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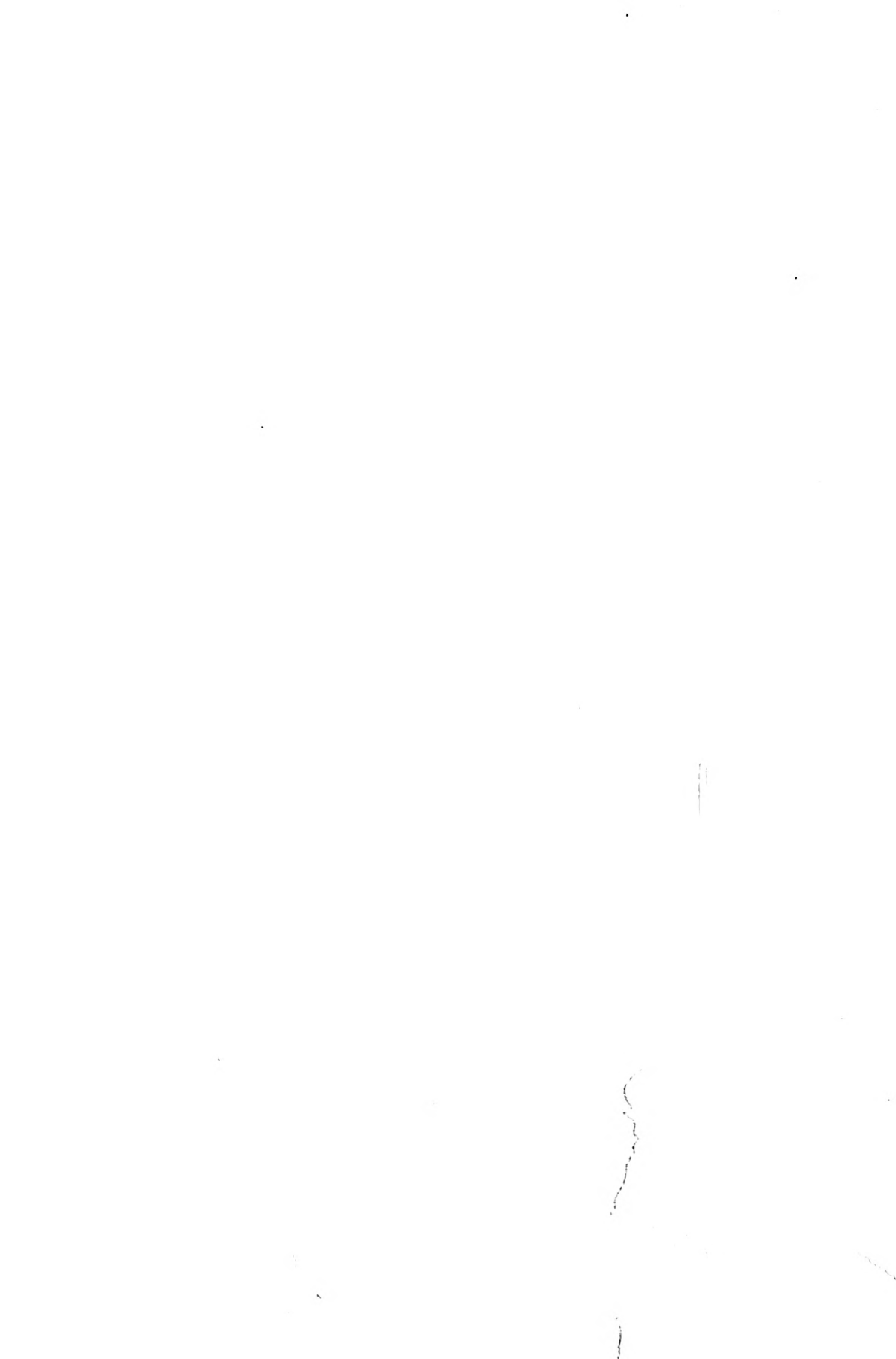
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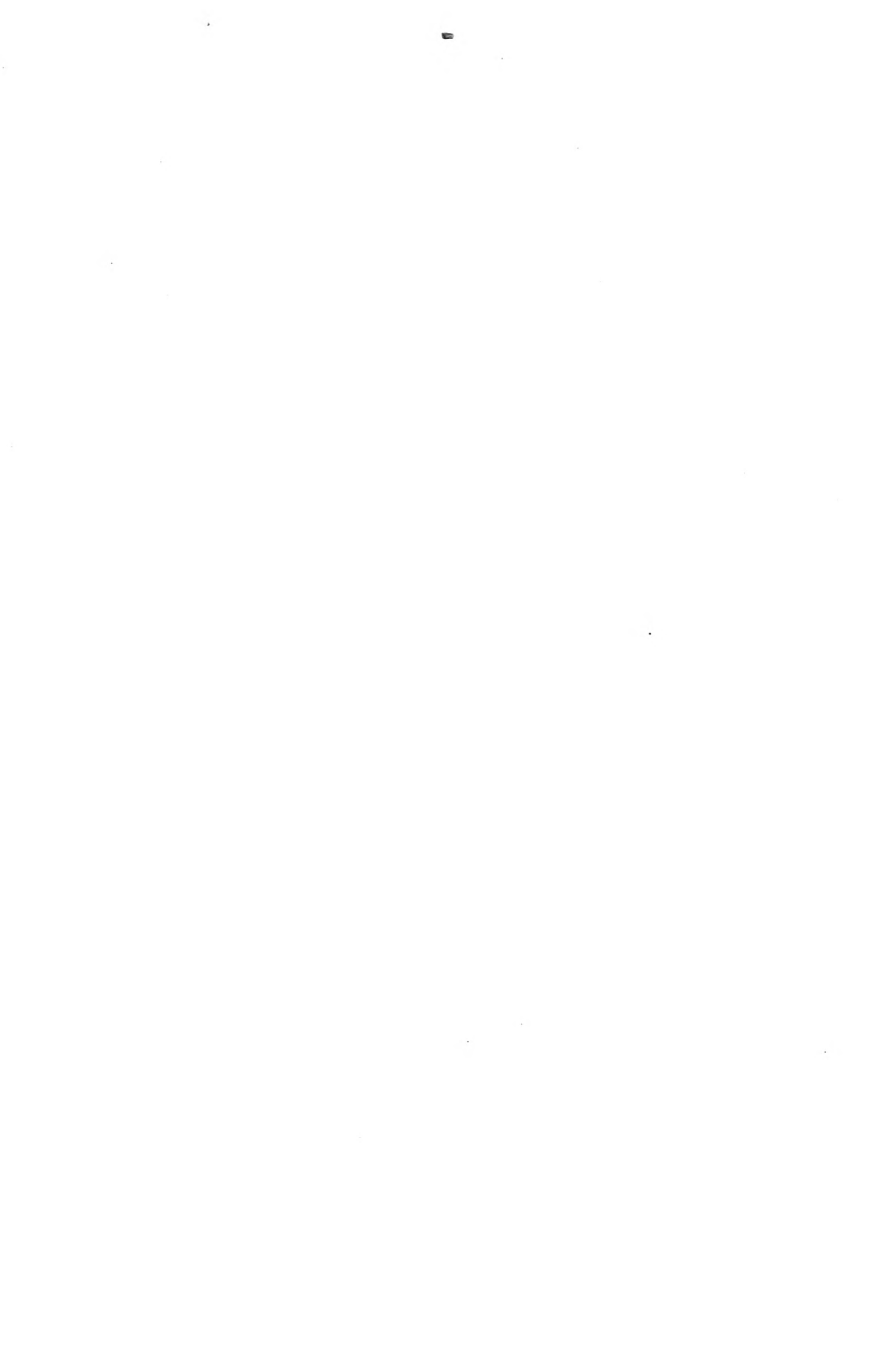
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SUPPLEMENT

TO

ALLEN'S DIGEST

OF

AGRICULTURAL IMPLEMENTS,

PATENTED IN THE UNITED STATES

(FROM 1789 TO JULY 1881.)

BEGINNING WITH JULY 1881 TO AND INCLUDING JUNE 1884.

COMPILED AND ARRANGED BY

JAMES T. ALLEN,

ASSISTANT EXAMINER

IN THE

U. S. PATENT OFFICE,
WASHINGTON, D. C.

GENERAL
FEB 12

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| Orvis, T. K. | 1279 | 1517 | St. John, G. B. | 1269 | 1513 |
| Orvis, T. K. | 1279 | 1518 | St. John, G. B. | 1270 | 1513 |
| Osborn, A. P. | 1395 | 1555 | St. John, G. B. | 1390 | 1554 |
| Packard, W. B. | 1404 | 1558 | St. John, G. B. | 1427 | 1565 |
| Palm, T. A. | 1324 | 1533 | St. John, G. B. | 1435 | 1567 |
| Palmer, H. S. | 1428 | 1566 | Sanborn, A. | 1403 | 1558 |
| Parlin, W. H. | 1279 | 1518 | Santrock, H. | 1460 | 1574 |
| Parlin, W. H. | 1282 | 1518 | Sater, H. H. | 1349 | 1540 |
| Parrish, H. | 1256 | 1507 | Sater, H. H. | 1370 | 1586 |
| Pate, Mc. D., Mason, S. O. and Dail, W. H. | 1233 | 1502 | Sater, H. H. | 1375 | 1549 |
| Pates, W. S. | 1285 | 1520 | Sater, H. H. | 1498 | 1546 |
| Patterson, W. B. | 1313 | 1527 | Schmidt, P. J. | 1446 | 1572 |
| Patterson, J. D. | 1407 | 1559 | Schoenshtedt, C. L. | 1373 | 1547 |
| Patton, C. W. | 1445 | 1571 | Schoonover, A. Jr. | 1367 | 1545 |
| Payne, J. M. | 1452 | 1573 | Schweer, C. | 1435 | 1568 |
| Peak, E. | 1409 | 1560 | Scott, W. | 1335 | 1536 |
| Pennock, W. H. | 1244 | 1504 | Sylee, S. K. | 1428 | 1566 |
| Petersen, P. | 1386 | 1553 | Shaffler, A. | 1436 | 1568 |
| Phillips, J. M. | 1330 | 1534 | Shaffstall, N. | 1387 | 1533 |
| Piatt, J. J. and E. R. | 1356 | 1542 | Shannon, E. and A. | 1479 | 1580 |
| Piatt, J. J. and E. R. | 1495 | 1586 | Sharp, D. P. | 1377 | 1551 |
| Pinckney, C. M. | 1369 | 1546 | Sharp, D. P. | 1409 | 1560 |
| Pirrung, G. | 1290 | 1521 | Shaver, G. | 1317 | 1531 |
| Pittman, M. S. E. | 1318 | 1531 | Shaver, G. | 1466 | 1576 |
| Platten, J. Sr. | 1250 | 1506 | Sebring, J. C. | 1470 | 1577 |
| Plice, T. V. | 1325 | 1533 | Shaeffer, F. | 1246 | 1505 |
| Pollock, J. R. | 1389 | 1556 | Sherman, J. | 1256 | 1507 |
| Pool, H. L. P. | 1246 | 1505 | Sherman, J. | 1372 | 1547 |
| Post, C. W. | 1281 | 1519 | Sherman, J. G. | 1110 | 1560 |
| Post, C. W. | 1328 | 1531 | Sherwood, A. T. | 1450 | 1572 |
| Post, C. W. | 1351 | 1540 | Sherwood, H. B. | 1463 | 1575 |
| Post, C. W. | 1410 | 1560 | Sickler, J. and E. E. | 1439 | 1568 |
| Post, C. W. | 1474 | 1578 | Simmons, C. Mc. C. | 1237 | 1503 |
| Post, C. W. | 1489 | 1583 | Simons, A. D. | 1452 | 1572 |
| Powell, E. | 1405 | 1558 | Simbhold, P. | 1317 | 1531 |
| Powell, E. | 1430 | 1566 | Simbhold, P. | 1409 | 1560 |
| Pratt, H. C. | 1360 | 1543 | Skank, G. F. | 1343 | 1538 |
| Prior, J. T. | 1249 | 1506 | Skillings, H. | 1263 | 1511 |
| Pucket, T. A. | 1327 | 1533 | Skillings, H. | 1294 | 1522 |
| Pursly, G. A. | 1450 | 1572 | Smiley, H. S. | 1340 | 1538 |
| Ralford, R. A. | 1140 | 1569 | Smith, H. L. | 1245 | 1505 |
| Rainwater, C. A., J. H. and A. P. | 1248 | 1505 | Smith, L. A. | 1254 | 1507 |
| Randall, S. G. | 1492 | 1581 | Smith, C. W. | 1297 | 1523 |
| Rankin, J. D. and Knox, W. C. | 1300 | 1524 | Smith, B. | 1299 | 1524 |
| Rea, H. | 1252 | 1507 | Smith, T. M. | 1303 | 1529 |
| Reed, C. D. | 1360 | 1543 | Smith, J. and Steinke, F. | 1307 | 1525 |
| Reed, C. T. | 1405 | 1558 | Smith, J. H. | 1309 | 1526 |
| Reeves, W. F. and H. C. | 1250 | 1506 | Smith, F. F. and Lockwood, J. W. | 1404 | 1558 |
| Remington, C. H. | 1382 | 1552 | Smith, F. F. and Lockwood, J. W. | 1412 | 1560 |
| Reynolds, E. D. and O. B. | 1379 | 1551 | Smith, A. | 1443 | 1571 |
| Rice, F. Apple, A. and M. | 1287 | 1521 | Smith, J. D. | 1444 | 1571 |
| Richardson, G. and Enderison, G. | 1245 | 1505 | Smith, J. M. and Thomas, H. W. C. | 1453 | 1573 |
| Richardson, T. L. | 1408 | 1559 | Smith, F. F. | 1461 | 1574 |
| Rickey, J. | 1415 | 1561 | Snyder, S. P., Stough, S. and Ulrick, T. D. | 1361 | 1543 |
| Riddle, W. N. | 1452 | 1573 | Snyder, S. P., Stough, S. and Ulrick, T. D. | 1498 | 1586 |
| Rikard, H. C. | 1248 | 1505 | Spangler, D. F. | 1301 | 1521 |
| Ring, J. | 1245 | 1505 | Spangler, J. W. | 1449 | 1572 |
| Risley, C. M. | 1232 | 1501 | Spangler, J. W. | 1449 | 1572 |
| Ritch, M. Mc. K. | 1242 | 1504 | Spencer, T. | 1241 | 1503 |
| Routh, G. H. | 1239 | 1503 | Stacy, G. W. | 1249 | 1505 |
| Robertson, H. A. | 1329 | 1534 | | | |

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|-----------------------------------|--------------|--------------|------------------------------|--------------|--------------|
| Stafford, M. J. | 1439 | 1568 | Verharen, E. T. | 1283 | 1519 |
| Stahl, H. C. | 1308 | 1525 | Walker, E. L. | 1232 | 1501 |
| Stahl, H. C. | 1310 | 1526 | Wanee, C. H. | 1404 | 1558 |
| Stebbins, L. | 1293 | 1522 | Ward, J. and Washburn, R. | 1380 | 1552 |
| Stevens, C. M. (R.) | 1305 | 1525 | Ward, J. | 1393 | 1555 |
| Stewart, U. T. | 1232 | 1501 | Warmoth, M. M. | 1361 | 1544 |
| Stockton, P. K. | 1414 | 1561 | Warner, J. P. | 1375 | 1549 |
| Stoddard, E. F. | 1271 | 1514 | Webber, A. P. | 1331 | 1535 |
| Stoddard, E. F. and Nauman, W. H. | 1483 | 1581 | Webber, A. P. | 1476 | 1579 |
| Stoneman, O. A. | 1397 | 1556 | Weir, W. S. | 1277 | 1517 |
| Stroud, W. D. | 1309 | 1526 | Weir, J. R. | 1344 | 1538 |
| Sursa, J. W. and Dowdall, J. T. | 1303 | 1529 | Weliver, G. | 1414 | 1561 |
| Swallow, J. E. | 1377 | 1554 | Wells, P. F. | 1324 | 1533 |
| Swickard, N. | 1406 | 1559 | West, W. H. | 1303 | 1529 |
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| Taylor, G. W. and S. | 1254 | 1507 | Weymouth, J. | 1236 | 1502 |
| Taylor, J. C. | 1318 | 1531 | Wiard, G. | 1417 | 1562 |
| Taylor, J. | 1462 | 1575 | Wiard, H. and Bullock, W. R. | 1425 | 1565 |
| Tenant, H. P. | 1475 | 1578 | Wilcox, H. | 1248 | 1505 |
| Terrell, H. D. | 1253 | 1506 | Wilde, W. H. | 1387 | 1553 |
| Thomas, J. W. and Ludlow, A. R. | 1477 | 1579 | Wilde, W. H. | 1472 | 1578 |
| Thompson, W. C. | 1304 | 1529 | Williams, P. W. | 1248 | 1505 |
| Thompson, H. V. | 1315 | 1528 | Williams, J. | 1275 | 1517 |
| Thompson, R. A. | 1432 | 1567 | Williams, F. O. | 1321 | 1532 |
| Timms, H. N. | 1312 | 1527 | Williams, F. O. | 1323 | 1532 |
| Topham, E. | 1403 | 1558 | Williams, N. H. | 1358 | 1543 |
| Tower, A. C. and J. D. | 1366 | 1545 | Williams, S. | 1458 | 1574 |
| Trowbridge, N. | 1366 | 1545 | Williams, F. O. | 1471 | 1577 |
| Trowbridge, N. | 1370 | 1546 | Wilson, J. R. | 1231 | 1501 |
| Trump, J. G. | 1356 | 1542 | Wise, D. | 13 | 6 |
| Tschop, A. | 1323 | 1532 | Witt, W. H. | 1409 | 1560 |
| Turchin, J. E. | 1301 | 1524 | Wood, M. G. and Pratt, W. C. | 1392 | 1554 |
| Turner, R. L. | 1309 | 1526 | Woolridge, J. | 1368 | 1546 |
| Turner, J. | 1378 | 1551 | Worthington, J. K. | 1386 | 1553 |
| Unthank, D. | 1350 | 1540 | Worthington, J. K. | 1471 | 1577 |
| Unthank, D. | 1480 | 1583 | Wright, E. A. | 1333 | 1535 |
| Utter, M. L. | 1348 | 1540 | Wright, E. A. | 1457 | 1573 |
| Van Brunt, W. A. | 1307 | 1525 | Wright, E. A. | 1465 | 1575 |
| Van Brunt, D. C. | 1307 | 1525 | Wright, E. A. | 1478 | 1579 |
| Van Brunt, D. C. | 1313 | 1527 | Yeiser, E. | 1377 | 1551 |
| Van Brunt, D. C. | 1314 | 1528 | Young, W. B. | 1375 | 1554 |
| Van Sickle, G. W. | 1276 | 1517 | Young, W. B. | 1391 | 1549 |
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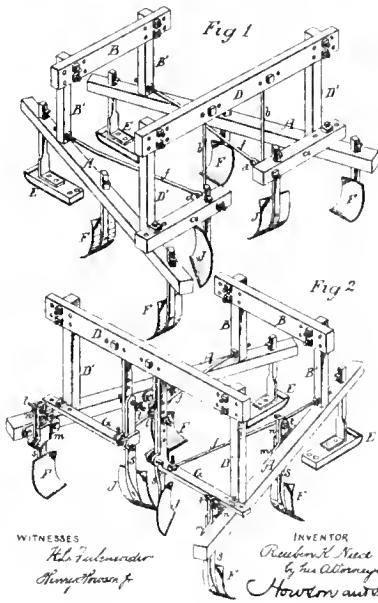
(No Model)

R. K. NIECE
CULTIVATOR.

2 Sheets—Sheet 1

No. 243,951.

Patented July 6, 1881.



WITNESSES

H. L. Tatum
Amey Brown

INVENTOR

Railton K. Niece
By his Attorney
Howison and Co

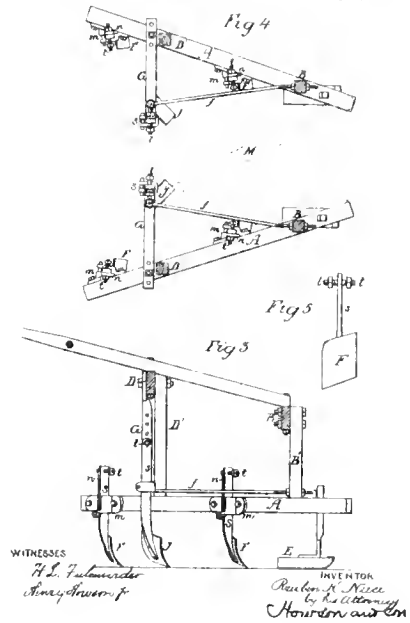
(No Model)

R. K. NIECE.
CULTIVATOR.

2 Sheets—Sheet 2

No. 243,951.

Patented July 6, 1881



WITNESSES

H. L. Tatum
Amey Brown

INVENTOR

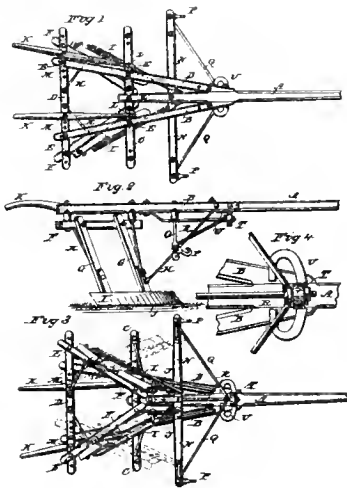
Railton K. Niece
By his Attorney
Howison and Co

(Model)

E. BARROWS.
CULTIVATOR.

No. 244,389.

Patented July 19, 1881.



WITNESSES

Geo. B. Patterson
Geo. B. Patterson

By his Attorney

INVENTOR

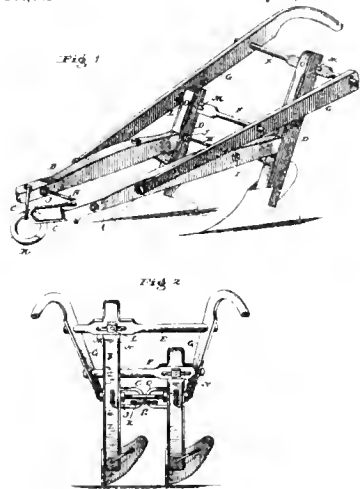
E. Barrows
Almond

(No Model)

B. C. McINNIS.
PLOW.

No. 244,842.

Patented July 19, 1881



Witnesses

Geo. B. Patterson
A. H. Brown

INVENTOR

B. C. McInnis
By his Attorney
Almond

(No Model)

E. W. EASLEY
CULTIVATOR

No 245,360.

Patented Aug. 9, 1881

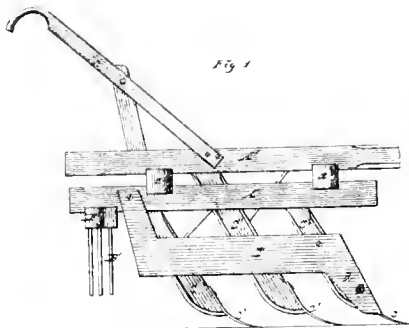


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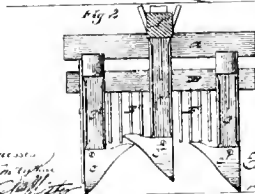


Fig. 2

Witnesses
H. C. ...
J. ...

Inventor
E. W. Easley
By ...
Attorney

(No Model)

J. W. DAVIS.
CULTIVATOR

No 245,810.

Patented Aug. 18, 1881

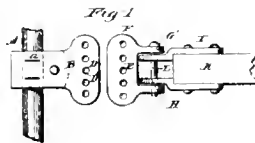


Fig. 1

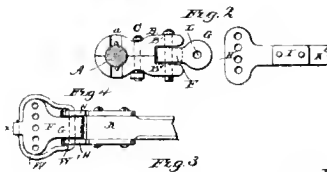
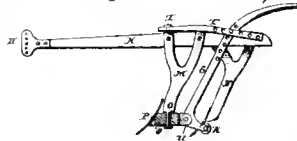


Fig. 2

Fig. 4

Fig. 3



Witnesses
Francis C. ...
H. ...

Inventor
John W. Davis
By Samuel J. Wallace
Attorney

(No Model)

J. A. FORBES.
COMBINED ROE AND CULTIVATOR.

No. 245,819.

Patented Aug. 16, 1881.

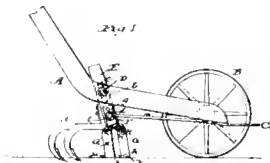


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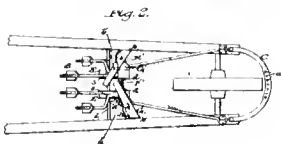


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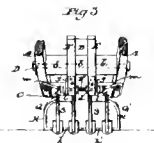


Fig. 3

WITNESSES
John A. ...
Ed. ...

INVENTOR
John A. Forbes
By ...
ATTORNEYS

(No Model)

N. J. GOOVER.
CULTIVATOR.

No. 245,812.

Patented Aug. 16, 1881.

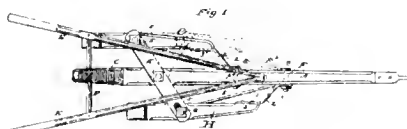


Fig. 1

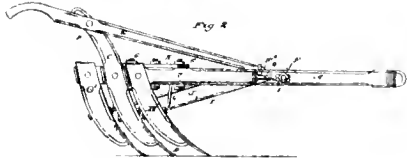


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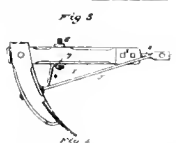


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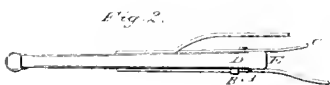
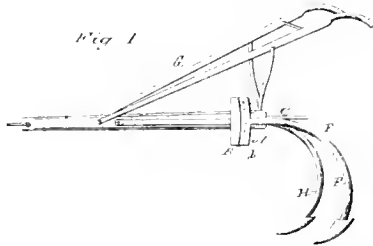
Witness
C. P. ...
D. ...

Inventor
Nathaniel J. Goover
By ...
Attorney

(Model)

J. R. WILSON.
DOUBLE SHOVEL FLOW.

No. 245,907. Patented Aug. 16, 1881.



Witnesses:
W. L. Thomas
John Stewart

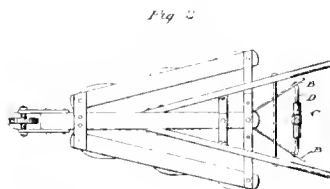
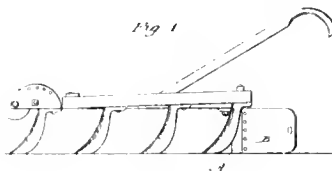
Inventor
John R. Wilson

(Model)

B. GRIFFIN.
CULTIVATOR & HOE

2 Sheets—Sheet 1

No. 246,124. Patented Aug. 23, 1881.



Witnesses:
Anson L. Griffin
Newton P. Fry

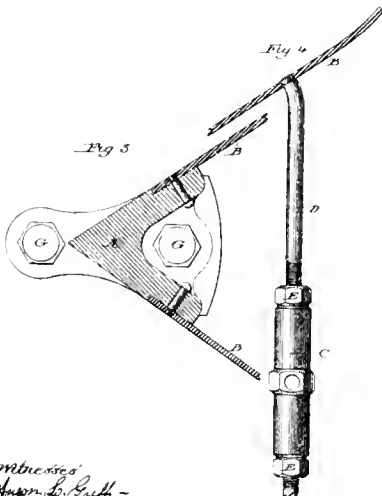
Inventor
Benjamin Griffin

(Model)

B. GRIFFIN.
CULTIVATOR HOE.

2 Sheets—Sheet 2

No. 246,124. Patented Aug. 23, 1881.



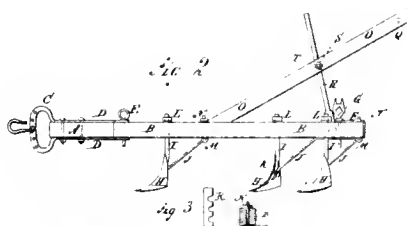
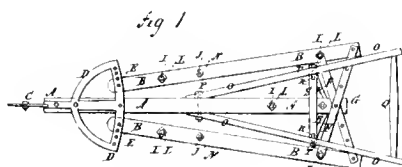
Witnesses:
Anson L. Griffin
Newton P. Fry

Inventor
Benjamin Griffin

(Model)

J. C. F. HAMMER.
CULTIVATOR.

No. 248,170. Patented Oct. 11, 1881.



Witnesses:
A. Schehl
C. Sigmund

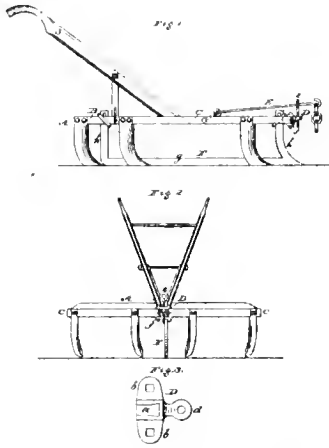
Inventor:
J. C. F. Hammer
BY [Signature]
ATTORNEYS.

(No Model)

C. M. RISLEY
CULTIVATOR.

No. 248,954.

Patented Nov. 1, 1881.



WITNESSES
L. W. Carter
A. B. Richards

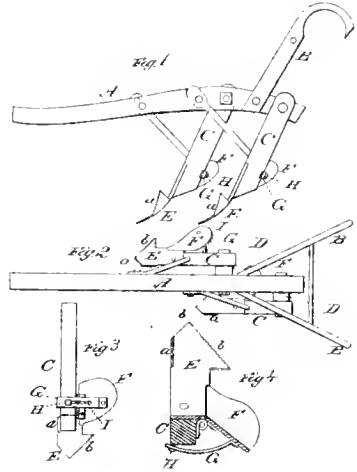
INVENTOR
C. M. Risley
 By *A. B. Richards*

(No Model)

U. T. STEWART
FLOW

No. 249,417.

Patented Nov. 8, 1881.



WITNESSES
J. B. Smith
H. J. Stewart

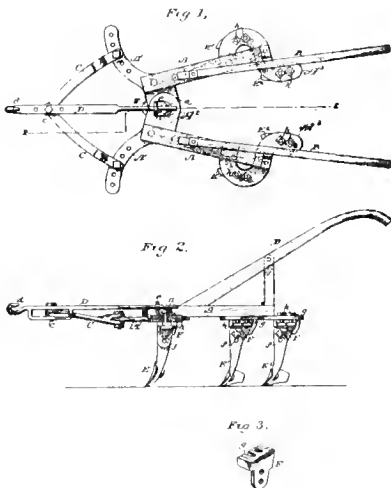
INVENTOR
U. T. Stewart
 by *Anderson & Smith*
 ATTORNEYS

(No Model)

E. L. WALKER.
CULTIVATOR.

No. 249,702.

Patented Nov. 15, 1881.



WITNESSES
Geo. W. Best
Wm. C. Stewart

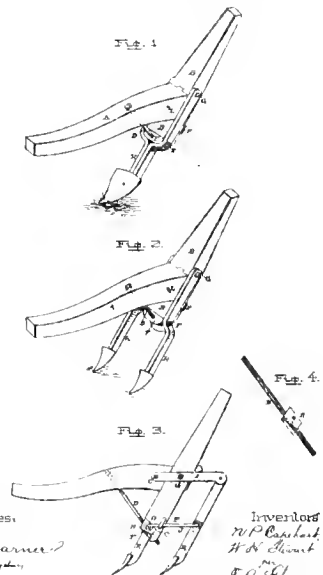
INVENTOR
Edward L. Walker
 By his attorney *F. B. Jones*

(No Model)

N. P. CAPEHART & W. H. STEWART.
CULTIVATOR.

No. 250,782.

Patented Dec. 13, 1881.



Witnesses,
J. W. Garner
J. B. Longstreng

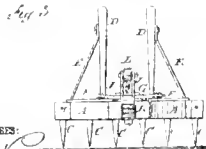
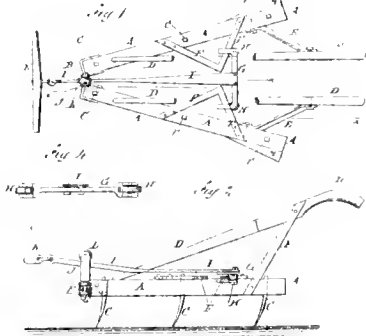
Inventors
N. P. Capehart
W. H. Stewart
 By *J. O. Adams*

(No Model)

M. C. MEIOS.
CULTIVATOR.

No. 250,831

Patented Dec. 13, 1881.



WITNESSES:
Chas. W. ...
b. Designer

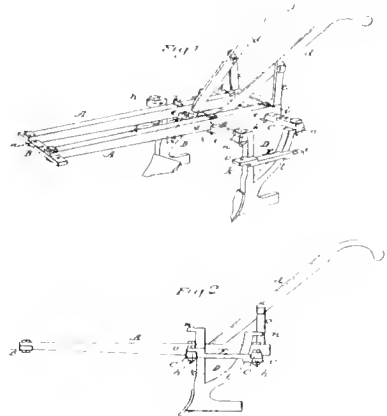
INVENTOR
M. C. Meios
BY *M. B. ...*
ATTORNEY.

(No Model)

A. CREECH
CULTIVATOR.

No. 251,527.

Patented Dec. 27, 1881.



WITNESSES:
Wm. ...

INVENTOR
A. Creech
BY *Hudson ...*
ATTORNEYS

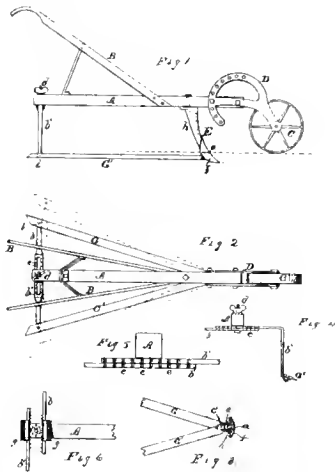
(No Model)

W. H. CLARK

IMPLEMENT FOR CUTTING WEEDS AND BEANS.

No. 251,765.

Patented Jan. 3, 1882.



WITNESSES:
Wm. ...

INVENTOR
W. H. Clark
BY *...*
ATTORNEY.

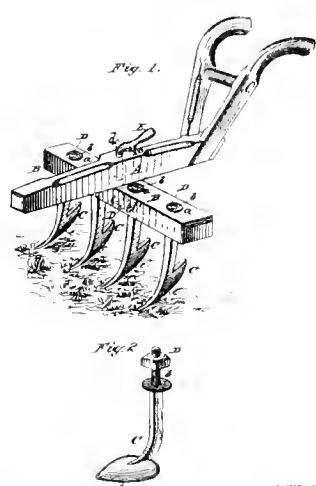
(No Model)

MOD. PATE S O MASON & W. H. DAIL.

CULTIVATOR

No. 252,509

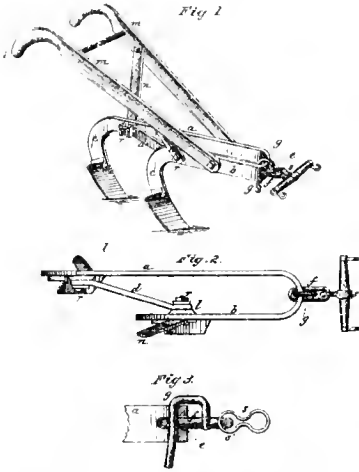
Patented Jan. 17, 1882.



WITNESSES:
...

INVENTOR
MOD. PATE S O MASON & W. H. DAIL
BY *...*
ATTORNEYS

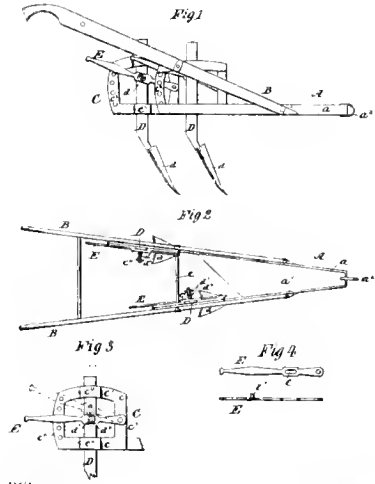
(No Model)
M T HANGOCH
 CULTIVATOR.
 No 253,164 Patented Jan. 31, 1882.



WITNESSES
And. G. Dittich
E. Dittich

INVENTOR
M. T. Hangoch
 By *Johnson & Johnson*
 Attorneys

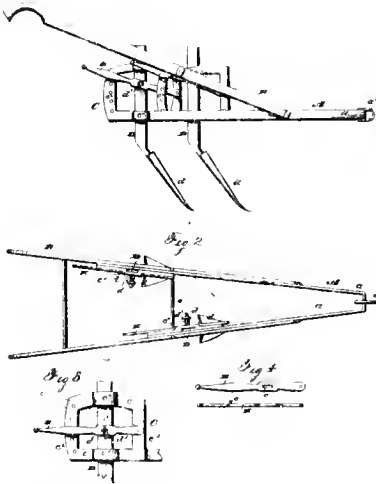
(Model)
F. R. COOPER & J. LEMMON.
 PLOW.
 No. 253,347. Patented Feb 7, 1882.



Witnesses
Wm. H. Dyer
Wm. H. Dyer

Inventors
F. R. Cooper
John Lemmon
 By *R. B. H. Lacey* Atty.

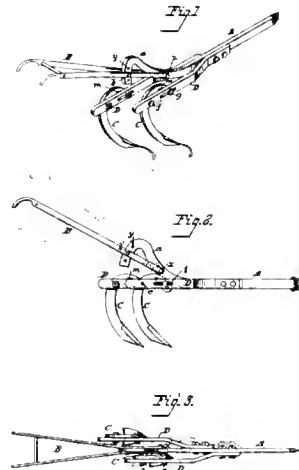
F. R. COOPER & J. LEMMON
 PLOW.
 No. 10,411. Reissued Nov. 27, 1883.



WITNESSES
Jos. C. Hutchison
S. S. Hutchinson

INVENTOR
Francis R. Cooper
John Lemmon
 By *A. H. Burgess* Atty.

(No Model)
W. J. DAVIDSON.
 CULTIVATOR.
 No. 254,932 Patented Mar. 14, 1882.



Witnesses
Wm. H. Dyer
Wm. H. Dyer

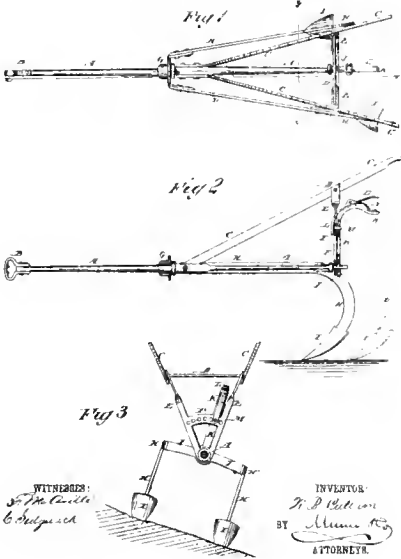
Inventor
W. J. Davidson
 By his attorney
Charles E. Foster

(No Model)

W B CULLOM
CULTIVATOR

No. 256,256

Patented Mar. 21, 1882.

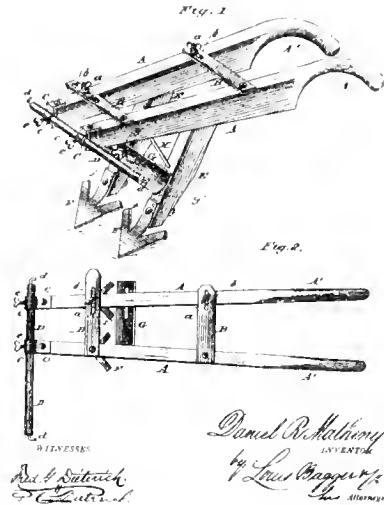


(No Model)

D. R MATHENY
COTTON FLOW

No. 256,348

Patented Apr 11, 1882.

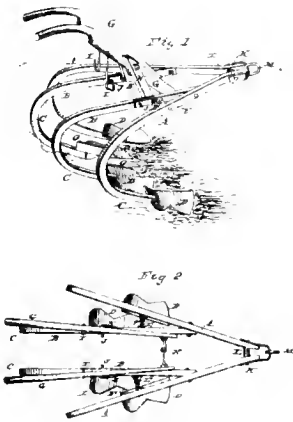


(No Model)

S. A EATSON
CULTIVATOR

No. 256,455

Patented Apr. 18, 1882.

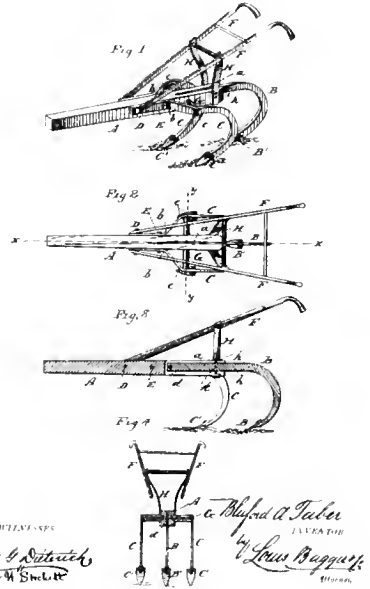


(No Model)

B. A. TABER
CULTIVATOR.

No. 259,943

Patented June 20, 1882

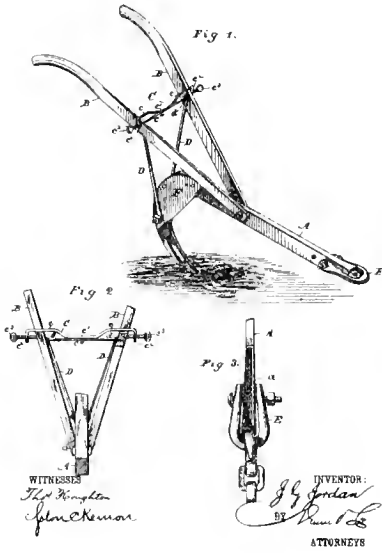


(No Model)

J. G. JORDAN.
CULTIVATOR.

No. 260,576.

Patented July 4, 1882.

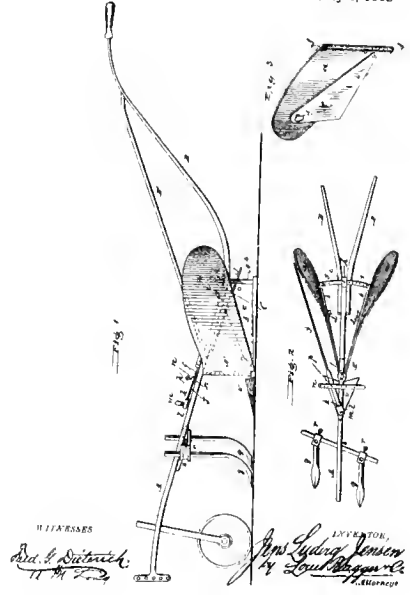


(No Model.)

J. L. JENSEN
CULTIVATOR.

No. 260,688.

Patented July 4, 1882.

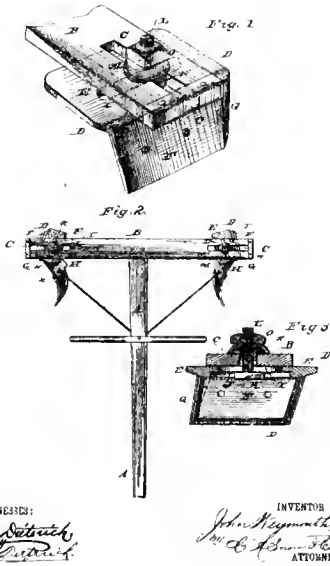


(No Model)

J. WEYMOUTH
CULTIVATOR.

No. 260,720.

Patented July 4, 1882.

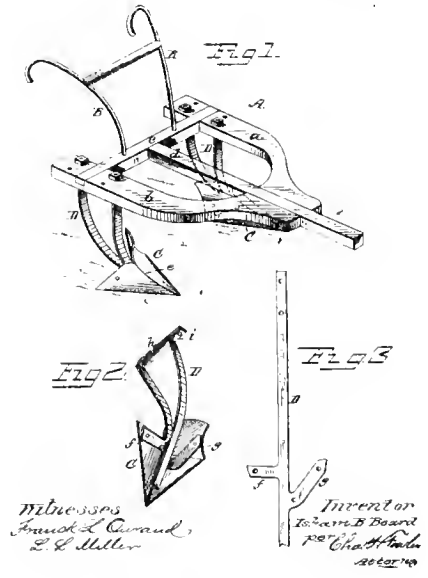


(No Model.)

I. B. BEARD.
CULTIVATOR.

No. 264,060.

Patented Sept. 12, 1882.

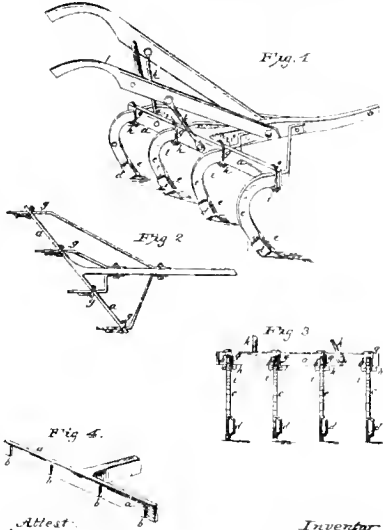


(No Model)

J. J. MIZE.
CULTIVATOR.

No. 294,323.

Patented Sept 12, 1882



Attest:
James Zwiley
Notary Public

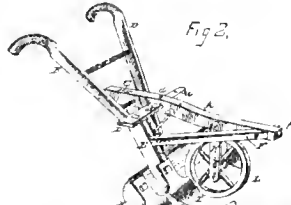
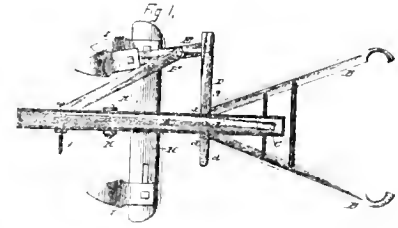
Inventor
John J. Mize
By
Ephraim J. Brown
Attorney

(No Model)

O. McC. SIMMONS.
FLOW.

No. 264,351.

Patented Sept 12, 1882.



WITNESSES:
D. S. Dittsch
J. H. Frank

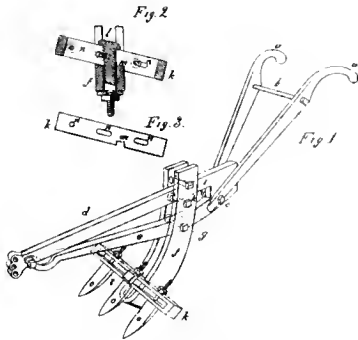
Inventor
O. McC. Simmons
By
Louis Bayger & Co.
ATTORNEYS

(No Model)

J. J. MOTLEY.
CULTIVATOR.

No. 284,957

Patented Sept. 26, 1882.



WITNESSES
Wm. Lawson
Chas. Coyle

Inventor
John J. Motley
By
Wm. Lawson
Attorney

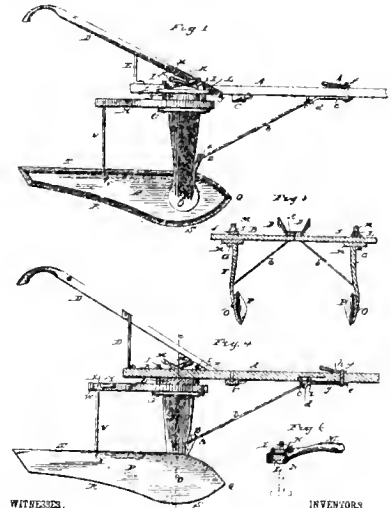
(No Model)

J. S. & G. N. GETCHELL.
HOE CULTIVATOR.

3 Sheets—Sheet 1

No. 266,998

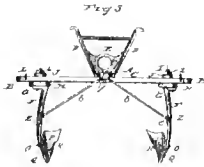
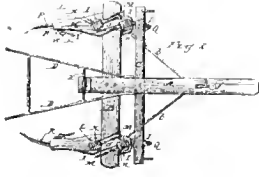
Patented Oct. 10, 1882



WITNESSES:
D. S. Dittsch
J. H. Frank

INVENTORS
J. S. Getchell
G. N. Getchell
By
Wm. Lawson
ATTORNEY

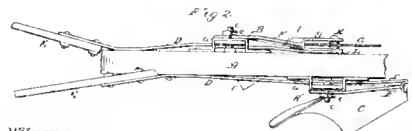
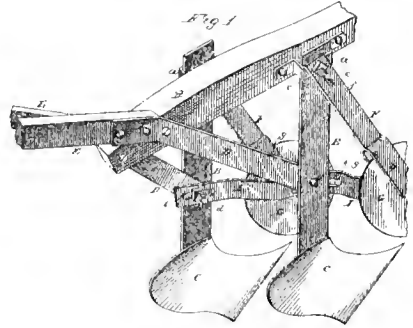
(No Model) J. S. & O. N. OTCHELL.
 SOLE CULTIVATOR
 No. 265,668 Patented Oct. 10, 1882.



WITNESSES:
Am. L. Dutcher
Geo. W. Stahl

INVENTOR:
J. S. OtcHELL
O. N. OtcHELL
 BY *C. S. Smith* ATTORNEY

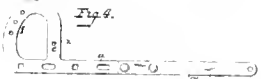
(No Model) O. L. & J. BRUNTON
 FLOW.
 No. 265,749. Patented Oct. 10, 1882



Witnesses:
W. Garner
C. S. Smith

INVENTORS:
O. L. Brunton
J. Brunton
 BY *C. S. Smith* ATTORNEY

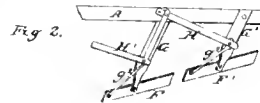
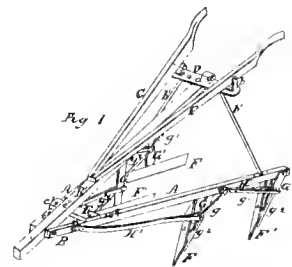
(No Model) W. J. DAVIDSON.
 FLOW.
 No. 265,763 Patented Oct. 10, 1882



Witness:
W. J. Davidson
William Foster

INVENTOR:
W. J. Davidson
 BY *Charles Foster*

(No Model) J. H. D'LAMATTER.
 CULTIVATOR.
 No. 285,765 Patented Oct. 10, 1882



Witnesses:
A. R. Connolly
J. J. M'Gee

INVENTOR:
J. H. D'LaMatter
 BY *Charles Foster* ATTORNEY

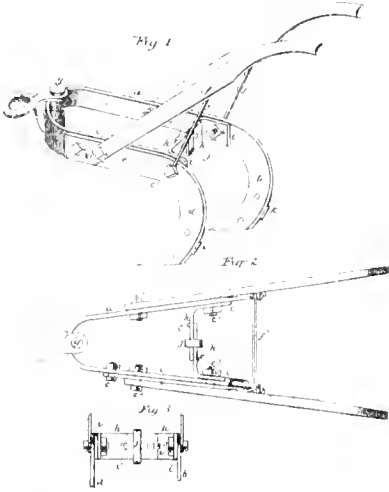
(No Model)

J I HANCOCK
CULTIVATOR.

2 Sheets—Sheet 1

No. 265,801.

Patented Oct. 10, 1882



Witnesses
Edmund Cardhas
Frank S. Smith

Inventor
J I Hancock
John W. Johnson & J. H. Johnson
Attorneys

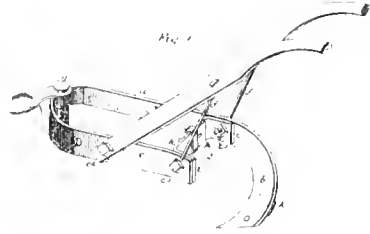
(No Model)

J I HANCOCK
CULTIVATOR.

2 Sheets—Sheet 2

No. 265 801

Patented Oct 10, 1882



Witnesses
Edmund Cardhas
Frank S. Smith

Inventor
J I Hancock
John W. Johnson & J. H. Johnson
Attorneys

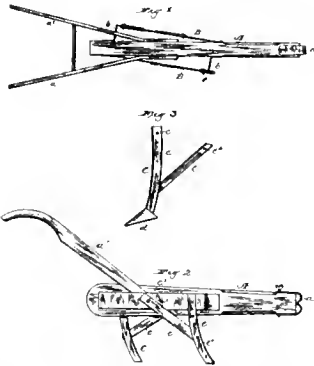
(No Model)

J. C. DENSON & S. B. BELL.
FLOW.

2 Sheets—Sheet 1

No. 266,274.

Patented Oct. 24, 1882.



Witnesses
J. C. Denson
S. B. Bell

Inventor
J. C. Denson
S. B. Bell
By Robert H. Gray
Attorney

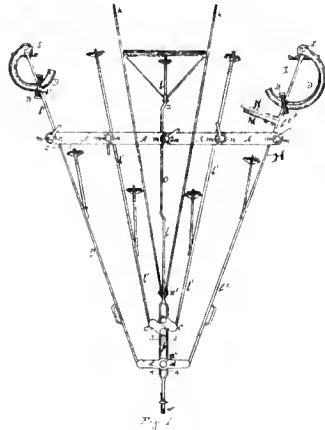
(No Model)

O. H. BOATH
CULTIVATOR

2 Sheets—Sheet 1

No. 267,255

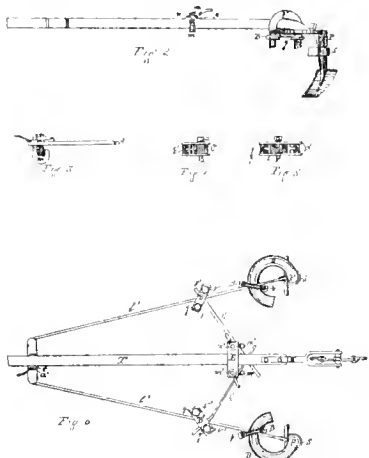
Patented Nov. 7, 1882



Witnesses
Alexander Rogers
R. H. Boath

Inventor
O. H. Boath
By R. H. Boath
Attorney

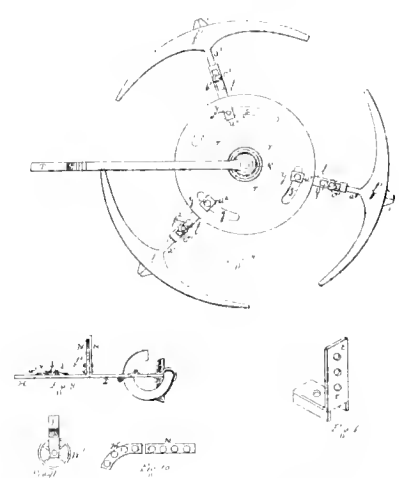
(No Model.)
O. H. ROATH
 CULTIVATOR.
 No. 267,255. Patented Nov. 7, 1882.



Witnesses
 Horatio Parsons
 Paul R. Anderson

Inventor
 O. H. Roath
 by A. R. Schmitt
 Attorney

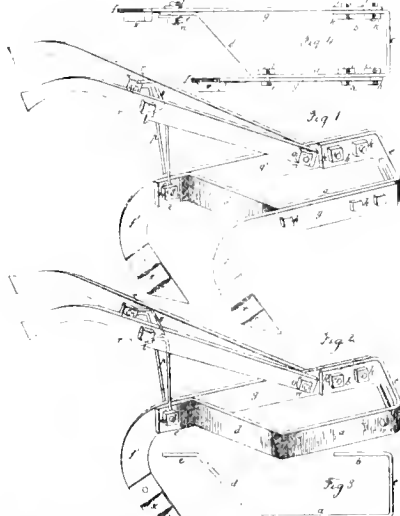
(No Model.)
G. H. ROATH
 CULTIVATOR.
 No. 267,255. Patented Nov. 7, 1882.



Witnesses
 Horatio Parsons
 Paul R. Anderson

Inventor
 G. H. Roath
 by A. R. Schmitt
 Attorney

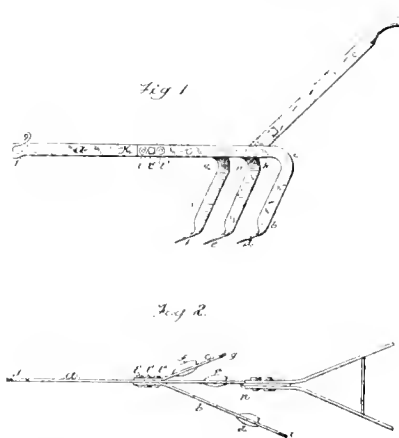
(No Model.)
M. HANCOCK
 CULTIVATOR PLOW.
 No. 266,223. Patented Nov. 28, 1882.



Witnesses
 George R. Hawley
 C. C. Grant

Inventor
 M. Hancock
 by A. R. Schmitt
 Attorney

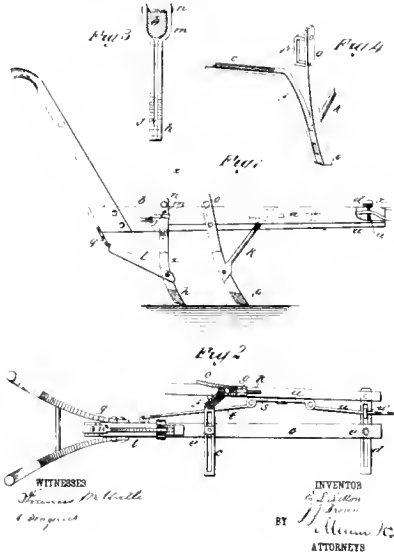
(No Model.)
D. H. BULL.
 HARROW CULTIVATOR.
 No. 268,617. Patented Dec. 5, 1882.



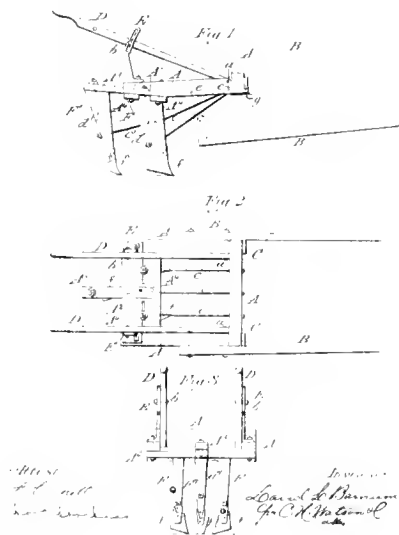
Witnesses
 S. H. Fowler
 C. J. Hammond

Inventor
 D. H. Bull
 by A. R. Schmitt
 Attorney

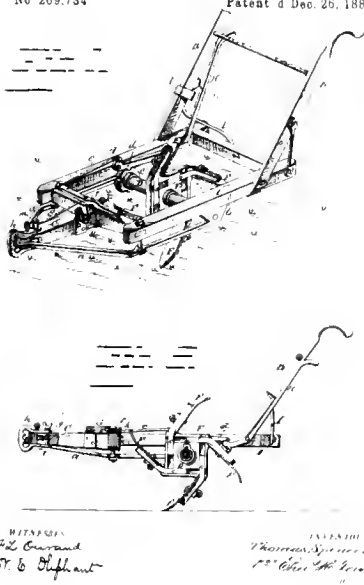
(Model)
E L LITTON & J J BROWN.
PLOW ATTACHMENT
No. 258,699 Patented Dec 5, 1881.



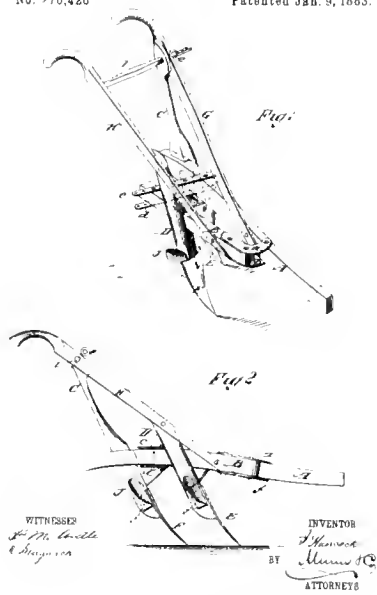
(No Model)
D L BARNUM
TRILL CULTIVATOR.
No 269,376 Patented Dec 19, 1882



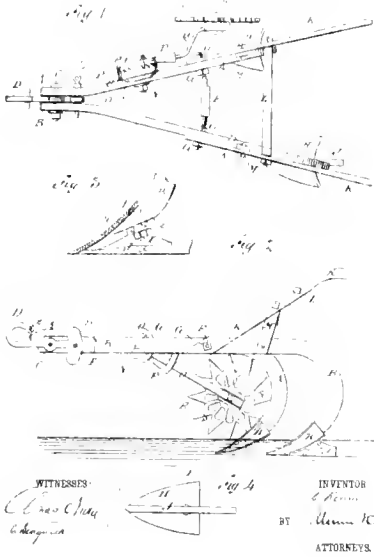
(Model)
T SPENCER
PLOW
No 269,734 Patented Dec. 26, 1882



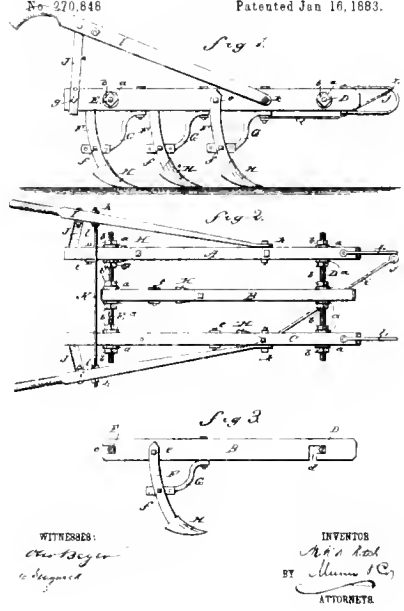
(No Model)
I HANCOCK
CULTIVATOR PLOW.
No. 270,426 Patented Jan. 9, 1883.



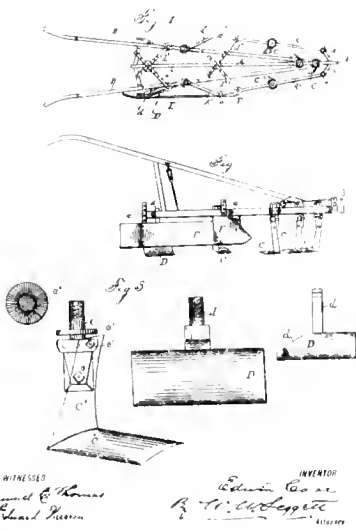
M
C. KENNER
 IMPROVED MODEL FLOW
 No. 270,812 Patented Jan 16, 1883



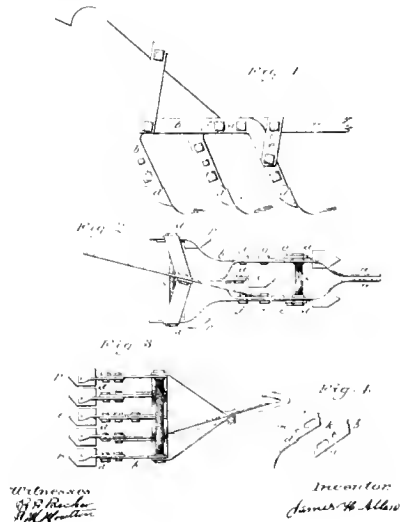
(No Model)
M. McE. RITCH
 FLOW
 No. 270,846 Patented Jan 16, 1883.



(No Model)
E. CASE
 CULTIVATOR.
 No. 270,987 Patented Jan 23, 1883



(No Model)
J. H. ALLEN
 CULTIVATOR
 No. 271,586 Patented Feb. 6, 1883

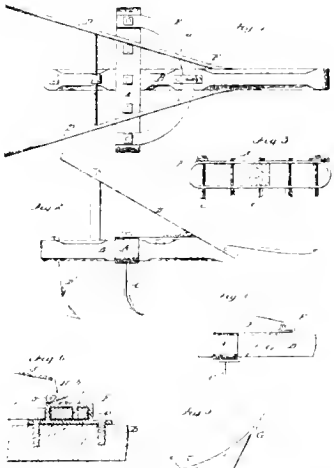


(No Model)

W H CARRUTH
HARROW AND CULTIVATOR

No. 271,580

Patented Feb. 6, 1883



Witness
G. S. Knight
George Deane

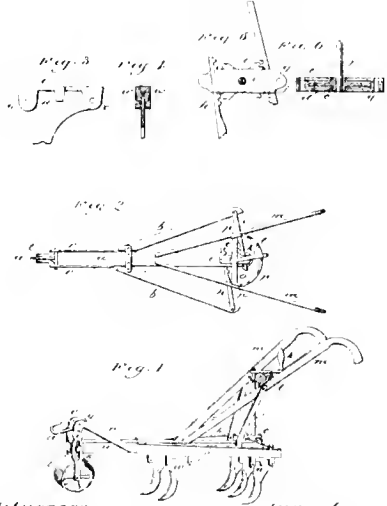
Inventor
W. H. Carruth
By W. H. Carruth

(No Model)

A N NORRIS
CULTIVATOR

No. 272,080

Patented Feb. 13, 1883.



Witness
W. H. Carruth
G. S. Knight

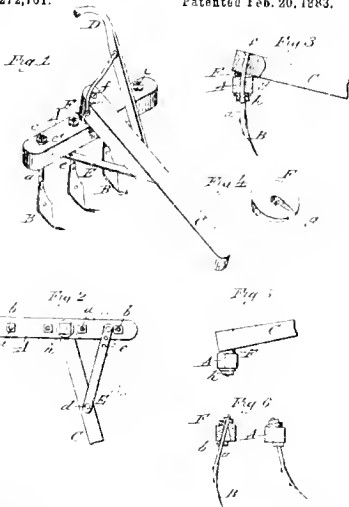
Inventor
A. N. Norris
By W. H. Carruth

(No Model)

F. H. JOHNSON
CULTIVATOR

No. 272,701.

Patented Feb. 20, 1883.



Witness
G. S. Knight
L. R. Brown

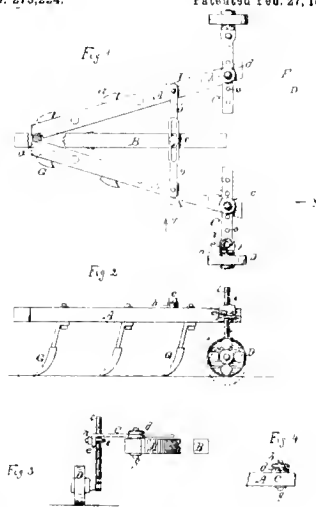
Inventor
Frank H. Johnson
By L. R. Brown

(No Model)

W. CARVER
CULTIVATOR AND BEAN HARVESTER

No. 273,224.

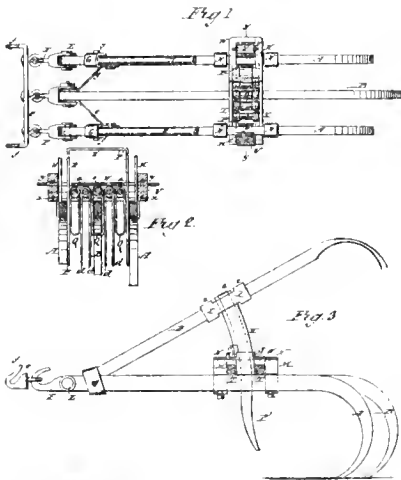
Patented Feb. 27, 1883.



Witness
L. R. Brown
W. H. Carruth

Inventor
William Carver
By W. H. Carruth

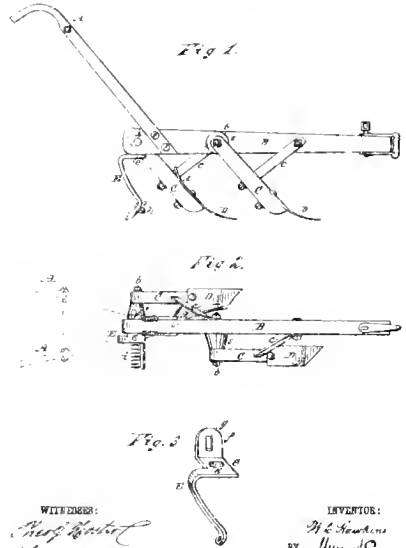
(Model)
F. M. ALLEN.
 CULTIVATOR
 No. 273,428. Patented Mar. 9, 1883.



WITNESSES:
James M. Smith
C. S. Johnson

INVENTOR:
F. M. Allen
 BY *Allen & Co.*
 ATTORNEYS

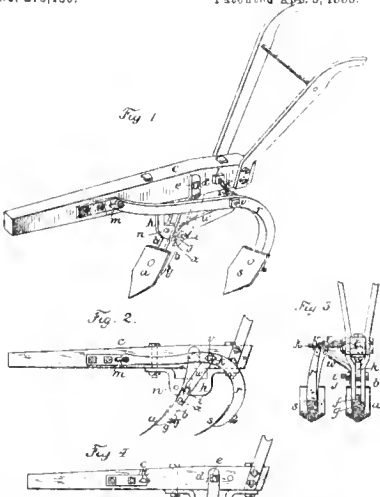
(No Model)
W. C. HAWKINS.
 PLOW
 No. 273,987. Patented Mar. 13, 1883.



WITNESSES:
John H. Smith
C. S. Johnson

INVENTOR:
W. C. Hawkins
 BY *Allen & Co.*
 ATTORNEYS

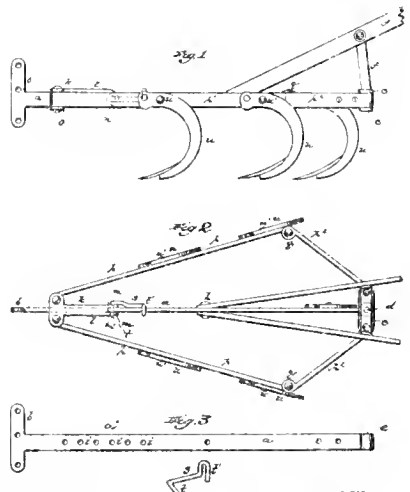
(No Model)
E. P. DAVIS.
 CULTIVATOR.
 No. 275,159. Patented Apr. 3, 1883.



Witnesses:
James M. Smith
C. S. Johnson

Inventor:
E. P. Davis
 BY *Johnson & Johnson*
 ATTORNEYS

(No Model)
W. H. PENNOCK.
 CULTIVATOR.
 No. 275,260. Patented Apr. 3, 1883.



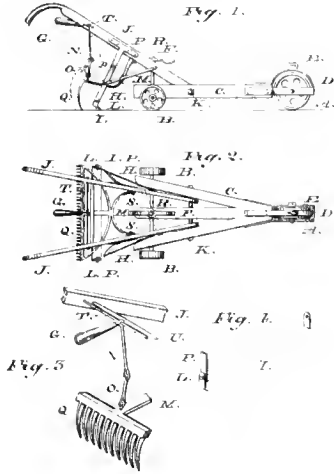
WITNESSES:
John H. Smith
C. S. Johnson

INVENTOR:
W. H. Pennock
 BY *Johnson & Johnson*
 ATTORNEYS

(No Model)

O BIRGHER
HORSE SODDLE HOE.

No. 275,482. Patented Apr. 10, 1883.



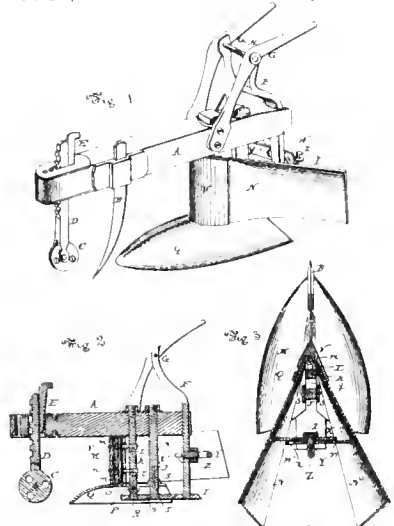
Witnesses:
Amory Benson &
Attorneys

Inventor:
O Birgher
per S. J. Smith
Attorney.

(No Model)

J RING
TROW

No. 277,786. Patented May 15, 1883.



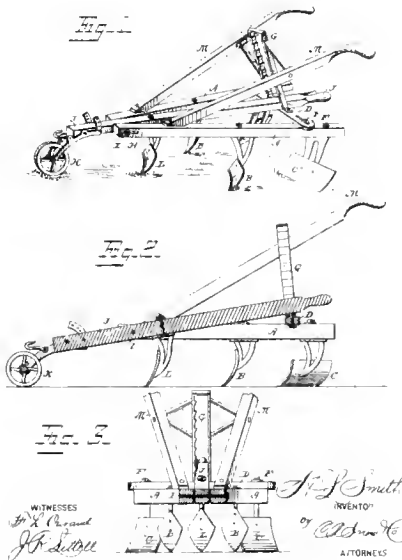
Witnesses:
S. J. Smith
Attorney

Inventor:
Johann Ring
per Louis Baguet & Co.
Attorneys

(No Model)

H. L. SMITH
CULTIVATOR

No. 277,946. Patented May 22, 1883.



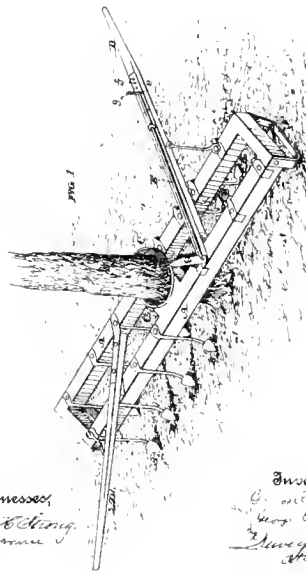
Witnesses:
S. J. Smith
Attorney

Inventor:
H. L. Smith
per S. J. Smith
Attorney

(No Model)

G RICHARDSON & G ENDERSON
ORCHARD CULTIVATOR.

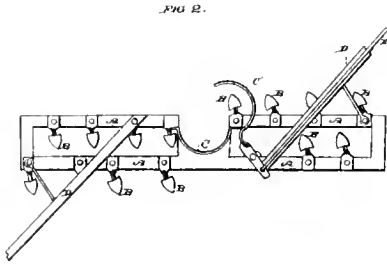
No. 279,277. Patented June 12, 1883.



Witnesses:
S. J. Smith
Attorney

Inventors:
G. Richardson
G. Enderson
per S. J. Smith
Attorneys

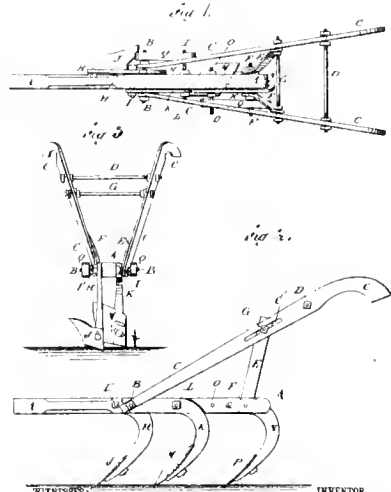
(No Model) 2 Sheets—Sheet 2
G. RICHARDSON & G. ENDERSON.
 ORCHARD CULTIVATOR.
 No. 279,277. Patented June 12, 1883.



Witnesses:
Edw. H. Johnson

Inventors,
George Richardson
and
George Enderson
 by *Dwight H. Johnson*
 Attorney

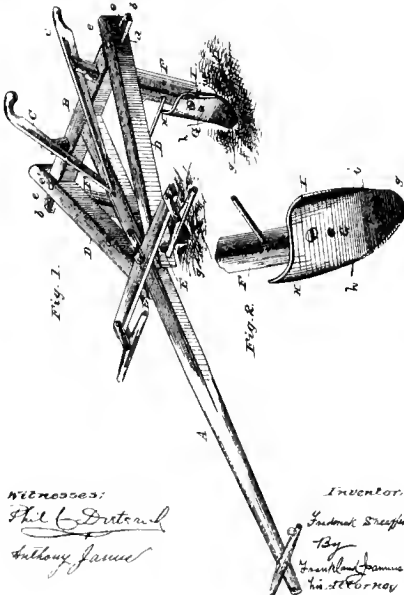
(No Model)
H. L. P. POOL.
 COMBINED SCRAPER, PLOW, AND CULTIVATOR.
 No. 279,429. Patented June 12, 1883.



WITNESSES:
Chas. H. Hill
& Dwight H. Johnson

INVENTOR
H. L. Pool
 BY *H. H. Hill & Co.*
 ATTORNEYS

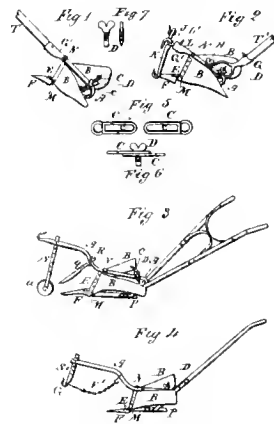
(No Model.)
F. SHEAFFER.
 STRADDLE ROW CULTIVATOR.
 No. 279,823. Patented June 19, 1883.



Witnesses:
W. L. Dutton
Anthony James

Inventor,
Franklin Sheaffer
 by *Wm. H. Johnson*
 Attorney

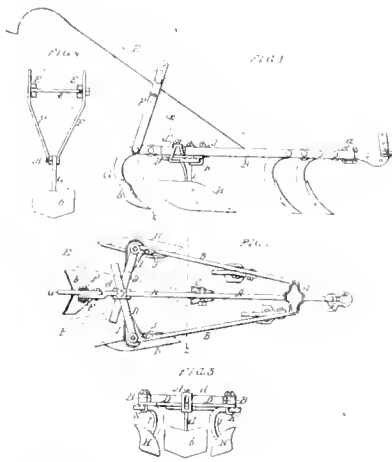
(No Model.)
B. LANOIZELET.
 AGRICULTURAL IMPLEMENT.
 No. 279,958. Patented June 26, 1883.



Witnesses
William H. Hill
and
Wm. H. Johnson

Inventor
Benoit Lanoizelet
 by *Wm. H. Hill*
 Attorney

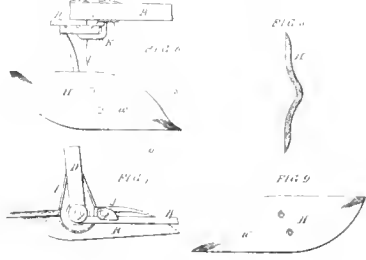
No Model
 S. L. ALLEN
 CULTIVATOR
 No 281,426
 Patented July 17, 1883



WITNESSES
 Oliver Williams
 Hamilton D. Turner

INVENTOR
 S. L. Allen
 By Hamilton D. Turner
 Attorney at Law

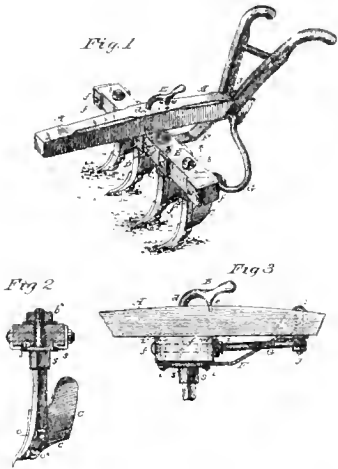
No Model
 S. L. ALLEN
 CULTIVATOR
 No 281,426
 Patented July 17, 1883



WITNESSES
 Hamilton Turner
 Oliver Williams

INVENTOR
 S. L. Allen
 By Hamilton D. Turner
 Attorney at Law

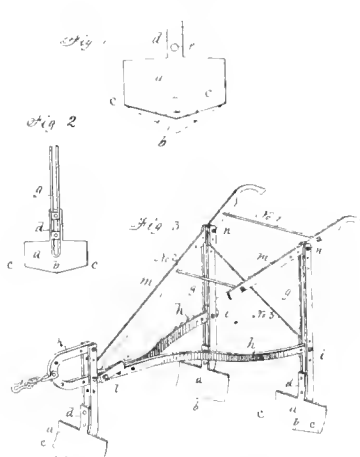
(No Model)
 S. O. MASON
 CULTIVATOR
 No. 282,341
 Patented July 31, 1883.



WITNESSES
 Fred J. Distenfeld
 Eben C. ...

INVENTOR
 Samuel O. Mason
 By William ...
 ATTORNEYS

No Model
 A. W. LIVINGSTON
 CULTIVATOR
 No. 282,640
 Patented Aug. 7, 1883.



WITNESSES
 C. H. ...
 C. L. ...

INVENTOR
 Alvan W. Livingston
 By Thomas C. ...
 ATTORNEY

(No Model)

P W WILLIAMS
CULTIVATOR.

No. 282,824

Patented Aug 7, 1883.

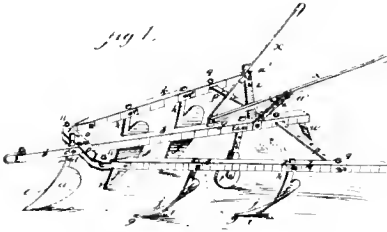
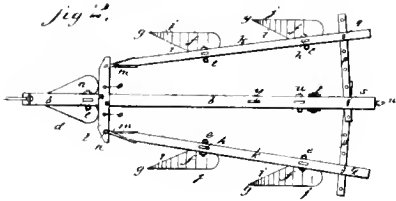


Fig. 1.



WITNESSES:

*John S. Small,
L. S. Lyman*

INVENTOR:

P. W. Williams
BY *Merrill & Co.*
ATTORNEYS

(No Model)

H C RIKARD
CULTIVATOR.

No 284,062

Patented Aug. 28, 1883.

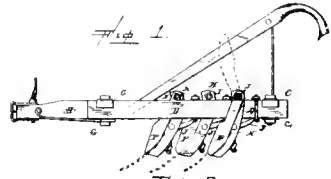


Fig. 1.

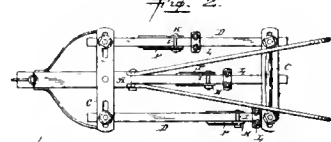


Fig. 2.

Fig. 3.



Witnesses:
Amos Gardner

J. Williams

Inventor:

H. C. Rikard,
per
F. Uehmann,
Att'y

(No Model)

C. A., J. H., & A. P. RAINWATER.
CULTIVATOR.

No. 285,073.

Patented Sept. 18, 1883.

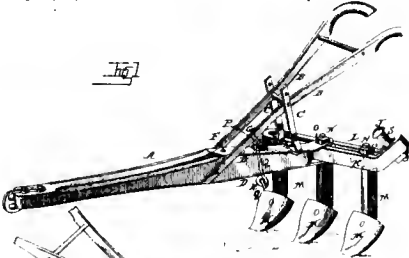


Fig. 1.

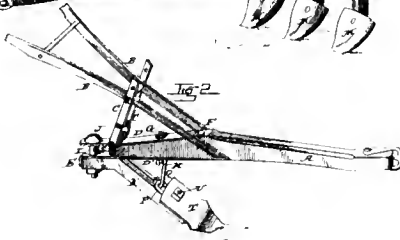


Fig. 2.



Fig. 3.

WITNESSES:

*Robt. A. Ditcher,
J. H. Rainwater*

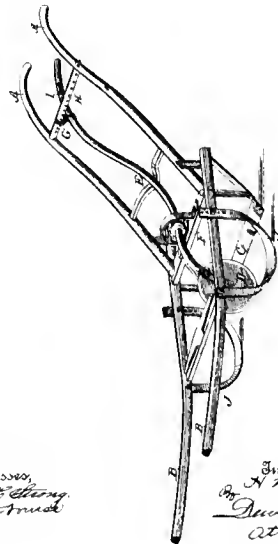
*C. A. Rainwater,
J. H. Rainwater,
A. P. Rainwater,*
INVENTORS
BY *C. Adams, H. C.*
ATTORNEYS

(No Model)

H WILCOX.
CULTIVATOR.

No. 285,193

Patented Sept. 18, 1883.



Witnesses:
*Geo. E. Strong,
J. H. Rainwater*

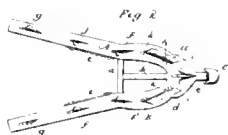
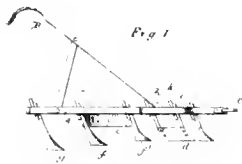
Inventor,
H. Wilcox,
BY *Devey & Co.*
Attorneys

(No Model)

G. W. STACY
CULTIVATOR.

No. 286,318.

Patented Sept. 18, 1883.



WITNESSES:

Thos Wroughton
H. R. Stevens

INVENTOR:

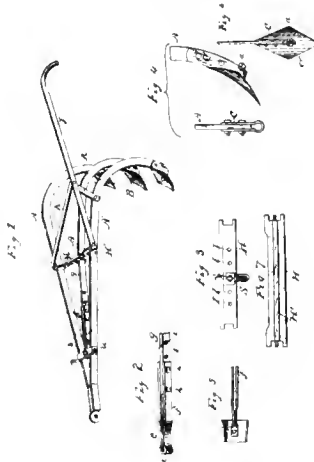
G. W. Stacy
BY *Wm. C. Brown*
ATTORNEY.

(No Model)

J. B. DAY & T. J. GREGORY
CULTIVATOR.

No. 286,409

Patented Sept. 25, 1883



WITNESSES:
Chas. K. Rorer
W. C. Brown

INVENTORS:

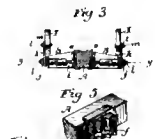
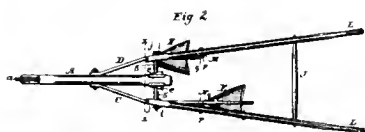
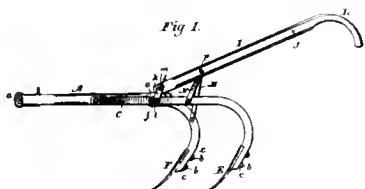
John B. Day
Thomas J. Gregory
By *Wm. C. Brown*
ATTORNEY.

(No Model)

G. C. AVERY
DOUBLE SHOVEL FLOW.

No. 286,723

Patented Sept. 25, 1883.



Witnesses:
Henry Koster
Jacob Bell

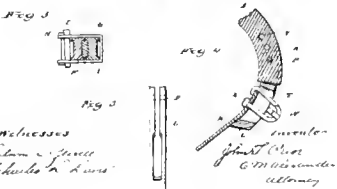
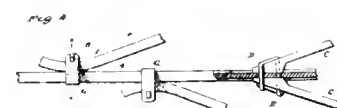
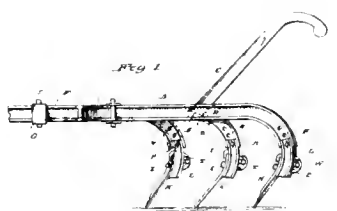
Inventor:
G. C. Avery
By *L. H. W. Linton*

(No Model)

J. T. PRIOR.
FLOW AND CULTIVATOR COMBINED.

No. 286,485

Patented Oct. 9, 1883.



Witnesses:
Chas. K. Rorer
Charles A. Davis

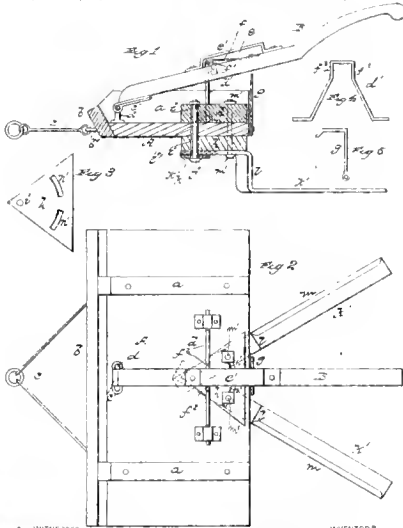
Inventor:
J. T. Prior
By *Wm. C. Brown*
ATTORNEY.

(No Model)

W. F. & H. C. RIEVES.
WEED CUTTER

No. 287,163

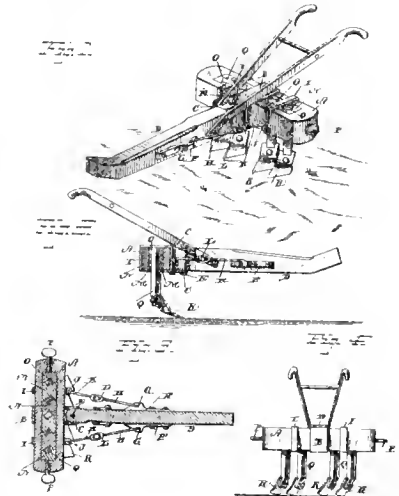
Patented Oct. 23, 1883.



WITNESSES:
Frank H. ...
John P. ...
 INVENTORS:
W. F. & H. C. Rieves
 BY *W. H. ...* ATTORNEYS

(No Model)

E. FULMER
MEANS FOR SECURING CULTIVATOR AND HARROW TEETH.
No. 287,531.
Patented Oct. 30, 1883.



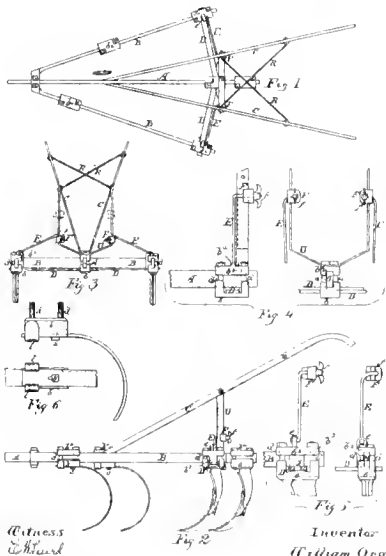
WITNESSES:
J. K. ...
C. D. ...
 INVENTOR:
E. Fulmer
 BY *...* ATTORNEY

(No Model)

W. ORD
CULTIVATOR.

No. 287,956

Patented Nov. 6, 1883.



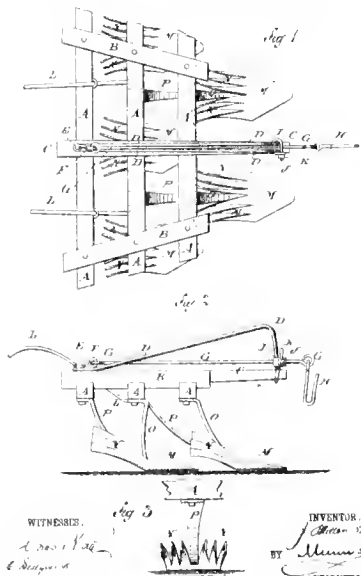
Witness:
Edward ...
W. R. ...
 Inventor:
William Ord
 BY *...* ATTORNEY

(No Model)

J. PLATTEN, Sr.
CULTIVATOR

No. 268,111

Patented Nov. 6, 1883.



WITNESSES:
A. ...
C. ...
 INVENTOR:
J. Platten, Sr.
 BY *...* ATTORNEY

(No Model)

E. S. BENHAM
JANG FLOW FRAME.

No. 289,376

Patented Dec. 4, 1883

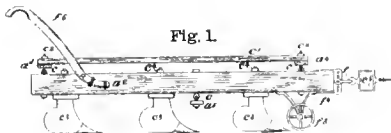


Fig. 1.

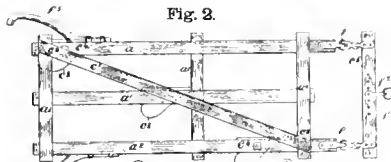


Fig. 2.

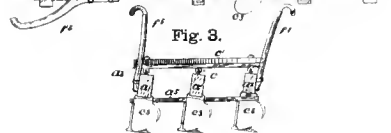


Fig. 3.

Witnesses.

J. W. Caldwell
J. M. Brown

Inventor

Ethan S. Benham
By *James S. Langley*
1883

(No Model)

S. FRENCH
CULTIVATOR.

No. 289,824

Patented Dec. 11, 1883.

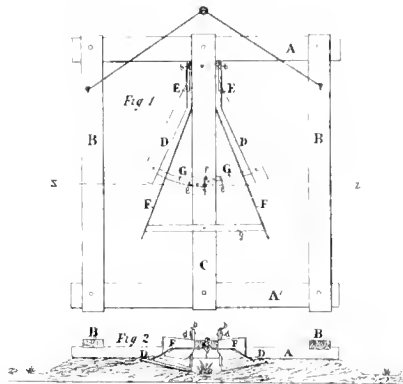


Fig. 1.



Fig. 2.



Fig. 3.

WITNESSES:

B. C. Stone
Geo. C. Nelson

INVENTOR
Samuel French
BY *John Stone*
ATTORNEY

(No Model)

J. L. GILBERT
FLOW

No. 290,032

Patented Dec. 11, 1883.

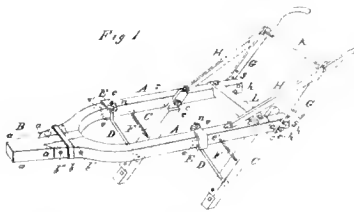


Fig. 1.



Fig. 2.



Fig. 3.

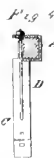


Fig. 4.

WITNESSES

W. H. Anderson
Philipp Kellner

INVENTOR

J. L. Gilbert
By *Anderson & Kellner*
ATTORNEYS

(No Model)

A. A. ROBERTS
FLOW.

No. 291,087.

Patented Jan. 1, 1884

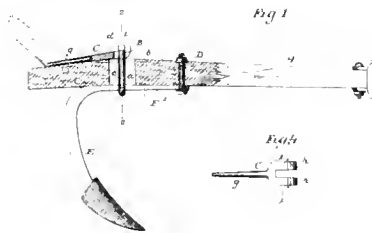


Fig. 1.

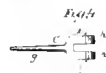


Fig. 2.

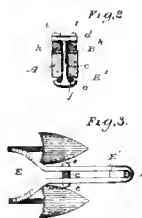


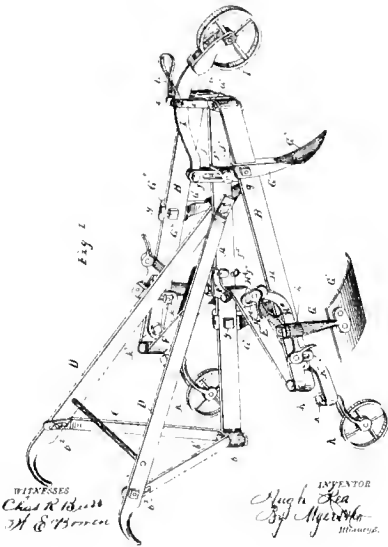
Fig. 3.

WITNESSES

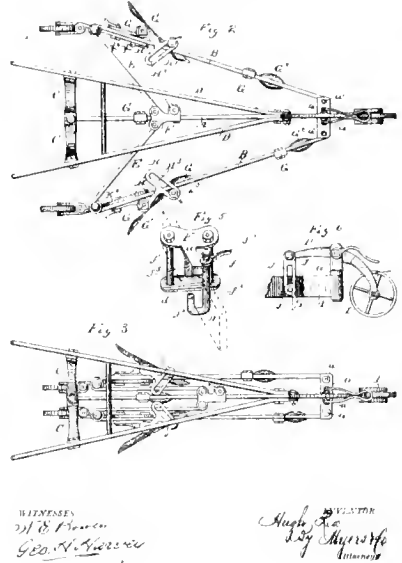
W. A. Smith
Geo. C. Johnson

INVENTOR
A. A. Roberts
By *W. A. Smith*
Geo. C. Johnson
ATTORNEYS

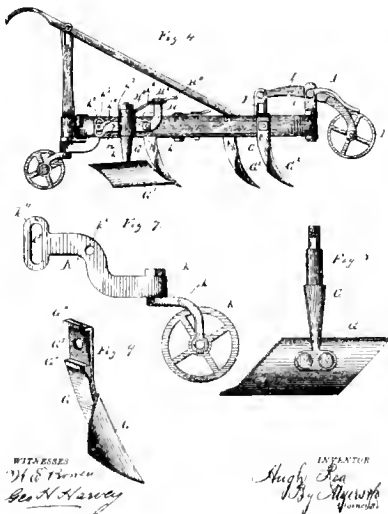
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 COMBINED PLOW AND CULTIVATOR.
 No. 291,772. Patented Jan. 8, 1884



(No Model) H REA 4 Sheets—Sheet 2
 COMBINED PLOW AND CULTIVATOR.
 No. 291,772. Patented Jan. 8, 1884



H REA
 COMBINED PLOW AND CULTIVATOR
 No. 291,772. Patented Jan. 8, 1884



H REA
 COMBINED PLOW AND CULTIVATOR
 No. 291,772. Patented Jan. 8, 1884

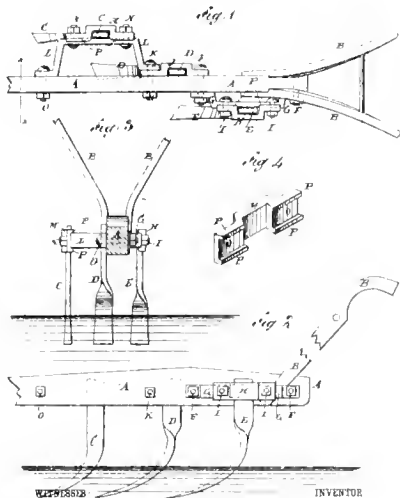


(No Model.)

H D TERRELL
CULTIVATOR

No. 292,070

Patented Jan. 15 1884.



WITNESSES
Chas. W. Moore
Wm. S. Moore

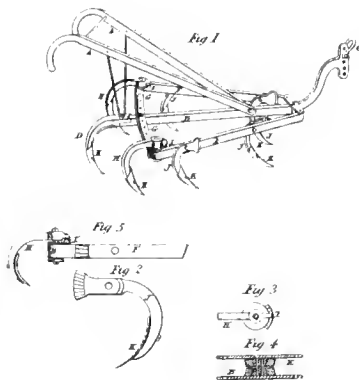
INVENTOR
H. D. Terrell
BY *Moore & Co*
ATTORNEYS

(No Model.)

P. BEELER
CULTIVATOR

No. 292,091

Patented Jan. 15, 1884



WITNESSES
Frank Darnell
Geo. D. Lee

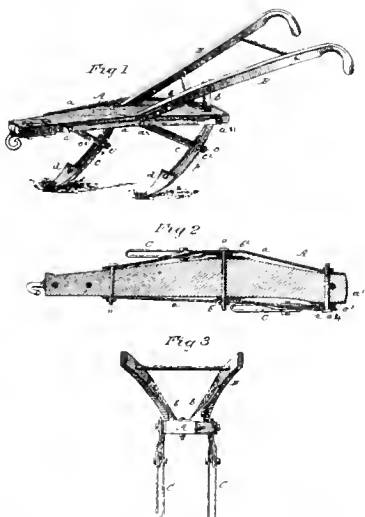
INVENTOR
P. Beeler
BY *S. S. Moore*
ATTORNEY

(No Model.)

H L MOORE
PLOW

No. 292,501

Patented Jan. 20, 1884.



WITNESSES
Red & White
Missouri

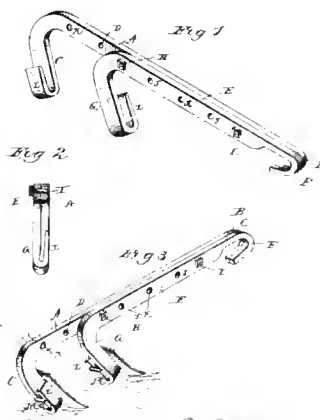
INVENTOR
H. L. Moore
BY *Wm. S. Moore*
ATTORNEYS

(No Model.)

W E VENABLE
PLOW

No. 292,878.

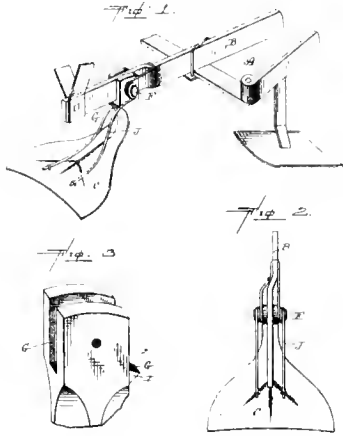
Patented Feb. 5, 1884.



WITNESSES
W. E. Venable
E. J. Suggs

INVENTOR
W. E. Venable
BY *C. A. Moore*
ATTORNEY

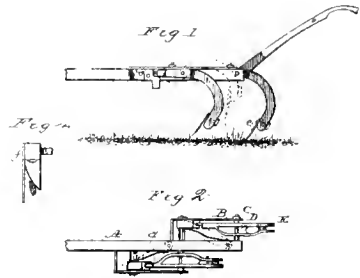
(No Model)
G W & S TAYLOR
 CULTIVATOR
 No. 293,920 Patented Feb. 19, 1884.



Witnesses:
R. F. Cardner
J. W. Garner

Inventors:
G. W. Taylor
S. Taylor
F. A. Johnson atty

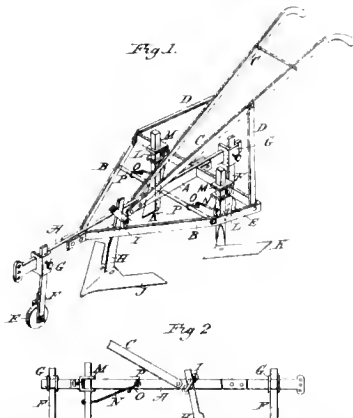
(No Model)
I A SMITH
 CULTIVATOR.
 No. 294,041. Patented Feb. 26, 1884



Attest
J. M. Reynolds
 Notary Public

Inventor
I. A. Smith
 By *O. C. Duffy*
 atty

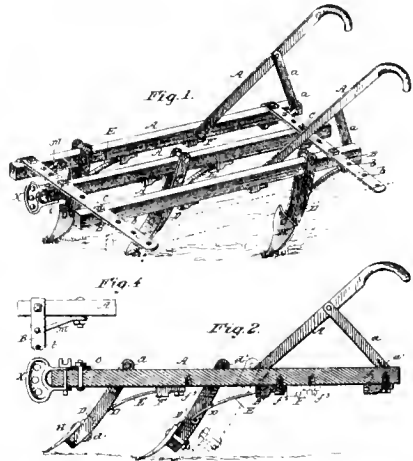
(No Model)
C. W MEADOR
 CULTIVATOR AND HORSE ROD.
 No. 295,189 Patented Mar. 18, 1884.



Attest
R. H. Abbott
A. R. Brown

Inventor,
Charles W. Meador
 By *J. C. Bastwick*

(No Model)
D. W BRANCH.
 CULTIVATOR.
 No. 298,121 Patented Apr. 1, 1884



WITNESSES:
And. E. Dietrich
H. H. Stone

INVENTOR
Daniel W. Branch
 By *J. S. South* & Co.
 ATTORNEYS

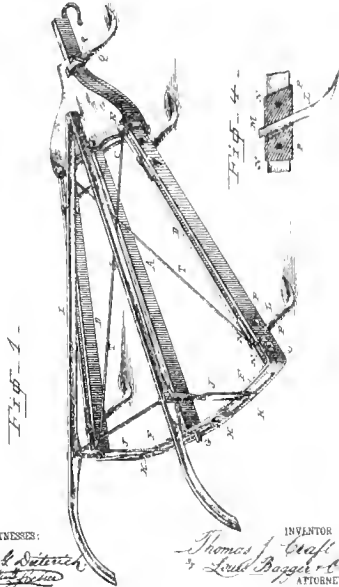
(No Model.)

T. J. CRAFT
CULTIVATOR

2 Sheets - Sheet 1

No. 297,069

Patented Apr. 15, 1884



WITNESSES:

And. & Dietrich
Attorneys

INVENTOR

Thomas J. Craft
Leah Baggel & Co.
ATTORNEYS

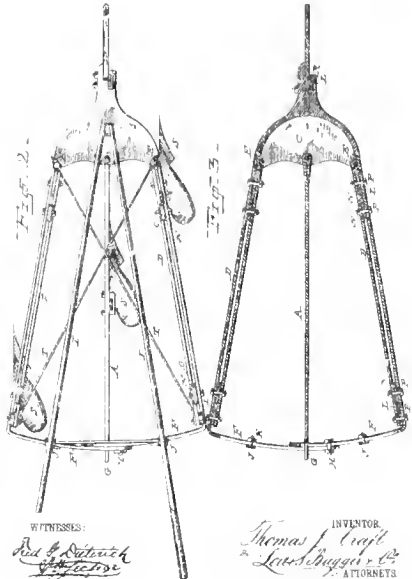
(No Model.)

T. J. CRAFT.
CULTIVATOR

2 Sheets - Sheet 2

No. 297,069.

Patented Apr. 15, 1884



WITNESSES:

And. & Dietrich
Attorneys

INVENTOR

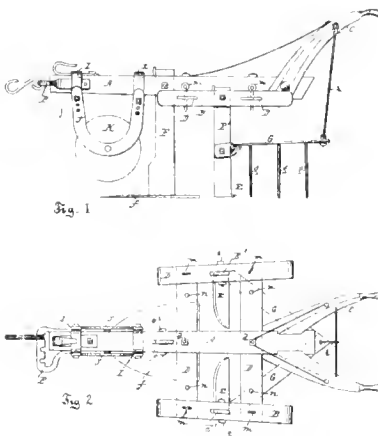
Thomas J. Craft
Leah Baggel & Co.
ATTORNEYS

(No Model.)

D. ARCHER.
CULTIVATOR.

No. 297,057

Patented Apr. 29, 1884.



Witnesses

Geo. A. Simpson
Attorneys

Inventor

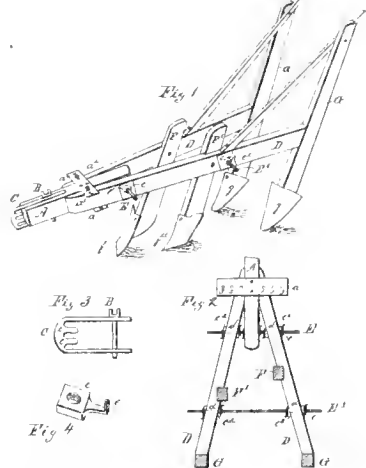
Leah Archer
Attorney

(No Model.)

T. H. BAIRD
COTTON AND CORN CULTIVATOR.

No. 298,334

Patented May 13, 1884



Witnesses

Geo. A. Smith
Attorneys

Inventor

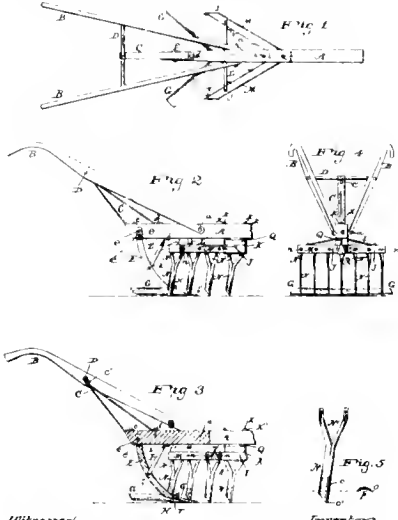
Thomas H. Baird
By J. S. Duffie
Attorney

(No Model)

H PARRISH
CULTIVATOR FLOW.

No. 299,180

Patented May 27, 1884



Witnesses:
Philip J. James,
McNanton

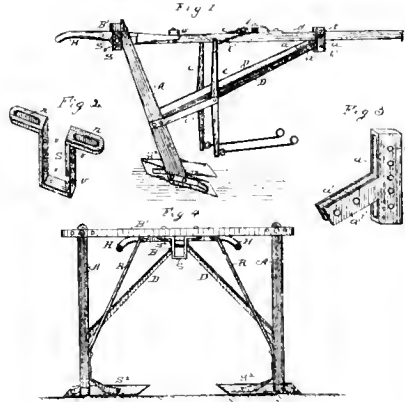
Inventor:
Henry Parrish
By Wm. H. Burston
Att'y

(No Model)

H L MILLER
SCRAPER CULTIVATOR

No. 299,415.

Patented May 27, 1884.



Witnesses:

Wm. H. Burston
Wm. J. Miller

Inventor:
Henry L. Miller

(No Model)

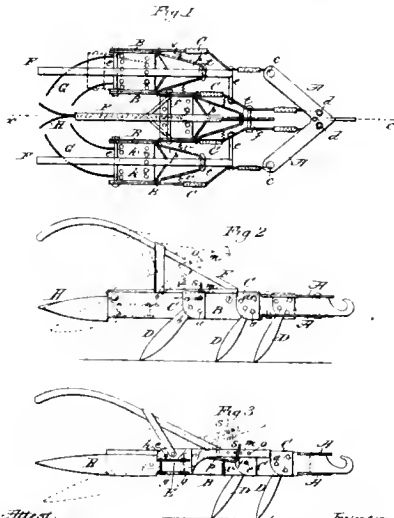
J SHERMAN.

3 Sheets—Sheet 1.

CULTIVATOR AND COTTON CROPPER.

No. 300,850.

Patented June 17, 1884.



Witness:
F. H. Holt
A. R. Brown

Inventor:
Joseph Sherman
By J. C. Taylor
Att'y

(No Model)

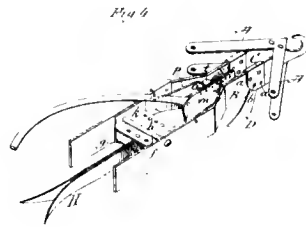
J SHERMAN.

2 Sheets—Sheet 2

CULTIVATOR AND COTTON CROPPER.

No. 300,850.

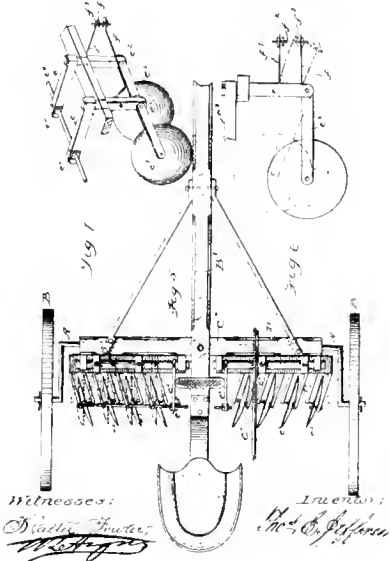
Patented June 17, 1884.



Witness:
F. H. Holt
A. R. Brown

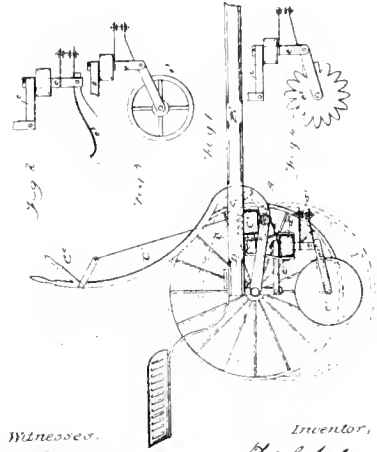
Inventor:
Joseph Sherman
By J. C. Taylor
Att'y

(Model) T. E. JEFFERSON 4 Sheets—Sheet 2
No. 243,705. HARBOW Patented July 5, 1881



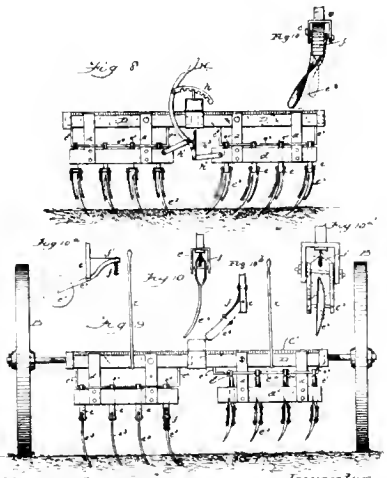
Witnesses: *Wm. H. Foster*
Inventor: *T. E. Jefferson*

(Model) T. E. JEFFERSON 4 Sheets—Sheet 1
No. 243,705. HARBOW Patented July 5, 1881



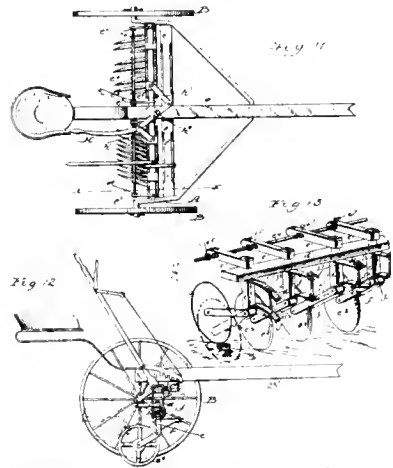
Witnesses: *Wm. H. Foster*
Inventor: *T. E. Jefferson*

(Model) T. E. JEFFERSON 4 Sheets—Sheet 3
No. 243,705. HARBOW Patented July 5, 1881



Witnesses: *Wm. H. Foster*
Inventor: *T. E. Jefferson*

(Model) T. E. JEFFERSON 4 Sheets—Sheet 4
No. 243,705. HARBOW Patented July 5, 1881



Witnesses: *Wm. H. Foster*
Inventor: *T. E. Jefferson*

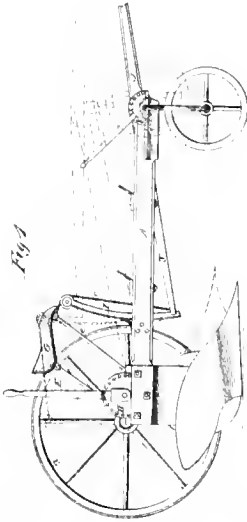
(No Model)

G B ST JOHN
FLOW TRUCK

2 Sheets—Sheet 1

No. 254,723

Patented Mar. 7, 1882.



WITNESSES:
Amos L. Conant
George Conell

INVENTOR:
Garland B. St. John
L. Deane

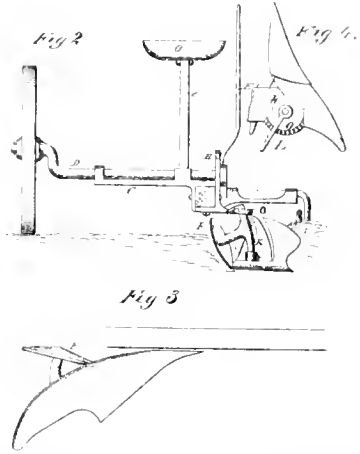
(No Model)

G B ST JOHN
FLOW TRUCK

2 Sheets—Sheet 2

No. 254,723

Patented Mar. 7, 1882.



WITNESSES:
Amos L. Conant
George Conell

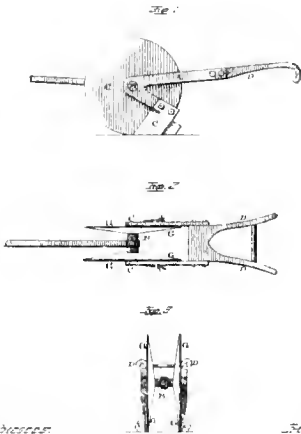
INVENTOR:
Garland B. St. John
L. Deane

(Model)

C. C. DAVIS & W. H. MERCER
COTTON SOBAPER

No. 257,666

Patented May 9, 1882.



WITNESSES:
W. H. Mercer
C. C. Davis

INVENTORS:
C. C. Davis
W. H. Mercer
F. C. Sherman

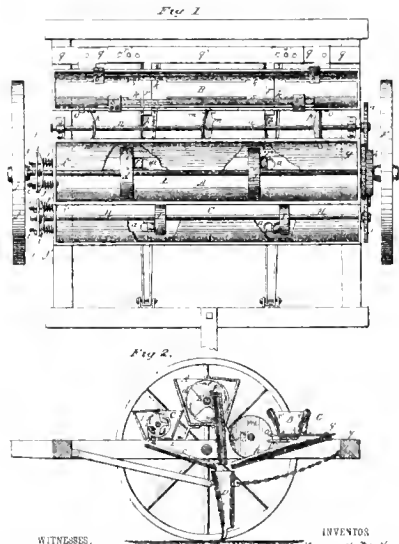
(No Model)

H. M. EDITH
SEED DRILL AND FERTILIZER

4 Sheets—Sheet 1

No. 258,928

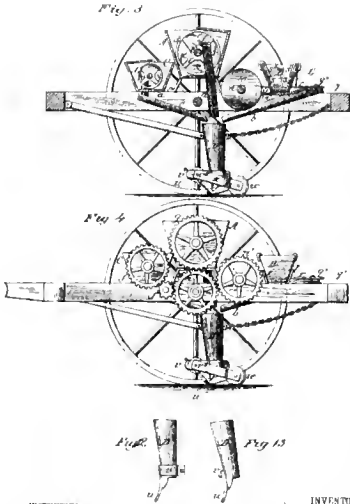
Patented June 6, 1882.



WITNESSES:
Edith M. Edith
John H. Edith

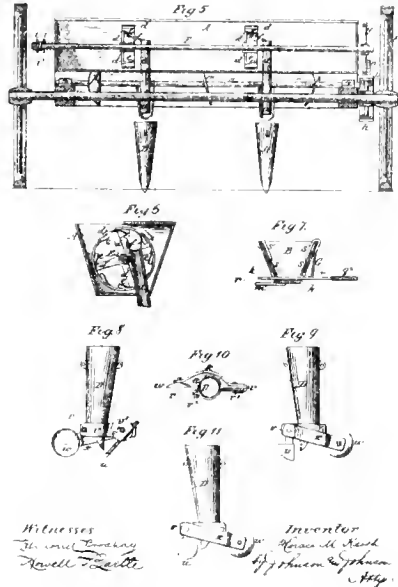
INVENTOR:
H. M. Edith
 ATTORNEY

(No Model) H M KEITH 3 Sheets—Sheet 1
SEED DRILL AND FERTILIZER
No. 258,928 Patented June 6, 1882.



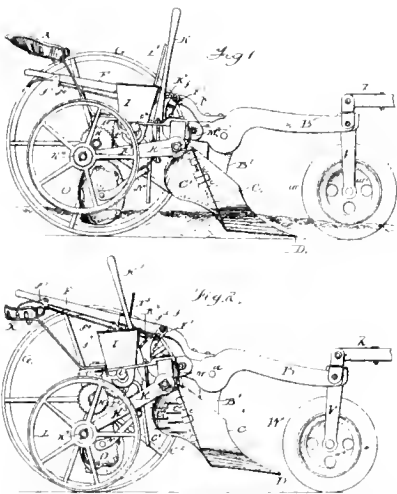
WITNESSES:
Edw. S. Dutton
W. C. Stead
INVENTOR
H. M. Keith
BY *J. H. Johnson & J. H. Johnson*
ATTORNEYS

(No Model) H M KEITH 3 Sheets—Sheet 2
SEED DRILL AND FERTILIZER
No. 258,928. Patented June 6, 1882



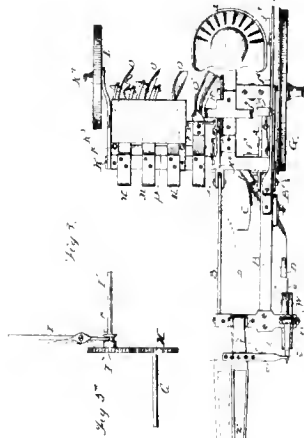
Witnesses:
Edw. S. Dutton
W. C. Stead
INVENTOR
H. M. Keith
BY *J. H. Johnson & J. H. Johnson*
ATTORNEYS

(No Model) T E JEFFERSON 3 Sheets—Sheet 1
COMBINED PLOW, HARROW, SEEDER, &c.
No. 280,482. Patented July 4, 1882.



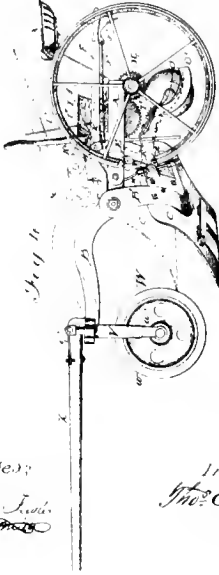
WITNESSES:
Edw. S. Dutton
W. C. Stead
INVENTOR
T. E. Jefferson

(No Model) T E JEFFERSON 3 Sheets—Sheet 2
COMBINED PLOW, HARROW, SEEDER, &c.
No. 280,482 Patented July 4, 1882.



Witnesses:
Edw. S. Dutton
W. C. Stead
INVENTOR
T. E. Jefferson

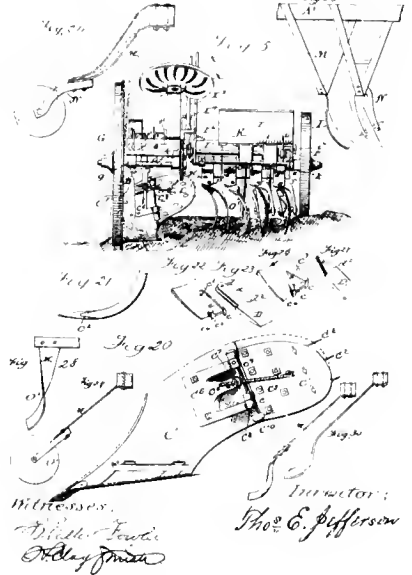
(No Model) T. E. JEFFERSON 9 Sheets—Sheet 3
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482. Patented July 4, 1882.



Witnesses:
Wm. L. Taylor
Edley Jones

Inventor:
Thos. E. Jefferson

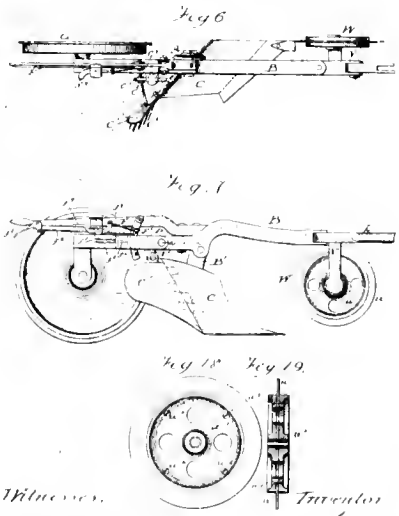
(No Model) T. E. JEFFERSON 9 Sheets—Sheet 4
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482. Patented July 4, 1882.



Witnesses:
Wm. L. Taylor
Edley Jones

Inventor:
Thos. E. Jefferson

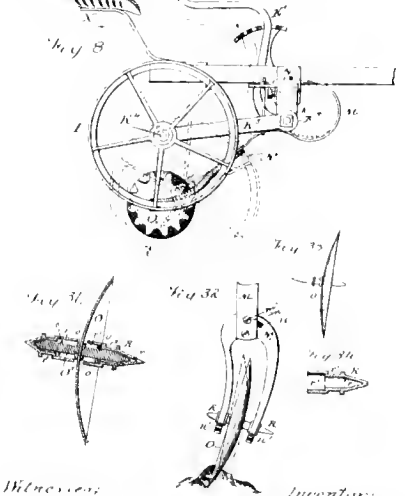
(No Model) T. E. JEFFERSON. 9 Sheets—Sheet 5
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482. Patented July 4, 1882.



Witnesses:
Wm. L. Taylor
Edley Jones

Inventor:
Thos. E. Jefferson

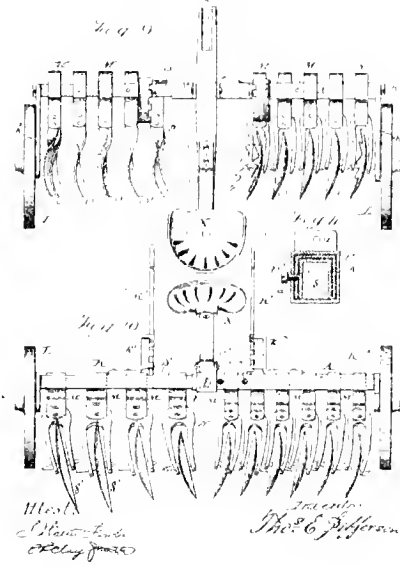
(No Model) T. E. JEFFERSON. 9 Sheets—Sheet 6
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482. Patented July 4, 1882.



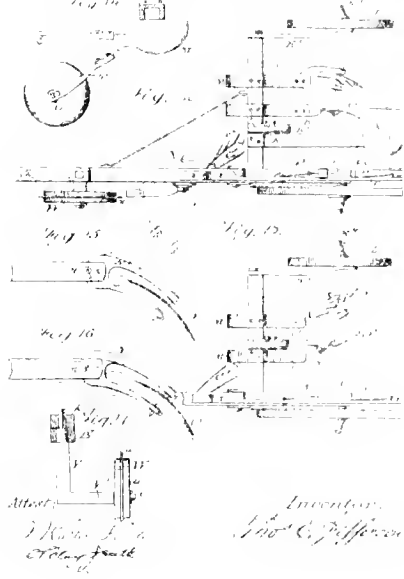
Witnesses:
Wm. L. Taylor
Edley Jones

Inventor:
Thos. E. Jefferson

(No Model) T. E. JEFFERSON 8 Sheets—Sheet 1
 COMBINED PLOW, BARROW, SEEDER, &
 No. 260,482. Patented July 4, 1882



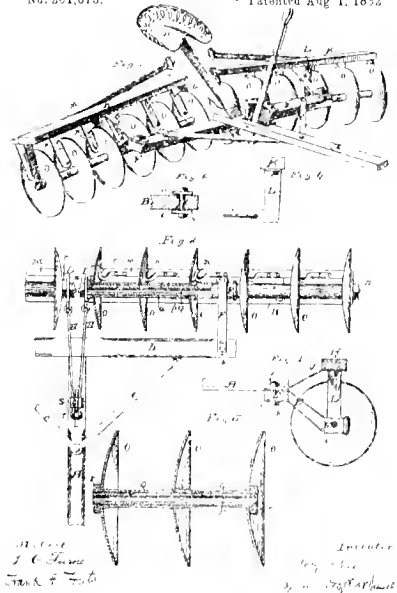
(No Model) T. E. JEFFERSON 8 Sheets—Sheet 2
 COMBINED PLOW, BARROW, SEEDER, &
 No. 260,482. Patented July 4, 1882



(No Model) T. E. JEFFERSON 8 Sheets—Sheet 3
 COMBINED PLOW, BARROW, SEEDER, &
 No. 260,482. Patented July 4, 1882



(No Model) H. M. ROSE 8 Sheets—Sheet 4
 DISK BARROW
 No. 261,976. Patented Aug 1, 1882

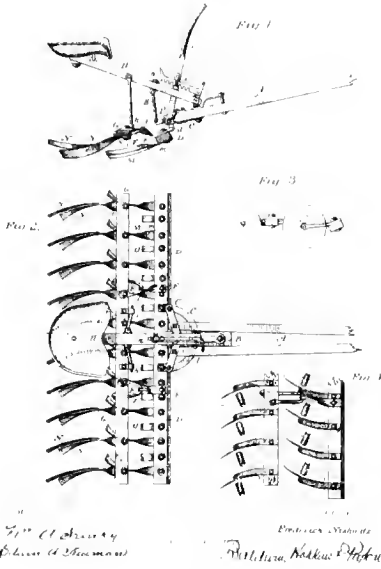


(No Model)

F NISHWITZ
HARROW

No. 262,820

Patented Aug. 15, 1882

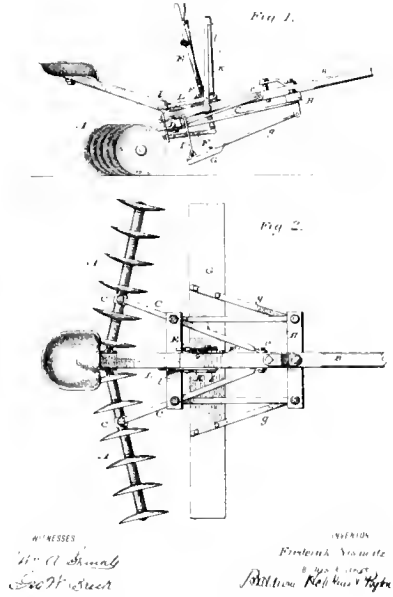


(No Model)

F NISHWITZ
HARROW

No. 283,565

Patented Aug. 29, 1882

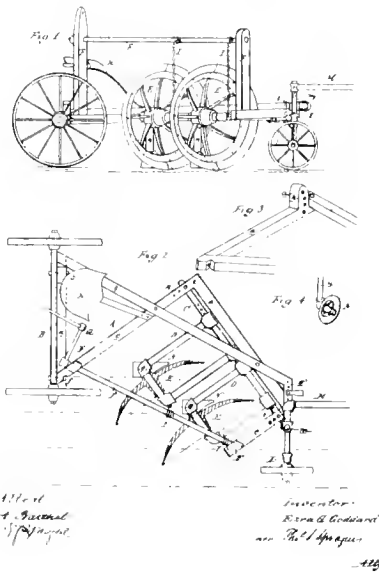


(No Model)

E G GODDARD.
ADJUSTABLE ROTARY SULKY FLOW

No. 266,689.

Patented Oct. 31, 1882.

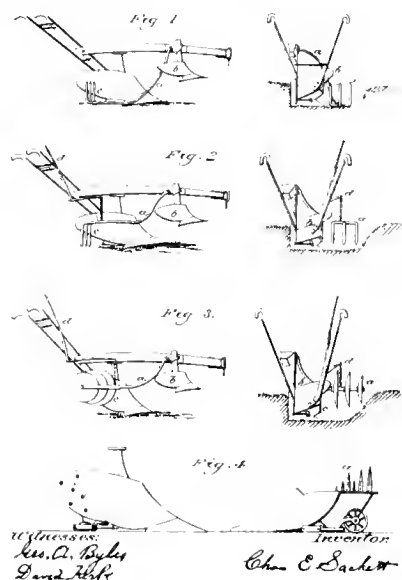


(No Model)

C. E. SACKETT
COMBINED FLOW AND PULVERIZER.

No. 288,630.

Patented Dec. 12, 1882.



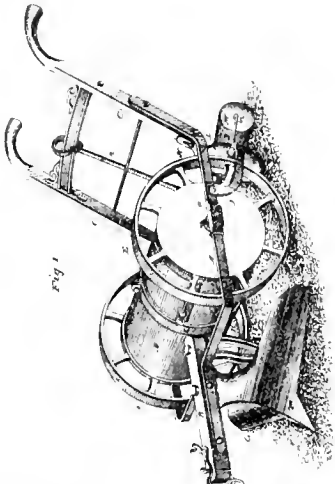
(No Model)

T. M. BARNA
COTTON PLANTER.

2 Sheets—Sheet 1

No. 270,369.

Patented Jan. 9, 1883.



WITNESSES:
And. S. Dutwich,
Geo. W. Shellett.

INVENTOR
Thomas M. Barna
by *Leuis Rogers & Co.*
ATTORNEYS

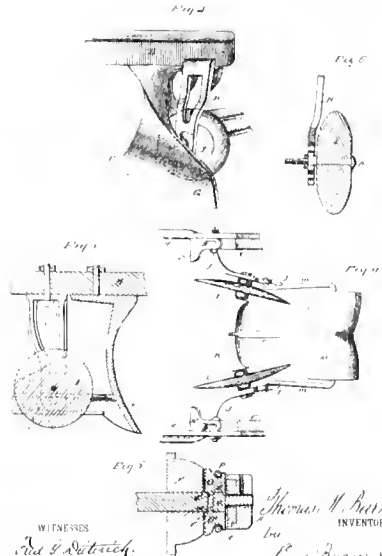
(No Model)

T. M. BARNA
COTTON PLANTER.

2 Sheets—Sheet 2

No. 270,369

Patented Jan. 9, 1883



WITNESSES
And. S. Dutwich,
Geo. W. Shellett.

INVENTOR
Thomas M. Barna
by *Leuis Rogers & Co.*
ATTORNEYS

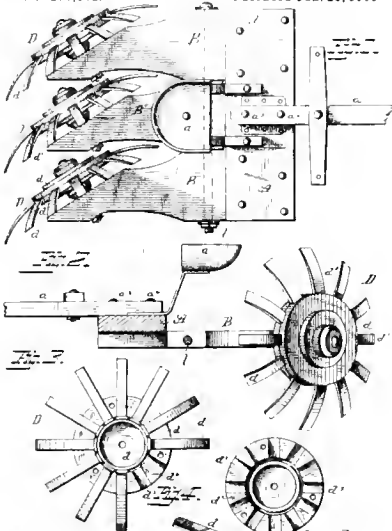
(No Model)

H. SKILLINGS
SPADE WHEEL PLOW.

2 Sheets—Sheet 1

No. 271,142.

Patented Jan. 23, 1883



Witnesses
James L. Cannon,
W. J. Cogswell.

INVENTOR
Henry Skillings
by *Thomas O. Stone*
ATTORNEY

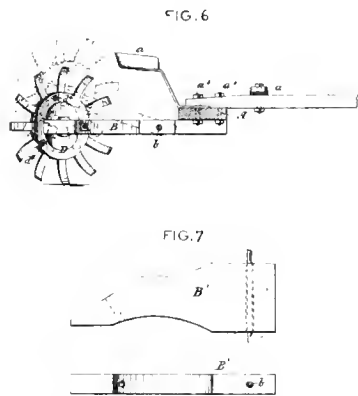
(No Model)

H. SKILLINGS.
SPADE WHEEL PLOW.

2 Sheets—Sheet 2

No. 271,142

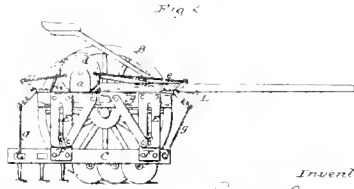
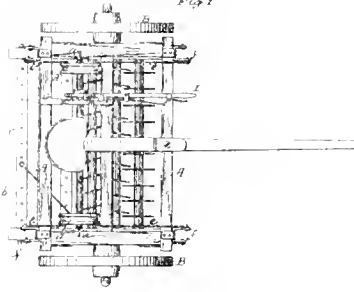
Patented Jan. 23, 1883.



WITNESSES
James L. Cannon,
W. J. Cogswell.

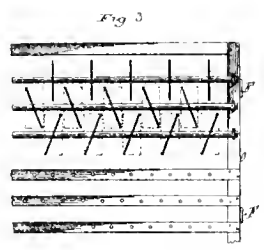
INVENTOR
Henry Skillings
by *Howard R. Lewis*
ATTORNEY

(No Model) J. CAMERON 2 Sheets—Sheet 1
 HARBOW
 No. 274,267. Patented Mar. 20, 1883.



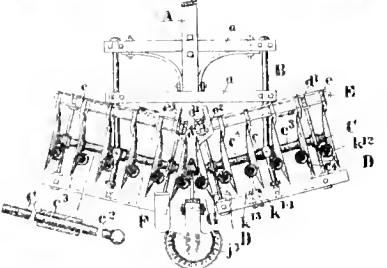
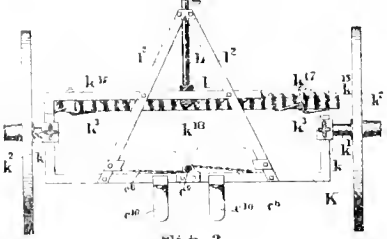
Inventor
Joseph Cameron
 Witnesses
Wm. H. ...
Samuel ...
 Attorney
...

(No Model) J. CAMERON 2 Sheets—Sheet 2
 HARBOW
 No. 274,267. Patented Mar. 20, 1883



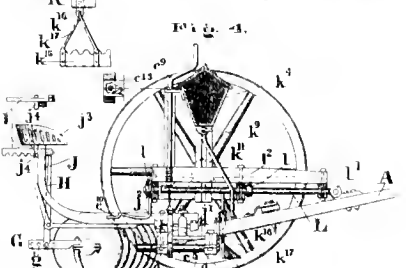
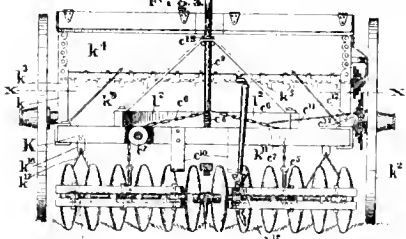
Inventor
Joseph Cameron
 Witnesses
Wm. H. ...
Samuel ...
 Attorney
...

(No Model) A. BRADFORD. 4 Sheets—Sheet 1
 COMBINED AGRICULTURAL MACHINE.
 No. 277,982. Patented May 22, 1883.



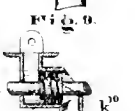
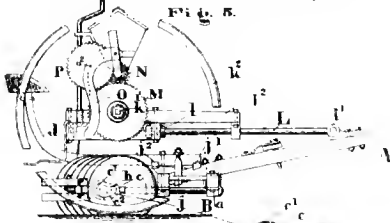
WITNESSES:
...
 INVENTOR
 ALLEN BRADFORD.
 BY *H. W. Bradford & Co.*
 ATTYS

(No Model) A. BRADFORD. 4 Sheets—Sheet 2
 COMBINED AGRICULTURAL MACHINE.
 No. 277,982. Patented May 22, 1883.



WITNESSES:
...
 INVENTOR
 ALLEN BRADFORD.
 BY *H. W. Bradford & Co.*
 ATTYS

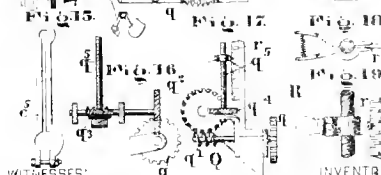
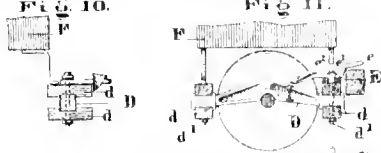
(No Model) A. BRADFORD.
 COMBINED AGRICULTURAL MACHINE.
 No. 277,982. Patented May 22, 1883.



WITNESSES:
 J. S. Mink
 Wm. S. Brown

INVENTOR:
 ALLEN BRADFORD.
 By H. W. Beadle, & C.
 ATTYS

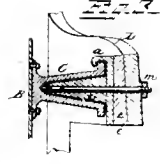
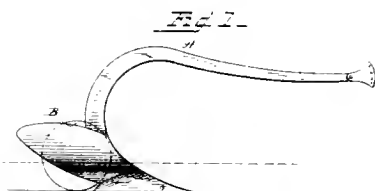
(No Model) A. BRADFORD.
 COMBINED AGRICULTURAL MACHINE.
 No. 277,982. Patented May 22, 1883.



WITNESSES:
 J. S. Mink
 Wm. S. Brown

INVENTOR:
 ALLEN BRADFORD.
 By H. W. Beadle, & C.
 ATTYS

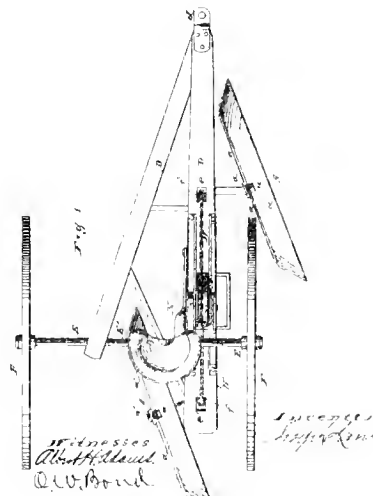
(No Model) G. B. ST JOHN.
 LANDSIDE FOR PLOWS.
 No. 278,623. Patented May 29, 1883.



WITNESSES:
 Frank H. O'Connell
 R. C. Campbell

INVENTOR:
 Garland B. St. John
 by L. Searles,
 Rev. S. H. H. Co.

(No Model) J. LANE.
 ROTARY PLOW.
 No. 278,711. Patented June 5, 1883.



WITNESSES:
 Albert Hilliard
 Q. W. Bond

INVENTOR:
 J. Lane

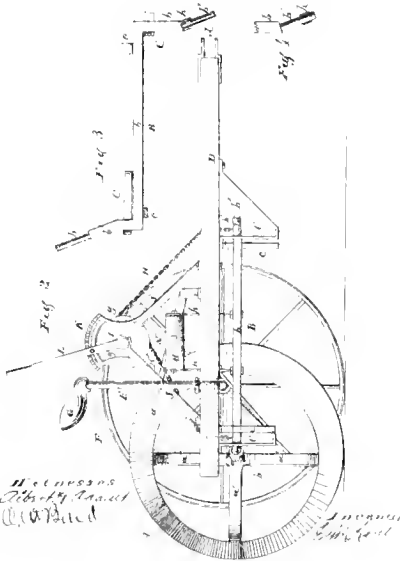
(No Model)

J. LANE
ROTARY FLOW

1 Sheet-Sheet 1

No. 278,711

Patented June 5, 1883



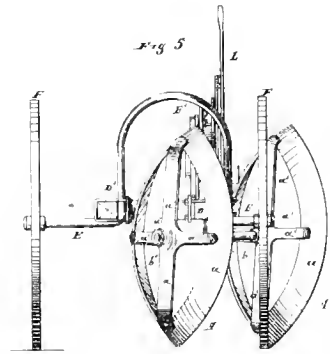
(No Model)

J. LANE
ROTARY FLOW

3 Sheets-Sheet 3

No. 278,711

Patented June 5, 1883.



Witnesses
Albert L. Lane
W. P. Bond.

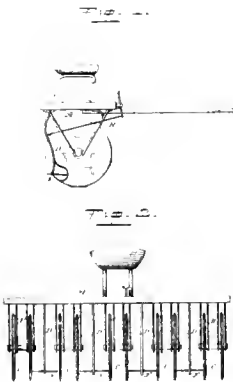
Inventor
J. Lane

(No Model)

W H MERCER
COTTON CHOPPER

No. 279,988

Patented June 26, 1883.



Witnesses
Louis F. Gardner

J. W. Garner

Inventor

Wm H. Mercer

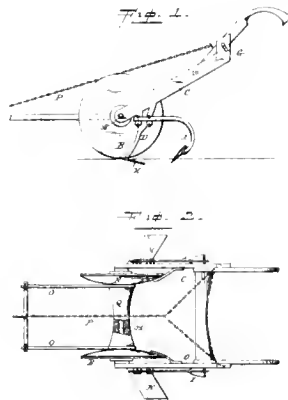
per T. Kellman
2007

(No Model)

W H MERCER.
COTTON SCRAPER

No. 281,103.

Patented July 10, 1883.



Witnesses

Louis F. Gardner

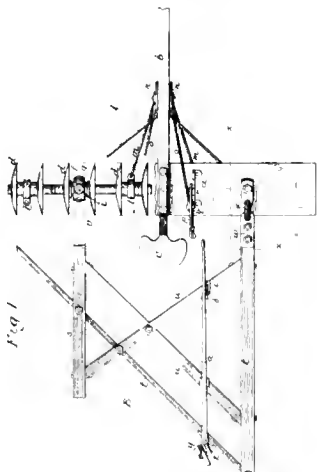
J. W. Garner

Inventor

Wm H. Mercer

per T. Kellman
2007

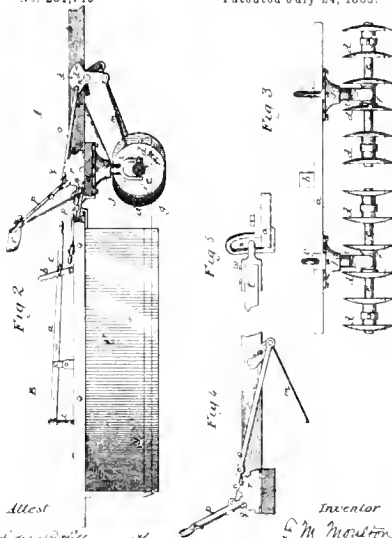
No Model) F M MOULTON 2 Sheets-Sheet 1
ROAD MAKING MACHINE
No. 281,715 Patented July 24, 1883



Attest
J. M. Moulton
By his Attorney
William B. Stickley

Inventor
F. M. Moulton
By his Attorney
William B. Stickley

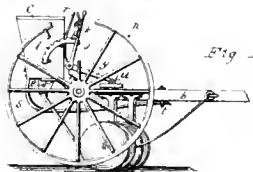
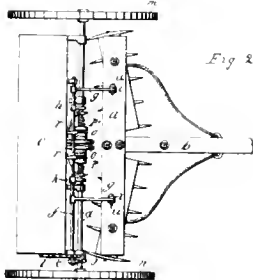
No Model) F M MOULTON 2 Sheets-Sheet 2
ROAD MAKING MACHINE
No. 281,715 Patented July 24, 1883.



Attest
J. M. Moulton
By his Attorney
William B. Stickley

Inventor
F. M. Moulton
By his Attorney
William B. Stickley

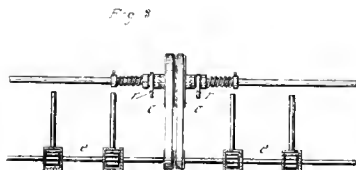
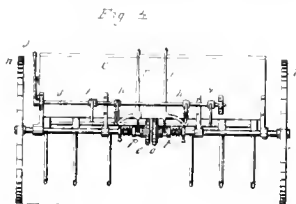
(No Model) J IMLER 2 Sheets-Sheet 1
COMBINED ROTARY DISK HARROW AND SEED SOWER
No. 282,526 Patented Aug 7, 1883



WITNESSES
Frank A. Jones
C. C. Rice

INVENTOR
John Imbler
By C. C. Rice

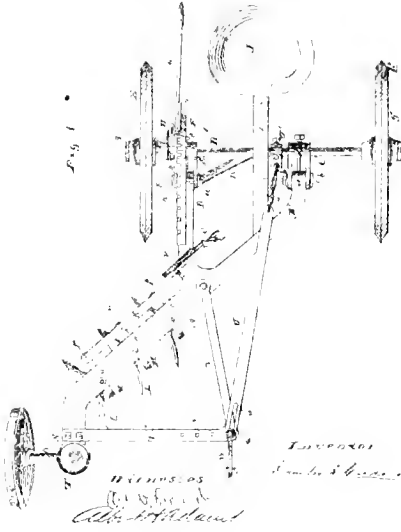
(No Model) J IMLER 2 Sheets-Sheet 2
COMBINED ROTARY DISK HARROW AND SEED SOWER
No. 282,526 Patented Aug 7, 1883.



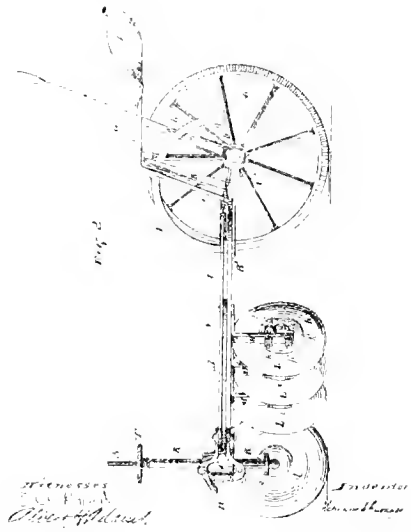
WITNESSES
Frank A. Jones
C. C. Rice

INVENTOR
John Imbler
By C. C. Rice

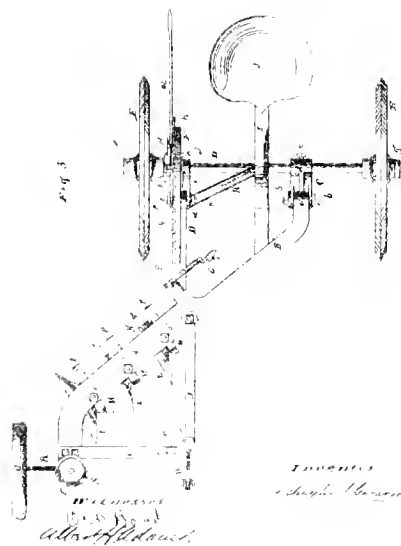
N. W. 611
 S. S. GARDNER
 ROTARY FLOW
 No. 255,809
 Patented Oct. 2, 1883.
 4 Sheets—Sheet 1



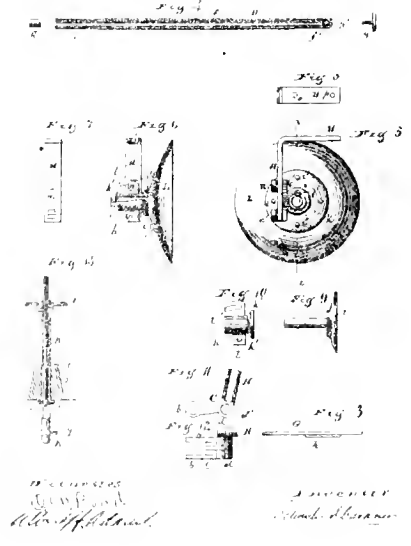
N. W. 612
 S. S. GARDNER.
 ROTARY FLOW
 No. 255,809
 Patented Oct. 2, 1883.
 4 Sheets—Sheet 2



N. W. 613
 S. S. GARDNER
 ROTARY FLOW
 No. 255,809
 Patented Oct. 2, 1883.
 4 Sheets—Sheet 3



N. W. 614
 S. S. GARDNER
 ROTARY FLOW
 No. 255,809
 Patented Oct. 2, 1883.
 4 Sheets—Sheet 4

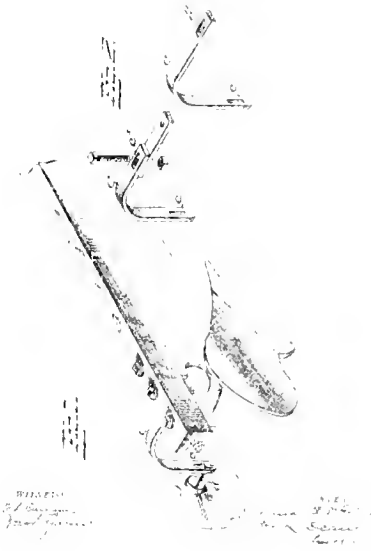


N. 287,330

C. E. ST JOHN
ROLLING LANDSIDE COLLARS

No. 287,330

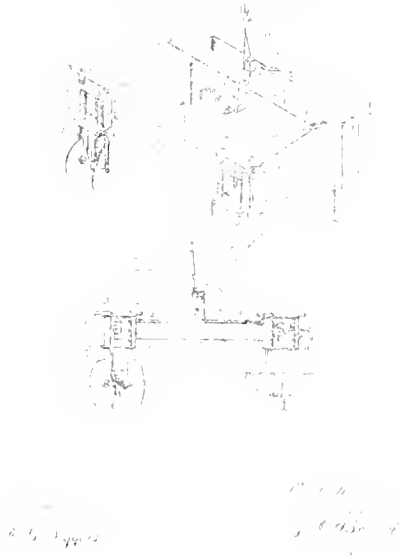
Patented Oct. 27, 1953



N. 291,127

J. ADPTIN
ROTARY PLOW

Patented Dec. 2, 1953

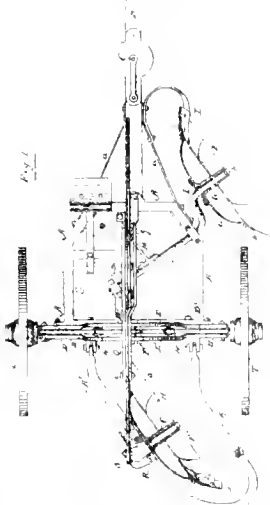


N. 291,127

J. ADPTIN
ROTARY PLOW

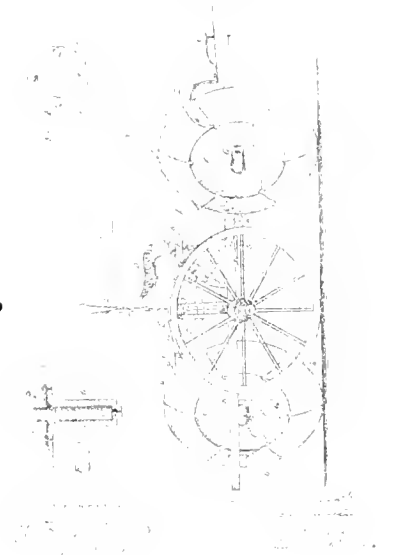
No. 291,127

Patented Jan. 1, 1954

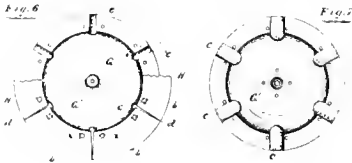
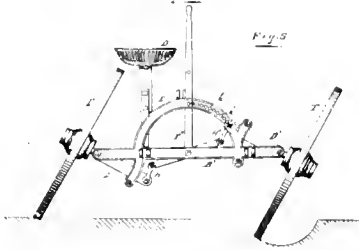


N. 291,127

J. ADPTIN
ROTARY PLOW

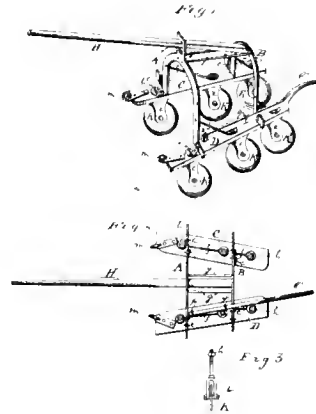


(No Model)
J AUSTIN
 ROTARY FLOW
 No. 291,127 Patented Jan. 1, 1884



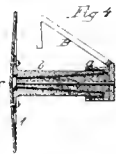
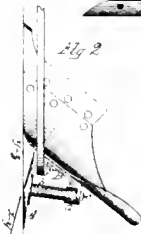
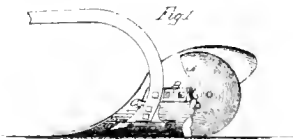
Witness
Henry ...
J. R. ...
 Inventor
John Austin
 by *W. ...*
 his Attorney

(No Model)
L A BRINGIER
 CULTIVATOR
 No. 293,221 Patented Feb. 12, 1884



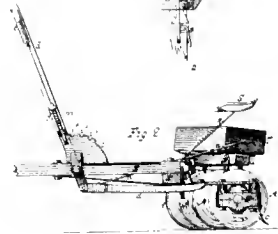
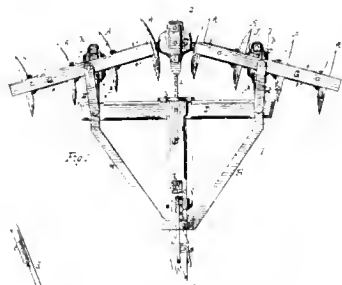
Witness
...
 Inventor
L. A. Bringier
 By *H. S. ...*
 Attorney

(No Model)
G B ST JOHN
 FLOW.
 No. 294,699 Patented Mar. 4, 1884.



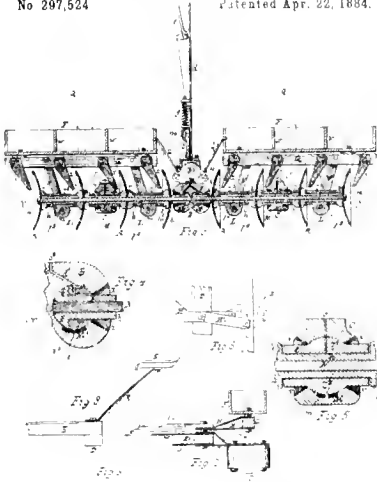
Witness
...
 Inventor
Garland ...
 his Attorney
W. S. ...

(No Model)
C LA DOW
 WHEEL CULTIVATOR OR HARROW
 No. 297,524 Patented Apr. 22, 1884.



Witness
...
 Inventor
Charles ...
 his Attorney
...

C LA DOW
WHEEL CULTIVATOR OR HARROW
No 297,524
Patented Apr. 22, 1884.



Witnesses
Wm. C. Smith
Geo. H. Smith

C LA DOW
WHEEL CULTIVATOR OR HARROW
No 297,524
Patented Apr. 22, 1884.

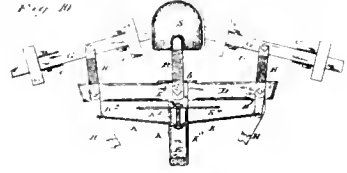
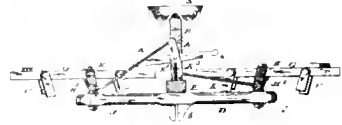
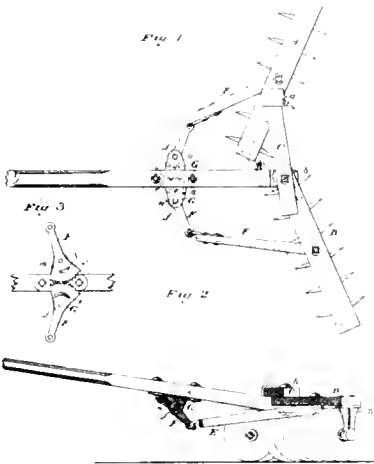


Fig. 10



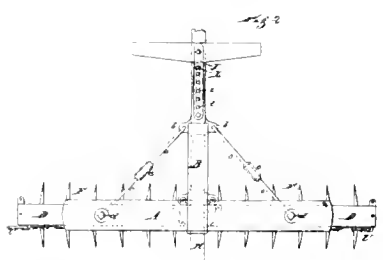
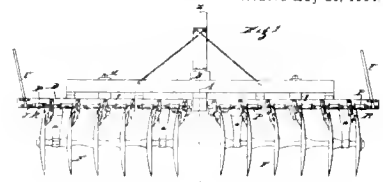
Witnesses
Wm. C. Smith
Geo. H. Smith

(No Model)
F BRAMER
DISK HARROW
No. 297,666.
Patented Apr. 20, 1884.



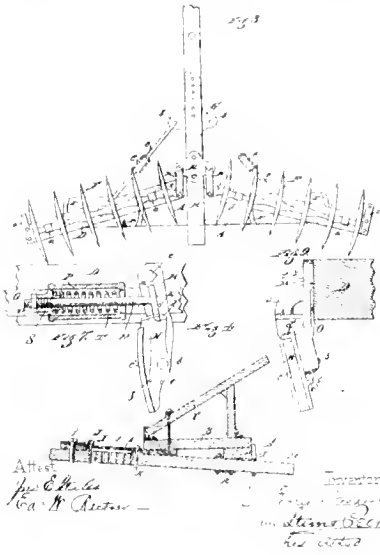
WITNESSES
Wm. C. Smith
Geo. H. Smith

(Model)
E F STODDARD
WHEEL HARROW
No. 298,811.
Patented May 20, 1884.

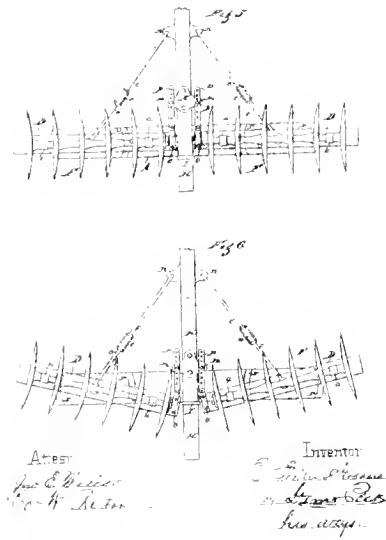


Attest
Geo. C. Smith
Geo. H. Smith

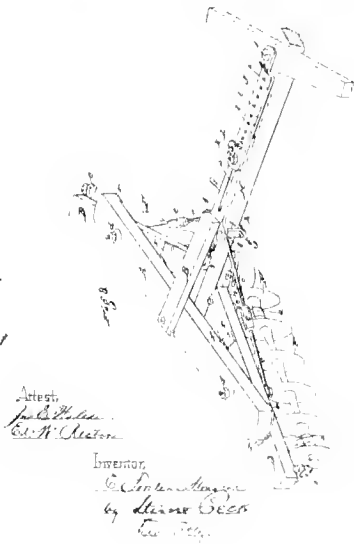
(Model.) E F STODDARD 4 Sheets—Sheet 1
 WHEEL HARROW
 No. 298,911 Patented May 20, 1884



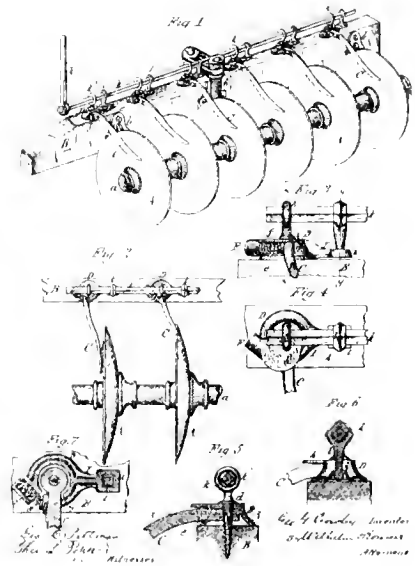
(Model.) E F STODDARD 4 Sheets—Sheet 2
 WHEEL HARROW
 No. 298,911 Patented May 20, 1884.



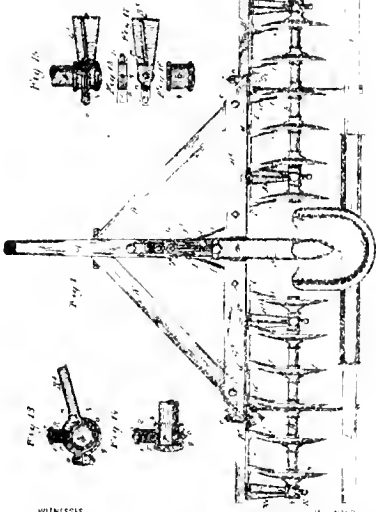
(Model.) E F STODDARD 4 Sheets—Sheet 3
 WHEEL HARROW
 No. 298,911 Patented May 20, 1884



(No Model.) J G CROWLEY
 DISK HARROW.
 No. 299,057 Patented May 20, 1884



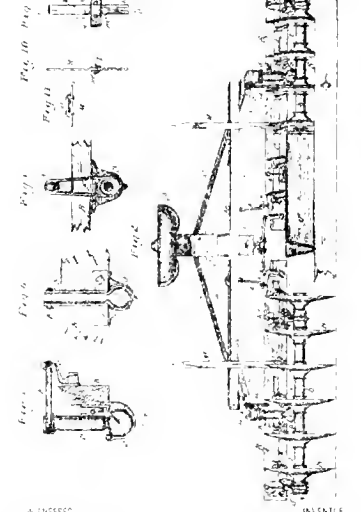
(No Model) G G CROWLEY 2 Sheets—Sheet 1
DISK HARROW
No. 300,097. Patented June 17, 1884



WITNESSES
Wm. L. Smith
H. H. Chase

INVENTOR
George G. Crowley
H. H. Chase

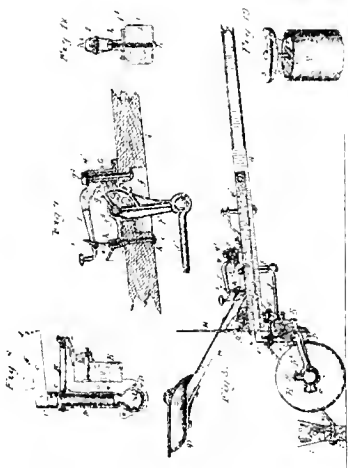
(No Model) G G CROWLEY 2 Sheets—Sheet 2
DISK HARROW.
No. 300,097 Patented June 17, 1884



WITNESSES
Wm. L. Smith
H. H. Chase

INVENTOR
George G. Crowley
H. H. Chase

(No Model) G G CROWLEY 2 Sheets—Sheet 1
DISK HARROW
No. 300,097 Patented June 17, 1884



WITNESSES
Wm. L. Smith
H. H. Chase

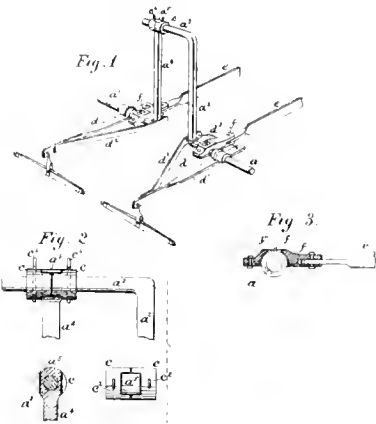
INVENTOR
George G. Crowley
H. H. Chase

(No Model)

J WILLIAMS
CULTIVATOR

No 253,458

Patented Feb. 7, 1882.



Witnesses:
H. Cooper
S. W. Heath

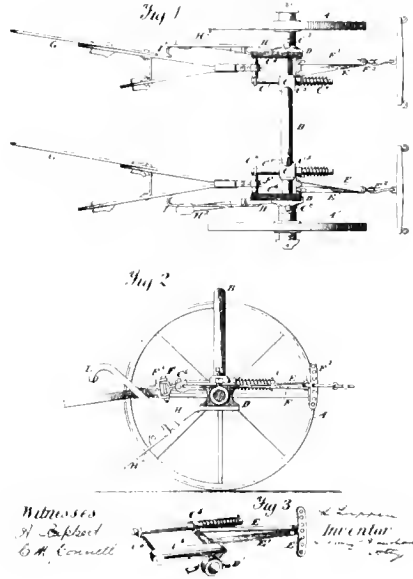
Inventor
J. Williams
By H. S. & W. Quincy
Attorneys

(No Model)

L. LUFFEN
CULTIVATOR

No 255,877

Patented Apr. 4, 1882



Witnesses
H. Cooper
G. M. Conwell

Inventor
L. Luffen
By H. S. & W. Quincy
Attorneys

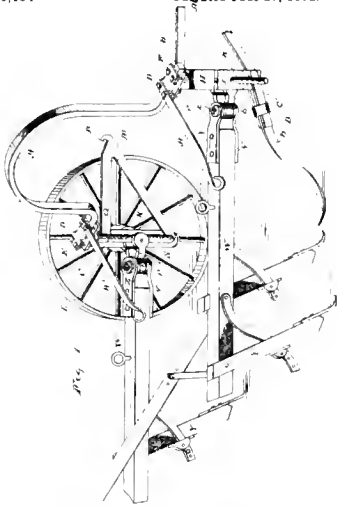
(No Model)

J. B. CHRISTIAN
SULKY CULTIVATOR.

2 Sheets—Sheet 1

No. 260,154

Patented June 27, 1882.



Witnesses
Edward Jones
C. Aubrey Jenkins

Inventor
J. B. Christian
By H. S. & W. Quincy
Attorneys

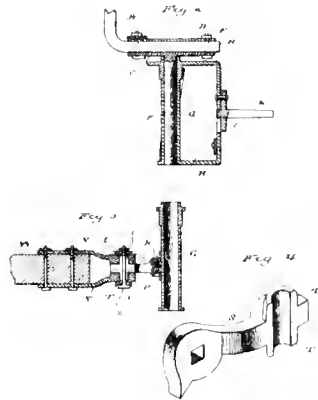
(No Model)

J. B. CHRISTIAN
SULKY CULTIVATOR.

2 Sheets—Sheet 2

No. 260,154.

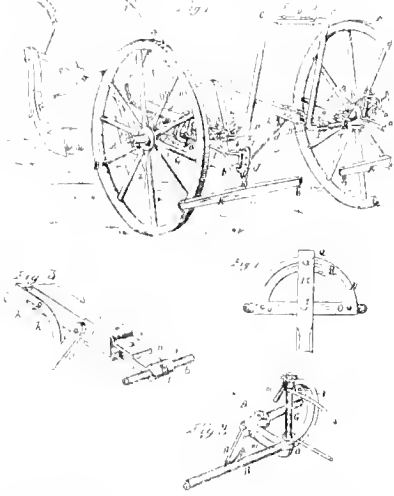
Patented June 27, 1882.



Witnesses
Edward Jones
C. Aubrey Jenkins

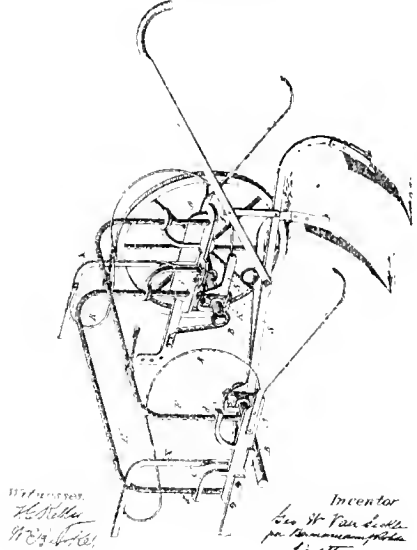
Inventor
J. B. Christian
By H. S. & W. Quincy
Attorneys

(No Model)
I. S. LEWIS & G. W. CALL
 CULTIVATOR
 No. 261,730 Patented July 25, 1881



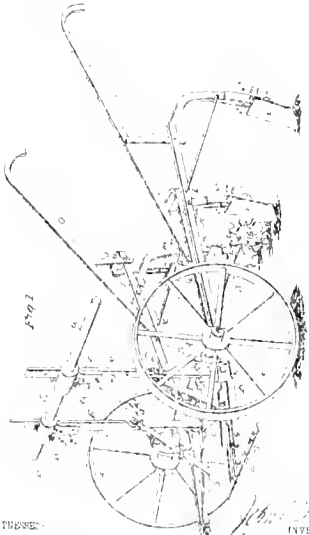
WITNESSES:
Wm. H. ...
...
 INVENTOR
I. S. Lewis & G. W. Call
 BY
...
 ATTORNEY

(No Model)
G. W. VAN SICKLE
 TONGUELESS CULTIVATOR.
 No. 271,164 Patented Jan. 23, 1883



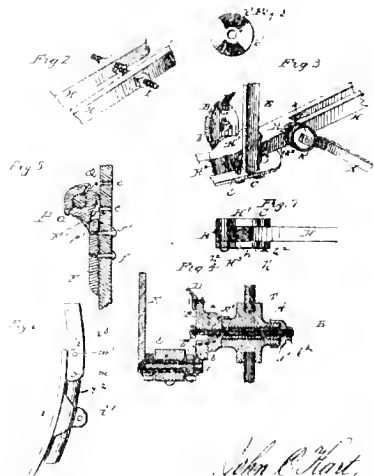
WITNESSES:
...
 INVENTOR
G. W. Van Sickle
 BY
...
 ATTORNEY

(No Model)
J. C. HART
 CULTIVATOR.
 No. 275,071. Patented Feb. 27, 1883.



WITNESSES:
...
 INVENTOR
J. C. Hart
 BY
...
 ATTORNEY

(No Model)
J. C. HART
 CULTIVATOR.
 No. 275,071. Patented Feb. 27, 1883.



WITNESSES:
...
 INVENTOR
J. C. Hart
 BY
...
 ATTORNEYS

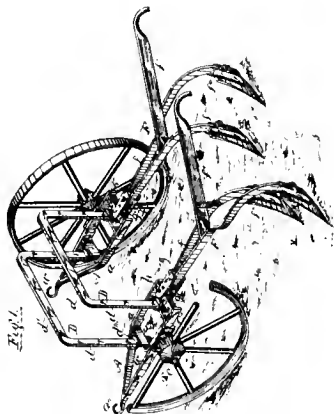
(No Model.)

W. S. WEIR
CULTIVATOR.

2 Sheets—Sheet 1

No. 274,070.

Patented Mar. 13, 1883.



Witnesses
B. Richards
James Henry

Inventor
W. S. Weir
By W. C. Richards
Att'y

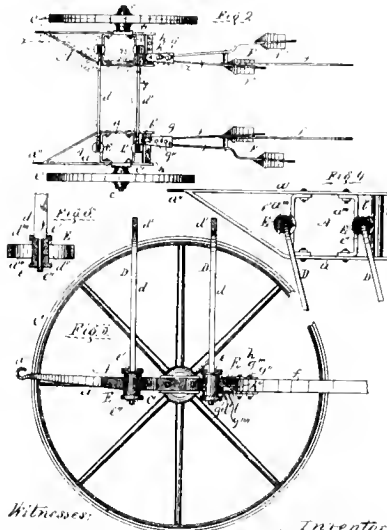
(No Model.)

W. S. WEIR
CULTIVATOR.

2 Sheets—Sheet 2

No. 274,070.

Patented Mar. 13, 1883.



Witnesses:
B. Richards
James Henry

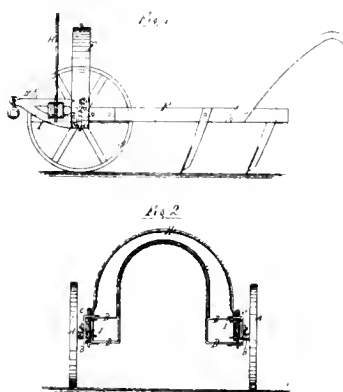
Inventor
W. S. Weir
By W. C. Richards
Att'y

E. W. JOY,

Assignor, by these inventors, to FAYAL FLOW COMPANY
CULTIVATOR.

No. 10,297

Issued Mar. 20, 1883.



Witnesses
B. Richards
Chas. S. Ireland

Inventor
E. W. Joy
By W. C. Richards
Att'y

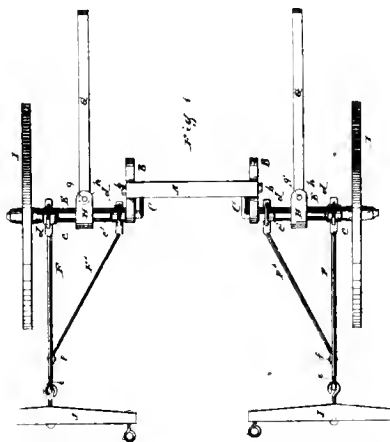
(No Model.)

B. C. SHADLEY
TONGUELESS CULTIVATOR

4 Sheets—Sheet 1

No. 274,555.

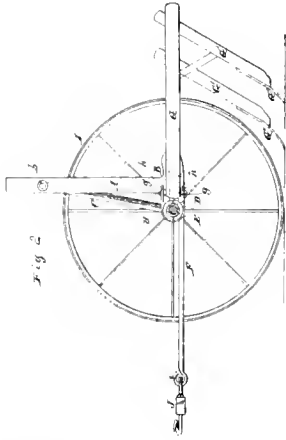
Patented Mar. 27, 1883.



Witnesses
B. Richards
B. A. Isaac

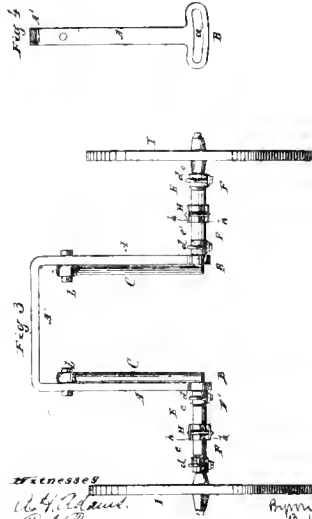
Inventor
B. C. Shadley
By W. C. Richards
Att'y

(No Model.) 4 Sheets—Sheet 3
B. C. BRADLEY.
 TONGUELESS CULTIVATOR.
 No. 274,556. Patented Mar. 27, 1883.



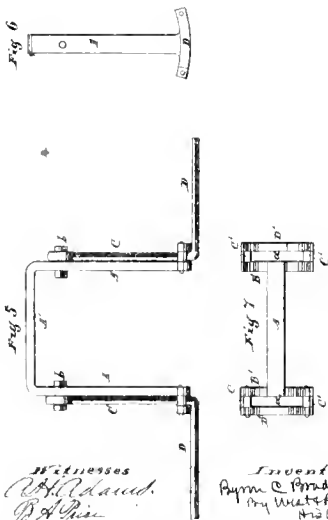
Witnesses
C. H. Redwood.
D. A. Price.
Inventor
B. C. Bradley.
By Wm. H. Bond.
Att'y.

(No Model.) 4 Sheets—Sheet 3
B. C. BRADLEY.
 TONGUELESS CULTIVATOR.
 No. 274,556. Patented Mar. 27, 1883.



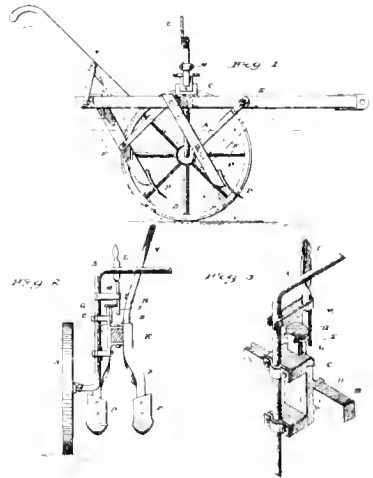
Witnesses
C. H. Redwood.
D. A. Price.
Inventor
B. C. Bradley.
By Wm. H. Bond.
Att'y.

(No Model.) 4 Sheets—Sheet 4
B. C. BRADLEY.
 TONGUELESS CULTIVATOR.
 No. 274,556. Patented Mar. 27, 1883.



Witnesses
C. H. Redwood.
D. A. Price.
Inventor
B. C. Bradley.
By Wm. H. Bond.
Att'y.

(No Model.) 4 Sheets—Sheet 4
T. B. JEWETT.
 CULTIVATOR.
 No. 274,784. Patented Mar. 27, 1883.



Witnesses
Chas. L. Price.
W. A. Parson.
Inventor
T. B. Jewett.
By Wm. H. Bond.
Att'y.

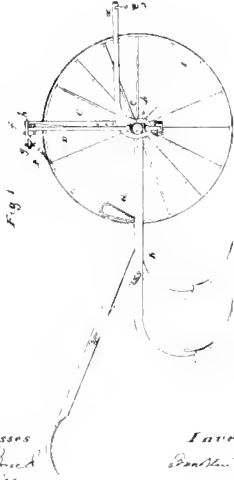
(No Model)

F K ORVIS
CULTIVATOR.

2 Sheets—Sheet 1

No. 275,846

Patented Apr. 17, 1883.



Witnesses
Wm. L. Bond
C. B. Bond

Inventor
Franklin Orvis

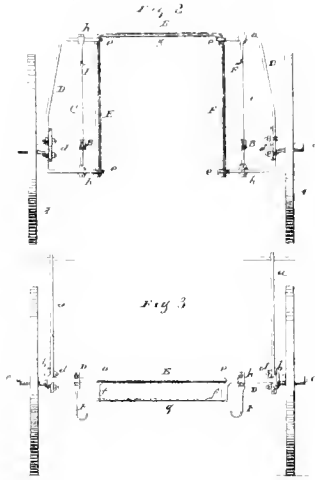
(No Model)

F K ORVIS
CULTIVATOR.

2 Sheets—Sheet 2

No. 275,846

Patented Apr. 17, 1883.



Witnesses
Wm. L. Bond
C. B. Bond

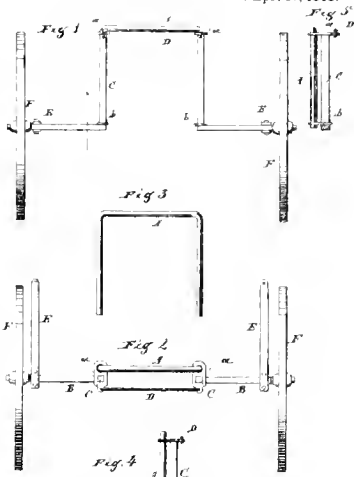
Inventor
Franklin Orvis

(No Model)

F K ORVIS
CULTIVATOR.

No. 275,847

Patented Apr. 17, 1883.



Witnesses
Wm. L. Bond
C. B. Bond

Inventor
Franklin Orvis

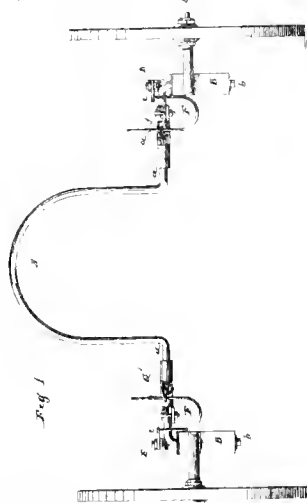
(No Model)

W H PARLIN
CULTIVATOR.

2 Sheets—Sheet 1

No. 276,272.

Patented Apr. 24, 1883



Witnesses
Wm. L. Bond
C. B. Bond

Inventor
William H. Parlin
Per Messrs Bond & Bond
New York

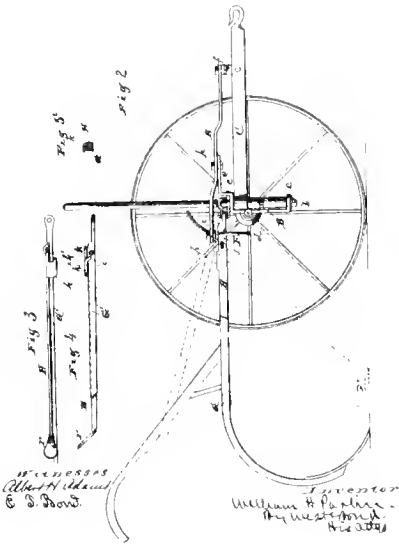
(No Model)

W H PARLIN
CULTIVATOR

3 Sheets—Sheet 2

No. 276,272.

Patented Apr. 24, 1883



Witnesses
Alfred H. Board
& S. Board

Inventor
William H. Parlin
By Westford
H. S. Board

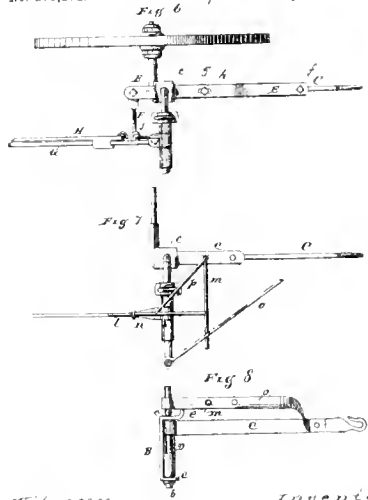
(No Model)

W H PARLIN
CULTIVATOR

3 Sheets—Sheet 1

No. 276,272.

Patented Apr. 24, 1883.



Witnesses
Alfred H. Board
& S. Board

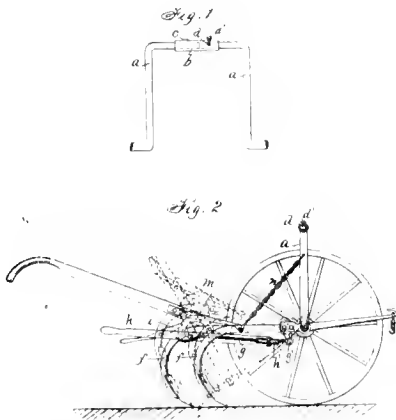
Inventor
William H. Parlin
By Westford
H. S. Board

(No Model)

W E BUTLER.
WHEEL CULTIVATOR.

No. 276,766.

Patented May 1, 1883.



Witnesses:
A. C. Percival
H. C. Chalmers

Inventor:
William E. Butler
By Thomas S. Greeney
Attorney

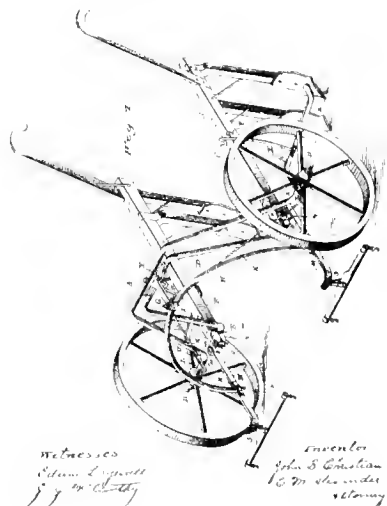
(Model)

J. B. CHRISTIAN.
CULTIVATOR

2 Sheets—Sheet 1

No. 284,360.

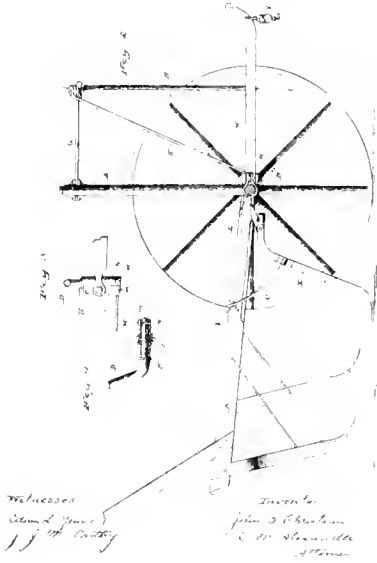
Patented Sept 4, 1883.



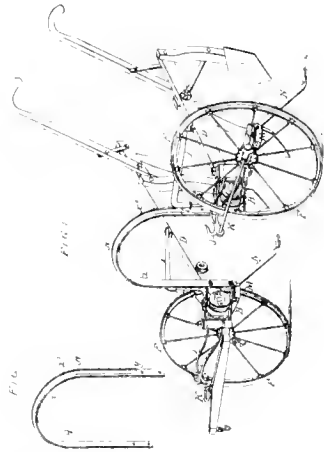
Witnesses
John L. Spaul
J. J. McCarty

Inventor
J. B. Christian
By McCarty
Attorney

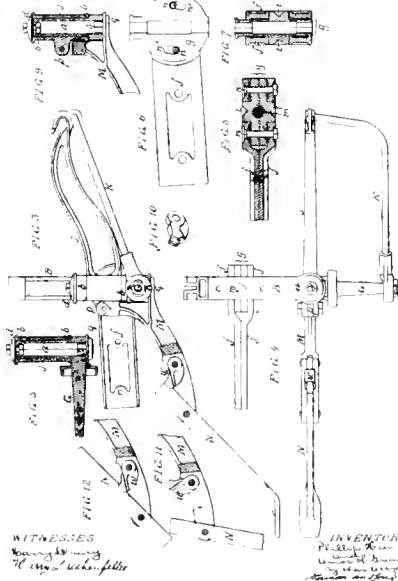
No Model
J B CHRISTIAN
CULTIVATOR
No 284,390
Patented Sept 4, 1883.



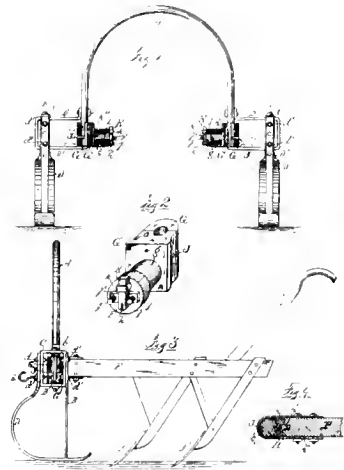
No Model
P HIEN & A H GRIMM
CULTIVATOR
No. 284,960
Patented Sept. 11, 1883.



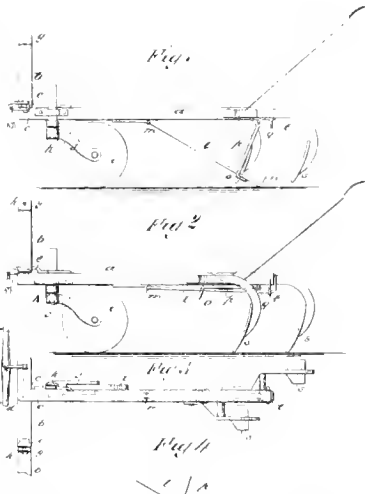
No Model
P HIEN & A H GRIMM
CULTIVATOR
No. 284,960
Patented Sept. 11, 1883



No Model
J M BLADE
CULTIVATOR.
No 288,764
Patented Nov 20, 1883



No Model
F L HILSABECK
 CULTIVATOR
 No. 291,736 Patented Jan. 8, 1884

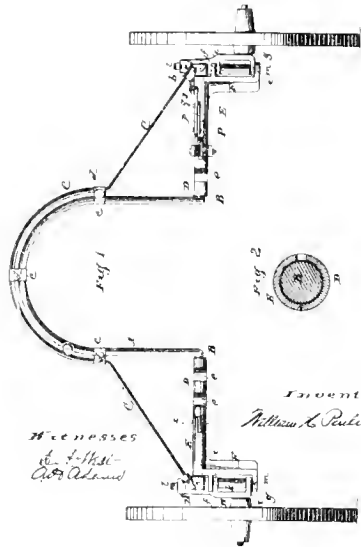


WITNESSES
E. F. Hunt
C. H. Adams

INVENTOR
F. L. Hilsabeck

BY *Munn & Co.*
 ATTORNEYS

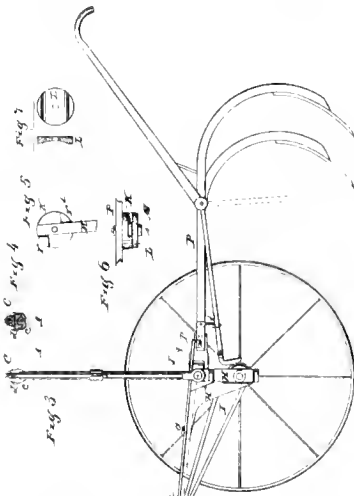
No Model
W H PARLIN
 CULTIVATOR.
 No. 201,930 Patented Jan. 15, 1884



WITNESSES
E. F. Hunt
C. H. Adams

INVENTOR
William H. Parlin

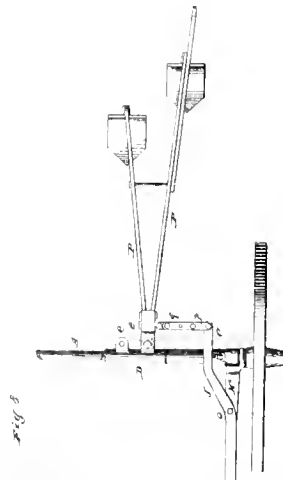
No Model
W H PARLIN
 CULTIVATOR
 No. 291,930 Patented Jan. 15, 1884



WITNESSES
E. F. Hunt
C. H. Adams

INVENTOR
William H. Parlin

No Model
W H PARLIN
 CULTIVATOR
 No. 291,930 Patented Jan. 15, 1884

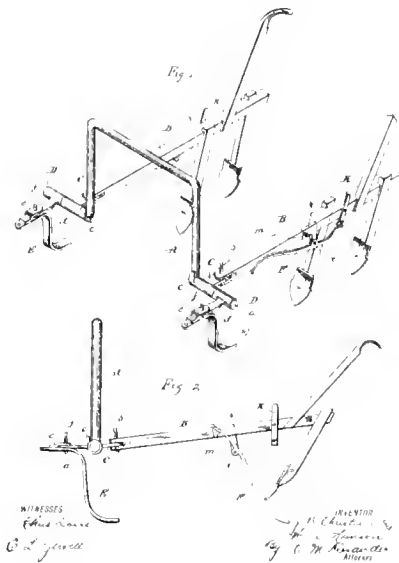


WITNESSES
E. F. Hunt
C. H. Adams

INVENTOR
William H. Parlin

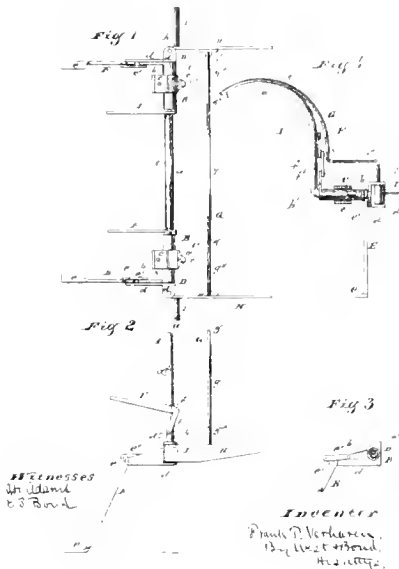
No. Model
J B CHRISTIAN & W D HANSON
TONGUELESS CULTIVATOR.

No 292,283. Patented Jan. 23, 1884.



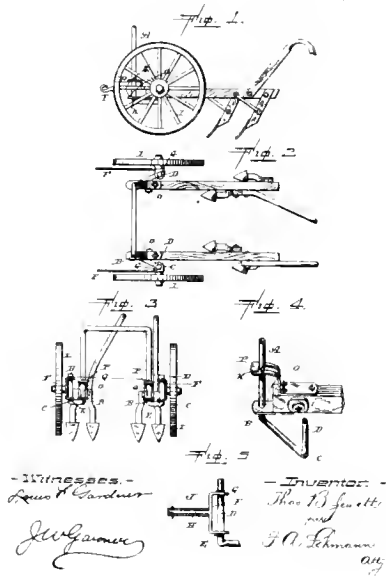
No. Model
F T VERHAGEN
CULTIVATOR.

No. 292,877. Patented Feb 5, 1884



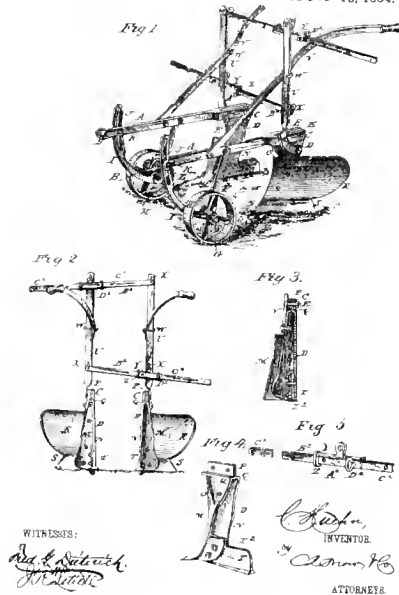
No. Model
T B JEWETT
TONGUELESS WHEEL CULTIVATOR.

No 293,030 Patented Feb. 5, 1884

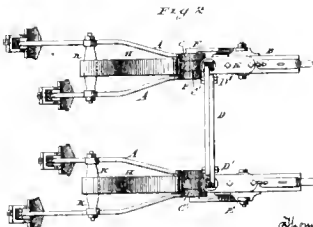
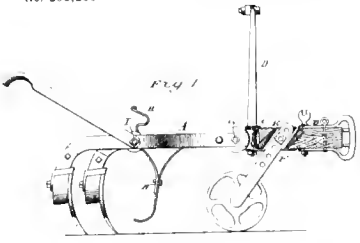


No. Model
C HUEHN
PLOW

No. 293,252 Patented Feb 12, 1884.



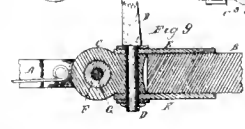
(No Model)
T MEIKLE
 CULTIVATOR
 No. 293,266
 Patented Feb. 12, 1884



Attest:
 A. M. Long
 E. S. Walker

Thomas Meikle
 Inventor
 by
 R. Mason
 Atty

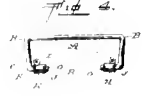
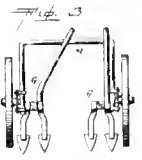
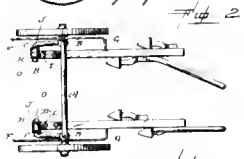
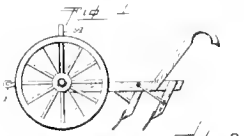
(N. Model)
T MEIKLE
 CULTIVATOR
 No. 293,266
 Patented Feb. 12, 1884



Attest:
 A. M. Long
 E. S. Walker

Thomas Meikle
 Inventor
 by
 R. Mason
 Atty

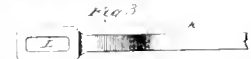
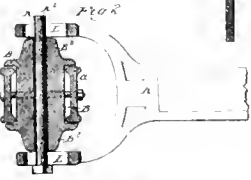
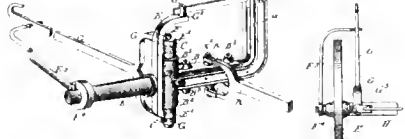
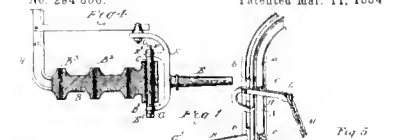
(No Model)
T B JEWETT
 TONGUELESS WHEEL CULTIVATOR
 No. 293,331
 Patented Feb. 12, 1884



Witnesses:
 James H. Gardner
 W. J. Gardner

Inventor:
 Thos B. Jewett
 by
 J. A. Schumann
 Atty

(No Model)
C W POST
 CULTIVATOR
 No. 294,806
 Patented Mar. 11, 1884



Witnesses:
 H. M. Washburn
 Chas. G. Page

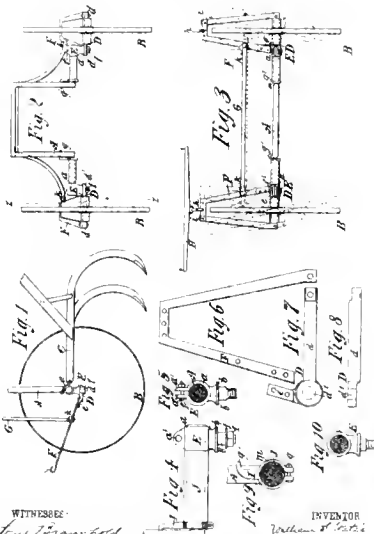
Inventor:
 C. W. Post
 by
 Jas. G. Elliott
 Atty

No Model

W S PATES
CULTIVATOR.

No. 295,937

Patented Apr. 1, 1884



WITNESSES
Jas. H. ...
Alfred ...

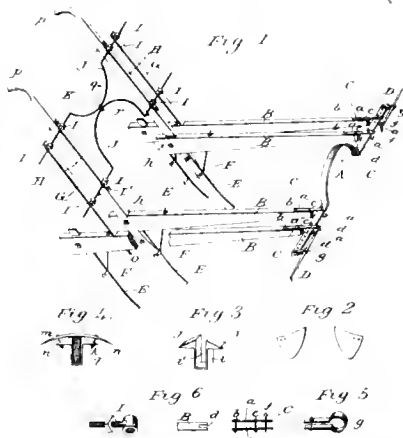
INVENTOR
W. S. Pates
BY ...
ATTORNEY

No Model

A J. MARBERRY
CULTIVATOR.

No. 296,025

Patented Apr. 1, 1884



Witnesses
Robert ...
E. D. ...

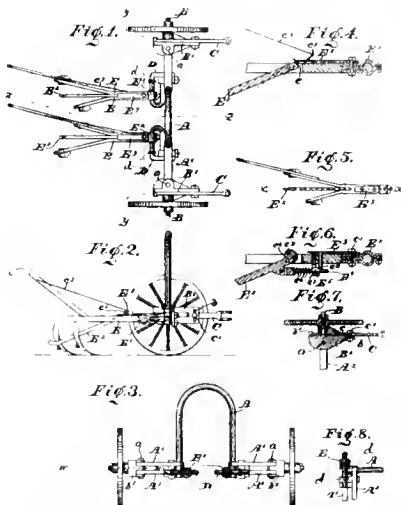
Inventor
A. J. Marberry
By ...

No Model

M. W. McCANN.
CULTIVATOR.

No. 296,860

Patented Apr. 15, 1884



WITNESSES
Chas. ...
Chas. L. ...

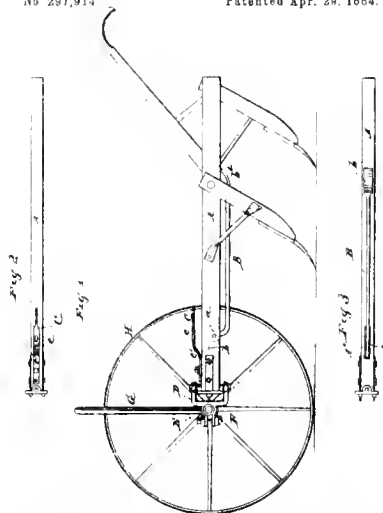
INVENTOR
Marion W. McCann.
By ...

(N. Model)

B C BRADLEY
DRAG BAR FOR CULTIVATOR BEAMS.

No. 297,914

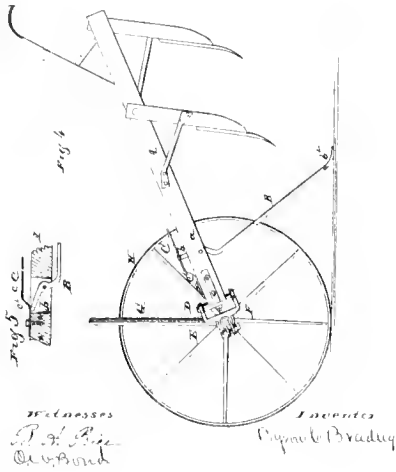
Patented Apr. 29, 1884



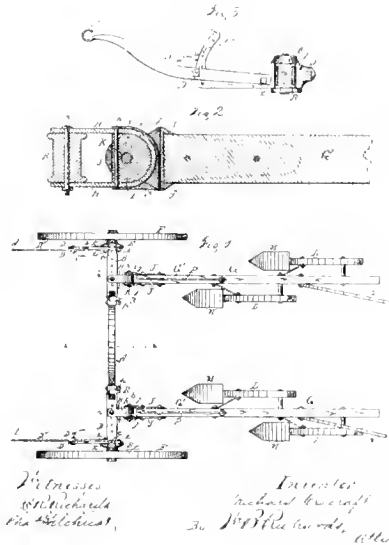
Witnesses
B. H. ...
W. H. ...

Inventor
Byron C. Bradley

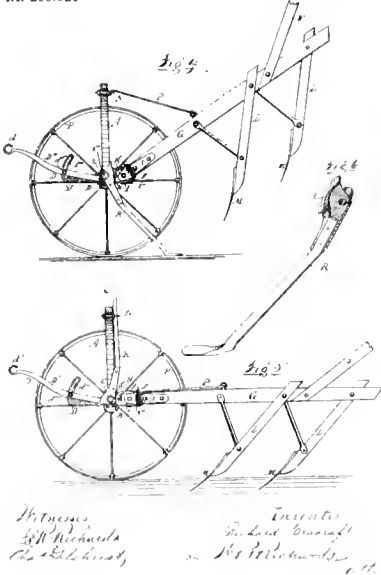
(No Model)
B. C. BRADLEY 2 Sheets—Sheet 2
 DRAG BAR FOR CULTIVATOR BEAMS.
 No. 297,914 Patented Apr. 29, 1884.



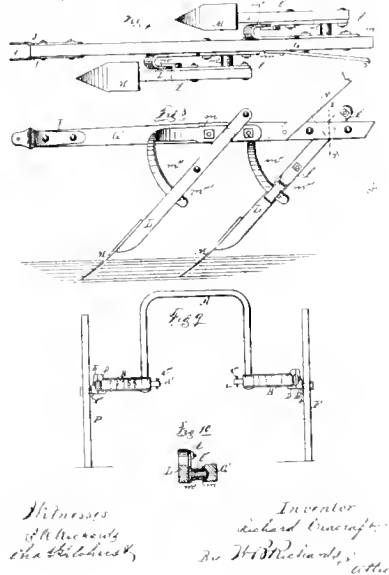
(No Model)
R. CRACRAFT 1 Sheet—Sheet 1
 CULTIVATOR
 No. 299,626 Patented June 3, 1884



(No Model)
R. CRACRAFT. 3 Sheets—Sheet 2
 CULTIVATOR.
 No. 299,626 Patented June 3, 1884.



(No Model)
R. CRACRAFT. 1 Sheet—Sheet 3
 CULTIVATOR.
 No. 299,626 Patented June 3, 1884.

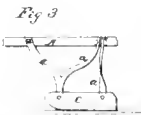
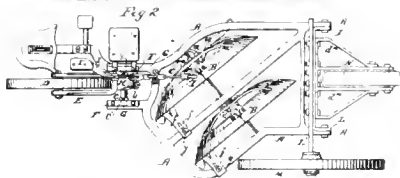
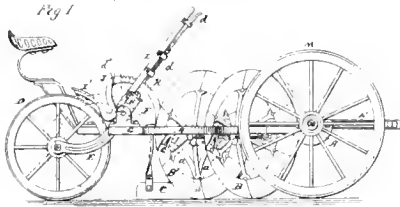


(No Model)

J AUSTIN
FLOW

No 244,367

Patented July 19, 1881



Witnesses.
Henry Thompson
F. F. Warner.

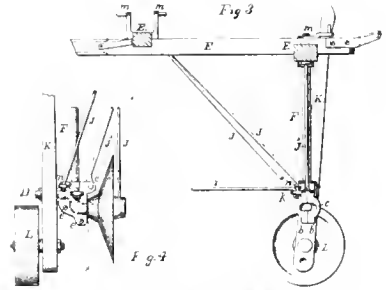
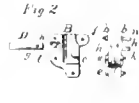
Inventor
John Austin

(No Model)

J W BODLEY
ROTARY CULTIVATOR

No. 245,053.

Patented Aug 2, 1881



Witnesses.
John Bodley
F. F. Warner

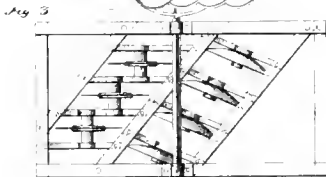
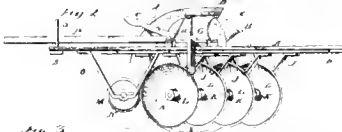
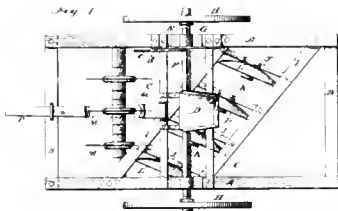
Inventor.
John W. Bodley
By Howard Gros ATTORNEYS.

(No Model)

I N KYLE.
ROTARY GANG FLOW

No 250,739

Patented Dec. 13, 1881



Attest.
Wm. Knight
H. C. ...

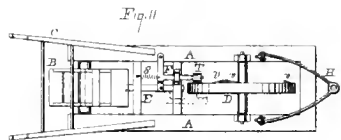
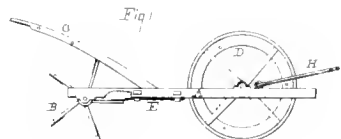
Inventor,
I. N. Kyle
By ...

(No Model)

F RICE, A & M APPLE
TOBACCO BILLING MACHINE

No 251,135

Patented Dec 20, 1881



Witnesses:
...
...

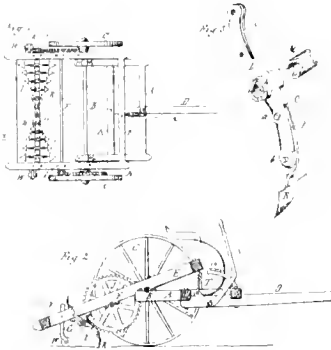
Inventors
Frank R. Rice
M. Apple
By ... ATTORNEY

(No Model.)

E. F. BOSTWICK
CULTIVATOR

No. 256,642.

Patented Apr 18, 1882.



Witnesses
J. B. Smith
& J. S. Smith

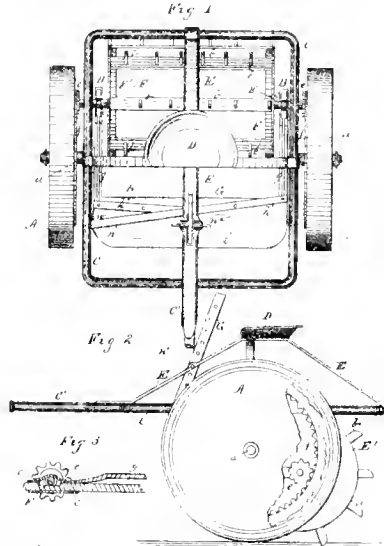
Inventor
Edward E. Bostwick
By H. B. Smith
Att'y

(No Model.)

J. HUFFBLE
SOIL PULVERIZER

No. 256,801

Patented Apr 18, 1882



Witnesses
Edw. L. Smith
J. B. Smith

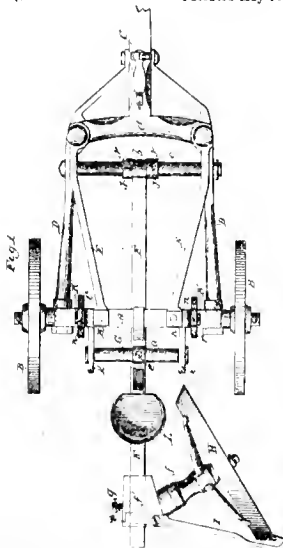
Inventor
James Huffble
By J. B. Smith
Att'y

(No Model.)

S. C. BAUOUM.
SULKY PLOW AND COTTON SOBAPER.

No. 257,914

Patented May 16, 1882.



Witnesses
J. B. Smith
& J. S. Smith

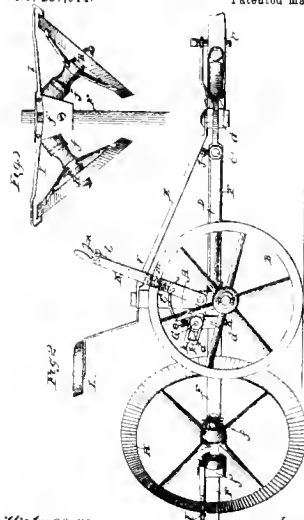
Inventor
Samuel C. Bauoum
By H. B. Smith
Att'y

(No Model.)

S. C. BAUOUM.
SULKY PLOW AND COTTON SOBAPER.

No. 257,914.

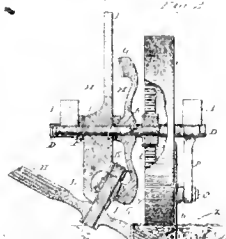
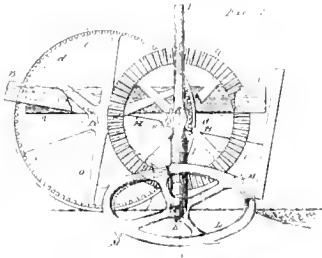
Patented May 16, 1882.



Witnesses
Edw. L. Smith
J. B. Smith

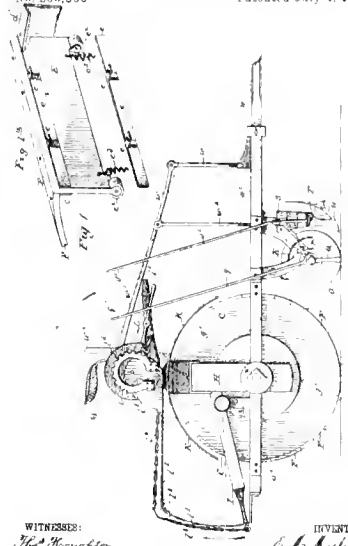
Inventor
Samuel C. Bauoum
By H. B. Smith
Att'y

(No Model) E M MILES
FLOW
No 250,594 Patented June 20, 1882



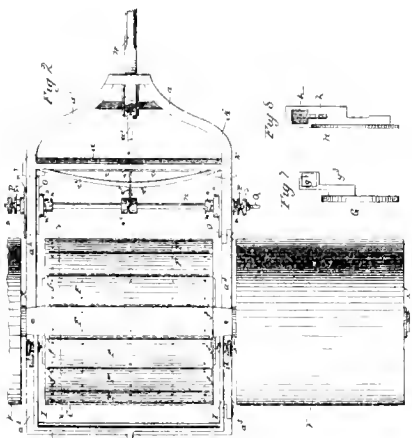
WITNESSES: *Geo. F. Satchell*
Edw. H. ...
INVENTOR: *E. M. Miles*
BY *Lois Briggs & Co.*
ATTORNEYS

(No Model) E M MILES
COMBINED REVOLVING FLOW OR SPADE AND ROLLER.
No 260,596 Patented July 4, 1882



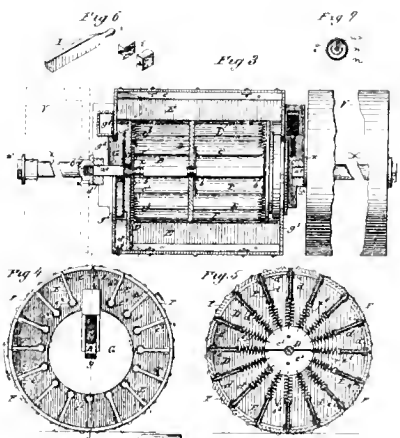
WITNESSES: *Thos. Houghton*
Edw. H. ...
INVENTOR: *E. M. Miles*
BY *Sam'l L. ...*
ATTORNEYS

(Model) E M MILES
COMBINED REVOLVING FLOW OR SPADE AND ROLLER
No 260,596 Patented July 4, 1882



WITNESSES: *Thos. Houghton*
Edw. H. ...
INVENTOR: *E. M. Miles*
BY *Sam'l L. ...*
ATTORNEYS

(Model) E M MILES
COMBINED REVOLVING FLOW OR SPADE AND ROLLER
No 260,596. Patented July 4, 1882



WITNESSES: *Thos. Houghton*
Edw. H. ...
INVENTOR: *E. M. Miles*
BY *Sam'l L. ...*
ATTORNEYS

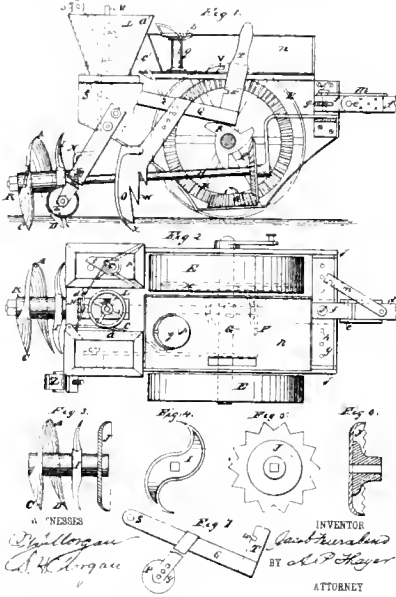
(No Model)

J PEIERABEND

FLOWING AND TILLING APPARATUS.

No. 260,673

Patented July 4, 1882



(No Model)

G. PIFRUNG
ROTARY FLOW

2 Sheets—Sheet 1

No. 260,782

Patented July 11, 1882

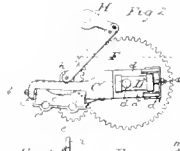
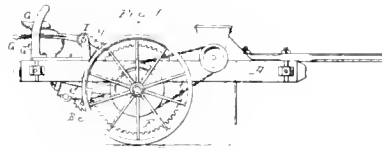


Fig. 3

Fig. 4

Witnesses
Richard L. Hoff
H. A. Schreff

Inventor
G. Pifrung
by A. P. Meyer

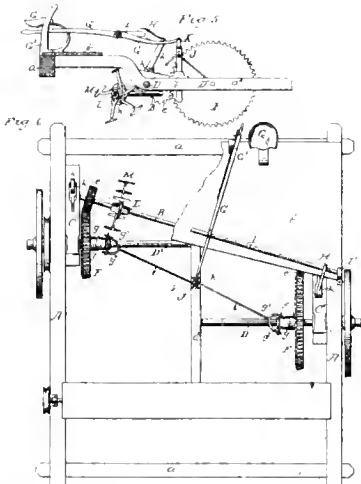
(No Model)

G. PIFRUNG
ROTARY FLOW.

2 Sheets—Sheet 2

No. 260,782.

Patented July 11, 1882



Witnesses
Charles Hoff
H. A. Schreff

Inventor
G. Pifrung
by A. P. Meyer

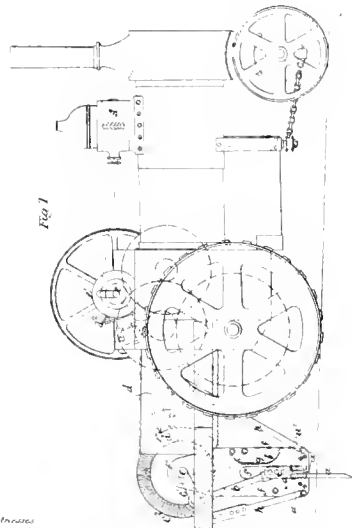
(No Model)

W. E. CROSSBY & A. CAREY
MACHINE FOR DIGGING LAND.

6 Sheets—Sheet 1

No. 262,377

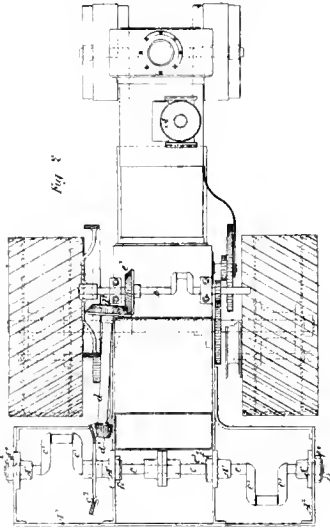
Patented Aug. 6, 1882.



Witnesses
W. E. Crossby
A. Carey
W. E. Crossby & A. Carey

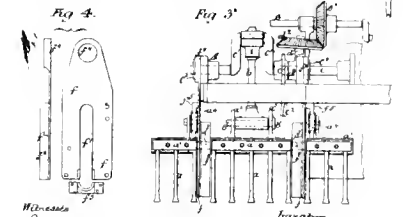
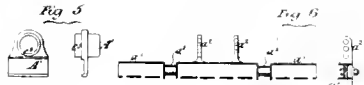
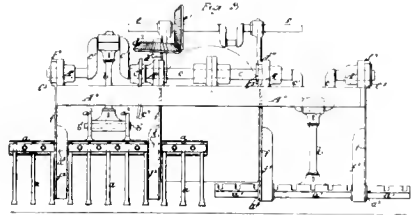
Inventors
W. E. Crossby
A. Carey

(No Model) W E CROSSBY & A CAREY 6 Sheets-Sheet 2
MACHINE FOR DIGGING LAND.
No. 262,377 Patented Aug. 8, 1882.



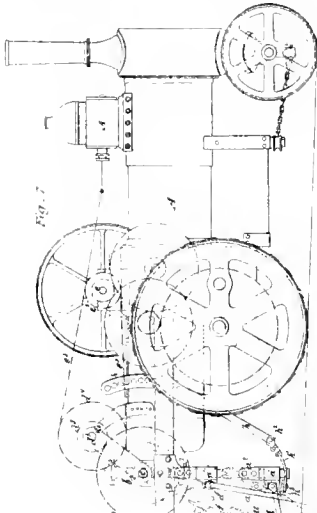
Witness
Invention
W. E. Crossby & A. Carey

(No Model) W E CROSSBY & A CAREY 6 Sheets-Sheet 3
MACHINE FOR DIGGING LAND.
No. 262,377 Patented Aug. 8, 1882



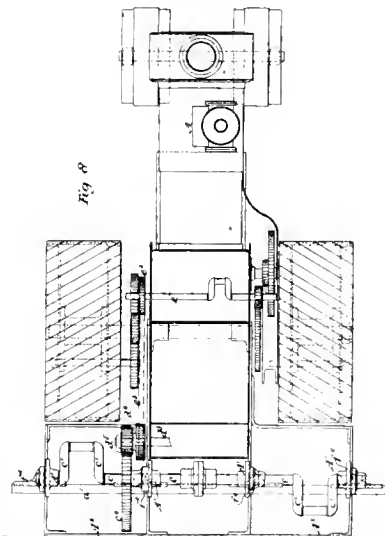
Witness
Invention
W. E. Crossby & A. Carey

(No Model) W E CROSSBY & A CAREY 6 Sheets-Sheet 1
MACHINE FOR DIGGING LAND.
No. 262,377 Patented Aug. 8, 1882



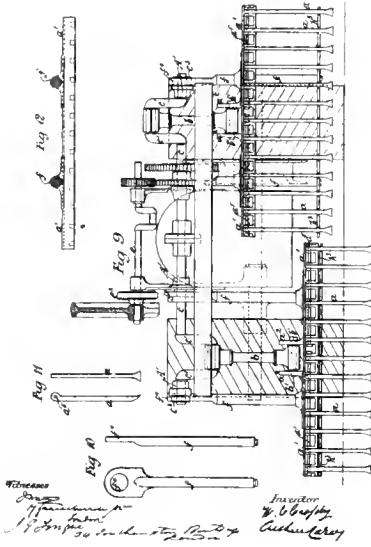
Witness
Invention
W. E. Crossby & A. Carey

(No Model) W E CROSSBY & A CAREY 6 Sheets-Sheet 5
MACHINE FOR DIGGING LAND.
No. 262,377 Patented Aug. 8, 1882

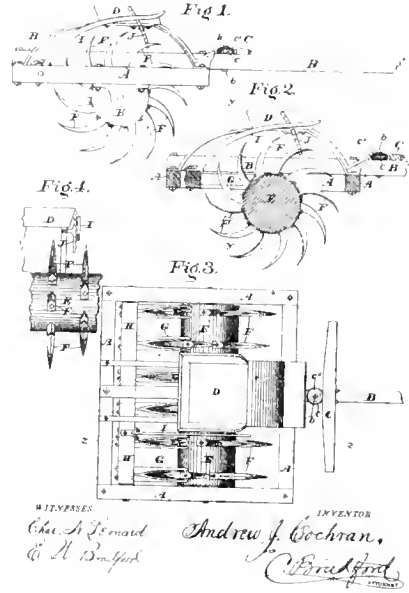


Witness
Invention
W. E. Crossby & A. Carey

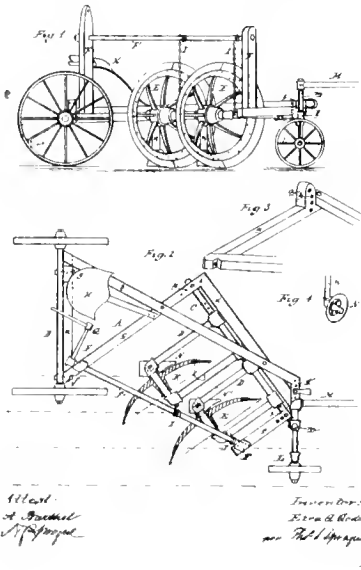
(No Model)
W. E. CROSSEY & A. CAREY 3 Sheets—Sheet 4
 MACHINE FOR DIGGING LAND.
 No. 262,377. Patented Aug. 6, 1882.



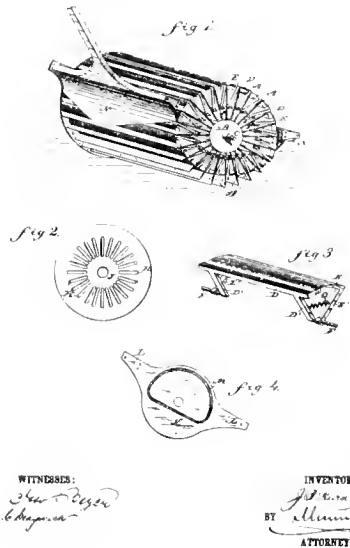
(No Model)
A. J. COCHRAN
 SOIL PULVERIZER
 No. 265,917. Patented Oct. 10, 1882.



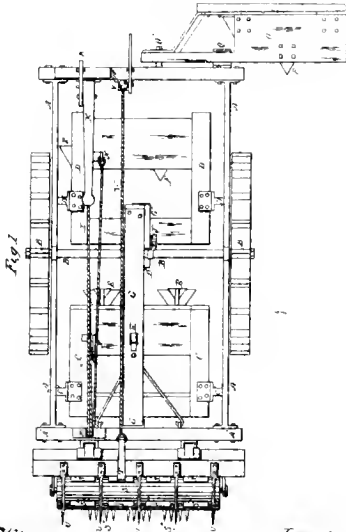
(No Model)
E. G. GODDAED.
 ADJUSTABLE ROTARY HULKY FLOW.
 No. 266,689. Patented Oct. 31, 1882.



(No Model)
J. B. HURD.
 REVOLVING PLOW.
 No. 266,824. Patented Oct. 31, 1882.



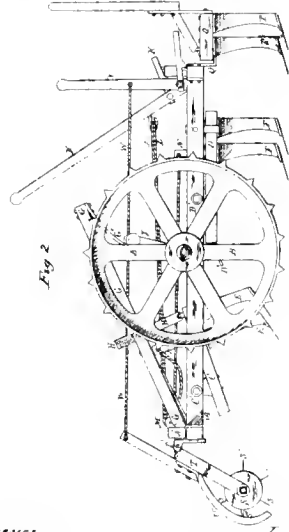
(No Model) L. STEBBINS 3 Sheets—Sheet 1
No. 269,339 Patented Dec. 19, 1882.



Witness
Benjamin F. Remont
Wilhelm Korte

Inventor
Lorenz Stebbins
& Ohio & Sons
Attorneys

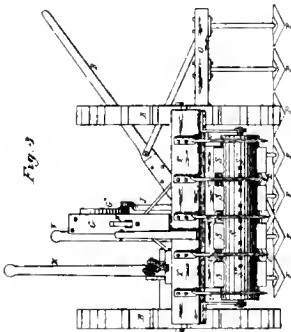
(No Model) L. STEBBINS 3 Sheets—Sheet 2
No. 269,339 Patented Dec. 19, 1882



Witness
Benjamin F. Remont
Wilhelm Korte

Inventor
Lorenz Stebbins
& Ohio & Sons
Attorneys

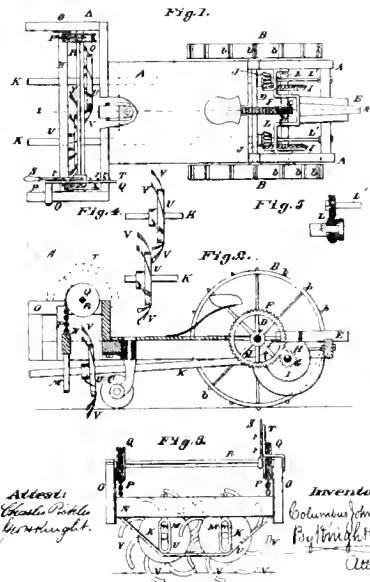
(No Model) L. STEBBINS 3 Sheets—Sheet 3
No. 269,339 Patented Dec. 19, 1882.



Witness
Benjamin F. Remont
Wilhelm Korte

Inventor
Lorenz Stebbins
& Ohio & Sons
Attorneys

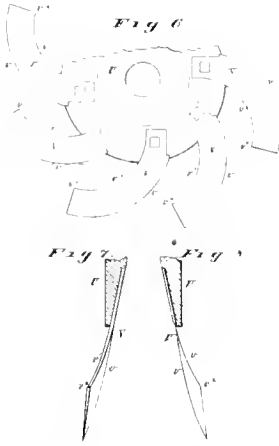
(No Model) C. JOHNSTON 2 Sheets—Sheet 1
No. 269,782 Patented Dec. 26, 1882



Witness
Charles Perkins
Newburgh, N.Y.

Inventor
Columbus Johnston
Newburgh, N.Y.
Attorneys

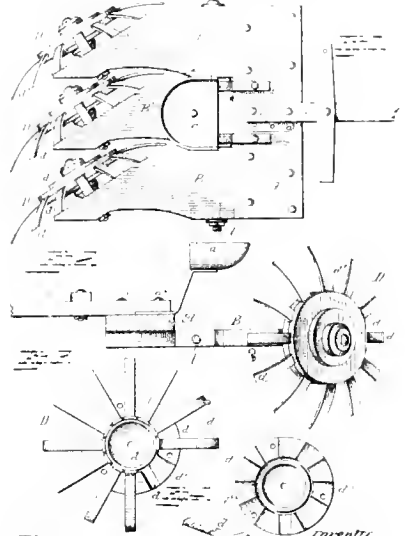
(No Model) **C JOHNSTON** Sheets—Sheet 2
 ROTARY FLOW AND PULVERIZER
 No. 269,792 Patented Dec. 26, 1882



Attest
 Wm. S. Allen
 William S. Daynes

Inventor
 C. Johnston
 By Wm. S. Allen
 Wm. S. Daynes
 Attys.

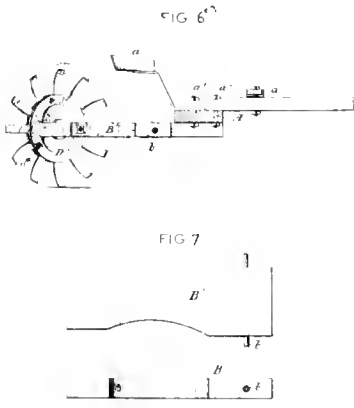
(No Model) **H SKILLINGS** Sheets—Sheet 1
 SPADE WHEEL FLOW
 No. 271,142 Patented Jan. 23, 1883



Witnesses
 T. W. C. C. C. C.
 H. J. Rogers

Inventor
 H. Skillings
 By Wm. S. Allen
 Wm. S. Daynes
 Attys.

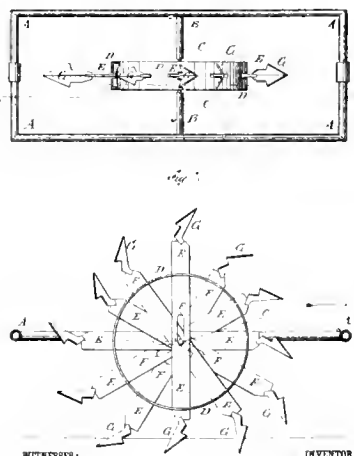
(No Model) **H SKILLINGS** Sheets—Sheet 2
 SPADE WHEEL FLOW
 No. 271,142 Patented Jan. 23, 1883



WITNESSES
 Wm. S. Allen
 Wm. S. Daynes

INVENTOR
 H. Skillings
 By Wm. S. Allen
 Wm. S. Daynes
 Attys.

(No Model) **G. A. BETANCOURT**
 ROTARY FLOW.
 No. 272,631 Patented Feb. 20, 1883.



WITNESSES:
 C. L. Macchia
 C. Bayard

INVENTOR
 G. A. Betancourt
 BY Wm. S. Allen
 Wm. S. Daynes
 ATTORNEYS

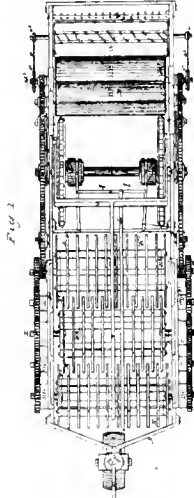
(No Model)

J A KAY
CULTIVATING MACHINE.

3 Sheets—Sheet 1

No. 273,101

Patented Feb. 27, 1883.



Witnesses
W. C. Fanning
W. H. Smith

Inventor
Joshua A. Kay
By W. H. Smith

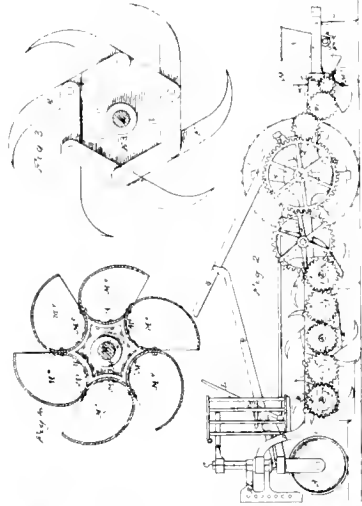
(No Model)

J. A. KAY
CULTIVATING MACHINE.

3 Sheets—Sheet 2

No. 273,101

Patented Feb. 27, 1883.



Witnesses

W. C. Fanning
W. H. Smith

Inventor
Joshua A. Kay
By W. H. Smith

(No Model)

J. A. KAY
CULTIVATING MACHINE.

3 Sheets—Sheet 3

No. 273,101

Patented Feb. 27, 1883.



Witnesses
W. C. Fanning
W. H. Smith

Inventor
Joshua A. Kay
By W. H. Smith

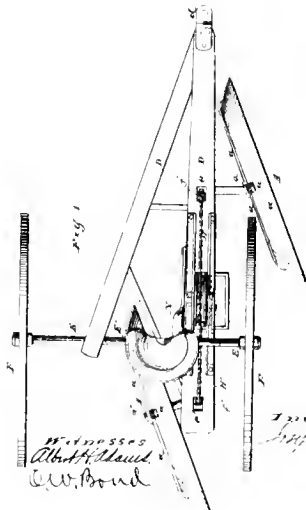
(No Model)

J. LANE
ROTARY FLOW.

3 Sheets—Sheet 1

No. 278,711.

Patented June 5, 1883.



Witnesses
Alfred Hillaud
C. W. Bond

Inventor
Joseph Lane

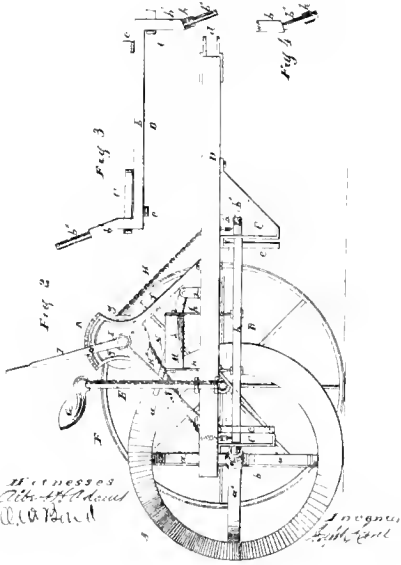
(No Model)

J LANE
ROTARY PLOW

3 Sheets—Sheet 2

No. 278,711

Patented June 5, 1883



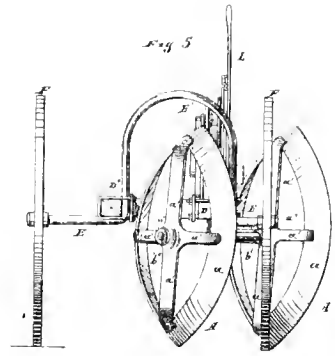
(No Model)

J LANE
ROTARY PLOW

3 Sheets—Sheet 1

No. 278,711.

Patented June 5, 1883



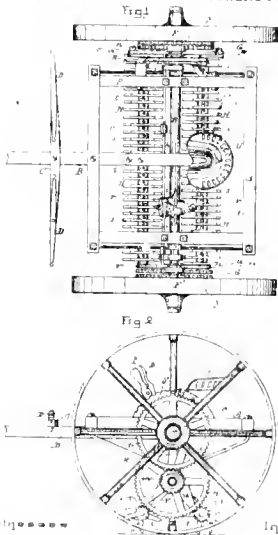
(No Model)

R B LILLIE
SOIL PULVERIZER

2 Sheets—Sheet 1

No. 278,803.

Patented June 5, 1883.



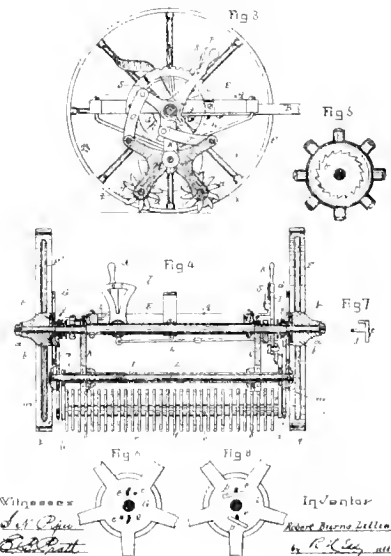
(No Model)

R B LILLIE
SOIL PULVERIZER.

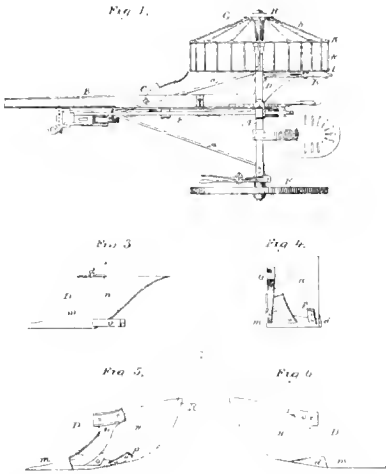
2 Sheets—Sheet 2

No. 278,803.

Patented June 5, 1883.

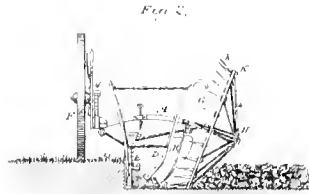


(No Model.) C. E. SACKETT 2 Sheets-Sheet 1
COMBINED PLOW AND PULVERIZER
No. 279,818 Patented June 19, 1883



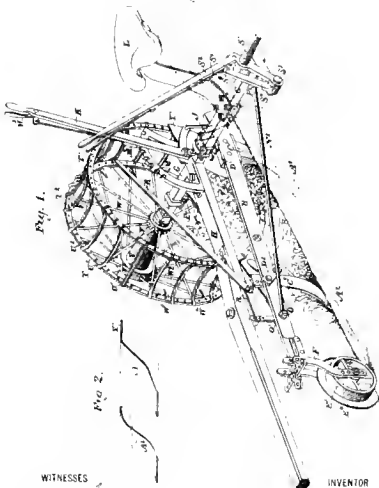
WITNESSES: J. W. A. Smith, Wm. L. M. ...
INVENTOR: Charles E. Sackett, By his attorney, Geo. Raymond & Co., Lowell, Mass.

(No Model.) C. E. SACKETT 2 Sheets-Sheet 2
COMBINED PLOW AND PULVERIZER
No. 279,818. Patented June 19, 1883



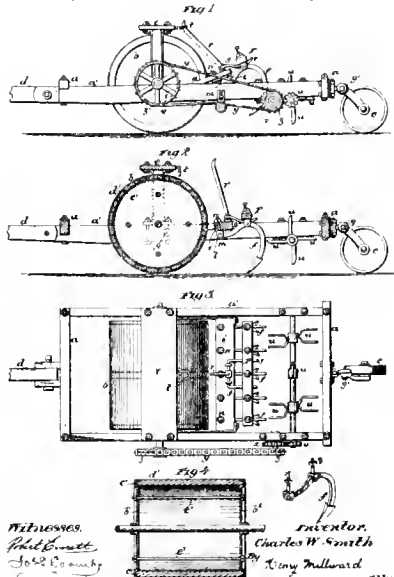
WITNESSES: J. W. A. Smith, Wm. L. M. ...
INVENTOR: Charles E. Sackett, By his attorney, Geo. Raymond & Co., Lowell, Mass.

(No Model.) C. E. SACKETT
TILLING MACHINE.
No. 279,819 Patented June 19, 1883.



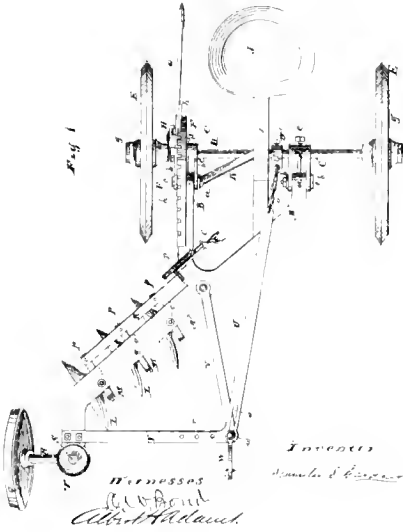
WITNESSES: J. W. A. Smith, Geo. H. ...
INVENTOR: Charles E. Sackett, By his attorney, Geo. Raymond & Co., Lowell, Mass.

(No Model.) C. W. SMITH
SOIL PULVERIZING MACHINE.
No. 281,149. Patented July 10, 1883

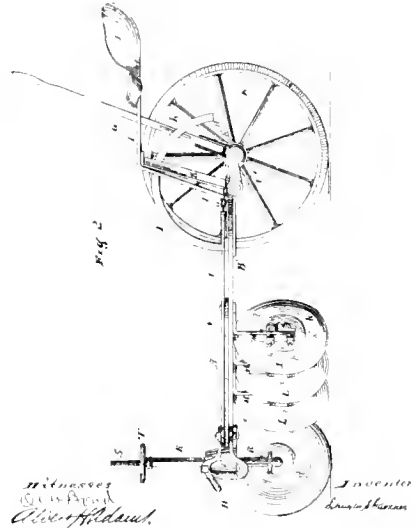


WITNESSES: Phil. ...
INVENTOR: Charles W. Smith, By his attorney, Wm. ...

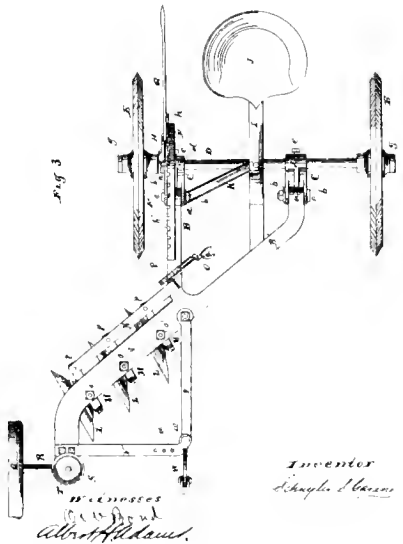
(No Model.)
 S S GARDNER
 ROTARY PLOW
 No. 285,809 Patented Oct. 2, 1883.



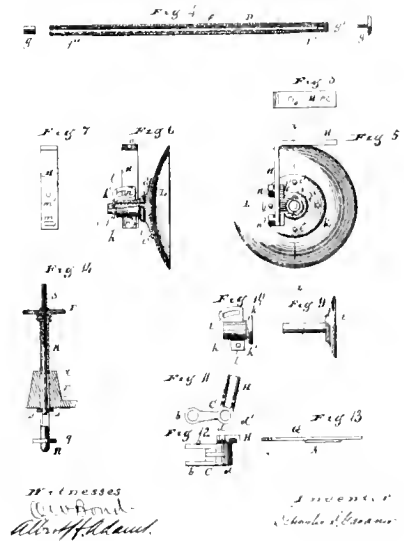
(No Model.)
 S S GARDNER
 ROTARY PLOW
 No. 285,809 Patented Oct. 2, 1883.



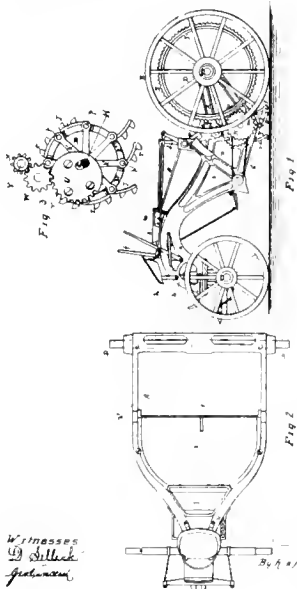
(No Model.)
 S S GARDNER
 ROTARY PLOW
 No. 285,809 Patented Oct. 2, 1883.



(No Model.)
 S S GARDNER
 ROTARY PLOW
 No. 285,809 Patented Oct. 2, 1883.



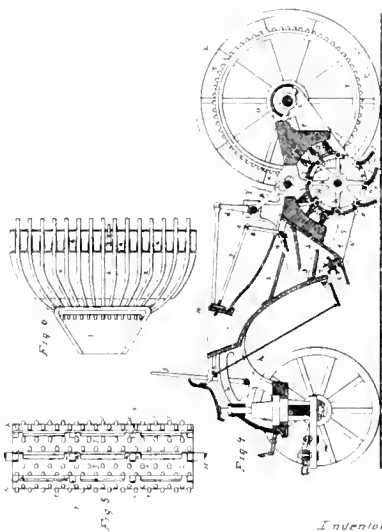
(No Model) B SMITH 2 Sheets—Sheet 1
ROTARY HARROW AND CLOD BREAKER
No 287,479 Patented Oct 30, 1883.



Witnesses
D. S. Sillick
J. G. Johnson

Inventor
B. Smith
By J. G. Johnson

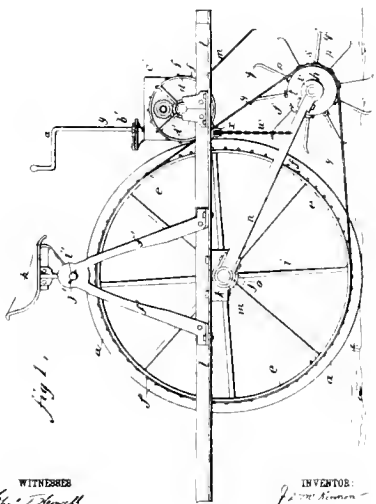
(No Model) B SMITH 2 Sheets—Sheet 2
ROTARY HARROW AND CLOD BREAKER
No 287,479 Patented Oct 30, 1883.



Witnesses
D. S. Sillick
J. G. Johnson

Inventor
B. Smith
By J. G. Johnson

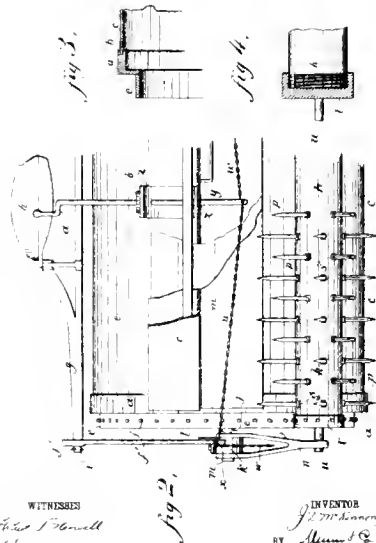
(No Model) J. D. MCKINNON 2 Sheets—Sheet 1
COMBINED HARROW, ROLLER, &c.
No. 289,118 Patented Nov 27, 1883



WITNESSES
Chas. J. Howell
& Howard

INVENTOR
J. D. McKinnon
BY Munn & Co
ATTORNEYS

(No Model) J. D. MCKINNON 2 Sheets—Sheet 2
COMBINED HARROW, ROLLER, &c.
No. 289,118 Patented Nov 27, 1883



WITNESSES
Chas. J. Howell
& Howard

INVENTOR
J. D. McKinnon
BY Munn & Co
ATTORNEYS

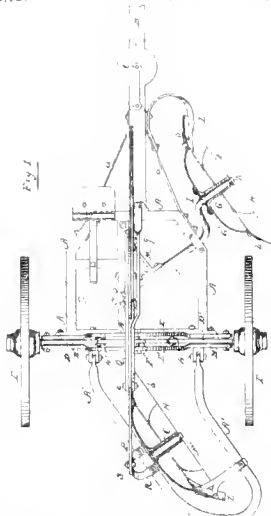
J. Model

J. AUSTIN
ROTARY PLOW

Sheets-Sheet 1

No. 291,127

Patented Jan. 1, 1884



Witness
Henry Thompson
J. M. Baker

Inventor
John Austin
per F. F. Hume
his Attorney

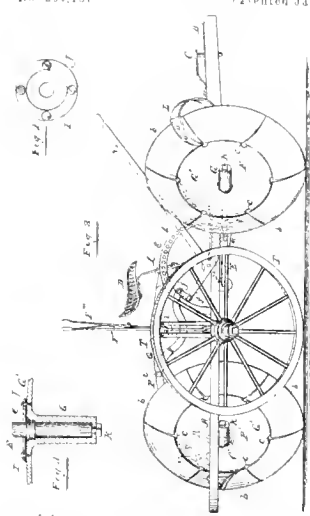
No. Model

J. AUSTIN
ROTARY PLOW

Sheet-Sheet 1

No. 291,127

Patented Jan. 1, 1884



Witness
Henry Thompson
J. M. Baker

Inventor
John Austin
per F. F. Hume
his Attorney

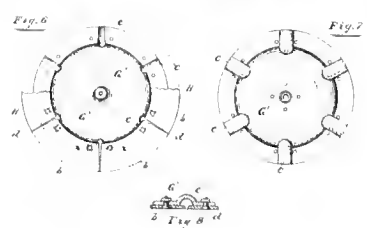
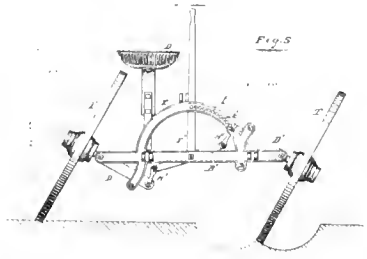
(No Model)

J. AUSTIN
ROTARY PLOW

Sheet-Sheet 3

No. 291,127

Patented Jan. 1, 1884



Witness
Henry Thompson
J. M. Baker

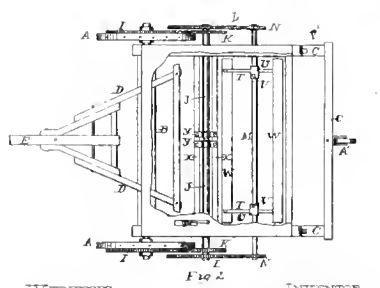
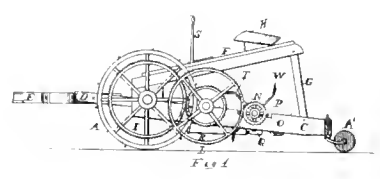
Inventor
John Austin
per F. F. Hume
his Attorney

(No Model)

J. D. RANKIN & W. C. ENOY.
SOIL POLVERIZER.

No. 293,080.

Patented Feb. 5, 1884



Witness
Robert Kirk
C. D. Cook

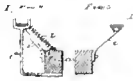
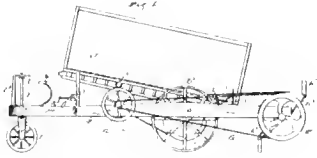
Inventor
John D. Rankin
William C. Enoy
per J. D. Cook
his Attorney

(No Model)

D. F. SPANGLER
SPADING MACHINE.

No. 293,104

Patented Feb. 5, 1884



Witnesses:
J. C. Moore
C. H. Dodge



INVENTOR
D. F. Spangler
per N. S. Stacey

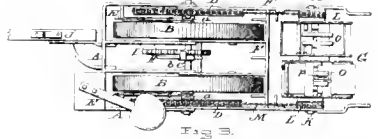
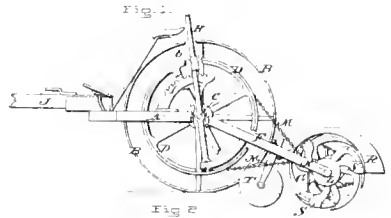
(No Model)

J. B. TURCHIN
HORSE SPADING MACHINE.

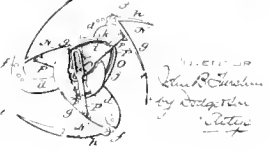
No. 300,413.

2 Sheets—Sheet 1

Patented June 17, 1884.



Witnesses:
J. C. Moore
C. H. Dodge



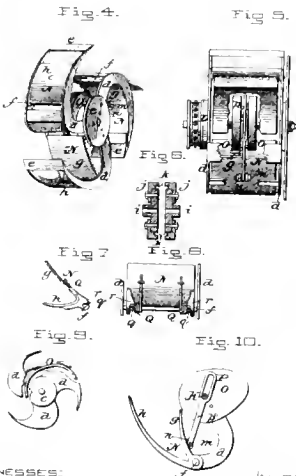
(No Model)

J. B. TURCHIN
HORSE SPADING MACHINE.

No. 300,413

Patented June 17, 1884

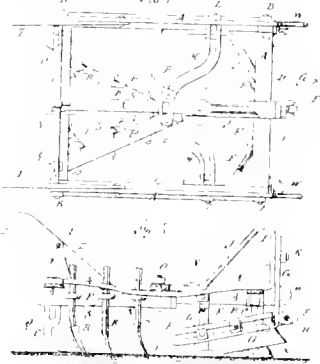
2 Sheets—Sheet 2



Witnesses:
J. C. Moore
C. H. Dodge

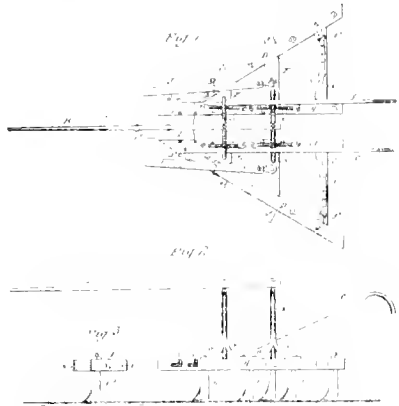
INVENTOR
J. B. Turchin
per N. S. Stacey

(No Model)
T M SMITH
COMBINED SCRAPER AND BARRAGE
No. 266,976 Patented Sept. 5, 1882



WITNESSES
C. ...
E. ...
INVENTOR
T. M. Smith
ATTORNEYS
M. ...

(No Model)
W H WEST.
CULTIVATOR
No. 266,238 Patented Oct 17, 1882



WITNESSES
W. ...
C. ...
INVENTOR
W. H. West
ATTORNEYS
M. ...

(No Model)
J W BURSA & J T DOWDALL
COTTON CULTIVATOR.
No. 266,734 Patented Oct 31, 1882

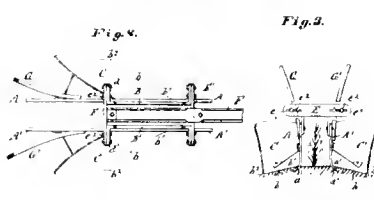
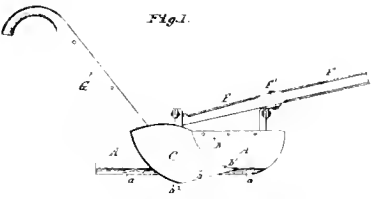
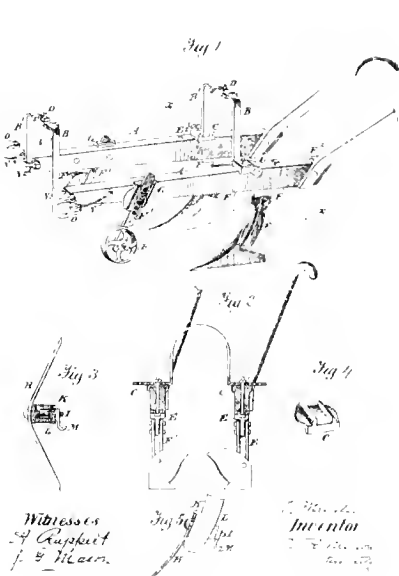


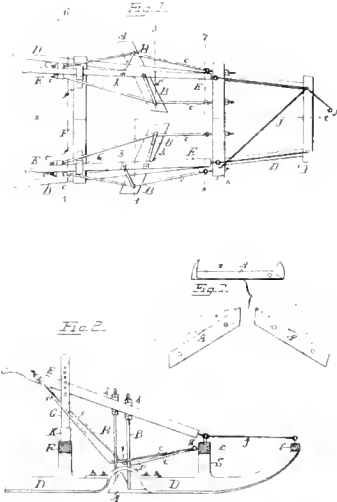
Fig. 4: Mechanical drawing of a cotton cultivator showing a vertical frame.
Attest:
Charles ...
John H. ...
INVENTORS,
James H. ...
John T. Dowdall
for ...
Atty.

(No Model)
F MEKKE.
COMBINED PLOW AND CULTIVATOR.
No. 269,871 Patented Jan 2, 1884



WITNESSES
J. ...
J. ...
INVENTOR
F. Mekke
ATTORNEYS
M. ...

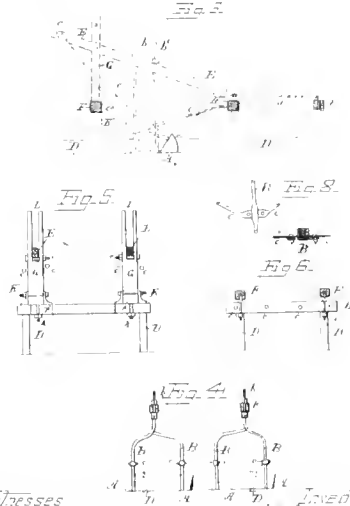
(No Model)
W C THOMPSON
 COTTON SCRAPER AND CULTIVATOR.
 No. 290,814 Patented Dec. 25, 1883.



Witnesses:
 J. H. Brown
 J. C. Williams

Inventor:
 W. C. Thompson
 by J. A. Woodcock
 atty.

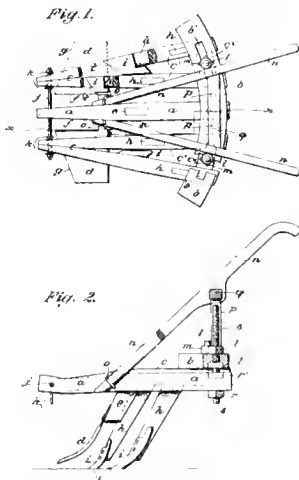
(No Model)
W C THOMPSON
 COTTON SCRAPER AND CULTIVATOR
 No. 290,814 Patented Dec. 25, 1883.



Witnesses:
 J. H. Brown
 J. C. Williams

Inventor:
 W. C. Thompson
 by J. A. Woodcock
 atty.

(Model)
S. H. FOUNTAIN
 COTTON SCRAPER AND CULTIVATOR.
 No. 294,604 Patented Mar. 4, 1884.



WITNESSES:
 J. H. Brown
 J. C. Williams

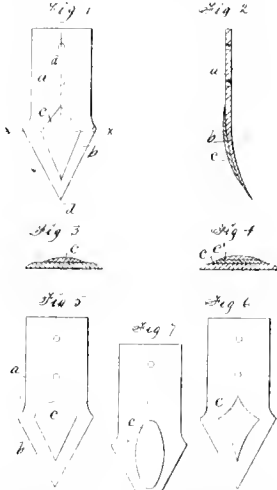
INVENTOR:
 S. H. Fountain
 BY Allen R.
 ATTORNEY

(No Model)

J. M. FALLIS
Shovel Flow

No. 243,231

Patented June 21, 1881.

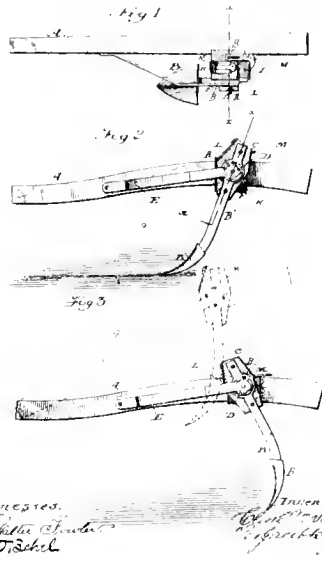


Witnesses:
Frank W. Jones
C. H. Smith

Inventor:
J. M. Fallis
By Thomas G. Orm & Co.
Attorneys.

2 Sheets—Sheet 1

C. M. STEVENS
MEANS FOR ATTACHING CULTIVATOR TEETH
No. 9,788. Reissued July 5, 1881

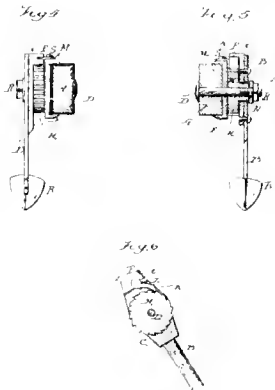


Witnesses:
Walter Smith
A. T. Debel

Inventor:
C. M. Stevens
By Frank W. Jones
Attorneys.

2 Sheets—Sheet 2

C. M. STEVENS
MEANS FOR ATTACHING CULTIVATOR TEETH
No. 9,788 Reissued July 5, 1881



Witnesses:
Walter Smith
A. T. Debel

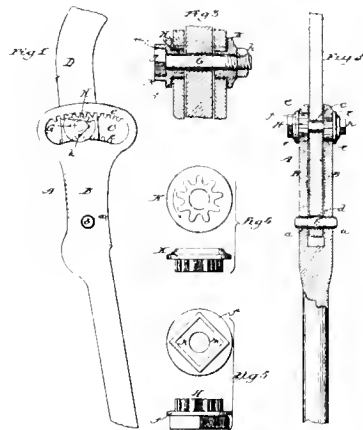
Inventor:
C. M. Stevens
By Frank W. Jones
Attorneys.

(No Model)

F. B. MANLY.
FLOW STANDARD

No. 246,169.

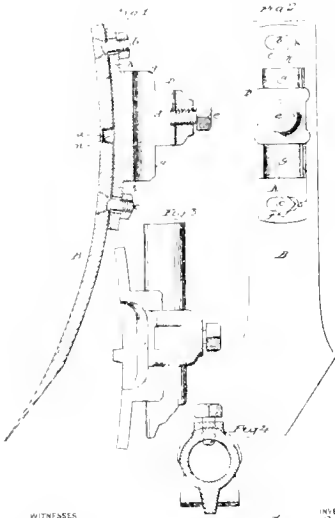
Patented Aug. 23, 1881.



WITNESSES:
Walter Smith
A. T. Debel

INVENTOR:
Frank B. Manly
By Anderson & Smith
ATTORNEYS

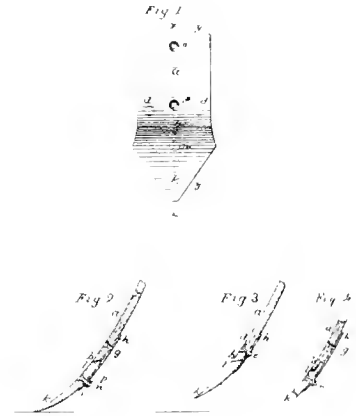
No. Model 1
F B MANLY
 ATTACHMENT FOR CULTIVATOR BLADES.
 No. 246,170 Patented Aug. 23, 1881



WITNESSES
Wm. Brown
Chas. Phillips

INVENTOR
Frank B. Manly
 by *Andrew Smith*
 ATTORNEYS

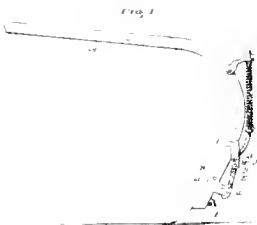
No. Model 1
J F KING
 CULTIVATOR SHOVEL.
 No. 247,658 Patented Sept. 27, 1881



WITNESSES
Edw. Knight
John Keman

INVENTOR
J. F. King
 BY *Wm. L. King*
 ATTORNEYS

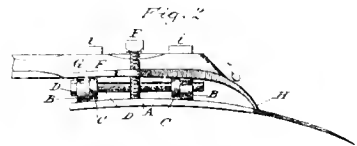
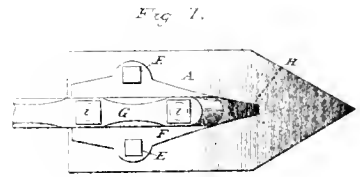
No. Model 1
F BRISSINGER
 CULTIVATOR
 No. 247,756 Patented Oct. 4 1881



WITNESSES
Wm. L. King
John Keman

INVENTOR
F. Brissinger
 BY *Wm. L. King*
 ATTORNEYS

No. Model 1
W L BOGART
 CULTIVATOR
 No. 249,673 Patented Nov. 22, 1881.



WITNESSES
Wm. L. King
John Keman

INVENTOR
William L. Bogart

(Model)
J C HEDE
 CULTIVATOR SHOVEL
 No. 250,530 Patented Dec 6, 1881.

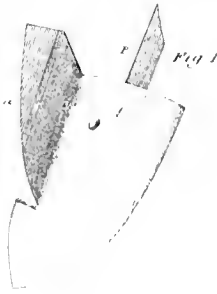
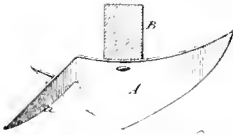


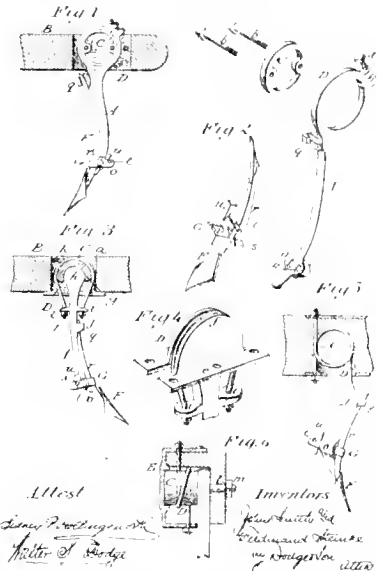
Fig 2



Attest
 Henry P. Haldeman
 Clerk of the Court

Inventor
 John C. Hede
 by J. C. Hede
 Attorney

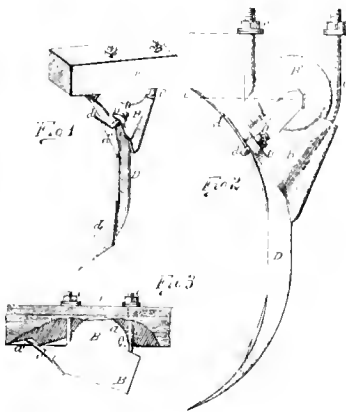
(No Model)
J SMITH & F STEINKE
 CULTIVATOR
 No. 251,981 Patented Jan 3, 1882



Attest
 Henry P. Haldeman
 Clerk of the Court

Inventors
 John Smith & F. Steinke
 by J. C. Hede
 Attorney

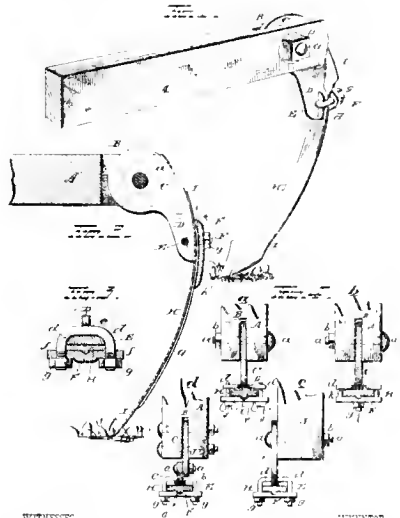
(No Model)
D C VAN BRUNT
 CULTIVATOR
 No. 251,976 Patented Jan 3, 1882



Witnesses
 E. H. Assmus
 A. C. Brown

Inventor
 D. C. Van Brunt
 by J. C. Haldeman
 Attorney

(Model)
W A VAN BRUNT
 CULTIVATOR TOOTH
 No. 252,279 Patented Jan. 10, 1882.



Witnesses
 E. H. Assmus

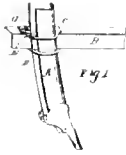
Inventor
 W. A. Van Brunt
 by J. C. Haldeman
 Attorney

(No Model)

H. C. STAHL
CULTIVATOR STANDARD CLAMP

No. 262,536

Patented Jan. 17, 1882



WITNESSES
W. H. Brown
W. C. Adams

INVENTOR
Harlowe Stahl

J. S. ROWELL
CULTIVATOR TOOTH

No. 10,078

Issued Apr. 4, 1882.



Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 13

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Fig. 20

Fig. 21

Fig. 22

Fig. 23

Fig. 24

Fig. 25

Fig. 26

Fig. 27

Fig. 28

Fig. 29

Fig. 30

Fig. 31

Fig. 32

Fig. 33

Fig. 34

Fig. 35

Fig. 36

Fig. 37

Fig. 38

Fig. 39

Fig. 40

Fig. 41

Fig. 42

Fig. 43

Fig. 44

Fig. 45

Fig. 46

Fig. 47

Fig. 48

Fig. 49

Fig. 50

Fig. 51

Fig. 52

Fig. 53

Fig. 54

Fig. 55

Fig. 56

Fig. 57

Fig. 58

Fig. 59

Fig. 60

Fig. 61

Fig. 62

Fig. 63

WITNESSES
W. H. Brown
W. C. Adams

INVENTOR
John S. Rowell
J. W. Adams
Attorney

(Model)

J. MORTER
CULTIVATOR TOOTH

No. 256,356

Patented Apr 11, 1882.

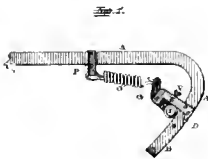
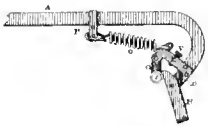


Fig. 2



WITNESSES
W. H. Brown
W. C. Adams

INVENTOR
J. Morter
W. H. Brown
W. C. Adams
Attorney

(No Model)

J. S. ROWELL
SEEDER OR CULTIVATOR TOOTH

No. 256,922

Patented Apr. 25, 1882.



Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 13

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Fig. 20

Fig. 21

Fig. 22

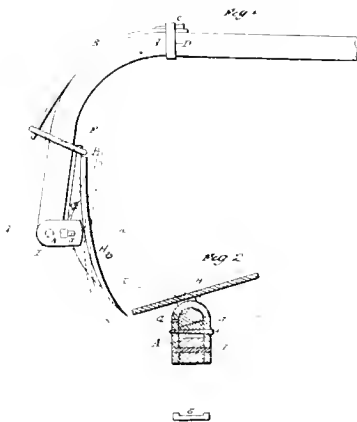
Fig. 23

Fig. 24

WITNESSES
W. H. Brown
W. C. Adams

INVENTOR
John S. Rowell
J. W. Adams
Attorney

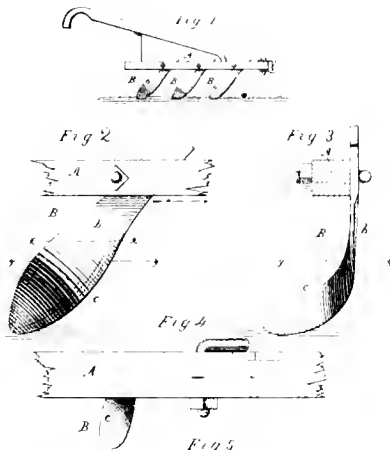
(No Model)
W D STROUD
CULTIVATOR TOOTH
No. 268,263 Patented May 23, 1882



WITNESSES:
Emory H. Bales
H. S. Rogers

INVENTOR:
William D. Stroud
By Thomas H. Morgan
Attorney

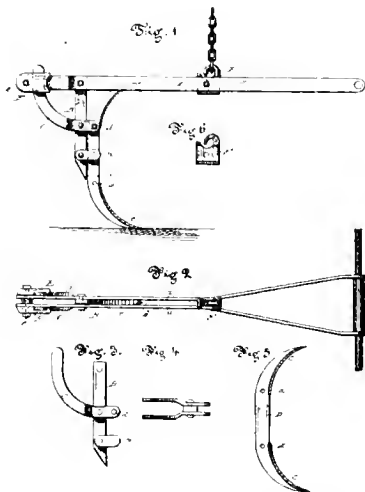
(No Model)
R L TURNER.
CULTIVATOR
No. 261,499 Patented July 18 1882



WITNESSES:
John Hamilton
E. W. H. Hays

INVENTOR:
R. L. Turner
By [Signature]
Attorney

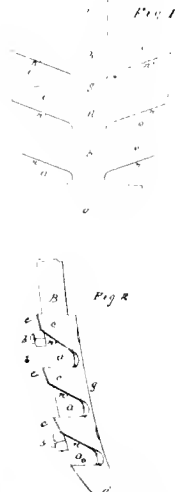
(No Model)
J H SMITH
CULTIVATOR TOOTH
No. 261,636 Patented July 25, 1882



WITNESSES:
A. A. [Signature]
Wm. [Signature]

INVENTOR:
J. H. Smith
By [Signature]
Attorney

(No Model)
A S CORE
CULTIVATOR TOOTH
No. 267,739 Patented Nov. 21, 1882.



WITNESSES:
Wm. [Signature]
Arthur S. Core

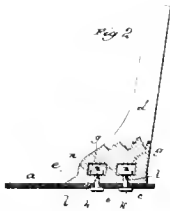
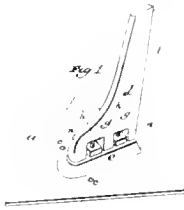
INVENTOR:
A. S. Core
By [Signature]

(No Model)

Z HOWE & E OATLEY.
CULTIVATOR.

No. 268,234

Patented Nov. 28, 1882



WITNESSES:
Omey H. Bates
Phil Johnson

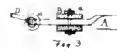
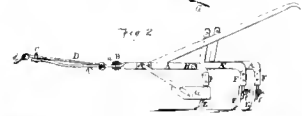
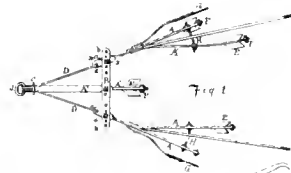
INVENTOR:
Z. Howe & E. Oatley
by *W. H. Sargent*
ATTORNEYS

(No Model)

J J DEAL.
CULTIVATOR.

No. 268,368

Patented Nov. 28, 1882



WITNESSES:
O. G. Hill
W. H. Sargent

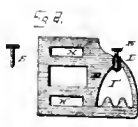
INVENTOR:
J. J. Deal
by *W. H. Sargent*
ATTORNEYS

(No Model)

H C STAHL.
STANDARD CLAMP

No. 270,855

Patented Jan. 16, 1883.



WITNESSES:
And. C. Dutcher
J. G. Merrill

INVENTOR:
Harlow Stahl
by *Louis Rogers*
ATTORNEYS

(Model)

A W DIFENDORF & P H MERRILL
CULTIVATOR

No. 271,432

Patented Jan. 30, 1883.

fig 1.

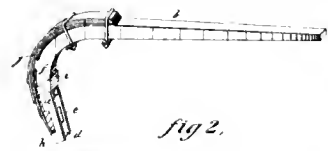


fig 2.

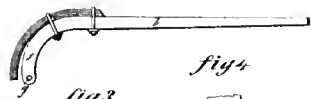
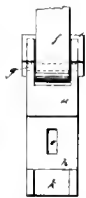


fig 4.



WITNESSES:
Charles Arnold
W. H. Sargent

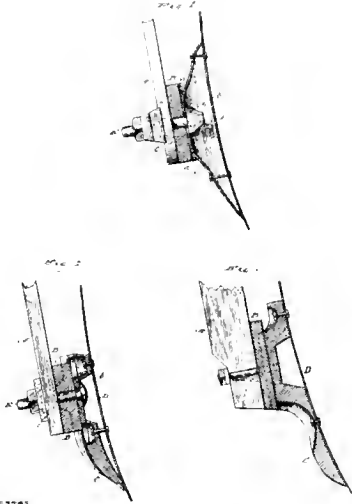
INVENTOR:
A. W. Diefendorf & P. H. Merrill
by *W. H. Sargent*
ATTORNEYS

(No Model)

E CHILDREN
CULTIVATOR SHOVEL

No. 271,791

Patented Feb. 6, 1883.



WITNESSES
J. H. Bond
& Benjamin

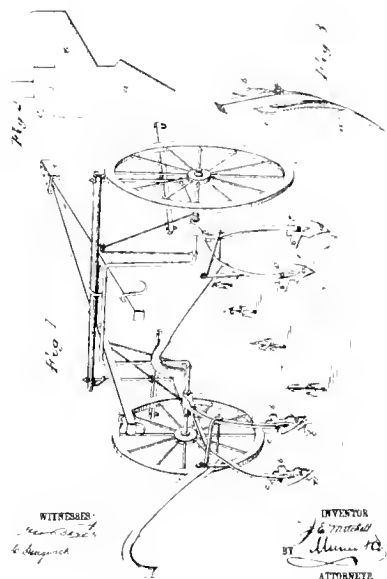
INVENTOR
E. Children
BY J. H. Bond
ATTORNEY

(Model)

J. E. MITCHELL
SHOVEL FOR CULTIVATORS

No. 272,301

Patented Feb. 13, 1883



WITNESSES
J. H. Bond
& Benjamin

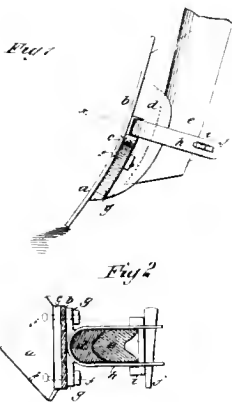
INVENTOR
J. E. Mitchell
BY J. H. Bond
ATTORNEY

(No Model)

J. W. JONES.
CULTIVATOR SHOVEL.

No. 273,550.

Patented Mar. 8, 1883.



WITNESSES
Thomas M. Smith
& Benjamin

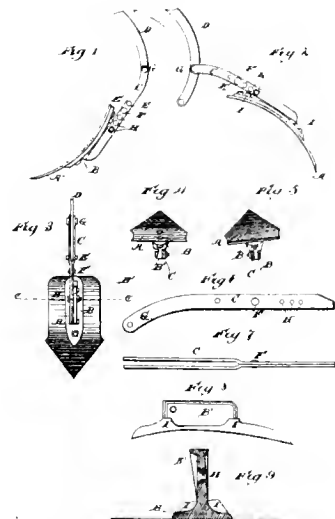
INVENTOR
J. W. Jones
BY Thomas M. Smith
ATTORNEY

(No Model)

J. L. LAUGHLIN
CULTIVATOR

No. 274,126

Patented Mar. 20, 1883.



WITNESSES
George W. Bond
& Benjamin

INVENTOR
John L. Laughlin
BY George W. Bond
ATTORNEY

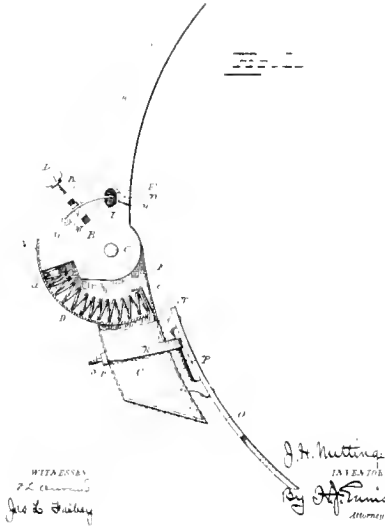
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J H NUTTING
CULTIVATOR

Sheet 1

No. 274,962

Patented Apr. 3, 1883.



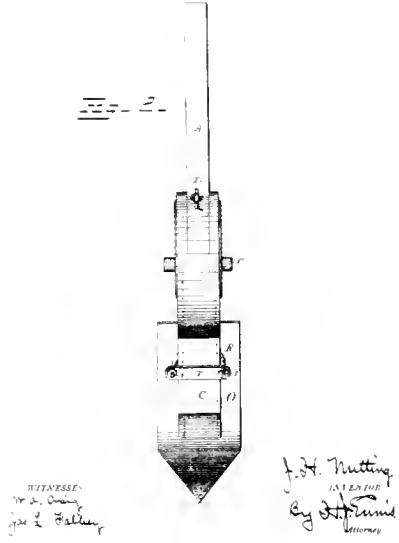
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J H NUTTING
CULTIVATOR.

Sheet 2

No. 274,962.

Patented Apr. 3, 1883.

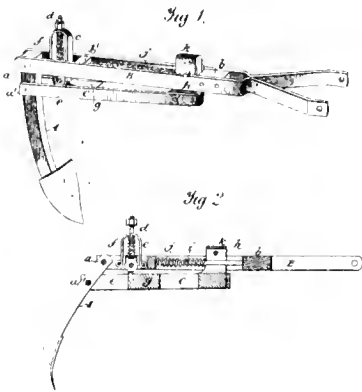


(No Model)

A. B. CLARK
SPRING HOE FOR CULTIVATORS.

No. 275,148.

Patented Apr. 3, 1883.

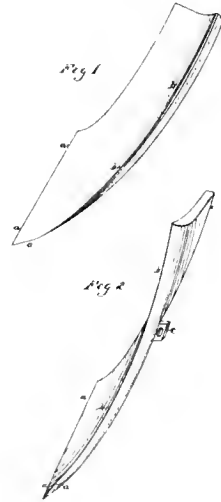


(Model)

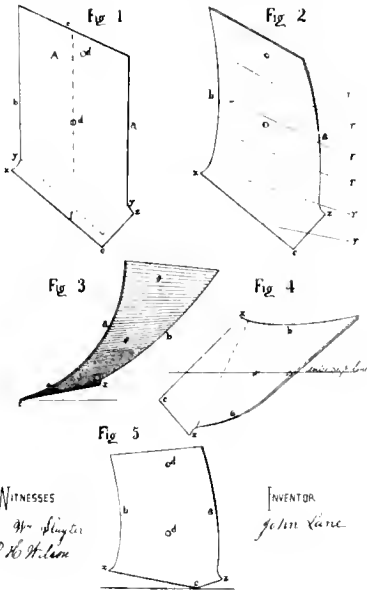
H. N. TIMMS
CULTIVATOR SHOVEL.

No. 275,546

Patented Apr. 10, 1883.



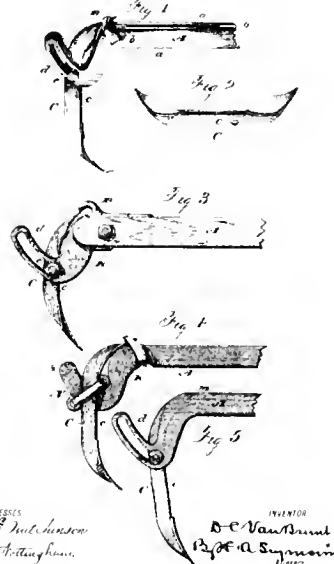
(Model)
J LANE
 CORN CULTIVATOR BLADE OR SHOVEL.
 No. 277,907. Patented May 22, 1883.



WITNESSES
Wm. Higgins
R. H. McLean

INVENTOR
John Lane

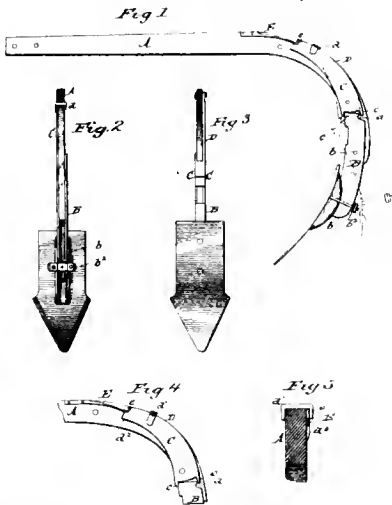
(No Model)
D C VAN BRUNT
 CULTIVATOR
 No. 280,283 Patented June 26, 1883



WITNESSES
John C. McLean
S. B. Nottingham

INVENTOR
D. C. Van Brunt
R. A. Symonds

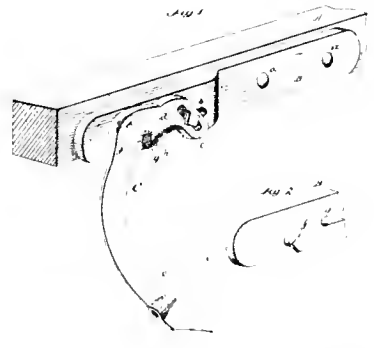
(No Model)
W B PATTERSON
 CULTIVATOR.
 No. 281,126 Patented July 10, 1883.



WITNESSES
Wm. Higgins
R. H. McLean

INVENTOR
Wm. B. Patterson
By De Witt Allen
 ATTORNEY

(No Model)
W J DAVIDSON
 CULTIVATOR.
 No. 282,852 Patented Aug 7, 1883.



WITNESSES
John C. McLean
S. B. Nottingham

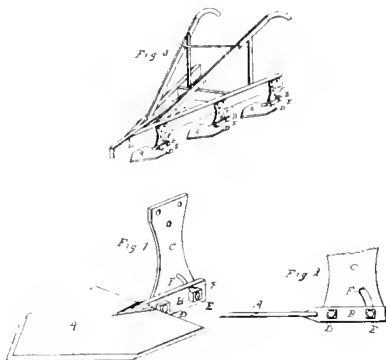
INVENTOR
W. J. Davidson
By Charles De Witt

(No Model)

L D GAVITT
CULTIVATOR BLADE

No. 282,880.

Patented Aug 7, 1883.



Witness
 Jas. H. Johnson
 Wm. S. Pillsbury

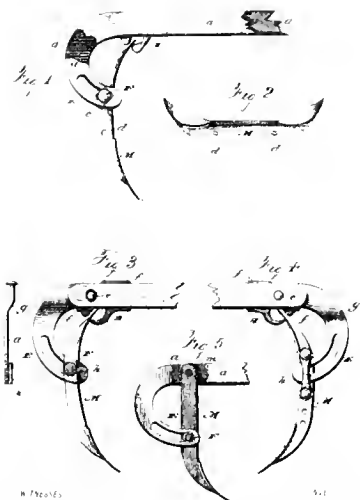
Inventor
 Lewis D. Eward
 by Wm. W. Hayward
 Att. Sol.

(No Model)

D C VAN BRUNT
CULTIVATOR BEAM

No. 284,093

Patented Aug 28, 1883



Witness
 Jos. C. Hutchins
 A. G. Mc. Johnson

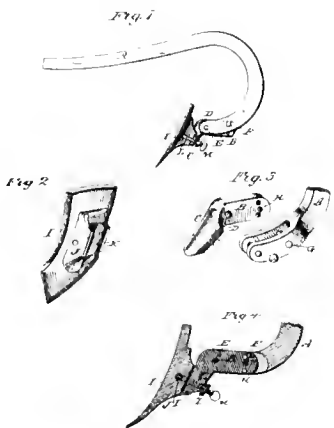
Inventor
 D. C. Van Brunt
 R. P. A. Seymour

(No Model)

D N LUSE & J W BELL
CULTIVATOR.

No. 284,565

Patented Sept. 4, 1883



Witnesses:
 Geo. S. Atkinson
 J. W. Bell

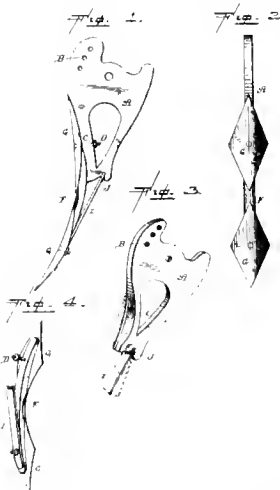
Inventor
 David S. Luse
 John W. Bell
 by Louis Dagon & Co.
 Attorneys

(Model)

G D ROWELL
SEED BAR TOOTH

No. 287,171

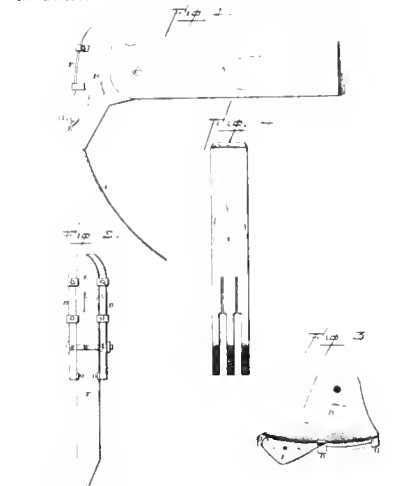
Patented Oct 23, 1883.



Witness
 Geo. S. Atkinson
 J. W. Bell

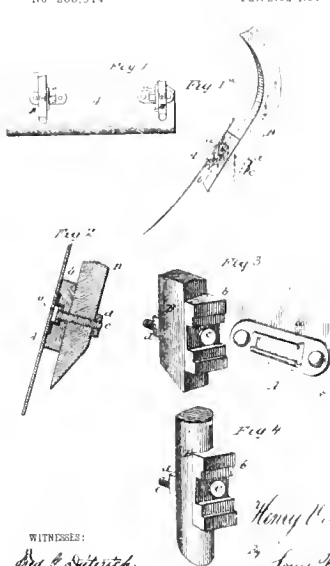
Inventor
 G. D. Rowell
 by A. C. Seymour

(No Model)
G D ROWELL
 REVERSIBLE CULTIVATOR TOOTH
 No 287,172 Patented Oct. 23, 1883



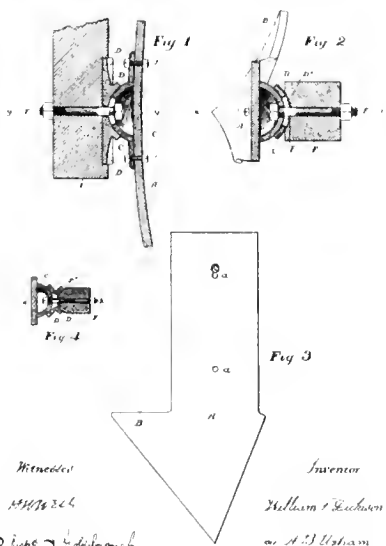
Witnesses:
James T. ...
...
 Inventor:
G. D. Rowell
J. H. ...

(No Model)
H V THOMPSON
 CULTIVATOR
 No 288,514 Patented Nov. 13, 1883



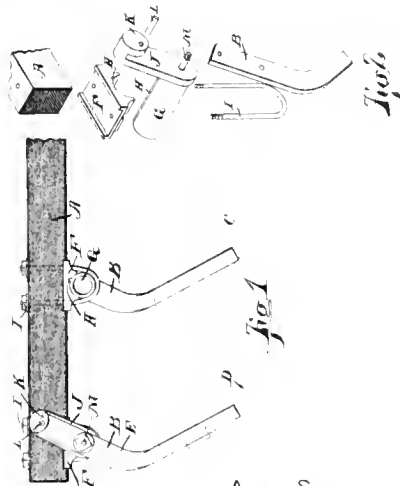
Witnesses:
...
 Inventor:
Henry V. Thompson
Louis Bagger & Co.
 ATTORNEYS

(No Model)
W F DICKISON
 CULTIVATOR SHOVEL
 No 292,795 Patented Feb 5, 1884



Witnesses:
...
 Inventor:
William F. Dickison
A. J. ...

(No Model)
J M LONG & C E McBETH
 CULTIVATOR
 No 295,779 Patented Mar 25, 1884



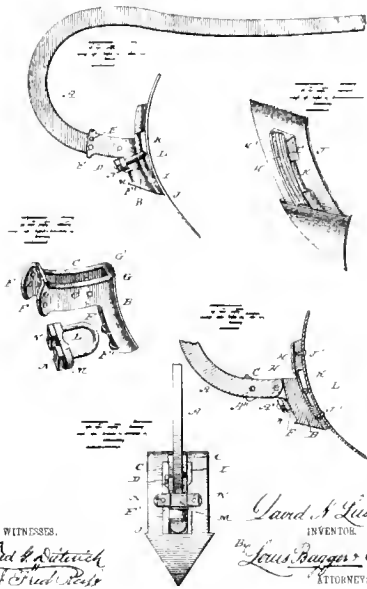
Witnesses:
...
 Inventor:
John M. Long
Charles E. McBeth
James W. See
 ATTORNEYS

No. Mod-1

D N LUSE
CULTIVATOR

No 296,983

Patented Apr. 15, 1884.

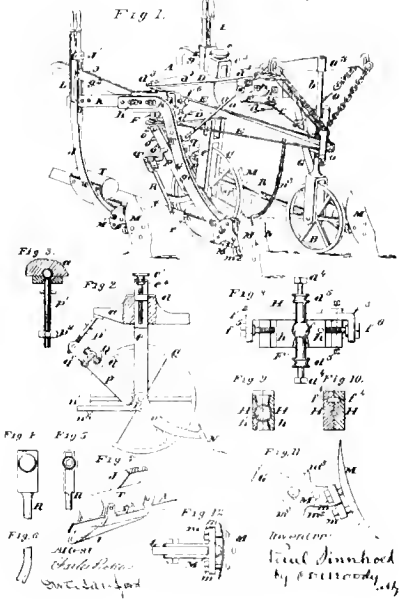


WITNESSES.

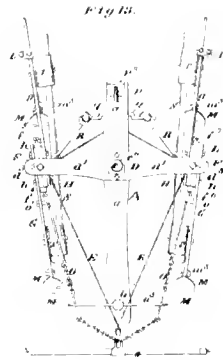
Edw. & Nuttall
J. Paul Ross

David S. Luse
INVENTOR
The Lewis & Ruggles Co.
ATTORNEYS

Model 1
P. SINNBOLD
CULTIVATOR
No. 244,773
Patented July 26, 1881



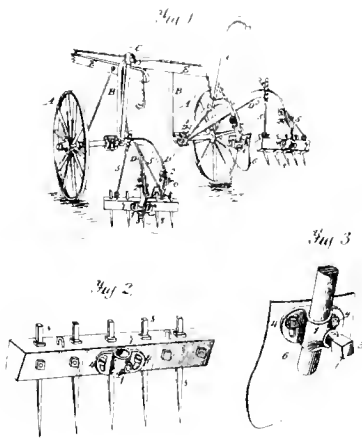
Model 1
P. SINNBOLD
CULTIVATOR
No. 244,773
Patented July 26, 1881



Attest:
John W. Smith
Notary Public

Inventor:
Paul Sinnbold
by C. S. Moody
att'y

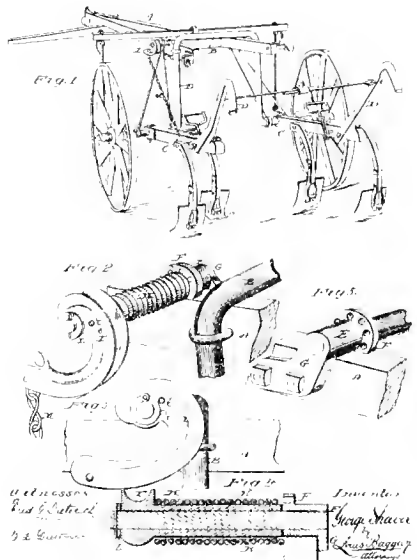
No. Model 1
W. E. DENISON
CULTIVATOR
No. 245,466
Patented Aug. 9, 1881



Witnesses
of Deposition
C. H. Connell

Inventor:
W. E. Denison
by C. S. Moody
att'y

G. SHAVER
CULTIVATOR
No. 246,224
Patented Aug. 23, 1881.



Witnesses
of Deposition
B. S. Quinn

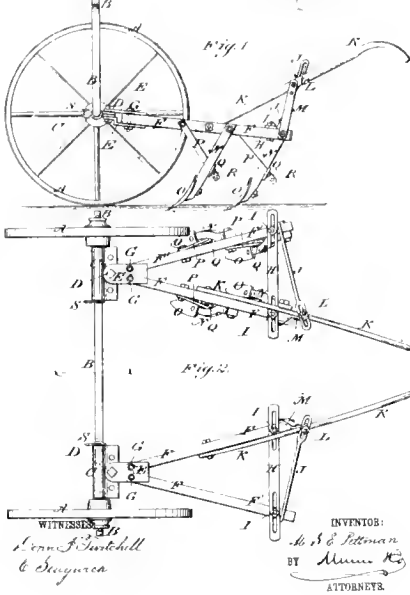
Inventor:
G. Shaver
by C. S. Moody
att'y

(No Model)

M S E. PITTMAN
CULTIVATOR

No. 246,551

Patented Aug 30, 1881.



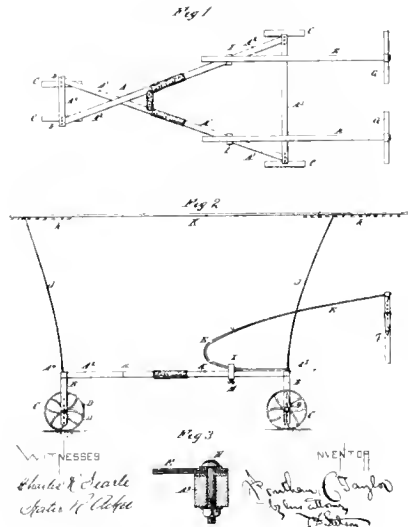
(No Model)

J. C. TAYLOR.
WEEDING CARRIAGE.

2 Sheets—Sheet 1

No 247,866

Patented Oct 4, 1881.



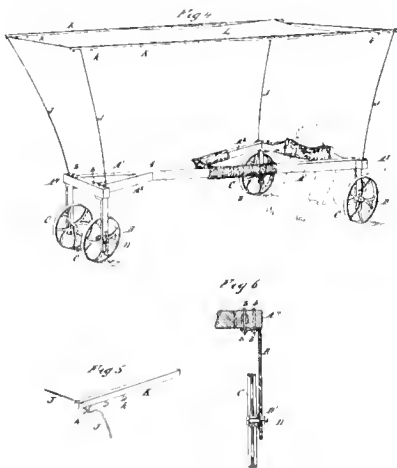
(No Model)

J. C. TAYLOR
WEEDING CARRIAGE

2 Sheets—Sheet 2

No 247,866

Patented Oct 4, 1881



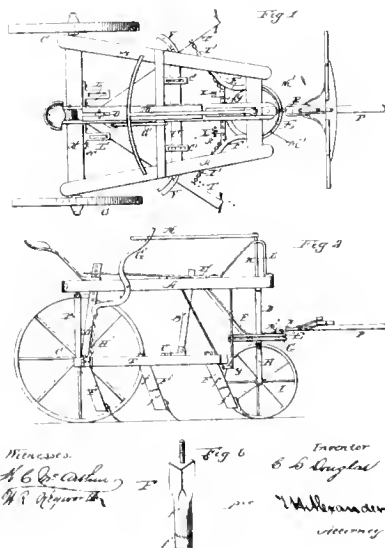
(No Model)

C. B. DOUGLAS
CULTIVATOR

2 Sheets—Sheet 1

No. 247,990.

Patented Oct. 4, 1881.



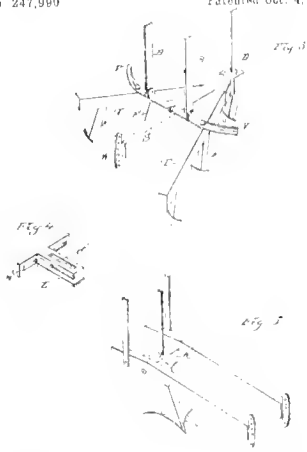
(No Model)

C. B. DOUGLAS
CULTIVATOR.

2 Sheets—Sheet

No. 247,999

Patented Oct. 4, 1881.



Witnesses
 J. C. ...
 J. ...

Inventor
 C. B. Douglas
 By ...

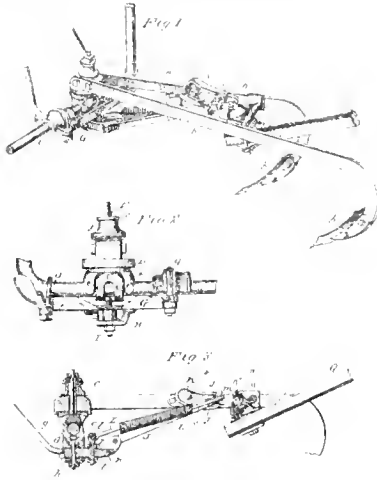
(No Model)

G. W. BROWN
CULTIVATOR.

1 Sheet—No. 1

No. 248,991

Patented Nov. 1, 1881.



Witnesses
 J. ...
 J. ...

Inventor
 G. W. Brown
 By ...

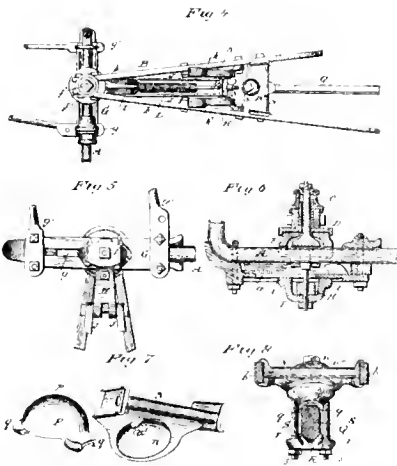
(Model)

G. W. BROWN
CULTIVATOR.

2 Sheets—Sheet 1

No. 248,991

Patented Nov. 1, 1881.



Witnesses
 J. ...
 J. ...

Inventor
 G. W. Brown
 By ...

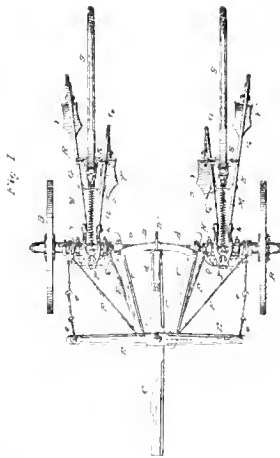
(Model)

G. W. BROWN
CULTIVATOR.

1 Sheet—Sheet 1

No. 248,992

Patented Nov. 1, 1881.



Witnesses
 J. ...
 J. ...

Inventor
 G. W. Brown
 By ...

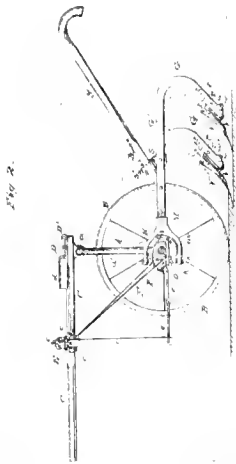
Model

G W BROWN
CULTIVATOR

4 Sheets—Sheet 1

No 248,992

Patented Nov. 1, 1881.



Witnesses
 Ed J. Siskind
 P. C. Eastwood

Inventor
 G. W. Brown
 By H. S. Richards

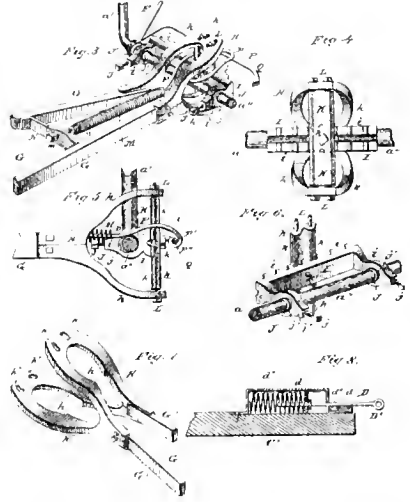
Model

G W BROWN
CULTIVATOR

4 Sheets—Sheet 2

No 248,992

Patented Nov. 1, 1881.



Witnesses
 Ed J. Siskind
 P. C. Eastwood

Inventor
 G. W. Brown
 By H. S. Richards

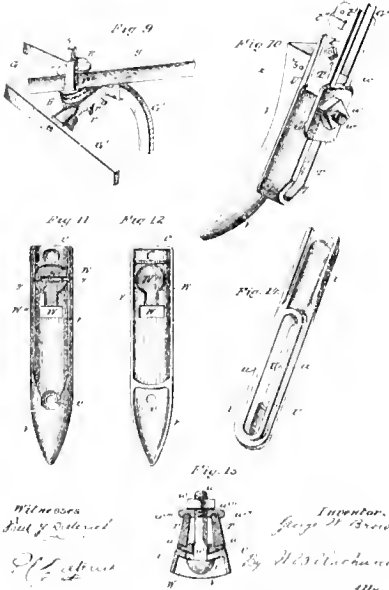
Model

G W BROWN
CULTIVATOR

4 Sheets—Sheet 4

No 248,992

Patented Nov. 1, 1881



Witnesses
 Ed J. Siskind
 P. C. Eastwood

Inventor
 G. W. Brown
 By H. S. Richards

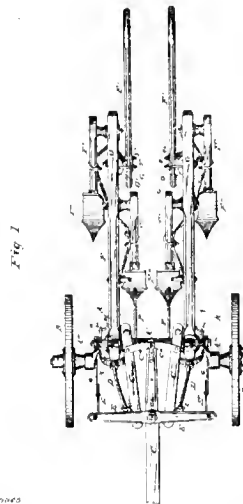
Model

G W BROWN & S G HOLYOKE
CULTIVATOR

4 Sheets—Sheet 3

No. 248,993

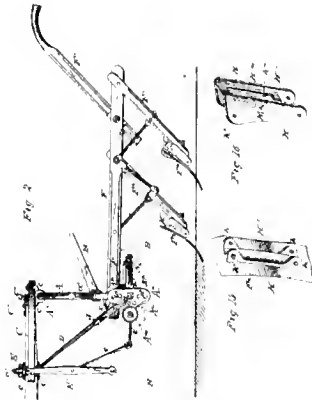
Patented Nov. 1, 1881.



Witnesses
 Ed J. Siskind
 P. C. Eastwood

Inventors
 G. W. Brown
 Samuel S. Holyoke
 By H. S. Richards

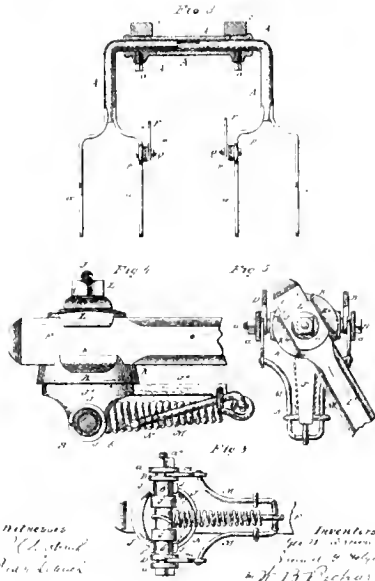
Model
G W BROWN & S G HOLYOKE
COLTIVATOR.
No 248,993 Patented Nov 1, 1881



Witnesses:
R. A. Stand
Ed. G. Linnick

Inventors:
George W. Brown
Samuel G. Holyoke
W. T. Richards

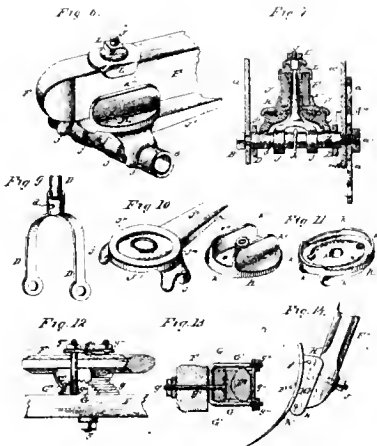
Model
G W BROWN & S G HOLYOKE
COLTIVATOR.
No 248,943 Patented Nov. 1, 1881.



Witnesses:
R. A. Stand
Ed. G. Linnick

Inventors:
George W. Brown
Samuel G. Holyoke
W. T. Richards

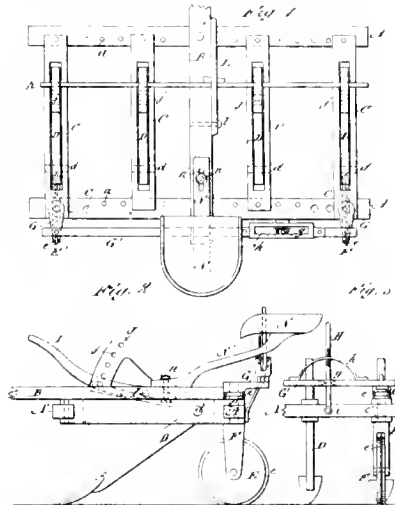
Model
G W BROWN & S G HOLYOKE
COLTIVATOR
No 248,993 Patented Nov 1 1881.



Witnesses:
R. A. Stand
Ed. G. Linnick

Inventors:
George W. Brown
Samuel G. Holyoke
W. T. Richards

No Model
F O WILLIAMS
WHEEL CULTIVATOR
No 250,180. Patented Nov. 29, 1881.



Witnesses:
C. S. Vassar
C. S. Vassar

Inventor:
F. O. Williams
ATTORNEYS.

No Model
J. W. HOLLSON
 CULTIVATOR
 No. 250,361
 Patented Dec. 6, 1881.

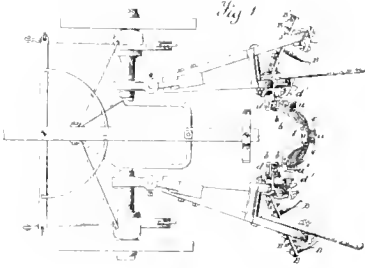
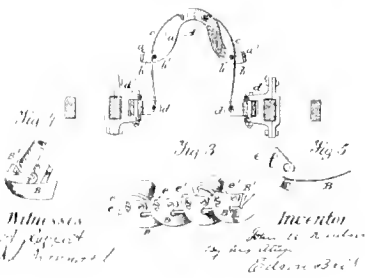
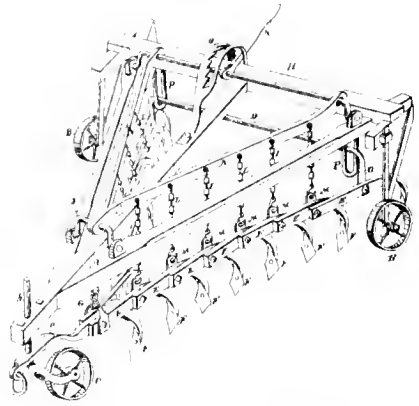


Fig. 2



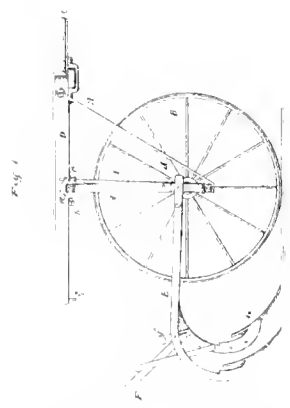
Witness
 J. W. Hollson
 Inventor
Witness
 J. W. Hollson
 Inventor

No. Model
A. EVANS & J. PRAPER
 CULTIVATOR
 No. 250,517
 Patented Dec. 6, 1881



Witness
 A. Evans & J. Praper
 Inventors
Witness
 A. Evans & J. Praper
 Inventors

No Model
J. BRADY
 CULTIVATOR
 No. 250,876
 Patented Dec. 13, 1881



Witness
 J. Brady
 Inventor
Witness
 J. Brady
 Inventor

No Model
J. BRADY
 CULTIVATOR
 No. 250,876
 Patented Dec. 13, 1881

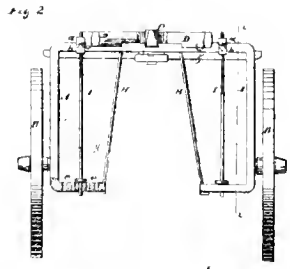
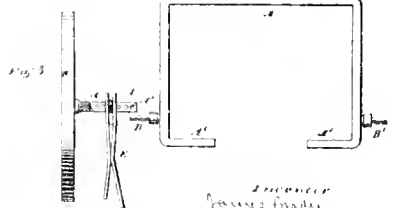


Fig. 3



Witness
 J. Brady
 Inventor
Witness
 J. Brady
 Inventor

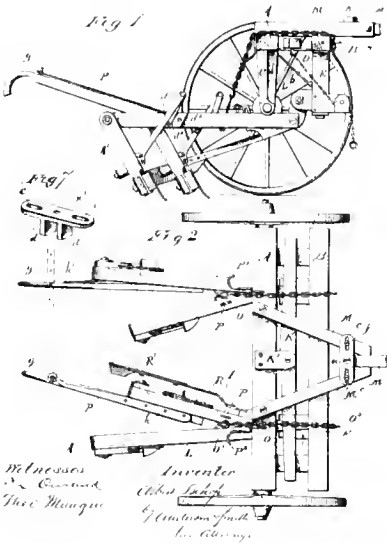
(Model)

A TSCHOP
CULTIVATOR

2 Sheets—Sheet 1

No. 251,656.

Patented Dec. 27, 1881.



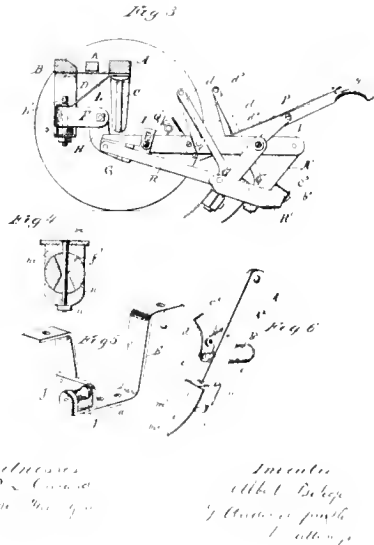
(Model)

A TSCHOP
CULTIVATOR

2 Sheets—Sheet 2

No. 251,656

Patented Dec. 27, 1881.

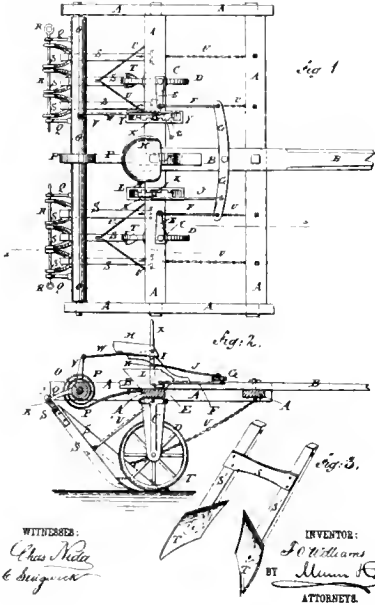


(No Model)

F O WILLIAMS.
CULTIVATOR.

No. 262,183

Patented Jan. 10, 1882

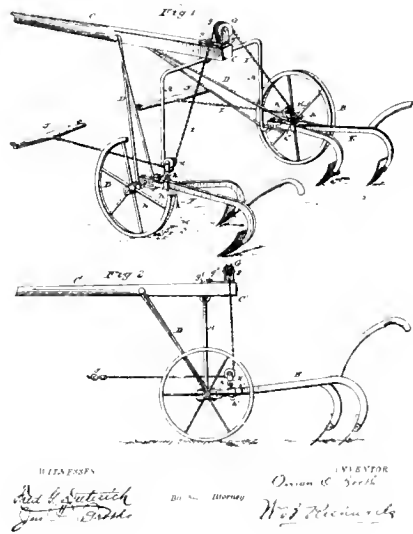


(Model)

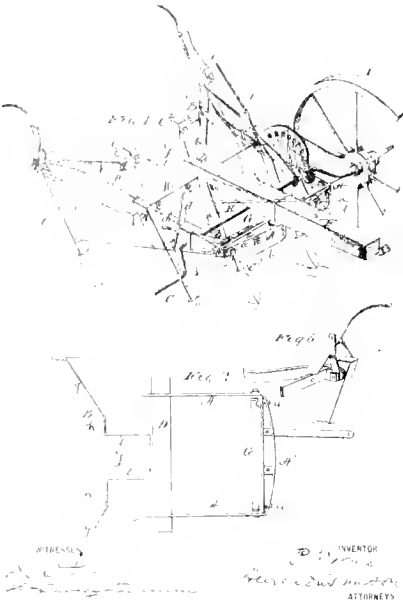
G O BOOTH
CULTIVATOR

No. 262,174

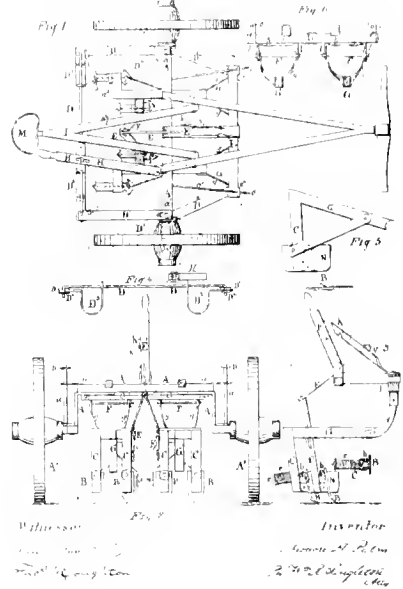
Patented Jan. 10, 1882.



P F WELLS
WHEEL CULTIVATOR
No 252,794 Patented Jan 24, 1882

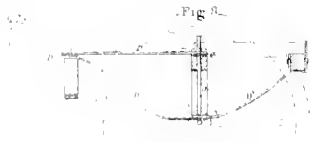
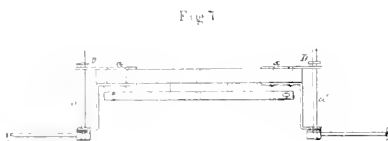


Model 1
T A PALM
WHEEL CULTIVATOR
No 252,794 Patented Jan 24, 1882



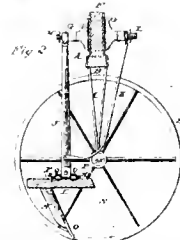
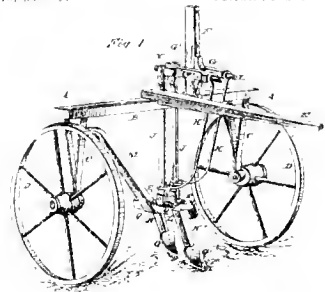
Witness
Inventor
T A Palm
27 and 28 High Street
New York

Model
T A PALM
WHEEL CULTIVATOR
No 252,794 Patented Jan 24, 1882



Witness
Inventor
T A Palm
27 and 28 High Street
New York

No Model 1
A GUMP
CULTIVATOR
No 259,837 Patented Jan 24, 1882



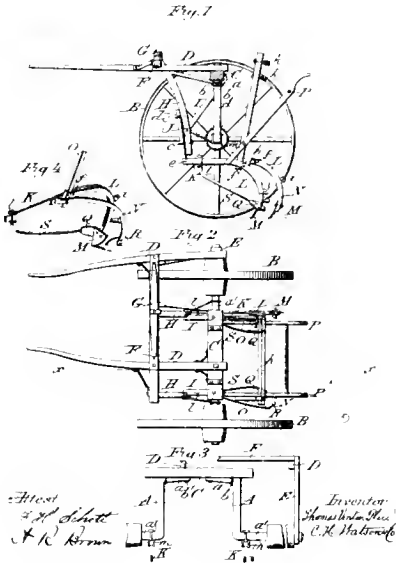
Witness
Inventor
A Gump
27 and 28 High Street
New York

(No Model)

T V PLICE
SULKY FLOW

No. 253,761.

Patented Feb. 14, 1882.

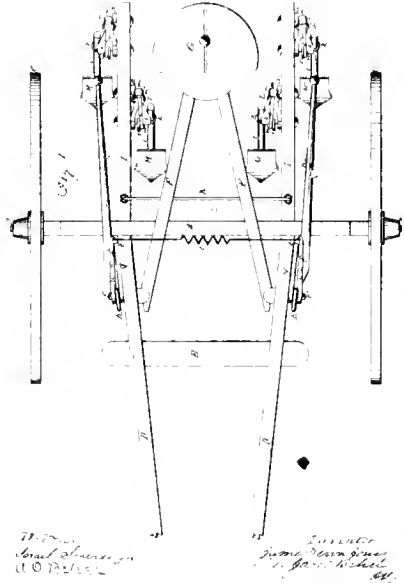


(No Model)

J H JONES
CULTIVATOR

No. 253,869

Patented Feb 21, 1882.

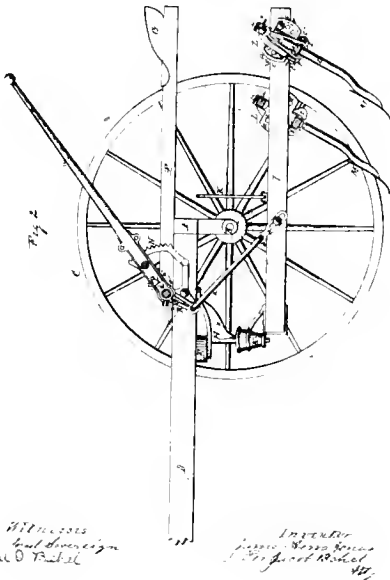


(No Model)

J H JONES
CULTIVATOR

No. 253,869

Patented Feb. 21, 1882.

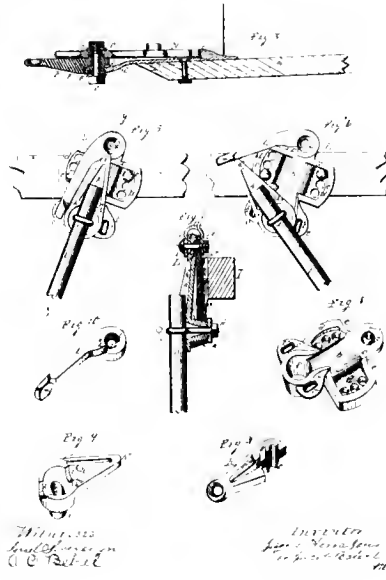


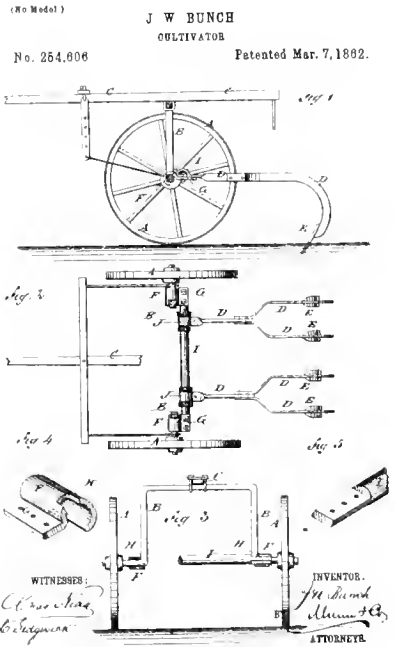
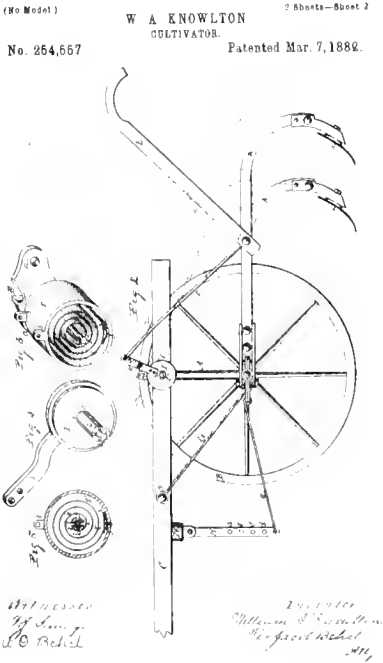
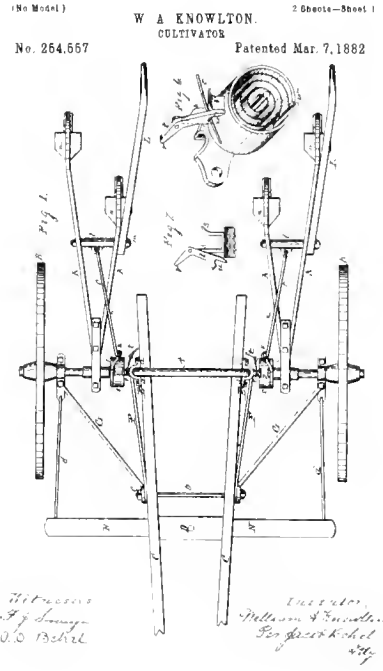
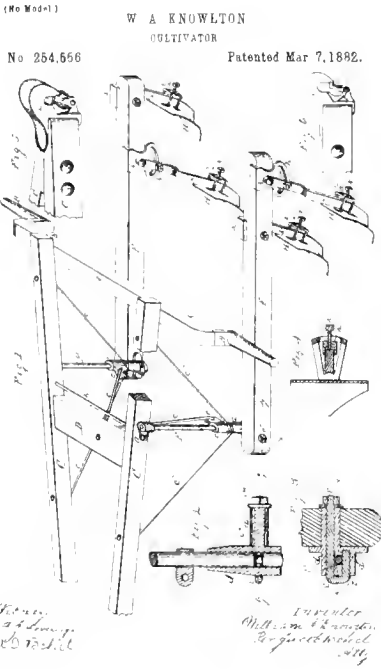
(No Model)

J H JONES
CULTIVATOR

No. 253,869

Patented Feb 21, 1882





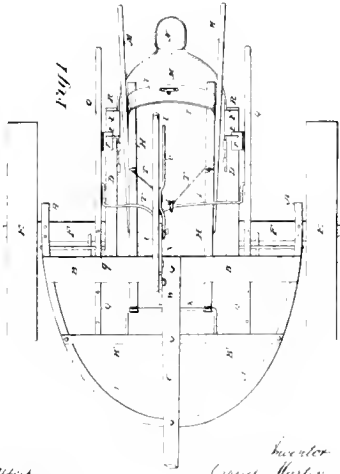
(No Model)

G MARTIN
CULTIVATOR.

2 Sheets—Sheet 1

No. 264,776.

Patented Mar. 7, 1882.



Witness
Geo. S. Smallwood Jr
E. W. Johnson

Inventor
George Martin
by Knight & Co

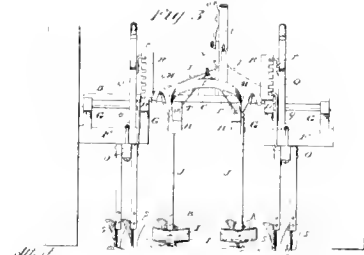
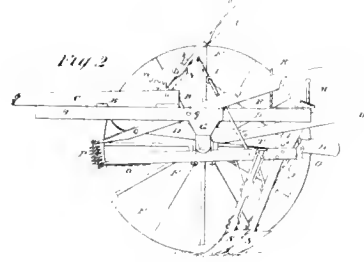
(No Model)

G MARTIN
CULTIVATOR.

2 Sheets—Sheet

No. 264,776

Patented Mar. 7, 1882.



Witness
Geo. S. Smallwood Jr
E. W. Johnson

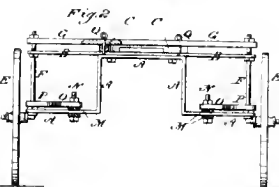
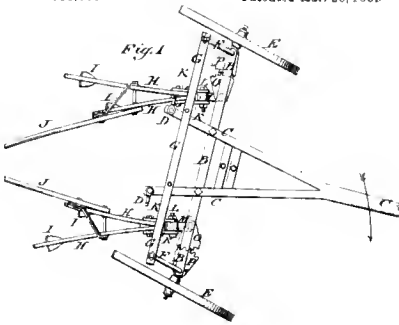
Inventor
George Martin
by Knight & Co

(No Model)

T A PURET
CULTIVATOR.

Patented Mar. 26, 1882

No. 255,669



WITNESSES:
Ramon J. Trenchell
C. Sigerson

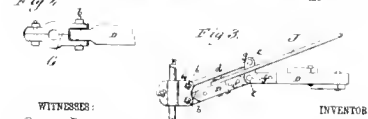
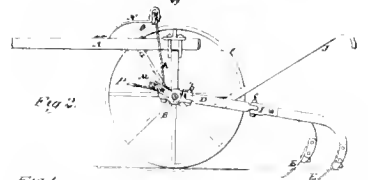
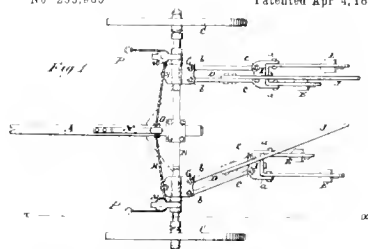
INVENTOR:
T. A. Puret
BY Allen C. E.
ATTORNEY'S.

(No Model)

L P HIATT.
CULTIVATOR.

Patented Apr. 4, 1882

No. 255,983



WITNESSES:
Ramon J. Trenchell
C. Sigerson

INVENTOR:
L. P. Hiatt
BY Allen C. E.
ATTORNEY'S.

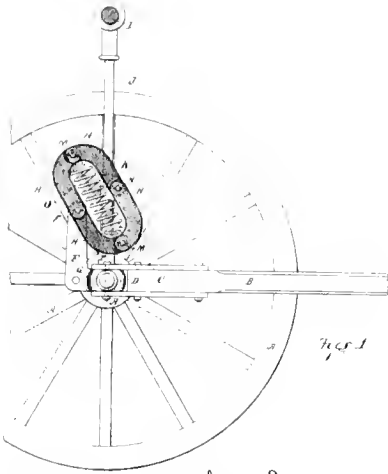
(No Model)

J M LONG
CULTIVATOR SPRING

2 Sheets—Sheet 1

No 256,012

Patented Apr. 4, 1882.



WITNESSES
Chas. Albrooks
John Seery

John M. Long INVENTOR
by James M. See
ATTORNEY

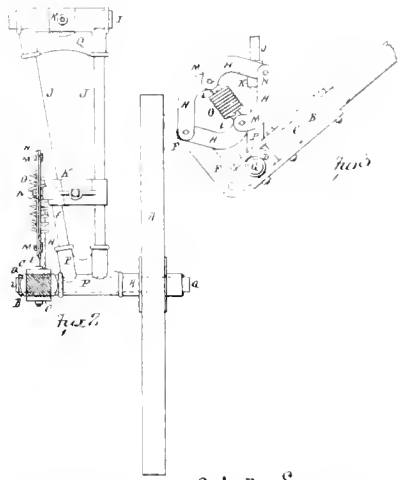
(No Model)

J. M. LONG
CULTIVATOR SPRING.

2 Sheets—Sheet 2

No 256,012

Patented Apr. 4, 1882.



WITNESSES
Chas. Albrooks
John Seery

John M. Long INVENTOR
by James M. See
ATTORNEY

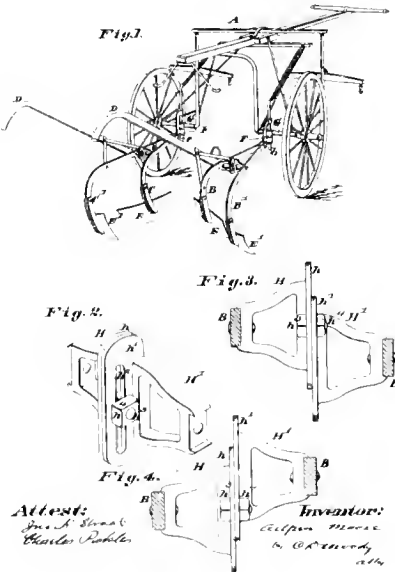
(No Model)

G. MOORE.
CULTIVATOR.

2 Sheets—Sheet 1

No. 256,029

Patented Apr 4, 1882.



Attest:
Chas. Albrooks
Charles Parker

Inventor:
G. Moore
by W. C. Moody
att

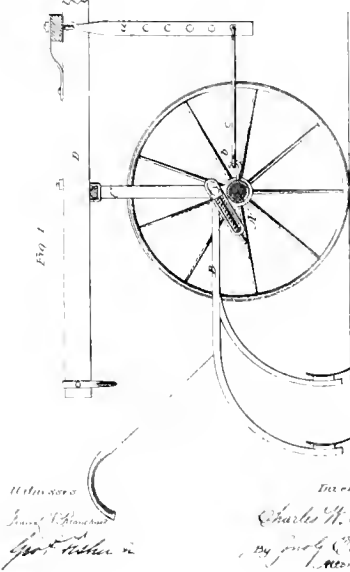
(No Model)

C W POST
CULTIVATOR.

2 Sheets—Sheet 1

No. 256,044

Patented Apr. 4, 1882.



Witneses
James A. Blodgett
Geo. W. Allen

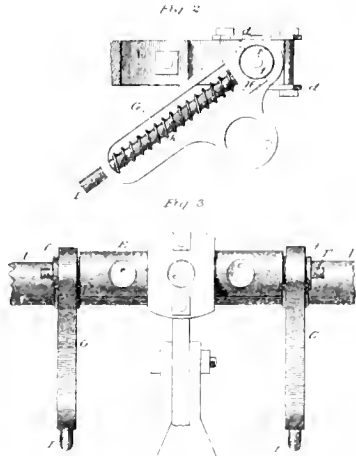
Inventor
Charles W. Post
by Geo. W. Allen
Attorney

No. 256,044

C W POST
CULTIVATOR.

3 Sheets—Sheet 2

Patented Apr. 4, 1882



Witnesses

John J. ...
John ...

Inventor

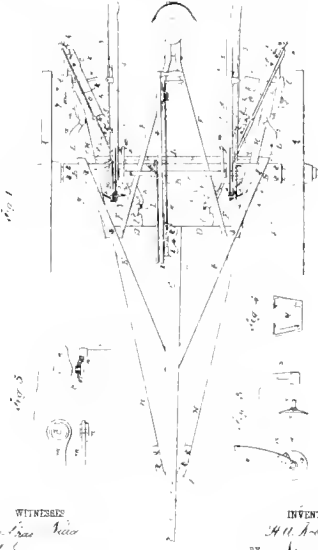
Charles H. Post
By ...

No. 268,374

H A ROBERTSON
CULTIVATOR.

3 Sheets—Sheet 1

Patented Apr 11, 1882.



Witnesses
...

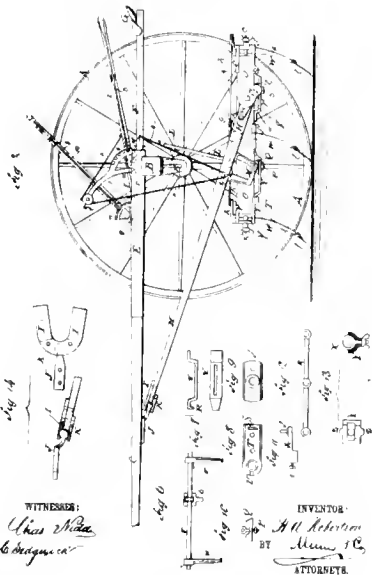
Inventor
H. A. Robertson
BY *...*
ATTORNEYS

No. 256,374

H A ROBERTSON
CULTIVATOR

3 Sheets—Sheet 2

Patented Apr 11, 1882.



Witnesses
...

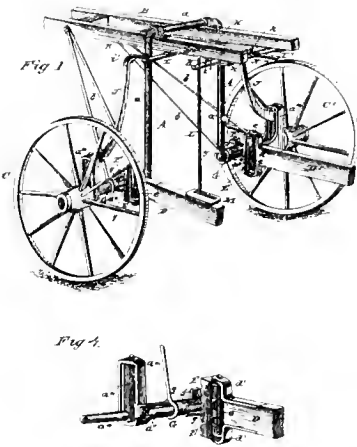
Inventor
H. A. Robertson
BY *...*
ATTORNEYS

No. 266,612

R H AVERY
CULTIVATOR.

3 Sheets—Sheet 1

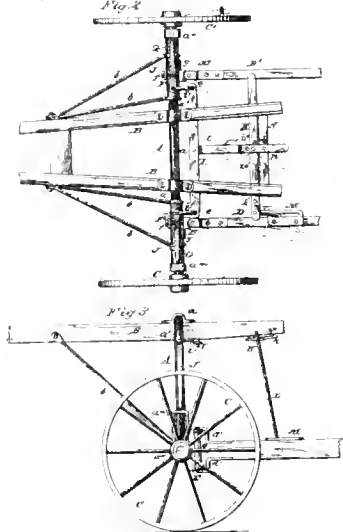
Patented Apr 18, 1882.



Witnesses
...

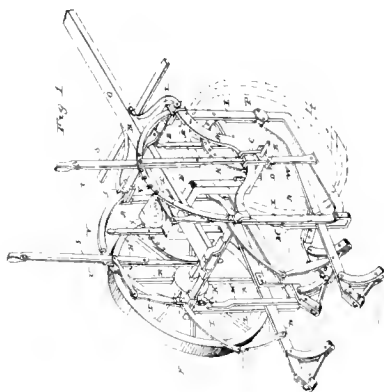
Inventor
Richard Avery
BY *...*
ATTORNEYS

Model 1
R H AVERY
 CULTIVATOR
 No 266,612 Patented Apr 18, 1882



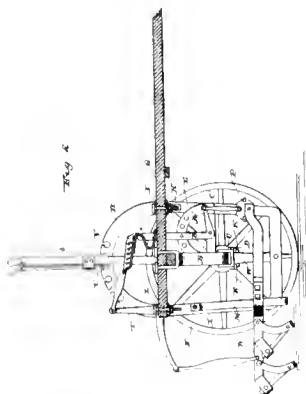
WITNESSES
And L. Dietrich
P. C. Laird
 INVENTOR
R. H. Avery
 per
W. B. Richardson attorney

(Model)
J. M. PHILLIPS.
 SULKY PLOW.
 No. 267,063. Patented Apr. 26, 1882.



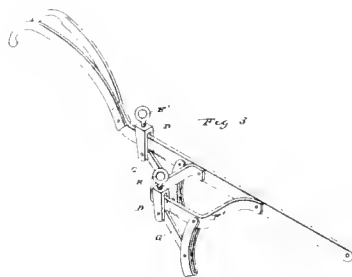
Witnesses
Edwin L. Young
J. J. McCreedy
 Inventor
John M. Phillips
 by *C. M. Alexander*
 Attorney

(Model)
J. M. PHILLIPS.
 SULKY PLOW.
 No. 267,063. Patented Apr. 26, 1882.



Witnesses
Edwin L. Young
J. J. McCreedy
 Inventor
John M. Phillips
 by *C. M. Alexander*
 Attorney

(Model)
J. M. PHILLIPS.
 SULKY PLOW.
 No. 267,063 Patented Apr 26, 1882.



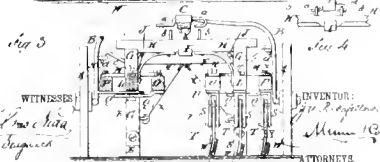
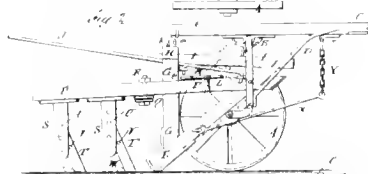
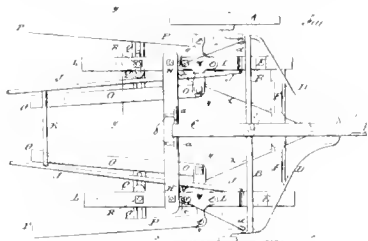
Witnesses
Edwin L. Young
J. J. McCreedy
 Inventor
John M. Phillips
 by *C. M. Alexander*
 Attorney

(No Model)

J W ROCKAFELLOW
SULKY CULTIVATOR.

No. 257,074

Patented Apr 25, 1882.



WITNESSES
Chas. W. ...
L. ...

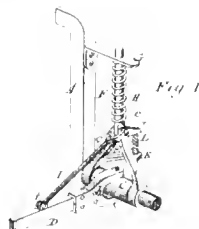
INVENTOR:
J. W. Rockafellow
ATTORNEYS

(No Model)

E P LYNCH
CULTIVATOR.

No. 257,228

Patented May 2, 1882.



Attest
Henry ...
D. P. ...

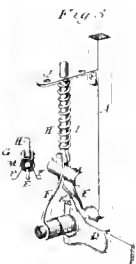
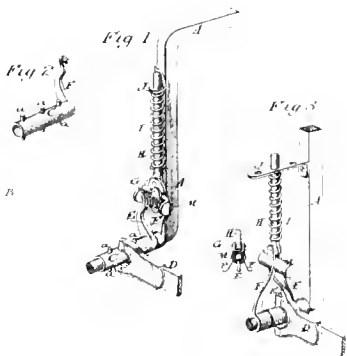
Inventor
E. P. Lynch
By his Atty
July 5, 1882.

(No Model)

E. P. LYNCH
CULTIVATOR.

No. 257,229.

Patented May 2, 1882.



Attest
Henry ...
Walter ...

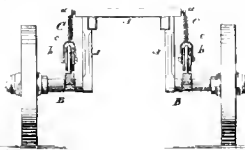
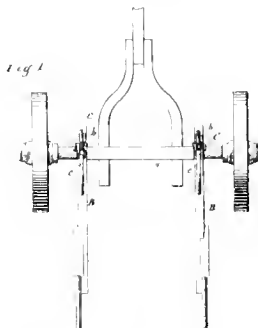
Inventor
E. P. Lynch
By his Atty
July 5, 1882.

(No Model)

A P WEBBER
CULTIVATOR.

No. 257,257.

Patented May 2, 1882.



Witnesses
R. ...
A. ...

Inventor
Alanson P. Webber
By his Atty

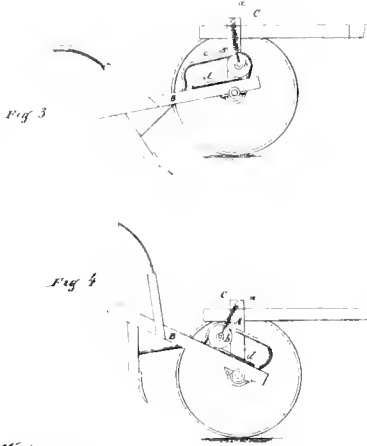
(No Model.)

A P WEBBER
CULTIVATOR.

2 Sheets—Sheet 2

No 257,257

Patented May 2, 1882.



Witnesses
A. W. Brown
B. H. Stone

Inventor
A. P. Webber
By H. C. Wood, Atty.

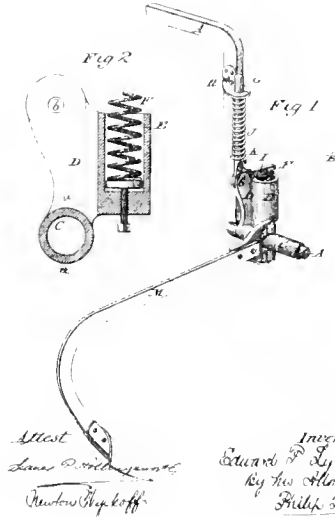
(No Model.)

E P LYNCH
WHEEL CULTIVATOR

2 Sheets—Sheet 1

No 257,730.

Patented May 9, 1882.



Attest
James P. Wood, Atty.
Newton Shipkoff

Inventor
Edward P. Lynch
By his Atty.
Philip S. Dodge

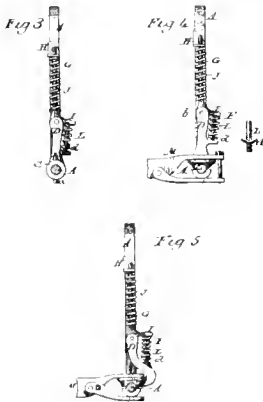
(No Model.)

E. P. LYNCH.
WHEEL CULTIVATOR.

3 Sheets—Sheet 1

No. 257,730.

Patented May 9, 1882



Attest
James P. Wood, Atty.
Newton Shipkoff

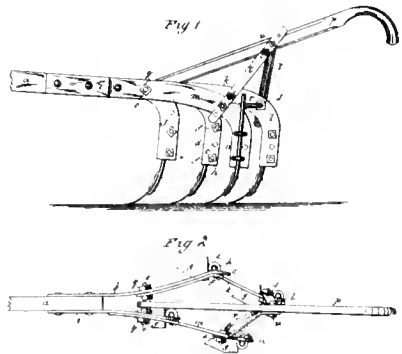
Inventor
Edward P. Lynch
By his Atty.
Philip S. Dodge

(No Model.)

A MESSERSMITH.
WHEEL CULTIVATOR.

No. 258,097.

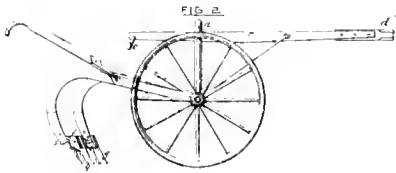
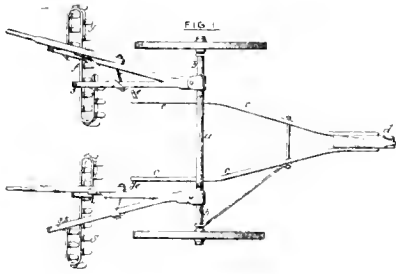
Patented May 16, 1882.



WITNESSES:
W. W. Hollingsworth
W. H. Reed

INVENTOR:
A. Messersmith
By James P. Wood
ATTORNEY

(No Model) T C DODSWORTH 2 Sheets-Sheet 1
CULTIVATOR.
No. 258,724 Patented May 30, 1882.



WITNESSES
Charles Brodhead
W. C. Smith

INVENTOR
Thomas C. Dodsworth
by Johnson & Johnson
1882.

(No Model) T C DODSWORTH 2 Sheets-Sheet 2
CULTIVATOR.
No. 258,724 Patented May 30, 1882

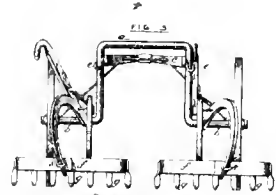


FIG. 4

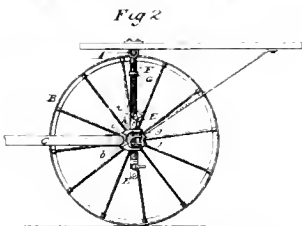
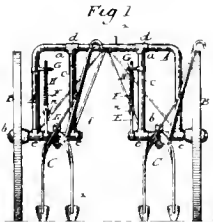
FIG. 5

FIG. 6

WITNESSES
Charles Brodhead
W. C. Smith

INVENTOR
Thomas C. Dodsworth
by Johnson & Johnson
1882.

(No Model) E A WRIGHT 2 Sheets-Sheet 1
CULTIVATOR
No. 259,826 Patented June 13, 1882.



Attest
Henry C. Henshaw
Newton H. Hoff

Inventor
Eugene A. Wright
by his ally
Philip J. Dorff.

(No Model) E A WRIGHT 2 Sheets-Sheet 2
CULTIVATOR
No. 259,826. Patented June 13, 1882

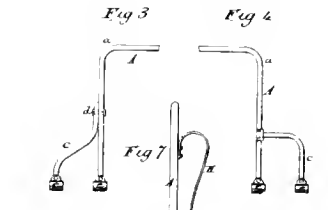


Fig 3

Fig 4

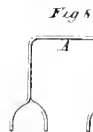


Fig 5

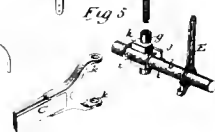
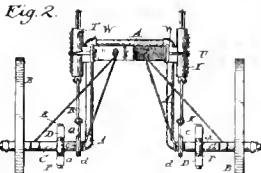
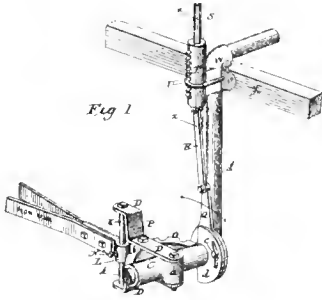


Fig 6

Attest
Henry C. Henshaw
Newton H. Hoff

Inventor
Eugene A. Wright
by his ally
Philip J. Dorff.

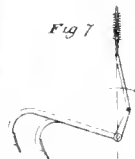
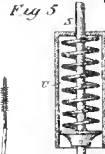
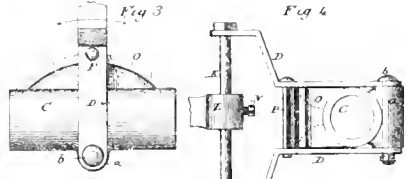
(Model.) D BERLEW & M. L. KISSELL. CULTIVATOR. Patented July 4, 1882.



Attest
Henry P. Hollingsworth
Harry Shipley

Inventors
David Berlew
& M. L. Kissell
By their atty
July 4 1882

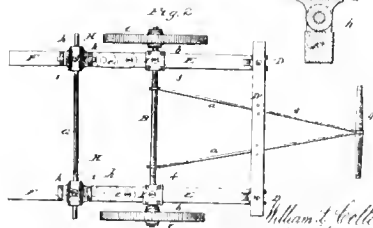
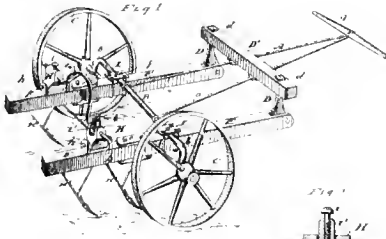
(Model.) D BERLEW & M. L. KISSELL. CULTIVATOR. Patented July 4, 1882.



Attest
Henry P. Hollingsworth
Harry Shipley

Inventors
David Berlew
& M. L. Kissell
By their atty
Philip J. Dorla

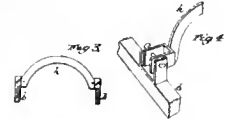
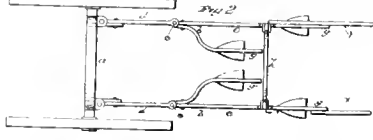
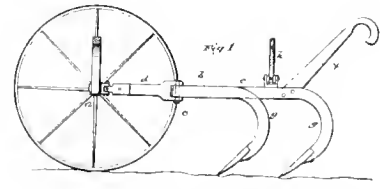
(No Model.) W L. COLTON & H A. SCHERMERHORN. CULTIVATOR. Patented July 4, 1882.



WITNESSES:
A. L. Dittsch
July 4 1882

William L. Colton
& H. A. Schermerhorn
INVENTORS
by Louis Rugges & Co
ATTORNEYS.

(No Model.) C W HINDS. CULTIVATOR. Patent d July 11, 1882.



WITNESSES
C. L. Bates
Philadelphia

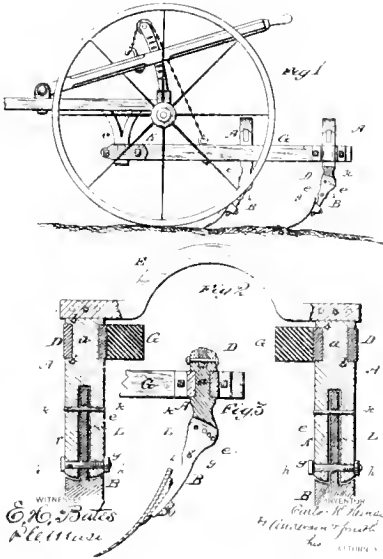
Inventor
Charles W. Hinds
by Amos J. Ford
ATTORNEYS

(No Model.)

C W HINDS.
CULTIVATOR.

No. 281,093

Patented July 11, 1882.

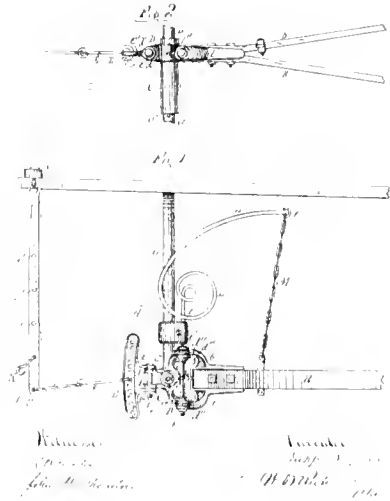


(No Model.)

L LUPPEN
CULTIVATOR

No. 261,663

Patented Aug 1, 1882



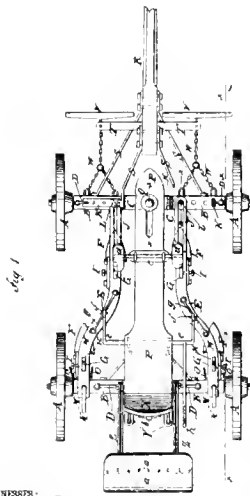
(Model.)

W SCOTT
CULTIVATOR

Sheet—Sheet 1

No 262,487

Patented Aug 8, 1882



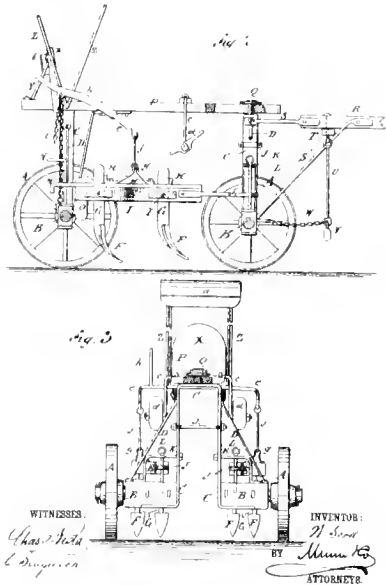
(Model.)

W SCOTT
CULTIVATOR

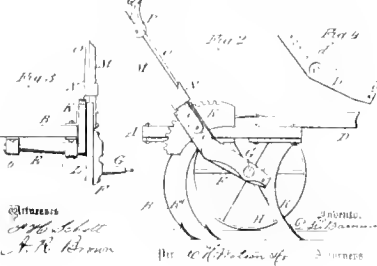
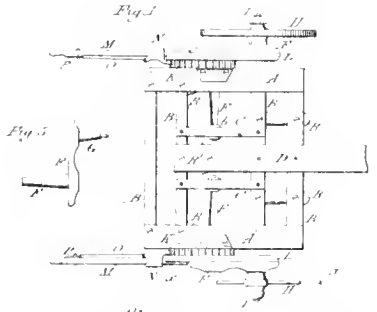
Sheet—Sheet 2

No 262,487

Patented Aug 8, 1882

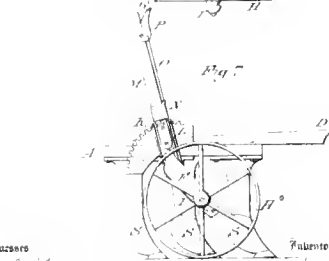
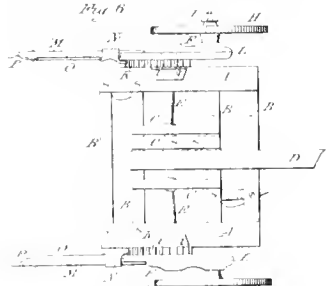


No. Model 1 D L BARNUM
COMBINED WHEEL CULTIVATOR AND GANG PLOW
No. 262,726 Patented Aug. 15, 1882



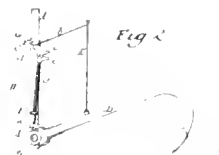
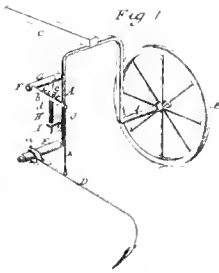
Witnesses: *Wm. H. Bell*
J. R. Benson
Per *W. H. Bell* & *J. R. Benson*

No. Model 1 D L BARNUM
COMBINED WHEEL CULTIVATOR AND GANG PLOW
No. 262,726 Patented Aug. 15, 1882



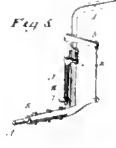
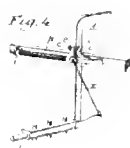
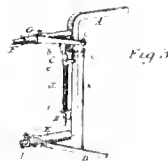
Witnesses: *Wm. H. Bell*
J. R. Benson
Per *W. H. Bell* & *J. R. Benson*

No. Model 1 E P LYNCH
CULTIVATOR
No. 263,187 Patented Aug. 22, 1882



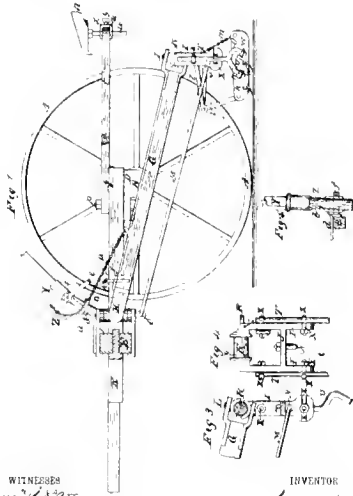
Witnesses: *Wm. H. Bell*
J. R. Benson
Per *Wm. H. Bell* & *J. R. Benson*

No. Model 1 E P LYNCH
CULTIVATOR
No. 263,187 Patented Aug. 22, 1882



Witnesses: *Wm. H. Bell*
J. R. Benson
Per *Wm. H. Bell* & *J. R. Benson*

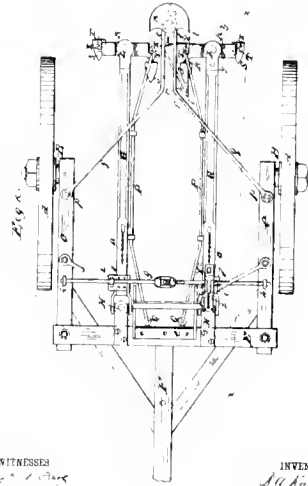
No. Model 1
E A KNIGHT
CULTIVATOR
No. 266,840 Patented Oct. 10, 1882



WITNESSES
John D. Adams
John G. Adams

INVENTOR
E A Knight
BY *Allen J. C.*
ATTORNEY

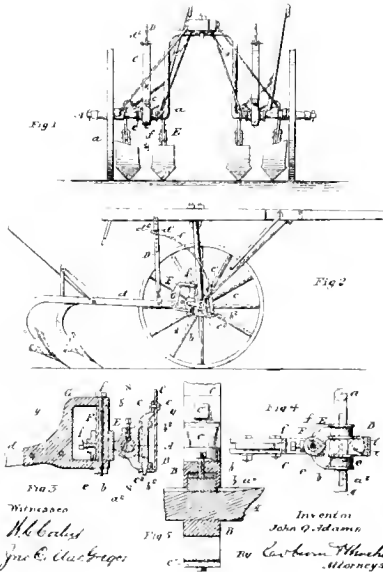
No. Model 1
E A KNIGHT
CULTIVATOR
No. 266,830 Patented Oct. 10, 1882



WITNESSES
John D. Adams
John G. Adams

INVENTOR
E A Knight
BY *Allen J. C.*
ATTORNEY

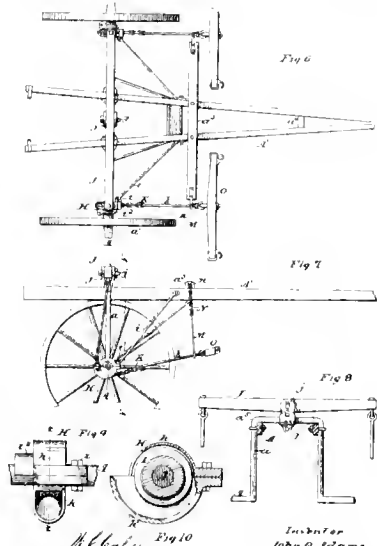
(No Model)
J Q ADAMS
CULTIVATOR
No. 266,666 Patented Oct. 17, 1882



WITNESSES
John D. Adams
John G. Adams

INVENTOR
John Q. Adams
BY *Carbourn & Thacher*
ATTORNEYS

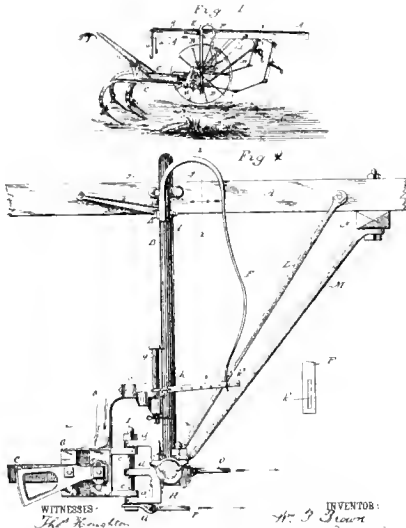
(No Model)
J Q. ADAMS.
CULTIVATOR.
No. 266,666 Patented Oct. 17, 1882



WITNESSES
John D. Adams
John G. Adams

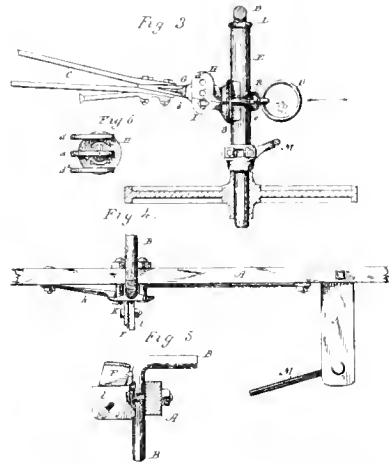
INVENTOR
John Q. Adams
BY *Carbourn & Thacher*
ATTORNEYS

(No Model) W P BROWN. 2 Sheets—Sheet 1
WHEELED CULTIVATOR.
No. 266,086 Patented Oct. 17, 1882



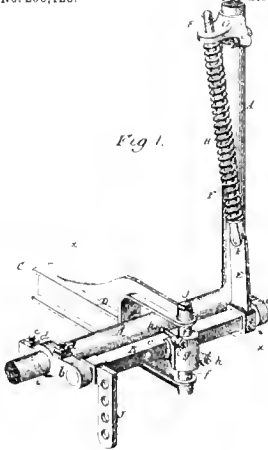
WITNESSES: *Edw. Kimball, Edward H. Brown*
INVENTOR: *W. P. Brown*
BY *James C. Coe* ATTORNEYS

(No Model) W P BROWN. 2 Sheets—Sheet 2
WHEELED CULTIVATOR.
No. 266,086 Patented Oct. 17, 1882



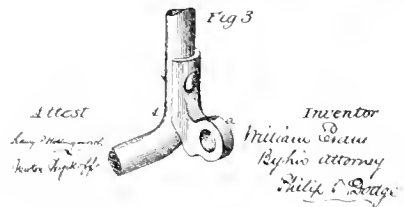
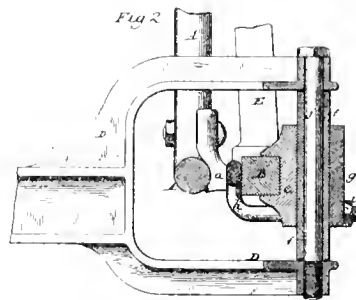
WITNESSES: *Edw. Kimball, Edward H. Brown*
INVENTOR: *W. P. Brown*
BY *James C. Coe* ATTORNEYS

(No Model) W. EVANS. 2 Sheets—Sheet 1
CULTIVATOR.
No. 266,123. Patented Oct. 17, 1882.



Attest: *Edward H. Brown, James C. Coe*
INVENTOR: *William Evans*
BY *John H. Dwyer*

(No Model) W EVANS. 2 Sheets—Sheet 2
CULTIVATOR.
No. 266,123 Patented Oct. 17, 1882



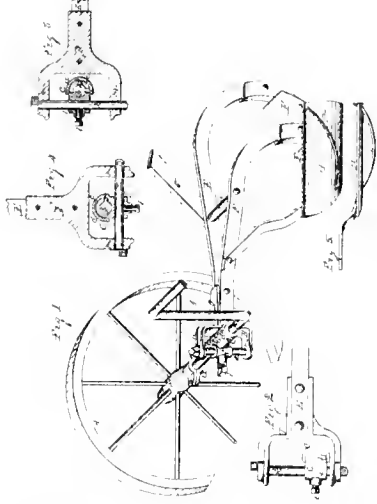
Attest: *Edw. Kimball, Edward H. Brown*
INVENTOR: *William Evans*
BY *John H. Dwyer*

(No Model)

W A KNOWLTON
CULTIVATOR

No. 286,482

Patented Oct. 24, 1882



Witnesses
J. W. ...
C. ...

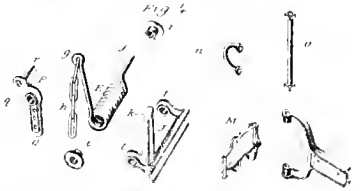
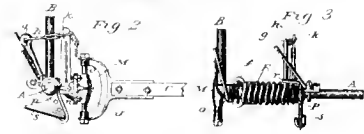
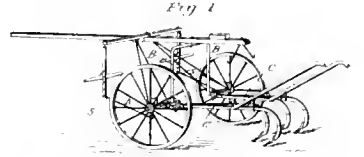
Inventor
W. A. Knowlton

(Model)

H H BUTLER
CULTIVATOR.

No. 287,670.

Patented Nov. 21, 1882.



Witnesses
J. W. ...
C. ...

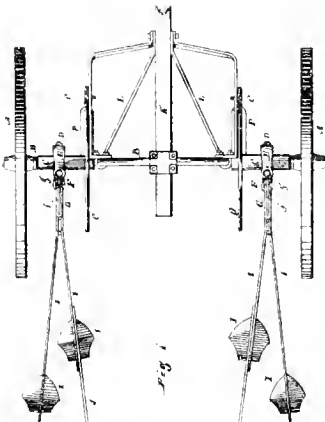
Inventor
H. H. Butler

(No Model)

J T HAMILTON
LIFTING DEVICE FOR CULTIVATOR BEAMS.

No. 288,887

Patented Dec. 12, 1882



Witnesses
M. H. ...
J. ...

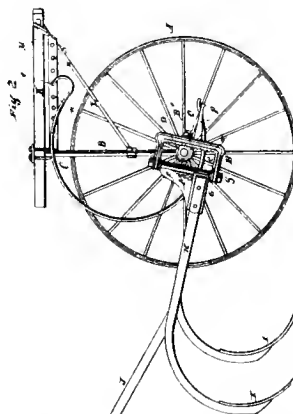
Inventor
James T. Hamilton

(No Model)

J T HAMILTON
LIFTING DEVICE FOR CULTIVATOR BEAMS.

No. 288,887

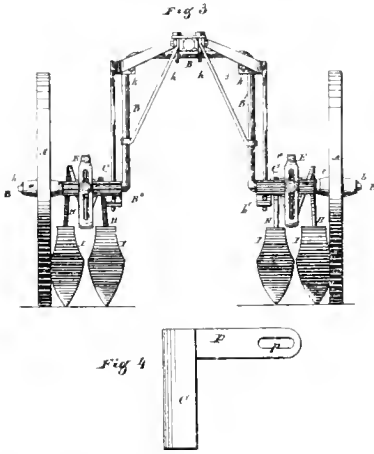
Patented Dec. 12, 1882



Witnesses
M. H. ...
J. ...

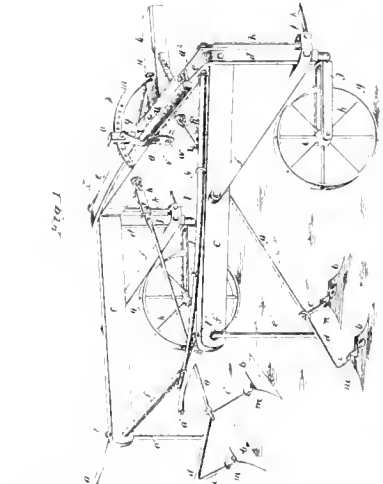
Inventor
James T. Hamilton

(No Model) J T HAMILTON 3 Sheets—Sheet 3
 LIFTING DEVICE FOR CULTIVATOR BEAMS.
 No. 288,887 Patented Dec. 12 1882



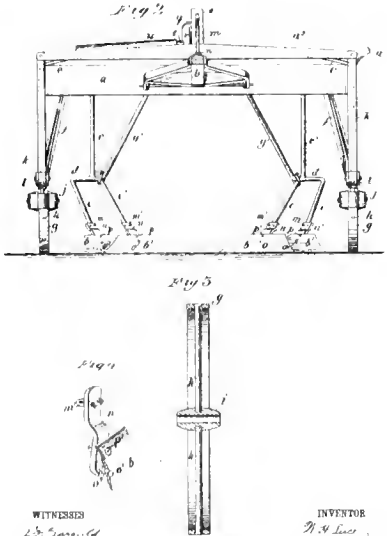
Witnesses: *Math. H. Miles*
John A. Powell
 Inventor: *James O. Hamilton*

(No Model) W H. LUCE 2 Sheets—Sheet 1
 CULTIVATOR.
 No. 269,689 Patented Dec. 26, 1882



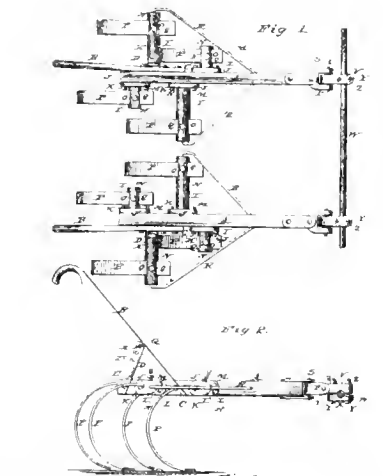
WITNESSES: *J. S. Johnson*
W. H. Luce
 Inventor: *W. H. Luce*
 BY *Wm. T. G.*
 ATTORNEY

(No Model) W H LUCE 2 Sheets—Sheet 2
 CULTIVATOR.
 No. 269,689 Patented Dec. 26, 1882



WITNESSES: *J. S. Johnson*
W. H. Luce
 Inventor: *W. H. Luce*
 BY *Wm. T. G.*
 ATTORNEY

(No Model) H. S SMILEY
 CULTIVATOR.
 No. 269,732 Patented Dec. 26, 1882

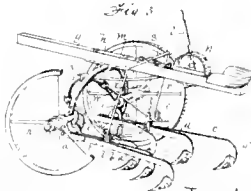
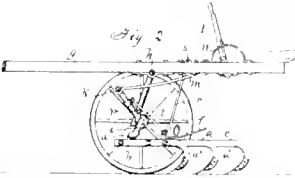
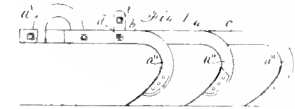


WITNESSES: *Phil. C. ...*
 Inventor: *Henry S. Smiley*
 BY *Wm. T. G.*
 ATTORNEY

(No Model)

P. ROONEY.
STRADDLE ROW CULTIVATOR.

No. 270,251. Patented Jan. 9, 1883



Witnesses
C. H. Smith
H. A. Stebbins

Inventor:
Patrick Rooney,
By Thomas G. Dring, Attorney

(No Model)

B. C. BRADLEY
CULTIVATOR

3 Sheets—Sheet 1

No. 270,629 Patented Jan. 16, 1883

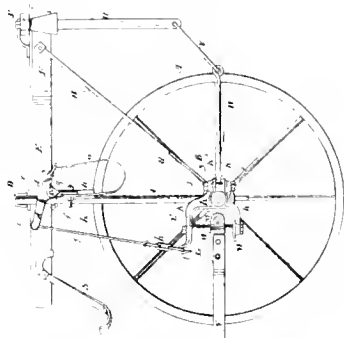


Fig. 1

Witnesses
Robert A. Shand
F. T. Case

Inventor:
B. C. Bradley,
By Robert A. Shand,
Attorney

(No Model)

B. C. BRADLEY
CULTIVATOR

3 Sheets—Sheet 2

No. 270,629 Patented Jan. 16, 1883

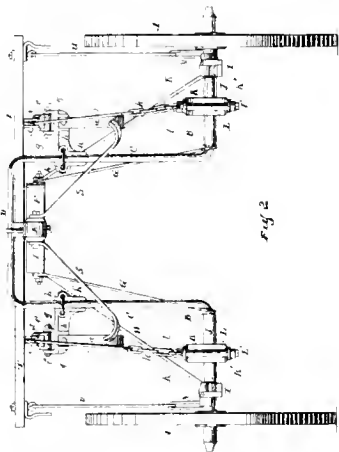


Fig. 2

Witnesses
Robert A. Shand
F. T. Case

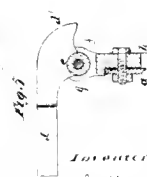
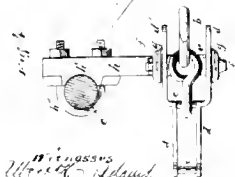
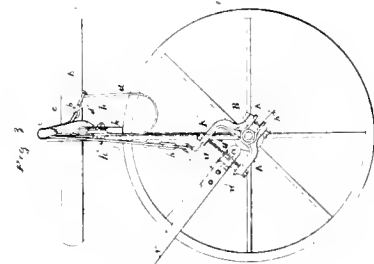
Inventor:
B. C. Bradley,
By Robert A. Shand,
Attorney

(No Model)

B. C. BRADLEY
CULTIVATOR

3 Sheets—Sheet 3

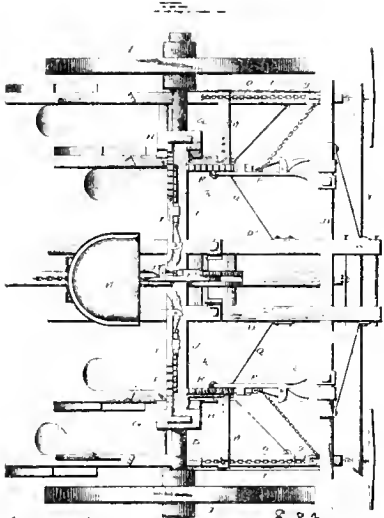
No. 270,629 Patented Jan. 16, 1883



Witnesses
Robert A. Shand
F. T. Case

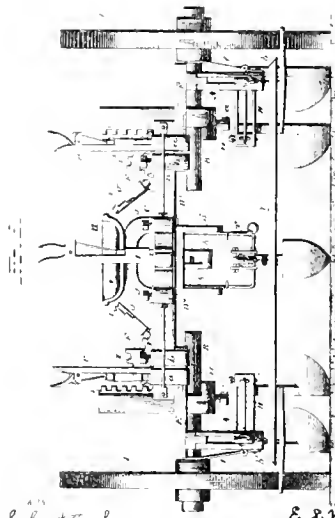
Inventor:
B. C. Bradley,
By Robert A. Shand,
Attorney

(No Model)
 E L MURRAY
 COMBINED WHEEL CULTIVATOR AND PLOW
 No. 272,460 Patented Feb. 20, 1883



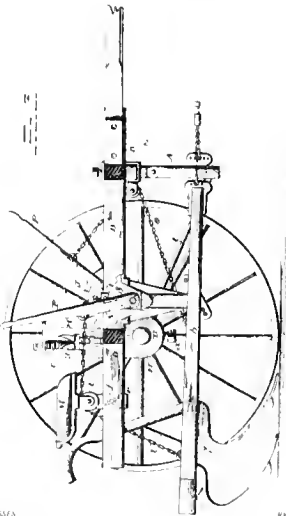
S. G. Hollingsham
J. G. W. G.
E. L. Murray
A. H. Chapman

(No Model)
 E L MURRAY
 COMBINED WHEEL CULTIVATOR AND PLOW
 No. 272,460 Patented Feb. 20, 1883



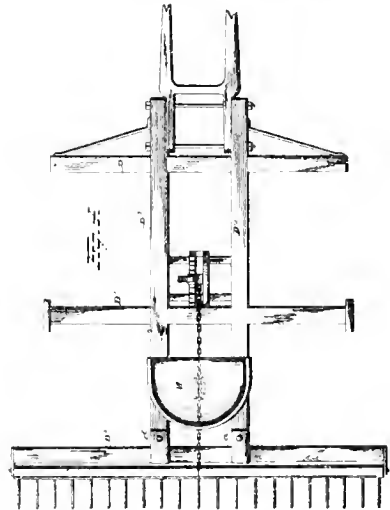
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J. G. W. G.
E. L. Murray
A. H. Chapman

(No Model)
 E L MURRAY
 COMBINED WHEEL CULTIVATOR AND PLOW
 No. 272,460 Patented Feb. 20, 1883



S. G. Hollingsham
J. G. W. G.
E. L. Murray
A. H. Chapman

(No Model)
 E L MURRAY
 COMBINED WHEEL CULTIVATOR AND PLOW
 No. 272,460 Patented Feb. 20, 1883



S. G. Hollingsham
J. G. W. G.
E. L. Murray
A. H. Chapman

(No Model)

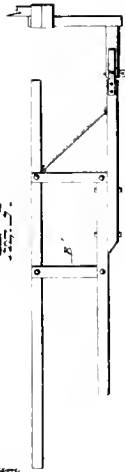
E. L. MURRAY

2 Sheets—Sheet 2

COMBINED WHEEL CULTIVATOR AND PLOW.

No. 272,460.

Patented Feb. 20, 1883.



WITNESSES

S. B. Nottingham
G. B. S. [unclear]

INVENTOR

E. L. Murray
By H. A. [unclear]

(No Model)

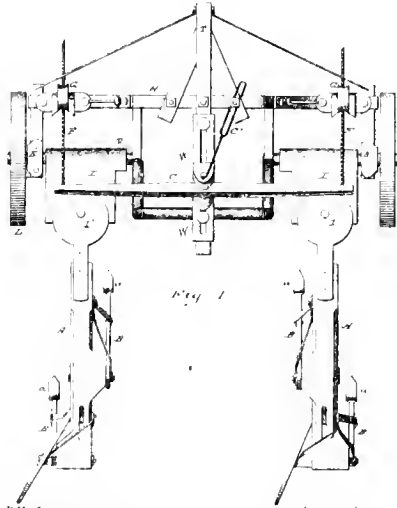
G. F. SEANK

2 Sheets—Sheet 1

CULTIVATOR.

No. 272,490

Patented Feb. 20, 1883.



Witnesses
Robert L. Schenck
H. A. [unclear]

Inventor

George F. Shank

(No Model)

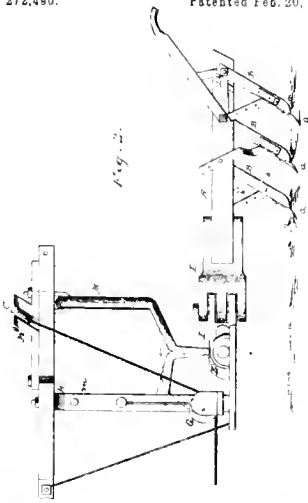
G. F. SEANK

2 Sheets—Sheet 2

CULTIVATOR

No. 272,490.

Patented Feb. 20, 1883.



Witnesses

Robert L. Schenck
H. A. [unclear]

Inventor

George F. Shank

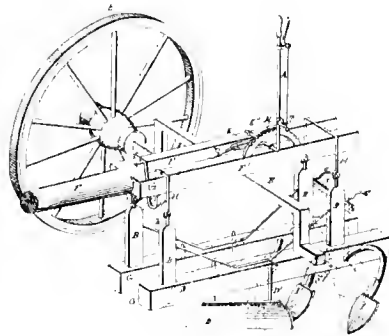
(Model)

J. KESTER.

CULTIVATING PLOW

No. 272,962

Patented Feb. 27, 1883.

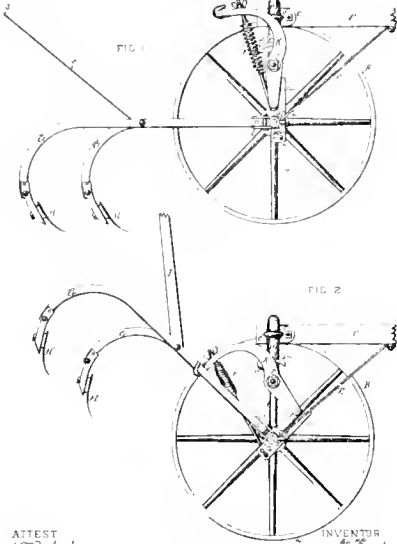


Witnesses

J. [unclear]
R. H. [unclear]

Inventor
John Kester

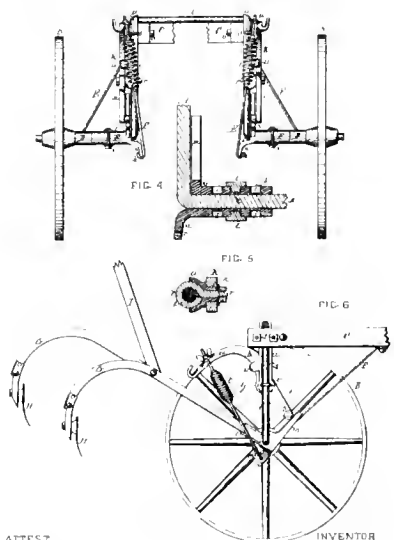
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W. McQuinn, Administrator
CULTIVATOR.
No. 273,673. Patented Mar. 6, 1883.



ATTEST
J. T. Schell
Att'y

INVENTOR
T. M. Flenniken
BY J. T. Schell
ATTY

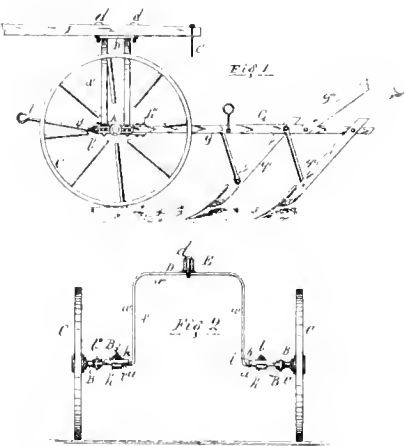
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W. McQuinn, Administrator
CULTIVATOR.
No. 273,673. Patented Mar. 6, 1883.



ATTEST
J. T. Schell
Att'y

INVENTOR
T. M. Flenniken
BY J. T. Schell
ATTY

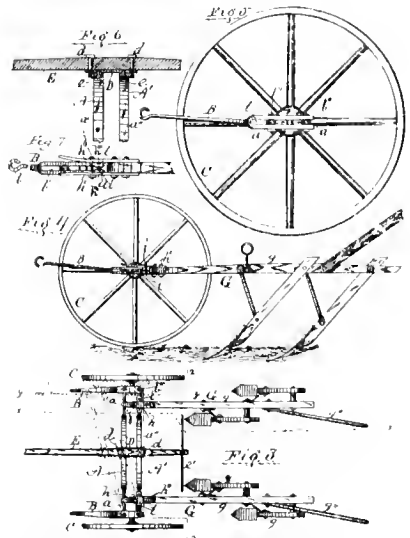
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No. 273,787. Patented Mar. 13, 1883.



Witness
W. H. Richards
James Hany

Inventor
J. E. Weir
By W. H. Richards
Att'y

(No Model) J E WEIR. 2 Sheets—Sheet 2
CULTIVATOR.
No. 273,787. Patented Mar. 13, 1883.



Witness
W. H. Richards
James Hany

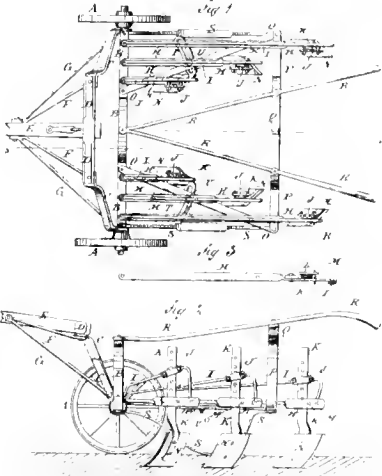
Inventor
J. E. Weir
By W. H. Richards
Att'y

(No Model.)

S. D. B. EISE
CULTIVATOR.

No. 274,616.

Patented Mar. 27, 1883.



WITNESSES
C. C. [Signature]
E. [Signature]

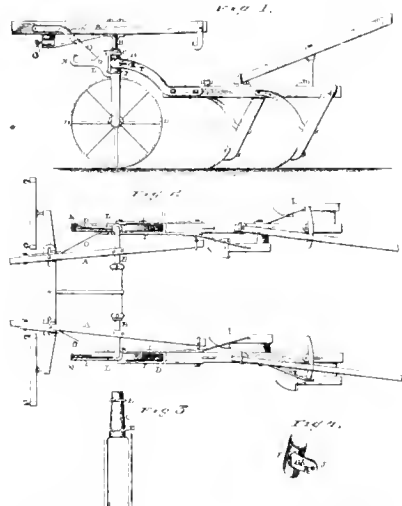
INVENTOR
S. D. B. EISE
BY *[Signature]*
ATTORNEYS

(No Model.)

C. D. CARTER
WHEEL CULTIVATOR.

No. 274,720.

Patented Mar. 27, 1883.



Witnesses
[Signature]
[Signature]

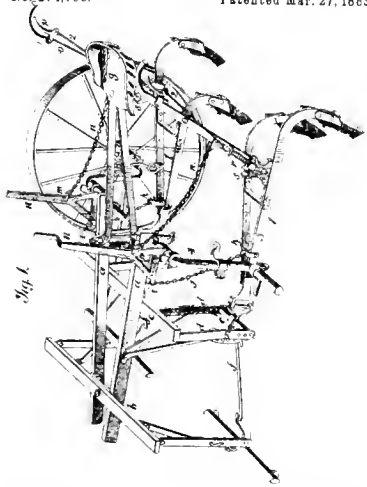
Inventor
C. D. Carter
BY *[Signature]*

(No Model.)

L. LUPPEN
CULTIVATOR.

No. 274,798.

Patented Mar. 27, 1883.



Witnesses
A. [Signature]
A. G. [Signature]

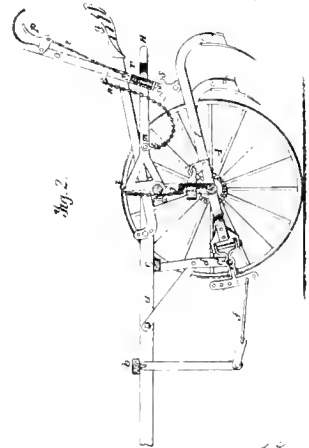
L. Luppen
Inventor
BY *[Signature]*

(No Model.)

L. LUPPEN.
CULTIVATOR.

No. 274,798

Patented Mar. 27, 1883



Witnesses
A. [Signature]
A. G. [Signature]

L. Luppen
Inventor
BY *[Signature]*

(No Model)

S. & R. DAY.
CULTIVATOR.

No. 274,920.

Patented Apr. 3, 1883.

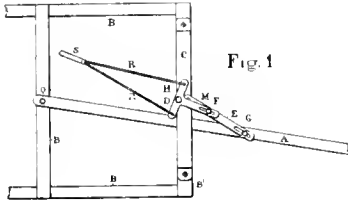


Fig. 1



Fig. 2.

Witnesses

W. H. Holt

Paul A. Goldsborough

Inventors

Samuel Day
and
Ransom Day

by A. B. Wham
Attorney at Law

(No Model)

J. LANE.
CULTIVATOR

No. 275,502.

Patented Apr. 10, 1883.

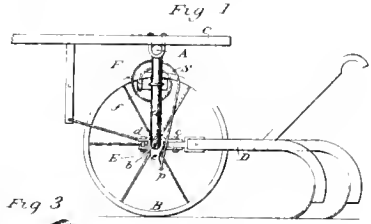


Fig. 1

Fig. 3

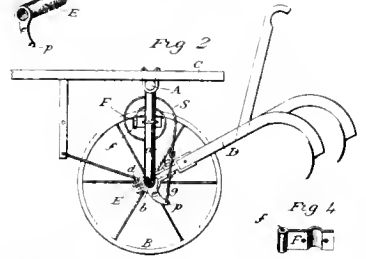


Fig. 2

Witnesses
Geo. C. Wilson
E. J. Lane

Fig. 4

Inventor
John Lane

(No Model)

A. E. BROOKS
CULTIVATOR

2 Sheets—Sheet 1

No. 275,577.

Patented Apr. 10, 1883.

Fig. 1

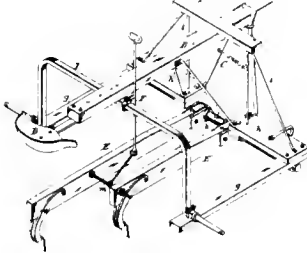
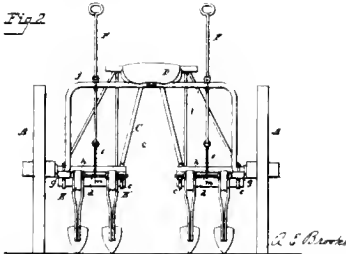


Fig. 2



Attest:
Wm. H. Holt
J. C. Thompson

Inventor
A. E. Brooks
by W. H. Holt
Attorney at Law

(No Model)

A. E. BROOKS
CULTIVATOR

2 Sheets—Sheet 2

No. 275,577

Patented Apr. 10, 1883.

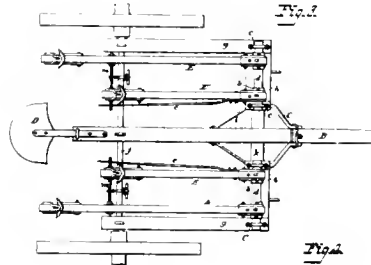


Fig. 2

Fig. 3

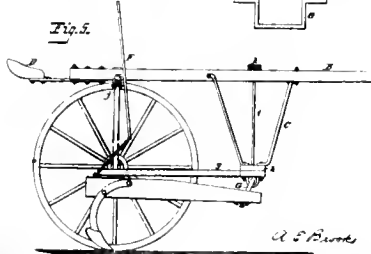


Fig. 3

Attest:
Wm. H. Holt
J. C. Thompson

Inventor
A. E. Brooks
by W. H. Holt
Attorney at Law

(No Model)

J W COLLINS
CULTIVATOR.

2 Sheets—Sheet 1

No. 276,160.

Patented Apr. 24, 1883

Fig. 1

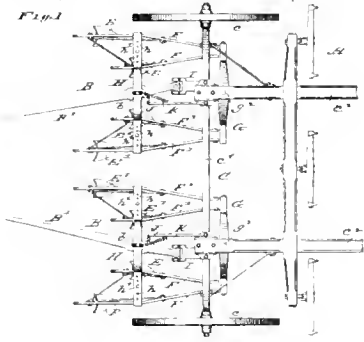
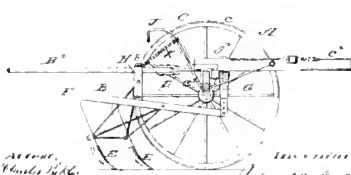


Fig. 2



Witness:
Wm. H. Stone
A. A. Daniels

Inventor:
John W. Collins
by J. C. M. G. & Co.

(No Model)

J W COLLINS
CULTIVATOR.

2 Sheets—Sheet 2

No. 276,160

Patented Apr. 24, 1883

Fig. 3

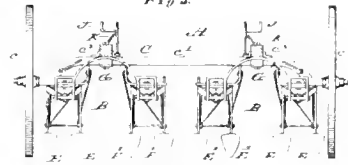
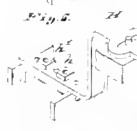


Fig. 4



Fig. 5



Witness:
Wm. H. Stone
A. A. Daniels

Inventor:
John W. Collins
by J. C. M. G. & Co.

(No Model)

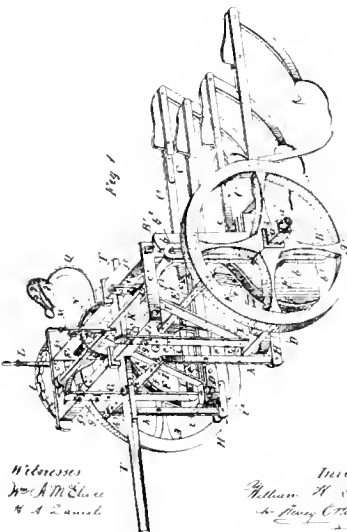
W H DETTER
CONVERTIBLE PLOW

4 Sheets—Sheet 1

No. 276,675.

Patented May 1, 1883.

Fig. 1



Witnesses:
Wm. H. Stone
A. A. Daniels

Inventor:
William H. Detter
by J. C. M. G. & Co.

(No Model)

W H DETTER
CONVERTIBLE PLOW

4 Sheets—Sheet 2

No. 276,675.

Patented May 1, 1883.

Fig. 2

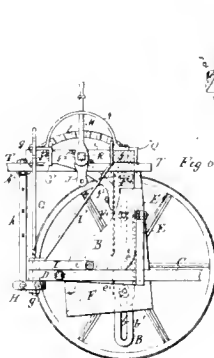
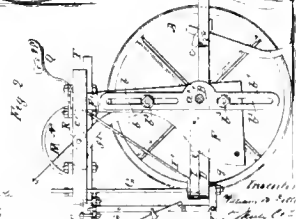


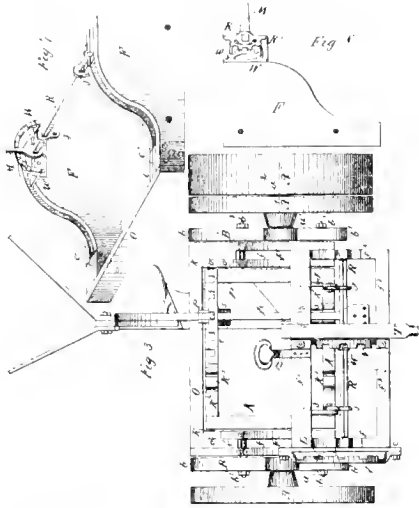
Fig. 3



Witnesses:
Wm. H. Stone
A. A. Daniels

Inventor:
William H. Detter
by J. C. M. G. & Co.

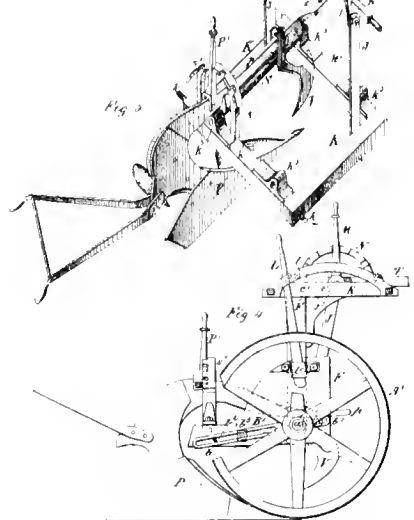
No Model
W H DETTER
CONVERTIBLE FLOW
No 276,675. Patented May 1, 1883.



Witnesses
J. M. McClure
J. A. Daniels

Inventor
William H. Detter
per J. M. McClure
J. A. Daniels

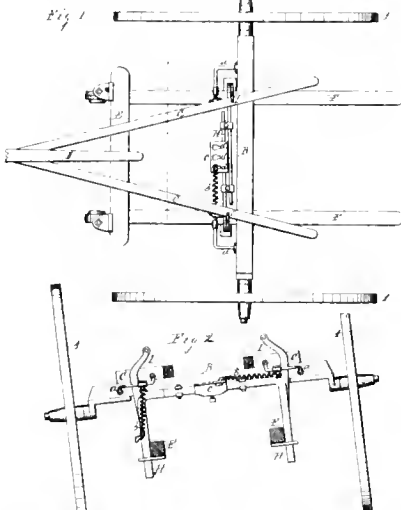
(No Model)
W H DETTER
CONVERTIBLE FLOW
No 276,675. Patented May 1, 1883.



Witnesses
J. M. McClure
J. A. Daniels

Inventor
William H. Detter
per J. M. McClure
J. A. Daniels

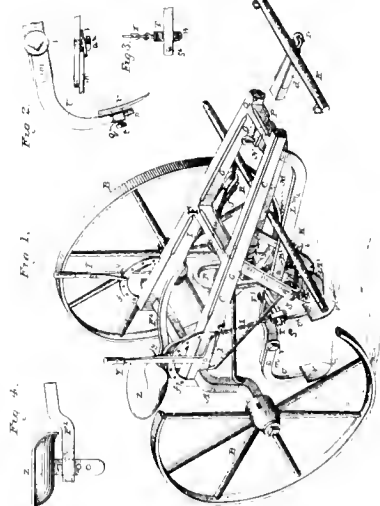
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M. L. UTTER
CULTIVATOR
No. 276,984. Patented May 1, 1883.



Witness
J. F. Schel

Inventor
M. L. Utter
per J. F. Schel

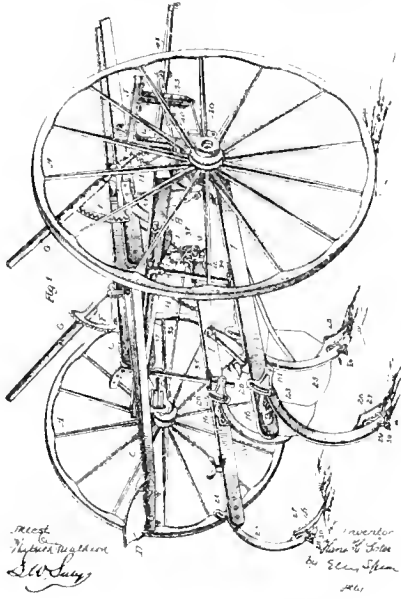
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WHEEL CULTIVATOR
No. 277,874. Patented May 22, 1883.



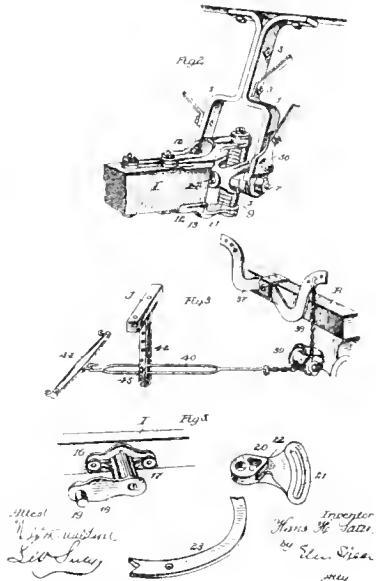
Witnesses
A. M. Brennan
Philip A. Martin

Inventors
Thomas W. Brennan
Daniel J. Brennan
per A. M. Brennan
Philip A. Martin

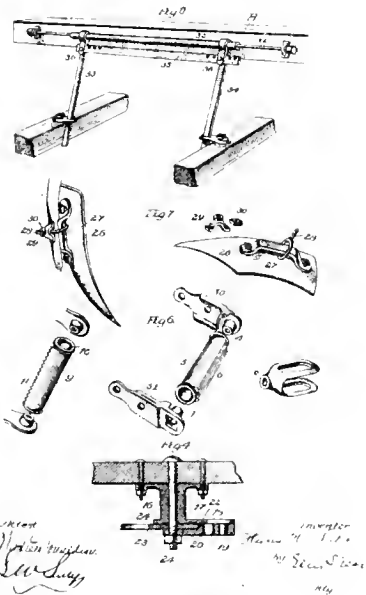
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No. 278,366 Patented May 29, 1883



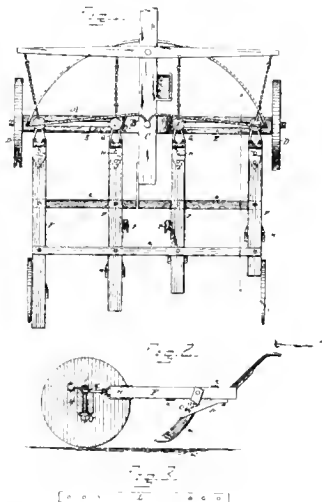
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No. 278,366 Patented May 29, 1883



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No. 278,366 Patented May 29, 1883



(No Model) E R HAM
No. 278,541 Patented May 29, 1883



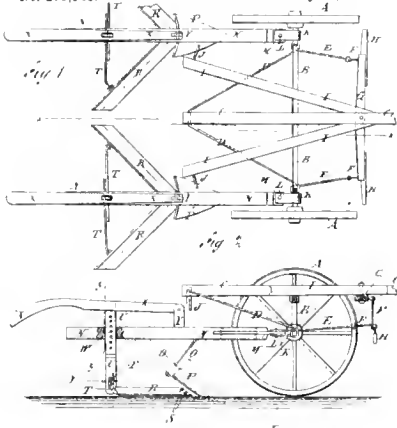
WITNESSES:
Wm. H. Sater
Wm. H. Sater

INVENTOR:
E. R. Ham
BY: Wm. H. Sater
ATTORNEY

(No Model)

O W HAMMOND
CULTIVATOR.

No. 278,543. Patented May 29, 1883.



WITNESSES
Oliver Case
& Augustus

INVENTOR
O W Hammond
BY
Merrill H. H.
ATTORNEYS

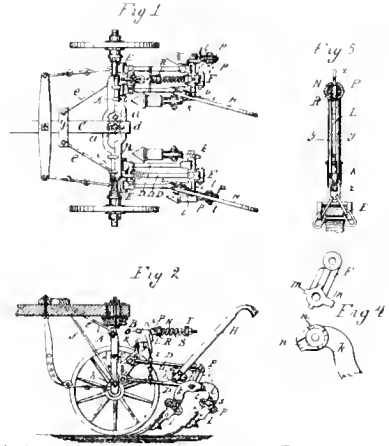
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D UNTHANK
CULTIVATOR

2 Sheets—Sheet 1

No. 278,672

Patented May 29, 1883



WITNESSES
Frank A. Ford
R. P. Wood

INVENTOR
Daniel Unthank

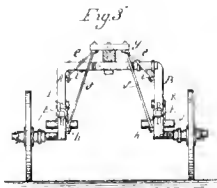
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D UNTHANK
CULTIVATOR

2 Sheets—Sheet 1

No. 278,672

Patented May 29, 1883



WITNESSES
Frank A. Ford
R. P. Wood

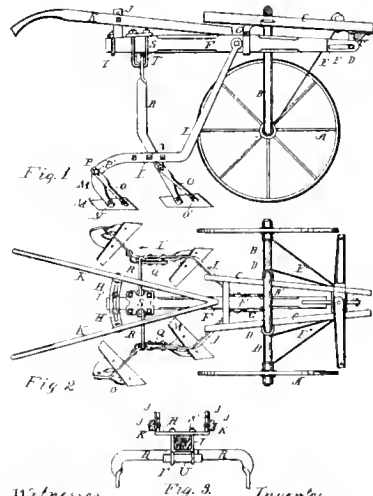
INVENTOR
Daniel Unthank

(No Model)

J H HOOBEE.
CULTIVATOR.

No. 279,245.

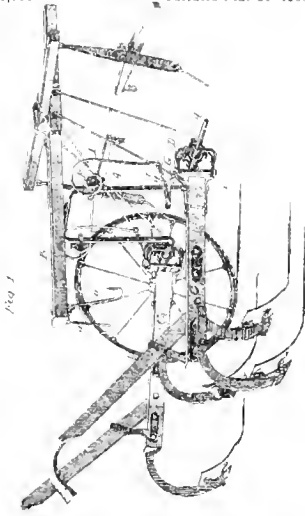
Patented June 12, 1883.



Witnesses
Robert Kirk
C. H. Jones

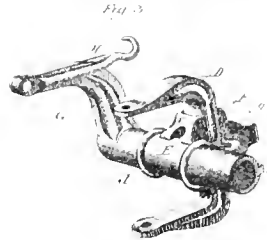
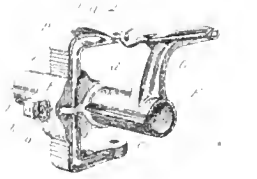
INVENTOR
John H. Hoobee

(No Model) C W POST
CULTIVATOR
No. 279,980 Patented June 26 1883



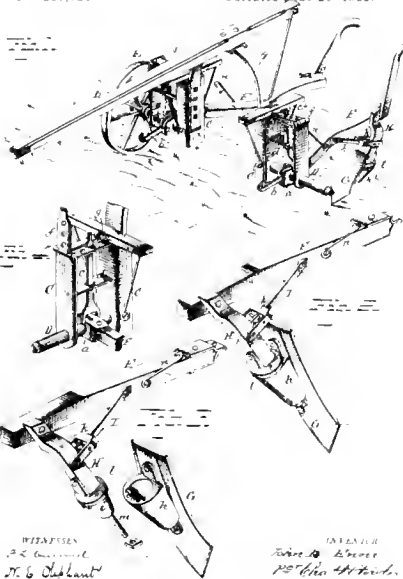
Witnesses
W. H. Elliott
Charles W. Post
J. H. Elliott
Attorneys

(No Model) C W POST
CULTIVATOR
No. 279,980 Patented June 26 1883



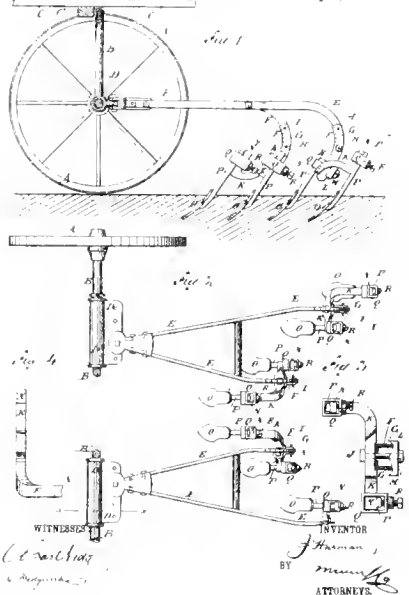
Witnesses
Geo. A. D. ...
W. H. Elliott
Charles W. Post
J. H. Elliott
Attorneys

(No Model) J B ENNIS
CULTIVATOR
No. 280,021 Patented June 26 1883.



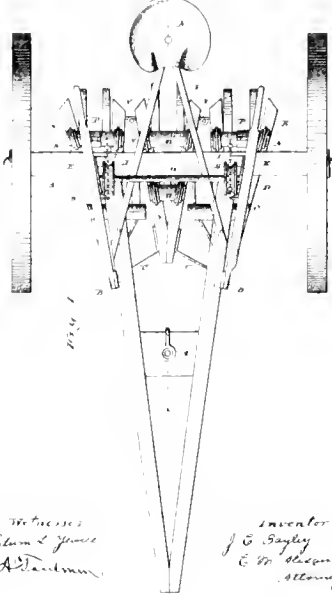
WITNESSES
J. C. ...
J. B. Ennis
Attorneys

(No Model) J HARMAN
ATTACHMENT FOR PLOWS AND CULTIVATORS
No. 280,615 Patented July 3, 1883



WITNESSES
J. H. Harman
Attorneys

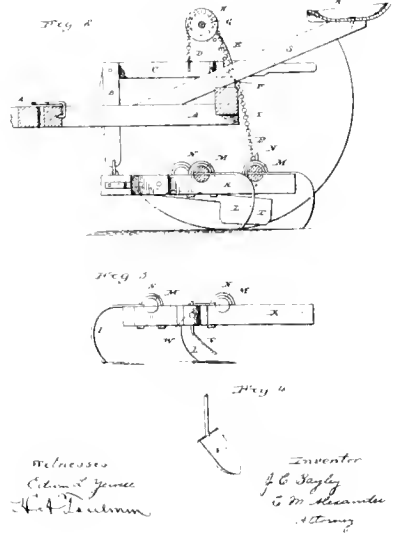
(No Model) J C BAYLEY 2 Sheets-Sheet 1
 SULKY CULTIVATOR
 No. 281,967 Patented July 24, 1883



Witnesses
 Charles James
 H. A. Deussen

Inventor
 J. C. Bayley
 E. M. Deussen
 Attorney

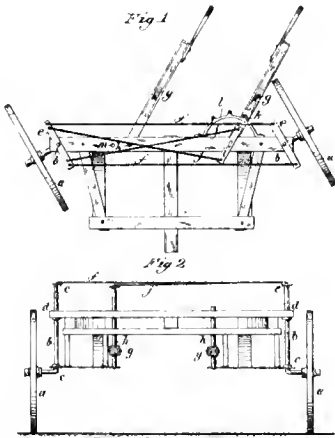
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 SULKY CULTIVATOR
 No. 281,967 Patented July 24, 1883.



Witnesses
 Charles James
 H. A. Deussen

Inventor
 J. C. Bayley
 E. M. Deussen
 Attorney

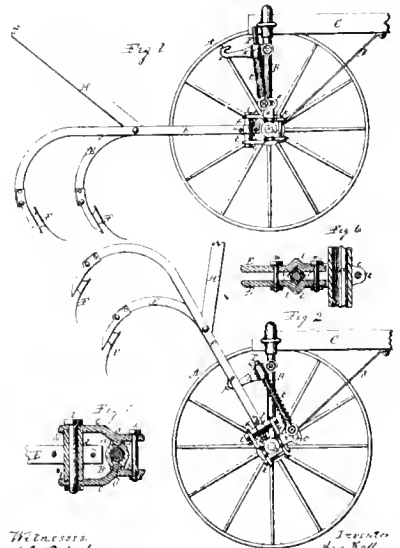
(No Model) J C & I JAY & B. L. CHAMBERS
 CULTIVATOR
 No. 282,198. Patented July 31, 1883.



WITNESSES
 J. C. Bayley
 C. W. Wright

INVENTOR
 J. C. Bayley
 BY E. M. Deussen
 Attorney

(No Model) A HALL 2 Sheets-Sheet 1
 CULTIVATOR.
 No. 282,885 Patented Aug. 7, 1883.



Witnesses
 A. C. B. B. B.
 J. C. Bayley

Inventor
 A. Hall
 P. B. B. B. B.

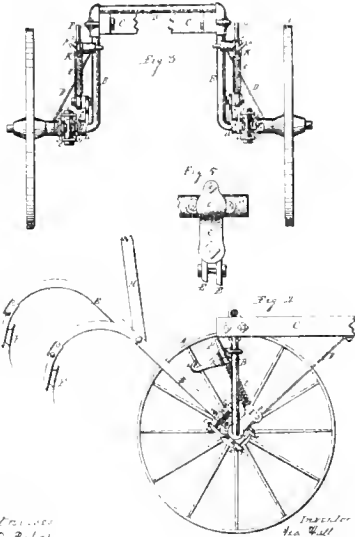
(No. Model)

A HALL
CULTIVATOR

Sheet—Sheet 1 2

No. 282,685.

Patented Aug. 7, 1883.



Witnesses
W. C. Bick
J. J. Gray

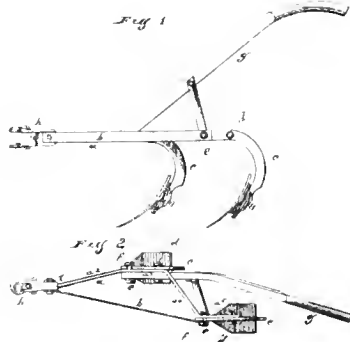
Inventor
A. Hall
By W. C. Bick
Attorney

(No. Model)

L GRAY
BEAM FOR SHOVEL PLOWS

No. 283,390.

Patented Aug. 21, 1883.



Witnesses
W. C. Bick
J. J. Gray

Inventor
L. Gray
By W. C. Bick
Attorney

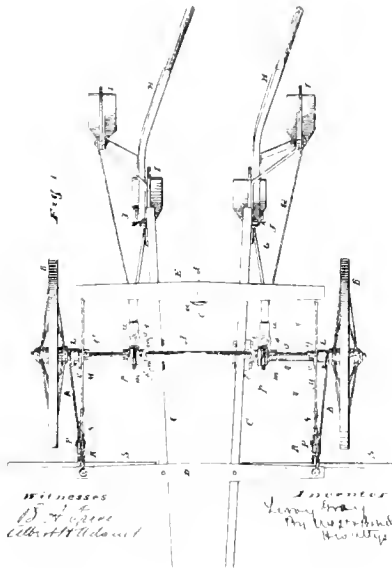
(No. Model)

L GRAY
CULTIVATOR

3 Sheets—Sheet 1

No. 283,775

Patented Aug. 28, 1883



Witnesses
W. C. Bick
J. J. Gray

Inventor
L. Gray
By W. C. Bick
Attorney

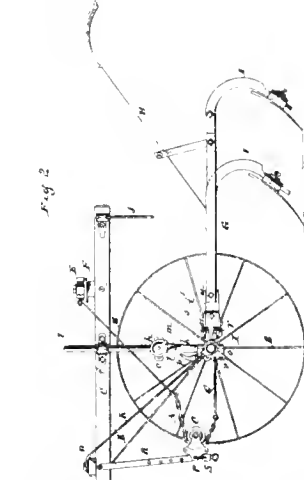
(No. Model)

L GRAY
CULTIVATOR

3 Sheets—Sheet 2

No. 283,775

Patented Aug. 28, 1883.



Witnesses
W. C. Bick
J. J. Gray

Inventor
L. Gray
By W. C. Bick
Attorney

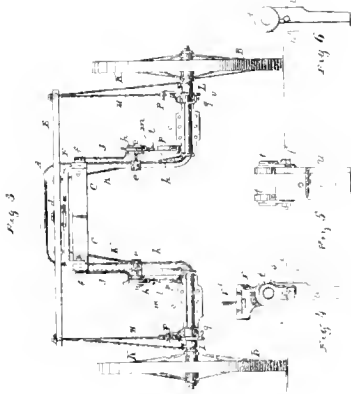
No. Model 1

L. GRAY
CULTIVATOR

Patented Aug. 28, 1883

No. 283,775

Patented Aug. 28, 1883



Witnesses
 J. C. ...
 J. H. ...

Inventor
 L. Gray
 by ...

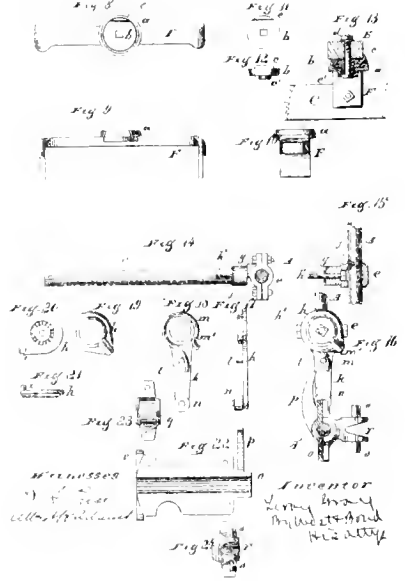
No. Model 1

L. GRAY
CULTIVATOR

45. etc-Sheet 4

No. 283,775

Patented Aug. 28, 1883



Witnesses
 J. C. ...
 J. H. ...

Inventor
 L. Gray
 by ...

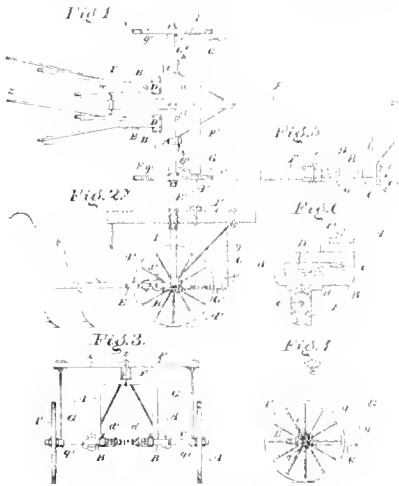
No. Model 1

M. W. McMANN
CULTIVATOR

Patented Aug. 28, 1883

No. 283,910

Patented Aug. 28, 1883



Witnesses
 J. C. ...
 J. H. ...

Inventor
 M. W. McMann
 by ...

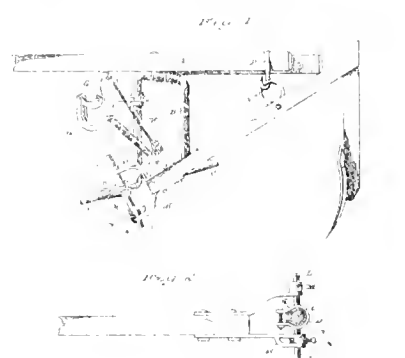
No. Model 1

J. E. CHRISTIAN
CULTIVATOR

Patented Sept. 4, 1883.

No. 283,979

Patented Sept. 4, 1883.



Witnesses
 J. C. ...
 J. H. ...

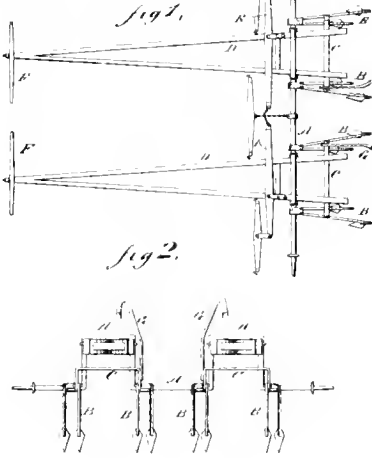
Inventor
 J. E. Christian
 by ...

(No Model)

W. J. FLOWERS.
CULTIVATOR

No 284,403

Patented Sept. 4, 1883.



WITNESSES:
Edw. F. Howell
C. H. Rogers

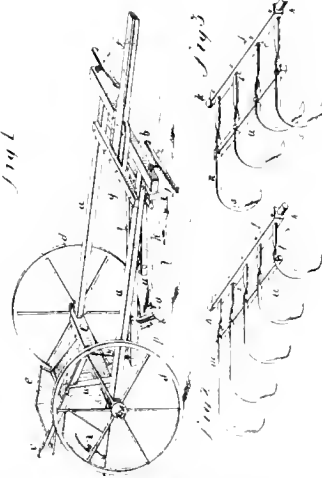
INVENTOR
W. J. Flowers
BY *Wm. H. [Signature]*
ATTORNEYS

(No Model)

J. J. HUSSEY
SULKY FLOW

No 284,558

Patented Sept. 4, 1883



WITNESSES:
Wm. H. [Signature]
C. H. Rogers

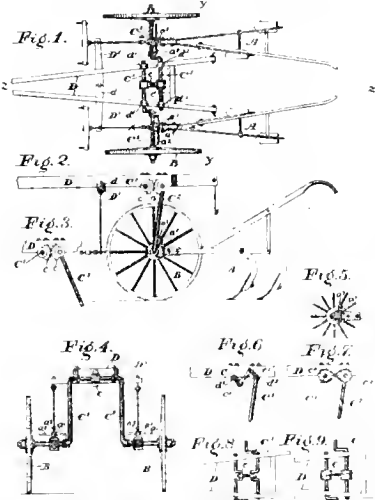
INVENTOR
J. J. Hussey
BY *Wm. H. [Signature]*
ATTORNEYS

(No Model)

B. J. HALL & J. E. MUSTARD
CULTIVATOR

No 284,734

Patented Sept. 11, 1883



WITNESSES:
Chas. M. [Signature]
E. H. Bondford

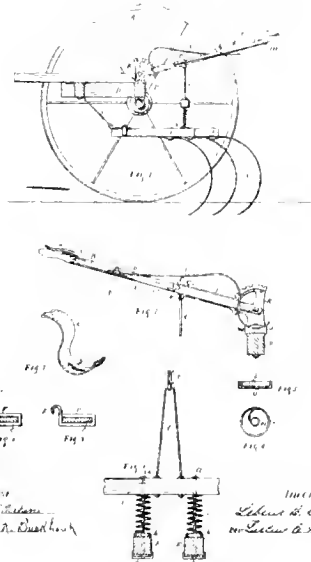
INVENTORS
Benjamin J. Hall,
James E. Mustard,
W. Bondford

(No Model)

L. C. CHAPIN
WHEEL CULTIVATOR

No 285,797

Patented Oct. 2, 1883.



WITNESSES:
Geo. S. [Signature]
Devin. [Signature]

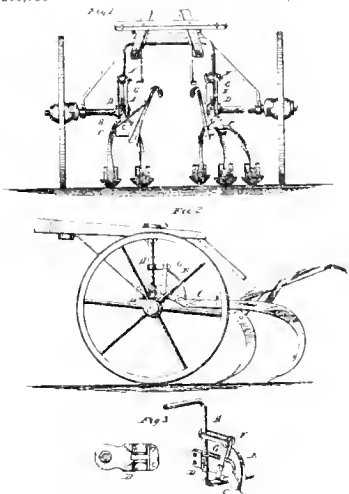
INVENTOR
L. C. Chapin
BY *Wm. [Signature]*
ATTORNEYS

No Model

J J & E R PIATT
FLOW

No 286,730

Patented Oct 16, 1883



Witnesses
Wm. Higgins
F. P. Rose

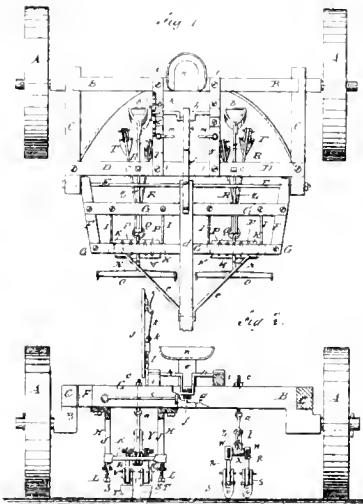
Inventors
J. J. Piatt
E. R. Piatt

No Model

D WISE
CULTIVATOR.

No 286,983

Patented Oct 16, 1883.



WITNESSES
Chas. Clark
& Dainger

INVENTOR
D. Wise
BY
Munn & Co
ATTORNEYS

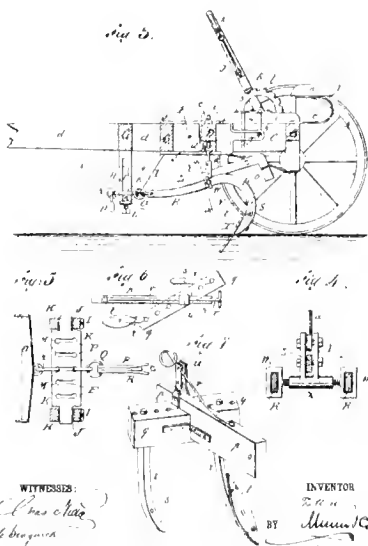
No Model

D. WISE
CULTIVATOR

2 Sheets—Sheet 2

No 286,983

Patented Oct 16, 1883.



WITNESSES
Chas. Clark
& Dainger

INVENTOR
D. Wise
BY
Munn & Co
ATTORNEYS

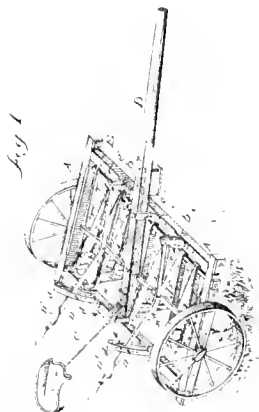
No Model

J G TRUMP
CULTIVATOR

2 Sheets—Sheet 1

No. 287,196

Patented Oct 23, 1883.



Witnesses
E. H. Smith
M. B. Collier

Inventor
J. G. Trump
BY
Munn & Co
ATTORNEYS

(No Model)

J G TRUMP
CULTIVATOR

2 Sheets—Sheet 2

No. 267,196

Patented Oct. 23, 1883.

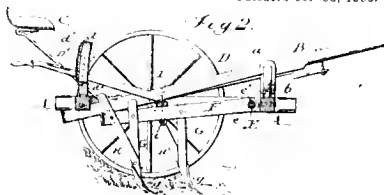


Fig. 2.

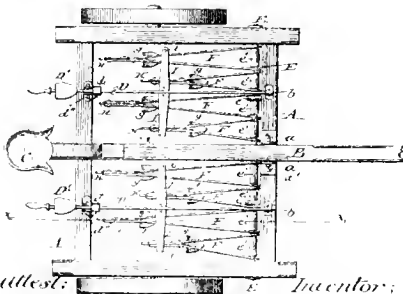


Fig. 3.

Witnesses:
V. A. ...
J. G. Trump
Inventor:
J. G. Trump
J. G. Trump

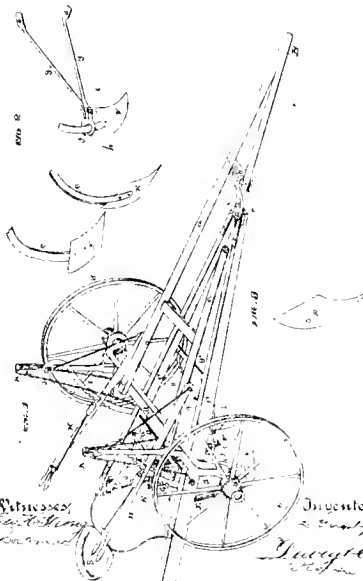
(No Model)

T L ORIGNET
GARDEN PLOW

4 Sheets—Sheet 1

No. 267,536

Patented Oct. 30, 1883.



Witnesses:
T. L. Orignet
Inventor:
T. L. Orignet
J. G. Trump

(Model)

J B NEFF
CULTIVATOR SPRING

4 Sheets—Sheet 1

No. 267,703

Patented Oct. 30, 1883.

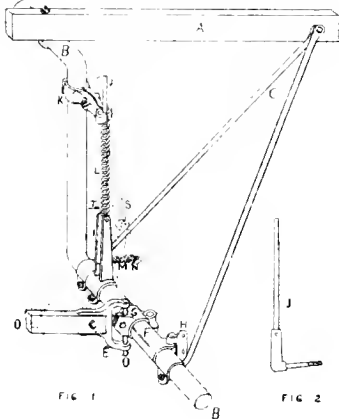


FIG. 1

FIG. 2

Witnesses:
Forley, Kane
& S. D. Little
Inventor:
Joseph B. Neff

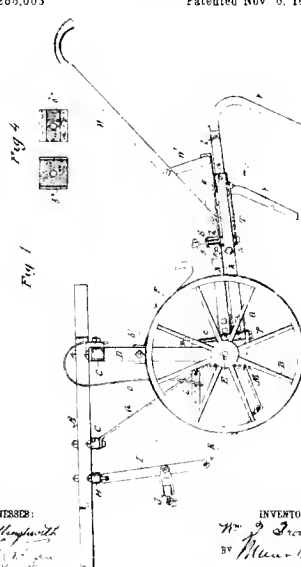
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W P BROWN
WHEEL CULTIVATOR

4 Sheets—Sheet 1

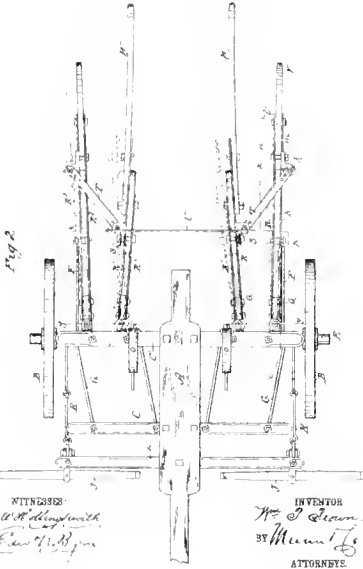
No. 268,003

Patented Nov. 6, 1884.

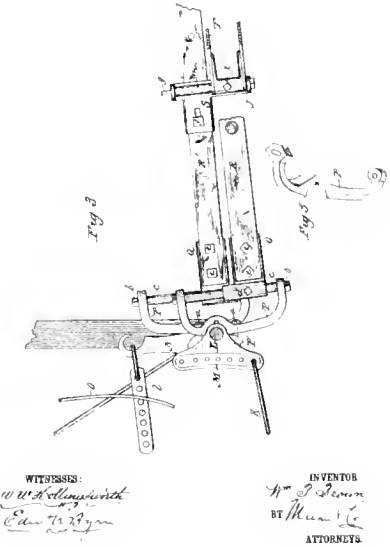


Witnesses:
W. W. Hollenback
Inventor:
W. P. Brown
M. M. ...
ATTORNEYS

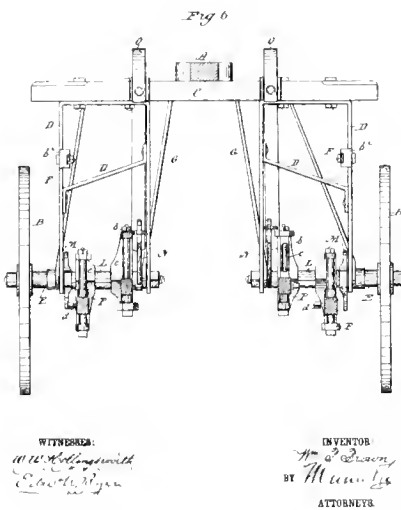
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 WHEEL CULTIVATOR.
 No 288,003 Patented Nov. 6, 1883.



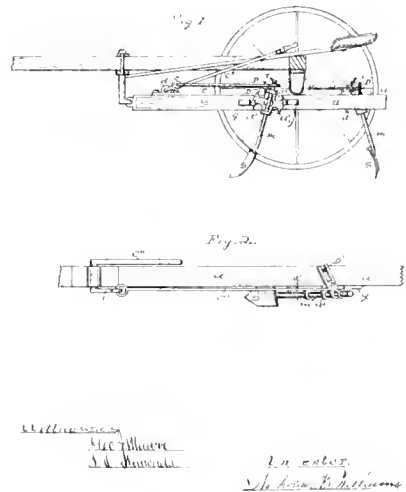
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 WHEEL CULTIVATOR
 No 288,003 Patented Nov. 6, 1883



(No Model) W P BROWN 4 Sheets-Sheet 4
 WHEEL CULTIVATOR.
 No 288,003 Patented Nov. 6, 1883.



(No Model) N H WILLIAMS.
 CULTIVATOR.
 No. 288,289 Patented Nov. 13, 1883.

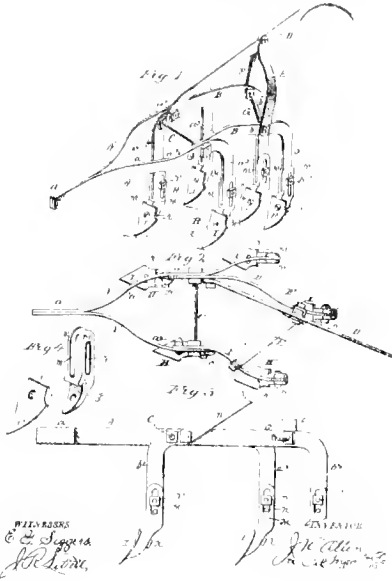


(No Model)

J H ALLEN
CULTIVATOR

No 288,202

Patented Nov. 13, 1883.

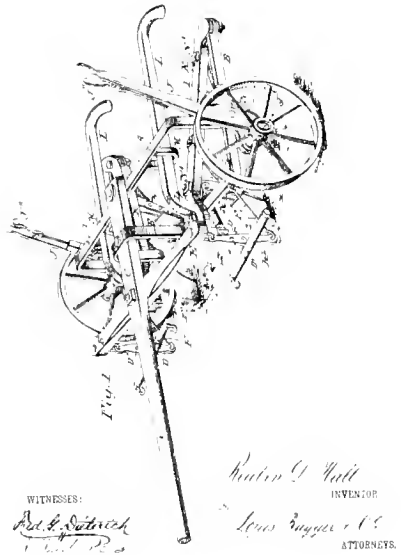


(No Model)

R D HALL
CULTIVATOR

No 289,043

Patented Nov. 27, 1883.

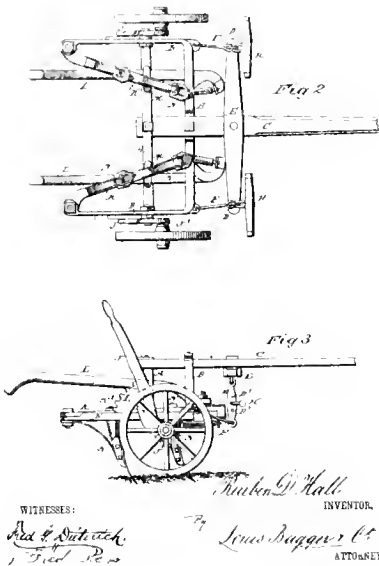


(No Model)

R D HALL
CULTIVATOR

No 289,093

Patented Nov. 27, 1883

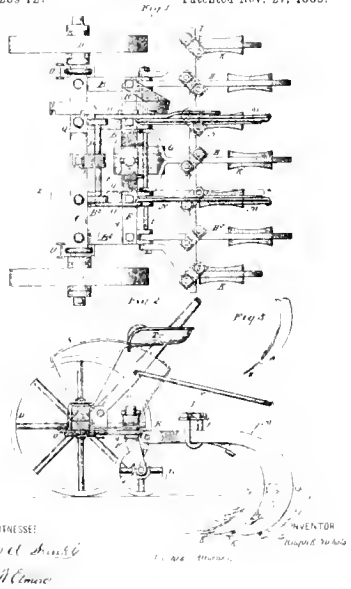


(Model)

R K NICHOLS
CULTIVATOR

No 289,127

Patented Nov. 27, 1883.

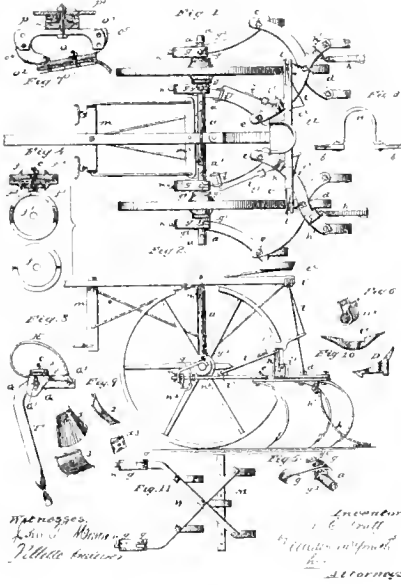


(No Model)

H C PRATT
CULTIVATOR

No. 289,708

Patented Dec. 4, 1883.

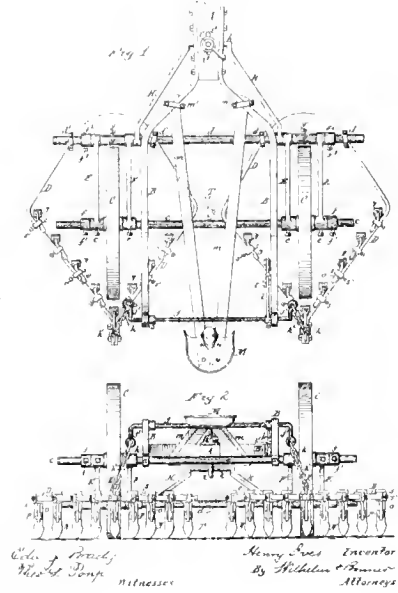


(No Model)

H IVES
CULTIVATOR.

No. 290,059.

Patented Dec. 11, 1883.

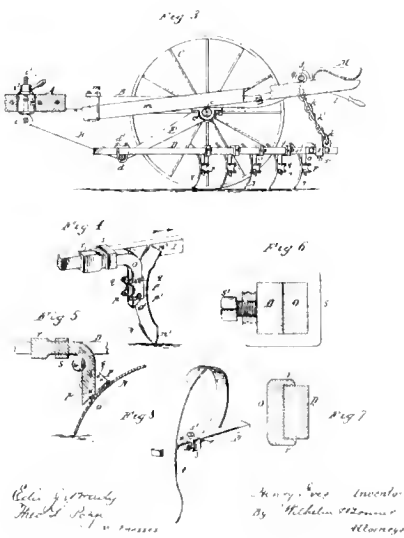


(No Model)

H. IVES.
CULTIVATOR.

No. 290,059

Patented Dec. 11, 1883.

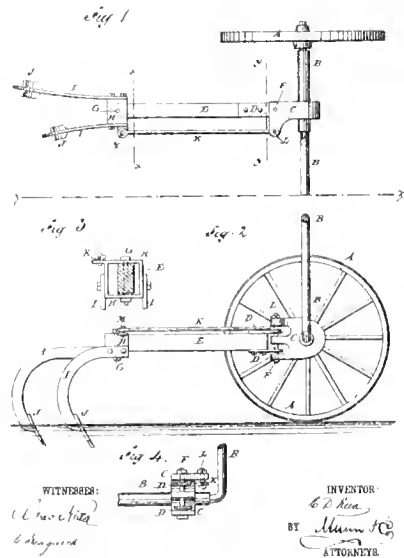


(No Model)

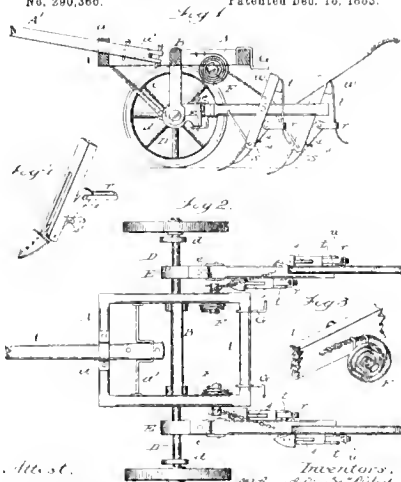
C. D REED
CULTIVATOR.

No. 290,111

Patented Dec. 11, 1883

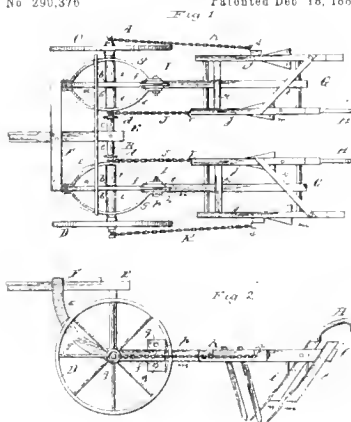


No Model
S. P. SNYDER, S STOUGH & T D ULBRICK
CULTIVATOR
No. 290,366. Patented Dec. 18, 1883.



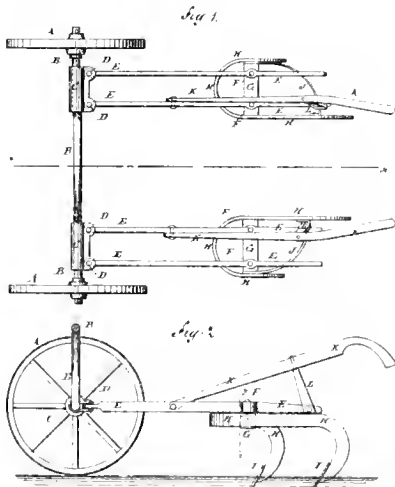
Inventors:
S. P. Snyder
S. Stough
T. D. Ulbrick
Attorneys:
W. H. Sullivan
1114

No Model
M M WARMOTH
CULTIVATOR
No. 290,376 Patented Dec. 18, 1883



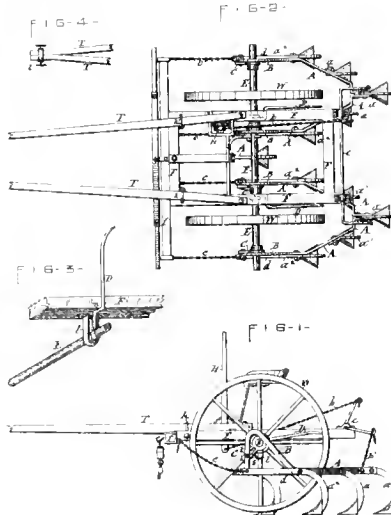
Inventor:
M. M. Warmoth
Witnesses:
L. B. Sullivan
W. H. Sullivan
Attorney

No Model
G W LILLY & J E NORMAN
CULTIVATOR.
No. 290,440 Patented Dec. 18, 1883.



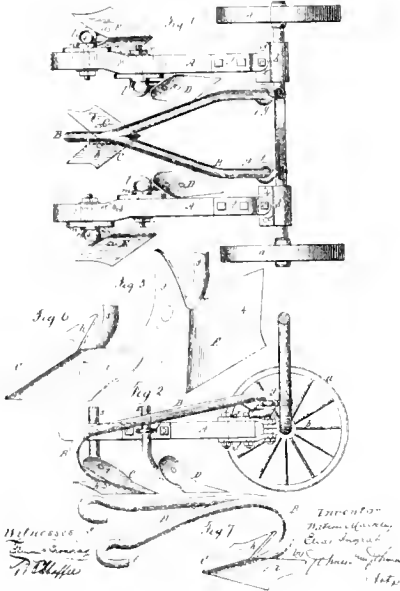
WITNESSES:
C. M. Smith
G. D. Stewart
INVENTOR:
G. W. Lilly
J. E. Norman
BY: M. M. Sullivan
ATTORNEY

No Model
J W COOK
CULTIVATOR
No. 290,539. Patented Dec. 18, 1883.

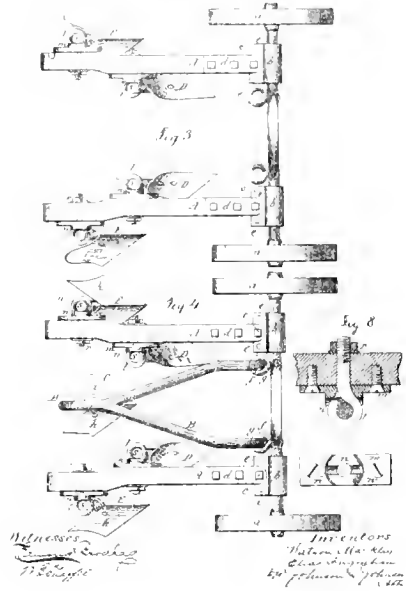


WITNESSES:
S. E. Thompson
C. B. Stewart
INVENTOR:
J. W. Cook
BY: M. M. Sullivan
ATTORNEY

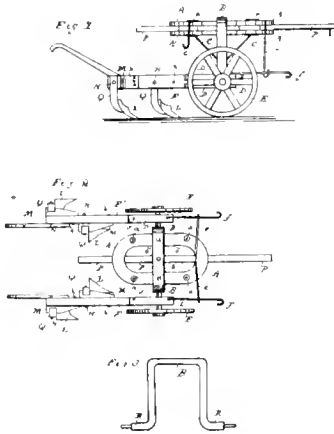
(No. Model) W MARKLEY & E INGRAHAM
CULTIVATOR FLOW
No. 290,893 Patented Dec. 18, 1883.



(No. Model) W MARKLEY & E INGRAHAM
CULTIVATOR FLOW
No. 290,893 Patented Dec. 18, 1883.



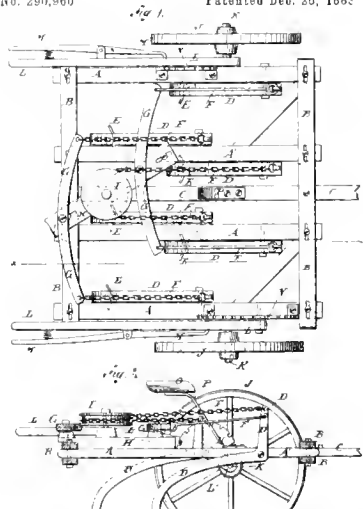
(No. Model) J N. LAMM.
CULTIVATOR.
No. 290,778 Patented Dec. 25, 1883.



WITNESSES
Herin S. Lamm
G. S. Olds

INVENTOR
John N. Lamm
G. S. Olds

(No. Model) E B BELLINGER.
CULTIVATOR.
No. 290,960 Patented Dec. 25, 1883.



WITNESSES
E. B. Bellinger
G. S. Olds

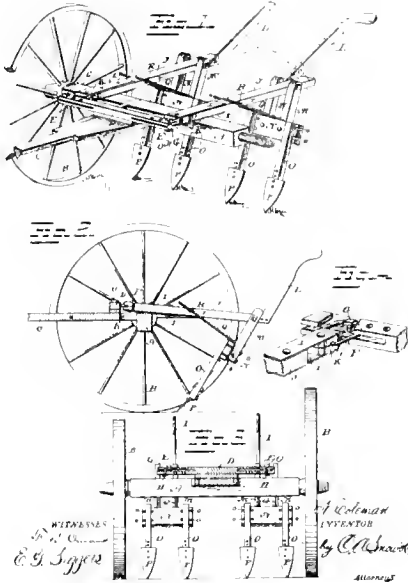
INVENTOR
E. B. Bellinger
BY G. S. Olds
ATTORNEYS

No Model

N COLEMAN
CULTIVATOR

Patented Jan. 8, 1884

No. 291,577.



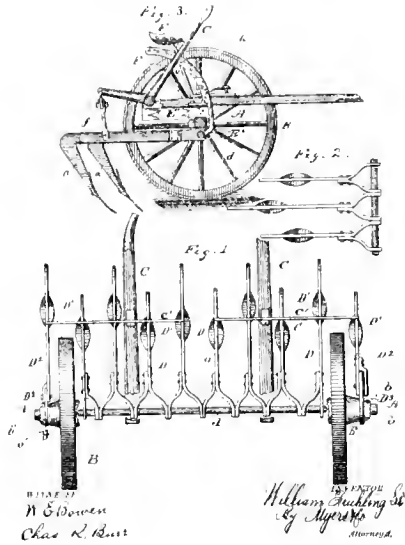
No Model

W FRUHLING, Sr
GRAPE AND ORCHARD CULTIVATOR

2 Sheets—Sheet 1

Patented Jan. 22, 1884

No. 292,297



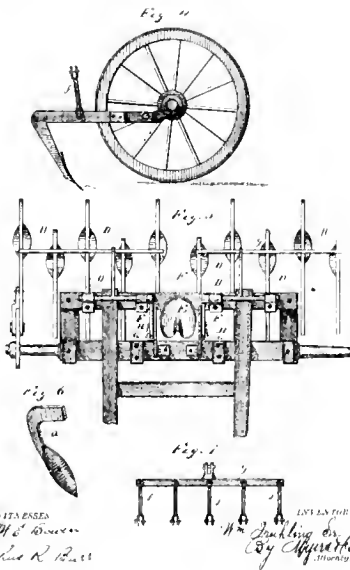
No Model

W FRUHLING, Sr
GRAPE AND ORCHARD CULTIVATOR

2 Sheets—Sheet 2

Patented Jan. 22, 1884

No. 292,297

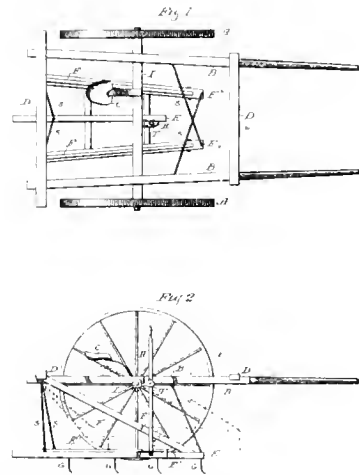


No Model

H W FERGUSON
CULTIVATOR

Patented Jan. 29, 1884

No. 292,634

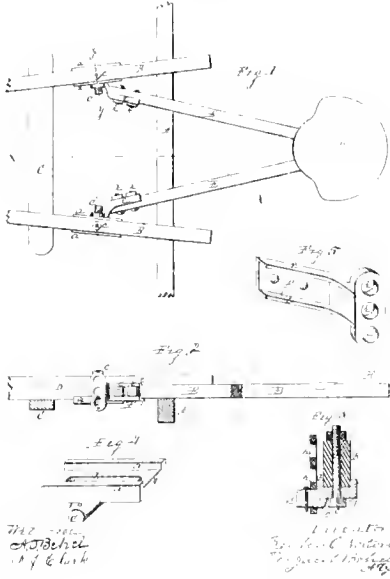


(No Model)

R C NORTON
CULTIVATOR

No. 292,674

Patented Jan. 29, 1884



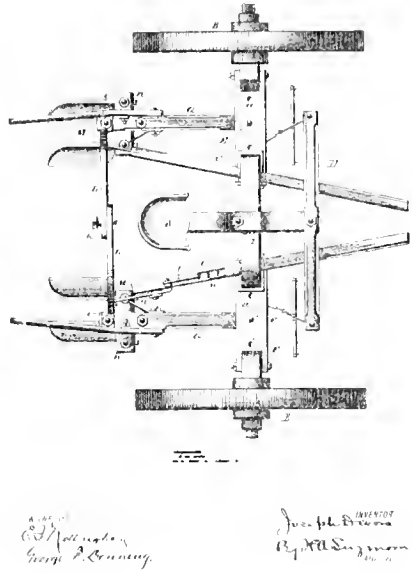
(No Model)

J DIVORA
CULTIVATOR.

No. 292,996

3 Sheets—Sheet 1

Patented Feb. 5, 1884



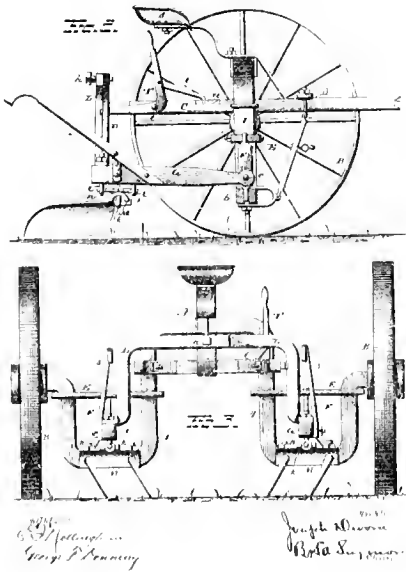
(No Model)

J DIVORA
CULTIVATOR

No. 292,996

Patented Feb. 5, 1884

1 Sheet—Sheet 2



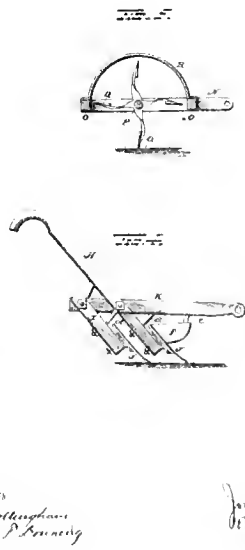
(No Model)

J. DIVORA
CULTIVATOR

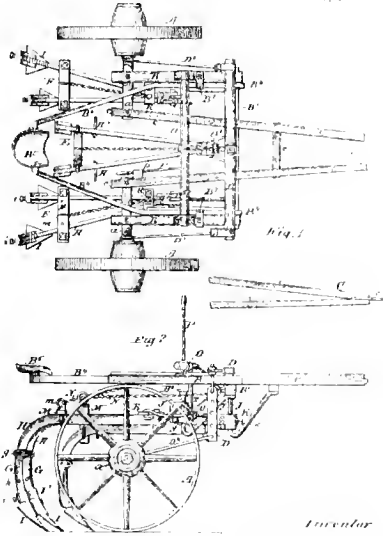
No. 292,996

Patented Feb. 5, 1884

1 Sheet—Sheet 3



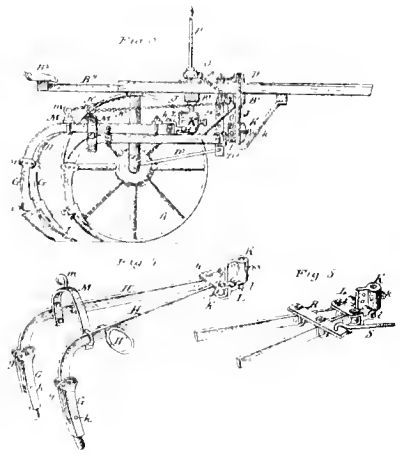
No Model
W M HARRIS
CULTIVATOR
No 293,017. Patented Feb. 5, 1884



Witnesses
S. C. Smith
W. H. Mason

Inventor
Willard M. Harris
by C. E. Mason
att'y

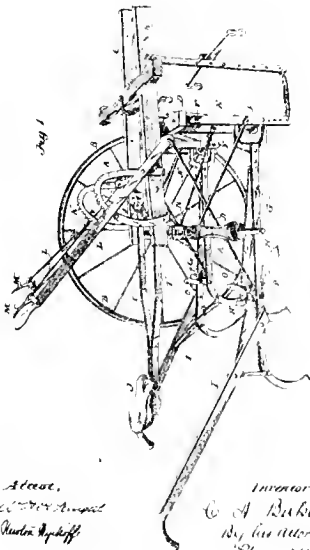
No Model
W M HARRIS
CULTIVATOR
No 293,017 Patented Feb. 5, 1884



Witnesses
S. C. Smith
W. H. Mason

Inventor
Willard M. Harris
by C. E. Mason
att'y

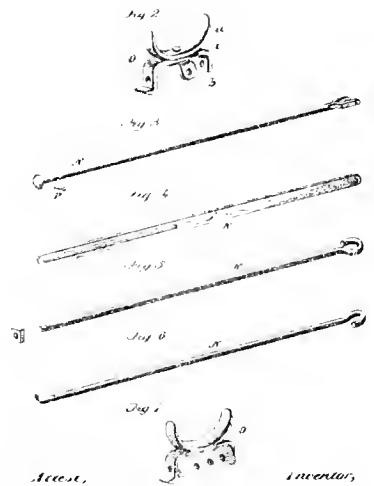
No Model
C. A. BAKER
WHEEL CULTIVATOR
No. 293,616 Patented Feb. 19, 1884



Attest,
S. C. Smith
Austin Spickoff

Inventor,
C. A. Baker
By his Attorney,
S. C. Smith & Co.

No Model
C. A. BAKER
WHEEL CULTIVATOR
No 293,616 Patented Feb. 19, 1884



Attest,
S. C. Smith
Austin Spickoff

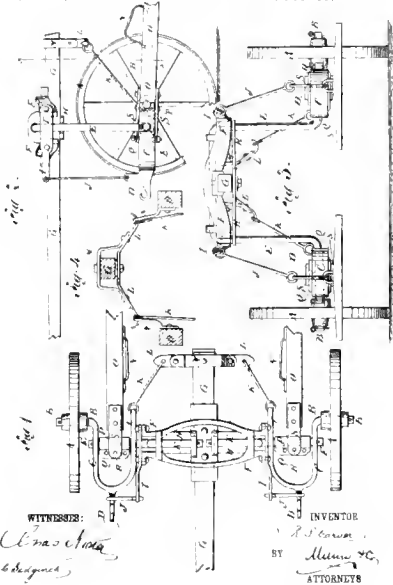
Inventor,
C. A. Baker
By his Attorney,
S. C. Smith & Co.

(No Model)

R L CARVER
SULKY CULTIVATOR.

No. 293,717

Patented Feb 19, 1884



WITNESSES:
Amos
Edgerton

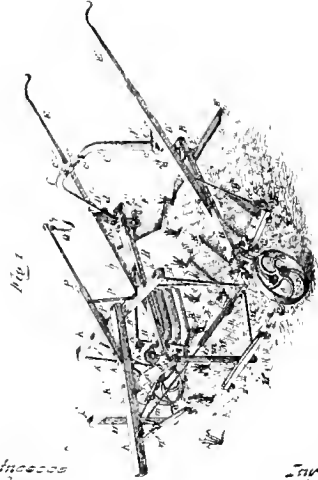
INVENTOR
R L Carver
BY
Merrill
ATTORNEYS

(No Model)

A C & J D TOWER
CULTIVATOR

No. 295,060

Patented Mar 11, 1884.



WITNESSES
Edgerton
Edgerton

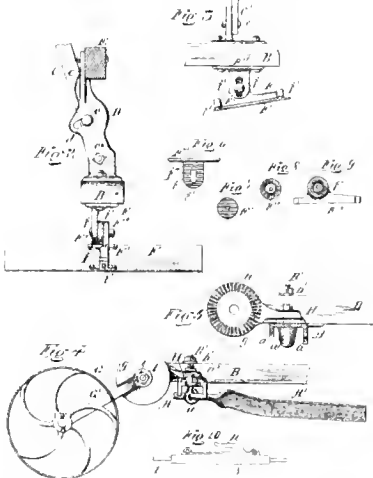
INVENTOR
A C & J D Tower
BY
Edgerton
ATTORNEYS

(No Model)

A C & J D TOWER
CULTIVATOR.

No. 295,080

Patented Mar 11, 1884.



WITNESSES
Edgerton
Edgerton

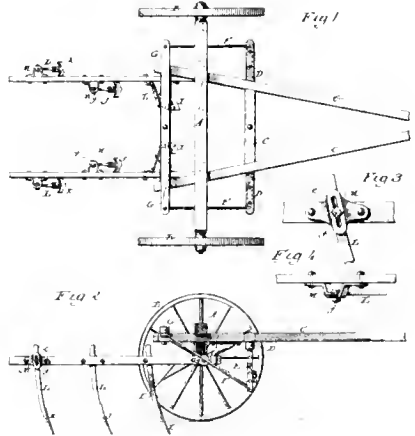
INVENTOR
A C & J D Tower
BY
Edgerton
ATTORNEYS

(No Model)

N TROWBRIDGE
WHEEL CULTIVATOR.

No. 295,082

Patented Mar 11, 1884.



WITNESSES
Edgerton
Edgerton

INVENTOR
Newton Trowbridge
BY
Edgerton
ATTORNEYS

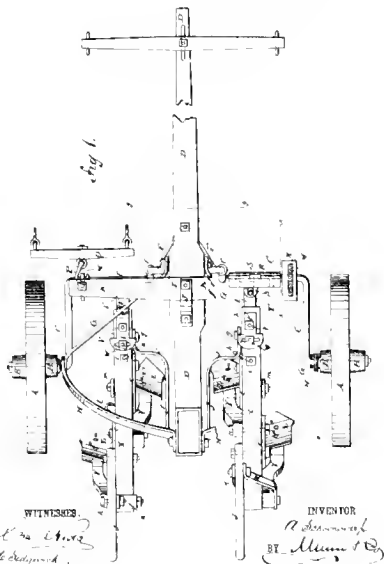
No Model

A. SCHOONOVER, Jr
CULTIVATOR

2 Sheets—Sheet 1

No. 295,292

Patented Mar. 18, 1884



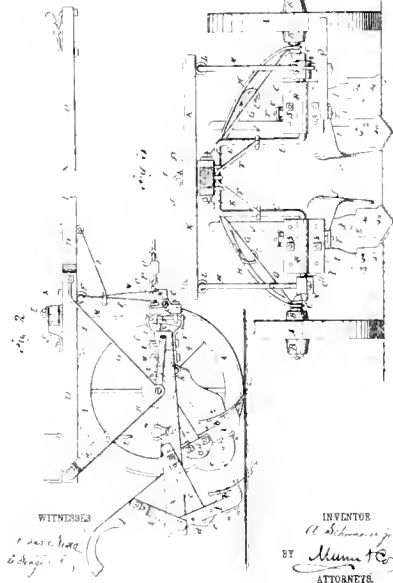
No Model

A. SCHOONOVER, Jr
CULTIVATOR

2 Sheets—Sheet 2

No. 295,292

Patented Mar. 18, 1884



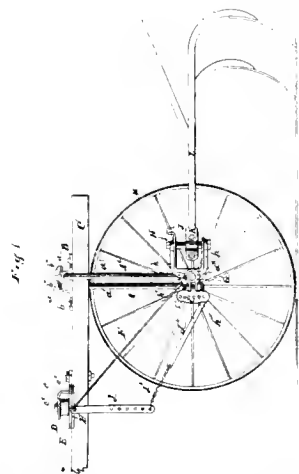
No Model

B. C. BRADLEY
CULTIVATOR

2 Sheets—Sheet 1

No. 295,520

Patented Mar. 25, 1884



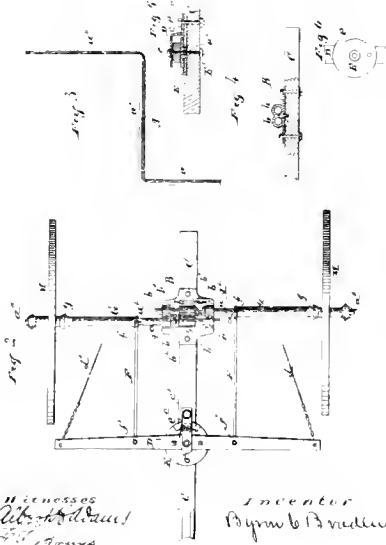
No Model

B. C. BRADLEY
CULTIVATOR

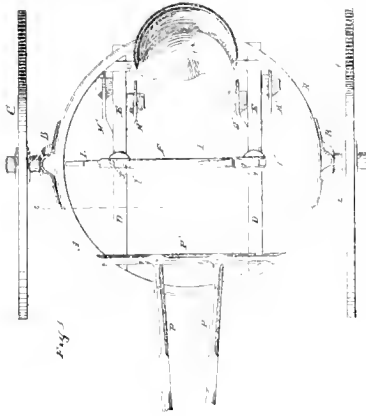
2 Sheets—Sheet 2

No. 295,520

Patented Mar. 25, 1884



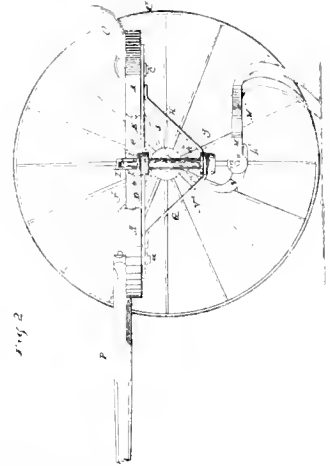
No Model. J WOOLRIDGE 1 Sheet—Sheet 1
CULTIVATOR
No. 295,607 Patented Mar. 25, 1884



Witnesses
Albert A. Bond
W. Bond

Inventor
John Woolridge

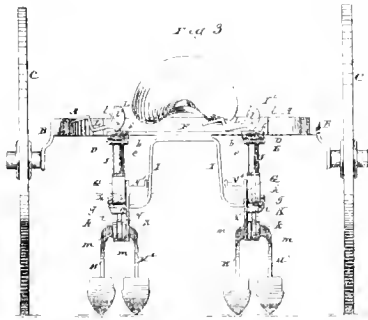
No Model. J WOOLRIDGE 4 Sheets—Sheet 1
CULTIVATOR
No. 295,607 Patented Mar. 25, 1884



Witnesses
Albert A. Bond
W. Bond

Inventor
John Woolridge

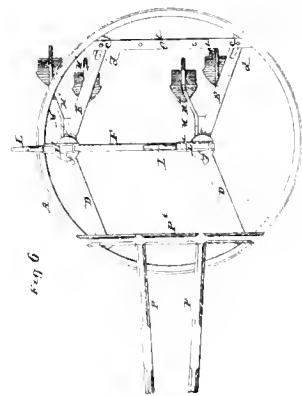
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CULTIVATOR
No. 295,607 Patented Mar. 25, 1884



Witnesses
Albert A. Bond
W. Bond

Inventor
John Woolridge

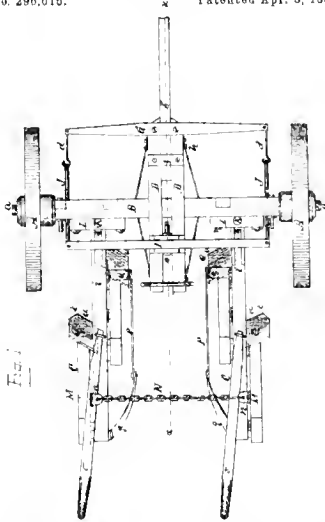
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CULTIVATOR
No. 295,607 Patented Mar. 25, 1884



Witnesses
Albert A. Bond
W. Bond

Inventor
John Woolridge

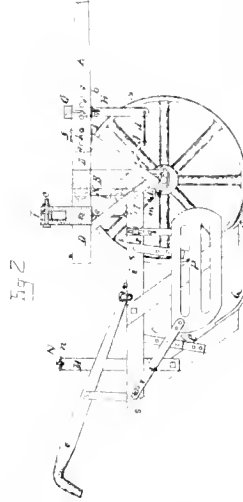
No Model. C. M. PINCKNEY 3 Sheets—Sheet 1
CULTIVATOR
No. 296,616. Patented Apr. 8, 1884.



WITNESSES
H. B. Jones
C. J. Brown

INVENTOR
C. M. Pinckney
By *J. B. Langer*
Attorney

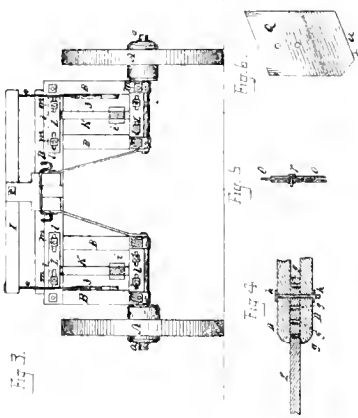
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CULTIVATOR
No. 296,616 Patented Apr. 8, 1884.



WITNESSES
H. B. Jones
C. J. Brown

INVENTOR
C. M. Pinckney
By *J. B. Langer*
Attorney

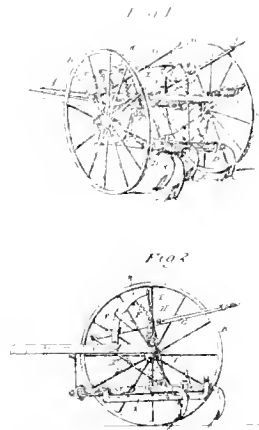
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CULTIVATOR
No. 296,616. Patented Apr. 8, 1884.



WITNESSES
H. B. Jones
C. J. Brown

INVENTOR
C. M. Pinckney
By *J. B. Langer*
Attorney

No Model. A LINDBGREN
WHEEL CULTIVATOR
No. 296,760 Patented Apr. 15, 1884.



Witness
J. W. Helgeson
Harry S. Sibley

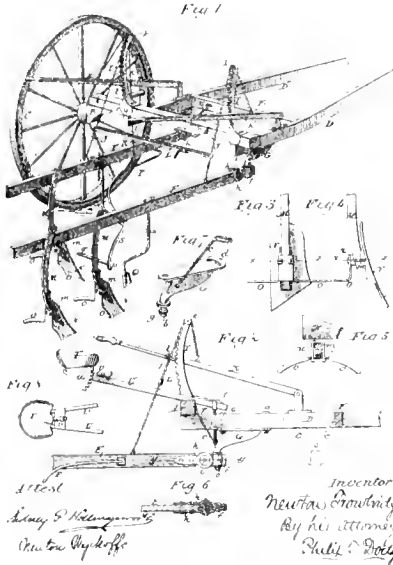
Inventor
Amos Lindgren
By his attorney
Edwin Sibley

(No Model.)

N TROWBRIDGE
CULTIVATOR.

No. 296,800

Patented Apr. 15, 1884.

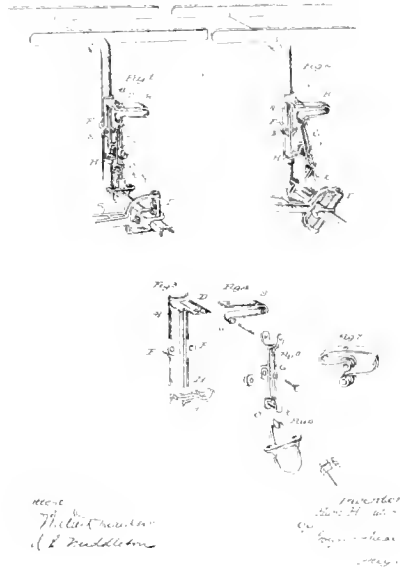


(No Model.)

H H SATER
CULTIVATOR

No. 297,637

Patented Apr. 29, 1884.

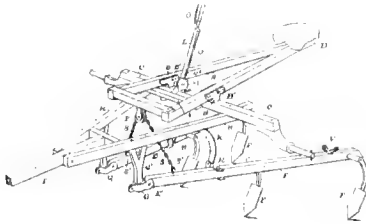


(No Model.)

C H HILL & J T RYAN
ADJUSTABLE SLAT LIFT CULTIVATOR.

No. 297,933

Patented Apr. 29, 1884.



Witness
Michael
Robert A. Stebbins

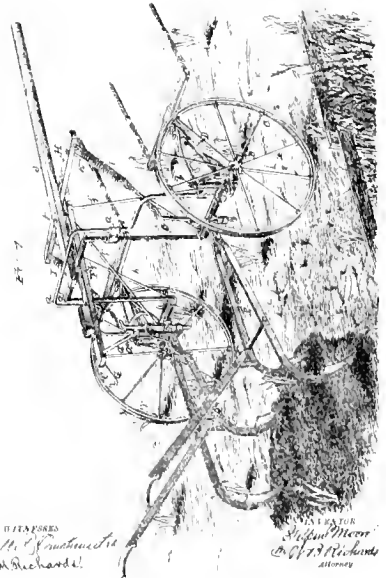
Inventors
James T. Ryan
Charles H. Hill
per U. S. H. Plummer
attorneys

(No Model.)

G MOORE
CULTIVATOR

No. 298,609

Patented May 13, 1884



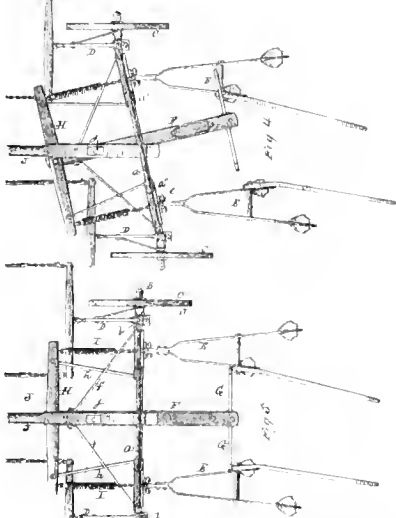
(No Model)

G MOORE
CULTIVATOR

3 Sheets - Sheet 1

No. 298,609

Patented May 13, 1884



WITNESSES
H. P. Cushman
J. W. Richards

INVENTOR
G. Moore
J. W. Richards
 Attorney

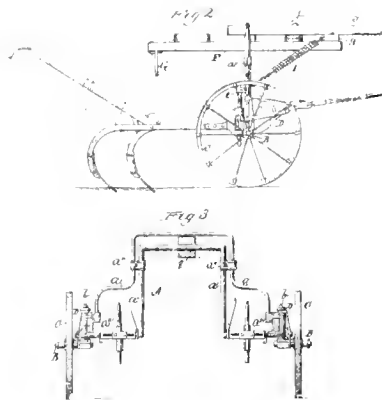
(No Model)

G MOORE
CULTIVATOR

3 Sheets - Sheet 2

No. 298,609

Patented May 13, 1884



WITNESSES
H. P. Cushman
J. W. Richards

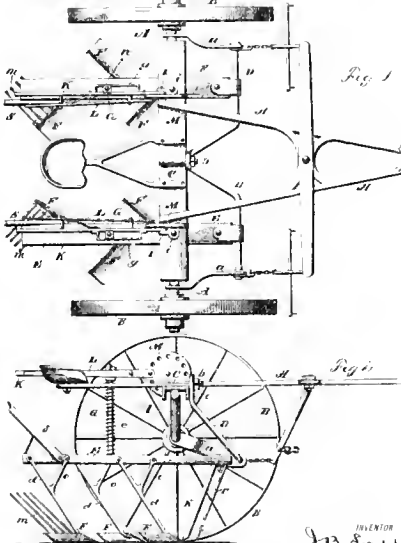
INVENTOR
G. Moore
J. W. Richards
 Attorney

(No Model)

J B LADD
WEEDING MACHINE.

No. 298,863.

Patented May 20, 1884.



WITNESSES
G. P. Manning
Steve Cook

INVENTOR
J. B. Ladd
B. H. Mason
 Attorney

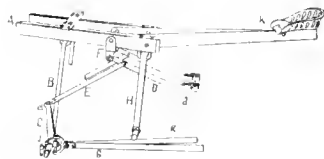
(No Model)

J B NEFF.

FOOT LIFT FOR RIDING CULTIVATORS

No. 299,157.

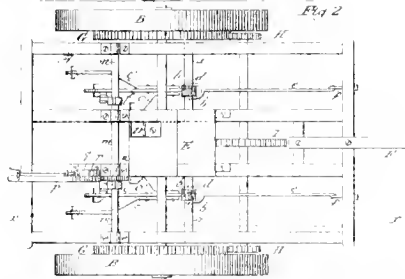
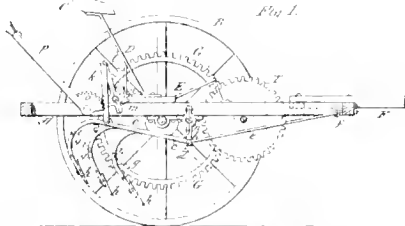
Patented May 27, 1884.



WITNESSES
B. H. Weston
Chas. S. Smith

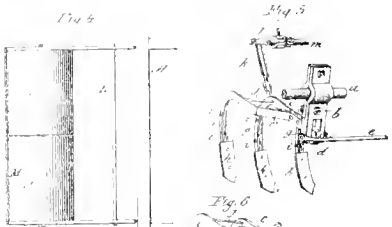
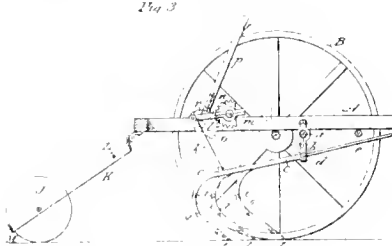
INVENTOR
Joseph B. Neff

(N. Model) **B J CURRY** 2 Sheets—Sheet 1
CULTIVATOR
 No. 299,627 Patented June 3, 1884



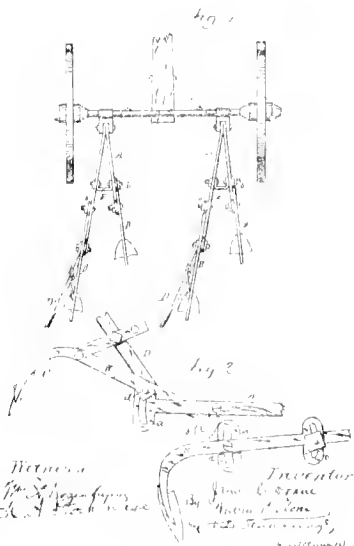
Witness
 J. R. Brown
 Inventor
 James J. Curry
 by A. R. Brown
 Chas

(N. Model) **B J CURRY** 2 Sheets—Sheet 2
CULTIVATOR
 No. 299,627 Patented June 3, 1884.



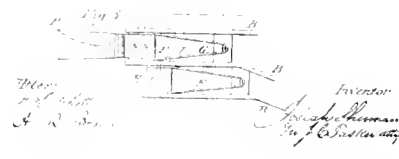
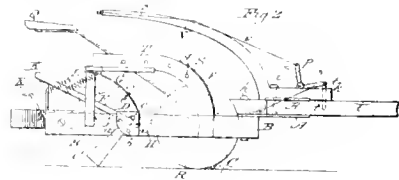
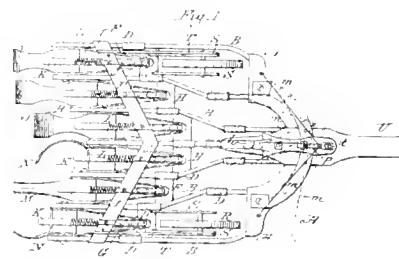
Witness
 J. R. Brown
 Inventor
 James J. Curry
 by A. R. Brown
 Chas

(N. Model) **J C. DOANE**
CULTIVATOR
 No. 300,055 Patented June 10, 1884.



Witness
 J. R. Brown
 Inventor
 J. C. Doane
 by A. R. Brown
 Chas

(N. Model) **J SHERMAN** 2 Sheets—Sheet 1
CULTIVATOR AND COTTON CHOPPER
 No. 300,049 Patented June 17, 1884



Witness
 J. R. Brown
 Inventor
 J. Sherman
 by A. R. Brown
 Chas

(No Model)

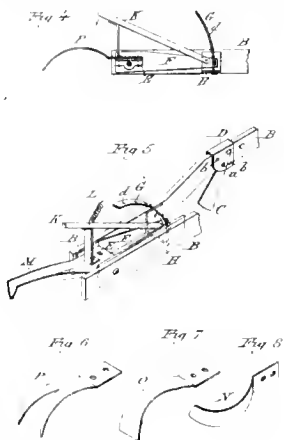
J. SHERMAN

2 Sheets—Sheet 2

CULTIVATOR AND COTTON CHOPPER.

No. 300,649

Patented June 17, 1884



Witnesses
 J. H. Hill
 & R. Brown

Inventor
 Joseph Sherman
 by H. B. Easton, atty.

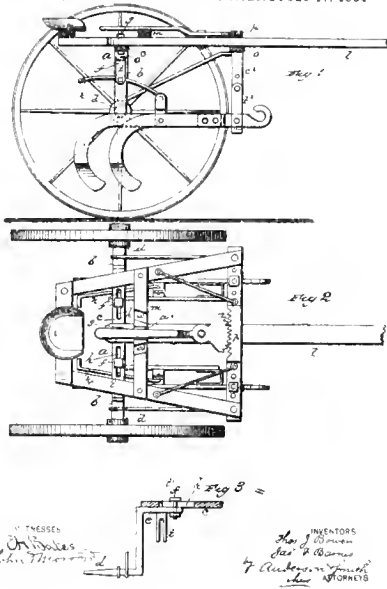
(No Model)

T. J. BOWEN & J. F. BARNES.

CULTIVATOR

No. 300,680

Patented June 17, 1884



Witnesses
 J. H. Hill
 & R. Brown

Inventors
 T. J. Bowen
 & J. F. Barnes
 by C. Anderson, atty.

(No Model)

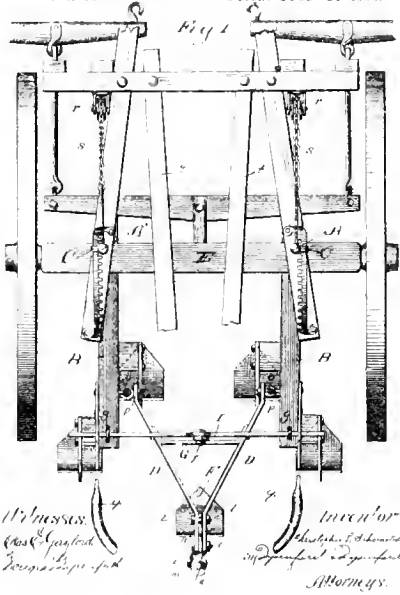
C. L. SCHOENSTEDT

2 Sheets—Sheet 1

CULTIVATOR

No. 301,011

Patented June 24, 1884.



Witnesses
 Chas. C. Gaylord
 & J. H. Hill

Inventor
 C. L. Schoenstedt
 by J. H. Hill, atty.

(No Model)

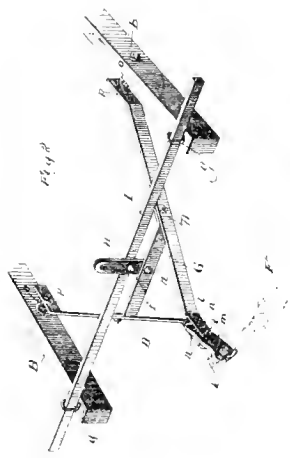
C. L. SCHOENSTEDT

2 Sheets—Sheet 2

CULTIVATOR

No. 301,011

Patented June 24, 1884.



Witnesses
 Chas. C. Gaylord
 & J. H. Hill

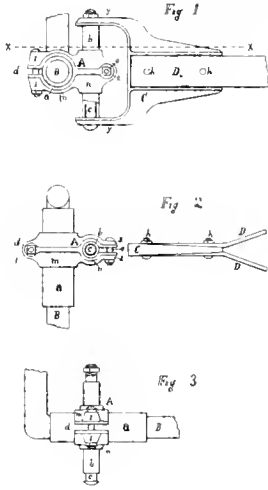
Inventor
 C. L. Schoenstedt
 by J. H. Hill, atty.

(No Model.)

W B YOUNG
CULTIVATOR

No. 252,672

Patented Jan 17, 1882



Witnesses

William Steyer
R. D. Kitchin

Inventor

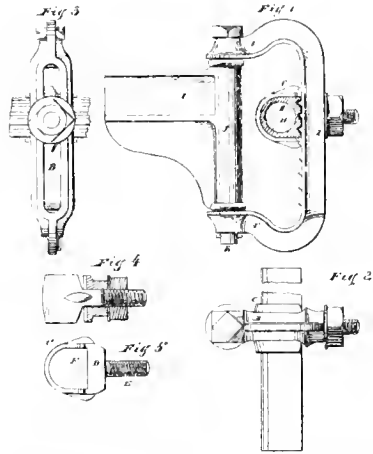
Wm B Young
by John C. ...
Att'y.

(No Model.)

J I HAMILTON
COUPLING FOR CULTIVATOR PEARS

No. 252,763

Patented Jan. 24, 1882.



Witnesses

Albert H. ...
George S. ...

Inventor

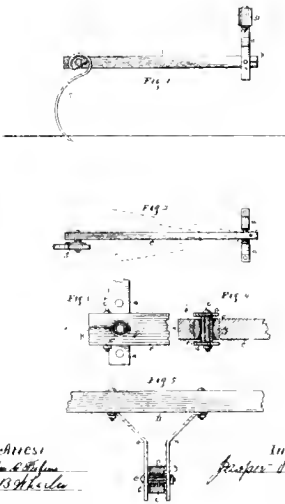
James I Hamilton
by West & Bond
Att'ys

(No Model.)

J P WARNER
SWIVEL COUPLING

No. 278,203.

Patented Apr. 24, 1883



Witness
John C. ...
R. B. ...

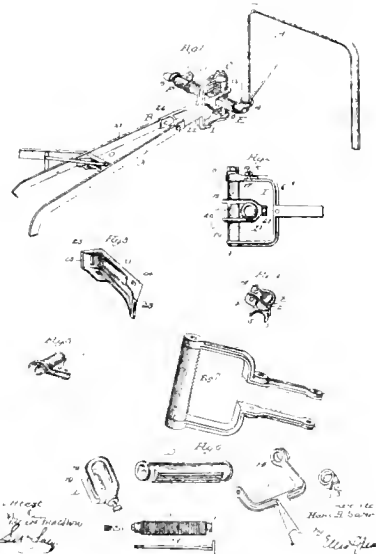
Inventor
Joseph P. Warner

(No Model.)

H H SATLER
CULTIVATOR

No. 278,718.

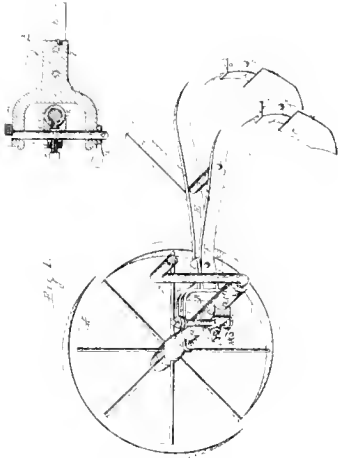
Patented May 1, 1883



Witness
John C. ...
R. B. ...

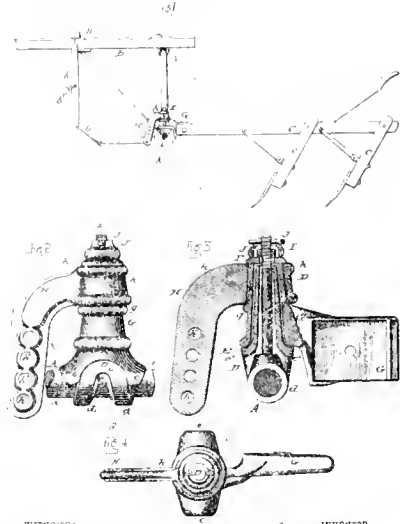
Inventor
H. H. Satler
by ...
Att'y

No. Model
W A KNOWLTON
 CULTIVATOR
 No. 287,443 Patented Oct. 30, 1883.



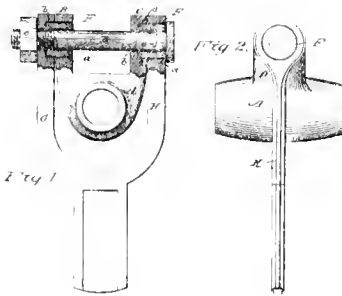
Witnesses
J. C. ...
...
 Inventor
W. A. Knowlton

No. Model
G W BROWN
 CULTIVATOR
 No. 298,833 Patented May 20, 1884



Witnesses
...
 Inventor
G. W. Brown
 Attorney
...

No. Model
H. BORGETT, Jr., & L. P. DORRELL
 CULTIVATOR
 No. 300,563 Patented June 17, 1884.

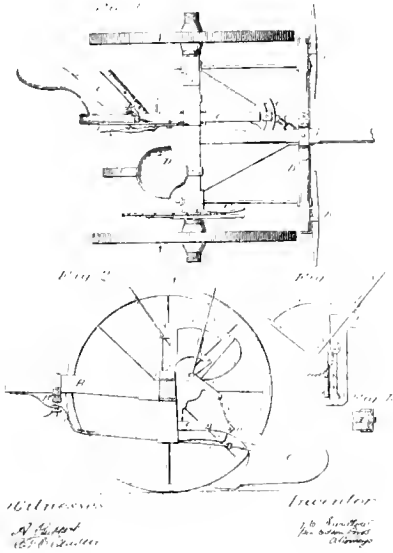


Witnesses
...
 Inventors
H. Borgett Jr.
L. P. Dorrell

J. E. SWALLOW.
Adjustable Plow.

No. 106,294

Patented Aug 9, 1870



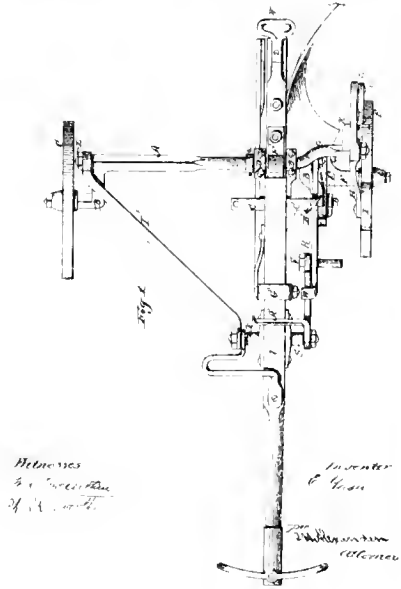
(Model)

E. YEISER
SULKY PLOW

2 Sheets—Sheet 1

No. 244,708

Patented July 19, 1881.



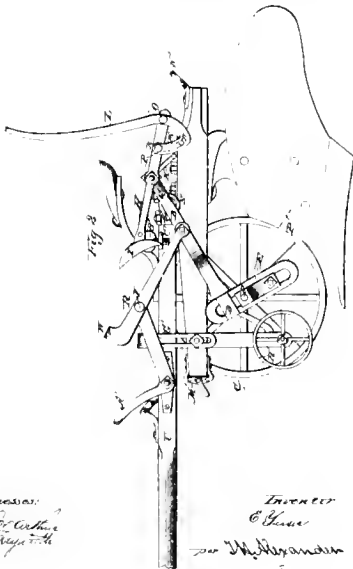
(Model)

E YEISER
SULKY PLOW

2 Sheets—Sheet 1

No. 244,708.

Patented July 19, 1881.

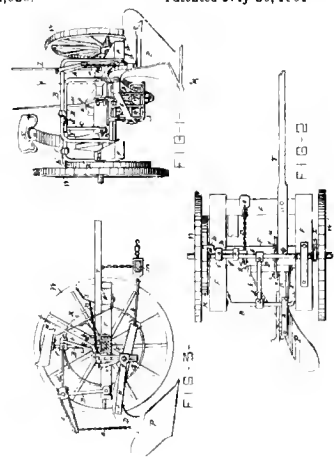


(No Model)

D P SHARP.
SULKY PLOW

Patented July 26, 1881

No. 244,825.



WITNESSES=

INVENTOR=

A. S. ...
H. C. ...
T. ...

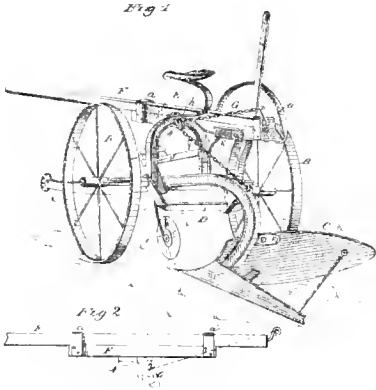
D. P. Sharp
per M. Alexander
Attorney

(No Model)

J. F. CARNAGY.
SULKY OR WHEEL PLOW

No. 244,862.

Patented July 20, 1881.



Witnesses:
James L. Conradi
W. B. Saffa

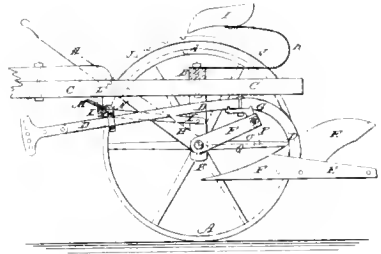
Inventor:
J. F. Carnagy
per J. H. Mitchell
Attorneys

(No Model)

J. TURNER.
SULKY PLOW

No. 245,587.

Patented Aug. 9, 1881.



Witnesses:
C. S. Smith
C. Maguire

Inventor:
J. Turner
BY J. H. Mitchell
Attorneys

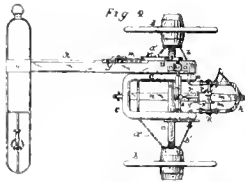
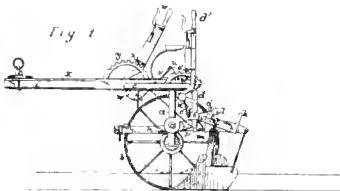
(Model)

E. M. CARROLL.

2 Sheets—Sheet 1

SOLEY ATTACHMENT FOR PLOWS AND HARROWS.
No. 246,080

Patented Aug. 23, 1881.



Witnesses:
J. H. Kington
J. H. Kington

Inventor:
E. M. Carroll
BY J. H. Kington
Attorneys

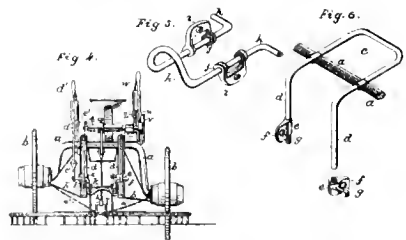
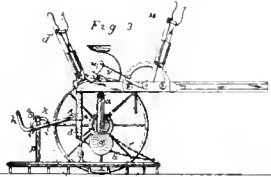
(Model)

E. M. CARROLL.

2 Sheets—Sheet 2

SULKY ATTACHMENT FOR PLOWS AND HARROWS.
No. 246,080.

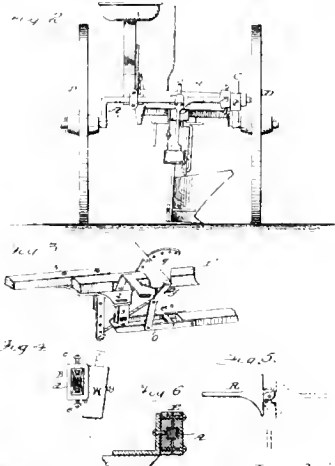
Patented Aug. 23, 1881.



Witnesses:
J. H. Kington
J. H. Kington

Inventor:
E. M. Carroll
BY J. H. Kington
Attorneys

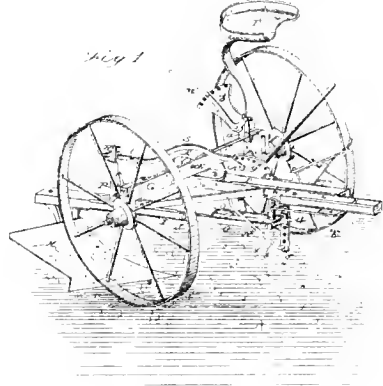
(No Model) E D & O B. REYNOLDS. 2 Sheets—Sheet 1
 WHEEL FLOW
 No. 246,203. Patented Aug. 23, 1881



Witnesses.
 Charles Tomlinson
 J. A. Brown

Inventor's.
 E. D. & O. B. Reynolds.
 by A. H. Brown & Co
 attys

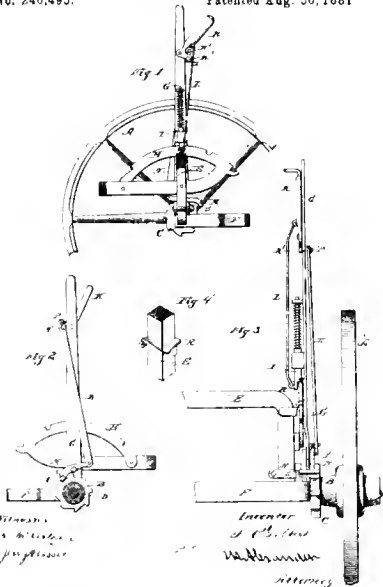
(No Model) E D & O B. REYNOLDS. 2 Sheets—Sheet 1
 WHEEL FLOW
 No. 246,203. Patented Aug. 23, 1881



Witnesses.
 W. H. Van der
 R. & S. Law

Inventor's.
 E. D. & O. B. Reynolds
 by A. H. Brown & Co
 attys

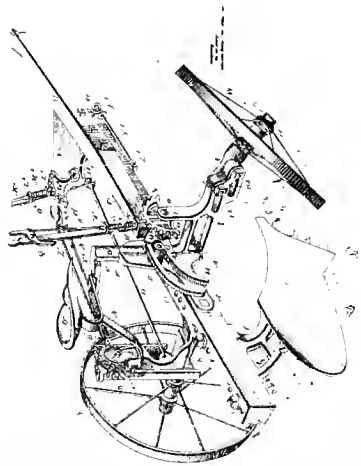
(Model) I R GILBERT.
 SULKY FLOW
 No. 246,495. Patented Aug. 30, 1881



Witnesses.
 J. A. Brown
 J. H. Brown

Inventor
 I. R. Gilbert
 by A. H. Brown
 attys

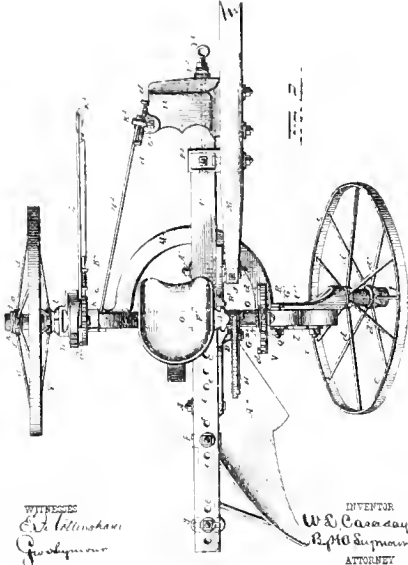
(No Model) W L CASADAY
 SULKY FLOW
 No. 246,598 Patented Sept. 6, 1881



Witnesses
 E. H. Harrington
 Geo. H. Brown

INVENTOR
 W. L. Casaday
 by A. H. Brown
 ATTORNEY

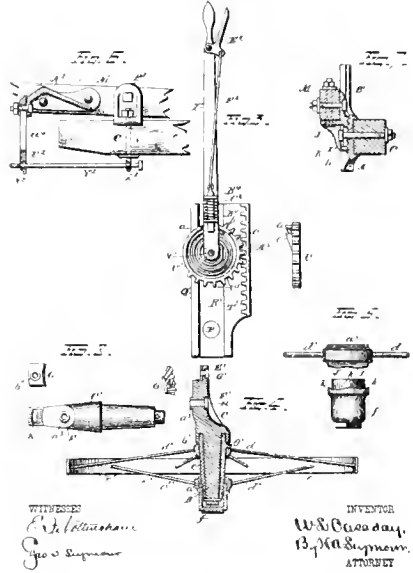
Model 1
 W. L. CASADAY
 SULKY PLOW.
 No. 246,598. Patented Sept. 6, 1881



WITNESSES
E. A. Hollingshead
J. S. Seymour

INVENTOR
 W. L. Casaday
 By *H. A. Seymour*
 ATTORNEY

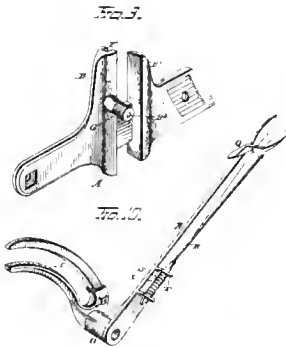
Model 1
 W. L. CASADAY
 SULKY PLOW.
 No. 246,598. Patented Sept. 6, 1881.



WITNESSES
E. A. Hollingshead
J. S. Seymour

INVENTOR
 W. L. Casaday
 By *H. A. Seymour*
 ATTORNEY

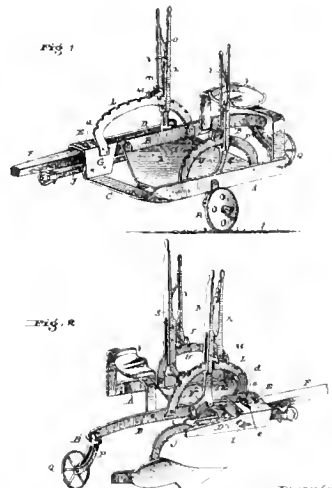
Model 1
 W. L. CASADAY
 SULKY PLOW.
 No. 246,598. Patented Sept. 6, 1881



WITNESSES
E. A. Hollingshead
J. S. Seymour

INVENTOR
 W. L. Casaday
 By *H. A. Seymour*
 ATTORNEY

J. WARD & R. WARBURN
 SULKY CARRIAGE FOR PLOWS
 No. 247,446 Patented Sept. 20, 1881.



WITNESSES
James Ward
Rufus Warburn
W. B. Cooper

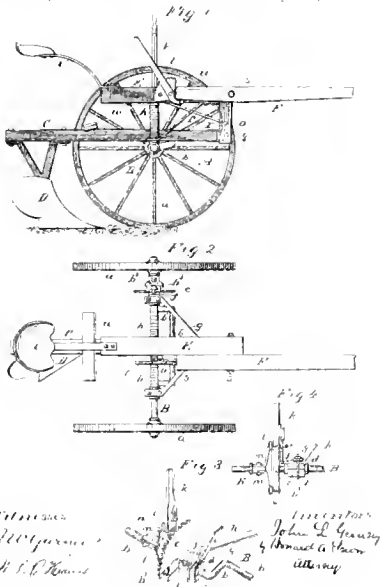
INVENTORS
 James Ward and
 Rufus Warburn
 By *W. B. Cooper*

(No Model.)

J. L. GERNSEY
SULKY PLOW

No. 247,030.

Patented Sept. 27, 1881.

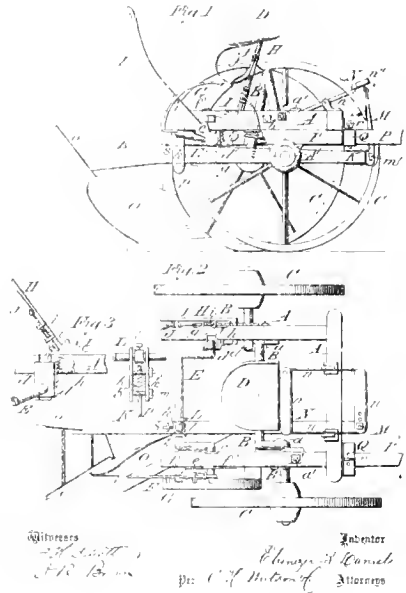


(No Model.)

E. B. DANIELS
SULKY PLOW

No. 249,020.

Patented Nov. 1, 1881.

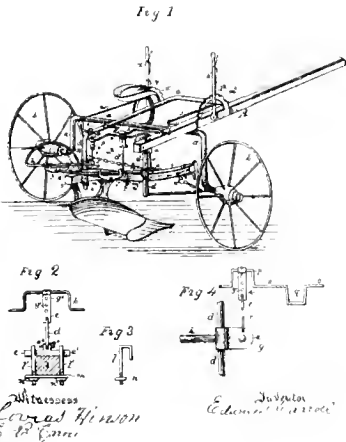


(Model.)

E. M. CARROLL
SULKY PLOW

No. 249,501

Patented Nov. 15, 1881.

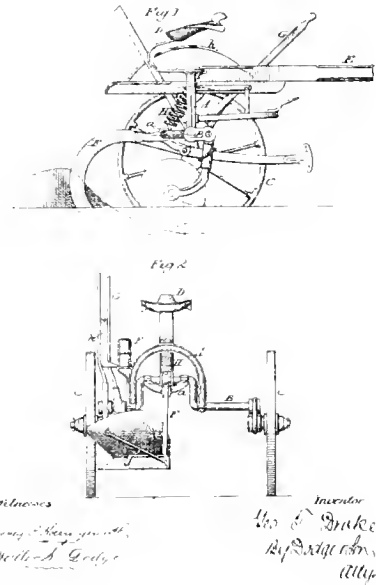


(No Model.)

G. T. DRAKE
WHEELED FLOW

No. 243,509

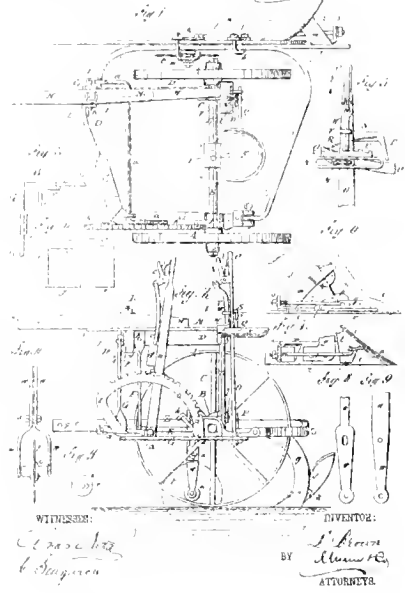
Patented Nov. 15, 1881.



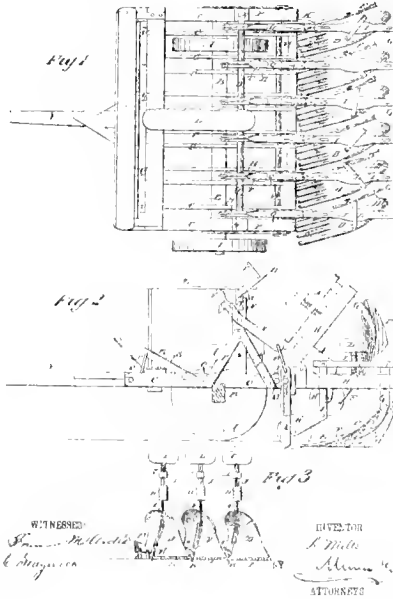
(Model)
G. APPIEGATE
 SULKY FLOW.
 No. 249,864. Patented Nov. 22, 1881.



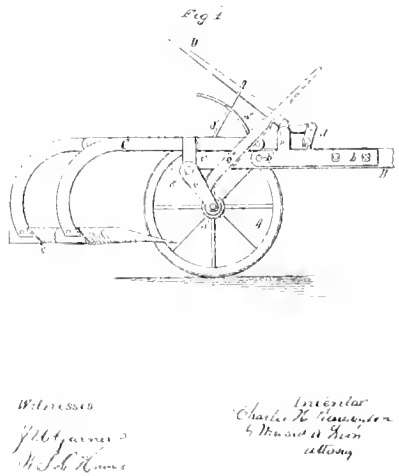
(Model)
L. BROWN
 SULKY FLOW.
 No. 249,900. Patented Nov. 22, 1881.



(Model)
R. MILLS
 GANG FLOW.
 No. 251,271. Patented Dec. 20, 1881.



(Model) 2 Sheets—Sheet 1
C. H. REMINGTON
 FLOW.
 No. 251,287. Patented Dec. 20, 1881.



Model 1

C. H. REMINGTON
Plow

2 Sheets—Sheet

No. 251,287.

Patented Dec. 20, 1881.

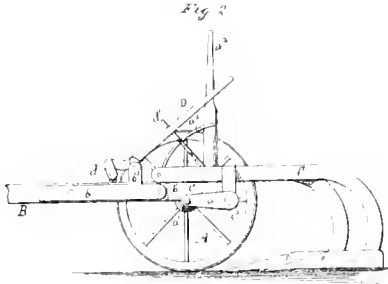


Fig. 2

Witnesses

J. W. Gurnee
W. S. Thomas

Inventor
C. H. Remington
By Thomas & Hoar
Attorneys

No Model

C. F. GODDARD
Roller Plow

4 Sheets—Sheet 1

No. 251,367

Patented Dec. 27, 1881.

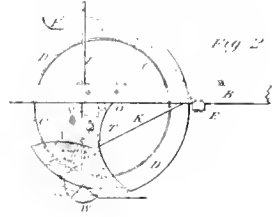


Fig. 2

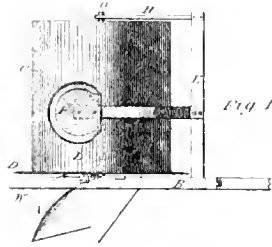


Fig. 1

Witnesses

C. S. Brown
J. W. Gurnee

Inventor

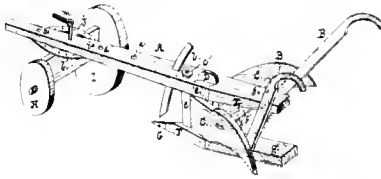
Charles F. Goddard

(Model)

J. KONIG
Plow

No. 251,445.

Patented Dec. 27, 1881.



WITNESSES

J. A. Butcher
Geo. A. Bailey

INVENTOR

J. Konig

By E. W. Williams
ATTORNEY

(no Model)

T. A. CONLEE & J. H. KENNETH
SULKY PLOW

4 Sheets—Sheet 1

No. 251,766

Patented Jan. 3, 1882

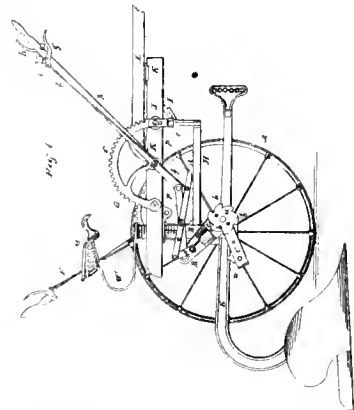
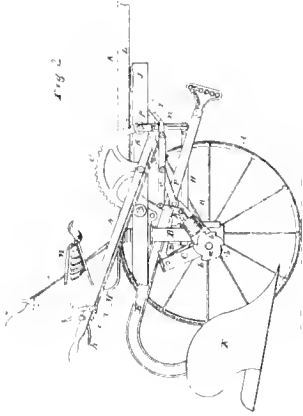


Fig. 1

Witnesses
O. W. Gurnee
J. W. Gurnee

Inventors
Thomas A. Conlee
John H. Kenneth
By W. S. Thomas
Attorney

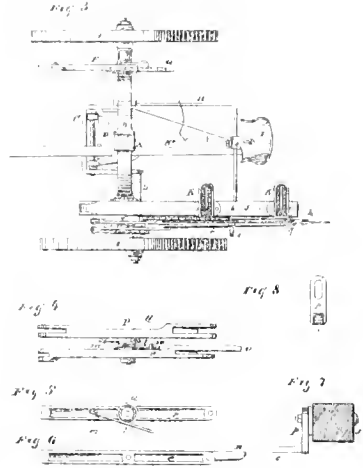
(No Model) 1 Sheet—Sheet 1
T A CONLEE & J H KENNETH
 SULKY PLOW
 No. 251,766. Patented Jan. 3, 1882



Witnesses
 Albert Adams
 B. J. Green

Inventor
 Thomas A. Conlee
 John H. Kenneth
 By Westford
 atty.

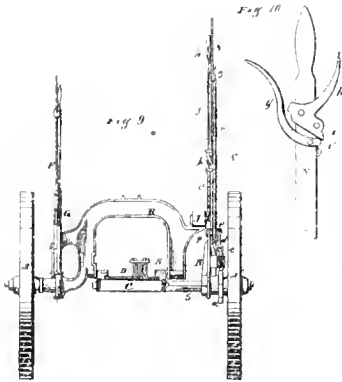
(No Model) 1 Sheet—Sheet 1
T A CONLEE & J H KENNETH
 SULKY PLOW
 No. 251,766. Patented Jan. 3, 1882



Witnesses
 Albert Adams
 B. J. Green

Inventor
 Thomas A. Conlee
 John H. Kenneth
 By Westford
 atty.

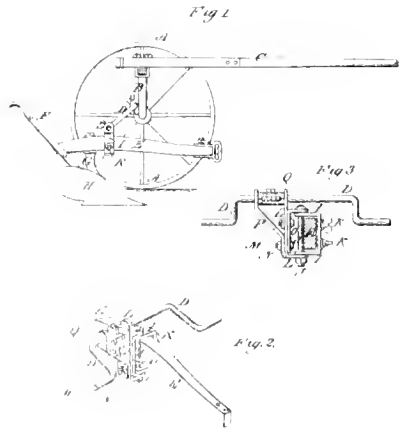
(No Model) 1 Sheet—Sheet 4
T A CONLEE & J H KENNETH
 SULKY PLOW
 No. 251,766 Patented Jan. 3, 1882



Witnesses
 Albert Adams
 B. J. Green

Inventor
 Thomas A. Conlee
 John H. Kenneth
 By Westford
 atty.

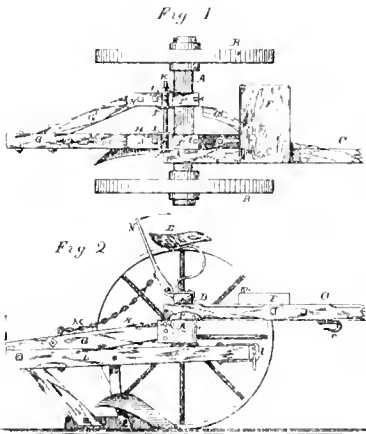
(Model) **M. KITE**
 COUPLING FOR SULKY PLOWS.
 No. 251,895 Patented Jan. 3, 1882



Witnesses
 Albert Adams
 B. J. Green

INVENTOR:
 M. Kite
 BY
 Albert Adams
 ATTORNEY

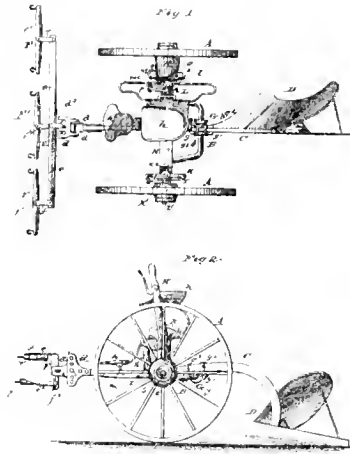
(No Model.)
A C HINSON
 STOCK FOR PLOW TRUCKS
 No. 263,218. Patented Jan 10, 1882.



WITNESSES:
Geo Hamilton
John O'Brien

INVENTOR
A C Hinson
 BY *Wm L Casaday*
 ATTORNEY

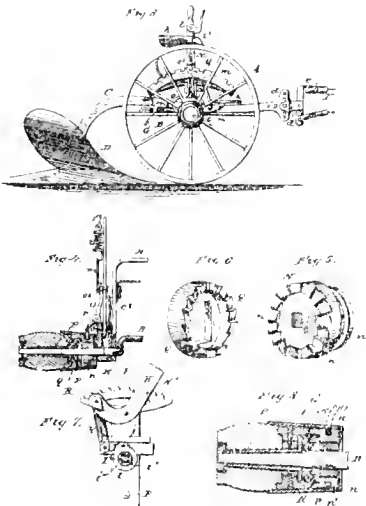
(No Model.)
H MILLER
 SULKY PLOW
 No. 262,815 Patented Jan 24, 1882



WITNESSES:
Ed. S. Sutherland
J. C. Sutherland

INVENTOR
H Miller
 BY *Wm L Casaday*
 ATTORNEY

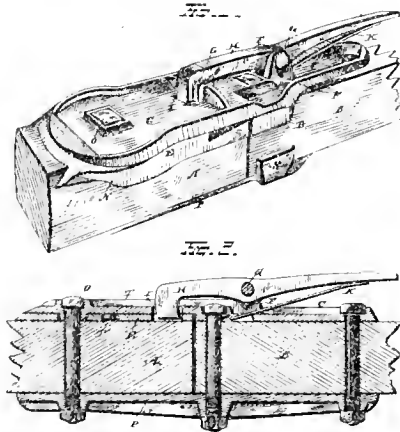
(No Model.)
H MILLER
 SULKY PLOW
 No. 262,615 Patented Jan 24, 1882



WITNESSES:
Ed. S. Sutherland
J. C. Sutherland

INVENTOR
H Miller
 BY *Wm L Casaday*
 ATTORNEY

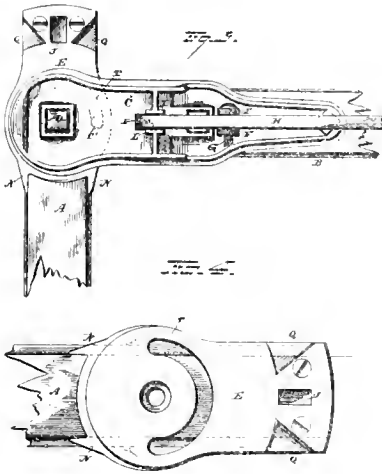
(No Model.)
W. L. CASADAY
 POINTED FLOW TONGUE
 No. 252,866 Patented Jan 31, 1882.



WITNESSES:
Ed. S. Sutherland
Wm L Casaday

INVENTOR
Wm L Casaday
 BY *Wm L Casaday*
 ATTORNEY

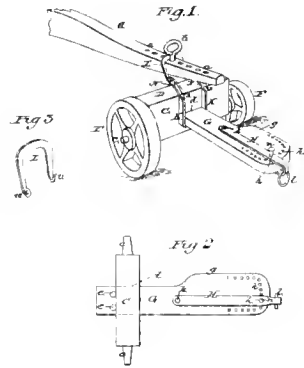
(No Model) W. L. CASADAY. 3 Sheets—Sheet 2
 JOINTED FLOW TONGUE.
 No. 252,888. Patented Jan. 31, 1882.



WITNESSES
E. D. Nottingham
German Engineer

INVENTOR
W. L. Casaday
R. J. Adams
 ATTORNEY

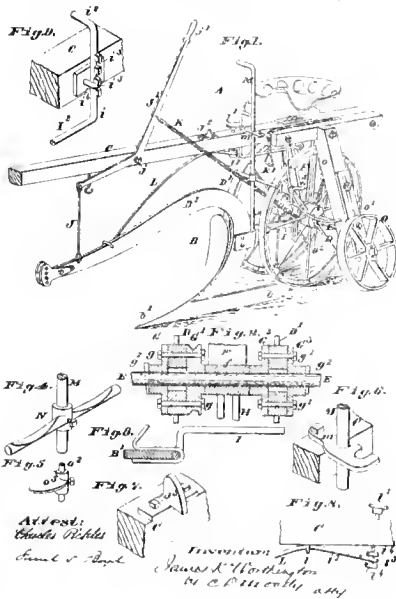
(No Model) P. PETERSEN
 FLOW
 No. 253,094. Patented Jan. 31, 1882.



WITNESSES
John C. Ellis
Philadelphian

INVENTOR
Peter Petersen
7 Madison Street
 ATTORNEYS

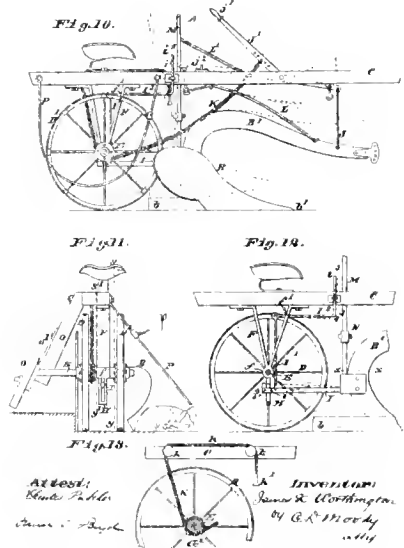
(Model) J. K. WORTHINGTON 2 Sheets—Sheet 1
 SULKY FLOW.
 No. 253,807 Patented Feb. 14, 1882.



Attest:
Charles B. Bickel
 Clerk of Court

INVENTOR
James K. Worthington
14 C. P. 111 only

(Model) J. K. WORTHINGTON 2 Sheets—Sheet 2
 SULKY FLOW.
 No. 253,807 Patented Feb. 14, 1882.



Attest:
Charles B. Bickel
 Clerk of Court

INVENTOR
James K. Worthington
14 C. P. 111 only

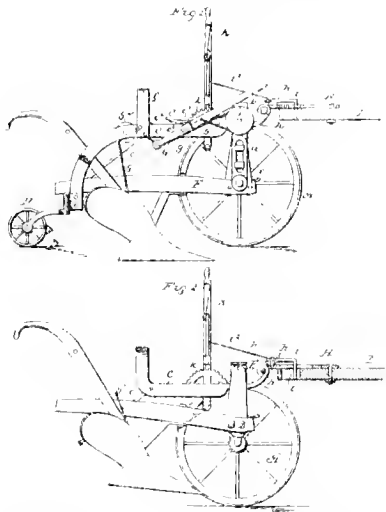
(No Model)

N SHAFFSTALL
PLOW

1 Sheet—Sheet 1

No. 254,394

Patented Feb. 28, 1882.



Witnesses

J. M. Gardner
Wm. C. Taylor

Inventor
Nathan Shaffstall
by *Wm. C. Taylor*

(No Model)

N SHAFFSTALL
PLOW

3 Sheets—Sheet 2

No. 254,394

Patented Feb. 28, 1882.

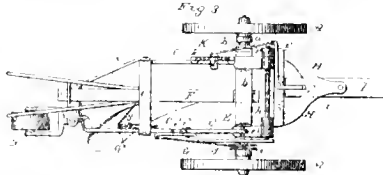


Fig. 4



Fig. 5

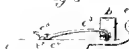
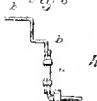


Fig. 6



Witnesses

J. M. Gardner
Wm. C. Taylor

Inventor
Nathan Shaffstall
by *Wm. C. Taylor*

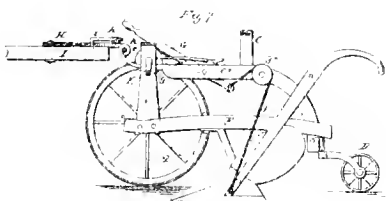
(No Model)

N SHAFFSTALL
PLOW

1 Sheet—Sheet 3

No. 254,394

Patented Feb. 28, 1882.



Witnesses

J. M. Gardner
Wm. C. Taylor

Inventor
Nathan Shaffstall
by *Wm. C. Taylor*

(No Model)

W H WILDE
WHEEL PLOW

1 Sheet—Sheet 1

No. 254,418

Patented Feb. 28, 1882.

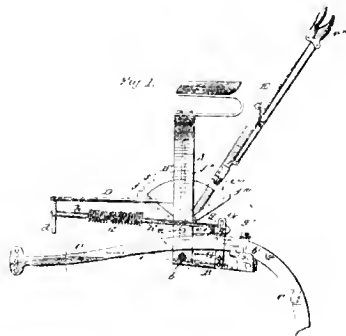
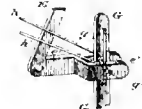


Fig. 2

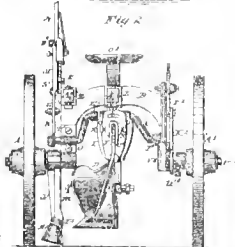
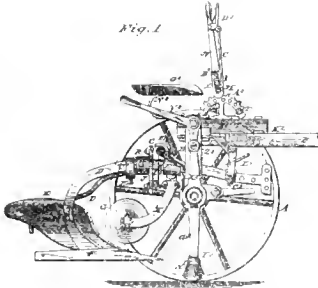


Witnesses

Paul C. Nuttall
W. C. Taylor

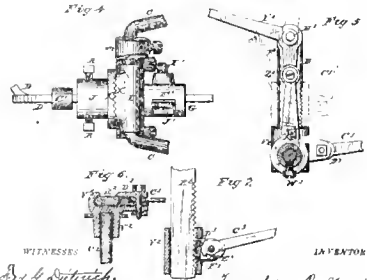
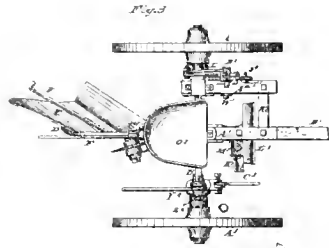
Inventor
William H. Wilde
by *W. C. Taylor*

(Model) F. B. HUNT 4 Sheets—Sheet 1
 SULKY PLOW. Patented Mar. 7, 1882.
 No. 254,481



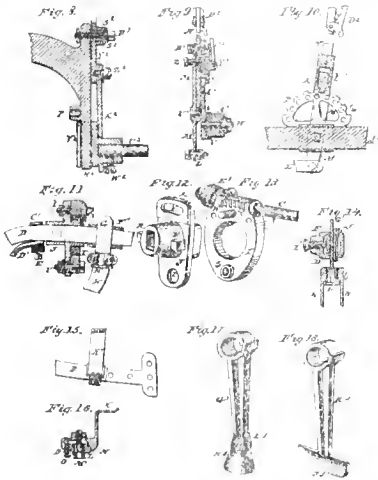
WITNESSES
Geo. L. DeWitt
J. C. DeWitt
 INVENTOR
Franklin B. Hunt

(Model) F. B. HUNT 4 Sheets—Sheet 2
 SULKY PLOW. Patented Mar. 7, 1882.
 No. 254,481



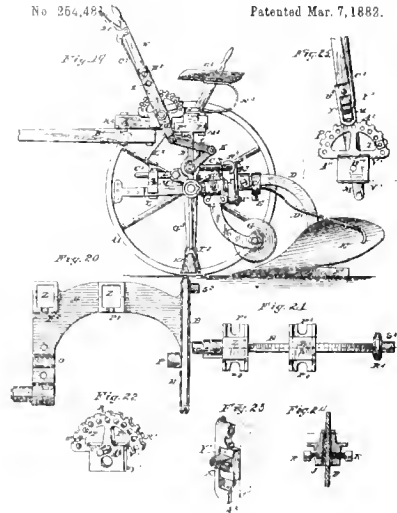
WITNESSES
Geo. L. DeWitt
J. C. DeWitt
 INVENTOR
Franklin B. Hunt

(Model) F. B. HUNT 4 Sheets—Sheet 3
 SULKY PLOW. Patented Mar. 7, 1882.
 No. 254,481



WITNESSES
Geo. L. DeWitt
J. C. DeWitt
 INVENTOR
Franklin B. Hunt

(Model) F. B. HUNT. 4 Sheets—Sheet 4
 SULKY PLOW. Patented Mar. 7, 1882.
 No. 254,481



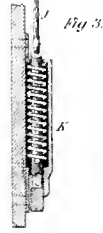
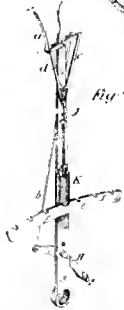
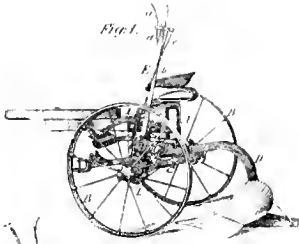
WITNESSES
Geo. L. DeWitt
J. C. DeWitt
 INVENTOR
Franklin B. Hunt

(No Model)

C E KNERLEG
SULKY PLOW

No 254,555

Patented Mar. 7, 1882



Witnesses
Wm C Stewart
Lined Holmgren

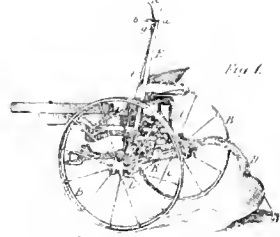
Inventor
C. E. Knerleg
By Wm C Stewart
Lined Holmgren

(No Model)

A LINDGREN
SULKY PLOW

No 254,558

Patented Mar. 7, 1882



Witnesses
Wm C Stewart
Lined Holmgren

Inventor
August Lindgren
By Wm C Stewart
Lined Holmgren

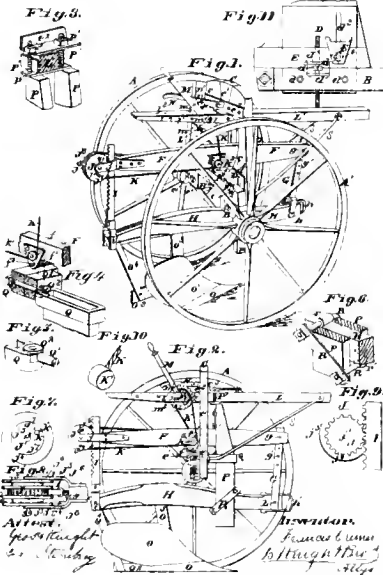
Model 1

2 Sheets—Sheet 1

F CREMER
COMBINED PLOW AND CULTIVATOR

No. 254,620

Patented Mar 7, 1882.



Witnesses
F. C. Stewart
Lined Holmgren

Inventor
Francis Cremer
By F. C. Stewart
Lined Holmgren

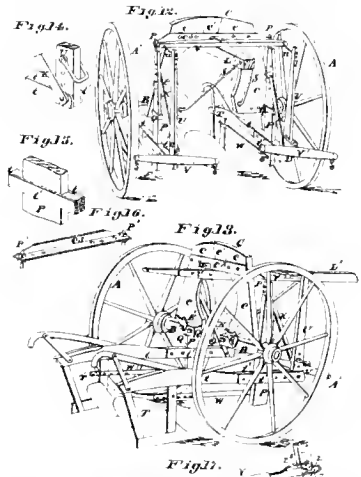
Model 1

2 Sheets—Sheet 2

F CREMER
COMBINED PLOW AND CULTIVATOR

No. 254,620

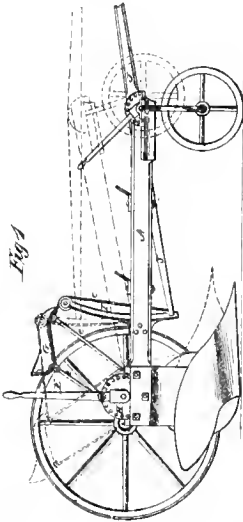
Patented Mar. 7, 1882.



Witnesses
F. C. Stewart
Lined Holmgren

Inventor
Francis Cremer
By F. C. Stewart
Lined Holmgren

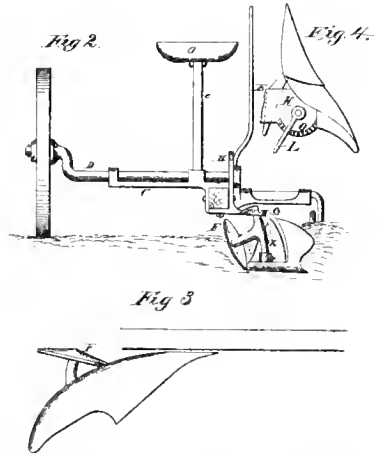
(No Model) 2 Sheets—Sheet 1
G. B. ST JOHN
 FLOW TRUCK.
 No. 254,723. Patented Mar. 7, 1882.



WITNESSES
Amos L. Curran
George Conell

INVENTOR
G. B. St John
L. Deane

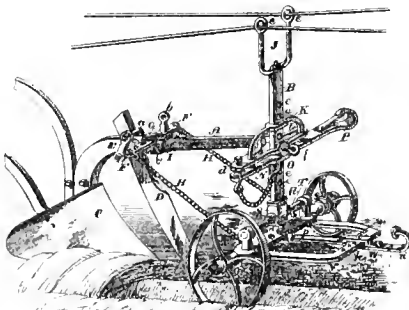
(No Model) 2 Sheets—Sheet 2
G B ST JOHN
 FLOW TRUCK.
 No. 254,723 Patented Mar. 7, 1882.



WITNESSES
Amos L. Curran
George Conell

INVENTOR
G. B. St John
L. Deane

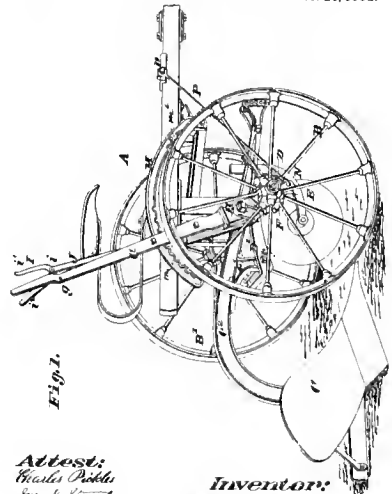
(No Model) **F. FENSKÉ.** 2 Sheets—Sheet 1
 FLOW. Patented Mar. 21, 1882.
 No. 255,156



Witnesses
Edw. Adams
Amey Adams

Inventor:
Ferdinand Fenske
By Strat & Underwood
 Attorneys

(No Model) **G. MOGRE** 2 Sheets—Sheet 1
 SULKY FLOW. Patented Mar. 21, 1882.
 No. 255,391.



Attest:
Charles P. Dobb
Geo. S. Strat

Inventor:
William Mogre
by G. R. Moody
 atty.

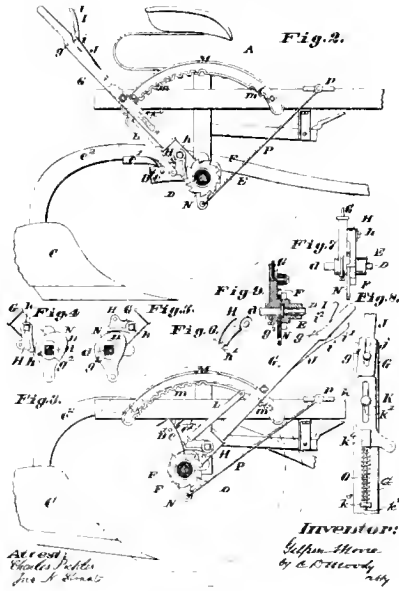
(No Model)

G. MOORE.
SULKY PLOW.

2 Sheets—Sheet 2

No. 255,391

Patented Mar. 21, 1882.



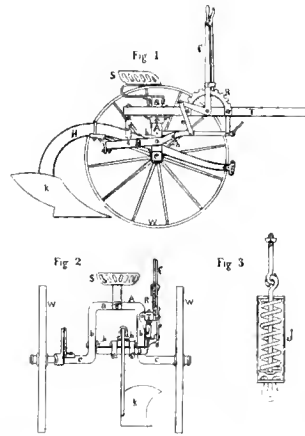
(No Model)

W B YOUNG
SULKY PLOW

2 Sheets—Sheet 1

No. 255,557

Patented Mar. 28, 1882.



WITNESSES
William [unclear]
W. B. [unclear]

INVENTOR
W. B. Young
by John [unclear]
[unclear]

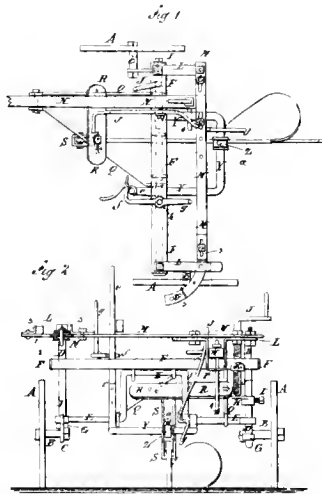
(Model)

T. T. HARRISON
SULKY PLOW.

2 Sheets—Sheet 1

No. 255,977

Patented Apr. 4, 1882.



WITNESSES:
Chas. [unclear]
& [unclear]

INVENTOR:
T. T. Harrison
BY [unclear]
ATTORNEYS

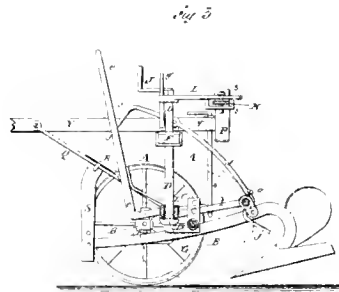
(Model)

T. T. HARRISON.
SULKY PLOW.

2 Sheets—Sheet 2

No. 255,977.

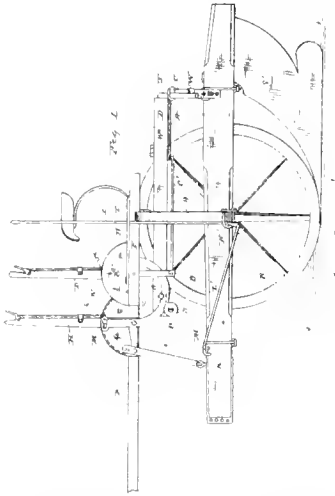
Patented Apr. 4, 1882.



WITNESSES:
Chas. [unclear]
& [unclear]

INVENTOR:
T. T. Harrison
BY [unclear]
ATTORNEYS

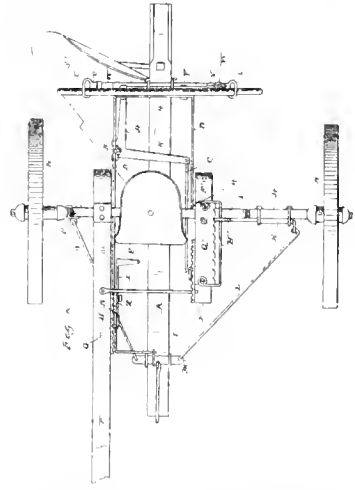
(Model) M G WOOD & W C PRATT 3 Sheets—Sheet 1
 SULKY PLOW.
 No. 256,422 Patented Apr. 11, 1882.



Witnesses:
 Edward Spruce
 J. J. Mc Carthy

Inventor:
 M. G. Wood & W. C. Pratt
 By C. M. Alexander
 Attorney

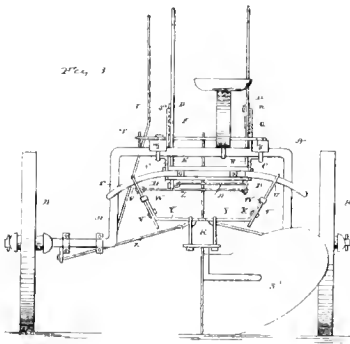
(Model) M G WOOD & W C PRATT 3 Sheets—Sheet 2
 SULKY PLOW.
 No. 256,422. Patented Apr. 11, 1882.



Witnesses:
 Edward Spruce
 J. J. Mc Carthy

Inventor:
 M. G. Wood & W. C. Pratt
 By C. M. Alexander
 Attorney

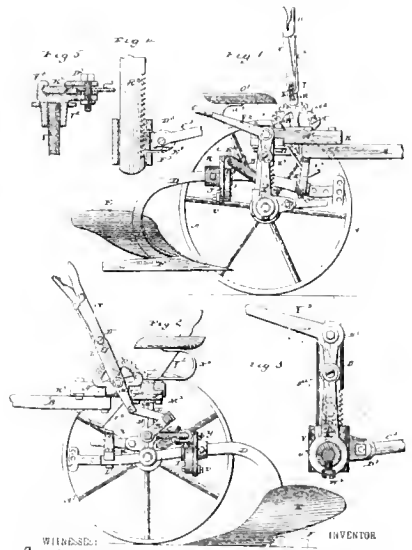
(Model) M. G. WOOD & W C PRATT 3 Sheets—Sheet 3
 SULKY PLOW.
 No. 256,422 Patented Apr. 11, 1882.



Witnesses:
 Edward Spruce
 J. J. Mc Carthy

Inventor:
 M. G. Wood & W. C. Pratt
 By C. M. Alexander
 Attorney

(No Model) F B HUNT 3 Sheets—Sheet 1
 SULKY PLOW
 No. 256,695. Patented Apr 12, 1882.



Witnesses:
 Ed. L. Spruce
 J. J. Mc Carthy

Inventor:
 Frank B. Hunt

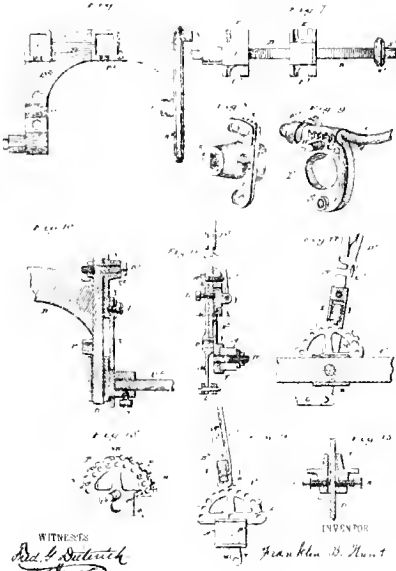
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F B HUNT
SULKY PLOW.

2 Sheets—Sheet 1

No. 256,905

Patented Apr 18, 1882.



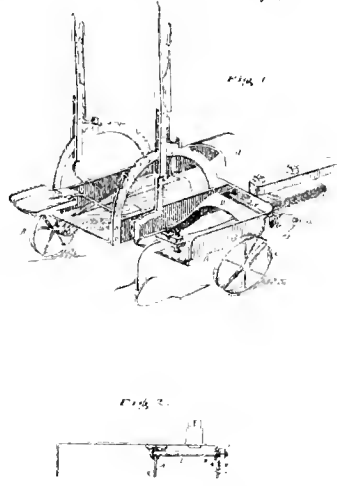
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J WARD
SULKY PLOW.

1 Sheet—Sheet 1

No. 257,266

Patented May 2, 1882.



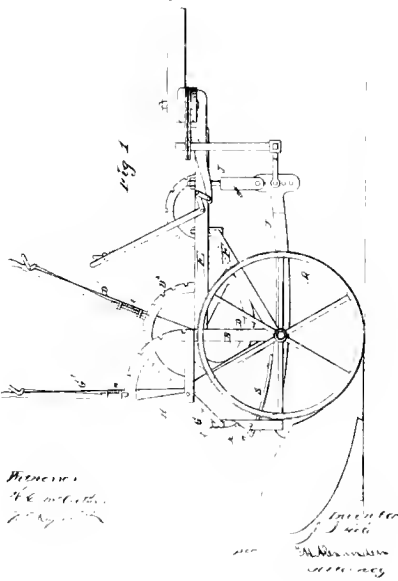
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J I HOKE
SULKY PLOW.

1 Sheet—Sheet 1

No. 257,327

Patented May 2, 1882.



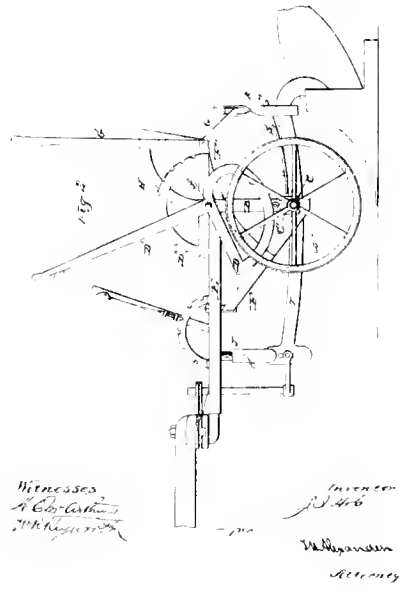
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J I HOKE
SULKY PLOW.

1 Sheet—Sheet 2

No. 257,327.

Patented May 2, 1882.



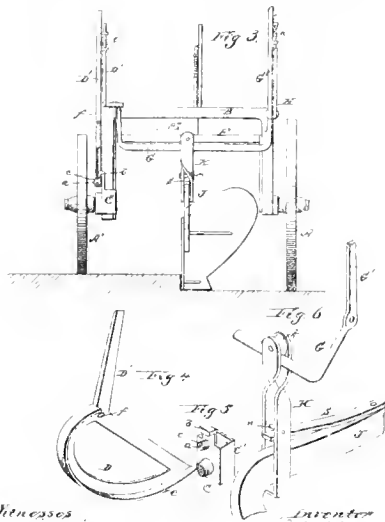
(No Model)

J I HOKE

Patented May 2, 1882.

No. 257,327

SULKY PLOW



Witnesses
 H. C. Weston
 W. R. Hayward

Inventor
 J. I. Hoke
 W. H. Anderson
 Attorney

(No Model)

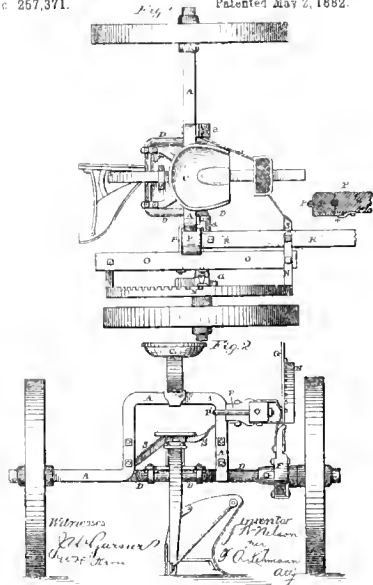
J W NELSON

2 Sheets—Sheet 1

No. 257,371.

WHEEL PLOW

Patented May 2, 1882.



Witnesses
 R. L. Garner
 W. R. Hayward

Inventor
 J. W. Nelson
 S. C. Ashman
 Attorney

(No Model)

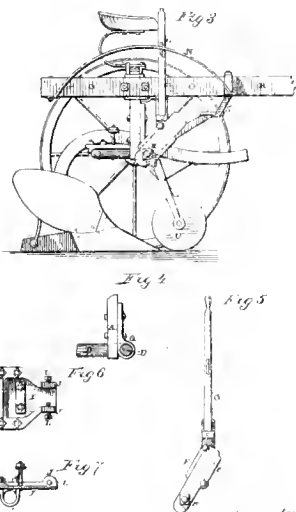
J. W. NELSON

2 Sheets—Sheet 2

No. 257,371.

WHEEL PLOW

Patented May 2, 1882.



Witnesses
 R. L. Garner
 W. R. Hayward

Inventor
 J. W. Nelson
 S. C. Ashman
 Attorney

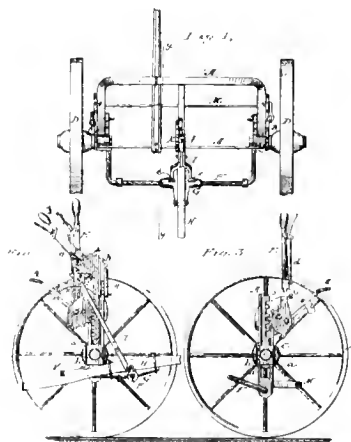
(No Model)

I. LODGE.

SULKY PLOW.

No. 257,502

Patented May 9, 1882.



Witnesses
 A. L. Dittich
 W. R. Hayward

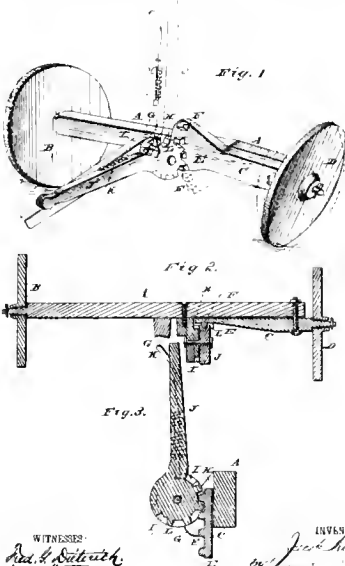
Inventor
 I. Lodge
 S. C. Ashman
 Attorney

(No Model.)

J. NICEWOOD
SULKY PLOW.

No. 257,805.

Patented May 9, 1882.



WITNESSES:
Geo. L. Satchell
W. A. Clegg

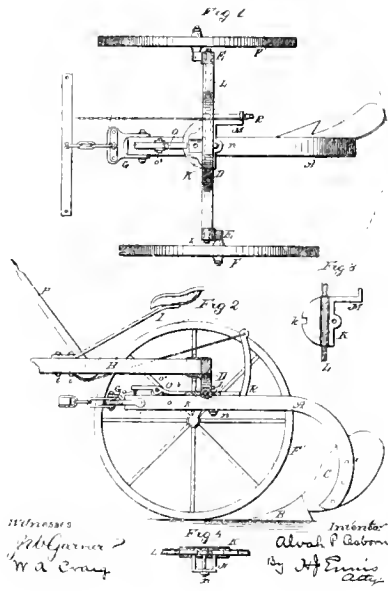
INVENTOR:
J. Nicewood
 BY *W. A. Clegg*
 ATTORNEYS.

(No Model.)

A. P. OSBORN
SULKY PLOW.

No. 257,749.

Patented May 9, 1882.



WITNESSES:
W. A. Clegg

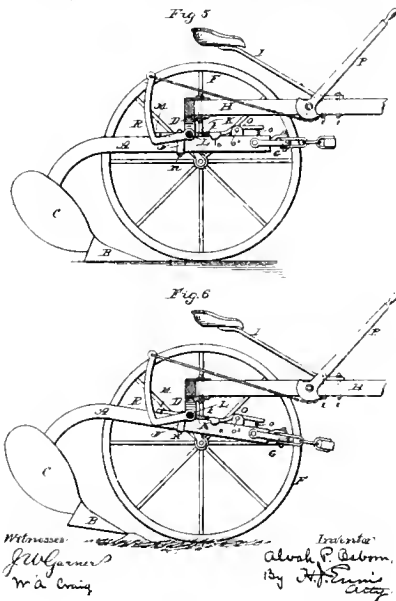
INVENTOR:
Alfred P. Osborn
 BY *W. A. Clegg*
 ATTORNEYS.

(No Model.)

A. P. OSBORN
SULKY PLOW.

No. 257,749.

Patented May 9, 1882.



WITNESSES:
W. A. Clegg

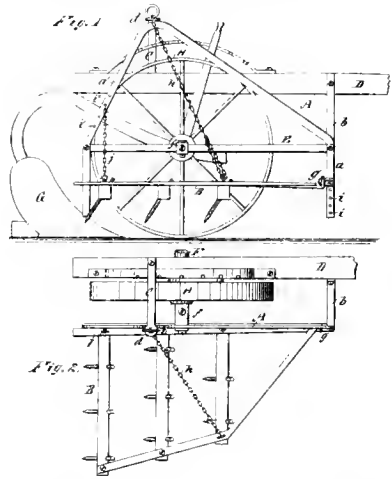
INVENTOR:
Alfred P. Osborn
 BY *W. A. Clegg*
 ATTORNEYS.

(Model.)

M. ROBINSON.
COMBINED SULKY PLOW AND DRAG.

No. 257,783.

Patented May 9, 1882.



WITNESSES:
W. A. Clegg

INVENTOR:
M. Robinson
 BY *W. A. Clegg*
 ATTORNEYS.

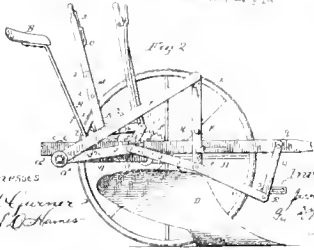
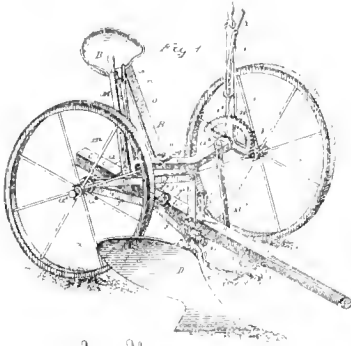
(No Model.)

J NIXON
SULKY FLOW

2 Sheets—Sheet 1

No. 257,971

Patented May 16, 1882.



Witnesses
W. Gardner
W. S. Thomas

Inventor
J. Nixon
By W. S. Thomas

(No Model.)

J NIXON
SULKY FLOW

2 Sheets—Sheet 2

No. 257,971.

Patented May 16, 1882.

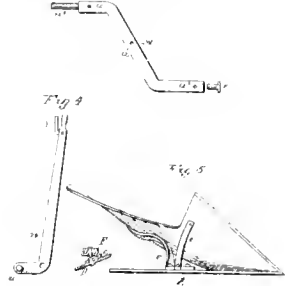


Fig. 3

Fig. 4

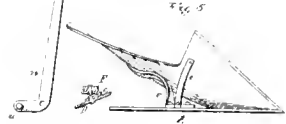


Fig. 5



Witnesses
W. Gardner
W. S. Thomas

Inventor
J. Nixon
By W. S. Thomas

(No Model.)

J I HOKE
SULKY FLOW.

2 Sheets—Sheet 1

No. 258,202.

Patented May 16, 1882

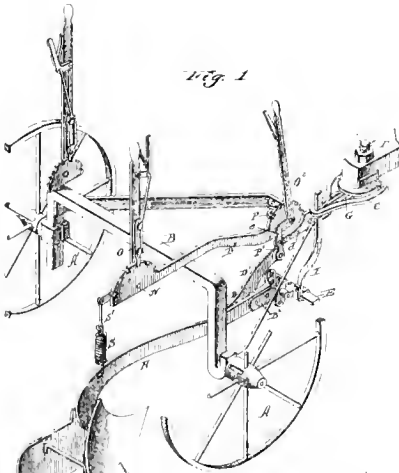


Fig. 1

Witnesses
W. Gardner
W. S. Thomas

Inventor
J. I. Hoke
By W. S. Thomas

(No Model.)

J I HOKE
SULKY FLOW

2 Sheets—Sheet 2

No. 258,202

Patented May 16, 1882.

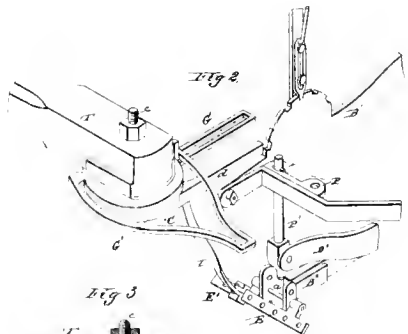
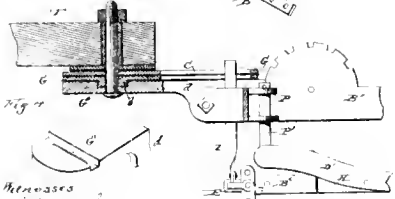


Fig. 2

Fig. 3



Witnesses
W. Gardner
W. S. Thomas

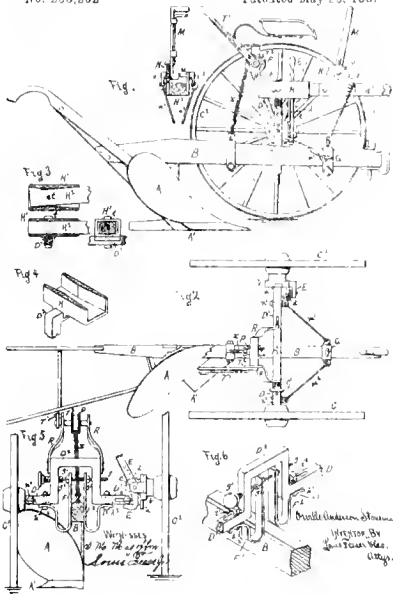
Inventor
J. I. Hoke
By W. S. Thomas

(No Model)

O. A. STONEMAN
SULKY PLOW

No. 258,262

Patented May 23, 1882.

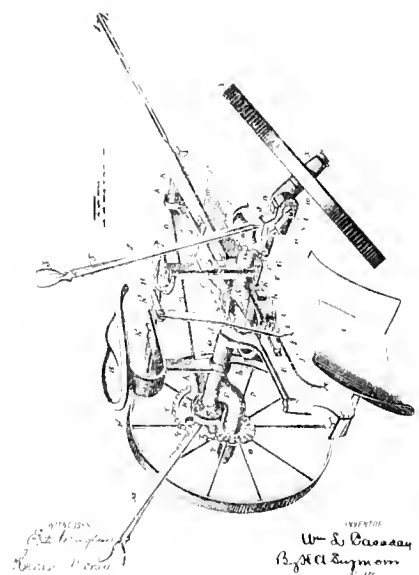


(No Model)

W. L. CASADAY
SULKY PLOW

No. 258,987

Patented June 6, 1882

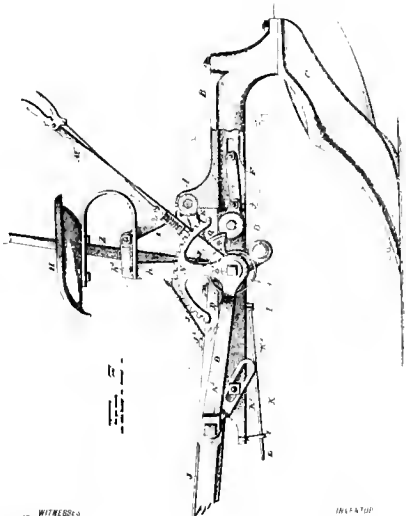


(No Model)

W. L. CASADAY
EDGE PLOW

No. 258,987.

Patented June 6, 1882

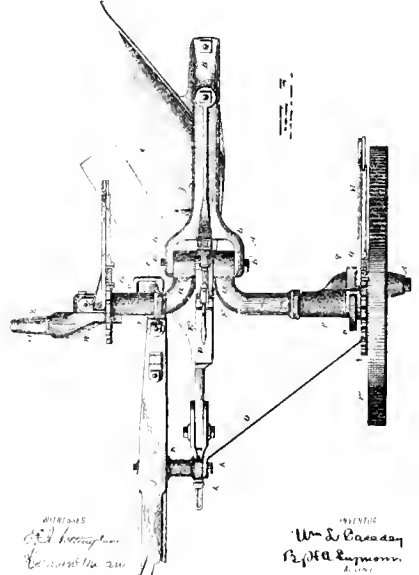


(No Model)

W. L. CASADAY
SULKY PLOW

No. 258,987.

Patented June 6, 1882.



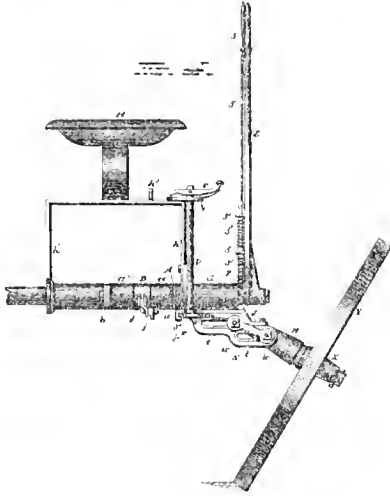
(No Model)

W L CASADAY
SULKY PLOW

4 Sheets—Sheet 4

No. 258,987.

Patented June 6, 1882



WITNESSES
J. E. Hutchinson
Herman W. ...

INVENTOR
 W L Casaday
R. H. A. Seymour

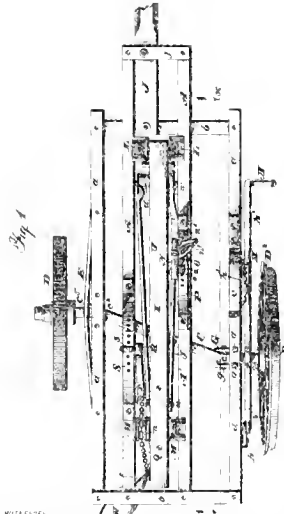
(Model)

J R POLLOCK
SULKY PLOW

7 Sheets—Sheet

No. 259,715.

Patented June 20, 1882



WITNESSES
J. E. Hutchinson
Herman W. ...

INVENTOR
 J R Pollock
R. H. A. Seymour

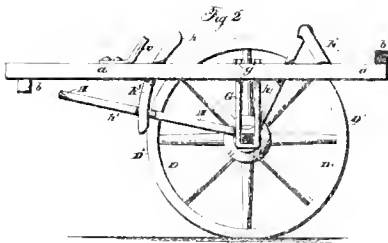
(Model)

J R POLLOCK.
SULKY PLOW

3 Sheets—Sheet 2

No. 259,715.

Patented June 20, 1882.



WITNESSES
J. E. Hutchinson
Herman W. ...

INVENTOR
 J R Pollock
R. H. A. Seymour

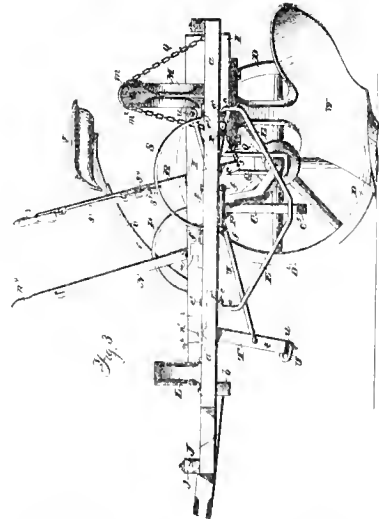
(Model)

J. R. POLLOCK
SULKY PLOW.

2 Sheets—Sheet 3

No. 259,715.

Patented June 20, 1882.



WITNESSES
J. E. Hutchinson
Herman W. ...

INVENTOR
 J R Pollock
R. H. A. Seymour

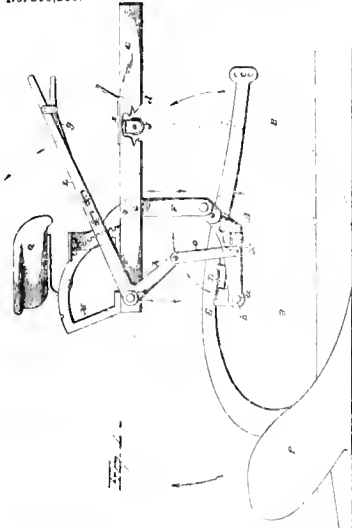
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F. S. DAVENPORT
WHEEL PLOW.

3 Sheets—Sheet 1

No. 260,286.

Patented June 27, 1882.



WITNESSES
R. B. Nottingham
J. S. Nottingham

INVENTOR
F. S. Davenport
R. B. Nottingham
Attorney

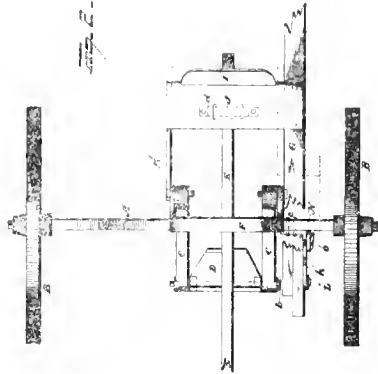
(No Model)

F. S. DAVENPORT.
WHEEL PLOW.

3 Sheets—Sheet 2

No. 260,286.

Patented June 27, 1882.



WITNESSES
R. B. Nottingham
J. S. Nottingham

INVENTOR
F. S. Davenport
R. B. Nottingham
Attorney

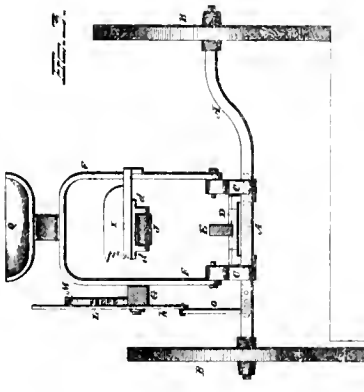
(No Model)

F. S. DAVENPORT
WHEEL PLOW.

3 Sheets—Sheet 3

No. 260,286

Patented June 27, 1882.



WITNESSES
R. B. Nottingham
J. S. Nottingham

INVENTOR
F. S. Davenport
R. B. Nottingham
Attorney

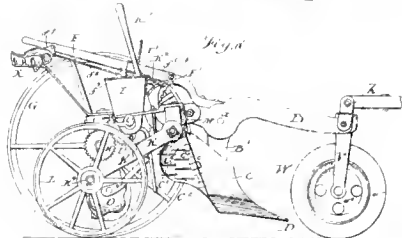
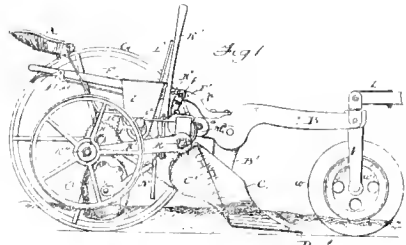
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T. E. JEFFERSON.
COMBINED PLOW, HARROW, SEEDER, &c.

3 Sheet—Sheet 1

No. 260,492.

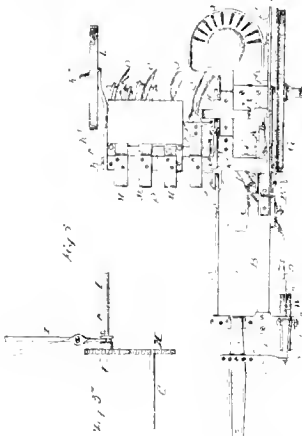
Patented July 4, 1882.



WITNESSES
R. B. Nottingham
J. S. Nottingham

INVENTOR
T. E. Jefferson

(No Model) T. E. JEFFERSON 3 Sheets—Sheet 2
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482. Patented July 4, 1882.

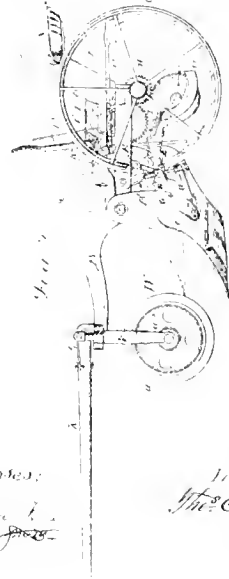


Witnesses.

Wm. L. Taylor
Chas. J. Smith

Inventor.
Thos. E. Jefferson

(No Model) T. E. JEFFERSON 3 Sheets—Sheet 1
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482 Patented July 4, 1882

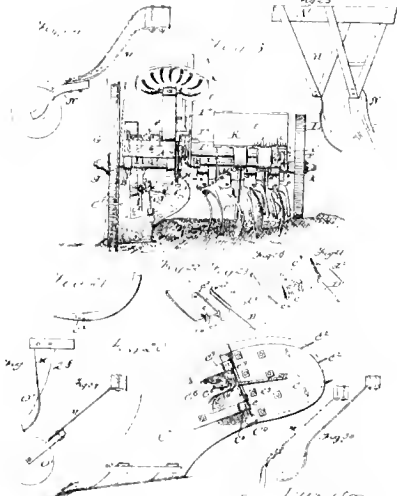


Witnesses.

Wm. L. Taylor
Chas. J. Smith

Inventor.
Thos. E. Jefferson

(No Model) T. E. JEFFERSON 3 Sheets—Sheet 4
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482 Patented July 4, 1882.

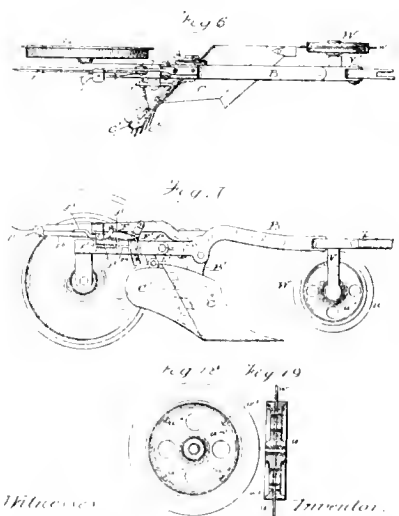


Witnesses.

Wm. L. Taylor
Chas. J. Smith

Inventor.
Thos. E. Jefferson

(No Model) T. E. JEFFERSON 3 Sheets—Sheet 5
 COMBINED PLOW, HARROW, SEEDER, &c.
 No. 260,482 Patented July 4, 1882.

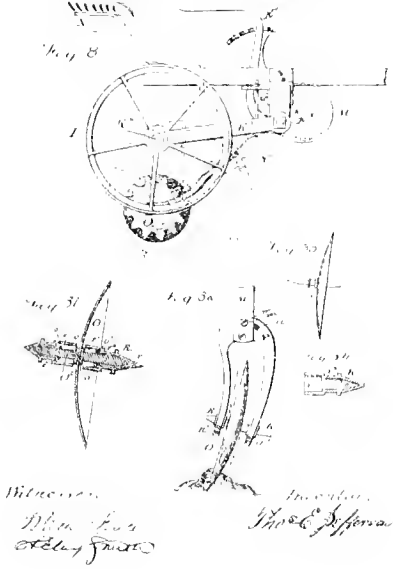


Witnesses.

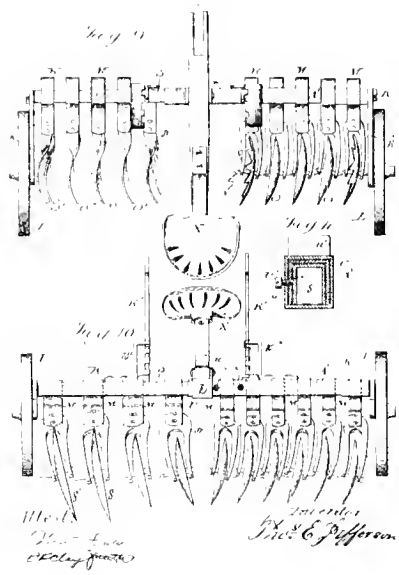
Wm. L. Taylor
Chas. J. Smith

Inventor.
Thos. E. Jefferson

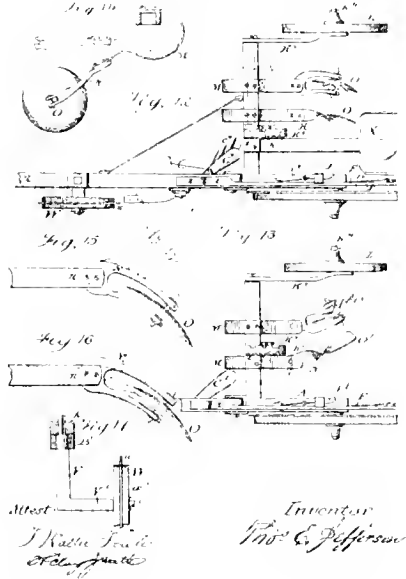
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COMBINED PLOW, HARROW, SEEDER, &c.
No. 260,482. Patented July 4, 1882.



(No. Model) T. E. JEFFERSON 9 Sheets—Sheet 9
COMBINED PLOW, HARROW, SEEDER, &c.
No. 260,482. Patented July 4, 1882.



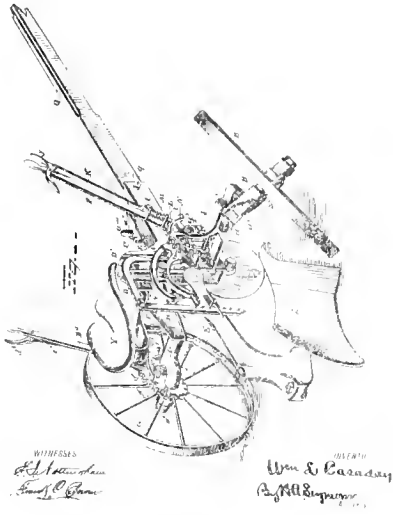
(No. Model) T. E. JEFFERSON 9 Sheets—Sheet 8
COMBINED PLOW, HARROW, SEEDER, &c.
No. 260,482. Patented July 4, 1882.



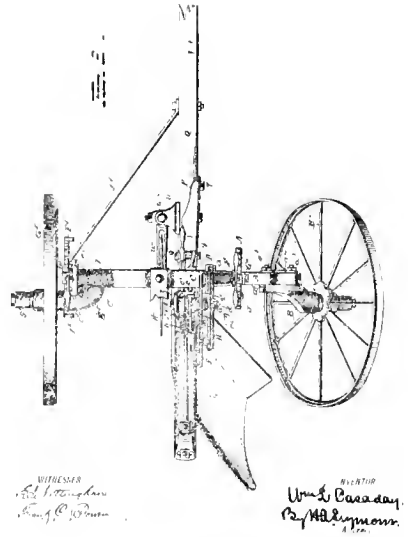
(No. Model) T. E. JEFFERSON 9 Sheets—Sheet 8
COMBINED PLOW, HARROW, SEEDER, &c.
No. 260,482. Patented July 4, 1882.



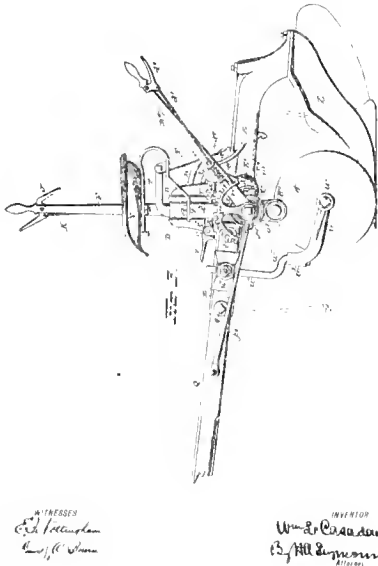
(Model)
 W. L. CASADAY
 SULKY PLOW
 No. 260,534
 5 Sheets—Sheet 1
 Patented July 4, 1882



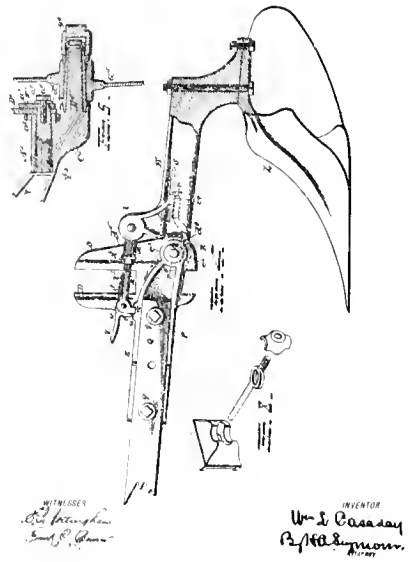
(Model)
 W. L. CASADAY
 SULKY PLOW
 No. 260,534
 5 Sheets—Sheet 2
 Patented July 4, 1882



(Model)
 W. L. CASADAY.
 SULKY PLOW
 No. 260,534.
 5 Sheets—Sheet 3
 Patented July 4, 1882.



(Model)
 W. L. CASADAY
 SULKY PLOW.
 No. 260,534.
 5 Sheets—Sheet 4
 Patented July 4, 1882.



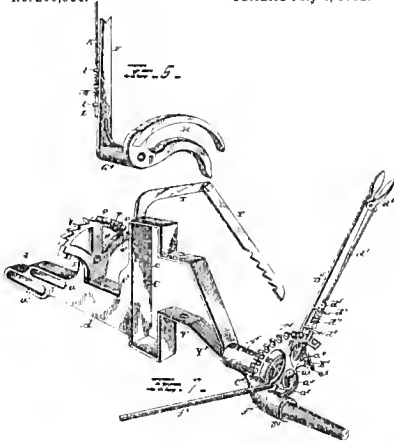
(Model.)

W. L. CASADAY.
SULKY PLOW.

5 Sheets—Sheet 6

No. 260,634.

Patented July 4, 1882.



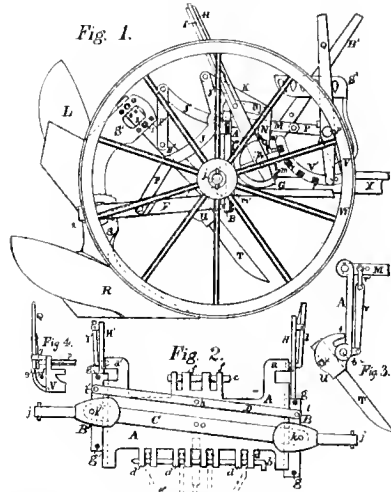
WITNESSES
Edw. H. ...
...

INVENTOR
Wm. L. Casaday.
R. H. ...

A. SANBORN.
SULKY PLOW.

No. 261,176.

Patented July 18, 1882.



WITNESSES
...
...

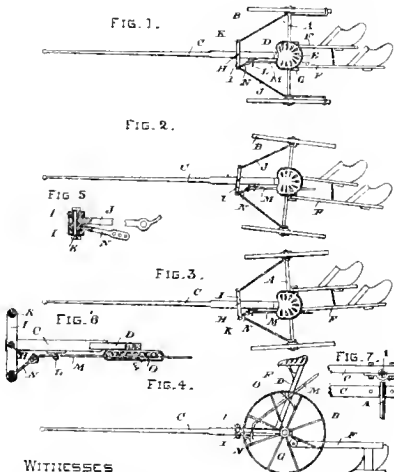
INVENTOR
Augustus Sanborn

(No Model.)

E. TOPHAM.
GANG PLOW.

No. 261,182.

Patented July 18, 1882



WITNESSES
...
George Derby

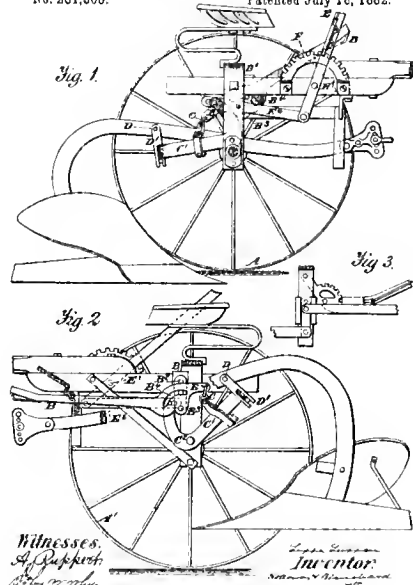
INVENTOR
Edward Topham
...

(No Model.)

L. LUFFEN.
SULKY PLOW.

No. 261,366.

Patented July 18, 1882.



WITNESSES
...
...

INVENTOR
Luffen ...

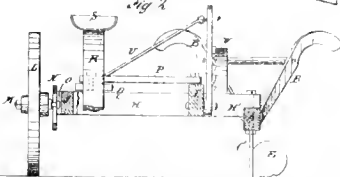
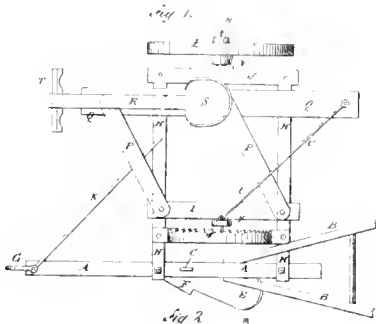
(No Model)

C H WANLE

RIDING ATTACHMENT FOR PLOWS.

No. 261,793

Patented July 25, 1882.



WITNESSES:
Chas. A. Stone
& Designer

INVENTOR:
C. H. Wanle
 BY *Almon B. Co.*
 ATTORNEY

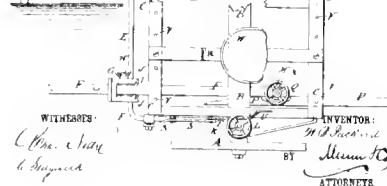
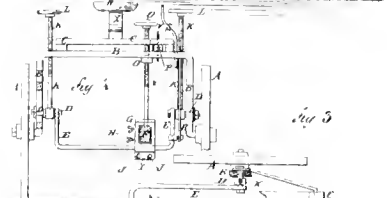
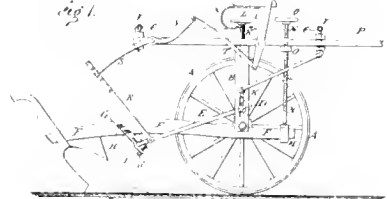
(No Model)

W B. PACEARD

SULKY PLOW, &c.

No. 262,465.

Patented Aug. 8, 1882.



WITNESSES:
Chas. A. Stone
& Designer

INVENTOR:
W. B. Paceard
 BY *Almon B. Co.*
 ATTORNEY

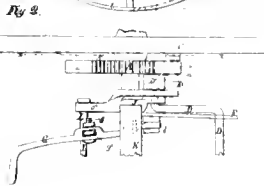
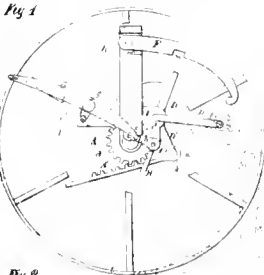
(Model)

F. F. SMITH & J. W. LOCKWOOD.

POWER LIFT FOR PLOWS.

No. 262,547

Patented Aug. 8, 1882



Witnesses
Chas. A. Stone
Edw. C. Thomas

Inventor:
F. F. Smith
J. W. Lockwood

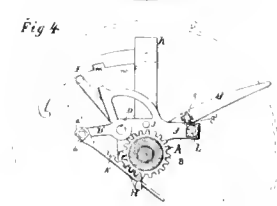
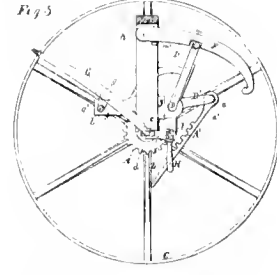
(Model)

F. F. SMITH & J. W. LOCKWOOD.

POWER LIFT FOR PLOWS.

No. 262,547.

Patented Aug. 8, 1882



Witnesses
Chas. A. Stone
Edw. C. Thomas

Inventor:
F. F. Smith
J. W. Lockwood

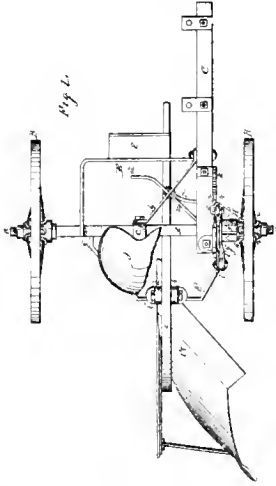
(No Model)

G. S. BRIGGS.
SULKY PLOW

2 Sheets—Sheet 1

No. 282,729

Patented Aug. 15, 1882



Witnesses
J. J. Hanson
C. C. Beckel

Inventor
George S. Briggs
by C. C. Beckel
ATTORNEY

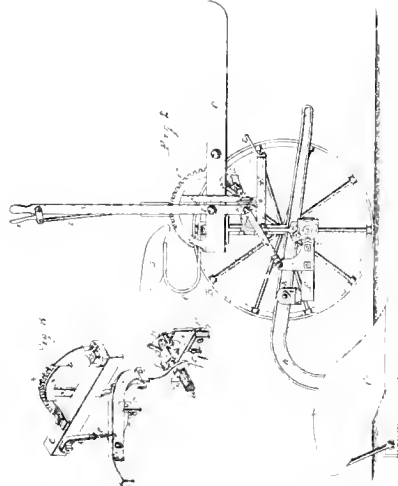
(No Model)

G. S. BRIGGS
SULKY PLOW

2 Sheets—Sheet 2

No. 282,729

Patented Aug. 15, 1882



Witnesses
J. J. Hanson
C. C. Beckel

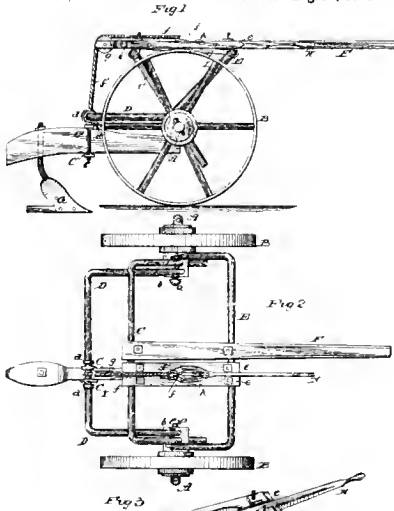
Inventor
George S. Briggs
by C. C. Beckel
ATTORNEY

(No Model)

C. T. REED.
SULKY ATTACHMENT FOR PLOWS.

No. 263,217.

Patented Aug. 22, 1882.



WITNESSES:
Geo. S. Beckel
J. J. Hanson

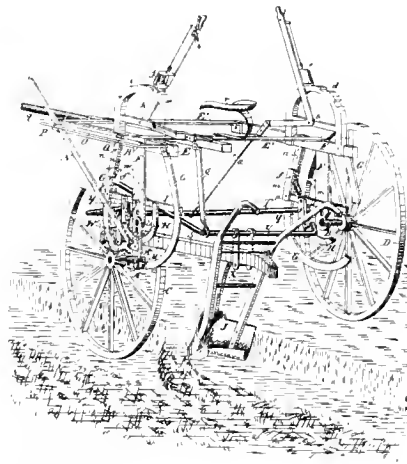
INVENTOR:
C. T. Reed,
by Louis Berger
ATTORNEY

(Model)

E. POWELL.
SULKY PLOW.

No. 263,577.

Patented Aug. 29, 1882



WITNESSES:
J. J. Hanson
C. C. Beckel

INVENTOR:
E. Powell,
by Messrs
ATTORNEYS

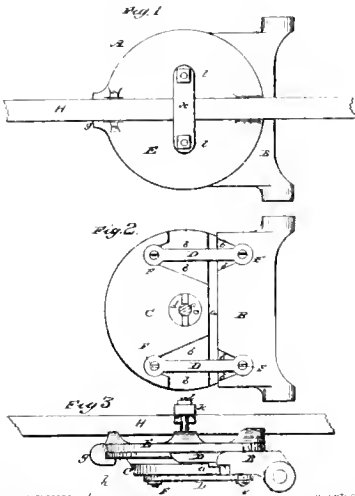
(No Model)

N SWICKARD
SULKY FLOW.

2 Sheets—Sheet 1

No. 263,869

Patented Aug. 29, 1882



WITNESSES
Emory A. Gates
Philipp Heiser

INVENTOR
N. Swickard
Attorney at Law
New York City

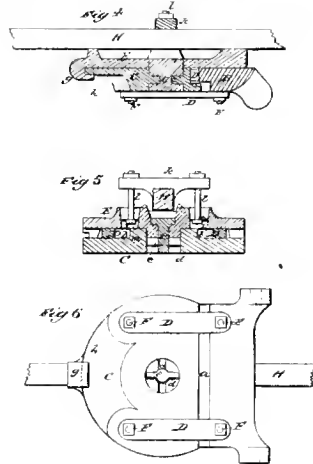
(No Model)

N SWICKARD
SULKY FLOW.

2 Sheets—Sheet 2

No. 263,869

Patented Aug. 29, 1882



WITNESSES
Emory A. Gates
Philipp Heiser

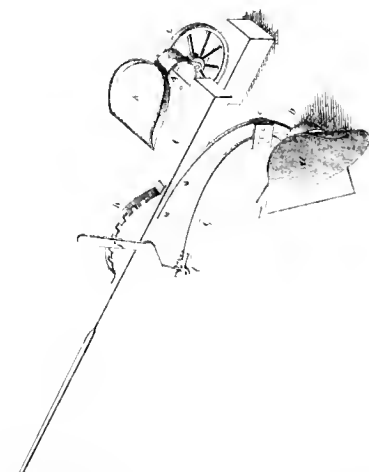
INVENTOR
N. Swickard
Attorney at Law
New York City

(No Model)

S W BARR.
SULKY FLOW.

No. 263,753

Patented Sept 5, 1882



Witnesses
Geo. F. Cummings
Steph. Ken. Co. Ballou

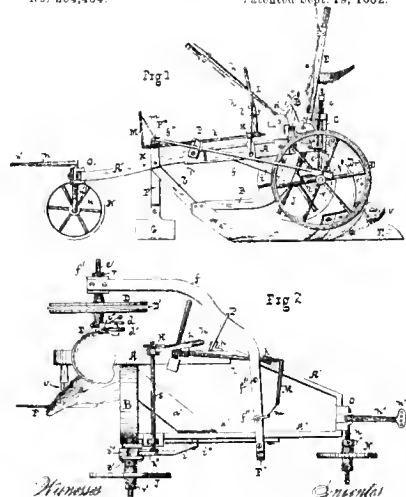
Inventor
S. W. Barr

(No Model)

B S BENSON
FLOW

No. 264,434

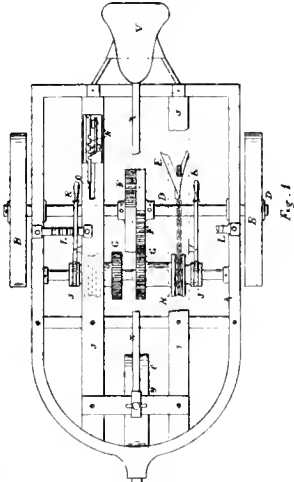
Patented Sept. 19, 1882



Witnesses
W. S. Patton
Wm. A. Bealy

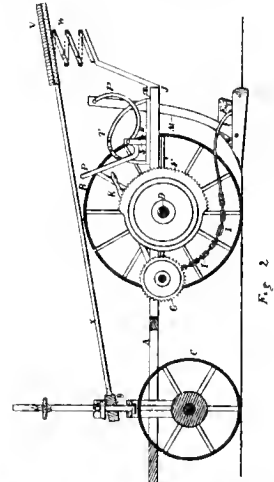
Inventor
B. S. Benson
Attorney

(No Model) J. D. PATTERSON 3 Sheets—Sheet 1
 WHEEL PLOW.
 No. 264,562. Patented Sept. 19, 1882.



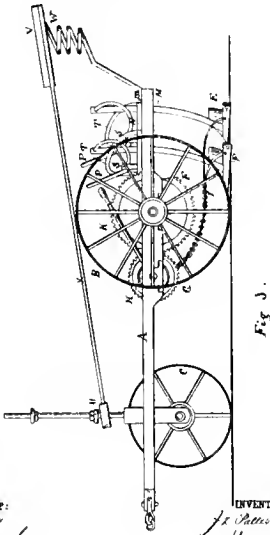
WITNESSES: *Geo. Kimball, C. S. Sargent*
 INVENTOR: *J. D. Patterson*
 BY *Allen H. C.* ATTORNEY.

(No Model) J. D. PATTERSON 3 Sheets—Sheet 2
 WHEEL PLOW.
 No. 264,562. Patented Sept. 19, 1882.



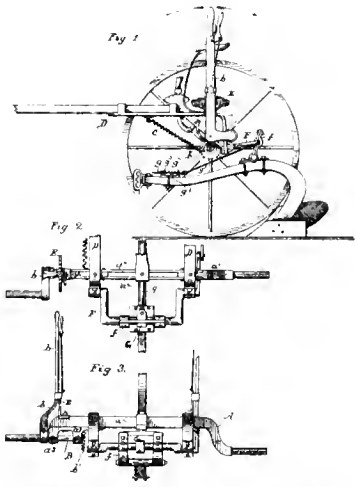
WITNESSES: *Geo. Kimball, C. S. Sargent*
 INVENTOR: *J. D. Patterson*
 BY *Allen H. C.* ATTORNEY.

(No Model) J. D. PATTERSON 3 Sheets—Sheet 3
 WHEEL PLOW.
 No. 264,562. Patented Sept. 19, 1882.



WITNESSES: *Geo. Kimball, C. S. Sargent*
 INVENTOR: *J. D. Patterson*
 BY *Allen H. C.* ATTORNEY.

(No Model) A. F. BERGQVIST
 SULKY PLOW.
 No. 264,610. Patented Sept. 18, 1882.



WITNESSES: *Edw. H. Sargent, John C. Kemm*
 INVENTOR: *A. F. Bergqvist*
 BY *Allen H. C.* ATTORNEY.

(No Model)

T T HARRISON
SULKY PLOW.

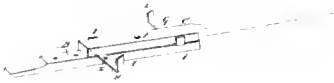
No. 264,692.

Patented Sept. 19, 1882.

Fig 1



Fig 2



WITNESSES
Francis Pollock
C. H. Hays

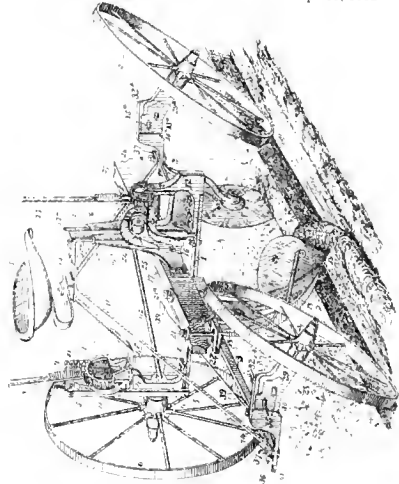
INVENTOR
T. T. Harrison
BY *[Signature]*
ATTORNEYS

(No Model)

T L RICHARDSON.
SULKY PLOW.

No. 254,763.

Patented Sept. 19, 1882



Witness
[Signature]

Fig 1

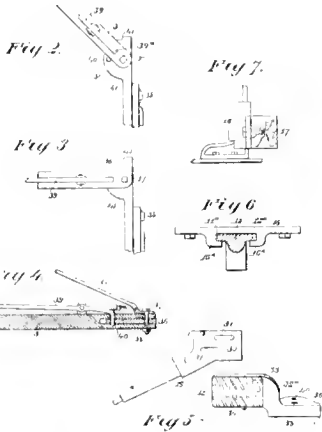
Inventor
T. L. Richardson
BY *[Signature]*
ATTORNEYS

(No Model)

T L RICHARDSON
SULKY PLOW.

No. 264,763

Patented Sept. 19, 1882



Witness
[Signature]

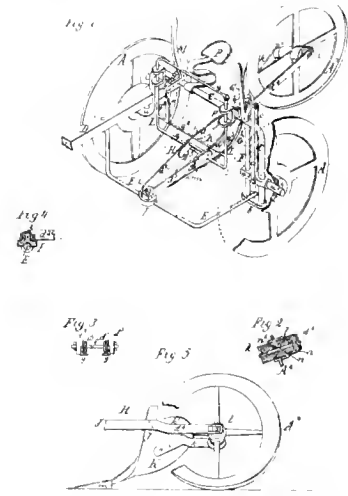
Inventor
T. L. Richardson
BY *[Signature]*
ATTORNEYS

(Model)

N S BARGER
SULKY PLOW.

No. 264,846

Patented Sept. 26, 1882



Witness
[Signature]

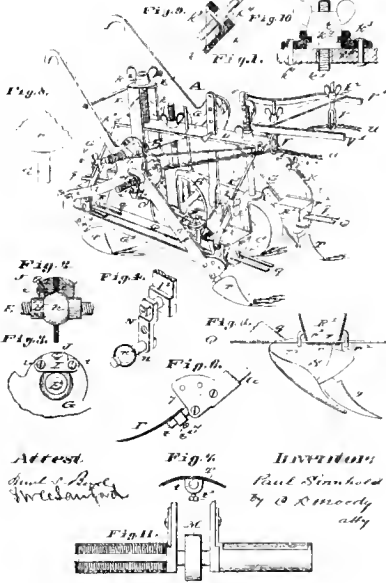
Inventor
N. S. Barger
BY *[Signature]*
ATTORNEYS

(No Model.)

P. SINNHOLD
SEED DRILL.

No. 265,708

Patented Oct 10, 1882

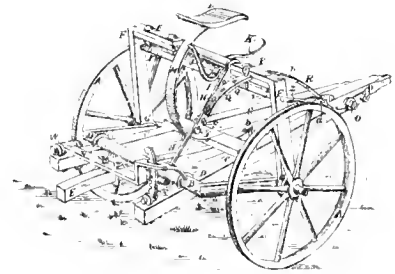


(No Model.)

E. PEAK.
WHEEL PLOW

No. 287,581.

Patented Nov. 14, 1882.



WITNESSES
E. Sinnhold
C. Engle

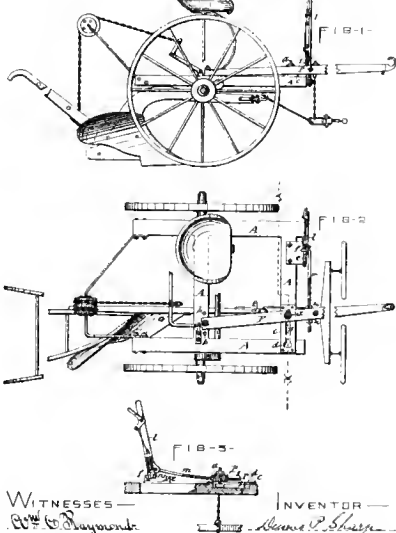
INVENTOR:
E. Peak
BY *Allen R.*
ATTORNEYS

(No Model.)

D. P. SHARP.
PLOW SULKY.

No. 287,802.

Patented Nov. 14, 1882.

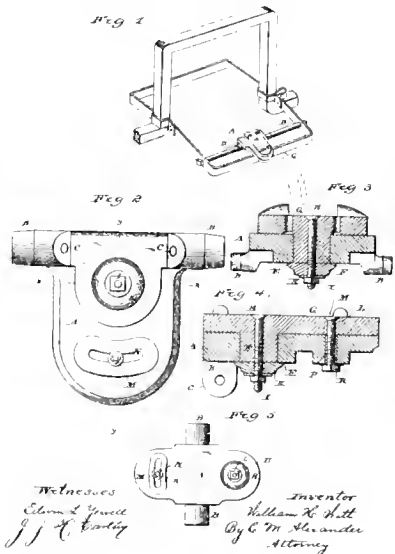


(No Model.)

W. H. WITT.
PLOW ATTACHMENT.

No. 287,830.

Patented Nov. 14, 1882.

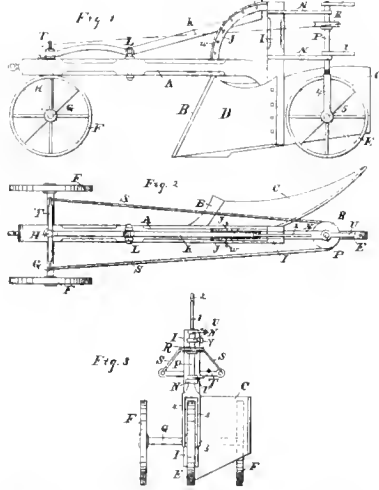


(No Model)

P. A. FOMINAYA
PLOW.

No. 267,648.

Patented Nov. 14, 1882.



Witnesses
A. C. Egan,
John C. Hayes

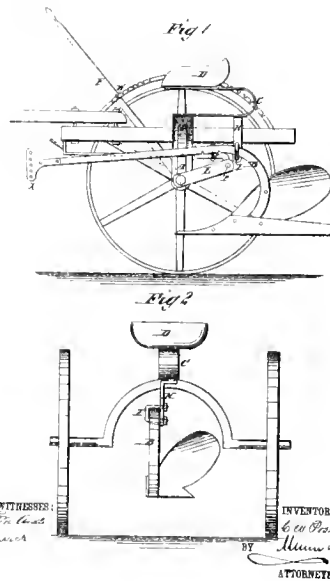
Inventor:
Peter A. Fominaya,
By Chas. B. Shinn,
Attorney

(No Model)

C. W. POST.
SULKY PLOW.

No. 268,280

Patented Nov. 28, 1882



Witnesses:
Chas. B. Shinn,
Hayes

Inventor:
C. W. Post,
By
Munn & Co.,
Attorneys.

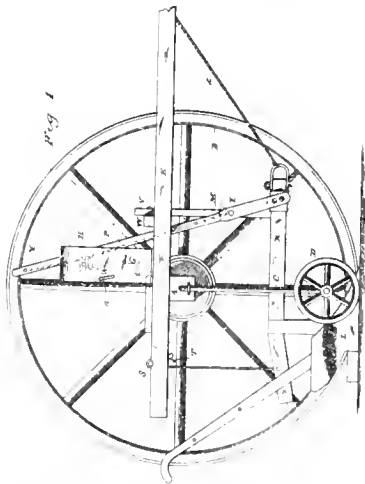
(No Model)

J. G. SHEERMAN
SULKY PLOW.

3 Sheets—Sheet 1

No. 288,737

Patented Dec. 5, 1882.



Witnesses,
Edw. L. Jones,
W. A. Tinkham.

Inventor
Jesse S. Sherman
By
C. M. Alexander,
Attorney

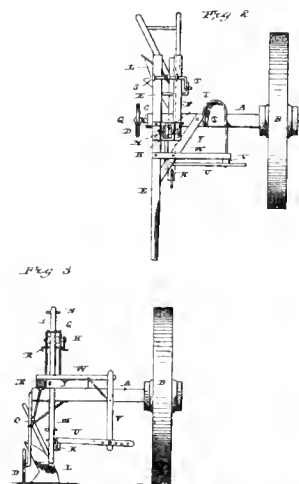
(No Model)

J. G. SHEERMAN.
SULKY PLOW.

3 Sheets—Sheet 2

No. 288,737

Patented Dec. 5, 1882.



Witnesses
Edw. L. Jones
W. A. Tinkham

Inventor
Jesse S. Sherman
By
C. M. Alexander,
Attorney

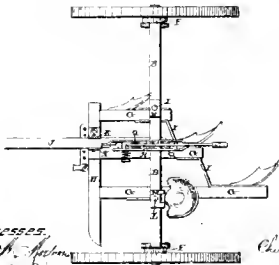
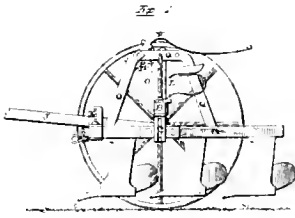
(Model)

C. D. CARTER
GANG PLOW

2 Sheets—Sheet 1

No. 269,008.

Patented Dec. 12, 1882.



Witnesses:
J. P. Adams
W. H. Allen

Inventor:
C. D. Carter
J. O. Johnson
Attorney

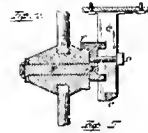
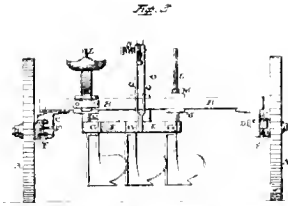
(Model)

C. D. CARTER
GANG PLOW

2 Sheets—Sheet 2

No. 269,008

Patented Dec. 12, 1882



Witnesses:
H. P. Adams
W. H. Allen

Inventor:
C. D. Carter
J. O. Johnson
Attorney

(No Model)

M. KITE.
SULKY PLOW

No. 269,427

Patented Dec. 19, 1882.

Fig. 1

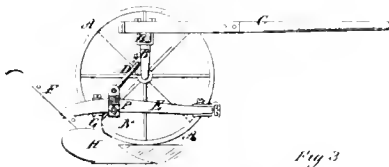


Fig. 3

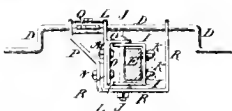
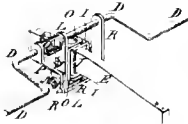


Fig. 2



WITNESSES:

Wm. J. Smith
C. W. Johnson

INVENTOR:

M. Kite
BY
C. W. Johnson
ATTORNEY

(Model)

E. C. EATON
SULKY PLOW.

No. 270,033.

Patented Jan. 2, 1883

Fig. 1

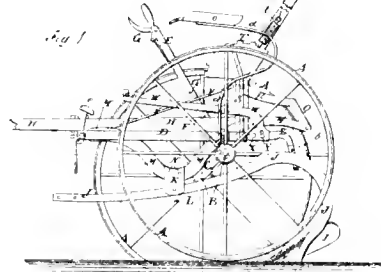
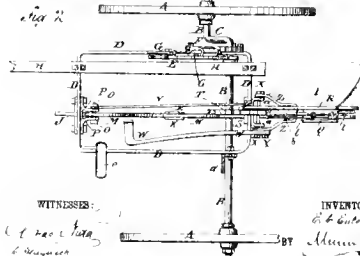


Fig. 2



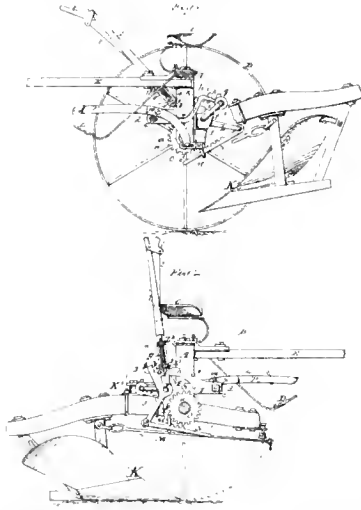
WITNESSES:

C. W. Johnson
C. W. Johnson

INVENTOR:

E. C. Eaton
BY
C. W. Johnson
ATTORNEY

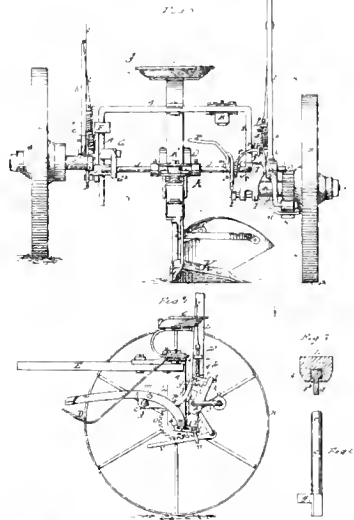
(No Model) 2 Sheets—Sheet 1
F. F. SMITH & J. W. LOCKWOOD.
 PLOW SULKY.
 No. 272,002. Patented Feb. 13, 1883.



Witnesses:
Wm. B. Brown
Edw. J. Brown

Inventor:
F. F. Smith & J. W. Lockwood

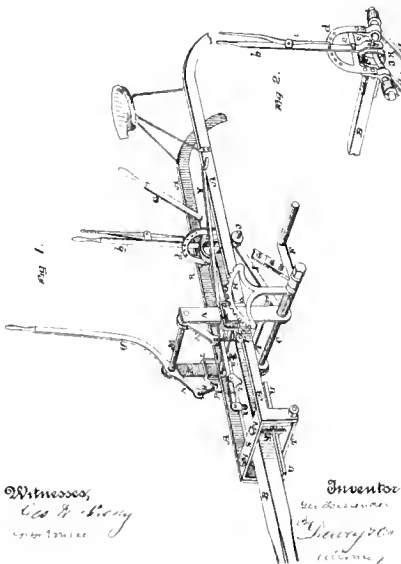
(No Model) 2 Sheets—Sheet 2
F. F. SMITH & J. W. LOCKWOOD.
 PLOW SULKY.
 No. 272,002. Patented Feb. 13, 1883.



Witnesses:
Wm. B. Brown
Edw. J. Brown

Inventor:
F. F. Smith & J. W. Lockwood

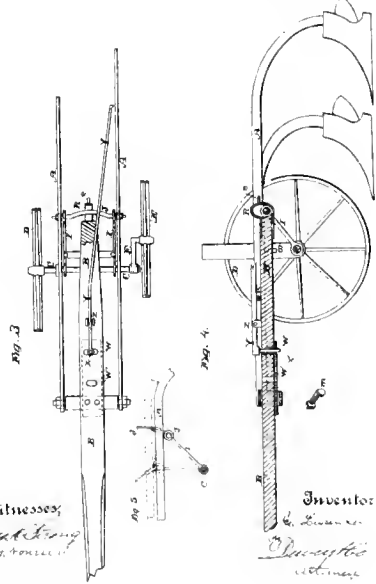
(No Model) 2 Sheets—Sheet 1
G. LISSENDEN.
 GANG PLOW.
 No. 273,292. Patented Mar. 3, 1883.



Witnesses:
Wm. B. Brown
Edw. J. Brown

Inventor:
G. Lissenden

(No Model) 2 Sheets—Sheet 2
G. LISSENDEN.
 GANG PLOW.
 No. 273,292. Patented Mar. 6, 1883.



Witnesses:
Wm. B. Brown
Edw. J. Brown

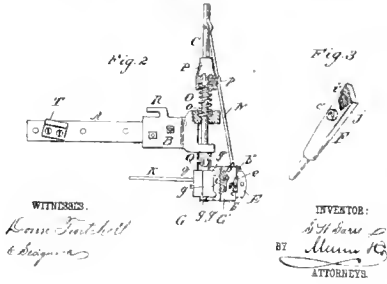
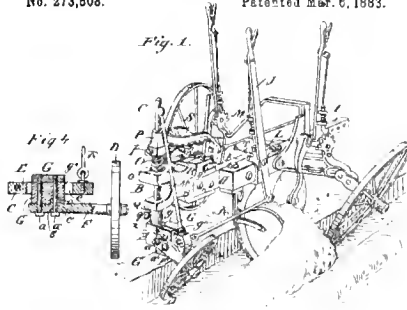
Inventor:
G. Lissenden

(No Model)

S. H. GARST
SULKY PLOW.

Patented Mar. 6, 1883.

No. 273,508.



WITNESSES:
Sam Fitchell
& Designer

INVENTOR:
S. H. Garst
BY
Munn & Co.
ATTORNEYS

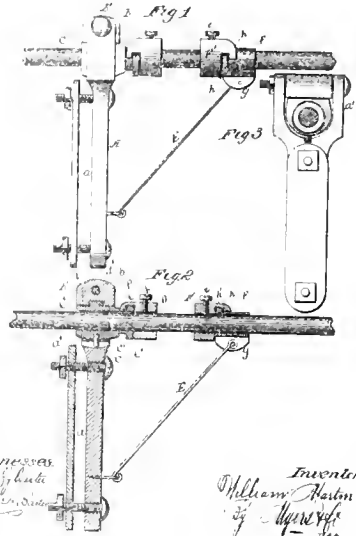
(No Model)

W. MARTIN
SULKY PLOW.

2 Sheets—Sheet 1

No. 273,696.

Patented Mar. 6, 1883.



Witnesses
Wm. J. Hubert
James D. Smith

Inventor
William Martin
By
Wm. J. Hubert
Att'y

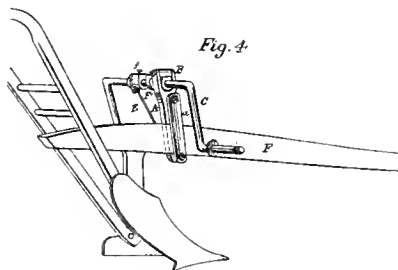
(No Model)

W. MARTIN.
SULKY PLOW.

2 Sheets—Sheet 2.

No. 273,696.

Patented Mar. 6, 1883.



Witnesses:
Wm. J. Hubert
James D. Smith

Inventor:
William Martin
By
Myer & Co.
Att'y

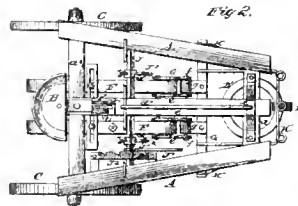
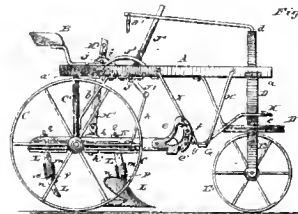
(No Model)

C. B. DOUGLAS.
SULKY PLOW.

2 Sheets—Sheet 1

No. 273,671.

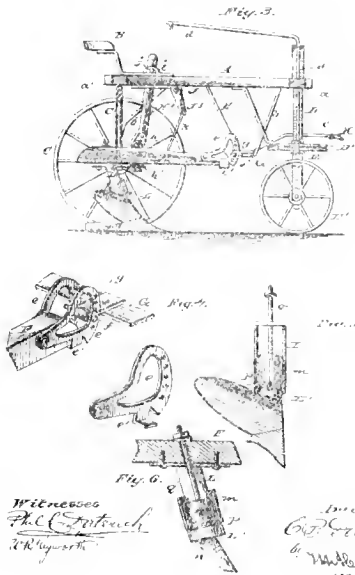
Patented Mar. 13, 1883.



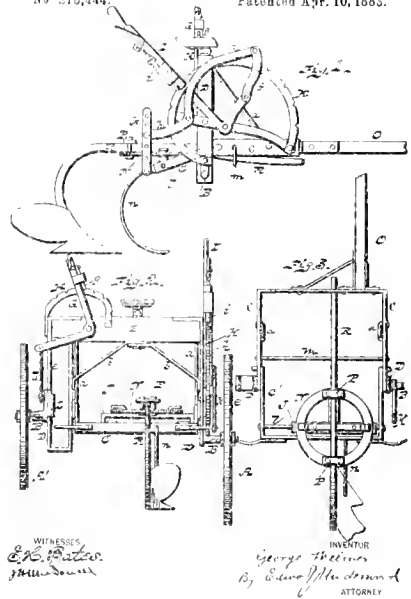
Witnesses
Phil. C. Galt
Wm. J. Hubert

Inventor
Chas. B. Douglas
per
Wm. J. Hubert
Attorney

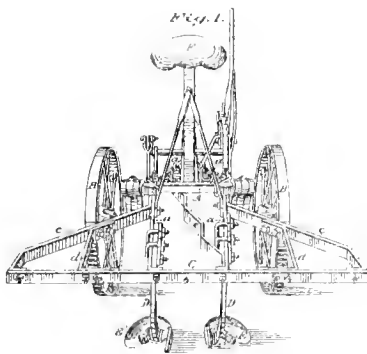
(No Model)
C. E. DOUGLAS. 7 Sheets—Sheet 2
 SULKY PLOW
 No. 273,971. Patented Mar. 13, 1883



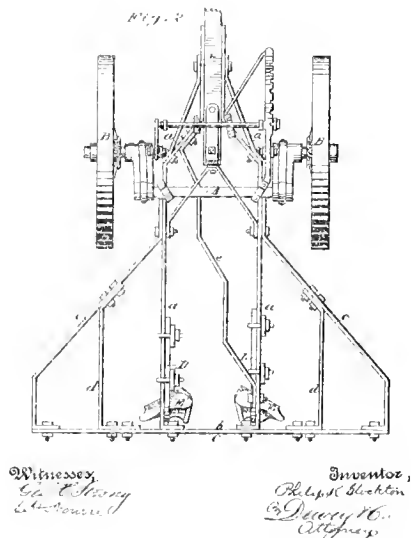
(No Model)
G. WELIVER.
 SULKY PLOW ATTACHMENT.
 No. 275,444. Patented Apr. 10, 1883.



(No Model)
P. E. STOCKTON 2 Sheets—Sheet 1
 SULKY PLOW
 No. 275,956. Patented Apr. 17, 1883.



(No Model)
P. E. STOCKTON 4 Sheets—Sheet 2
 SULKY PLOW
 No. 275,956. Patented Apr. 17, 1883.

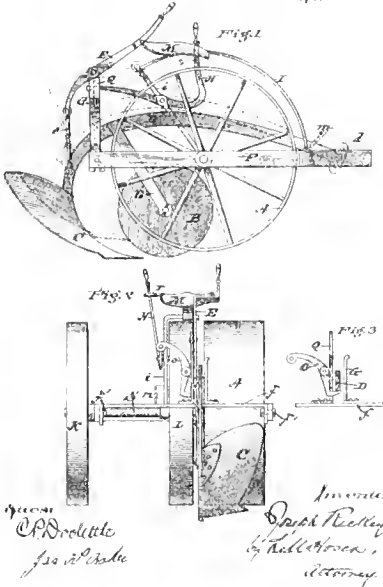


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J. RICKEY.
SOLEY FLOW

No. 276,193.

Patented Apr. 24 1883.

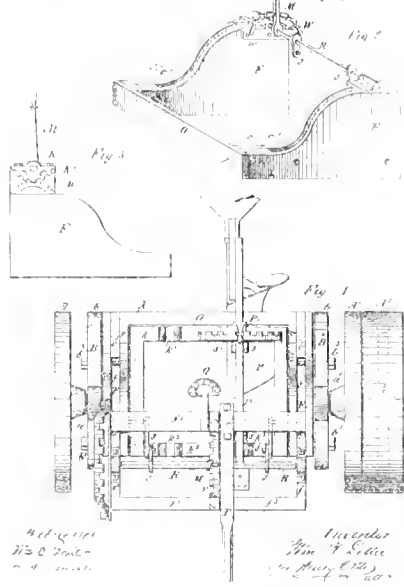


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W. H. DETTER.
CONVERTIBLE FLOW

No. 276,874

Patented May 1, 1883.

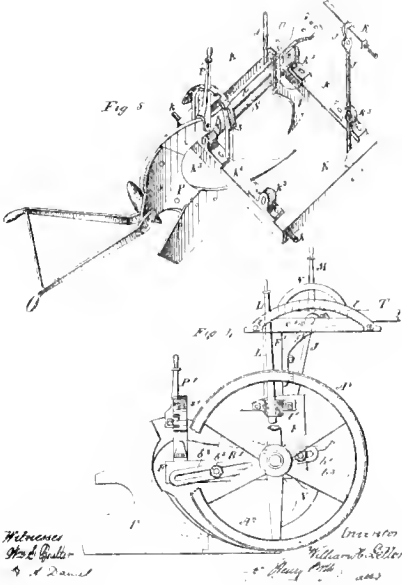


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W. H. DETTER.
CONVERTIBLE FLOW.

No. 276,874.

Patented May 1, 1883.

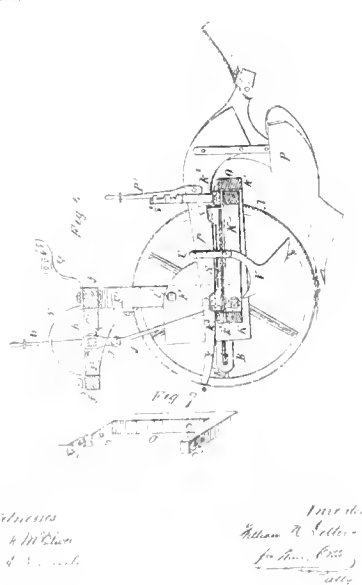


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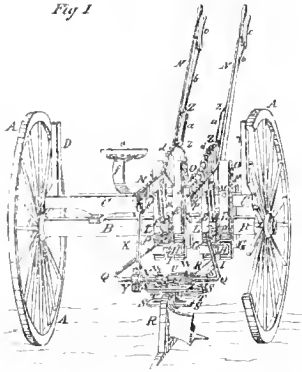
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CONVERTIBLE FLOW.

No. 276,874

Patented May 1, 1883.



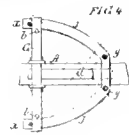
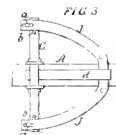
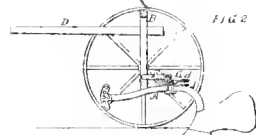
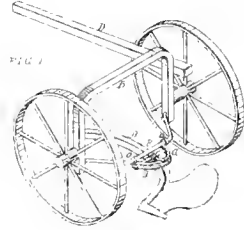
(No Model)
W. H. KREMSER.
 PLOW ATTACHMENT TO WAGON OEARING.
 No. 276,975. Patented May 1, 1883.



WITNESSES:
Edw. Howell
Wm. Simpson

INVENTOR:
W. H. Kremsier
 BY *Morris J. C.*
 ATTORNEY.

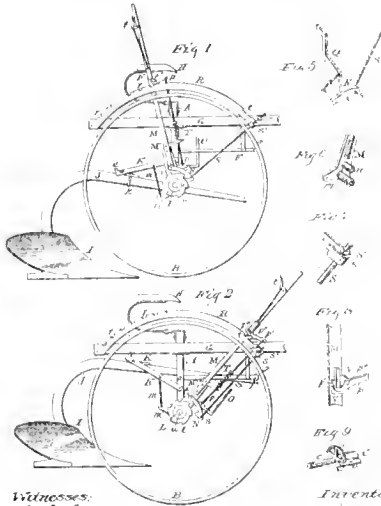
(No Model)
G. H. FOWLER
 SULKY PLOW.
 No. 277,258. Patented May 8, 1883.



WITNESSES:
Henry Murray
Thomas D. Lyon

INVENTOR:
G. H. Fowler
Wm. D. Brown
Wm. D. Brown

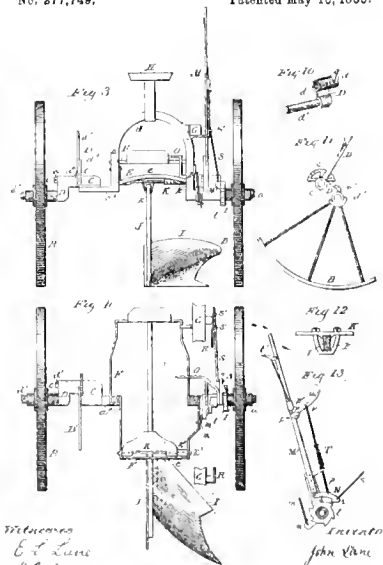
(No Model)
J. LANE.
 SULKY PLOW.
 No. 277,749. Patented May 15, 1883.



Witnesses:
E. L. Lane
W. C. Lane

Inventor:
John Lane

(No Model)
J. LANE.
 SULKY PLOW.
 No. 277,749. Patented May 15, 1883.



Witnesses:
E. L. Lane
W. C. Lane

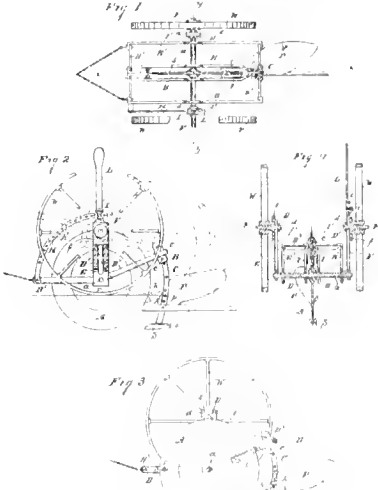
Inventor:
John Lane

(No Model)

J. BUCHANAN.
PLOW.

No. 277,937.

Patented May 22, 1883.



WITNESSES
Gerrit J. Lyons
Georg Blockler

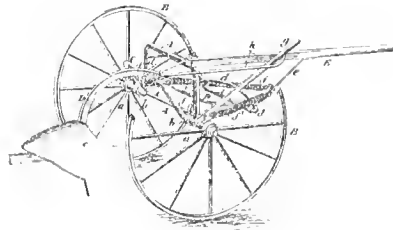
INVENTOR
James Buchanan
Per. W. S. ...

(No Model)

R. C. BUCKLEY.
SULKY PLOW.

No. 278,089.

Patented May 22, 1883.



Witnesses
J. ...
G. ...

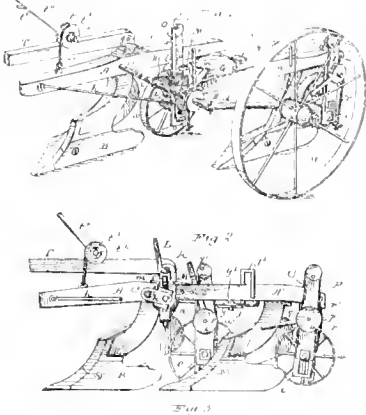
Inventor
Robert C. Buckley
By ...

(No Model)

D. B. DOGGE
WHEEL PLOW.

No. 278,519

Patented May 24, 1883



Witnesses
W. ...
C. ...

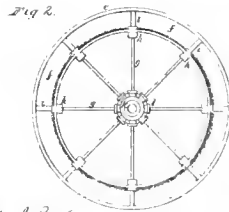
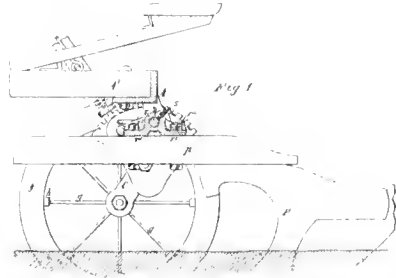
Inventor
James H. Dogge
Per. ...

(No Model)

G. WIARD.
SULKY PLOW.

No. 278,643.

Patented May 29, 1883.



Witnesses
G. ...
P. ...

Inventor
George Wiard
By ...

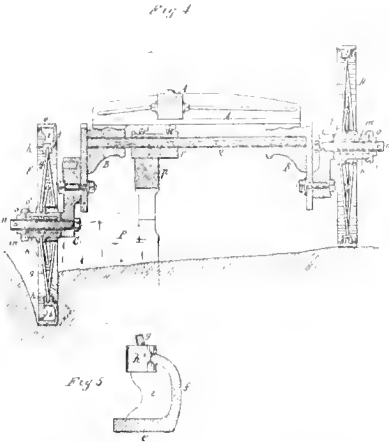
(No Model)

G WIARD.
SULKY FLOW.

2 Sheets—Sheet 1

No. 278,643.

Patented May 29, 1883.



Chas. L. Brady
Thos. L. Rice,
Witnesses

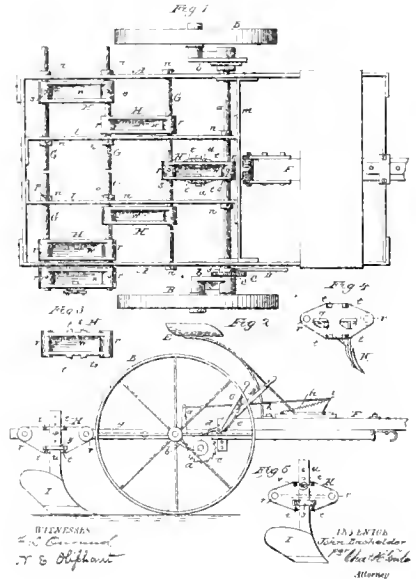
Samuel M. Crocker
R. L. White, Attorney
Witnesses

(No Model)

J. BACHELDER.
AGRICULTURAL MACHINE.

No. 278,675.

Patented June 5, 1883.



Witnesses
T. S. Blighman

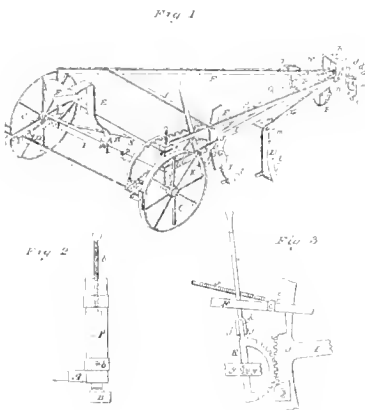
Thos. Bachelder
Attorney

(No Model)

P MOORE.
GANG AND SULKY FLOW.

No. 278,725.

Patented June 5, 1883.



Witnesses
Thos. L. Rice
Henry H. Grant

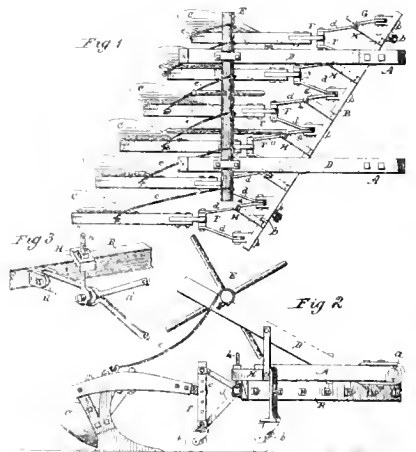
Inventor
P. Moore
Thos. Bachelder
Attorney

(No Model)

W. KIMMEL.
GANG FLOW.

No. 278,768.

Patented June 19, 1883.



Witnesses
Thos. Bachelder
Henry H. Grant

Inventor
W. Kimmel
Thos. Bachelder
Attorney

(No Model) 2 Sheets—Sheet 1
E. B. DANIELS & E. A. DE WITT
FLOW SULKY
No. 280,015 Patented June 26, 1883

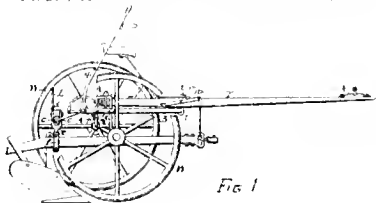


Fig 1

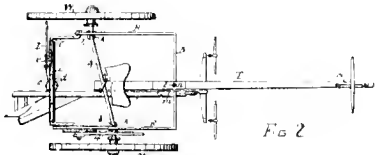


Fig 2

WITNESSES

G. B. Boush
W. B. Reynolds

INVENTORS

E. B. Daniels
E. A. De Witt

(No Model) 2 Sheets—Sheet 2
E. B. DANIELS & E. A. DE WITT
FLOW SULKY
No. 280,015. Patented June 26, 1883.

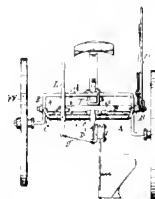


Fig 3

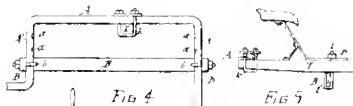


Fig 4

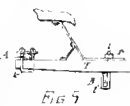


Fig 5

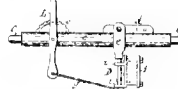


Fig 6



Fig 7

WITNESSES

G. B. Boush
W. B. Reynolds

INVENTORS

E. B. Daniels
E. A. De Witt

(No Model) 2 Sheets—Sheet 1
P. P. JACOTOT
MOVING PLOW.
No. 280,479 Patented July 3, 1883

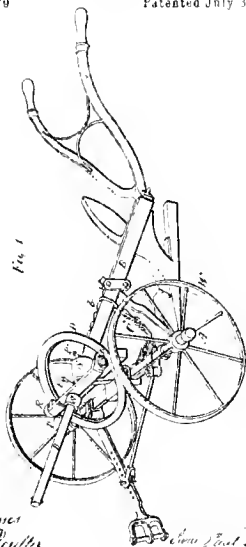


Fig 1

Witnesses
H. C. Butler
G. H. Knott

Inventor
P. P. Jacotot
By Henry C. C. C.

(No Model) 2 Sheets—Sheet 2
P. P. JACOTOT
MOVING PLOW
No. 280,479 Patented July 3, 1883

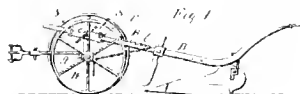


Fig 1

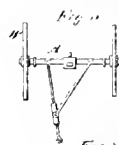


Fig 2

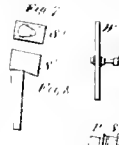


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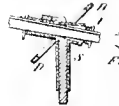


Fig 4

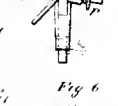


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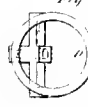


Fig 6

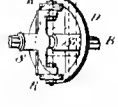


Fig 7

Witnesses
H. C. Butler
G. H. Knott

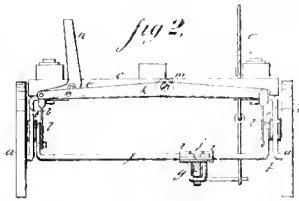
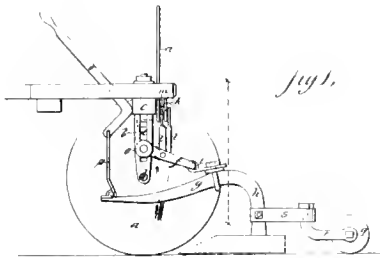
Inventor
P. P. Jacotot
By Henry C. C. C.

(No Model)

B F McCRAY
SULKY PLOW

No 282,207

Patented July 31, 1883.



WITNESSES:
Charles Howell
& *Belgrave*

INVENTOR:
B. F. McCray
BY *Almon W.*
ATTORNEYS.

(Model)

J L RUNK
SULKY PLOW

No 282,929

Patented Aug. 7, 1883.

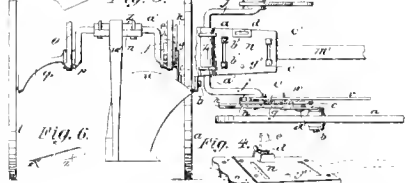
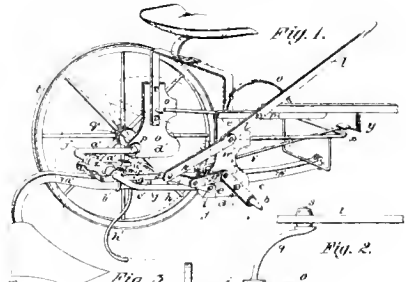


Fig. 3.
Fig. 4.
Fig. 5.
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Fig. 95.
Fig. 96.
Fig. 97.
Fig. 98.
Fig. 99.
Fig. 100.

WITNESSES:
Charles Howell
& *Belgrave*

INVENTOR:
J. L. Runk
BY *Almon W.*
ATTORNEYS.

(No Model)

T. I. LUDWIG.
PLOW.

3 Sheets—Sheet 1

No. 282,999.

Patented Aug. 14, 1883.

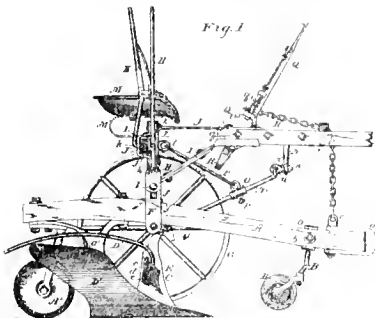


Fig. 8



Fig. 11



Fig. 10



WITNESSES:
Wm. A. Shankle
H. W. Conner

INVENTOR:
Thomas I. Ludwig
By his Attorneys
Belgrave, Conner & Belgrave

(No Model)

T. I. LUDWIG
PLOW

3 Sheets—Sheet 2

No. 282,999

Patented Aug. 14, 1883.

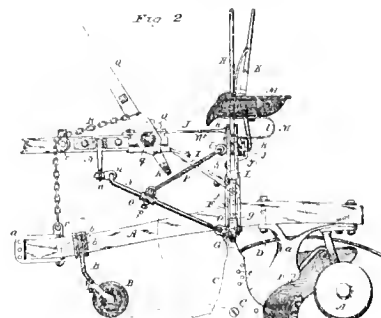


Fig. 4



Fig. 5



Fig. 6



Fig. 7



WITNESSES:
Wm. A. Shankle
H. W. Conner

INVENTOR:
Thomas I. Ludwig
By his Attorneys
Belgrave, Conner & Belgrave

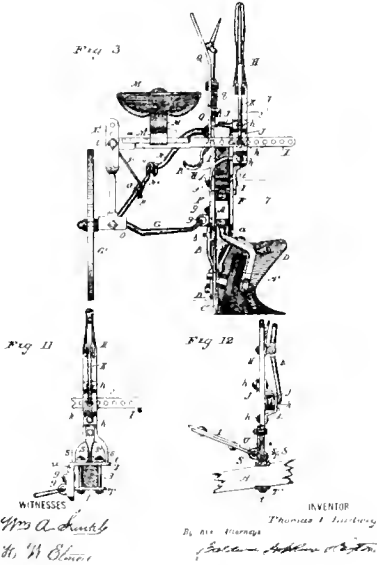
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T I LUDWIG
PLOW

2 Sheets—Sheet 3

No. 282,990

Patented Aug. 14, 1883.



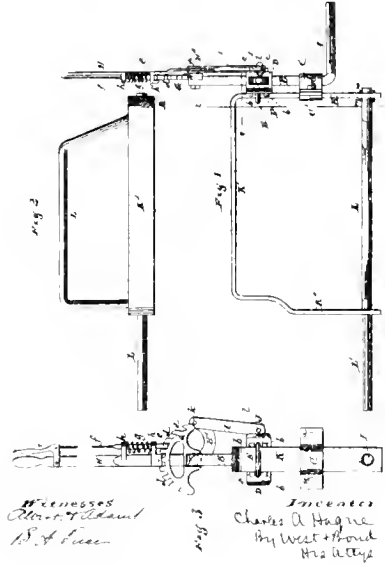
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C. A. HAGUE
SULKY PLOW

2 Sheets—Sheet 1

No. 283,102

Patented Aug. 14, 1883



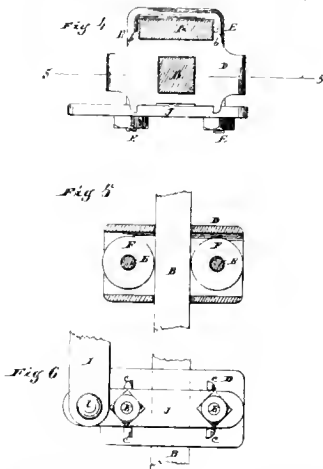
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C. A. HAGUE.
SULKY PLOW

2 Sheets—Sheet 2

No. 283,102.

Patented Aug. 14, 1883.

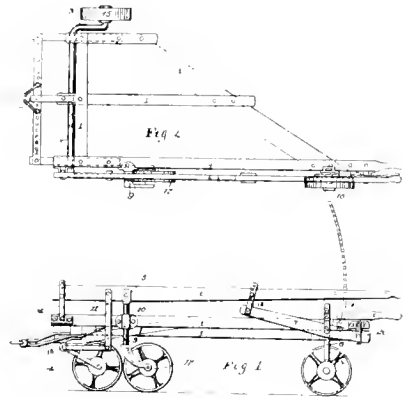


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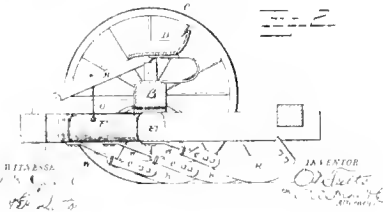
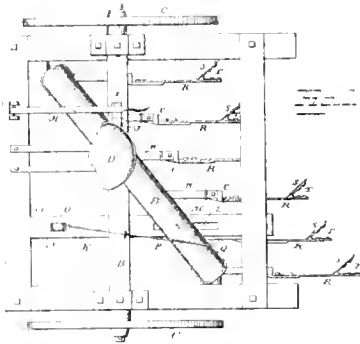
F. A. HILL.
PLOW AND CULTIVATOR FRAME.

Patented Aug. 21, 1883.

No. 283,394

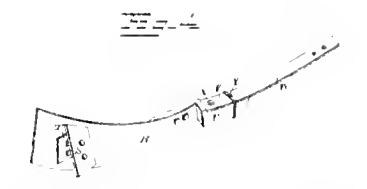
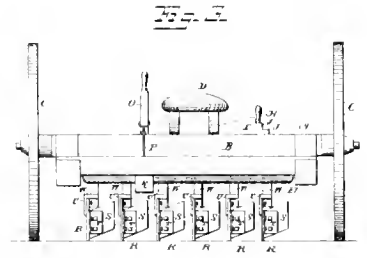


(No Model) O N FELTS GANG PLOW
 Patented Aug. 21, 1883.
 No. 283,585



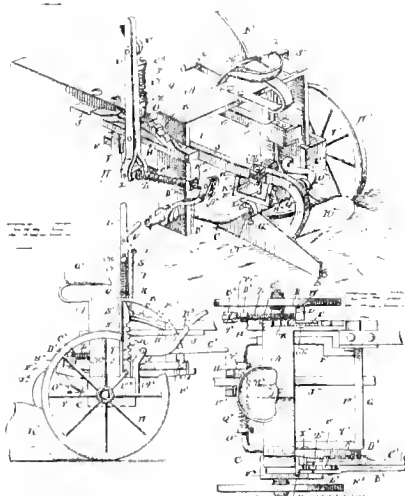
WITNESSES
 J. S. ...
 O N FELTS
 INVENTOR
 J. S. ...

(No Model) O N FELTS GANG PLOW
 Patented Aug. 21, 1883.
 No. 283,585



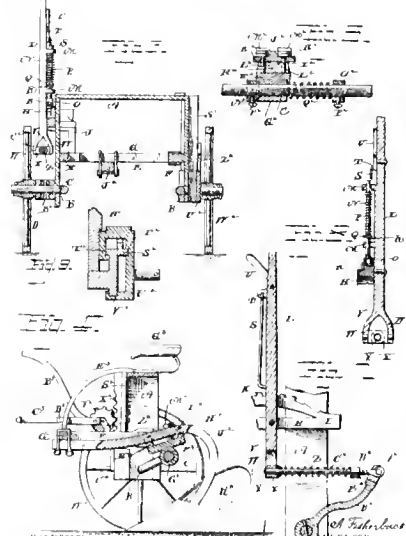
WITNESSES
 J. S. ...
 O N FELTS
 INVENTOR
 J. S. ...

(No Model) A FISHERBUCK SULKY PLOW
 Patented Aug. 28, 1883.
 No. 283,977



WITNESSES
 J. S. ...
 A FISHERBUCK
 INVENTOR
 J. S. ...

(No Model) A FISHERBUCK SULKY PLOW
 Patented Aug. 28, 1883.
 No. 283,977



WITNESSES
 J. S. ...
 A FISHERBUCK
 INVENTOR
 J. S. ...

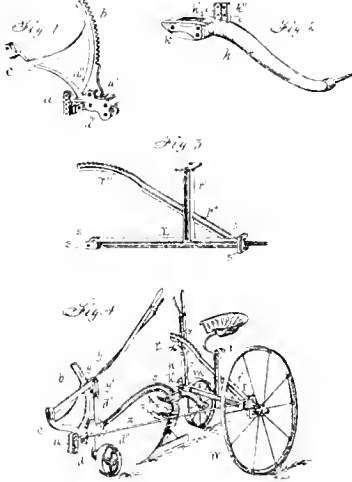
No Model

J H McBRIDE

RIDING ATTACHMENT FOR PLOWS

No. 284,036

Patented Aug 28, 1883



Witnesses
J. A. Holladay
J. L. ...

Inventor
J. H. McBride.
By Thomas C. Craig, Atty.

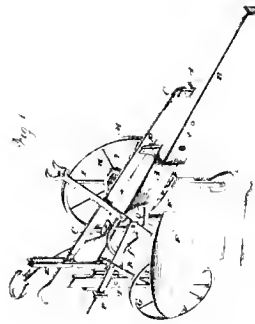
No Model

J R ERVIN

SULKY PLOW

No. 285,022

Patented Sept 18, 1883



Witnesses
Geo C. Hutchinson
J. E. ...

Inventor
James R. Ervin
By ...

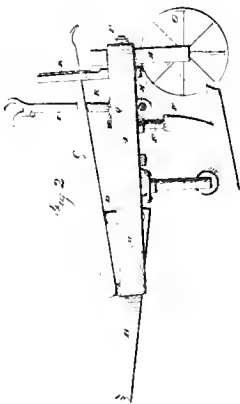
No Model

J R ERVIN

SULKY PLOW

No. 285,022

Patented Sept. 18, 1883.



Witnesses
Geo C. Hutchinson
J. E. ...

Inventor
James R. Ervin
By ...

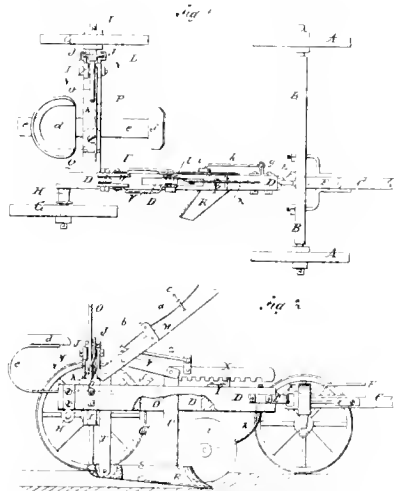
No Model

G W HUNT

WHEEL PLOW

No. 285,412.

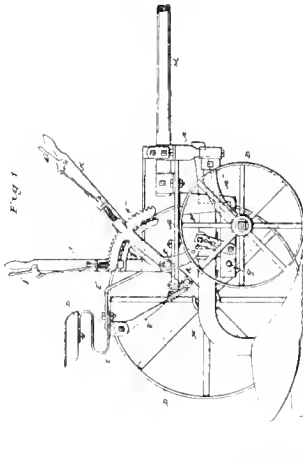
Patented Sept. 25, 1883



Witnesses
J. M. ...
E. ...

Inventor
G. W. Hunt
By ...

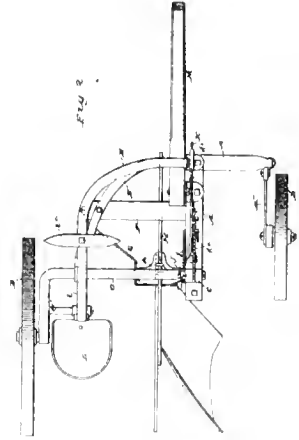
Model 1
 R S HIGGINS
 SULKY FLOW
 No. 285,749
 Patented Sept. 25, 1883.



Witnesses
 A. H. H. H. H.
 A. H. H. H.

Inventor
 R. S. Higgins
 by Knight Bros
 1883

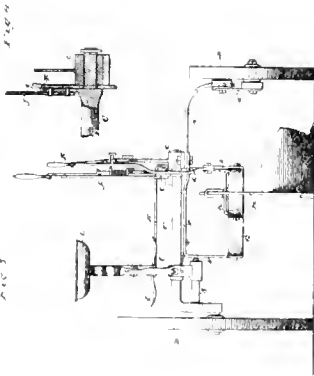
Model 1
 R S HIGGINS
 SULKY FLOW
 No. 285,749.
 Patented Sept. 25, 1883.



Witnesses
 A. H. H. H.
 A. H. H. H.

Inventor
 R. S. Higgins
 by Knight Bros
 1883

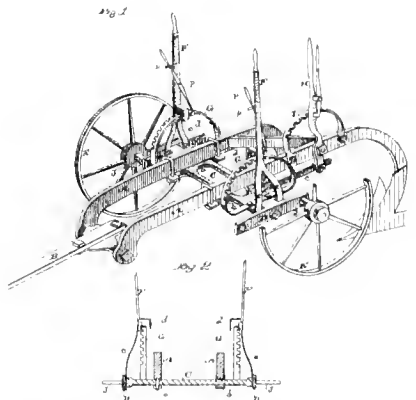
Model 1
 R S HIGGINS
 SULKY FLOW
 No. 285,749
 Patented Sept. 25, 1883.



Witnesses
 A. H. H. H.
 A. H. H. H.

Inventor
 R. S. Higgins
 by Knight Bros
 1883

Model 1
 J M FIX
 GANG FLOW
 No. 285,885
 Patented Oct. 2, 1883.



Witnesses
 Co. H. H. H.
 Co. H. H. H.

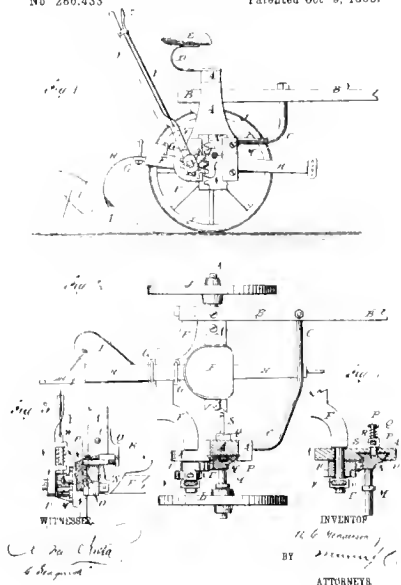
Inventor
 J. M. Fix
 by Dancy & Co
 1883

(No Model)

W C HENDERSON
SULKY PLOW

No 286,433

Patented Oct. 9, 1883.

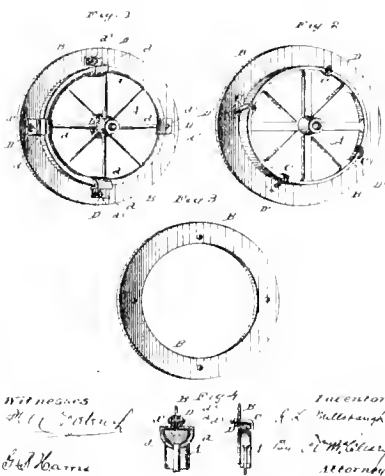


(No Model)

R L MILLSPAUGH.
WHEEL FOR SULKY PLOWS

No. 286,468

Patented Oct. 9, 1883.

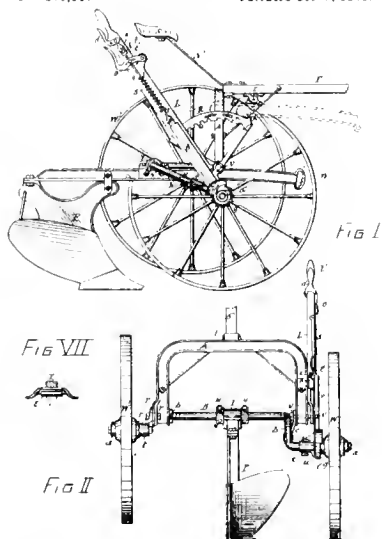


(No Model)

H WIARD & W R BULLOCK
SULKY PLOW

No 286,517

Patented Oct. 9, 1883.

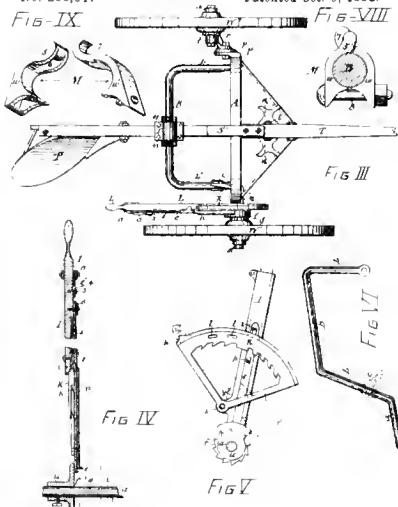


(No Model)

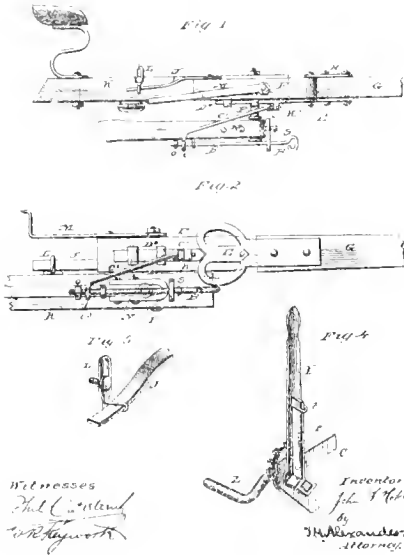
H WIARD & W R BULLOCK
SULKY PLOW.

No. 286,517

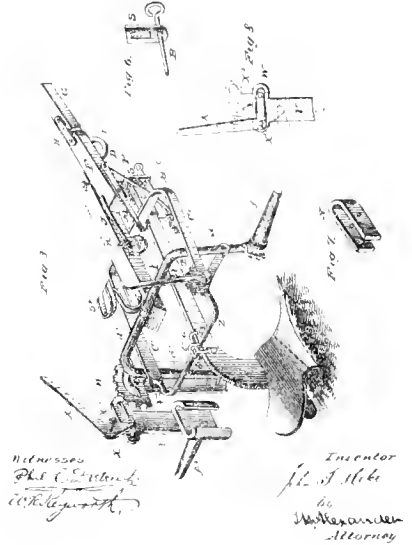
Patented Oct. 9, 1883.



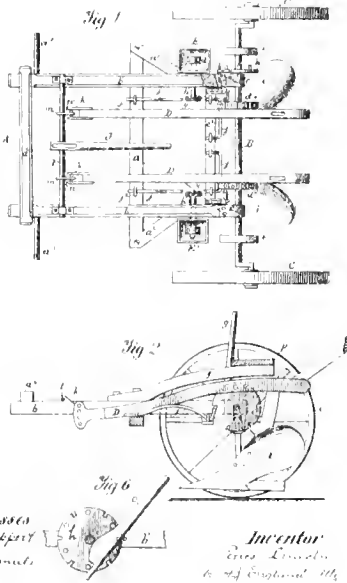
(No Model) J I HOKE 2 Sheets—Sheet 1
 SULKY PLOW
 No 286,540 Patented Oct. 9, 1883.



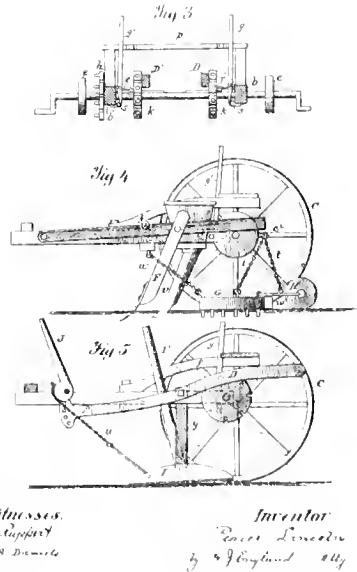
(No Model) J I HOKE 2 Sheets—Sheet 2
 SULKY PLOW
 No 286,540 Patented Oct. 9, 1883.



(No Model) P. LINCOLN 2 Sheets—Sheet 1
 SULKY PLOW, SEEDER, AND CULTIVATOR
 No 287,034 Patented Oct. 23, 1883.



(No Model) P. LINCOLN 2 Sheets—Sheet 2
 SULKY PLOW, SEEDER, AND CULTIVATOR
 No 287,034 Patented Oct. 23, 1883.

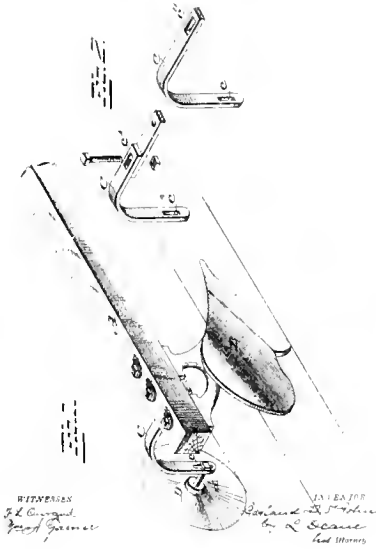


(No Model)

G P ST JOHN
ROLLING LANDSIDE COLTER.

No. 287,336

Patented Oct. 23, 1883.

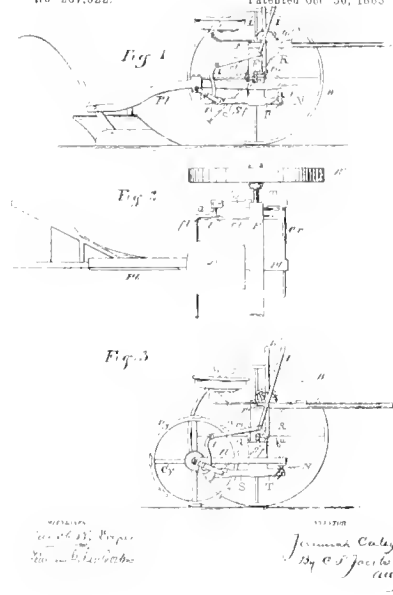


(No Model)

J CALEY
ADJUSTABLE FRAME SULKY

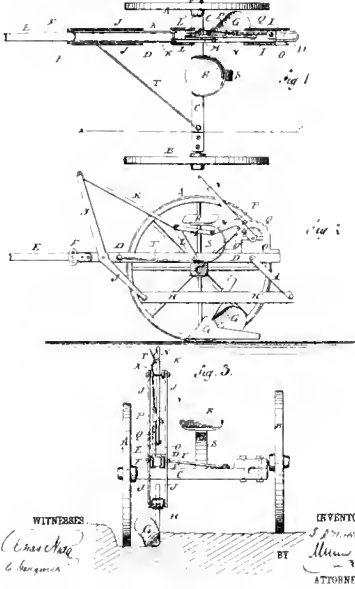
No. 287,622

Patented Oct. 30, 1883



(No Model)

T. B. NUTTING
GAND AND SULKY PLOW
No. 287,861
Patented Nov. 6, 1883.

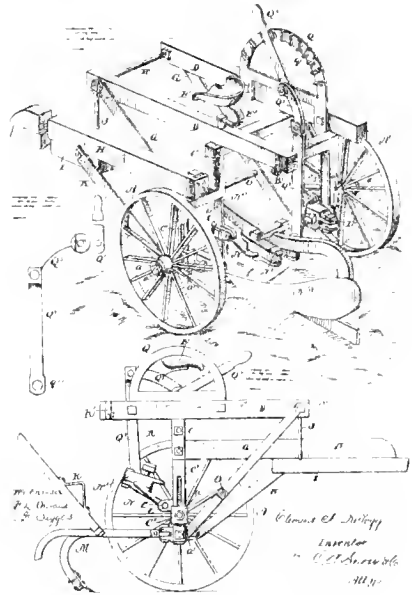


(No Model)

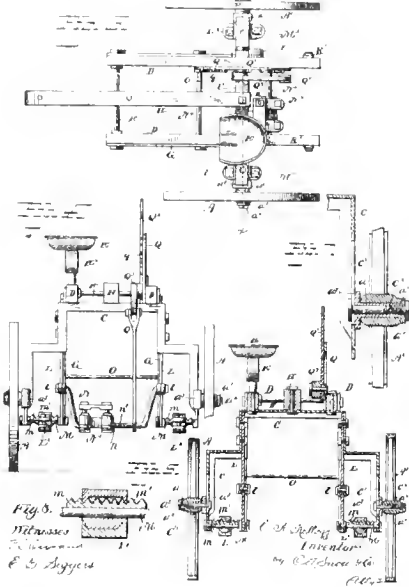
C. A. KELLOGG
SULKY PLOW

No. 288,341

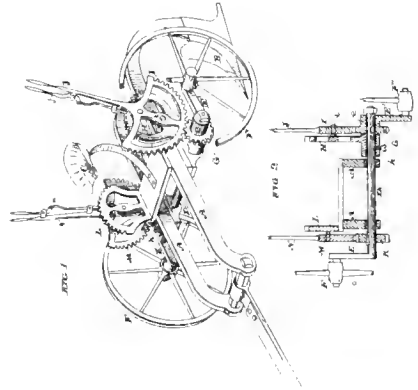
Patented Nov. 13, 1883.



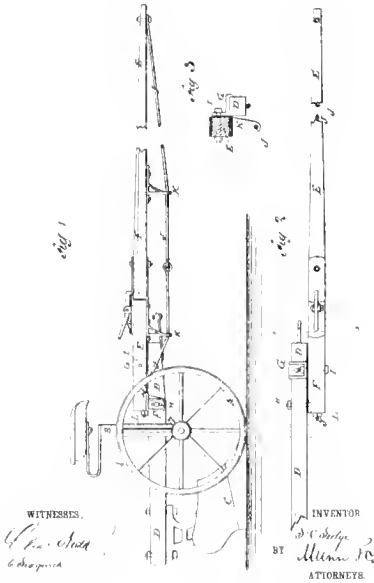
(No Model)
C. A. EELLOGG
 SULKY PLOW
 No. 288,341
 Patented Nov. 13, 1883



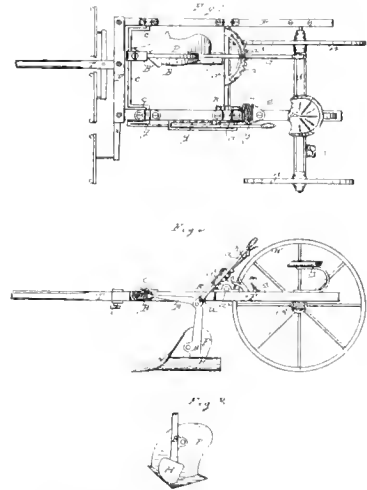
(No Model)
H. S. PALMER.
 GANG PLOW.
 No. 288,362
 Patented Nov. 13, 1883.



(No Model)
S. K. SEELYE
 SULKY PLOW
 No. 288,873.
 Patented Nov. 20, 1883



(No Model)
J. F. GERRIE
 "OLKY PLOW"
 No. 288,993
 Patented Nov. 27, 1883.

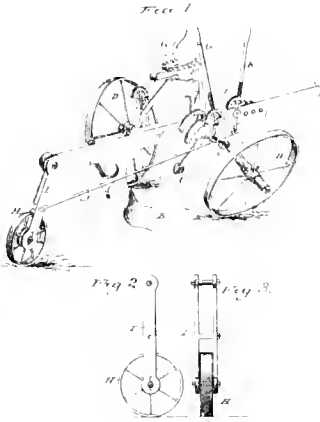


(No Model)

W H HARROD
SULKY PLOW

No 266,998

Patented Nov. 27, 1883



WITNESSES
J. Green & Son
Provs. Commrs

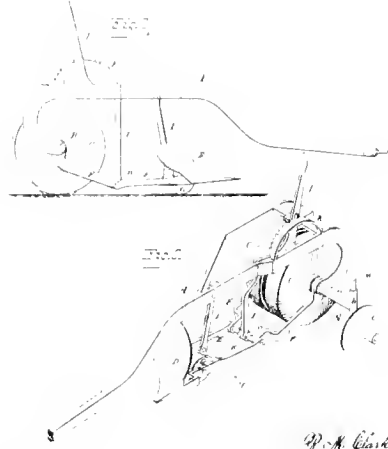
INVENTOR
William H Harrod
By J. S. Hunt
Attorney

(No Model)

H M CLARK
WHEEL PLOW

No. 269,283

Patented Dec. 27, 1883



WITNESSES
C. W. Cooper
William F. Cook

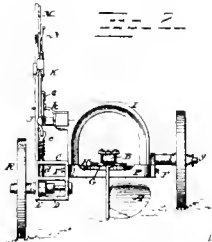
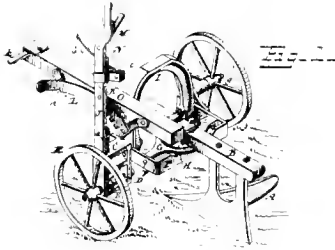
INVENTOR
H. M. Clark
By H. S. Allen
Attorney

(Model)

A BALL
SULKY PLOW

No. 289,798

Patented Dec. 11, 1883



WITNESSES
H. L. Crawford
William J. Reed

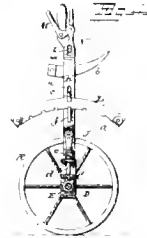
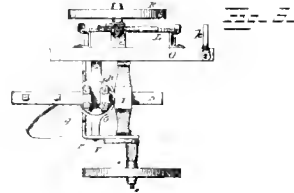
INVENTOR
Albert Ball
By Geo. L. & David
Attorneys

(Model)

A BALL
SULKY PLOW

No. 289,798

Patented Dec. 11, 1883.



WITNESSES
H. L. Crawford
William J. Reed

INVENTOR
Albert Ball
By Geo. L. & David
Attorneys

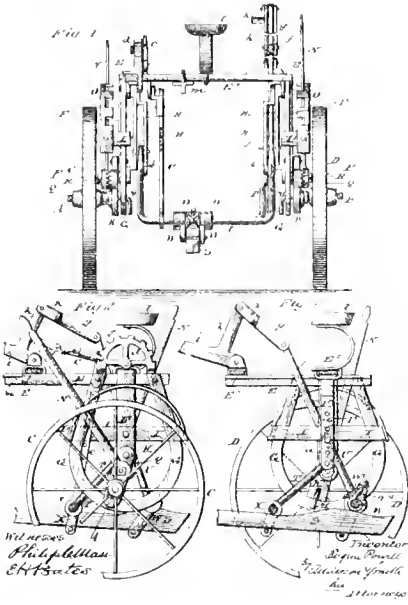
No. Model:

E POWELL

WHEEL & FLOW

No 290,107

Patented Dec. 11, 1863



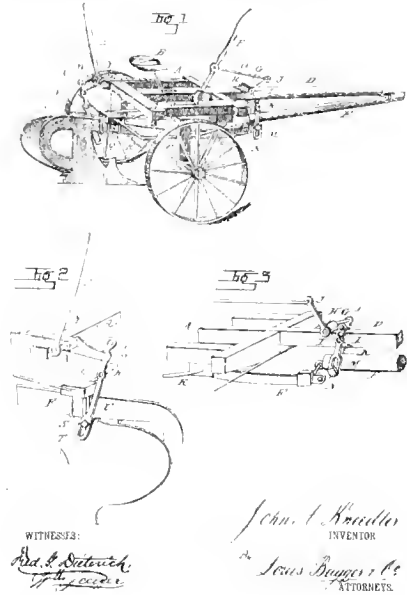
No. Model:

J A ENEEDLER

FLOW

No 291,250

Patented Jan. 1, 1864



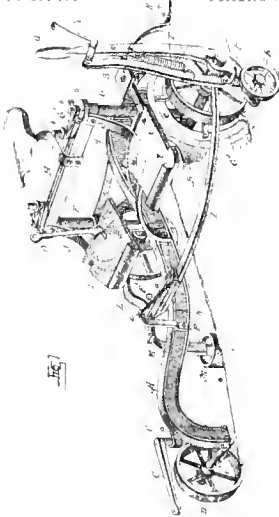
No. Model:

B S BENSON

WHEEL PLOW

No 291,975

Patented Jan. 15, 1864



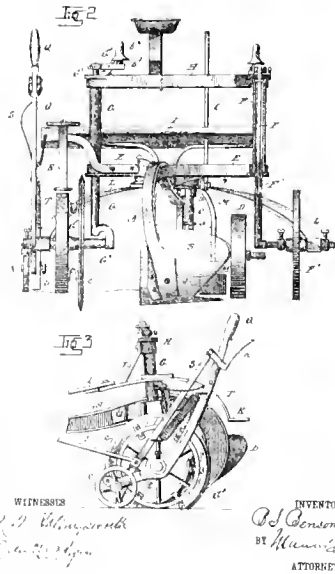
No. Model:

B S BENSON

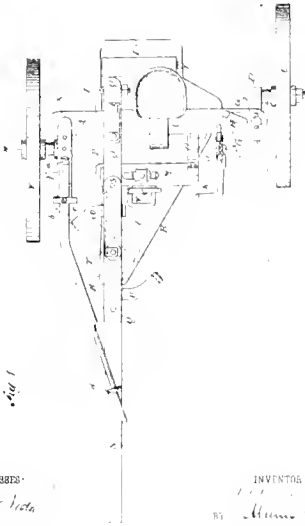
SULKY PLOW

No 291,975

Patented Jan. 15, 1864.



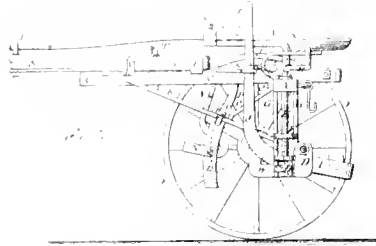
No Model
J. T. HARRISON
SULKY PLOW
No 292,391
Patented Jan 30, 1884



WITNESSES
C. J. ...
...

INVENTOR
J. T. Harrison
BY Munn & Co
ATTORNEYS

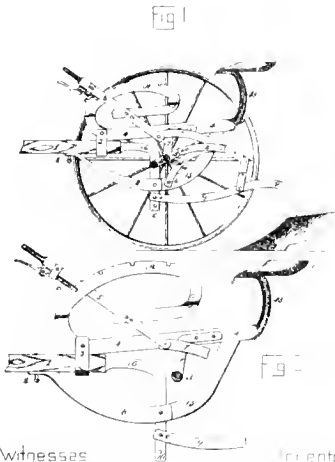
No Model
J. T. HARRISON
SULKY PLOW
No 292,391
Patented Jan 22, 1884



WITNESSES
C. J. ...
...

INVENTOR
J. T. Harrison
BY Munn & Co
ATTORNEYS

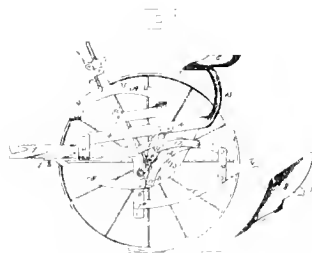
No Model
J. L. FURBY
SULKY PLOW
No 292,426
Patented Jan 22, 1884



Witnesses
C. J. ...
Amos ...

Inventor
J. L. Furby
BY ...
Att'y

No Model
J. L. FURBY
SULKY PLOW
No 292,426
Patented Jan 22, 1884



Witnesses
C. J. ...
Amos ...

Inventor
J. L. Furby
BY ...
Att'y

(No Model.)

R A THOMPSON
WHEEL PLOW

No. 293,818

Patented Feb. 19, 1884.

FIG 1

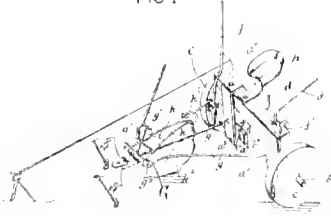


FIG 2

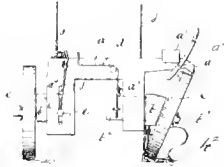


FIG 3



WITNESSES
J. B. ...
R. N. ...

INVENTOR
R. A. Thompson
By H. V. ...
ATTY

(No Model.)

B C BRADLEY

BED PLATE FOR SULKY PLOW BEAMS

No. 293,934

Patented Feb. 19, 1884.

Fig 1

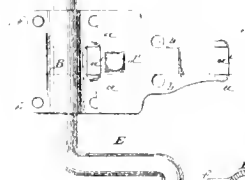


Fig 2

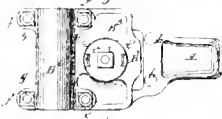


Fig 3



WITNESSES
J. B. ...
R. N. ...

INVENTOR
B. C. Bradley
ATTY

(No Model.)

E F O'HAVER

WHEEL PLOW.

No. 294,261

Patented Feb. 26 1884.

Fig 1

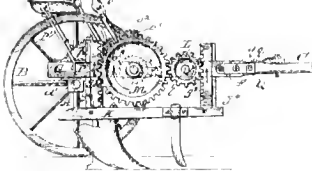
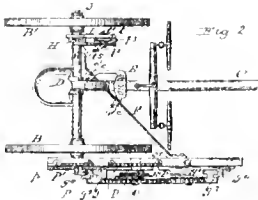


Fig 2



Witnesses
J. B. ...
E. F. ...

INVENTOR
E. F. O'Haver
By E. F. ...
ATTY

(No Model.)

F N CLUTE

SULKY PLOW

No. 294,582

Patented Mar. 4, 1884.



WITNESSES
J. B. ...
R. N. ...

INVENTOR
Frank N. Clute
By Lewis ...
ATTY

(No Model) F N CLUTE SULKY PLOW Patented Mar 4 1884

No. 294,582

Patented Mar 4 1884

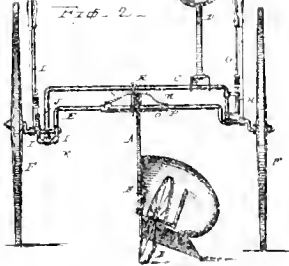
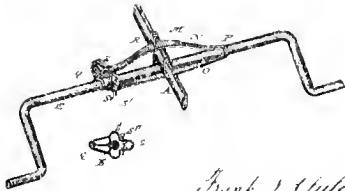


Fig. 2.



Frank N Clute INVENTOR
By Louis Bugger & Co ATTORNEYS

WITNESSES
A. S. S. S. S.

(No Model) F N CLUTE SULKY PLOW Patented Mar 4 1884

No. 294,582

Patented Mar 4 1884

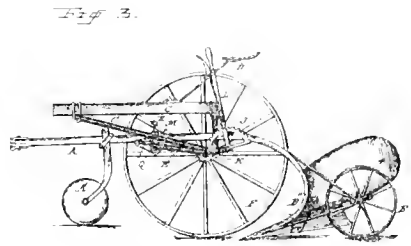
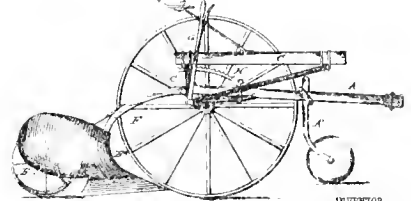


Fig. 3.



Frank N Clute INVENTOR
By Louis Bugger & Co ATTORNEYS

WITNESSES
A. S. S. S. S.

(No Model) F B HUNT SULKY PLOW Patented Mar 18 1884

No. 295,176

Patented Mar 18 1884

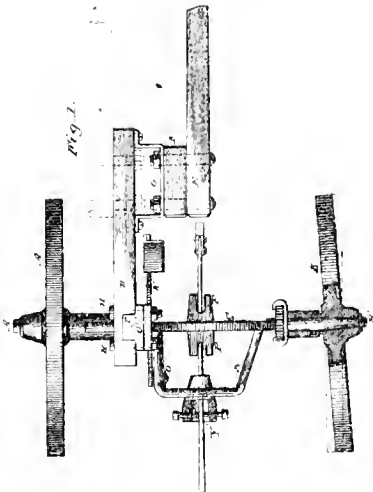


Fig. 1.

Franklin B Hunt INVENTOR
By W. H. H. H. H.

WITNESSES
A. S. S. S. S.

(No Model) F B HUNT SULKY PLOW Patented Mar 18 1884

No. 295,176

Patented Mar 18 1884

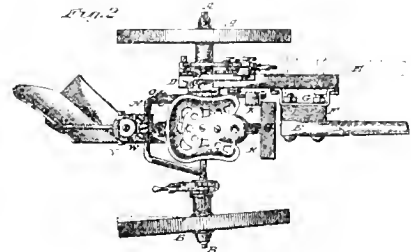


Fig. 2.

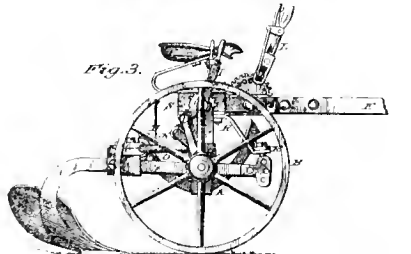


Fig. 3.

Franklin B Hunt INVENTOR
By W. H. H. H. H.

WITNESSES
A. S. S. S. S.

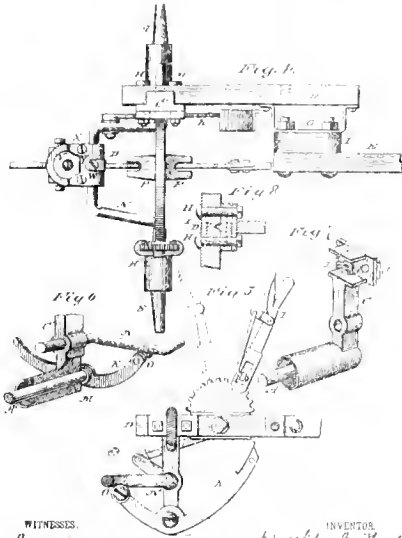
No Model

F B HUNT
SULKY PLOW

4 Sheets - Sheet 1

No. 295,175

Patented Mar. 18, 1884



WITNESSES:
And. S. DeWitt
Jos. A. Ryan

INVENTOR:
Franklin B. Hunt

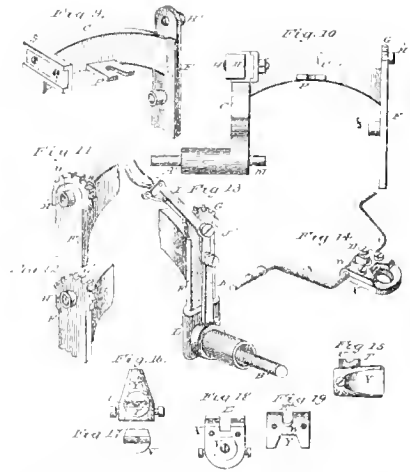
No Model

F B HUNT
SULKY PLOW

4 Sheets - Sheet 4

No. 295,175

Patented Mar. 18, 1884



WITNESSES:
And. S. DeWitt
Jos. A. Ryan

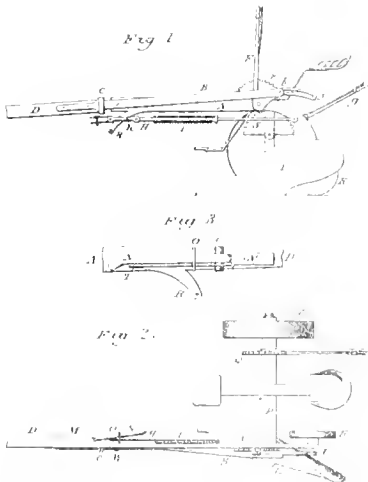
INVENTOR:
Franklin B. Hunt

No Model

S W BARR
SULKY PLOW

Patented Mar. 25, 1884

No. 295,613



Witnesses:
Geo. C. Cummings
Arthur H. Benjamin

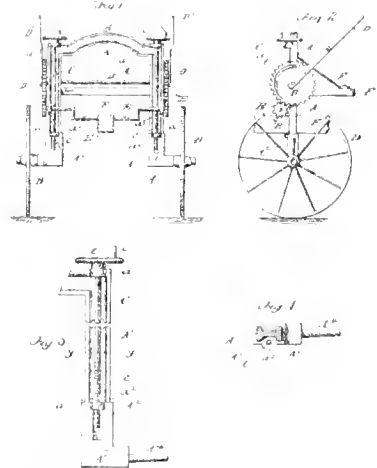
INVENTOR:
Charles W. Barr

No Model

W McNARY
SULKY PLOW

Patented Mar. 25, 1884

No. 295,788



Witnesses:
Geo. C. Cummings
Arthur H. Benjamin

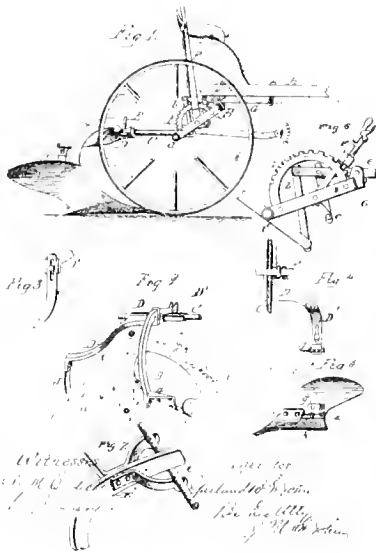
INVENTOR:
William McNary

(No Model)

G B ST JOHN
PLOW

No. 296,246

Patented Apr. 1, 1884

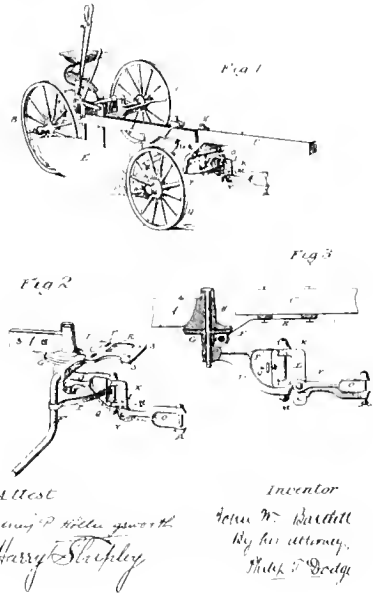


(No Model)

J W BARTLETT
WHEEL PLOW

No. 296,720.

Patented Apr. 15, 1884.

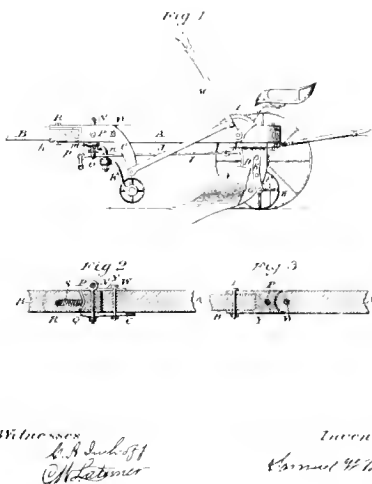


(No Model)

S. W BARR
SULKY PLOW.

No. 298,337

Patented May 13, 1884

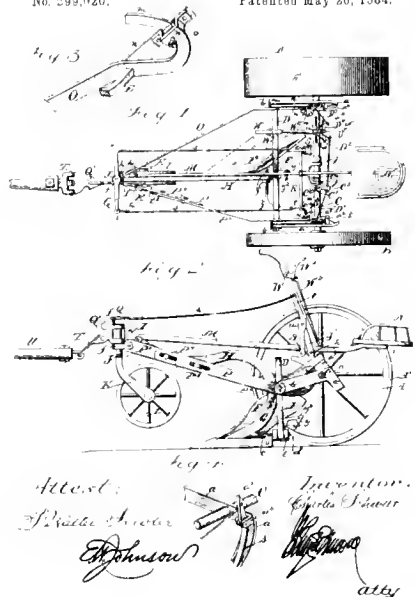


(No Model)

C. SCHWEER
SULKY PLOW.

No. 299,020.

Patented May 20, 1884.



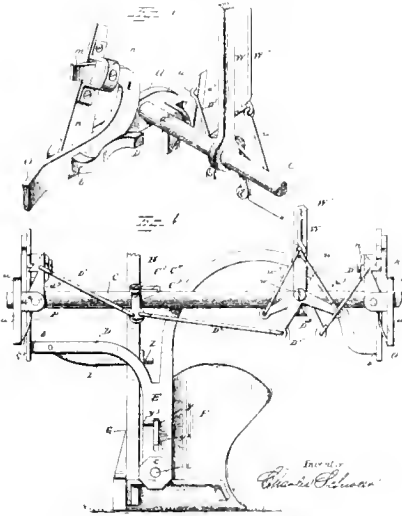
No. Model

SCHWEER
SULKY PLOW

2 Sheets—Sheet 2

No. 299,020

Patented May 20, 1884



WITNESSES
Frank L. Brown
C. J. Johnson

Inventor
Charles Schweer
ATTORNEY

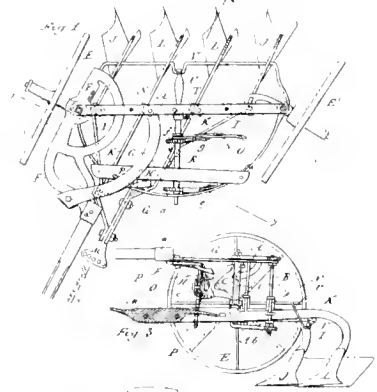
No. Model

A SHAFFER
GANG PLOW

5 Sheets—Sheet 1

No. 299,022

Patented May 20, 1884



Witness
A. B. Burtel
C. J. Johnson

Inventor
Abraham Shaffer
By Wm. H. H. Sprague

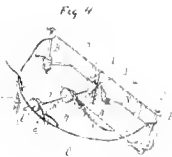
No. Model

A SHAFFER
GANG PLOW

2 Sheets—Sheet 2

No. 299,022

Patented May 20, 1884



WITNESSES
J. H. Robertson
C. J. Johnson

INVENTOR
Abraham Shaffer
By Wm. H. H. Sprague
ATTORNEY

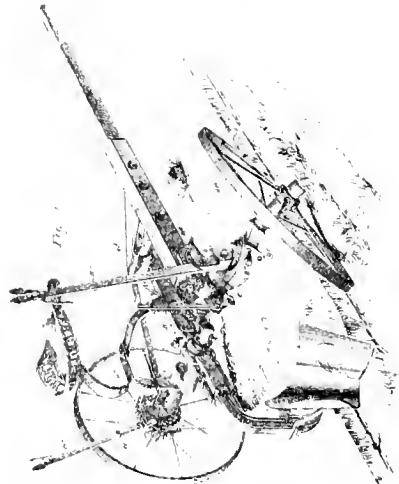
No. Model

W. L. CASADAY
SULKY PLOW

3 Sheets—Sheet 1

No. 299,542

Patented May 27, 1884



Witness
J. H. Robertson
C. J. Johnson

Inventor
Wm. L. Casaday
By Wm. H. H. Sprague

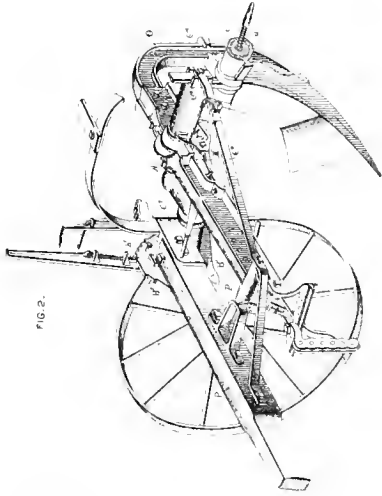
No Model

W L CASADAY
SULKY FLOW

3 Sheets—Sheet 1

No. 299,343

Patented May 27, 1884.



WITNESSES
Frank J. Gill
Geo. F. Downing

INVENTOR
W. L. Casaday
By H. H. Simpson

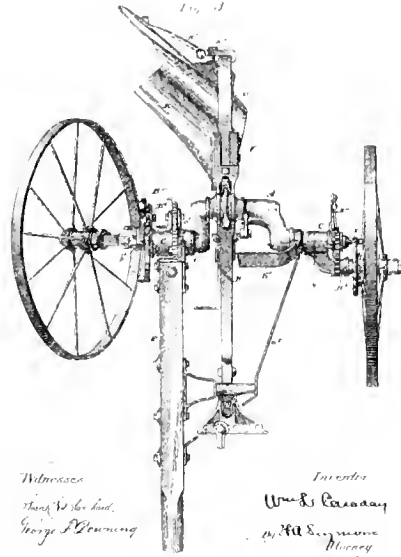
No Model

W L CASADAY
SULKY FLOW

3 Sheets—Sheet 1

No. 299,343

Patented May 27, 1884



WITNESSES
Frank J. Gill
Geo. F. Downing

INVENTOR
W. L. Casaday
By H. H. Simpson

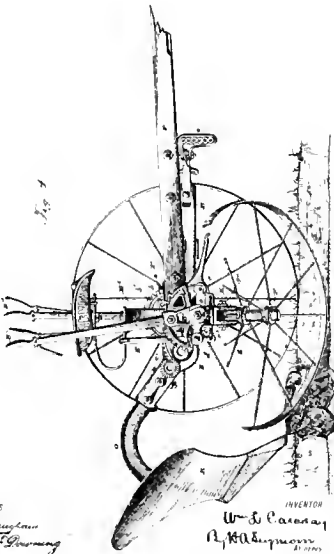
No Model

W L CASADAY
SULKY FLOW

5 Sheets—Sheet 4

No. 299,343.

Patented May 27, 1884.



WITNESSES
Frank J. Gill
Geo. F. Downing

INVENTOR
W. L. Casaday
By H. H. Simpson

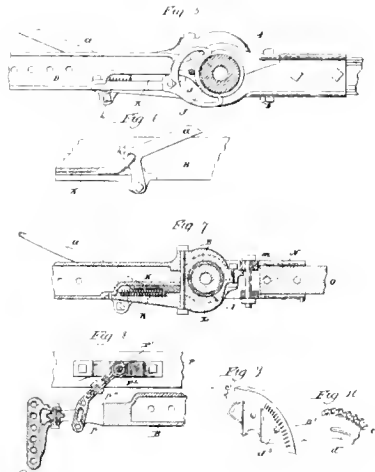
No Model

W L CASADAY
SULKY FLOW

5 Sheets—Sheet 5

No. 299,343

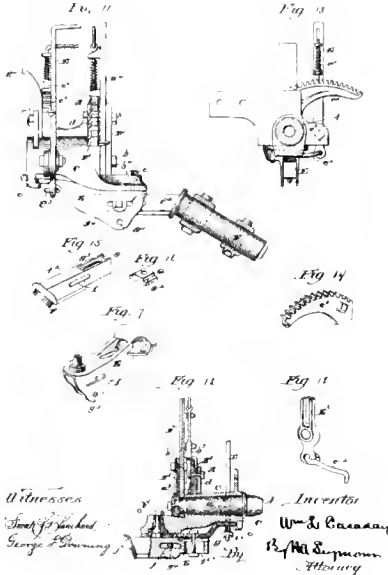
Patented May 27, 1884



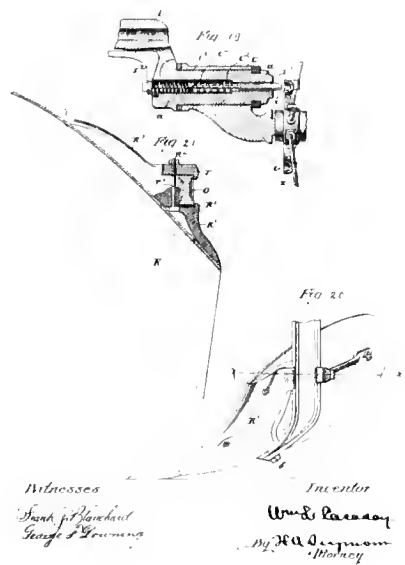
WITNESSES
Frank J. Gill
Geo. F. Downing

INVENTOR
W. L. Casaday
By H. H. Simpson

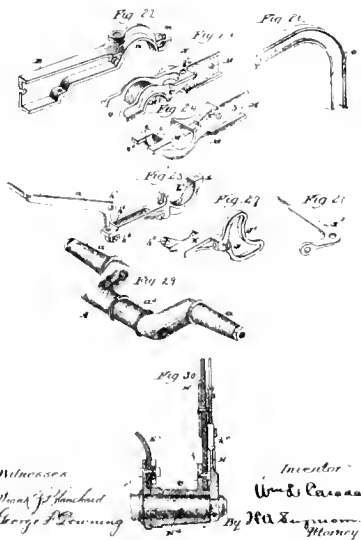
No Model
 W L CASADAY
 SULKY PLOW
 No. 299,343
 Patented May 27, 1884.



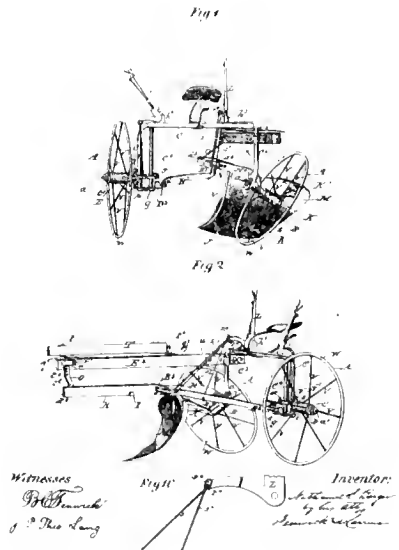
No Model
 W L CASADAY
 SULKY PLOW
 No. 299,343
 Patented May 27, 1884



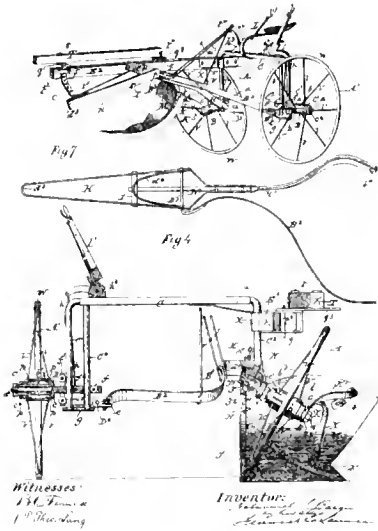
No Model
 W L CASADAY
 SULKY PLOW
 No. 299,343
 Patented May 27, 1884.



No Model
 N. S. BARGER
 SULKY PLOW
 No. 299,452.
 Patented May 27, 1884.



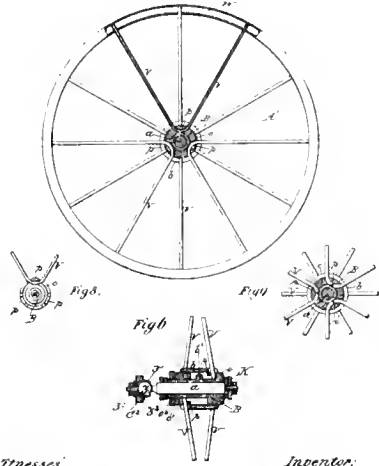
(No Model) N. S. BARGER. 2 Sheets—Sheet 3
 SULKY PLOW. Patented May 27, 1884.
 No. 299,462
 Fig. 3



Witnesses:
 W. M. Finner
 J. P. McLaughlin

Inventor:
 Nathaniel S. Barger
 Attorney: C. H. ...

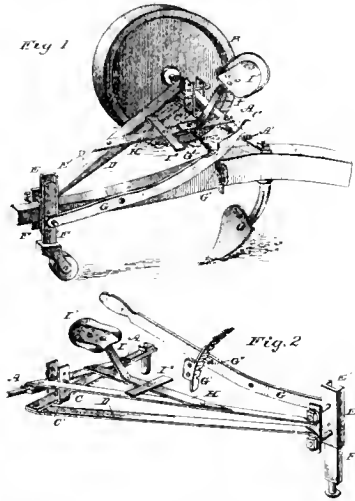
(No Model) N. S. BARGER. 2 Sheets—Sheet 3
 SULKY PLOW. Patented May 27, 1884.
 No. 299,462.
 Fig. 3



Witnesses:
 W. M. Finner
 J. P. McLaughlin

Inventor:
 Nathaniel S. Barger
 Attorney: C. H. ...

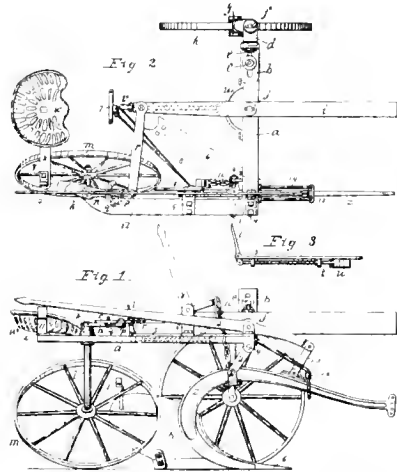
No. Model) M. J. STAFFORD
 ATTACHMENT FOR PLOWS
 No. 299,868. Patented June 3, 1884



WITNESSES:
 A. E. ...
 J. ...

INVENTOR:
 M. J. Stafford
 Law: ...

(No Model) J. & E. E. SICKLER
 SULKY PLOW
 No. 390,807 Patented June 24, 1884



WITNESSES:
 ...
 ...

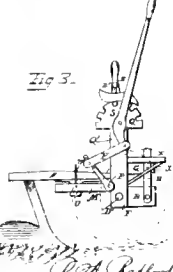
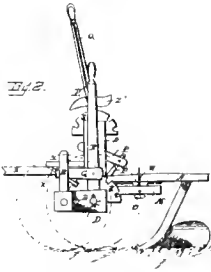
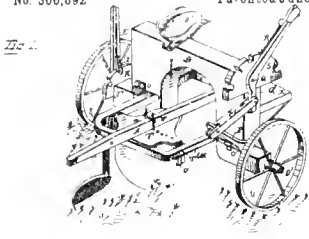
INVENTORS:
 ...
 ...

(No Model)

R. A. RADFORD
SULKY PLOW.

No. 300,892

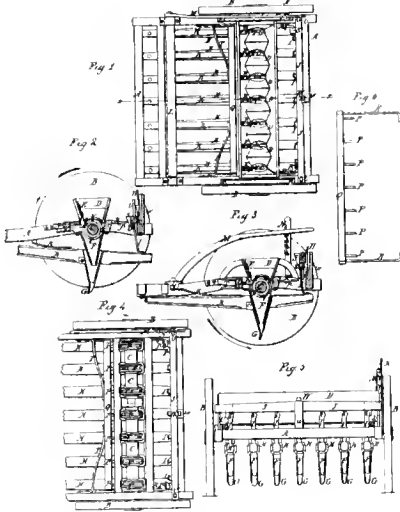
Patented June 24, 1884.



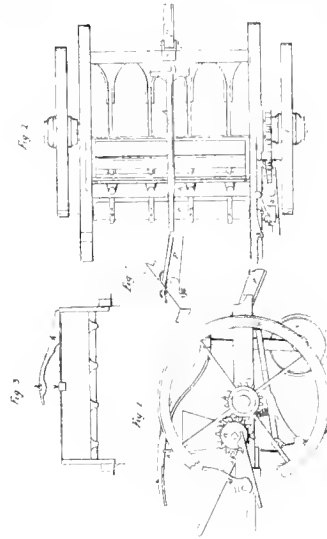
WITNESSES
J. C. [unclear]
W. E. [unclear]

R. A. Radford
INVENTOR
by [unclear]
Attorney.

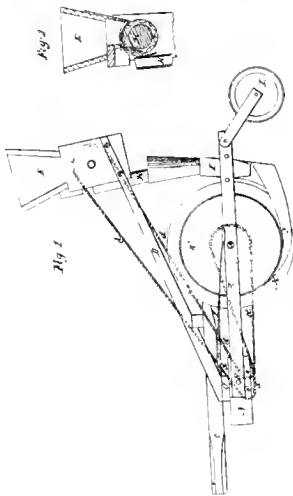
J. Deak
Grain Drill
 No. 26,616. *Patented Jan. 12, 1849*



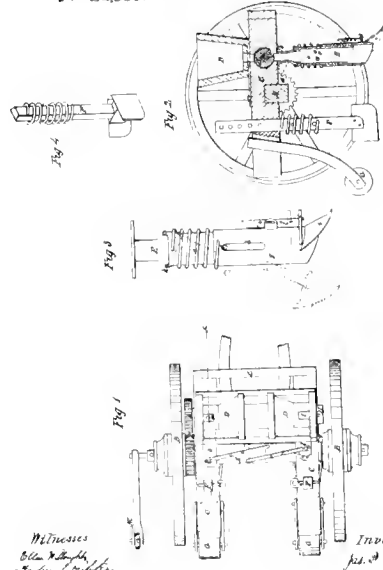
J. M. Green
Grain Drill
 No. 27,909. *Patented Jan. 12, 1849*



L. M. Green
Grain Planter
 No. 27,839. *Patented May 22, 1850*



J. P. Green
Grain Planter
 No. 27,849. *Patented Jan. 9, 1850*



Witnesses
Wm. D. Smith
John C. Smith

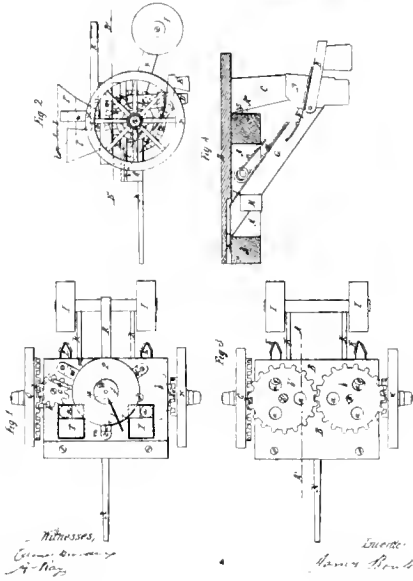
Inventor
J. P. Green

J. Brown

Conv. Roller

No 28,669

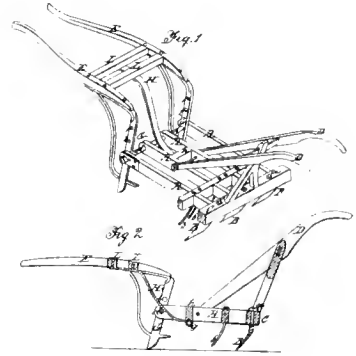
Patented Dec 27 1859



P. MORAUGHAN
Cultivator

No 29,806

Patented Dec 27 1859

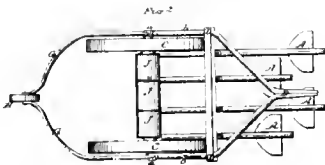
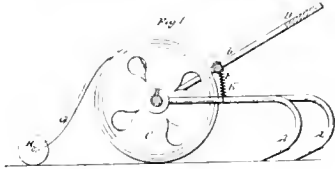


J. Guyer

Hand Flour

No 31,246

Patented Mar 3 1860



Witnesses
W. S. Guyer
M. Mason

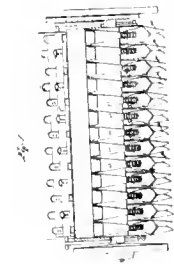
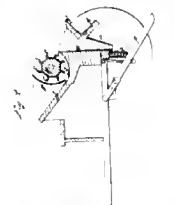
Inventor
John Guyer

J. K. ...

... ..

No 32,077

Patented Apr 11 1860



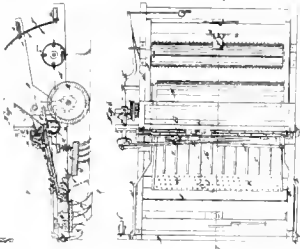
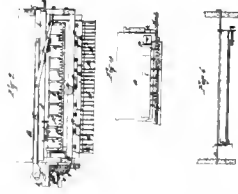
Witnesses
C. M. ...
J. ...

Inventor
J. K. ...

J. B. DUANE.
Grain Drill.

No. 30,212

Patented Oct. 1886



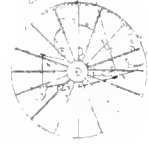
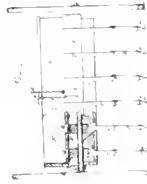
W. H. Mason
Mechanical
Drawing

See also
No. 29,800
for similar
invention

R. Smith
Grain Drill

No. 33,700

Patented Mar. 1887



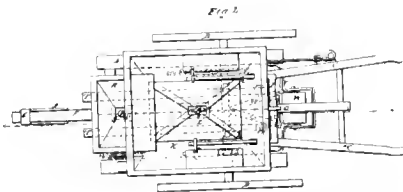
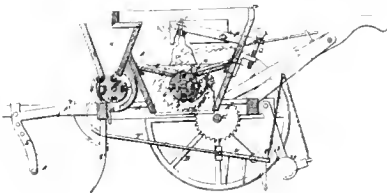
Wm. H. Mason
Mechanical
Drawing

See also
No. 33,701
for similar
invention

J. C. Rowan
Grain Drill

No. 33,701

Patented Mar. 1887



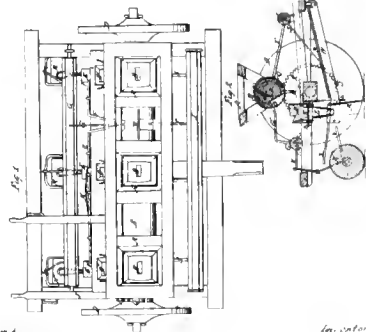
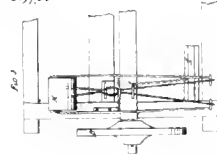
W. H. Mason
Mechanical
Drawing

See also
No. 33,702
for similar
invention

J. Cooley
Grain Drill

No. 31,700

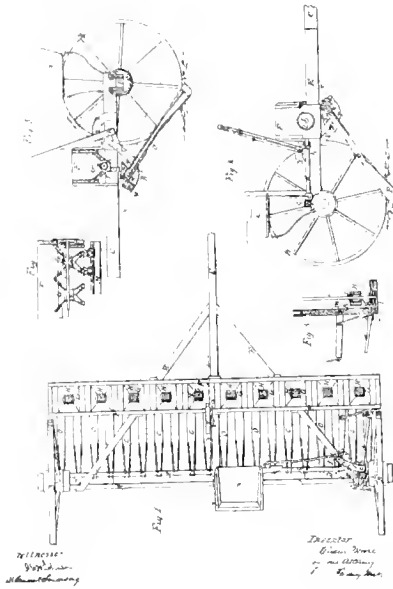
Patented Mar. 1887



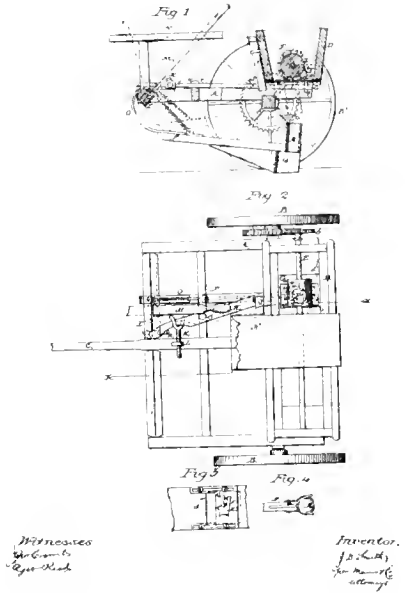
W. H. Mason
Mechanical
Drawing

See also
No. 31,701
for similar
invention

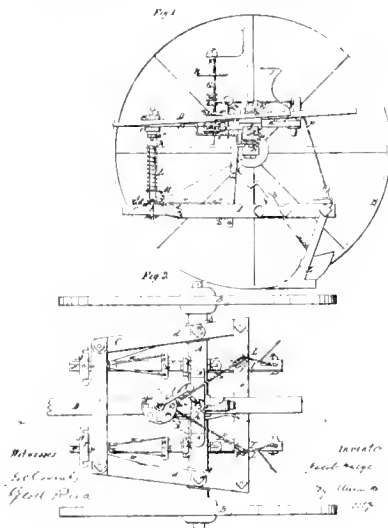
H. Moore.
Seeding-Machine.
No. 31,810. Patented Mar. 11, 1861



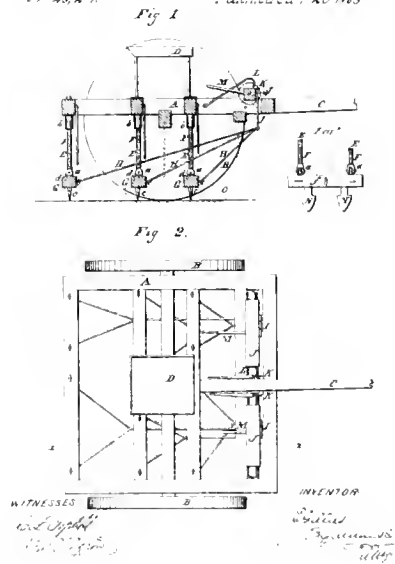
J. D. SMITH.
Grain Drill.
No. 35,713 Patented June 24, 1862.



J. Moore
Wheel Cultivator
No. 31,760 Patented Mar. 11, 1861



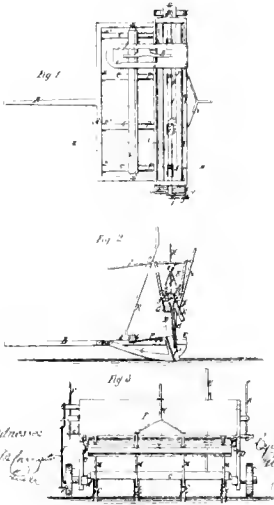
E. S. Gillies
Wheel Cultivator
No. 34,827 Patented May 20, 1862



C. C. CARTER
Grain Drill

No. 57,962

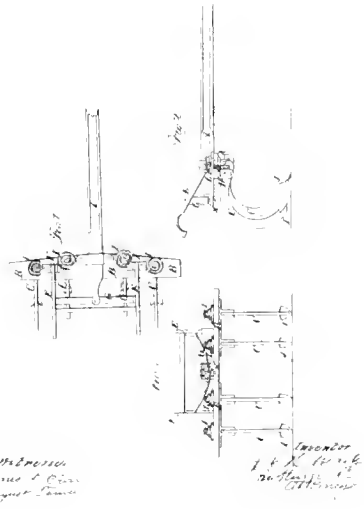
Patented September 11, 1896



J. C. HOFFEDITZ
Cultivator

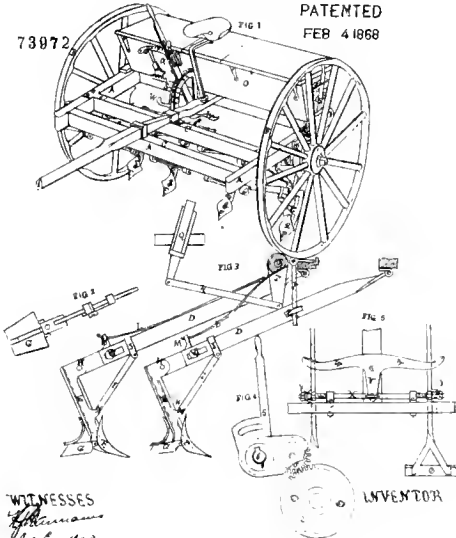
No. 60,892

Patented Jan. 1, 1897



MARTIN HAYDEN'S
SEEDING-CULTIVATOR
PATENTED
FEB 4 1868

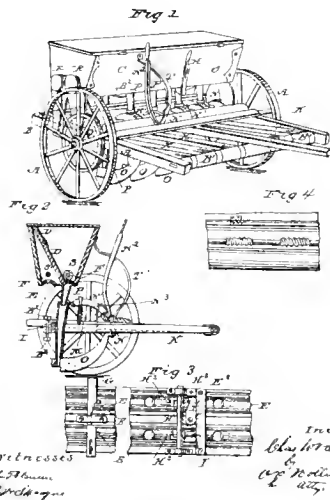
73972



C. W. PATTON.
Grain Drill.

No. 82,026.

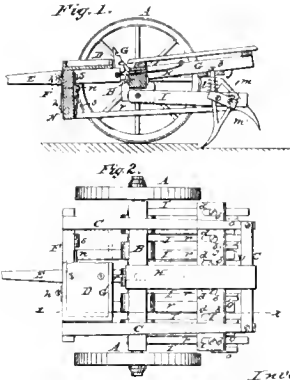
Patented Sept. 8, 1868.



C. ALVORD
Wheel Cultivator.

No. 84,931.

Patented Dec. 15, 1868



Witnesses:
C. A. Peck
J. C. Kinnear

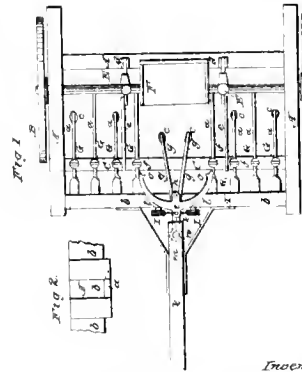
Inventor:
C. Alvord
by
H. H. H. H.
Attorney

J. H. BRINTON.
Wheel Cultivator.

No. 84,935.

2 Sheets—Sheet 1.

Patented Dec. 15, 1868.



Witnesses
J. H. Brinton
William C. Brinton

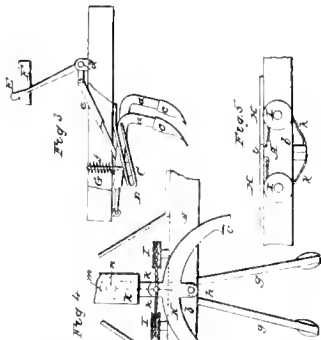
Inventor
J. H. Brinton
for himself and
William C. Brinton
Attorney

J. H. BRINTON.
Wheel Cultivator.

No. 84,935.

2 Sheets—Sheet 2.

Patented Dec. 15, 1868.



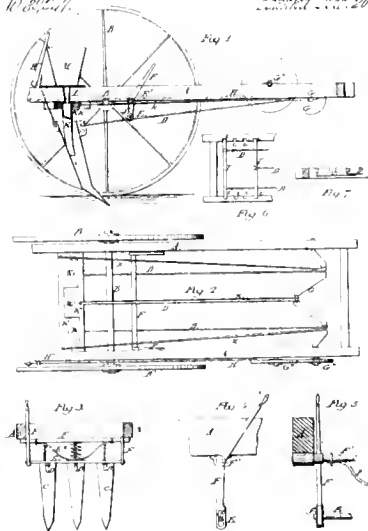
Witnesses:
J. H. Brinton
William C. Brinton

Inventor:
J. H. Brinton
for himself and
William C. Brinton
Attorney

J. H. Brinton
Wheel Cultivator

No. 84,935.

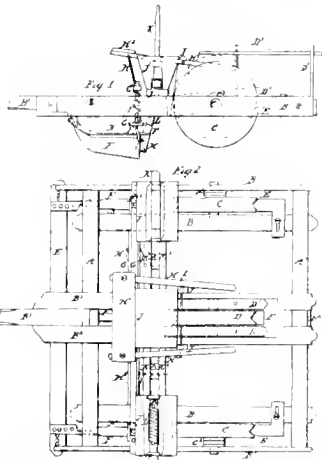
Patented Dec. 15, 1868.



Witnesses
J. H. Brinton
William C. Brinton

Inventor
J. H. Brinton
for himself and
William C. Brinton
Attorney

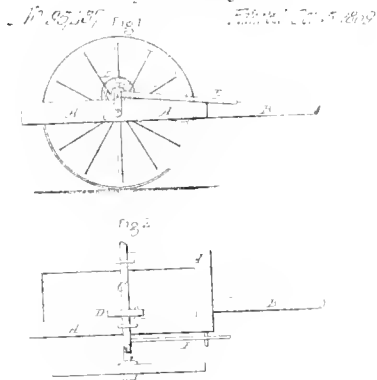
D. J. Franklin
Corn Planter
Patented May 1884



Witnesses,
Frank Johnson
Wm. H. Harrison
Inventor,
D. J. Franklin
By Geo. W. Blinn

J. M. Wilkes

Patented Dec 17 1870

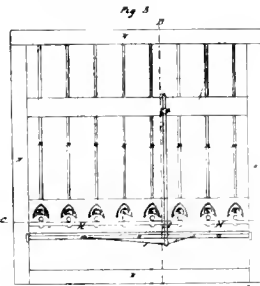
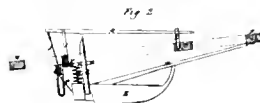


Witnesses
St. Decker
Geo. W. Blinn
Inventor
J. M. Wilkes
By Geo. W. Blinn

J. B. Clemons

Corn Drill

Patented Feb 8 1872



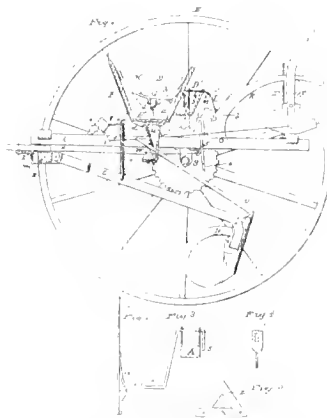
Witnesses
C. C. Johnson
J. W. Harrison
Inventor
J. B. Clemons
By Geo. W. Blinn

M. HAYDEN

Grain Drill.

No. 100,031

Patented Feb 22, 1870

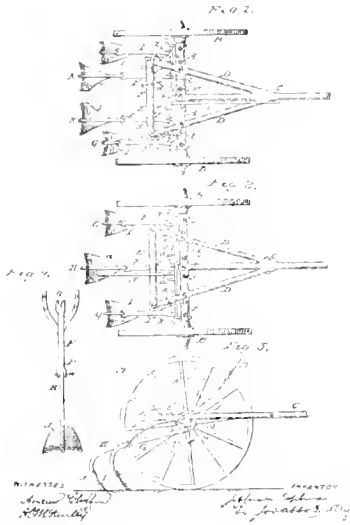


Witnesses
H. W. Kelley
J. W. Harrison
Inventor
M. Hayden
By Geo. W. Blinn

J. ESHLEMAN
Wheel Cultivator

No. 105,039

Patented Aug. 2, 1870.

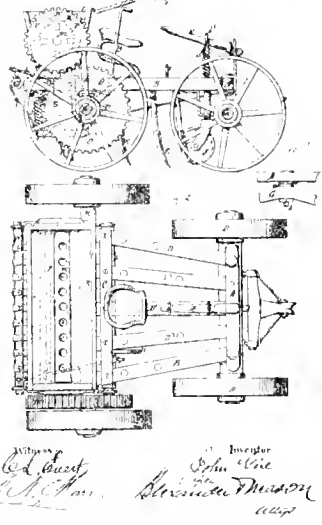


J. C. O'Neil

Tram-Drill

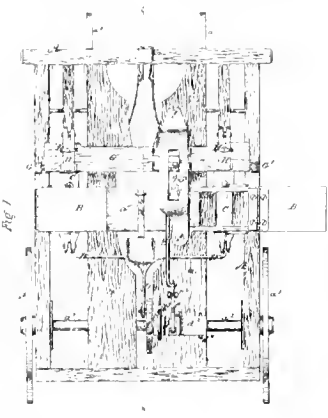
No. 109,658

Patented Sep. 11, 1870



1. Frame
2. Shaft
3. Gear
4. Pinion
5. Wheel

No. 111,500
Patented Sep. 11, 1870

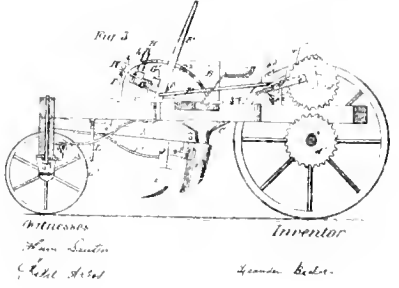
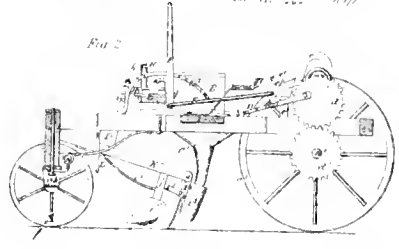


WITNESSES
John Weston
John Weston

INVENTOR
Samuel Baker

1. Frame
2. Shaft
3. Gear
4. Pinion
5. Wheel

No. 111,510
Patented Sep. 11, 1870



WITNESSES
John Weston
John Weston

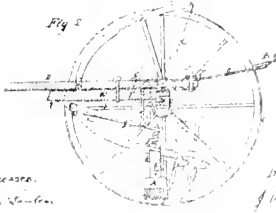
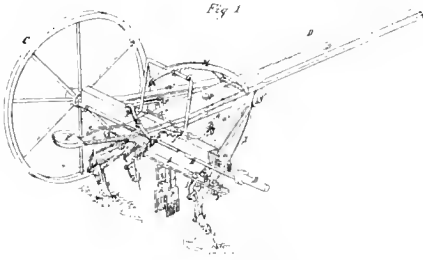
INVENTOR
Samuel Baker

J. W. Spangler.

117216

Cultivator

PATENTED JUL 18 1871

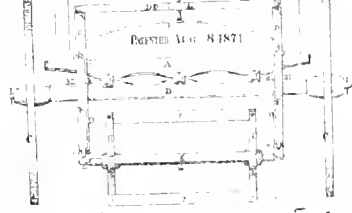


Witnesses
H. S. ...
J. S. ...

Inventor
J. W. Spangler

John W. Cassette
117748

PATENTED AUG 8 1871



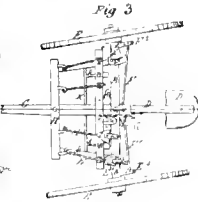
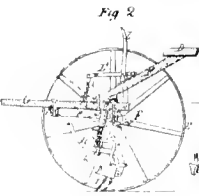
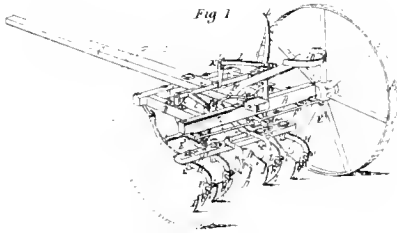
Witnesses
J. S. ...
J. S. ...

Inventor
John W. Cassette

J. W. SPANGLER
Improvement in Cultivators.

No 125,093

Patented March 26 1872



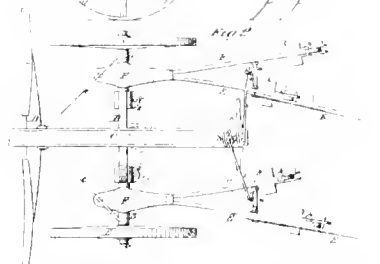
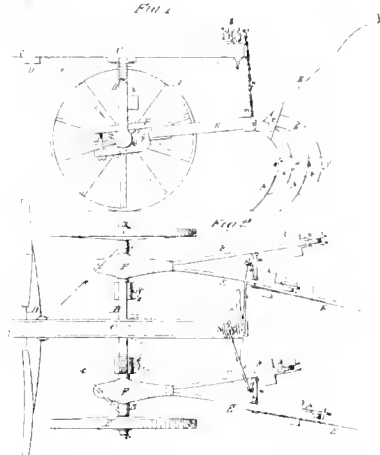
Witnesses
H. S. ...
J. S. ...

Inventor
J. W. Spangler

W. P. BEGWN
Improvement in Cultivators.

No 128,701

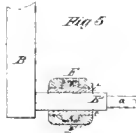
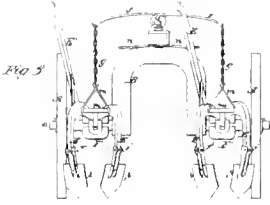
Patented July 9 1872



Witnesses
H. S. ...
J. S. ...

Inventor
W. P. Begwn

W. P. BROWN
 Improvement in Cultivators
 No. 128,701
 Patented July 9, 1872

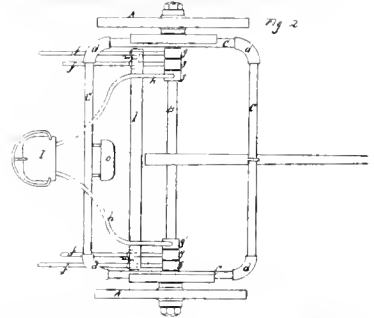
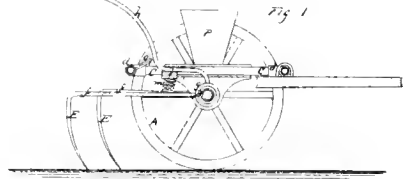


Witnesses
 W. C. Converse
 J. S. Converse

Inventor
 William P. Brown
 Per [Signature]

2 Sheets--Sheet 1

A. T. SHERWOOD
 Improvement in Cultivators
 No. 131,909
 Patented Oct. 1, 1872

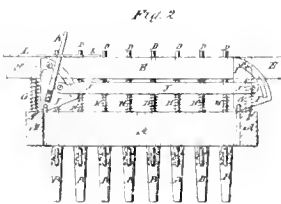
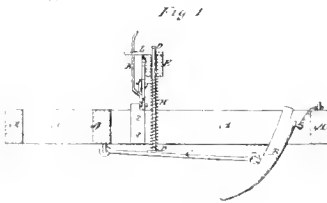


Witnesses
 [Signature]
 [Signature]

Inventor
 A. T. Sherwood
 Per [Signature]

G. A. PURSLEY
 Grain Drills.

No. 159,610
 Patented June 2, 1873



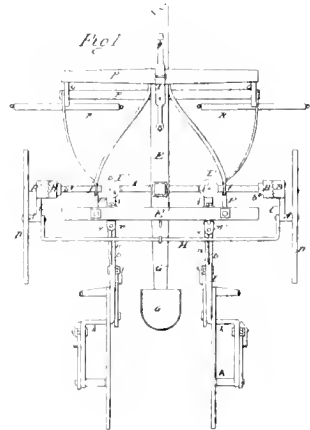
Witnesses:
 [Signature]
 [Signature]

Inventor
 G. A. Pursley
 Per [Signature]
 Attorneys.

2 Sheets--Sheet 1

J. M. GUSTIN
 Cultivators

No. 141,786
 Patented August 12, 1873.



Witnesses
 [Signature]
 [Signature]

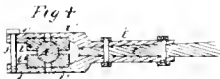
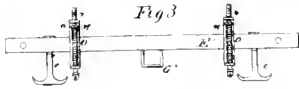
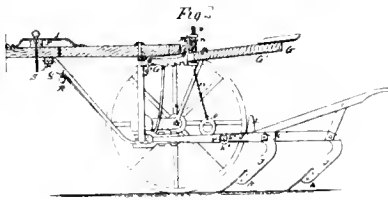
Inventor
 J. M. Gustin
 Per [Signature]

J. M. GUSTIN
Cultivators

2 Sheets--Sheet 2

No. 141,786

Patented August 12, 1873



Inventor
J. M. Gustin
Boston, Conn.
J. B. Conroy
Attorney



Inventor
J. M. Gustin
Boston, Conn.
J. B. Conroy
Attorney

E. K. HAYES
Double-Row Stalk Cutters

No. 147,936

Patented Feb. 24, 1874

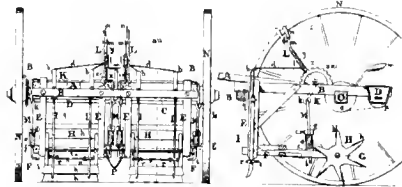


Fig. 1

Fig. 2

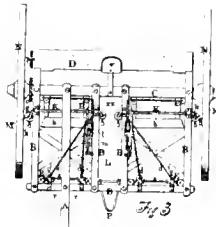


Fig. 3

Inventor
E. K. Hayes
Milan, Wis.
Wm. H. White
Attorney



Fig. 4

Inventor
E. K. Hayes
Milan, Wis.
Wm. H. White
Attorney

W. WEUSTHOFF
Grain-Drills

No. 148,906

Patented March 24, 1874

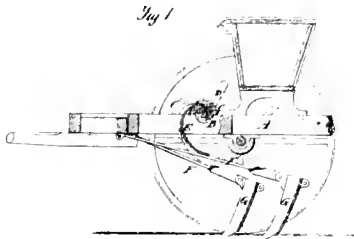


Fig. 1

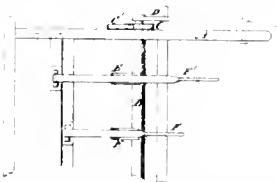


Fig. 2

Inventor
W. Weusthoff
St. Louis, Mo.
J. B. Conroy
Attorney

Inventor
W. Weusthoff
St. Louis, Mo.
J. B. Conroy
Attorney

G. J. OVERSHINER
Gang Plows

2 Sheets--Sheet 1

No. 151,425

Patented May 26, 1874

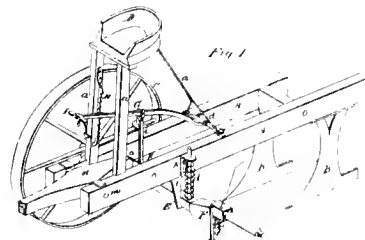


Fig. 1

Inventor
G. J. Overshiner
St. Louis, Mo.
Thos. W. Lane
Attorney

Inventor
G. J. Overshiner
St. Louis, Mo.
Thos. W. Lane
Attorney

G. J. OVERSHINER
Grang-Plows.

2 Sheets--Sheet 2

No. 151,425

Patented May 26, 1874

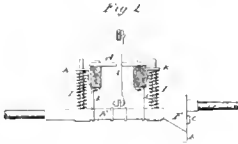


Fig. 2



Fig. 3

Witnesses:

Chas. C. ...
Thos. M. ...

Inventor

G. J. Overshiner

A. D. SIMONS
Combined Horse-Moo and Plow

No. 160,621

Patented March 9, 1875

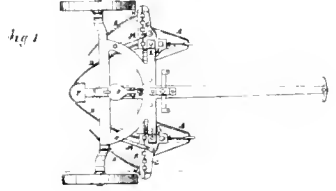


Fig. 1

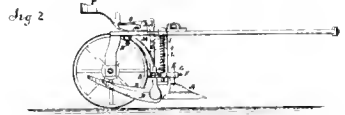


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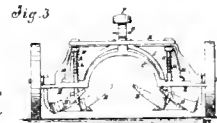


Fig. 3

Witnesses:

Almon ...
A. D. Simons

Inventor

A. D. Simons

Attorneys

W. N. RIDDLE
WHEEL CULTIVATORS

No. 180,271.

Patented July 26 1876

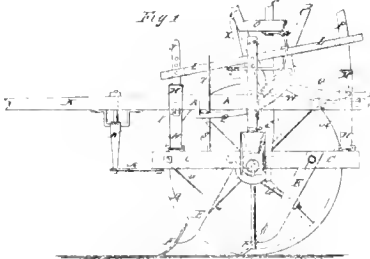


Fig. 1

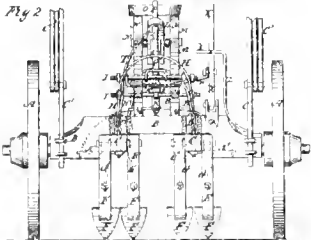


Fig. 2

Witnesses:

C. Hoff
John ...

Inventor

W. N. Riddle

Attorney

J. M. PAYNE
SULKY-PLOW

No. 181,200.

Patented Aug 16, 1876.

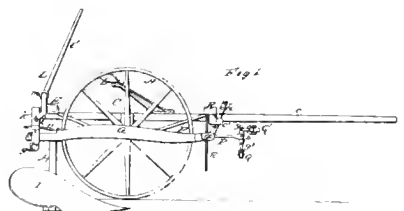


Fig. 1

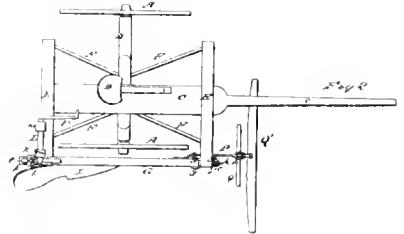


Fig. 2

Witnesses:

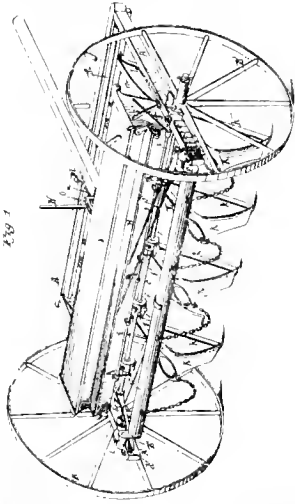
C. R. Lewis
John ...

Inventor

J. M. Payne

Attorneys

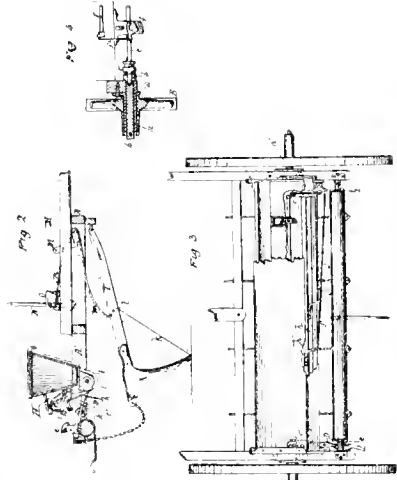
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J. M. SMITH & H. W. C. THOMAS
 GRAIN-DRILLS
 No. 184,268 Patented Nov. 14, 1876



Witnesses
 May Mahon
 John S. Carter

Inventors
 Joshua W. Smith
 H. W. C. Thomas
 by Will Smith
 Attorney

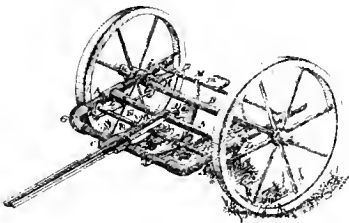
2 Sheets—Sheet 2
J. M. SMITH & H. W. C. THOMAS
 GRAIN-DRILLS
 No. 184,268. Patented Nov. 14, 1876



Witnesses
 May Mahon
 John S. Carter

Inventors
 Joshua W. Smith
 H. W. C. Thomas
 by Will Smith
 Attorney

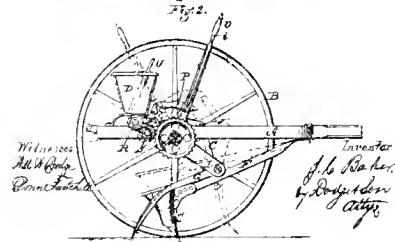
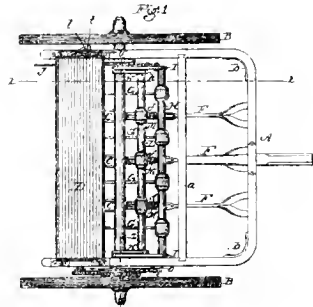
J. C. BAKER
 GRAIN-DRILL
 No. 186,407 Patented Dec. 23, 1877



WITNESSES
 Ed. C. Thompson
 A. M. Smith

INVENTOR
 John C. Baker
 by Augustus S. Sargent
 ATTORNEYS

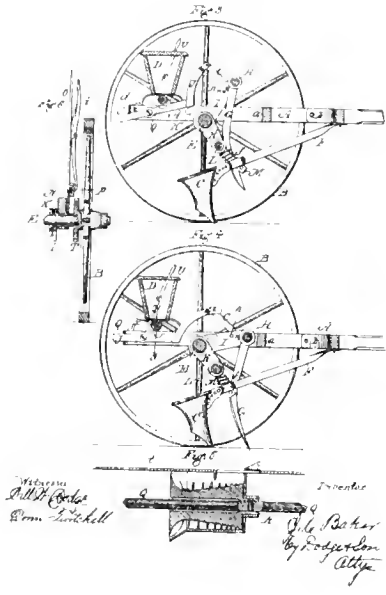
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J. C. BAKER.
 SEEDING-MACHINE
 No. 189,679 Patented April 17, 1877



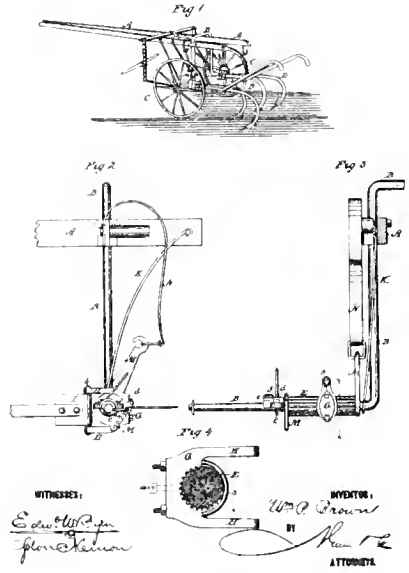
WITNESSES
 H. W. King
 R. M. Smith

INVENTOR
 J. C. Baker
 by Augustus S. Sargent
 ATTORNEYS

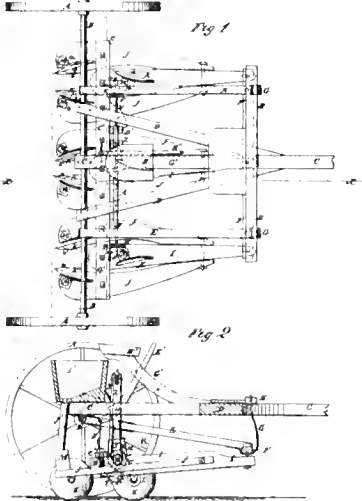
J. C. BAHER
SEEDING-MACHINE
No. 189,670
Patented April 17, 1877



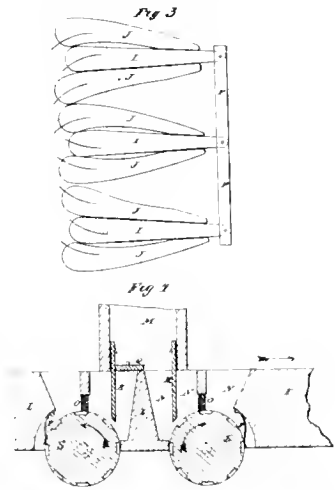
W. P. BROWN.
COUPLINGS FOR CULTIVATORS
No. 190,816
Patented May 15, 1877.



J. L. HILL.
CORN-PLANTER AND GRAIN-DRILL
No. 191,054.
Patented May 22, 1877.



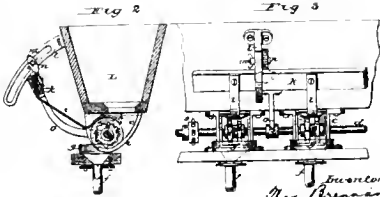
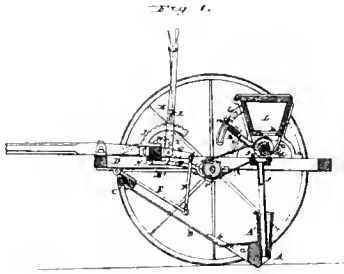
J. L. HILL
CORN-PLANTER AND GRAIN-DRILL
No. 191,054
Patented May 22, 1877



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T. BRENNAN, J. TAYLOR & J. T. LYNAM
GRAIN-DRILL

No 193,075

Patented July 17, 1877



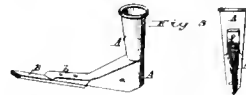
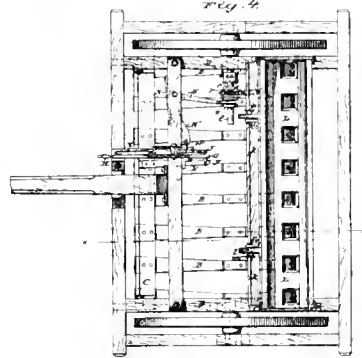
Witnesses
W. G. Barnes
C. C. Bourne

Inventors
T. Brennan
J. Taylor
& J. T. Lynam
By Wm. H. Burdett
Attorney

2 Sheets—Sheet 2
T. BRENNAN, J. TAYLOR & J. T. LYNAM
GRAIN-DRILL

No 193,075.

Patented July 17, 1877



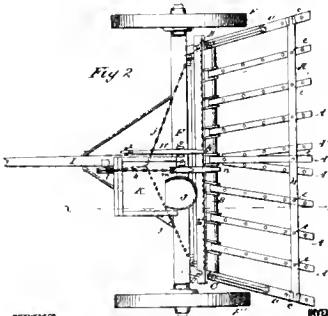
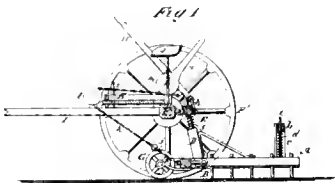
Witness
W. G. Barnes
C. C. Bourne

Inventors
T. Brennan
J. Taylor
& J. T. Lynam
By Wm. H. Burdett
Attorney

L. B. CODDINGTON & W. W. FRENCH
HARROWS.

No 193,092

Patented July 31, 1877



WITNESSES:

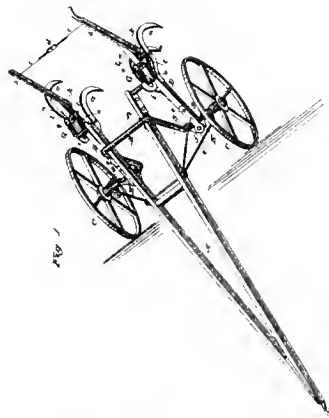
E. J. Hoff
J. H. Patterson

Inventors
L. B. Coddington
& W. W. French
By Wm. H. Burdett
Attorney

3 Sheets—Sheet 1
W. G. BARNES
CORN-CULTIVATORS

No 193,912

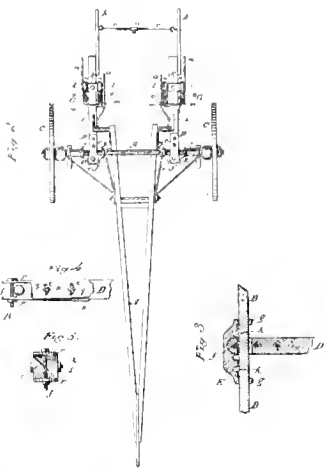
Patented Aug 7, 1877.



Witness:
C. C. Bourne
August Peterson

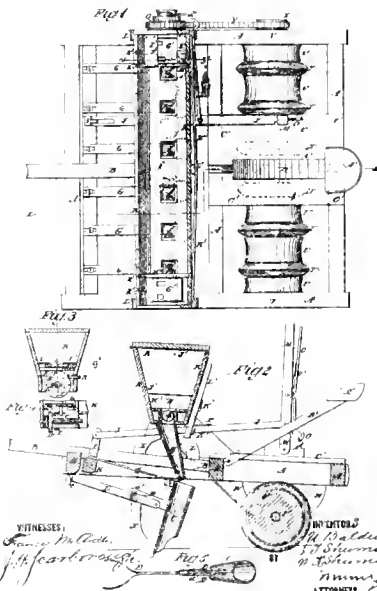
Inventor
Walter J. Barnes
By August Peterson
Attorney

2 Sheets—Sheet 1
 W. G. BARNES
 CORN-CULTIVATOR
 No. 193,912 Patented Aug. 7, 1877



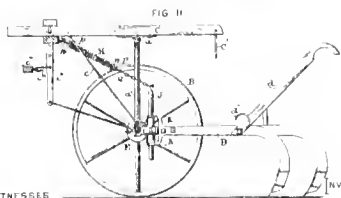
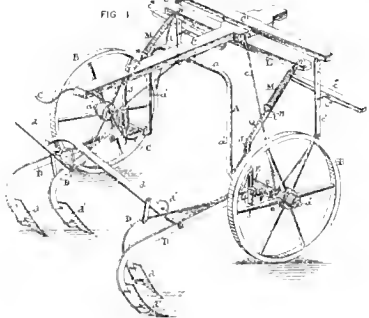
Witnesses:
E. E. Covert
W. G. Barnes
W. G. Barnes & Co.
 Inventor:
Walter G. Barnes
W. G. Barnes & Co.
 Attorneys

U. BALDWIN, I. T. & W. E. SHUMARD.
 SEEDER AND PLANTER
 No. 195,742. Patented Oct. 2, 1877



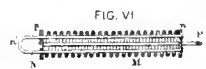
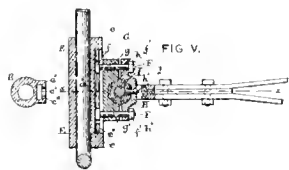
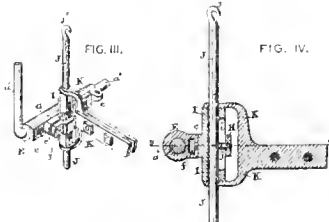
Witnesses:
James M. Peck
J. H. Carver
 Inventors:
U. Baldwin
I. T. Shumard
W. E. Shumard
 Attorneys

2 Sheets—Sheet 1
 G. MOORE
 Cultivator.
 No. 217,811 Patented July 22, 1879



Witnesses:
E. E. Covert
D. H. Hunt
 Inventor:
Gilpin Moore
W. B. Richards
 Attorney

2 Sheets—Sheet 2
 G. MOORE
 Cultivator.
 No. 217,811 Patented July 22, 1879

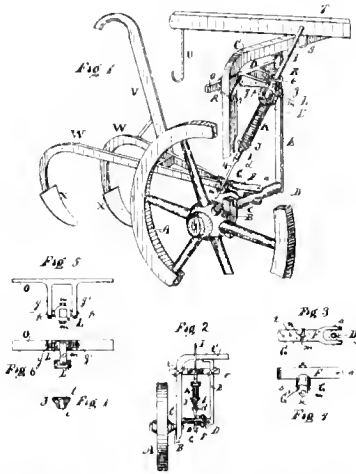


Witnesses:
E. E. Covert
D. H. Hunt
 Inventor:
Gilpin Moore
W. B. Richards
 Attorney

J M ELDER.
Cultivator

No. 222,391

Patented Dec. 9. 1879



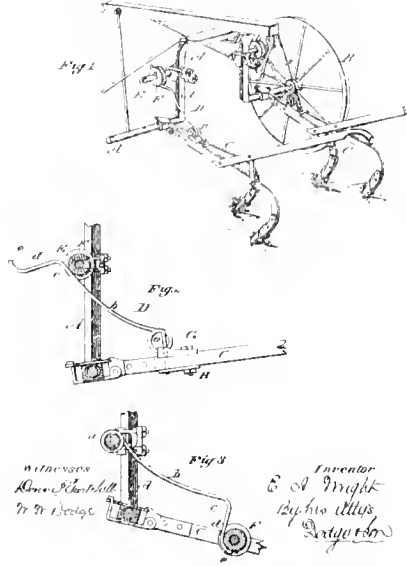
WITNESSES:
By Russell
W. J. Speer

INVENTOR.
James M. Elder
Per C. H. Russell
his Attorney

E A WRIGHT
Wheel Cultivator

No. 222,767

Patented Dec 16 1879



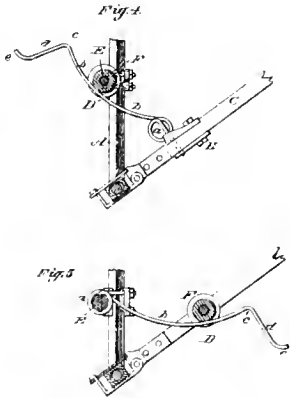
WITNESSES
Oliver S. Churchill
W. W. Dodge

Inventor
E. A. Wright
By his Attys.
S. J. Rogers

E A WRIGHT
Wheel-Cultivator

No. 222,767

Patented Dec. 16, 1879



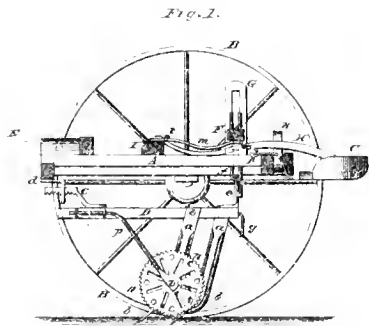
Witnesses.
Oliver S. Churchill
W. W. Dodge

Inventor
E. A. Wright
By his Attys.
S. J. Rogers

A R ALLISON.
Cultivator

No. 3,085

Reissued Feb 17, 1880



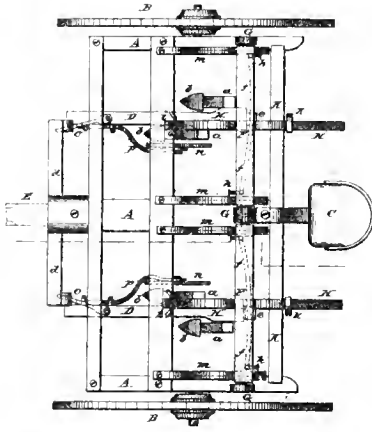
Witnesses
S. J. Rogers
William W. Dodge

Inventor
A. R. Allison
By his Attys.
S. J. Rogers

2 Sheets—Sheet 3

A. H. ALLISON,
 MANUFACTURER OF RAGLE MANUFACTURING CO.
 Cultivator.

No. 9,085. Reissued Feb. 17, 1880.
 Fig. 2.

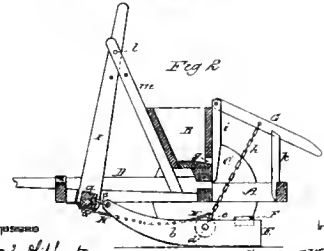
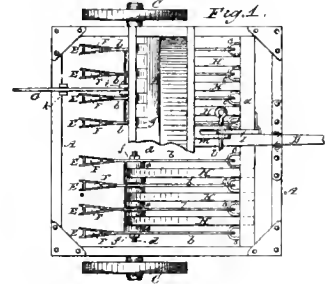


Witnesses
F. G. Gutrich
William W. Knight

Inventor
A. H. Allison
 By *Design & Co. Attorneys*

S. WILLIAMS,
 Wheat-Drill.

No. 225,545 Patented Mar. 16, 1880.



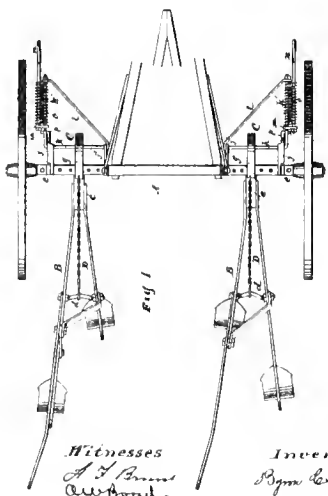
Witnesses
Nat. & Elephant
Geo. A. Votter

Inventor
Samuel Williams
 By *Shaw & Knapp Attorneys*

2 Sheets—Sheet 1

E. C. BRADLEY,
 Cultivator.

No. 226,833. Patented April 27, 1880.

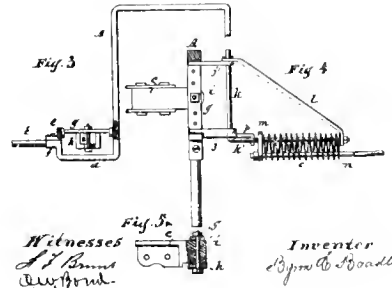
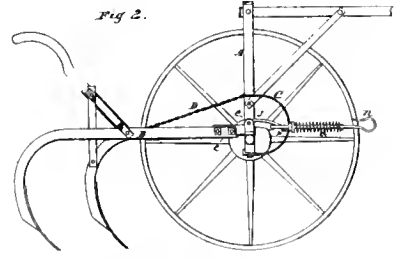


Witnesses
A. J. Brown
Geo. Bond

Inventor
Byron C. Bradley

E. C. BRADLEY,
 Cultivator.

No. 226,833. Patented April 27, 1880.



Witnesses
A. J. Brown
Geo. Bond

Inventor
Byron C. Bradley

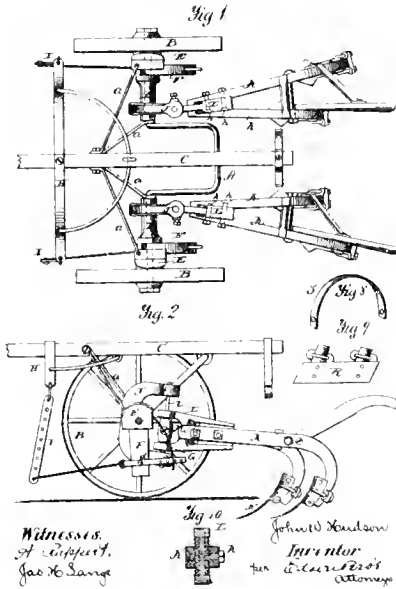
(No Model.)

J W HUDSON
Wheel Cultivator

2 Sheets—Sheet 1

No. 229,534

Patented July 6, 1880.



Witnesses
A. C. Crippen,
Geo. H. Sarge



Inventor
John W. Hudson
per C. C. Crippen & Geo. H. Sarge
Attorneys

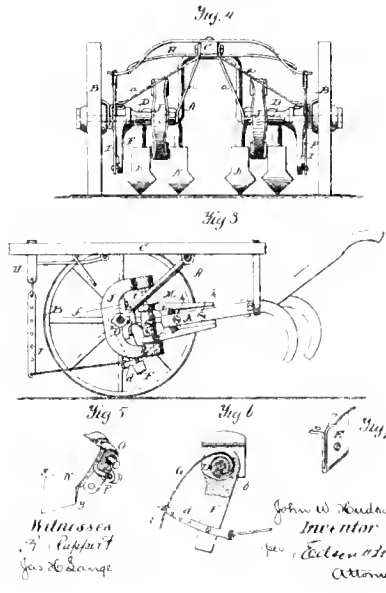
(No Model.)

J W HUDSON
Wheel Cultivator

2 Sheets—Sheet 2

No. 229,534

Patented July 6, 1880.



Witnesses
A. C. Crippen,
Geo. H. Sarge

Inventor
John W. Hudson
per C. C. Crippen & Geo. H. Sarge
Attorneys

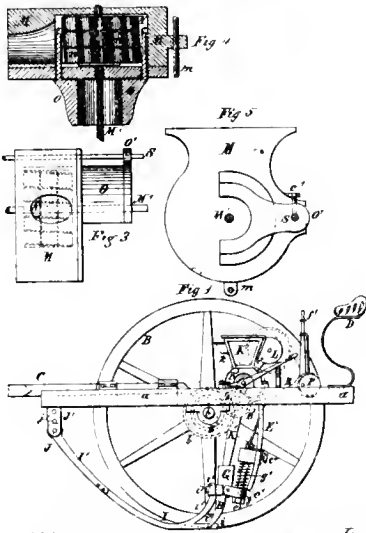
(No Model.)

D. E ASHER
Grain Drill

2 Sheets—Sheet 1

No. 231,749

Patented Aug. 31, 1880.



Witnesses
A. A. Daniels,
S. J. Murray

Inventor
Daniel E. Asher
per A. A. Daniels & S. J. Murray
Attorneys

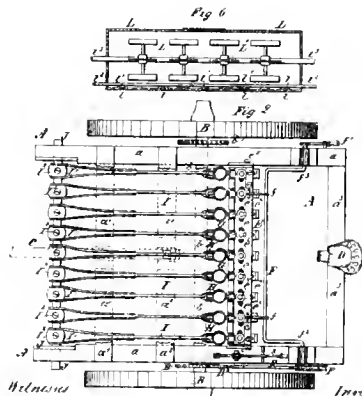
(No Model.)

D E ASHER
Grain Drill

2 Sheets—Sheet 2

No. 231,749

Patented Aug. 31, 1880.



Witnesses
A. A. Daniels,
S. J. Murray

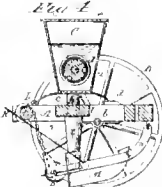
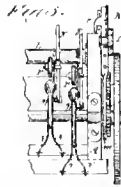
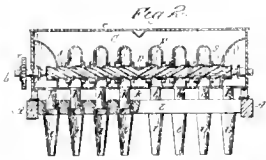
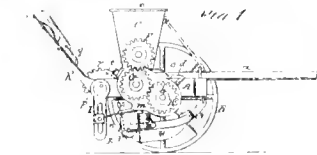
Inventor
Daniel E. Asher
per A. A. Daniels & S. J. Murray
Attorneys

(No. 4-64)

H. SANTROCK
Grain Drill

No. 233,435.

Patented Oct. 19, 1880.



Witnesses
Nat. E. Bryant
Richard W. Hayes

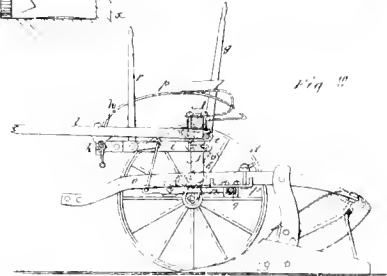
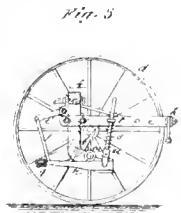
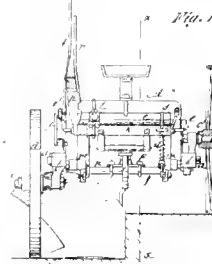
Inventor
Henry Santrock
By C. W. Smith
Attorney

(Model)

W. H. RYER
Sulky Plow

No. 234,615

Patented Nov. 16, 1880.

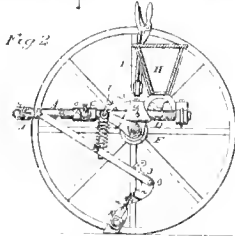
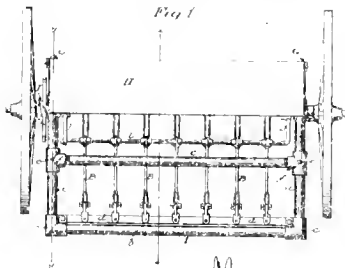


Witnesses
C. S. Jones
& O. J. Jones

Inventor
W. H. Ryer
By M. J. Ryan
Attorneys

2 Sheets—Sheet 1

J. C. BAKER
Combined Grain Drill and Cultivator
No. 234,845
Patented Nov. 30, 1880.

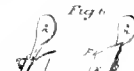
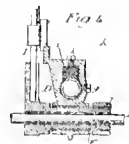
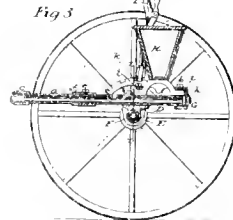


Witnesses
James B. ...
William D. ...

Inventor
John C. Baker
By ...
Attorney

3 Sheets—Sheet 2

J. C. BAKER
Combined Grain Drill and Cultivator
No. 234,845.
Patented Nov. 30, 1880.



Witnesses
...
William ...

Inventor
J. C. Baker
By ...
Attorney

(No Model.)

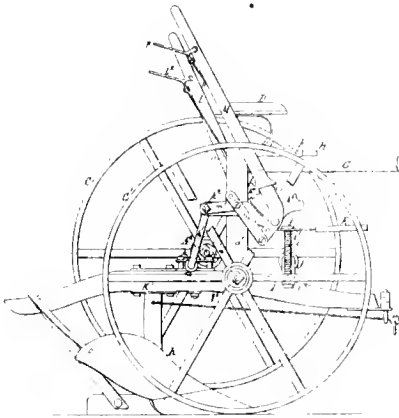
F. F. SMITH
Sulky Plows

1 Sheet—Sheet 1

No. 235,175

Patented Dec. 7, 1880.

Fig 1



Witnesses:
J. F. Morrison
J. P. Thompson

Inventor
F. F. Smith
Per: [Signature]

(No Model.)

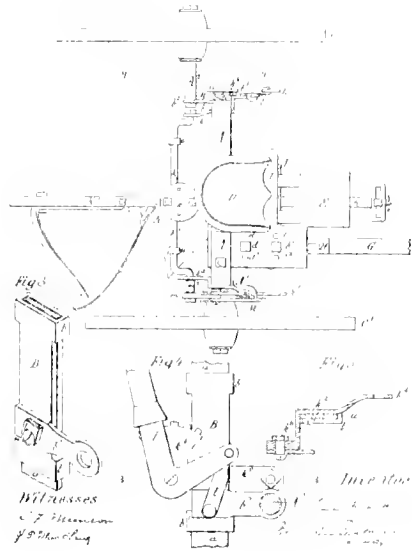
F. F. SMITH
Sulky Plows

2 Sheets—Sheet 2

No. 235,175

Patented Dec. 7, 1880

Fig 2



Witnesses
J. F. Morrison
J. P. Thompson

Inventor
F. F. Smith
Per: [Signature]

(No Model.)

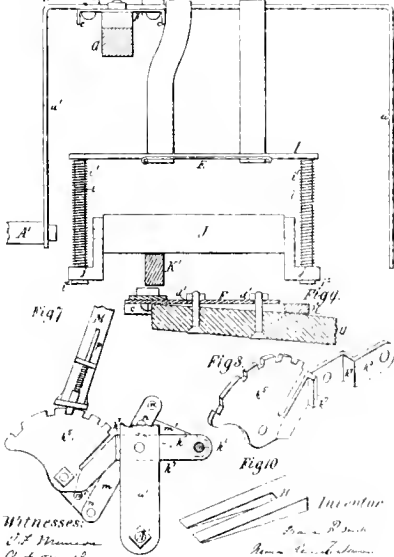
F. F. SMITH.
Sulky Plows

3 Sheets—Sheet 3

No. 235,175.

Patented Dec. 7, 1880.

Fig 6



Witnesses:
J. F. Morrison
J. P. Thompson

Inventor
F. F. Smith
Per: [Signature]

(Model)

R. J. BOWMAN.

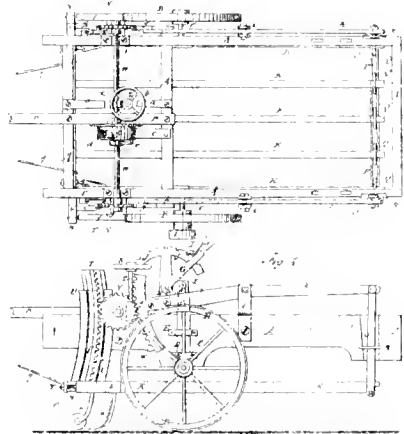
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No. 236,536.

Gang Plow, Planter and Cultivator.

Patented Jan. 11, 1881.

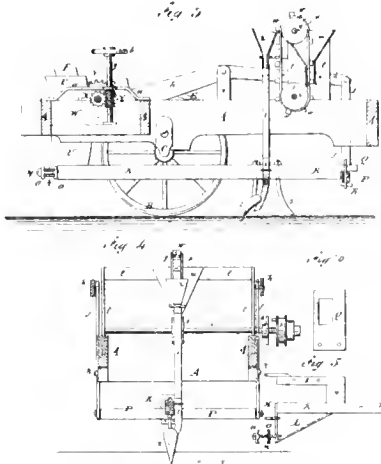
Fig 1



Witnesses
C. S. [Signature]
L. [Signature]

Inventor:
R. J. Bowman
BY: [Signature]
ATTORNEY

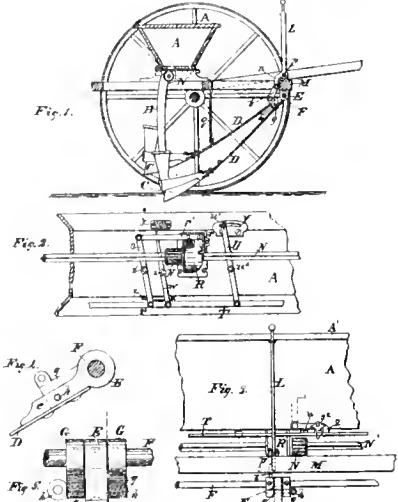
(Model) **R. J. BOWMAN.** 2 Sheets—Sheet 2
 Gang Plow, Planter and Cultivator.
 No. 236,536. Patented Jan. 11, 1881.



WITNESSES:
Chas. M. ...
E. ...

INVENTOR:
R. J. Bowman
 BY *Wm. H. ...*
 ATTORNEY

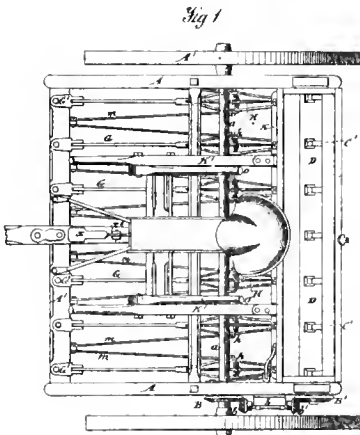
(Model) **J. TAYLOR**
 Rice Drill.
 No. 236,734. Patented Jan. 18, 1881.



Witnesses
Geo. U. ...
R. C. ...

Inventor:
James Taylor
 By *Geo. ...*
Chas. B. ...

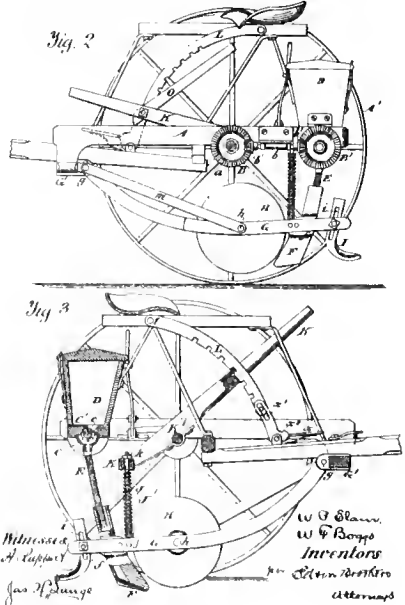
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 Grain Drill.
 No. 237,001. Patented Jan. 25, 1881.



Witnesses
A. ...
Geo. ...

W. P. Elam,
W. F. Boggs
 Inventors
 by *Edwin ...*
 Attorneys

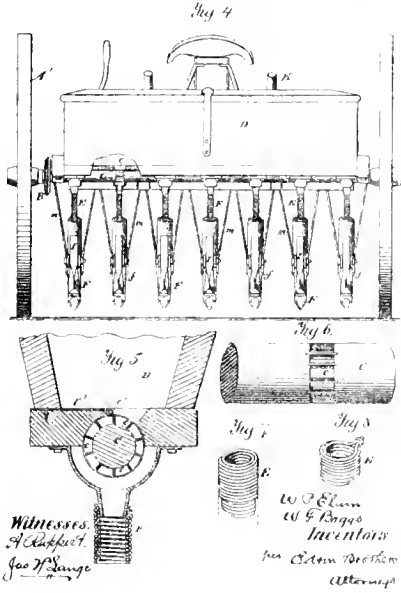
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 No. 237,001. Patented Jan. 25, 1881.



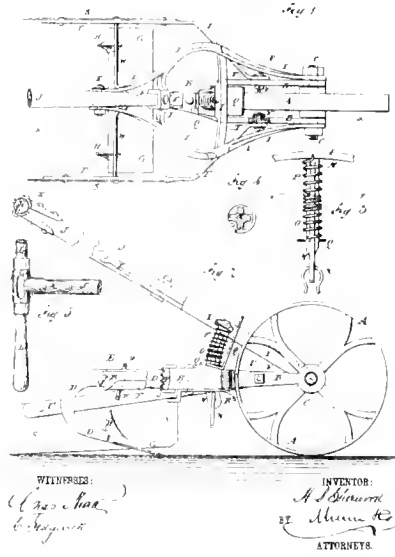
Witnesses
A. ...
Geo. ...

W. P. Elam,
W. F. Boggs
 Inventors
 by *Edwin ...*
 Attorneys

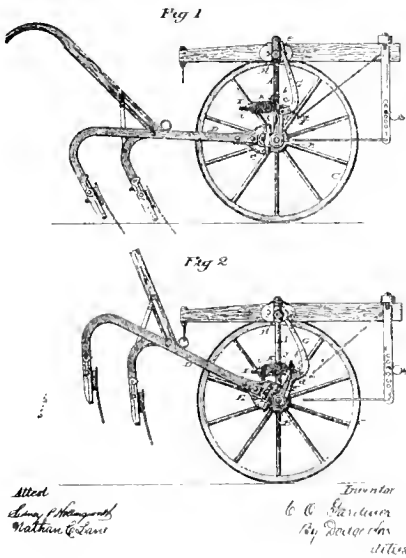
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 Grain Drill
 No. 237,001. Patented Jan. 25, 1881.



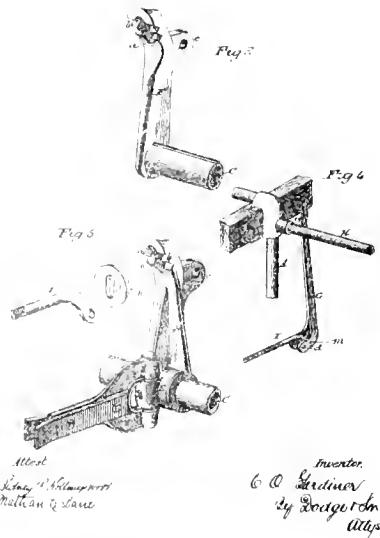
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 Hand Cultivator
 No. 237,057. Patented Jan. 25, 1881.



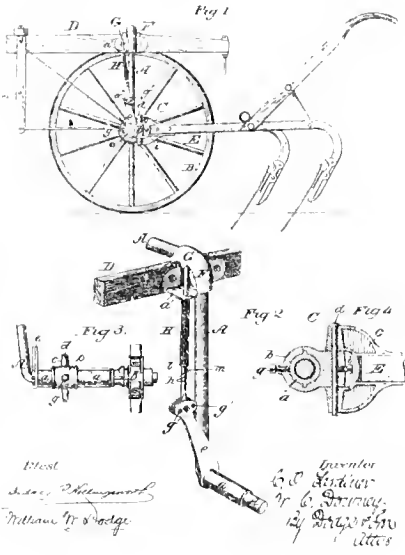
(Model.)
 C O GARDINER
 Cultivator
 No. 237,739. Patented Feb. 15, 1881.



(Model.)
 C O GARDINER
 Cultivator
 No. 237,739. Patented Feb. 15, 1881.



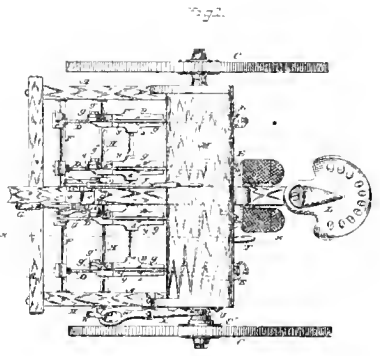
(No Model)
C. O. GARDINER & W. C. DOWNEY
 Cultivator
 No. 237,740 Patented Feb. 15, 1881.



Witness
Jas. E. Hutchinson
James C. Stone

Inventor
C. O. Gardiner
W. C. Downey
By James L. Norris

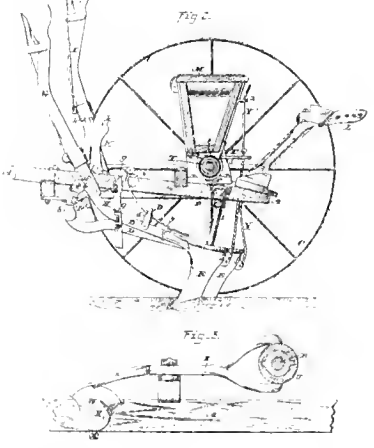
(No Model) 3 Sheets—Sheet 1
S. B. HART
 Grain Drill
 No. 238,683 Patented March 8, 1881



Witnesses
Jas. E. Hutchinson
James C. Stone

Inventor
Stacy B. Hart
By James L. Norris

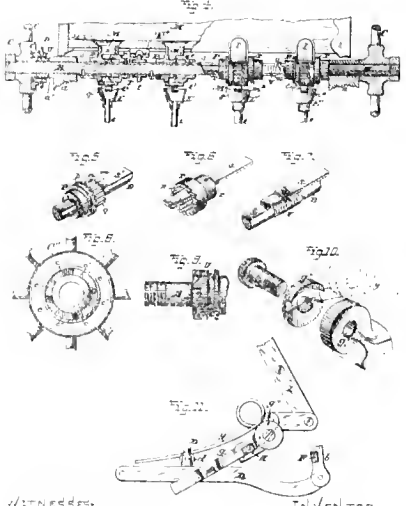
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S. B. HART
 Grain Drill.
 No. 238,683 Patented March 8, 1881



Witnesses
Jas. E. Hutchinson
James C. Stone

Inventor
Stacy B. Hart
By James L. Norris

(No Model) 3 Sheets—Sheet 7
S. B. HART
 Grain Drill
 No. 238,683 Patented March 8, 1881



Witnesses
Jas. E. Hutchinson
James C. Stone

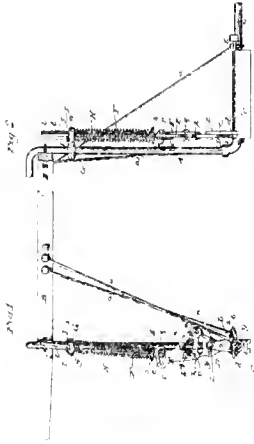
Inventor
Stacy B. Hart
By James L. Norris

(Model)

F. E. MANN
Wheel Cultivator.

No. 238,943

Patented March 15, 1881



WITNESSES
John C. Pease
Philip Allan

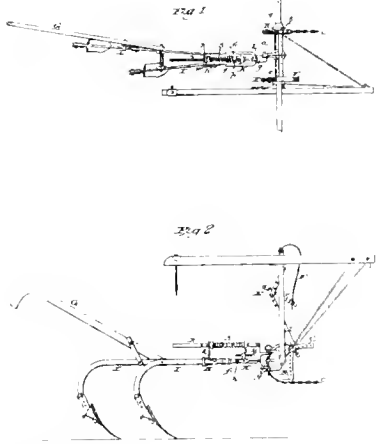
INVENTOR
Frank P. Mann
By Anderson & Smith

(No Model)

W. P. BROWN
Cultivator

No. 240,377.

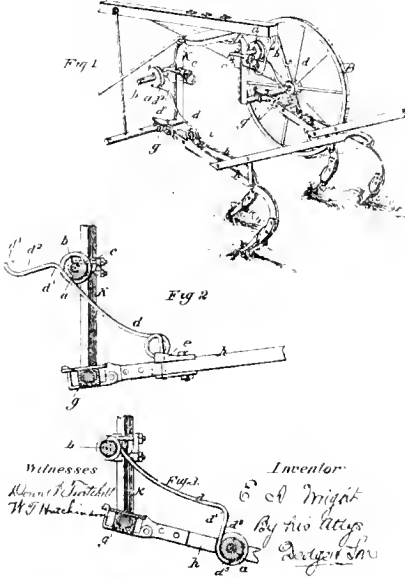
Patented April 19, 1881.



WITNESSES
John C. Pease
Philip Allan

INVENTOR
W. P. Brown
By Anderson & Smith

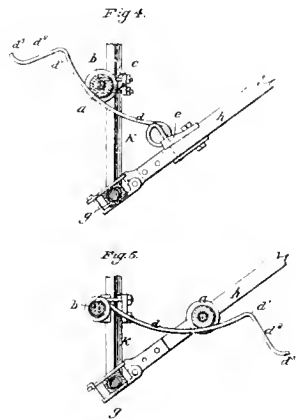
E. A. WRIGHT
Cultivator
No. 242,497.
Patented June 7, 1881.



Witnesses
Robert F. Trumbull
W. G. H. ...

Inventor
E. A. Wright
By his Attys
Dodge & ...

E. A. WRIGHT
Cultivator
No. 242,497.
Patented June 7, 1881.



Witnesses
Robert F. Trumbull
W. G. H. ...

Inventor
E. A. Wright
By his Attys
Dodge & ...

No. 243,123

C. A. HAGUE
Cultivator

1 Sheet—Sheet 1

Patented June 21, 1891

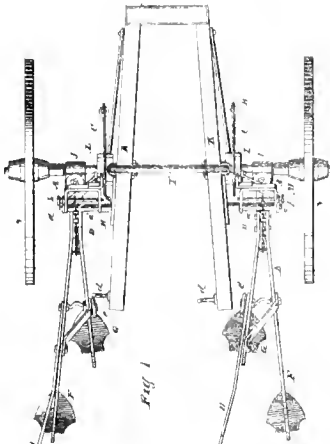


Fig. 1

Witnesses
O. W. Bond
& W. Murphy

Inventor
Charles A. Hague

No. 243,123.

C. A. HAGUE
Cultivator

2 Sheets—Sheet 2.

Patented June 21, 1891.

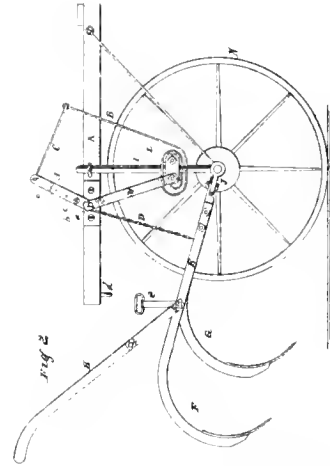


Fig. 2

Witnesses
O. W. Bond
& W. Murphy

Inventor
Charles A. Hague

No. 243,123

C. A. HAGUE.
Cultivator

2 Sheets—Sheet 2

Patented June 21, 1891.

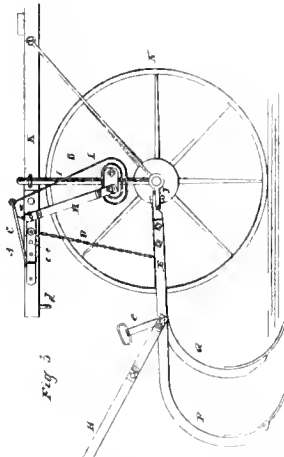


Fig. 3

Witnesses
O. W. Bond
& W. Murphy

Inventor
Charles A. Hague

No. 246,224

G. SHAVER
CULTIVATOR

Patented Aug. 23, 1891.

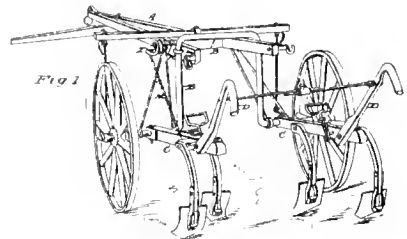


Fig. 1

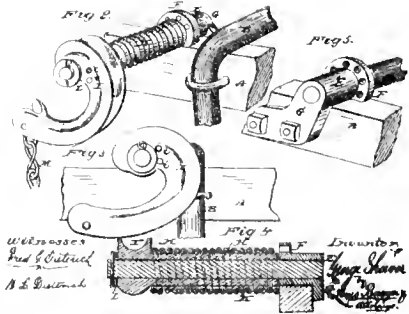
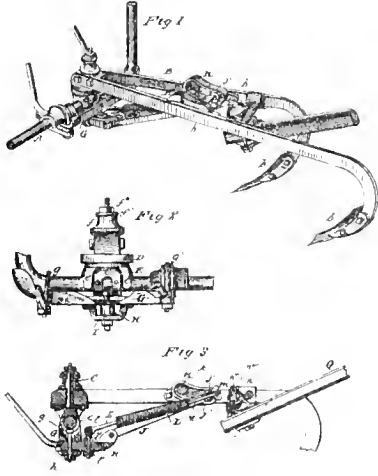


Fig. 2

Witnesses
Paul G. Burtch
& E. B. Burtch

Inventor
G. Shaver

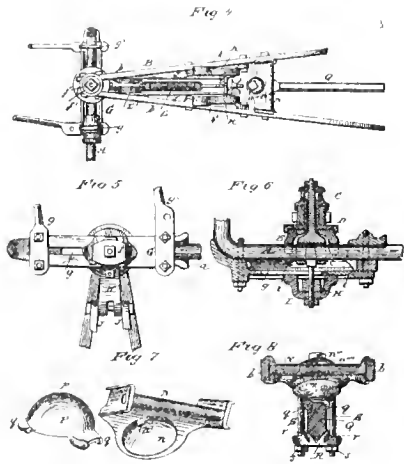
Model: G W BROWN 2 Sheets—Sheet 1
CULTIVATOR
No. 248,991 Patented Nov. 1, 1881.



Witnesses
Fred G. Dethlefsen
A. H. Brown

Inventor
George W. Brown
By W. B. Richards
Atty.

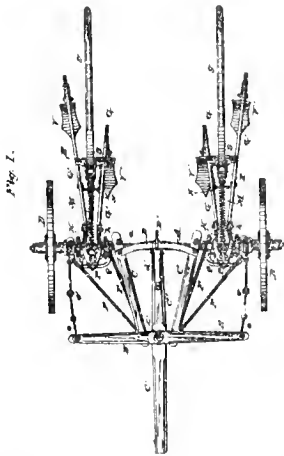
Model: G W BROWN 2 Sheets—Sheet 2
CULTIVATOR
No. 248,991 Patented Nov. 1, 1881



Witnesses
Fred G. Dethlefsen
A. H. Brown

Inventor
George W. Brown
By W. B. Richards
Atty.

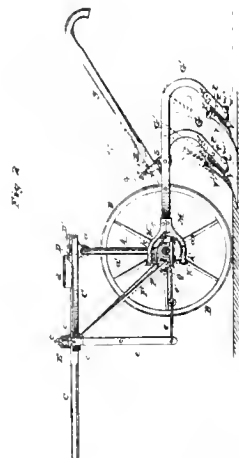
Model: G W BROWN 4 Sheets—Sheet 1
CULTIVATOR
No. 248,992 Patented Nov. 1, 1881



Witnesses
Fred G. Dethlefsen
D. Dethlefsen

Inventor
George W. Brown
By W. B. Richards
Atty.

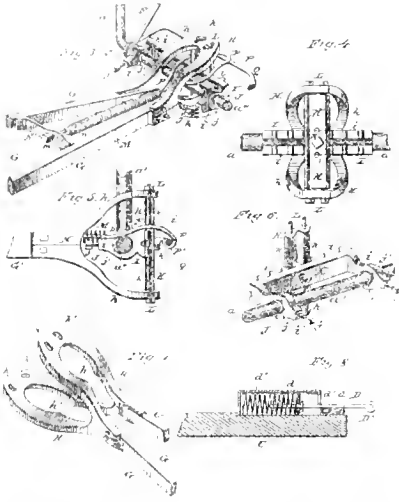
Model: G W BROWN 4 Sheets—Sheet 2
CULTIVATOR
No. 248,992. Patented Nov. 1, 1881.



Witnesses
Fred G. Dethlefsen
D. Dethlefsen

Inventor
George W. Brown
By W. B. Richards
Atty.

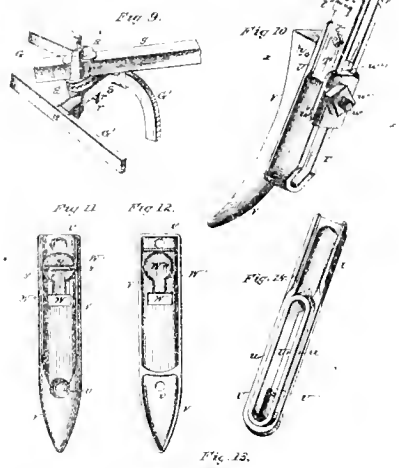
Model
G W BROWN
CULTIVATOR
No. 248,992
Patented Nov. 1, 1881.
4 Sheets—Sheet 3



Witness
J. G. ...
J. G. ...

Inventor
G. W. Brown
By W. B. Richards
Att'y

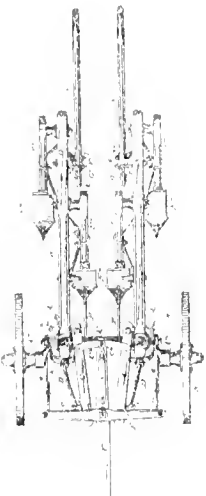
Model
G W BROWN
CULTIVATOR
No. 248,992
Patented Nov. 1, 1881.
1 Sheet—Sheet 4



Witness
J. G. ...
J. G. ...

Inventor
G. W. Brown
By W. B. Richards
Att'y

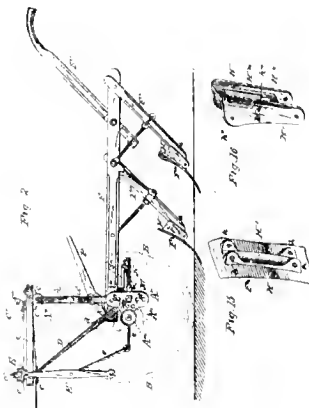
Model
G W BROWN & S G HOLYOKE
CULTIVATOR
No. 248,993
Patented Nov. 1, 1881.
4 Sheets—Sheet 1



Witness
J. G. ...
J. G. ...

Inventors
G. W. Brown
& S. G. Holyoke
By W. B. Richards
Att'y

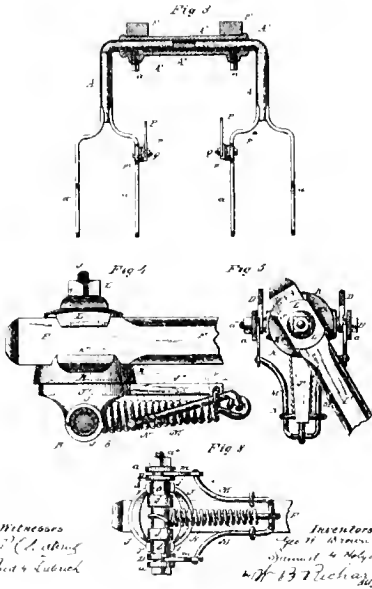
Model
G W BROWN & S G HOLYOKE
CULTIVATOR
No. 248,993
Patented Nov. 1, 1881.
4 Sheets—Sheet 2



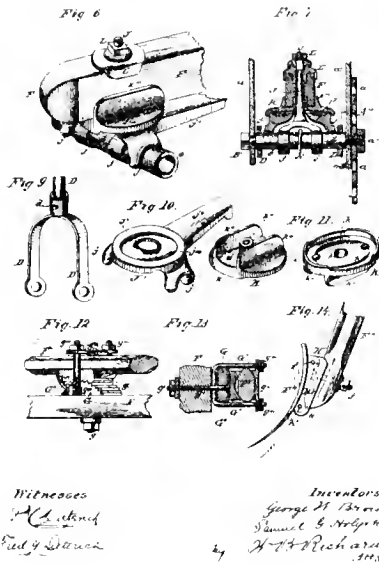
Witness
J. G. ...
J. G. ...

Inventors
G. W. Brown
& S. G. Holyoke
By W. B. Richards
Att'y

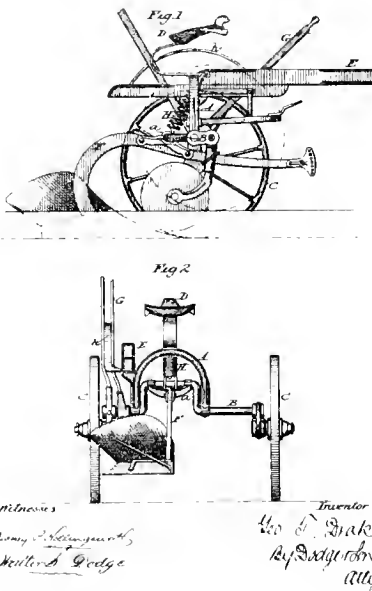
(Model.)
 G W BROWN & S G HOLYOKE
 CULTIVATOR
 No. 248,993 Patented Nov. 1, 1881.



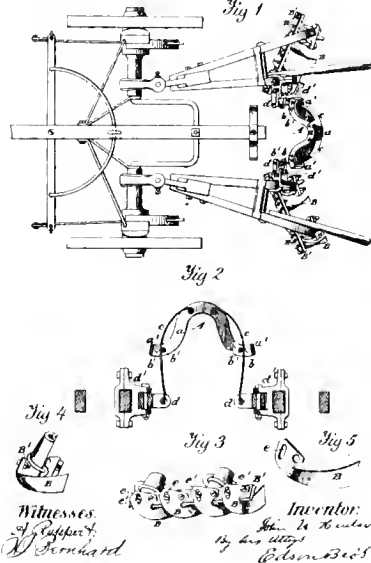
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 G W BROWN & S G HOLYOKE
 CULTIVATOR
 No. 248,993 Patented Nov. 1, 1881.



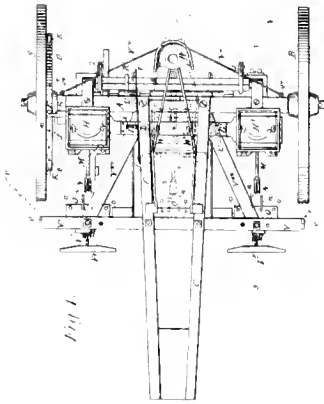
(No Model.)
 G T DRAKE
 WHEELED PLOW
 No. 249,509. Patented Nov. 15, 1881.



(No Model.)
 J. W HUDSON
 CULTIVATOR
 No. 250,361. Patented Dec. 8, 1881.



(No Model) J C SEBRING 4 Sheets—Sheet 1
 COMBINED PLANTER AND CULTIVATOR
 No. 251,301 Patented Dec. 20, 1881.



Witnesses
Edw. M. Smith
Harry & Knight

Inventor
 J. C. Sebring
J. C. Sebring

(No Model) J C SEBRING 4 Sheets—Sheet 2
 COMBINED PLANTER AND CULTIVATOR
 No. 251,301 Patented Dec. 20, 1881.

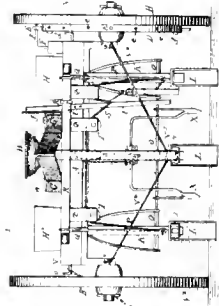


Fig. 2

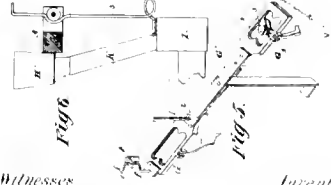


Fig. 5

Fig. 6

Witnesses
Edw. M. Smith
Harry & Knight

Inventor
 J. C. Sebring
J. C. Sebring

(No Model) J C SEBRING 4 Sheets—Sheet 3
 COMBINED PLANTER AND CULTIVATOR
 No. 251,301 Patented Dec. 20, 1881.

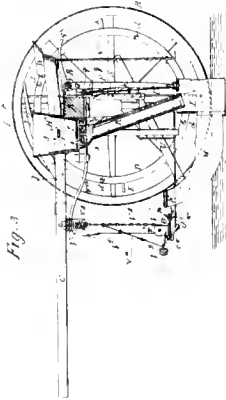


Fig. 3

Witnesses
Edw. M. Smith
Harry & Knight

Inventor
 J. C. Sebring
J. C. Sebring

(No Model) J C SEBRING 4 Sheets—Sheet 4
 COMBINED PLANTER AND CULTIVATOR
 No. 251,301 Patented Dec. 20, 1881.

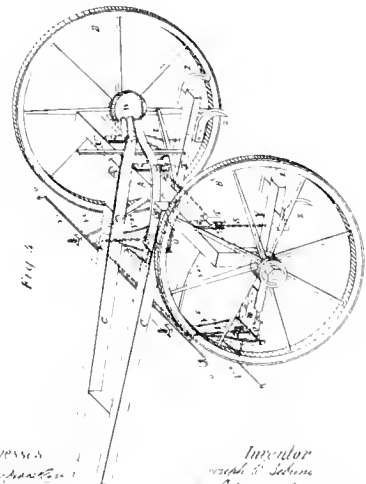
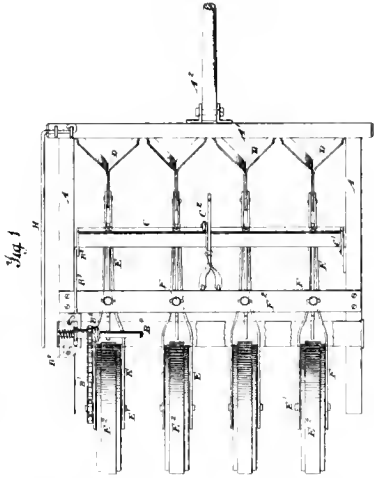


Fig. 4

Witnesses
Edw. M. Smith
Harry & Knight

Inventor
 J. C. Sebring
J. C. Sebring

(Model) R C MORRIS 2 Sheets-Sheet 1
GRAIN DRILL.
No. 251,724. Patented Jan 3, 1882



Witnesses
A. Sulphert
C. M. Council

R. C. Morris
Inventor
Attorney

(Model) R C MORRIS 2 Sheets-Sheet 1
GRAIN DRILL.
No. 251,724 Fig 2 Patented Jan 3, 1882.

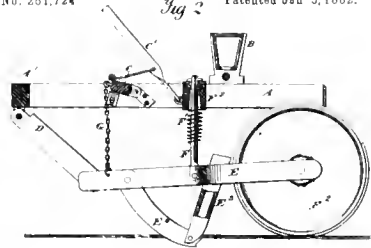
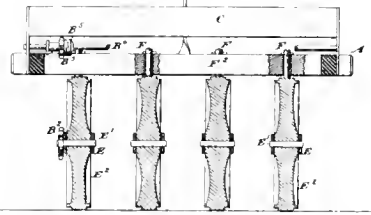


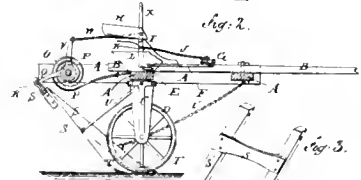
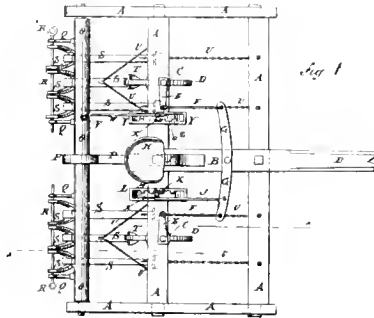
Fig 3



Witnesses
A. Sulphert
C. M. Council

R. C. Morris
Inventor
Attorney

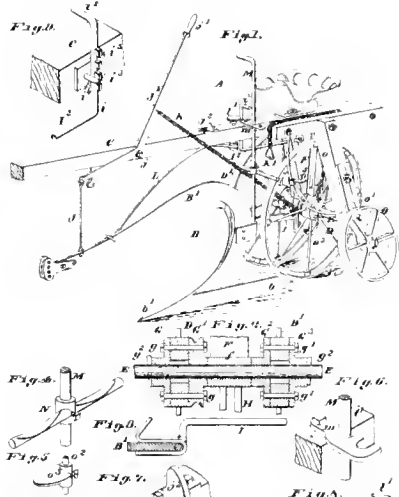
(No Model) F O WILLIAMS 2 Sheets-Sheet 1
CULTIVATOR
No. 252,163 Patented Jan. 10, 1882.



WITNESSES
Chas. H. Hill
C. S. Johnson

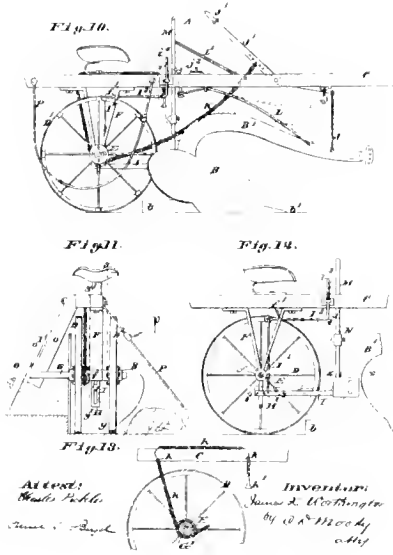
INVENTOR:
F. O. Williams
BY
Attorney

(Model) J K WORTHINGTON 2 Sheets-Sheet 1
BULBY FLOW
No. 253,807 Patented Feb 14, 1882.

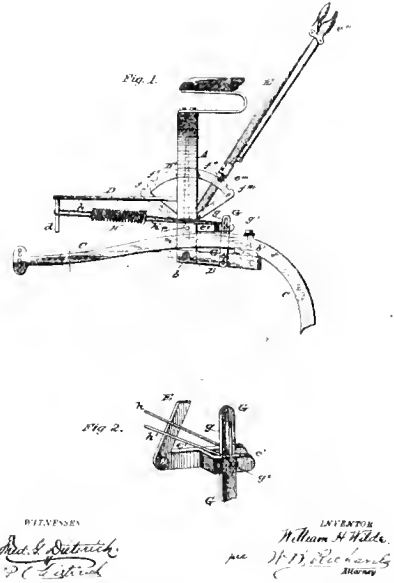


Witnesses
Chas. H. Hill
C. S. Johnson
Inventor:
J. K. Worthington
BY
Attorney

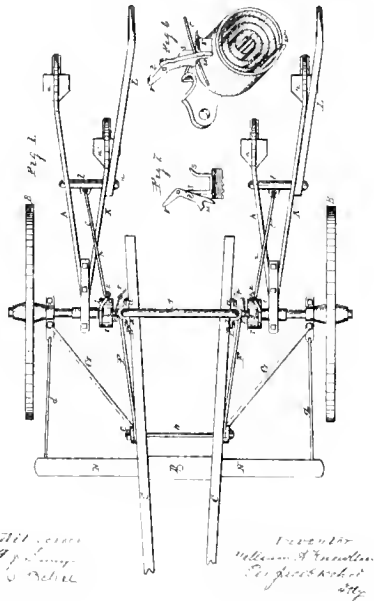
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ROLEY PLOW
No. 253,807 Patented Feb. 14, 1882



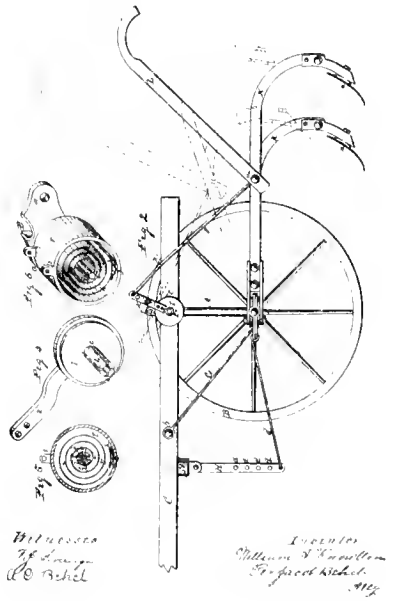
(No Model) W H WILDE
WHEEL PLOW.
No. 254,418 Patented Feb. 28, 1882.



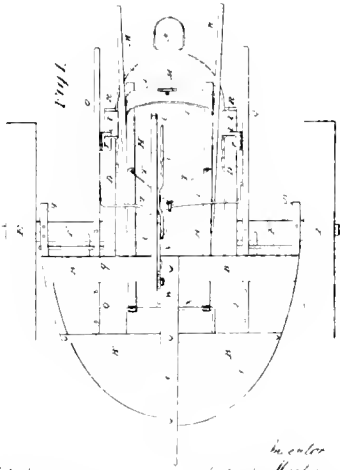
(No Model) W A KNOWLTON.
CULTIVATOR.
No. 254,557 Patented Mar. 7, 1882.



(No Model) W A KNOWLTON.
CULTIVATOR.
No. 254,557 Patented Mar. 7, 1882.



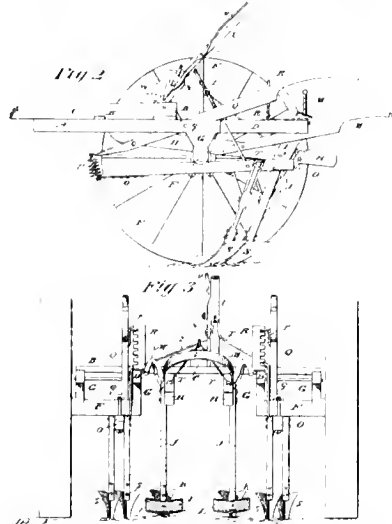
(No Model) G MARTIN
CULTIVATOR
No. 254,776 Patented Mar. 7, 1882.



Witness
Geo. S. Smallwood Jr
P. W. Stephens

Inventor
G. Martin
by Knight & Bates

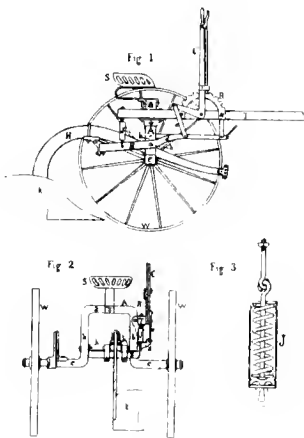
(No Model) G MARTIN
CULTIVATOR
No. 254,776 Patented Mar. 7, 1882.



Witness
Geo. S. Smallwood Jr
P. W. Stephens

Inventor
G. Martin
by Knight & Bates

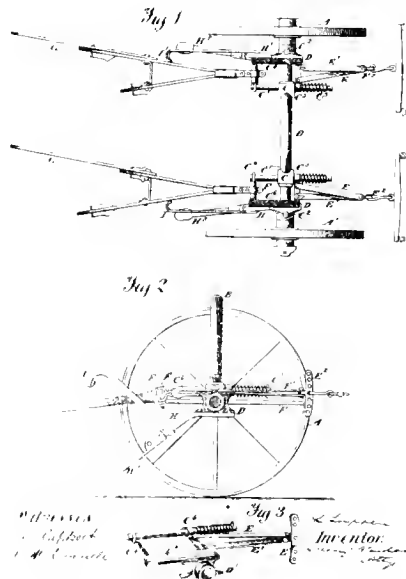
(No Model) W B YOUNG
SULKY FLOW
No. 255,557 Patented Mar. 28, 1882



Witnesses
William H. Hays
R. B. Hays

Inventor
William B. Young
by Hays & Hays

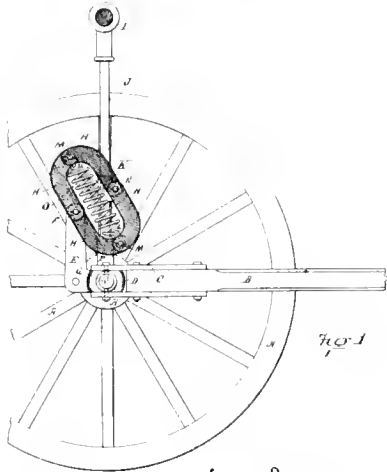
(No Model) L LUPPEN
CULTIVATOR
No. 256,877 Patented Apr. 4, 1882



Witnesses
C. B. Cook
J. H. Condit

Inventor
L. Luppen
by Cook & Condit

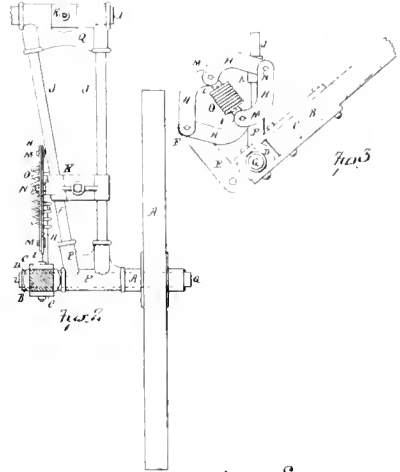
(No Model) J M LONG 2 Sheets—Sheet 1
CULTIVATOR SPRING
No. 256,012 Patented Apr. 4, 1882.



WITNESSES
John Roberts
John Long

John M. Long INVENTOR
by James W. See
ATTORNEY

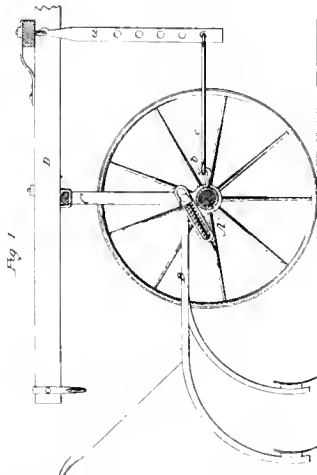
(No Model) J M LONG 2 Sheets—Sheet 2
CULTIVATOR SPRING.
No. 256,012 Patented Apr. 4, 1882.



WITNESSES
John Roberts
John Long

John M. Long INVENTOR
by James W. See
ATTORNEY

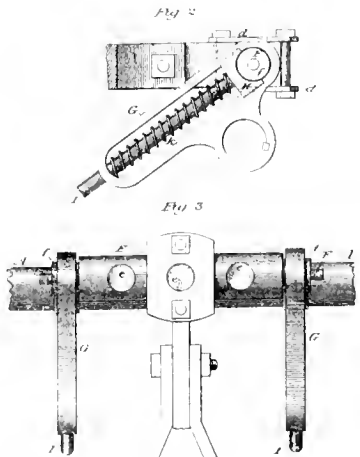
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CULTIVATOR.
No. 256,044 Patented Apr. 4, 1882.



Witnesses
Samuel B. Blount
Spencer A. Post

Inventor
Charles W. Post
by James W. See
ATTORNEY

(No Model) C. W. POST 2 Sheets—Sheet 2
CULTIVATOR.
No. 256,044 Patented Apr. 4, 1882.



Witnesses
Samuel B. Blount
Spencer A. Post

Inventor
Charles W. Post
by James W. See
ATTORNEY

(No Model)

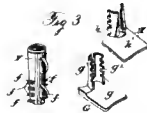
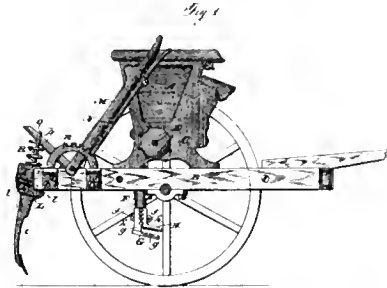
H. P. TENANT.

2 Sheets—Sheet 1.

GRAIN DRILL.

No. 258,784.

Patented Apr. 18, 1882.



Witnesses
Jos. C. Hutchinson
J. M. Mulhepp

Inventor
Hanson P. Tenant
By his Attorney,
James L. Norris

(No Model)

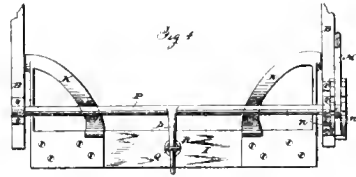
H. P. TENANT.

2 Sheets—Sheet 2

GRAIN DRILL.

No. 258,784.

Patented Apr. 18, 1882.



Witnesses
Jos. C. Hutchinson
J. M. Mulhepp

Inventor
Hanson P. Tenant
By his Attorney,
James L. Norris

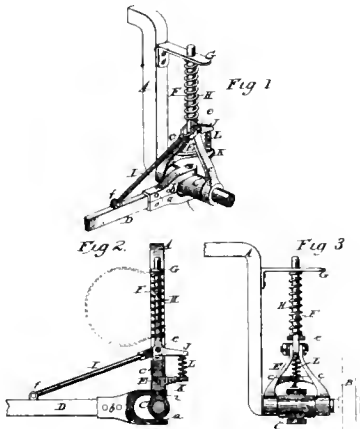
(No Model)

E. P. LYNCH.

CULTIVATOR.

No. 257,228.

Patented May 2, 1882.



Attest
Henry P. Hildreth
D. P. Cook

Inventor
Edward P. Lynch
By his Atty,
Philip S. Dodge

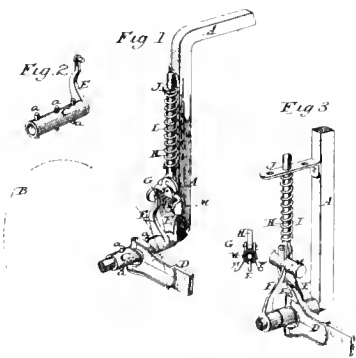
(No Model)

E. P. LYNCH

CULTIVATOR.

No. 257,229.

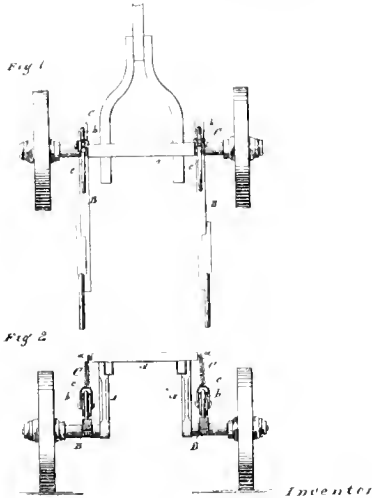
Patented May 2, 1882.



Attest
Henry P. Hildreth
D. P. Cook

Inventor
E. P. Lynch
By his Atty,
Philip S. Dodge

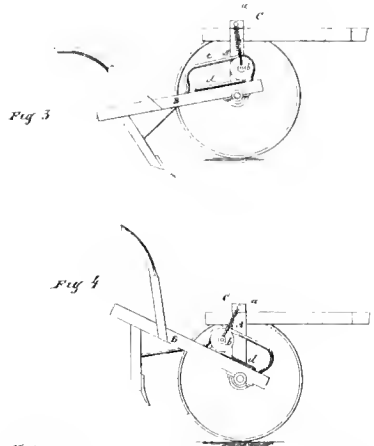
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A. P. WEBBER
 CULTIVATOR.
 No. 257,257. Patented May 2, 1882.



Witnesses
Alvin D. ...
B. H. ...

Inventor
Alexander P. Webber
 by *Wm. ...*

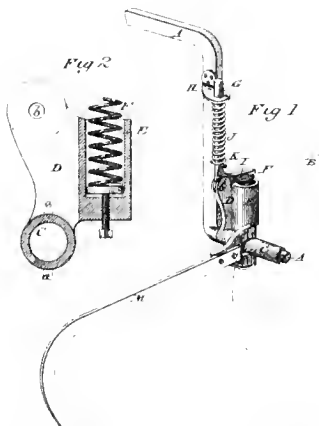
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A. P. WEBBER.
 CULTIVATOR.
 No. 257,257. Patented May 2, 1882.



Witnesses
Alvin D. ...
B. H. ...

Inventor
Alexander P. Webber
 by *Wm. ...*

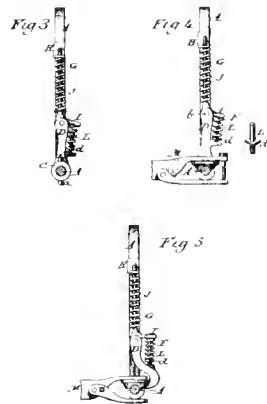
(No Model) 3 Sheets—Sheet 1
E. P. LYNCH.
 WHEEL CULTIVATOR.
 No. 257,730. Patented May 9, 1882.



Attest
Samuel P. ...
Newton H. ...

Inventor
Edward P. Lynch
 by his Attorney
Philip S. Dodge

(No Model) 3 Sheets—Sheet 2
E. P. LYNCH
 WHEEL CULTIVATOR.
 No. 257,730. Patented May 9, 1882.



Attest
Samuel P. ...
Newton H. ...

Inventor
Edward P. Lynch
 by his Attorney
Philip S. Dodge

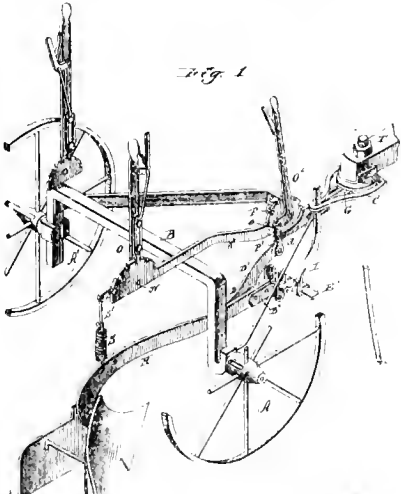
(No Model)

J. I. HOKE.
SULKY FLOW.

2 Sheets—Sheet 1

No. 258,202.

Patented May 16, 1882.



Witnesses:
H. C. ...
A. J. ...

Inventor:
J. I. Hoke
per W. H. Alexander
Attorney

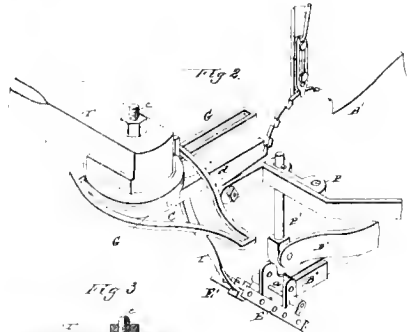
(No Model)

J. I. HOKE
SULKY FLOW.

2 Sheets—Sheet 2

No. 258,202.

Patented May 16, 1882.



Witnesses:
H. C. ...
A. J. ...

Inventor:
J. I. Hoke
per W. H. Alexander
Attorney

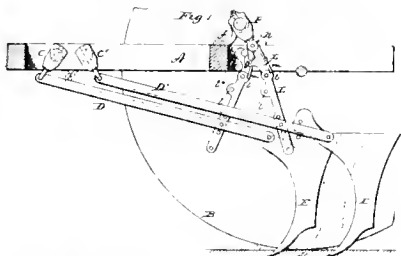
(No Model)

J. W. THOMAS & A. R. LUDLOW
SEEDING MACHINE AND CULTIVATOR

3 Sheets—Sheet 1

No. 258,824.

Patented May 30, 1882



Witnesses:
H. C. ...
A. J. ...

Inventor:
J. W. Thomas & A. R. Ludlow
per W. H. Alexander
Attorney

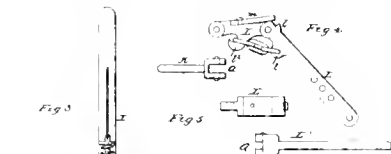
(No Model)

J. W. THOMAS & A. R. LUDLOW
SEEDING MACHINE AND CULTIVATOR.

3 Sheets—Sheet 2

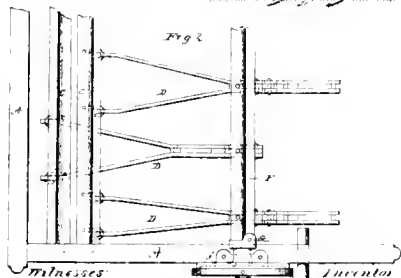
No. 258,824.

Patented May 30, 1882



Witnesses:
H. C. ...
A. J. ...

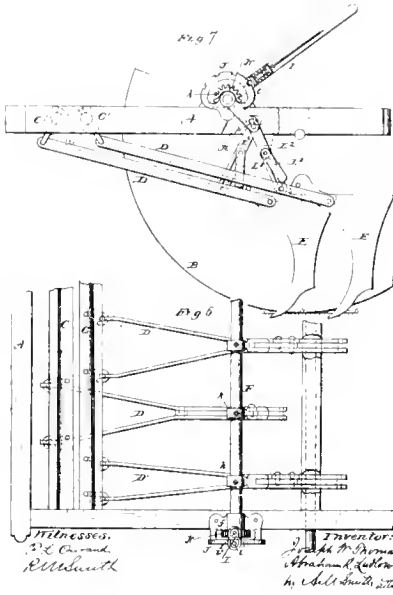
Inventor:
J. W. Thomas & A. R. Ludlow
per W. H. Alexander
Attorney



Witnesses:
H. C. ...
A. J. ...

Inventor:
J. W. Thomas & A. R. Ludlow
per W. H. Alexander
Attorney

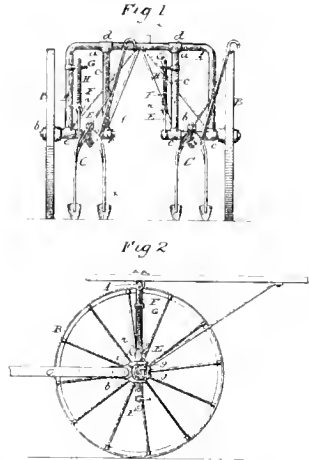
(No Model) J. W. THOMAS & A. R. LUDLOW 3 Sheets—Sheet 1
 SEEDING MACHINE AND CULTIVATOR.
 No. 258,824 Patented May 30, 1882.



Witnesses:
 W. C. Corwin
 R. B. Smith

Inventor:
 J. W. Thomas & A. R. Ludlow
 Attorneys
 W. C. Corwin & R. B. Smith

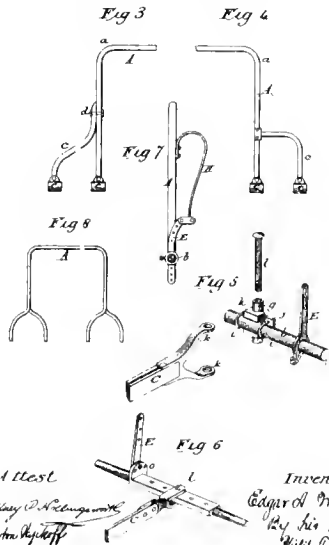
(No Model) E. A. WRIGHT 2 Sheets—Sheet 1
 CULTIVATOR
 No. 259,826. Patented June 13, 1882.



Attest
 Harry C. Huggenworth
 Newton H. Hoff

Inventor
 Edgar A. Wright
 By his atty
 Philip S. Dodge

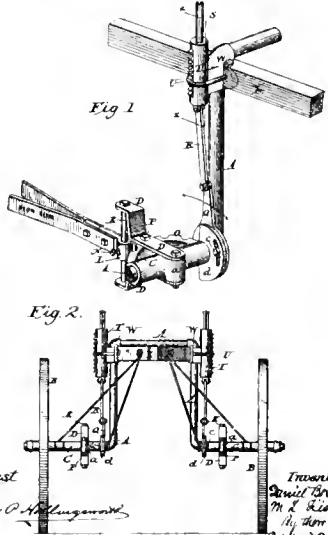
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 CULTIVATOR
 No. 259,826. Patented June 13, 1882.



Attest
 Harry C. Huggenworth
 Newton H. Hoff

Inventor
 Edgar A. Wright
 By his atty
 Philip S. Dodge

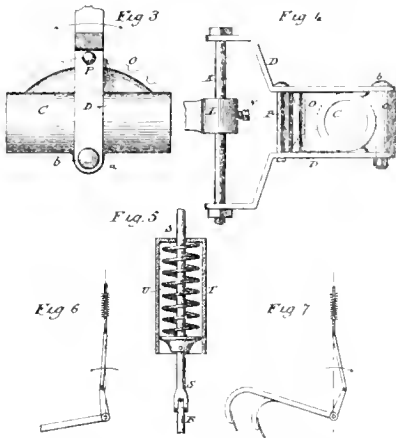
(Model) D. BERLEW & M. L. KISSELL. 2 Sheets—Sheet 1
 CULTIVATOR
 No. 260,447. Patented July 4, 1882.



Attest
 Harry C. Huggenworth
 Newton H. Hoff

Inventors
 Daniel Berlew
 M. L. Kissell
 By their atty
 Philip S. Dodge

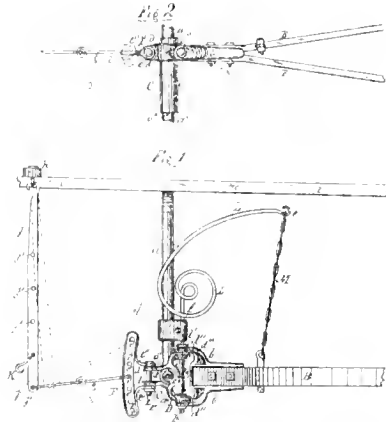
(Model.) 3 Sheets—Sheet 2
D. BERLEW & M. L. KISSELL.
 CULTIVATOR.
 No. 260,447. Patented July 4, 1882.



Witness
Henry C. Hollingsworth
Wesley Scheply

Inventors
Daniel Berlew
M. L. Kissell
 By *J. W. Little*
W. H. Deane

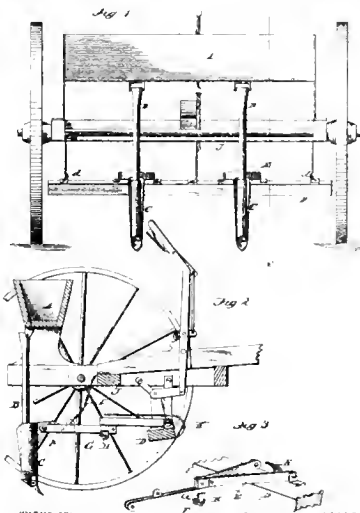
(No Model.)
L. LUPPEN
 CULTIVATOR.
 No. 261,863. Patented Aug 1, 1882



Witness
J. W. Little
J. W. Deane

Inventor
L. Luppen
 By *W. H. Deane*

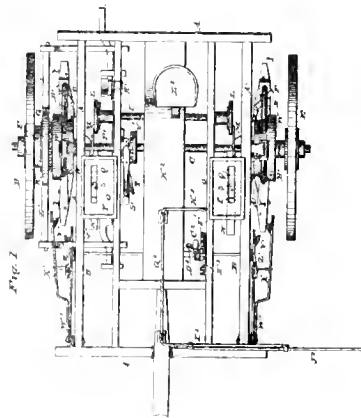
(Model.)
J. P. FULGHAM.
 GRAIN DRILL.
 No. 262,943. Patented Aug. 22, 1882.



Witness
A. F. R. Ruppel
W. H. Deane

Inventor
J. P. Fulgham
 By *W. H. Deane*

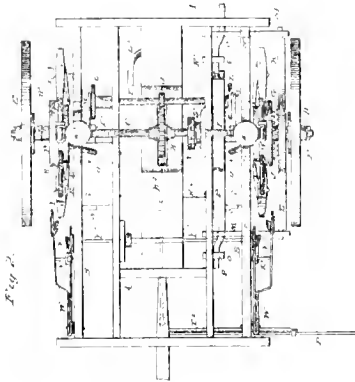
(No Model.) 4 Sheets—Sheet 1
E & A SHANNON.
 COSSR PLANTER.
 No. 263,084 Patented Aug. 22, 1882



Witness
W. H. Deane
J. W. Little

Inventors
Edgar Shannon
Abel Shannon
 By *W. H. Deane*
 ATTORNEYS

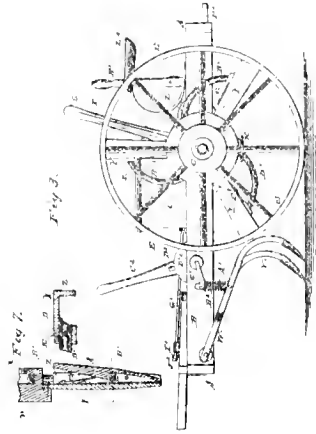
No. Model 1
E & A SHANNON
CORN PLANTER
No. 263,064
Patented Aug. 22, 1882
4 Sheets—Sheet 2



WITNESSES:
Paul C. Dutrich
W. J. ...

INVENTORS:
E. & A. Shannon
W. J. ...
ATTORNEYS

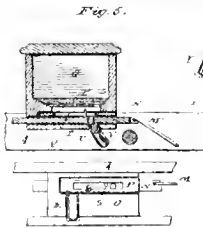
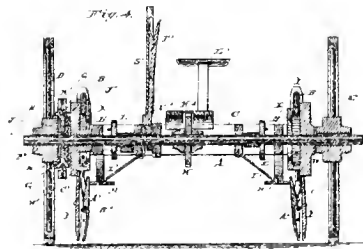
No. Model 1
E & A SHANNON
CORN PLANTER
No. 263,064
Patented Aug. 22, 1882
4 Sheets—Sheet 3



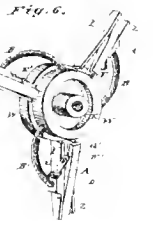
WITNESSES:
Paul C. Dutrich
W. J. ...

INVENTORS:
E. & A. Shannon
W. J. ...
ATTORNEYS

No. Model 1
E & A SHANNON
CORN PLANTER
No. 263,064
Patented Aug. 22, 1882
4 Sheets—Sheet 4

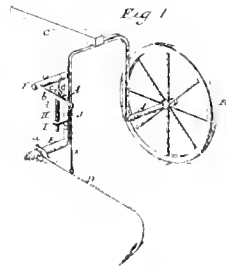


WITNESSES:
Paul C. Dutrich
W. J. ...



INVENTORS:
E. & A. Shannon
W. J. ...
ATTORNEYS

No. Model 1
E. P. LYNCH
CULTIVATOR
No. 263,187
Patented Aug. 22, 1882
8 Sheets—Sheet 1



WITNESSES:
Henry W. ...
Harold ...

INVENTOR:
E. P. Lynch
By his attorney,
Philip ...

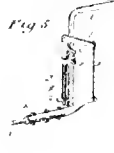
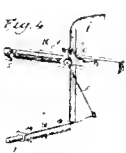
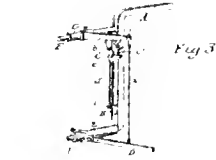
(No Model)

E. P. LYNCH
OBLIVATOR.

2 Sheets—Sheet 1

No. 263,167

Patented Aug. 22, 1882



Attest
Notary Public
J. W. H. H. H.

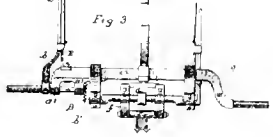
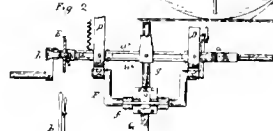
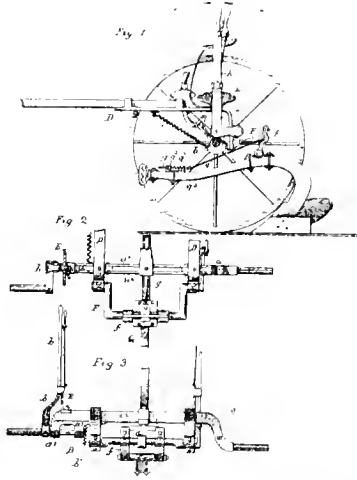
Inventor
E. P. Lynch
By his attorney
C. C. & G. G.

(No Model)

A. F. BERGQVIST
SOLEY FLOW.

Patented Sept. 19, 1882

No. 264,610



WITNESSES
E. W. H. H. H.

Inventor
A. F. Bergqvist
By his attorney
C. C. & G. G.

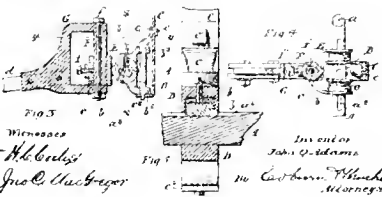
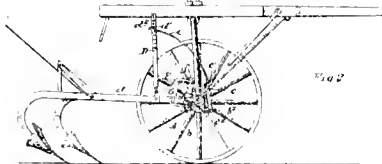
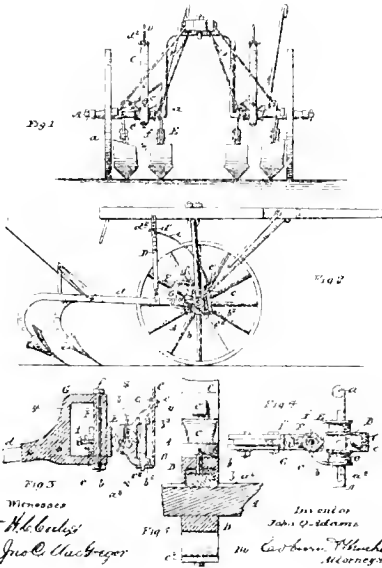
(No Model)

J. Q. ADAMS
CULTIVATOR.

2 Sheets—Sheet 1

No. 266,056

Patented Oct. 17, 1882



Witnesses
A. H. H. H.

Inventor
John Q. Adams
By his attorney
C. C. & G. G.

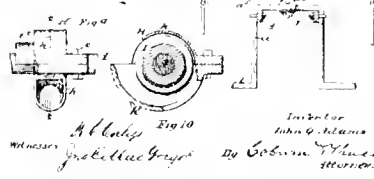
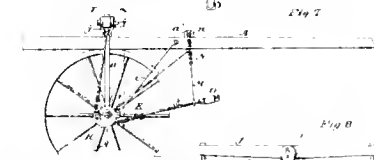
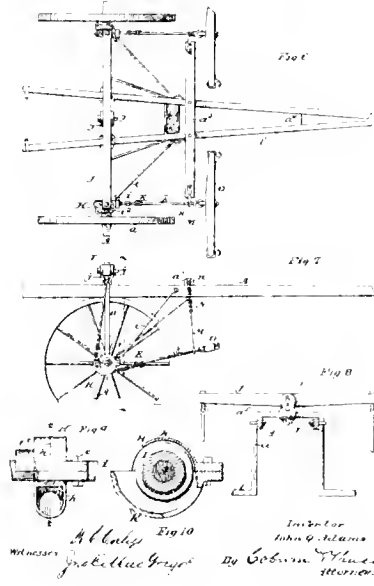
(No Model)

J. Q. ADAMS.
CULTIVATOR.

2 Sheets—Sheet 2

No. 266,056

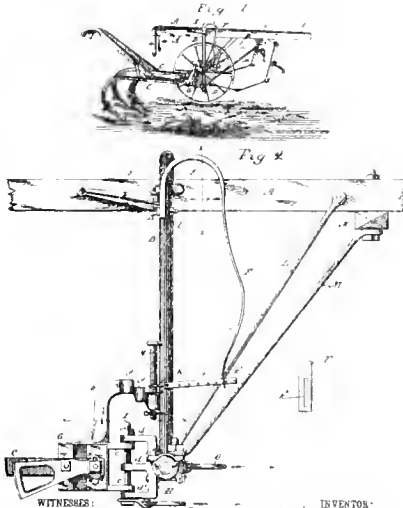
Patented Oct. 17, 1882



Witnesses
A. H. H. H.

Inventor
John Q. Adams
By his attorney
C. C. & G. G.

(No Model) W. P. BROWN 2 Sheets—Sheet 1
WHEELED CULTIVATOR
No. 266,086. Patented Oct. 17, 1882

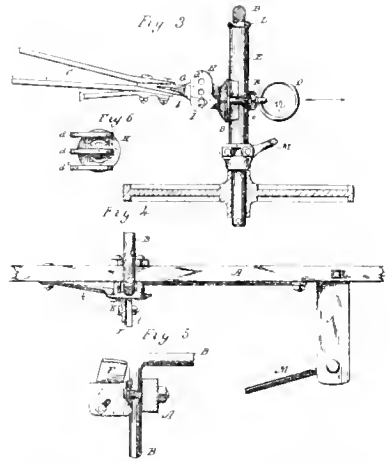


WITNESSES:
Thos. Houghton
Edw. M. Brown

INVENTOR:
W. P. Brown

BY *Sam. L. Deane*
ATTORNEY.

(No Model) W. P. BROWN 2 Sheets—Sheet 2
WHEELED CULTIVATOR.
No. 266,086 Patented Oct. 17, 1882

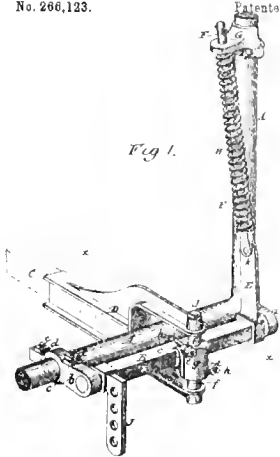


WITNESSES:
Thos. Houghton
Edw. M. Brown

INVENTOR:
W. P. Brown

BY *Sam. L. Deane*
ATTORNEY.

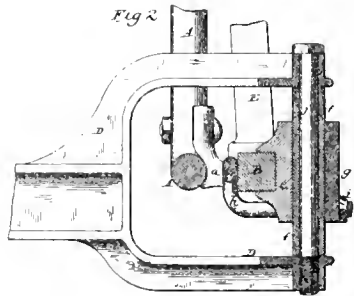
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CULTIVATOR.
No. 266,123. Patented Oct. 17, 1882



Attest.
Edw. M. Brown
Austin Nykoff

Inventor.
William Evans
By his attorney,
Wm. S. Dyer

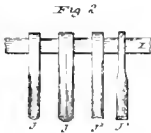
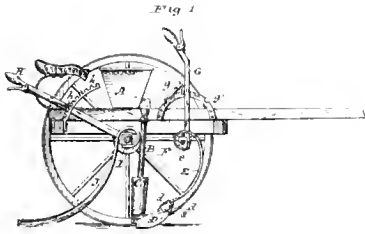
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CULTIVATOR.
No. 266,123. Patented Oct. 17, 1882.



Attest
Edw. M. Brown
Austin Nykoff

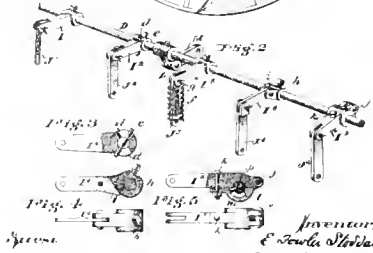
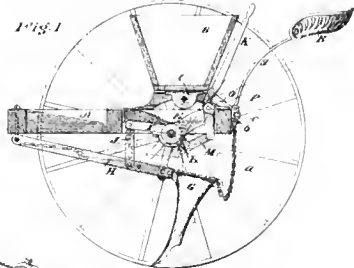
Inventor
William Evans
By his attorney
Wm. S. Dyer

(No Model) **E. A. MORPHEW & H. WITHEROW**
GRAIN DRILL
No. 266,499. Patented Oct. 24, 1882



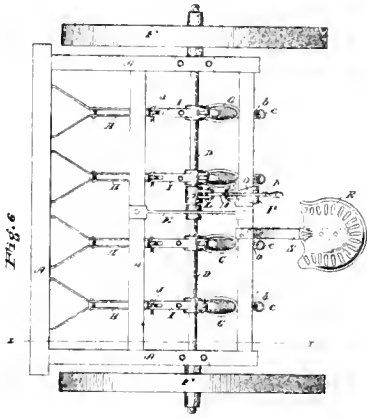
Witnesses
W. H. Killason
Henry Ferdinand
Inventors
E. A. Morphey & H. Witherow
per *W. H. Killason*
Attorneys

(No Model) **E. F. STODDARD & W. H. NAUMAN**
SEEDING MACHINE
No. 266,656 Patented Oct. 31, 1882



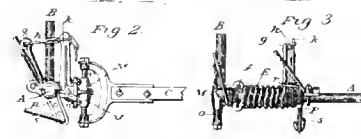
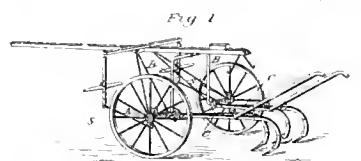
Witnesses
E. H. Taylor
H. Roseman
Inventors
E. F. Stoddard
& W. H. Nauman
by *Shaw & Cook*
Attorneys

(No Model) **E. F. STODDARD & W. H. NAUMAN**
SEEDING MACHINE
No. 266,656. Patented Oct. 31, 1882



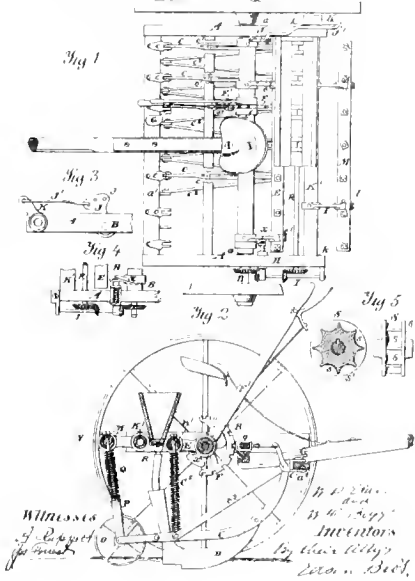
Witnesses
E. H. Taylor
H. Roseman
Inventors
E. F. Stoddard
& W. H. Nauman
by *Shaw & Cook*
Attorneys

(Mech.) **H. H. BUTLER**
CULTIVATOR
No. 267,670. Patented Nov. 21, 1882.

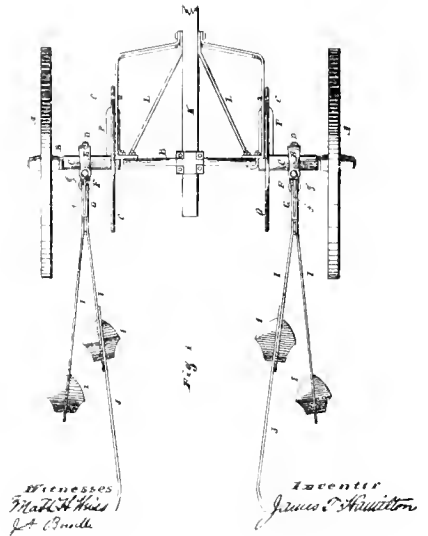


Witnesses
J. W. Steward
H. H. Butler
Inventor
H. H. Butler
by *Shaw & Cook*
Attorneys

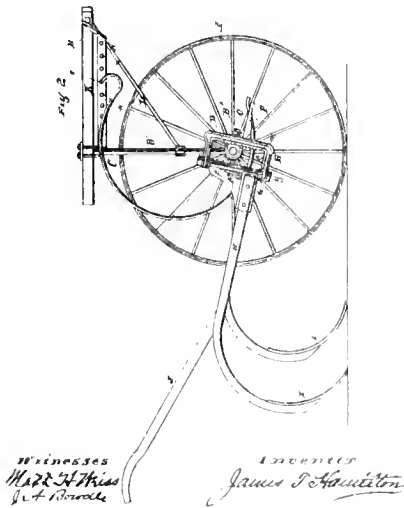
(No Model)
W P ELAM & W F ROGGE
 OIL-PAINT DRILL
 No. 268,361 Patented Nov. 23, 1882



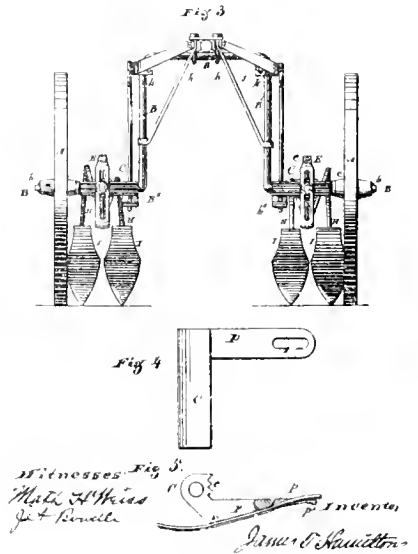
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J T HAMILTON
 LIFTING DEVICE FOR CULTIVATOR BEAMS
 No. 268,687 Patented Dec. 12, 1882



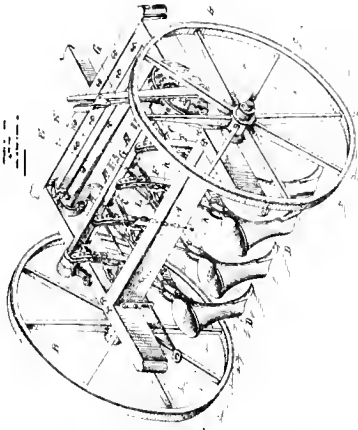
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J. T. HAMILTON
 LIFTING DEVICE FOR CULTIVATOR BEAMS.
 No. 268,687. Patented Dec. 12, 1882.



(No Model)
J. T. HAMILTON
 LIFTING DEVICE FOR CULTIVATOR BEAMS.
 No. 268,687 Patented Dec. 12, 1882.



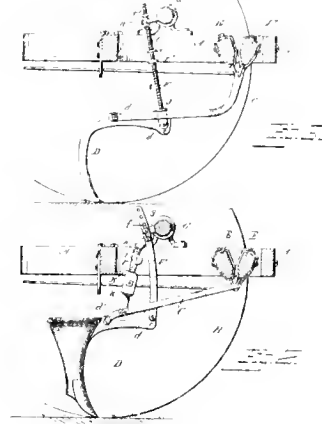
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 SEEDING MACHINE, CULTIVATOR, AND HARROW
 No. 270,414. Patented Jan. 9, 1883.



Witnesses
 Geo. Smith

Inventor
 C. A. Geiger
 by W. H. Smith

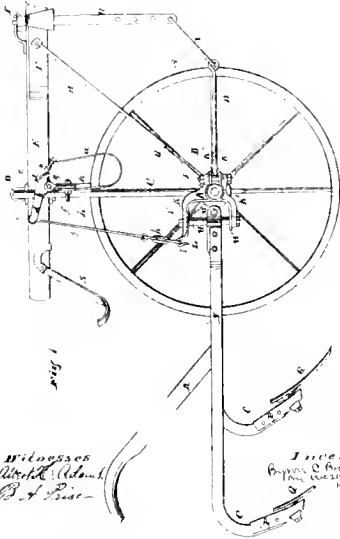
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 SEEDING MACHINE, CULTIVATOR, AND HARROW
 No. 270,414 Patented Jan. 9, 1883



Witnesses
 Geo. Smith

Inventor
 C. A. Geiger
 by W. H. Smith

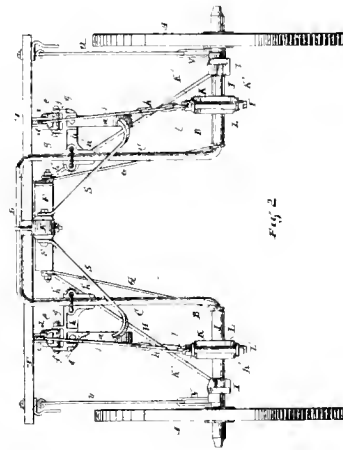
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 CULTIVATOR.
 No. 270,629 Patented Jan. 16, 1883



Witnesses
 W. H. Smith

Inventor
 B. C. Bradley
 by W. H. Smith

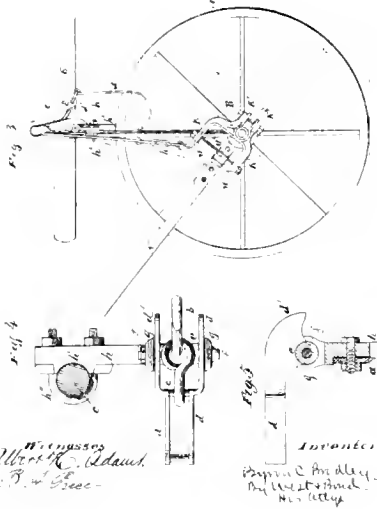
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 CULTIVATOR.
 No. 270,629 Patented Jan. 16, 1883



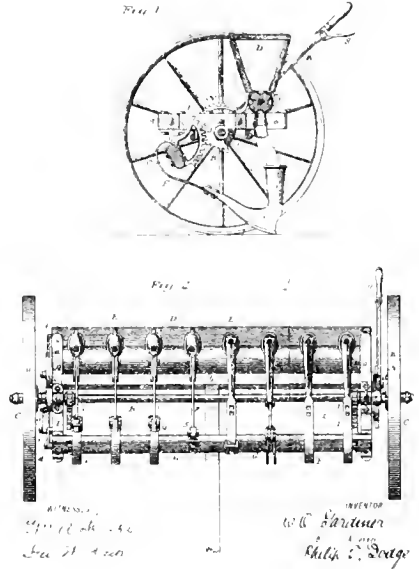
Witnesses
 W. H. Smith

Inventor
 B. C. Bradley
 by W. H. Smith

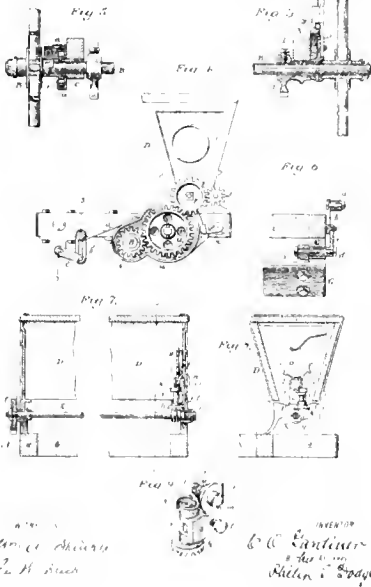
(Model)
B C BRADLEY
 CULTIVATOR.
 No. 270,629. Patented Jan. 16, 1883.



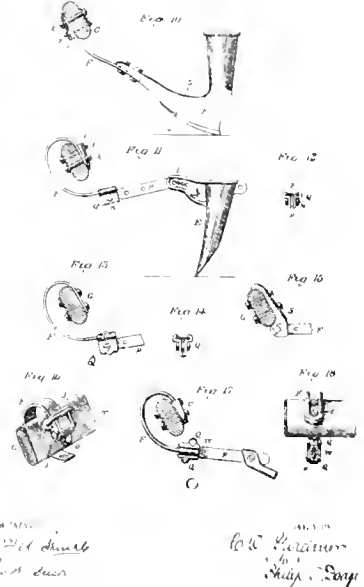
(Model)
C O GARDINER
 GRAIN DRILL.
 No. 271,445 Patented Jan. 30, 1883.



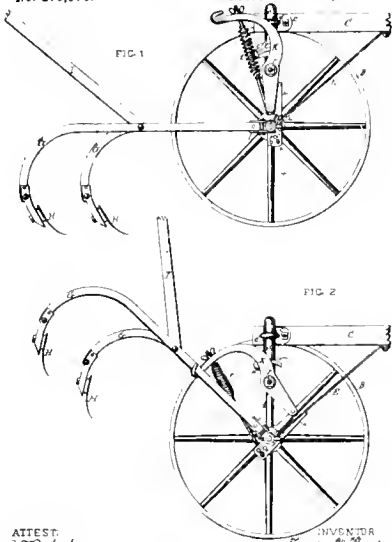
(Model)
C O GARDINER
 GRAIN DRILL.
 No. 271,445 Patented Jan. 30, 1883.



(Model)
C O GARDINER
 GRAIN DRILL.
 No. 271,445 Patented Jan. 30, 1883.



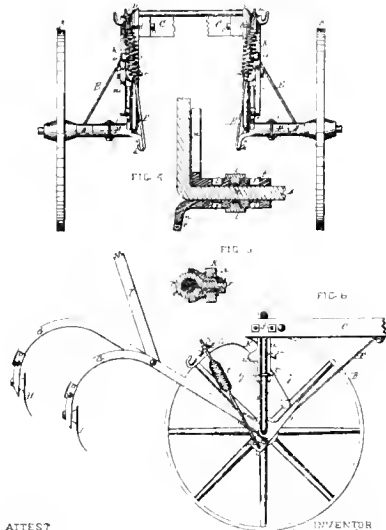
(No Model) T M FLENNIKEN, Dec'd. 2 Sheets—Sheet 1. W. McKee, Administrator. OULTIVATOR. No. 273,673. Patented Mar. 6, 1883.



ATTEST: J. P. Nichol, S. P. Deane

INVENTOR T. M. FLENNIKEN, BY J. P. Nichol, ATTY.

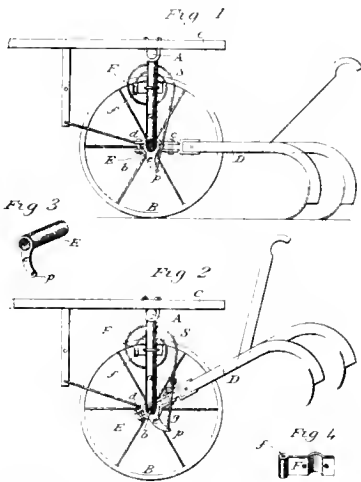
(No Model) T M FLENNIKEN, Dec'd. 2 Sheets—Sheet 2. W. McKee, Administrator. OULTIVATOR. No. 273,673. Patented Mar. 6, 1883.



ATTEST: J. P. Nichol, S. P. Deane

INVENTOR T. M. FLENNIKEN, BY J. P. Nichol, ATTY.

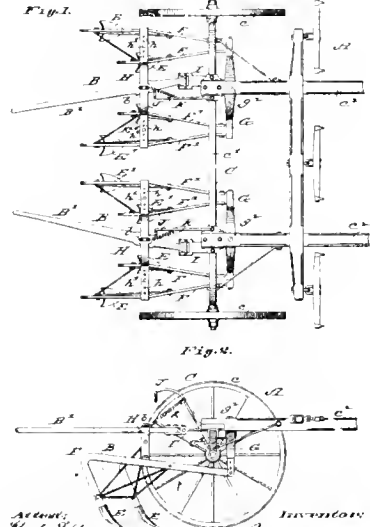
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Witnesses Geo C Milson, E. J. Lane

Inventor John Lane

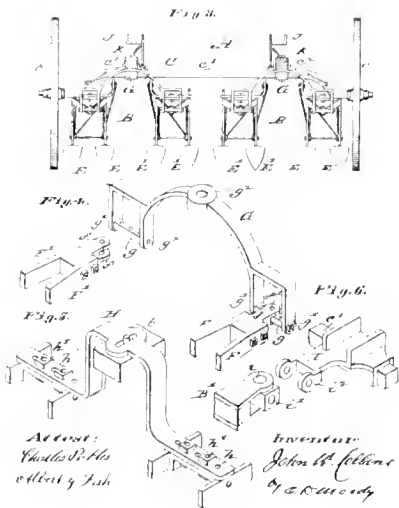
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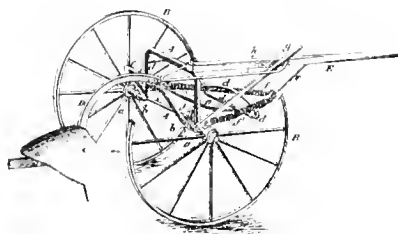
Witnesses: H. W. Collins, S. P. Deane

Inventor John W. Collins, by S. P. Deane, atty.

No. Model) J W COLLINS Sheets—Sheet 2
 COTTON RATOR
 No. 278,180 Patented Apr 24, 1883



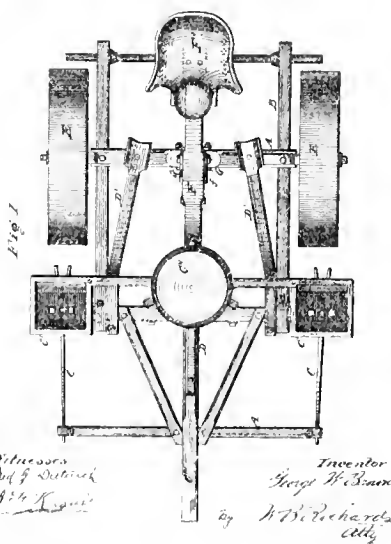
(No Model) R. C. BUCKLEY
 BUCKLEY FLOW
 No. 278,089 Patented May 22, 1883.



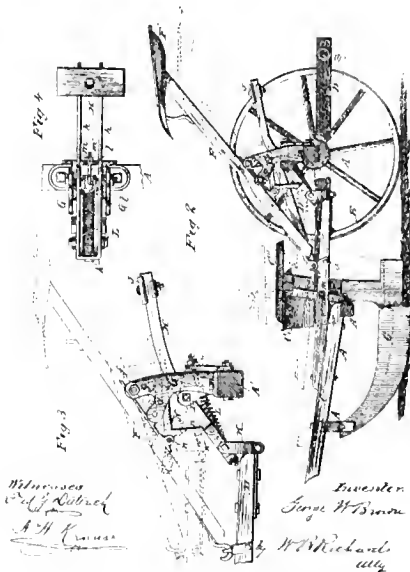
Witness:
 A. S. Reed
 W. F. Cole

Inventor:
 Robert C. Buckley
 by C. K. Richards atty

(Model) G W BROWN 2 Sheets—Sheet 1
 CORN PLANTER
 No. 278,497 Patented May 29, 1883.



(Model) G W BROWN 2 Sheets—Sheet 2
 CORN PLANTER
 No. 278,497. Patented May 29, 1883.



No Model.

O. W. BROWN
CORN PLANTER.

No. 278,498.

Patented May 29, 1883.

Fig. 1

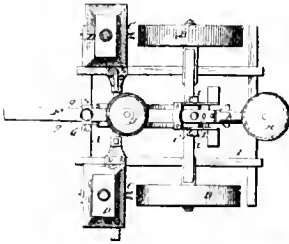


Fig. 2

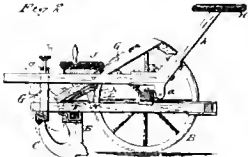


Fig. 3



Witnesses
Prof. G. S. Eastwick
— Do —
J. H. A. ...

Inventor
O. W. Brown
by H. W. ...

No Model.

D. UNTHANK
CULTIVATOR.

No. 278,672

Patented May 29, 1883.

Fig. 1

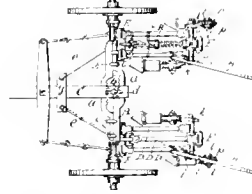
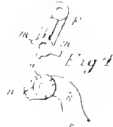
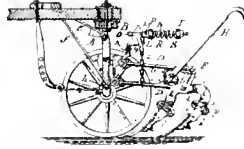


Fig. 2



Witnesses
Frank J. ...
R. D. ...

Inventor
D. Unthank

No Model.

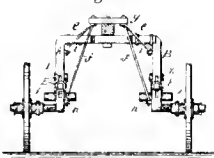
D. UNTHANK
CULTIVATOR.

Sheets—Sheet 1.

No. 278,672

Patented May 29, 1883.

Fig. 3



Witnesses
Frank J. ...
S. C. ...

Inventor
D. Unthank

No Model.

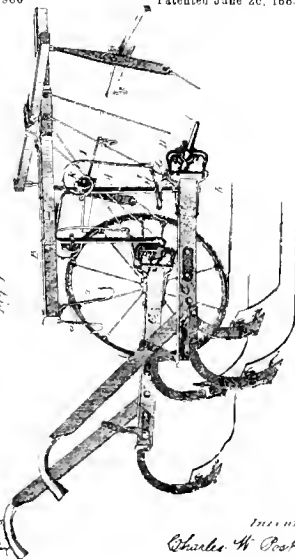
C. W. POST
CULTIVATOR.

Sheets—Sheet 1.

No. 279,980

Patented June 26, 1883.

Fig. 1



Witnesses
Frank J. ...
W. H. ...

Inventor
Charles W. Post
by J. H. ...

(No Model) C W POST 2 Sheets-Sheet 1
 CULTIVATOR Patented June 26 1883.
 No. 279,980

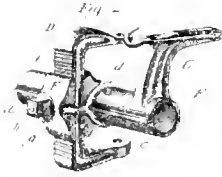
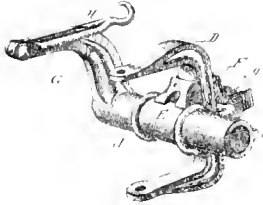


Fig. 1



Witnesses
 E. A. Spaulding
 W. H. Brown

Inventor
 Charles W. Post
 By J. H. Brown
 Attorney

(No Model) D E. McSHERRY & A G MYERS 2 Sheets-Sheet 1
 SEEDING MACHINE Patented July 3, 1883.
 No. 280,387.

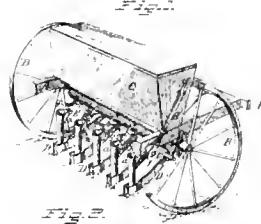
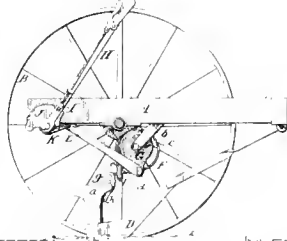


Fig. 1



Witnesses
 J. D. Brown
 W. H. Brown

Inventors
 Daniel E. McSherry
 Andrew G. Myers
 By J. H. Brown
 Attorney

(No Model) D E. McSHERRY & A G MYERS 2 Sheets-Sheet 2
 SEEDING MACHINE Patented July 3, 1883.
 No. 280,387

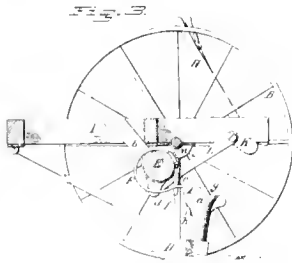


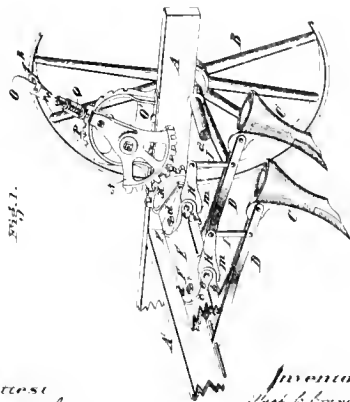
Fig. 3



Witnesses
 J. D. Brown
 W. H. Brown

Inventors
 Daniel E. McSherry
 Andrew G. Myers
 By J. H. Brown
 Attorney

(No Model) A C. CONNER 2 Sheets-Sheet 1
 GRAIN DRILL Patented Aug. 7, 1883.
 No. 282,847.



Witnesses
 J. D. Brown
 W. H. Brown

Inventor
 Albert C. Conner
 By J. H. Brown
 Attorney

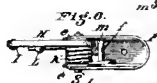
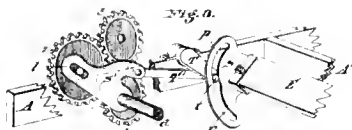
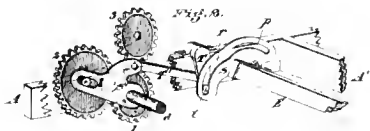
(No Model)

A. C. CONNER
DRAIN DRILL

2 Sheets - Sheet 2

No 282,847.

Patented Aug 7, 1883.



Attest
Jno. A. Jones
W. Schelowsky

Inventor
A. C. Conner
by Wm. D. Boyd
his Attorney

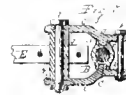
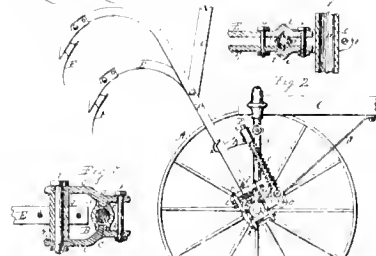
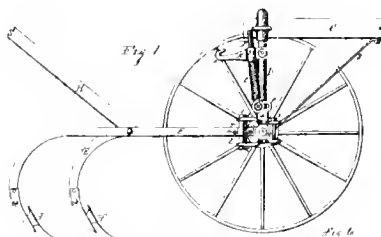
(No Model)

A. HALL
CULTIVATOR

2 Sheets - Sheet 1

No 282,885

Patented Aug 7, 1883.



Witness
J. E. B. B. B.
J. E. B. B. B.

Inventor
A. Hall
W. D. Boyd
his Attorney

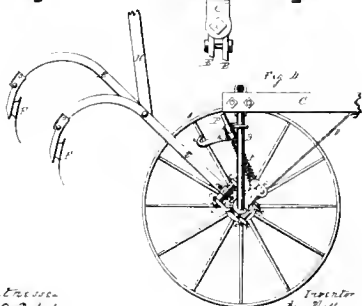
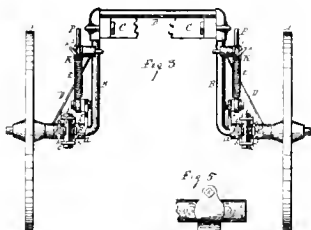
(No Model)

A. HALL
CULTIVATOR

2 Sheets - Sheet

No 282,885

Patented Aug 7, 1883.



Witness
J. E. B. B. B.
J. E. B. B. B.

Inventor
A. Hall
W. D. Boyd
his Attorney

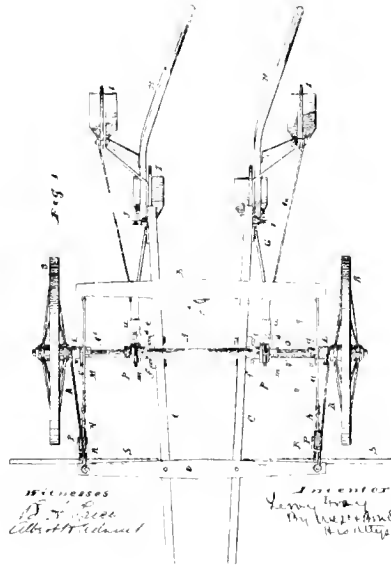
(No Model)

L. GRAY
CULTIVATOR

4 Sheets - Sheet 1

No 283,776

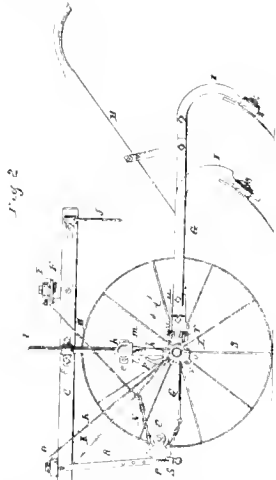
Patented Aug. 28 1883.



Witnesses
J. E. B. B. B.
J. E. B. B. B.

Inventor
L. Gray
W. D. Boyd
his Attorney

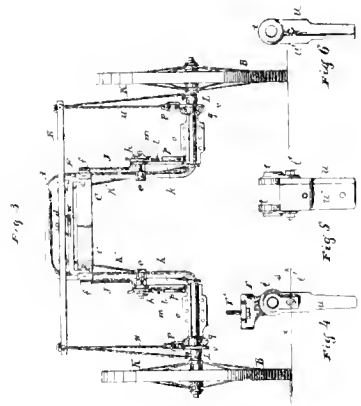
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 CULTIVATOR
 No. 283,776
 Patented Aug. 28, 1883.
 4 Sheets—Sheet 1



Witnesses
 D. S. Lee
 Albert H. Randall

Inventor
 L. Gray
 by Wm. A. Dwyer
 Atty.

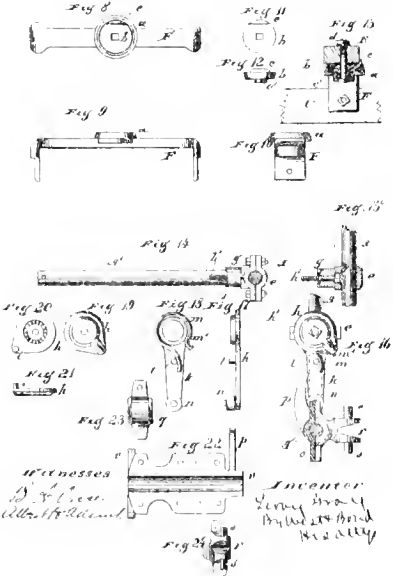
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 CULTIVATOR
 No. 283,776.
 Patented Aug. 28, 1883.
 4 Sheets—Sheet 2



Witnesses
 D. S. Lee
 Albert H. Randall

Inventor
 L. Gray
 by Wm. A. Dwyer
 Atty.

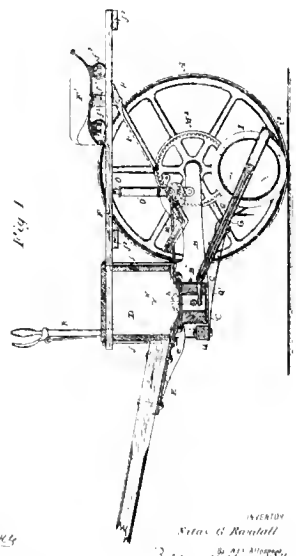
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 No. 283,776
 Patented Aug. 28, 1883.
 4 Sheets—Sheet 3



Witnesses
 D. S. Lee
 Albert H. Randall

Inventor
 L. Gray
 by Wm. A. Dwyer
 Atty.

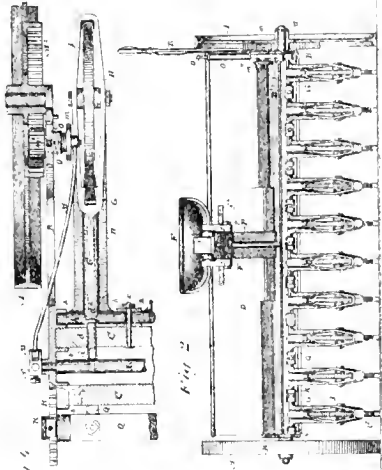
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 S G RANDALL
 FEEDING MACHINE.
 No. 284,060.
 Patented Aug. 28, 1883.
 3 Sheets—Sheet 1



Witnesses
 Wm. A. Dwyer
 Robert A. Sherman

Inventor
 S. G. Randall
 by Wm. A. Dwyer
 Atty.

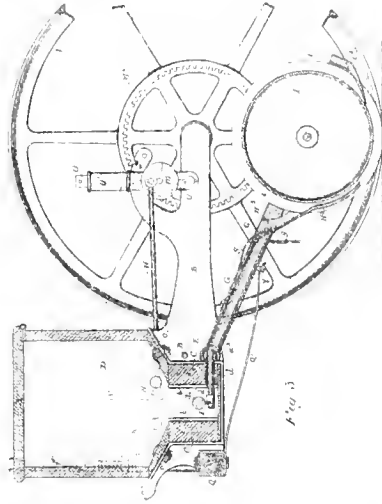
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WITNESSES
 Wm. H. Smith
 Edward C. Freeman

INVENTOR
 S. G. Randall
 By William H. Smith
 Attorney at Law

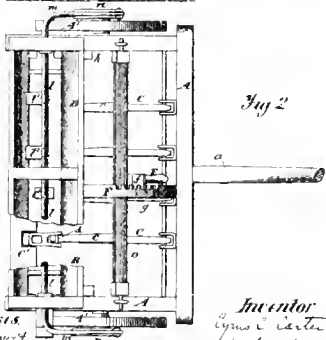
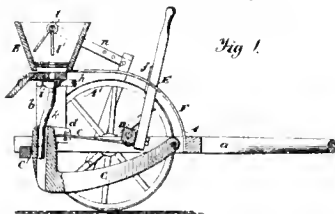
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 No 284,060. Patented Aug 28, 1883



WITNESSES
 Wm. H. Smith
 Edward C. Freeman

INVENTOR
 S. G. Randall
 By William H. Smith
 Attorney at Law

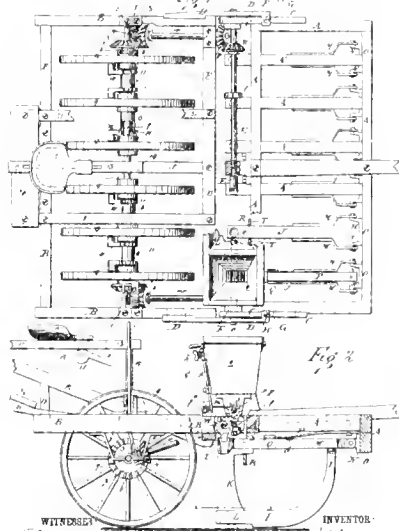
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 WHEAT SOWING MACHINE.
 No. 284,376 Patented Sept. 4, 1883



Witnesses
 J. H. ...
 W. J. ...

Inventor
 C. C. Carter
 By Wm. H. Smith
 Attorney at Law

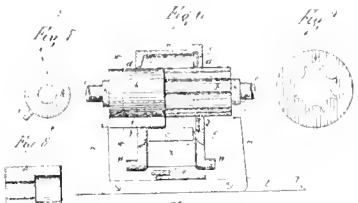
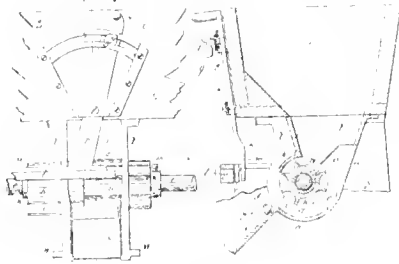
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 No. 284,378 Patented Sept. 4, 1883



WITNESSES
 J. H. ...
 W. J. ...

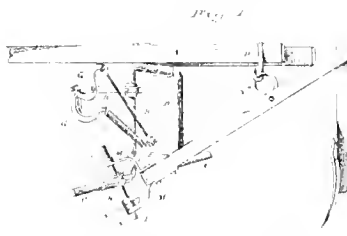
Inventor
 J. C. Center
 By Wm. H. Smith
 Attorney at Law

(No Model) J C CENTER SEED DRILL. Patented Sept. 4, 1883.



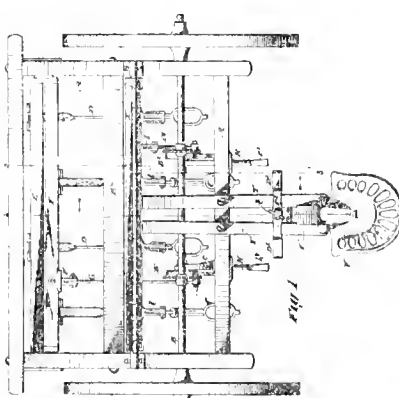
WITNESSES: C. H. ... S. ... INVENTOR: J. C. Center BY: ... ATTORNEYS

(No Model) J B CHRISTIAN CULTIVATOR. Patented Sept. 4, 1883.



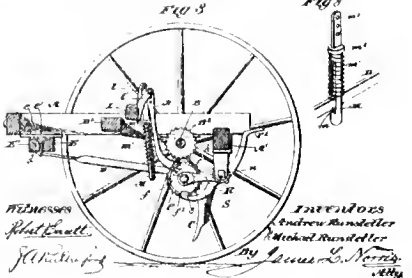
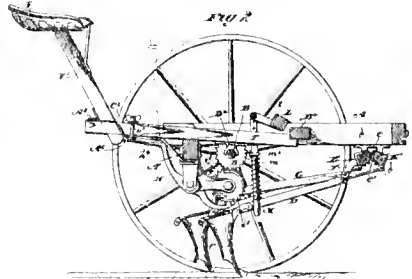
Witnesses: ... INVENTOR: John B. Christian BY: ... ATTORNEY

(No Model) A & M RUNSTETLER GRAIN DRILL. Patented Sept. 18, 1883.



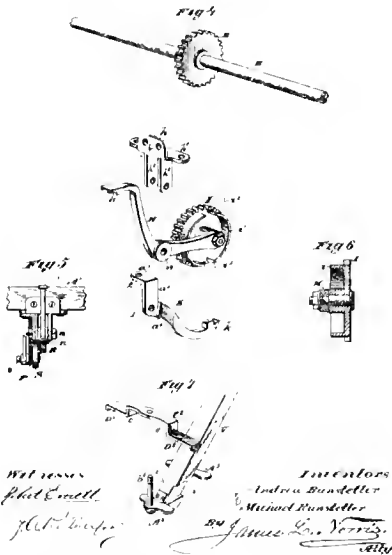
Witnesses: Phil ... Inventors: Andrew Runstetter, Michael Runstetter BY: ... ATTORNEYS

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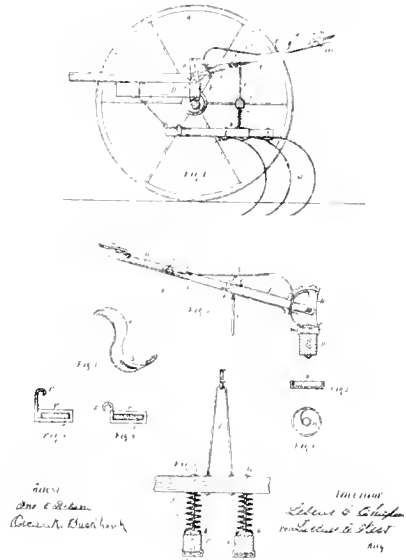


Witnesses: Phil ... Inventors: Andrew Runstetter, Michael Runstetter BY: ... ATTORNEYS

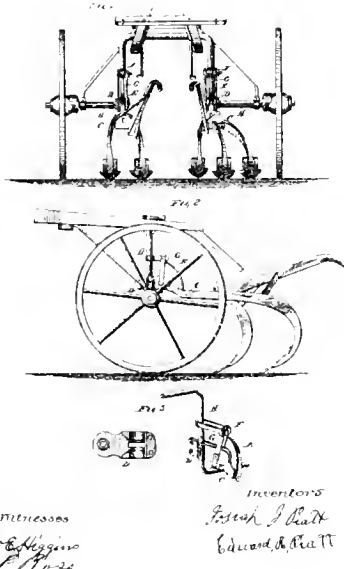
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 No. 285,363 Patented Sept. 18, 1883.



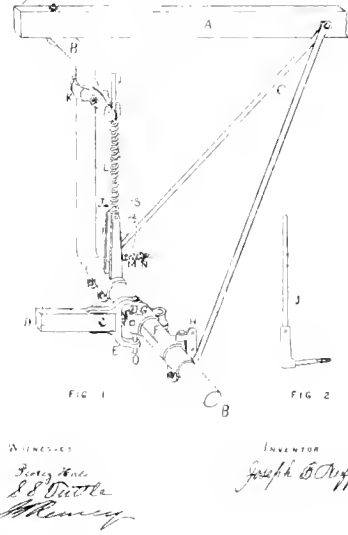
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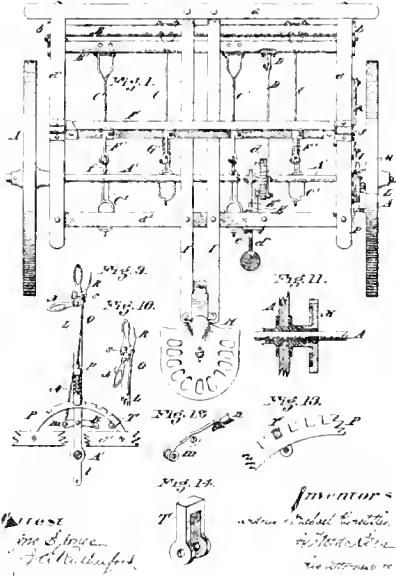
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 No. 286,730 Patented Oct. 16, 1883



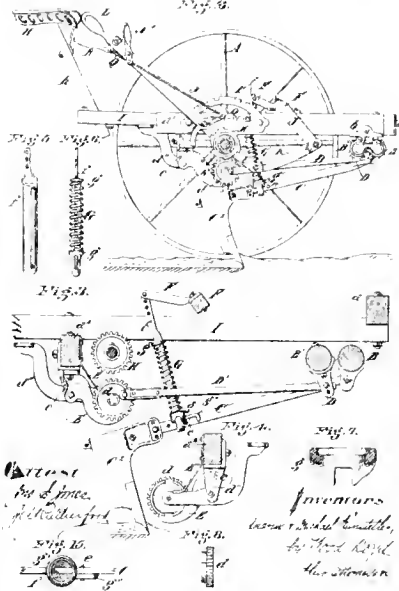
(Model)
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 CULTIVATOR SPRING
 No. 287,703 Patented Oct. 30, 1883.



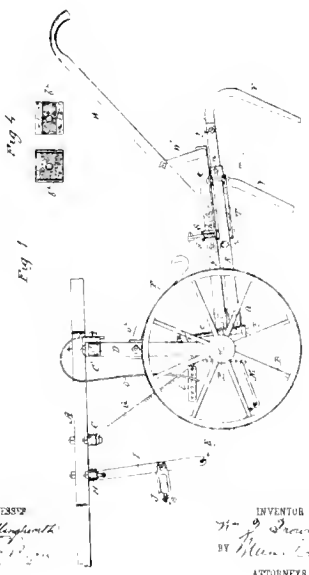
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PAIR DRILL
No 267,774 Patented Oct. 31, 1883.



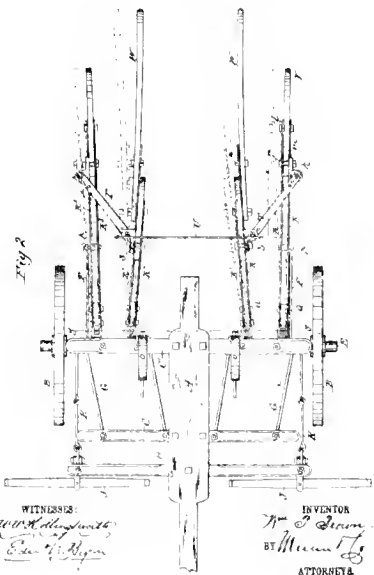
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No 267,774 Patented Oct. 31, 1883.



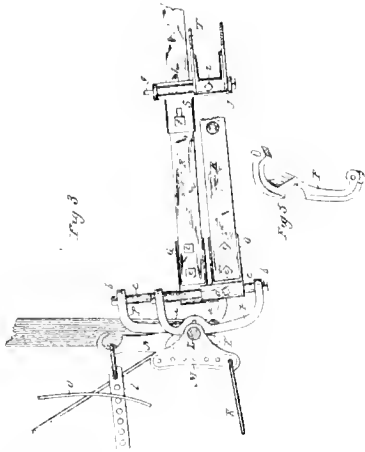
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No. 288,003 Patented Nov. 6, 1883.



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WHEEL CULTIVATOR
No. 288,003 Patented Nov. 6, 1883.



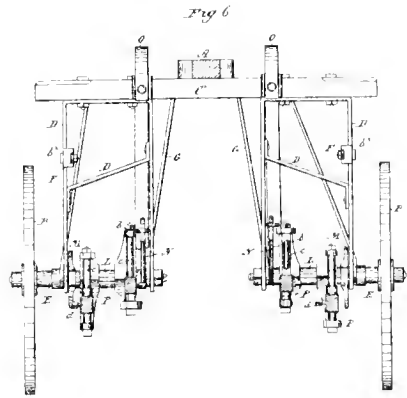
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WHEEL CULTIVATOR
No 268,003 Patented Nov. 6, 1883.



WITNESSES:
W. W. Hollingsworth
Edw. W. Byron

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W. F. Brown
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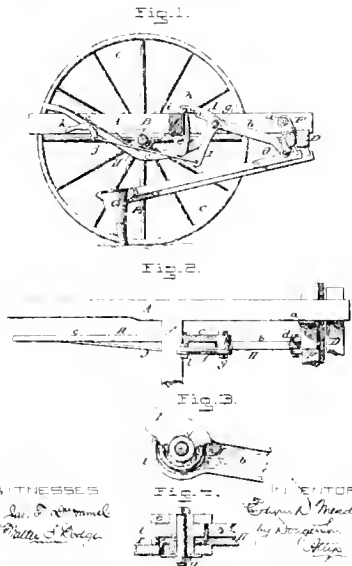
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WHEEL CULTIVATOR
No 268,003 Patented Nov. 6, 1883.



WITNESSES:
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Edw. W. Byron

INVENTOR
W. F. Brown
BY *M. M. L.*
ATTORNEYS

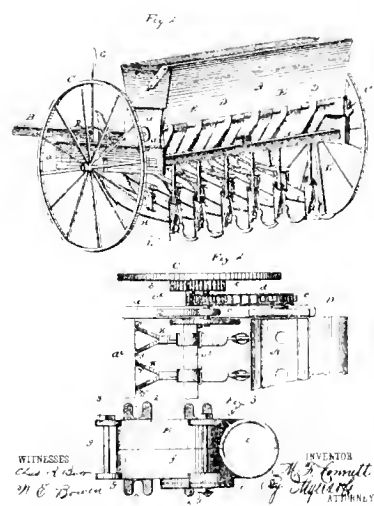
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SEEDING MACHINE
No 289,298. Patented Nov. 27, 1883.



WITNESSES
Geo. S. Kendall
Wm. S. Briggs

INVENTOR
Edw. D. Mead
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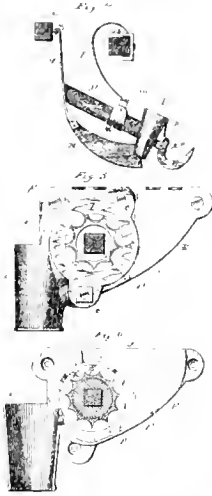
(No Model) M F CONNETT 3 Sheets-Sheet 1
GRAIN DRILL
No. 289,983 Patented Dec. 11, 1883.



WITNESSES
Geo. S. Kendall
W. S. Briggs

INVENTOR
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BY *Wm. S. Briggs*
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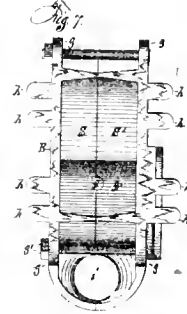
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 No. 289,893 Patented Dec. 11, 1883.



WITNESSES
 W. S. Brown
 W. S. Brown

INVENTOR
 M. F. Connett
 BY [Signature] ATTORNEY

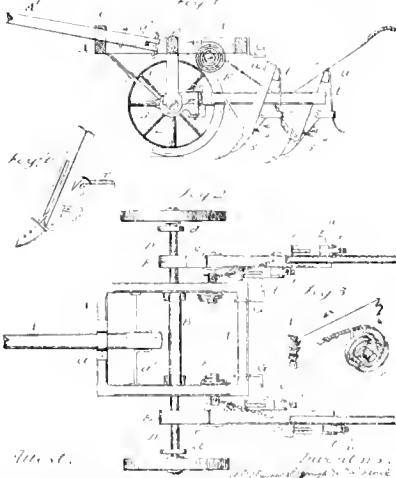
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 ORAIN DRILL
 No. 289,893 Patented Dec. 11, 1883.



WITNESSES
 W. S. Brown
 J. G. [Signature]

INVENTOR
 M. F. Connett
 BY [Signature] ATTORNEY

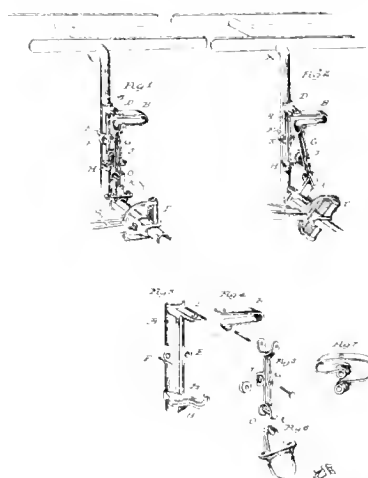
No. Model: S P SNYDER, S STOUGH & F D OLDRICK
 CULTIVATOR
 No. 290,366 Patented Dec. 18, 1883.



Witnesses
 W. S. Brown
 W. S. Brown

INVENTOR
 S. P. Snyder
 S. Stough
 F. D. Oldrick
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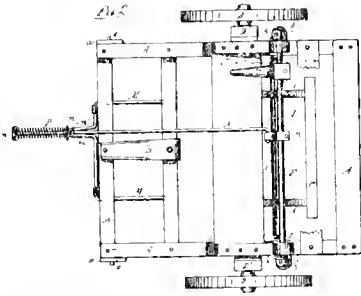
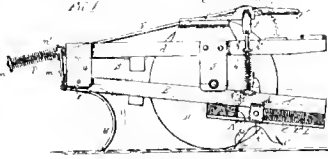
No. Model: H H SATER
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 No. 287,637 Patented Apr. 29, 1884.



Witnesses
 W. S. Brown
 W. S. Brown

INVENTOR
 H. H. Sater
 BY [Signature] ATTORNEY

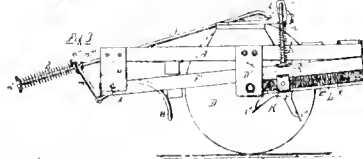
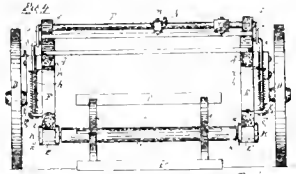
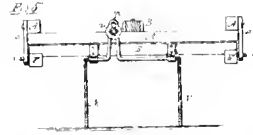
(No Model) J W ATKINSON & B PHELPS
CORNSTALK CUTTER.
No. 298,655 Patented May 13, 1884.



Witness
J. H. Nichols
Wm. H. ...

Inventors
James W. Atkinson
Ben. Phelps
By A. B. Richards

(No Model) J W ATKINSON & B PHELPS
CORNSTALK CUTTER.
No. 298,655 Patented May 13, 1884



Witness
J. H. Nichols
Wm. H. ...

Inventors
James W. Atkinson
Ben. Phelps
By A. B. Richards

243,951. REUBEN K. NIECE, French town, N. J. Cultivator. July 5, 1881. Filed May 5, 1880.

My invention relates to certain improvements in the cultivator for which Letters Patent of the United States No. 207,767 were granted to me on the 3d day of September, 1878, the objects of my present improvements being to strengthen the frame of the machine and decrease the weight of the same, and to provide for the ready shifting of the cultivator blades from one side of the machine to the other, so as to turn a furrow either toward or from the center of the machine. These objects

1. The combination of the side beams, A, A, and transverse beam, D of the machine with the right-angled bars G, G, of metal, the bracing rods *f, f*, connected thereto, and the plows J, J, the stems of which are hung to the vertical portions of the bars G and fit between lugs thereon, said lugs carrying pins, as described, whereby the plows are retained in position, all substantially as set forth.

2. The combination of a beam, A, and a plow having a vertical shank, *s*, with a supporting device, *m*, adapted to be bolted to the beam and having an upward projection, *n*, to which the shank is pivoted, and ears which embrace said shank and project rearwardly beyond the ears and are provided with openings for the reception of a retaining-pin, as set forth.

244,369. ELIJAH BARROWS, Marselles, Ill. Cultivator. July 19, 1881. Filed May 19, 1881.

1. In a cultivator, the combination of the tongue A, having bounds B, B, cross-bars C, D, secured under the latter, diagonal handles K, K, and the removable beams F, F, suitably braced, and having blades L, provided with cutters J, as herein described, for the purpose set forth.

2. In a cultivator, the combination, as herein described, of the tongue A, having bounds B, the double-tree N, having downward projecting brackets O, the pivoted rod R, having roller T, and connected by rods Q, with the brackets O, and the guide-plate U, all arranged and operating as and for the purpose set forth.

244,642. ROBT. C. McGINNIS, Charlotte N. C. Plow. July 19, 1881. Filed Apr. 16, 1881.

The present invention relates to that class of cultivators which are composed of a pair of parallel beams connected together by screw-rods or other devices for permitting said beams to be brought closer together or separated from each other, as may be desired.

The invention consists in a cultivator comprising a pair of parallel beams of unequal length which are adjustably connected to each other by means of screw bolts and nuts, and are each provided with an ordinary clevis, through which is passed a split or lap ring for connecting the same. Shovel or plow standards attached to the rear ends of the beams are connected at their upper ends with handle-rouds or connecting-bars which are provided with slots for receiving screw bolts passed through said standards, so as to permit the beams and standards to be adjusted laterally by turning the nuts of the connecting screw-rods.

The combination of the handle-connecting rounds or bars E, F, having slots M, the handles G, standards D, and bolts and nuts L, N, with the parallel beams A, B, of unequal length, and means for adjusting said beams laterally, as and for the purpose set forth.

245,360. EDWARD W. EASLEY, Peter's Landing, Tenn. Cultivator. Aug. 9, 1881. Filed Mar. 2, 1881.

This invention relates to improvements in cultivators particularly adapted for the cultivation of peanuts, cotton, corn, seed millet, sorghum, &c., and for rebreaking or barrowing the ground; and it consists in certain details in the construction and arrangement of parts, substantially as hereinafter more fully set forth.

In a cultivator, the combination, with the beams A, A', having the shovel-standards C, C' arranged in advance of each other, of the fender D, with its forward end connected to the front standard, and having a downward extension, *d*, arranged alongside of the plow *e*, substantially as and for the purpose set forth.

245,610. JOHN W. DAVIS, Elvaston, Ill. Cultivator. Aug. 16, 1881. Filed Apr. 7, 1881.

This invention relates to the class of cultivators operating on both sides of a row of plants at one passage; and it consists in im-

proved parts for connecting the plow beams to the wheel frame and improved parts borne by the plow-beams.

1. The combination, in a cultivator, of coupling of the axle-section B, having the laterally-adjusting holes D, break pin D, beam section F having laterally-adjusting holes E to give straight or side draft to the plow beam, and the clevis H, having holes for vertical adjustment of the plows, substantially as set forth.

2. The combination, in a cultivator, of beam coupling of the axle-section B and beam-clevis H with a plate or part, F, pivoted to the axle-section and clevis, and adapted to give way under great strain to release the plow beam and avoid breaking, substantially as set forth.

3. In a cultivator, the combination of plow-beam and standard M with a pivoted block, O, bearing a plow, P, and a handle, S, V, whereby the plow may be turned laterally and guided substantially as set forth.

4. In a cultivator, the combination of plow-beam and standard with a vertically-movable runner, U, connected to the standard, and a handle or means of moving and holding the runner at alternative points, substantially as set forth.

245,619. JOHN A. FORBES, Dover Del. Combined Hoe and Cultivator. Aug. 16, 1881. Filed April 23, 1881.

In a horse hoe and cultivator, the combination, with vertically and laterally adjustable standards E, E, of the opposite lateral hoed, G, G', secured by their shanks *g* to the outer sides of said standards, and the cultivator attachments S, S, secured by their vertical shanks *s* to the rear edges of said standards, substantially as and for the purposes set forth.

245,812. NATHANIEL J. GOVER, Oregon, Md. Cultivator. Aug. 16, 1881. Filed July 30, 1880.

My invention relates to an improvement in cultivators; and it consists in combining with a central plow beam and parallel side beams an angular-shaped cross-bar and adjustable braces, whereby the position of the plow beams with relation to each other may be changed, all as fully hereinafter described.

The combination, in a cultivator, of the main beam A, side beams, G, H, connecting brace I and the angular-shaped coupling-bar L, pivoted to the main beam and bolted to the side beams, as set forth.

245,907. JOHN R. WILSON, Waynesburg, Pa. Double-Shovel Plow. Aug. 16, 1881. Filed Oct. 28, 1880.

My invention relates to certain new and useful improvements in the class of double-shovel plows especially designed for side-hill plowing; and the invention consists in a novel construction and combination of parts, whereby I am enabled to adjust the left hand shovel on the beam to suit the inclination of the ground, all as will be hereinafter fully described, and specifically pointed out in the claim.

The herein-described double-shovel side-hill plow, composed of the single beam E, having plow-standard H rigidly connected thereto, the hump F, secured to said beam, the standard G, provided with perforated segmental plate A, and spring-bar C, having a bolt, D, for adjustingly securing said plate A to the beam E, as and for the purpose herein shown and described.

246,124. BENJAMIN GRIFFIN, Lawrence, Mass. Cultivator-Hoe. Aug. 23, 1881. Filed Jan. 31, 1881.

My invention relates to a hoe or molder attachment for cultivators; and it consists of a triangular standard and spring wings capable of expansion through their elasticity.

The combination, with a cultivator, of the triangular standard or share A, bolted to the center beam, the elastic wings B, secured rigidly to said share, and the spreader C, D, secured to the inner rear parts of said wings, and adapted to vary the width of the wings by means of their spring or elasticity, substantially as shown and described.

248,170. JOHANN C. F. HAMMER, Cullman, Ala. Cultivator. Oct. 11, 1881. Filed Oct. 28, 1880.

The object of this invention is to furnish cultivators so constructed that the plows can be adjusted to keep them parallel with the line of draft, as hereinafter described.

The combination, with the plows H and standard J, journaled at the upper end to turn in beams B, and held by a clamp nut at the top of the brace J, bent to one side at the upper end and there notched, the eyebolts M passing

up through beams B and the clamp-nuts N, as and for the purpose specified.

248,954. CALEB M. RISLEY, Woodbury, N. J., assignor of one-half to Clayton B. Rodgers, Philadelphia, Pa. Cultivator. Nov. 1, 1881. Filed May 7, 1881.

My invention consists of a guide applied centrally to a cultivator in the longitudinal direction thereof, whereby the cultivator will be run uniform and steady and the depth of penetration of the hoed may be limited.

It also consists of the head at the forward end of the cultivator, having a dovetailed connection with the center bar of the frame of the cultivator, and provided with an eye for the attachment of the bolt for the draft-rod.

1. A cultivator frame having center bar, B, and side bars, C, in combination with a skeleton-guide, F, consisting of a horizontal bottom bar, *g*, and two standards, *h, h*, one at each end, said standards being secured to said center bar at their tops.

2. The center bar, B, having a dovetailed forward end, in combination with the head D, having dovetailed recess *a* and side eyes, *b*, the plate *f* bolted to said head, and the side bars, C, pivoted between said head and plate, substantially as set forth.

249,417. URIAH T. STEWART, Sault-Ste. Marie, Tenn. Plow. Nov. 8, 1881. Filed July 30, 1881.

In a plow, the combination, with a plow-point having a serrated horizontal edge and a serrated vertical edge, of a half-heart-shaped mold-board hinged to the stock and adjustably braced thereto, substantially as and for the purposes set forth.

249,702. EDWARD L. WALKER, Twin Grove, Wis. Cultivator. Nov. 15, 1881. Filed July 19, 1881.

1. The combination, in a cultivator, of pivoted plow-beams having outwardly projecting arms at their forward ends, connecting draft-bars attached to said arms, and means for adjusting said connecting draft-bars at different points upon the outwardly projecting arms, whereby the lateral tension of the draft upon the pivoted plow beams may be changed at will, substantially as described.

2. The combination, in a cultivator, of pivoted plow-beams having outwardly-projecting arms at their forward ends, pivoted connecting draft-bars attached to said arms, a central draft-bar attached to the pivot of the connecting bars, and a slotted lug or guide attached to the pivot of the plow-beams, in which the rear end of said central draft-bar slides, substantially as described.

3. The combination, in a cultivator, of the pivoted plow-beams A, A, provided with outwardly and inwardly curved rear extensions, A', A', forward outer extension-arms, A'', A'', and connecting-plates A', A', the central draft bar, D, and the intermediate connecting adjustable draft-bars, C, all substantially as described.

250,782. NEWTON P. CAPEHART and WESLEY H. STEWART, Leona, Ala. Cultivator. Dec. 13, 1881. Filed Sep. 16, 1881.

Our invention relates to an improvement in cultivators; and it consists in providing an attachment consisting of a bar and a hooked rod provided with an eye, which can be secured to either side of the beam and standard, so that one of the bent iron rods or bars can be taken off of its side of the beam and standard and transferred to the rear end and secured to the attachment, and thus made to run in the rear of the front bar or foot, whereby both shovels are adapted for plowing on one side only or the row of growing plants; and, also, in a block which is secured to an endwise moving rod which is screw-threaded at both of its ends, one of the ends being passed through the beam and the other through the lower end of the standard, whereby the block can be adjusted back and forth, carrying with it the two feet, so as to cause them to run shallow or deep, as may be desired.

1. The combination of the beam and standard with the two feet, the connecting-bar I, and a hooked rod, J, provided with an eye, whereby the two feet can be secured so as to run one in the rear of the other, but upon opposite sides of the beam, substantially as described.

2. The combination of the beam and standard with a block which is secured to an endwise-moving rod, whereby the foot or feet, which are secured to the block, can be adjusted so as to run shallow or deep, substantially as set forth.

3. In a cultivator, the combination of the beam and standard with the endwise moving rod, having secured to it a block, the two feet, and the pivoted bolt by which the feet are secured in position, substantially as specified.

250,831. MONTGOMERY C. MEIGS, Toney, Ind. Cultivator. Dec. 13, 1881. Filed Sep. 8, 1881.

The invention consists in the combination, with the plow beams, hinged to each other at their forward ends, and the draw bar, of the angular bars, the cross-head having friction-wheels, and the friction-wheel pivoted to the slotted hinge-pintle, whereby the resistance of the ground and the draft strain are made to keep the said beams in place; and also in the combination, with the hinged plow-beams, of the inclined guide blocks, whereby the stalks of the corn being cultivated are made to regulate the width of the cultivator, as will be hereinafter fully described.

1. In a cultivator, the combination, with the hinged beams A, of the cross-head draw-bar I G, and the angular bars F, substantially as herein shown and described, whereby the resistance of the ground and the draft strain are made to keep the said beams in place, as set forth.

2. In a cultivator, the combination, with the angular bars F and the cross-head draw-bar I G, of the rollers H, substantially as herein shown and described, whereby the resistance of the ground and the draft strain are made to keep the said beams in place, as set forth.

3. In a cultivator, the combination of the beams A, angular bars F, and the cross-head draw-bar, constructed substantially as herein shown and described, with the ends of the cross-head G bent forward and slotted, whereby the said cross-head is kept in place upon the angular bars, as set forth.

4. The combination, with the beams A, of the angle-bars F F, the cross-head G, the draw-bar I, and the slotted hinge-pintle J, as shown and described.

251,527. ALONZO CREECH, Clayton, N. C. Cultivator. Dec. 27, 1881. Filed July 30, 1881.

1. In a cultivator having the parallel beams A and perforated transverse bars C, the combination of the branched standards D, having the end flanges, *a*, and the tie-bearings E below said end flanges, connecting the branches of the standard, substantially as specified.

2. The combination, with the interchangeable and adjustable branched standards D and the tie-bearings E, of the parallel beams A and their transverse bars C, forming a frame vertically adjustable with reference to said standards, substantially as specified.

251,765. WILLIAM H. CLARK, Greece, N. Y. Implement for Cutting Weeds and Beans. Jan. 3, 1882. Filed Aug. 22, 1881.

The object of my invention is to produce an implement for farmers' use for cutting weeds, beans, or other vegetation by means of advantageously arranged blades made to move horizontally just beneath the surface of the ground, the said implement being herewith fully described, and more particularly pointed out in the claims.

1. In combination with the body A and furrow tooth F, the diverging blades G G', pivoted to the tooth F, and held to the body A by adjustable standards or parts *b b'*.

2. The combination of the body A, tooth F, diverging blades G G', bent adjustable notched standards *b b'*, and fastening device, as and for the purpose set forth.

252,508. McDONALD PATE, SAMUEL O. MASON and WILLIAM H. DAIL, Snow Hill, N. C. Cultivator. Jan. 17, 1882. Filed Aug. 19, 1881.

Our invention relates to improvements in that class of cultivators which are adapted to be used in connection with the ordinary plow beam; and it consists in the combination, with the ordinary plow beam, of a cross-beam carrying a series of cultivator plows or shovels, a clamping bolt and nut, and a locking arm connected to said bolt and adapted to engage the plow beam for adjustably securing said beams together, all as will be hereinafter more fully described, and pointed out in the claim.

In a cultivator, the combination, with the beam A, of the cross-beam B, carrying a series of cultivator plows or shovels, a clamping bolt and nut, and a locking arm, E, connected to said bolt and adapted to engage the beam A, for adjustably securing said beams together, substantially in the manner herein shown and described.

253,164. MILTON T. HANCOCK, Thomasville, Ga., assignor to James F. Turner, same place. Cultivator. Jan. 21, 1882. Filed Jan. 3, 1882.

A flat bar of iron is bent so as to form parallel long and short beam sides, with the front end provided with a horizontal slot for a draft link, which is secured by a pin which straddles the curved beam end, giving a short and close whiffletree-connection, rendering it much easier to manage the cultivator, and forming a simple and durable draft attachment. The ends of the beam sides are connected by a diagonal brace and terminate in curved standards for the shovels. The brace extends from the curved standard of the short beam side to the curved standard of the long beam side, rendering the sides still at the standards, while bearing them lengthwise.

1. The bent bar forming the frame and the curved standards, and its curved front end having the horizontal middle slot, *e*, in combination with a link *f*, secured to said bent bar within the front middle slot, *e*, and the hook-pin *g*, substantially as described.

2. The bent bar forming the curved standards, and the curved front end having the horizontal middle slot, *e*, in combination with the link *f*, the hook-pin *g*, the draft attachment, and the diagonal brace *d*, substantially as described.

253,347. FRANCIS R. COOPER and JOHN LEMMON, Colerain, Ohio. Plow. Feb. 7, 1882. Filed Dec. 14, 1881.

The combination, in a cultivator, of the beams *a*, frames C, with perforated sides *c'*, and sockets *c*, the lever B, having slots *e* and studs *e'*, the pin and spring *d d'*, and standard D, substantially as shown and described.

10,411. FRANCIS R. COOPER and JOHN LEMMON, Colerain, Ohio. Plow. Reissued Nov. 27, 1882. Original, 253,347. Feb. 7, 1882. Filed Mar. 21, 1883.

1. The combination, with a draft frame carrying a notched or perforated frame, which latter supports the upper end of the plow standard, and a lever pivotedly secured thereto and adapted to engage with the notches or perforations thereof, of a plow or shovel standard and passing through suitable openings in the said frames and connected to said lever, substantially as set forth.

2. The combination, with a triangular draft frame composed of two divergent portions, a slotted or perforated frame mounted upon each of said members, and a lever pivotedly connected to each of said frames and adapted to engage with the notches or perforations thereof, of a shovel standard mounted movably in bosses upon each of said frames, and a spring connection between each of said standards and levers, substantially as and for the purpose set forth.

3. The combination, in a cultivator, of the beams *a*, frames C, having perforated sides *c'* and sockets *c*, the levers B, having slots *e* and studs *e'*, the pins and springs *d d'*, and the standard D, substantially as shown and described.

254,932. WILLIAM J. DAVIDSON, Big Spring, Va. Cultivator. Mar. 14, 1882. Filed Nov. 23, 1881.

The combination, with the single bar beam A, of split brackets, constructed as set forth, and with their free ends projecting to the rear, and standards connected to the brackets and constructed for attachment to either side thereof and adjustable thereon, substantially as set forth.

255,256. WALTER B. CULLUM, Renwood, W. Va. Cultivator. Mar. 21, 1882. Filed Dec. 23, 1881.

The invention consists in the combination, with the draw bar, of the loose collar, the plow beams, the connecting bar, the operating lever, and means for locking the same; and also in the combination, with the cross-bar attached to the plow beams, and the braces connecting the handles and draw bar, of the lever, the spring catch lever and the catch-bar, whereby the plow beams can be readily locked in place, unlocked, and adjusted, as will be hereinafter fully described.

1. In a double-shovel plow, the combination, with the draw bar A, of the loose collar G, the plow beams B, the connecting bar J, the lever K, and means for locking the same, substantially as and for the purpose set forth.

2. In a double-shovel plow, the combination, with the cross-bar J, attached to the plow-beams B, and the braces E, connecting the handles C and draw bar A, of the lever K, the spring catch lever L, and the cross-bar F, substantially as herein shown and described.

whereby the plow beams can be readily locked in place, unlocked, and adjusted, as set forth.

256,348. DANIEL R. MATHENY, Blackville, S. C. Cotton-Plow. Apr. 11, 1882. Filed Jan. 10, 1882.

The combination, in a cotton-plow, of the handle-beams A, the standards B, the one-sided whiffletree D, adjustable on the beams, the slotted cross-bars B B, and the adjusting cross-bar and cutter G, substantially as shown and described.

256,455. SMITH A. BATSON, Batson's Store, Tenn. Cultivator. Apr. 18, 1882. Filed Feb. 18, 1882.

In a cultivator, the combination of the outer beams, A, the inner beams, B, constructed in two sections, hinged together and having their front ends attached to said outer beams, A, and the handles C, having hooks I, all constructed and arranged substantially as set forth.

259,943. BLUFORD A. TABER, Hall's Hill, Tenn. Cultivator. June 20, 1882. Filed Jan. 30, 1882.

In a walking-cultivator, the combination, with the cultivator frame composed of the beam or tongue A, slotted longitudinally at *e*, fixed and shouldered shovel-beams C C, and handles F F, braced by the yoke or stirrup H, straddling the rear end of the slotted beam A, and having perforations *h h*, of the vertically-adjustable middle beam, B, pivoted in the slotted tongue at *d* and adjustable by the bolt *i*, in the manner and for the purpose herein shown and specified.

260,576. JOSIAH G. JORDAN, Thomasville, Ga. Cultivator. July 4, 1882. Filed April 21, 1882.

1. The combination, with the plow-handles B B, of the cross-bar C, having the main portion *e*, the central curved part, *e'*, auxiliary part *e''*, and bent end parts, *e'' e'''*, having threaded holes and set-screws *e'' e'''*, substantially as described, and for the purpose set forth.

2. The combination, with the plow-handles B B, of the cross-bar C, having the main portion *e*, the central curved part, *e'*, and bent end parts, *e'' e'''*, having threaded openings to take the set-screws *e'' e'''*, and the beam-rods D D, all combined and arranged as and for the purpose described.

3. In combination with the plow-beam having the inclined end and groove *a*, the clavis B, and hook or ring employed therewith, substantially as described.

260,686. JENS L. JENSEN, Copenhagen, Denmark. Cultivator. July 4, 1882. Filed Feb. 1, 1882.

My invention has relation to that class of so-called "walking cultivators," for cultivating potatoes and other plants which are grown in "hills," in which the mold-boards are made adjustable upon a fixed vertical pintle and provided with hinged wings or extensions on their inner sides; and it consists in the detailed construction and arrangement of the said hinged wings, and also in the detailed construction and arrangement of the adjustable fender or fender-bar for lifting the leaves of the plants as the machine advances, and thus preventing covering them, substantially as hereinafter more fully described, and particularly pointed out in the claims.

1. The combination, with the beam A, having standards A' A', arrow-bend share *e*, having the shoe C connecting it with the rear standard, A', bolt or pintle *f*, and adjustable wings *a a'*, of the adjustable auxiliary wings *b b'* and means for holding the same in their adjusted position upon wings *a a'*, substantially as and for the purpose herein shown and set forth.

2. In a cultivator, the combination, with a plow and plow-beam provided with the screw-threaded tap *m*, perforated cross-bars *n n*, and pin *p*, of the removable fender-bar *j*, hinged at one end in the nut *i*, and adjustable laterally or to either side to the perforated bars *n n*, substantially as and for the purpose herein shown and specified.

260,720. JOHN WEYMOUTH Sanger, Me. Cultivator. July 4, 1882. Filed April 21, 1882.

This invention relates to an improved angle-plate for connecting and properly adjusting the blades of cultivators and horse-hoes to their frames; and it consists in the improved construction of the same, which will be hereinafter fully described, and particularly pointed out in the claim.

The combination, with the cross-piece B, having slot C, of the angle-plate D, having

wing E, provided with slot I and recess J, and wing F, having flange G, forming a bearing for the shaft of a cultivator blade, the square-headed bolt L, the washer M, having nuts N, and the nut O, as set forth.

264,060. ISHAM B. BEARD, Villa Vista, La. Cultivator. Sept. 12, 1882. Filed May 16, 1881.

The combination, with the frame A and plows C, of the standards, consisting of the metal bar D, having upon one side right-angle arm J and diagonally opposite the arm G at an acute angle to the length of the bar, the latter being bent, as shown, and at its upper ends having horizontal flanges K, substantially as and for the purpose described.

264,323. JOHN J. MIZE, Pelham, Ga. Cultivator. Sept. 12, 1882. Filed June 27, 1882.

In my improved cultivator the beam and a diagonal cross-bar at its handle end are cast in one piece, and the curved shoveling standards are secured in vertical open notches in the under side of said diagonal cross-bar, so as to stand in parallel relation to the beam, extending horizontally to the curved standards behind the diagonal bar to a point in advance thereof, from which they are bent inward in the same plane, so as to join the beam at opposite points on both sides, making a strong, durable, and cheap construction, in which the shovels stand in a parallel range with the diagonal bar, giving an easy draft in loosening the soil between the rows of corn and making it easy to handle the cultivator. Such a cultivator is shown in the accompanying drawings, in which—

1. The beam cast with a diagonal cross-bar, *a*, at its handle end, with notches *b*, open at its under edge, as described, in combination with the standard bars and the clips for clamping them within the said open notches, as specified.

2. The combination, in a cultivator, of the beam cast with a diagonal cross-bar, *a*, at its handle end, having notches *b*, open at its under edge, with the curved standard bars bolted to the beam, and means, substantially as described, whereby they are secured within said open notches of said diagonal bar, as shown and described.

264,351. CAMERON McC. SIMMONS, Calabrese, Ala. Plow. Sep. 12, 1882. Filed July 18, 1882.

My invention relates to an interchangeable plow, cultivator, and planting device; and the novelty consists in the construction and arrangement of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claim.

The object of this invention is to produce a frame and interchangeable devices which will allow the implement to be converted at will into an ordinary plow and colter, a double plow, a double-shovelled cultivator, or a seed-coverer, each construction allowing adjustments to accommodate different widths of rows or drills. Many devices looking to the same end have been proposed.

The combination, with the main beam A, having recess *a*, and the main standard C, having recess *c*, of the cross-bar B, having slots *b*, the laterally-adjustable arm D, having perforations *d*, the auxiliary standard E, and standards K, having perforations *k*, the whole constructed and adapted to serve with interchangeable devices substantially as and for the purposes set forth.

264,957. JOHN J. MOTLEY, Salisbury, N. C. Cultivator. Sep. 20, 1882. Filed Mar. 4, 1882.

The double beam *d*, *e*, formed of the straight upper rod, *d*, and the lower arched rod, *e*, in combination with the bent and curved standard *f*, pivoted on the lower rod, *e*, of the beam by the bolt *g*, and provided with the bolts *h* and *i*, the one passing under and the other above the upper rod, *d*, substantially as shown and described, and for the purposes set forth.

265,668. JNO. S. GETCHELL and GEO. N. GETCHELL, Houlton, Me. Hoe-cultivator. Oct. 10, 1882. Filed June 13, 1882.

1. The combination, with the beam having the longitudinal groove in its under side, of the longitudinally slotted plate secured to the beam by a nut and bolt, and having a hooked end working in said slot, as set forth.

2. The combination, with the central beam and rear transverse beam, of the standards having a lug on the front edge and a top plate, rearwardly-extended platforms or strips hav-

ing a clamping device, clamping plates with bolts and nuts, the lugs pivoted to the standards and provided with rear upwardly extended rods, and forward convergent brace-rods, substantially as set forth.

3. The combination, with the cross beam B, of the standards having a top plate, and the lugs pivoted at their lower ends, the rearwardly extending platforms secured and clamped between said top plate and the under side of the beams, vertically-adjustable rods *f*, *f'*, top clamping plates, *J*, *J'*, and securing nuts and bolts, as set forth.

4. The combination, with the central longitudinal beam having a groove in its under surface, and provided with a longitudinally-adjustable plate having a hooked end moving thereon, of the rear cross-beam, the standards adjustable on the latter by means of clamping-plates, and provided with headed lugs on their front edges, and the brace rods secured thereon and extending up over the end of the plate on the central beam, as set forth.

265,749. GABRIEL L. BRUNTON and JULIUS BRUNTON, Centralia, Ill. Plow. Oct. 10, 1882. Filed July 22, 1882.

In a vine-cutting cultivator, the combination, with the beam, of the plow-standards B, braced rearwardly to the beam, the cutters G, arranged in front of the plows, the slotted rollers F, and the slotted braces I, pivotally secured to the axle of the colter and connected with the standard by the bolt which secures the handle-brace thereto, substantially as set forth.

265,763. WM. J. DAVIDSON, Big Springs, Va. Plow. Oct. 10, 1882. Filed Mar. 17, 1882.

My invention relates to that class of plows in which the standards are connected to brackets adjustable on the beam; and my invention consists in constructing the beam, as fully described hereinafter, so as to secure a greater variety of adjustments and secure greater stability and a better control of the implement, and so as to facilitate the connection of the handles and shorten their length.

1. The combination of the divided plow-beam having the straight sections overlapping and secured, and one or more adjustable brackets and standards secured to each section, as specified.

2. The beam *a*, *a'*, having the turned up end *f* and the lug or projection *g*, in combination with the handles and the adjustable brackets and standards, substantially as shown and described.

265,765. JAMES H. D'LAMATTER, Earlville, Ill. Cultivator. Oct. 10, 1882. Filed June 30, 1882.

1. The combination of the frame A and inclined central draft-beam B, pivoted together and relatively adjustable with the cross-bar D and supporting standards or braces *b*, *b'*, substantially as described and shown.

2. The movable and adjustable cross-bar E and braces *b*, *b'*, in combination with the connected and relatively-adjustable frame A and draft-beam B, substantially as described.

265,801. JOHN I. HANCOCK, Thomasville, Ga. Cultivator. Oct. 10, 1882. Filed July 20, 1882.

My improvement consists of the combination, in a covering plow and cultivator, of a frame consisting of two hinged beam-plates with a removable curved standard and two perforated angle-braces secured respectively to the beam plates and their adjusting devices, as hereinafter set forth.

In a covering plow and cultivator, the combination, with a frame consisting of two hinged beam-plates, *a*, of a removable curved standard, *c*, *d*, and two perforated angle-braces, *b*, *b'*, secured respectively to the beam plates *a* and their adjusting devices, substantially as described.

266,274. JESSIE C. DENSON AND STEPHEN B. BELL, Lamona, Fla. Plow. Oct. 24, 1882. Filed July 31, 1882.

The combination, substantially as set forth, of the beam A and the bars B, arranged on opposite sides of the beam A, and parallel to each other and at an angle to the end beam, and having their adjacent ends secured, the one close to the beam A and the other off to one side thereof, and adapted to carry the standard C, as and for the purpose described.

267,255. GEORGE H. ROATH, Mechanicsville, Pa. Cultivator. Nov. 7, 1882. Filed Sep. 29, 1881.

My invention relates to improvements in that class of cultivators with which various kinds of work can be done by changing the relative

position of or attaching some of the beams; and the objects of my improvements are, first, to regulate the beams so that their relative positions, as also those of the shovels attached to them, may be changed; and, second, a device by means of which the shovels can be set at a vertical angle, in order to scrape weeds from or cultivate the sides of a row.

1. In a cultivator, the combination, with the central beam, *b*, having the elongated slot *p*, of the shifting clamps *c*, *c'*, having center pins or teeth, *p'*, the beams *b'*, *b''*, and rear connecting or slide bars, substantially as described.

2. A cultivator-beam divided into two sections, H and I, with their respective arms M and N fastened together by bolts *b'*, substantially as and for the purpose specified.

268,223. MITCHELL HANCOCK, Hapeville, Ga. Cultivator-Plow. Nov. 28, 1882. Filed Aug. 23, 1882.

A metal plate bent in a peculiar manner forms a brace and a frame for the attachment of separate long and short plow beams, the long one of which supports the handles, while the short one is detachable to make a single or double cultivator plow, as may be desired to suit the work; and my improvement consists of the peculiar bent frame-brace, formed as hereinafter described, in combination with a long and a short plow beam secured to the opposite sides of the bent frame-brace in such manner as to form a staddle-cultivator or a single-plow cultivator.

In a cultivator-plow, the combination, with a frame brace consisting of the main portion *a*, cross-pieces *a'*, rearwardly projecting arm *b*, diagonal brace part *d*, of a curved plow stand and *f*, provided with a horizontal arm, *g*, adapted to be removably secured to the main portion *a* of the frame-brace, and a second curved standard, *f'*, whose arm *g'* is adapted to be secured to the opposite side, *h*, of the frame and the handles, substantially as described.

268,617. DANIEL H. BULL, Greenville County, S. C. Harrow-Cultivator. Dec. 5, 1882. Filed July 6, 1882.

A cultivator-tooth formed of a flat bar of metal to present a cutting edge to the soil, the lower point being twisted so as to present a broadside to the soil, as shown and described.

268,699. EDWARD L. LITTON and JOHN J. BROWN, Galtney City, S. C. Plow-Attachment. Dec. 5, 1882. Filed Sept. 30, 1882.

The combination of the slotted plate *w* and jointed connecting rod *t* with the beams *a* and *b*, standard *g*, and the adjustable arms *c*, *d*, substantially as described.

269,376. DAVID L. BARNUM, Wilson, N. Y. Thrill-Cultivator. Dec. 19, 1882. Filed Sept. 21, 1882.

In a thrill cultivator, the combination of the side pieces, A, cross-pieces A', A'', adjustable dolls B, rearward projecting piece A', adjustable plow standards E, F, stationary plow standard F', and bolts *d*, *d'*, all constructed and combined as and for the purpose described.

269,734. THOMAS SPENCER, Atlanta, Ga. Plow. Dec. 26, 1882. Filed Oct. 16, 1882.

This invention relates to certain new and useful improvements in plows for breaking and working rough ground; and the object of the present invention is to produce a plow that will yield or relieve itself from any obstructions—such as stones, roots, or stumps—that may come in contact with the points in the line of draft, without lifting of the plow by the operator, or strain upon the team, thus decreasing and lightening the labor of both. A further object is to provide a means whereby the plow may be readily drawn from one place to another without turning it upon the side, thereby lessening the drag, while at the same time the said plow or plows may be relieved of all dirt, brush, or other trash that may have accumulated thereon. These objects I attain by the construction substantially as shown in the accompanying drawings, and hereinafter described.

1. The rod *g*, connected to the clevis *h*, in combination with the spring C, bar or plate *f*, and set screw *e*, substantially as and for the purpose described.

2. The combination, with the ratchet wheel *e* and pivoted catch *d*, of the lever H and stirrup or trigger I, substantially as and for the purpose set forth.

3. The spring C and pivoted bar or plate *f* and the rods *a*, in combination with the clevis *h*, bolt *u*, shaft *b*, carrying plow-points or harrow-teeth, the shaft *v*, and catch *d*, substantially as and for the purpose specified.

270,426. **ISAIAH HANCOCK**, Fayetteville, Tenn. Assignor to S. M. Hancock and J. R. Hancock, same place. Cultivator. Jan. 9, 1883. Filed Aug. 22, 1882.

In my improved plow the beams of the plow are united by means of curved pivot-bars and straight holding and adjusting bars, so that the beams shall be rigidly held at any desired distance apart. The plow-handles are united to the plow-standards and to the beams to make them firm, and their upper ends are adjustable on the round that unites them. The plow-shares are provided with auxiliary wings that may be attached or detached without removing the shares from their standards.

In a cultivating plow, the combination of the main beam A, the short beam B, pivoted thereto, the two handles G H on the same side of the main beam, with the short beam between them, and the standards C D, respectively extended up to support the handle H and round I, as shown and described.

270,812. **CHARLES KENNER**, St. Mary's Mo. Double-Shovel Plow. Jan. 16, 1883. Filed Sep. 29, 1882.

In a shovel plow, the combination, with the plow beam A, cutted at its rear end, and provided with the hole *a* near its end, and shovel H, having a hole near its upper end, of a shaft A, made of a single bar of metal, having its lower arm, *d*, horizontal, and secured at its front end to the point of the shovel, and bent around at its rear end to form the upper inclined bar, *c*, provided with a hole *b*, near its end, and a single bolt, *f*, securing together the shaft, curved plow beam, and upper bar of the shovel, substantially as described.

270,846. **MILTON MCKEE RITCH**, Laurinburg N. C. Plow. Jan. 16, 1883. Filed Aug. 24, 1882.

1. In a gang plow, the combination, with the side beams, A C, having standards provided with plows, and nutted rods D E, of the removable short beam B, having the slot *e* in its rear end, and the inverted L-shaped slot *a* near its forward end, and having the plow H substantially as and for the purpose set forth.

2. In a gang-plow, the combination, with the plow-beams A B C, having the clevises L, of the draft rod *k*, arranged obliquely along the under side of said beams, with one end connected to one of the side plow beams and the other end extended forward to the clevis of the other side plow-beam, and adapted to be connected to the whiffletree, substantially as and for the purpose set forth.

270,887. **EDWIN CASE**, East Toledo, Ohio. Cultivator. Jan. 23, 1883. Filed Apr. 29, 1882.

1. The combination, with the hoes C, of the hillers arranged directly in rear of the hoes, and the fenders E, having their front portions in a plane outside the said hoes, substantially as described.

2. In a cultivator, the combination of the hoes, the top-lifter F, the tender E, and the tiller D, all relatively arranged to operate as set forth.

3. In a cultivator, the combination, with the forward adjustable wings, A', carrying hoes, of the rear adjustable wings, A, carrying fenders and hillers on either, substantially as described.

271,586. **JAMES H. ALLEN**, Wagon, Ills. Cultivator. Feb. 6, 1883. Filed July 20, 1882.

The objects of my improvement are, first, to thoroughly pulverize the ground and kill the weeds without injuring the growing corn or other grain; second, to provide an adjustable frame-work that may be attached to the running gears of any two-wheeled cultivator; third, to provide an adjustment of the shank to which the shovels are attached with the frame-work, so that the shovels may be readily lowered and raised.

1. In a wheel cultivator, the shovel frame composed of the curved bars *a a*, forming the center shovel-standard, the side bars, *b b*, each bent to form shovel-standards at the front and rear ends, and the bolts *f g*, substantially as shown and described.

2. The combination of the bars *a a* with the side bars, *b b*, each carrying shovels, as shown and described, the bolts *f g*, and the cross-bars *s*, whereby a jointed or flexible frame is formed, capable of being coupled to axles of different heights, substantially as shown and described.

271,599. **WM. H. CARRUTH**, Bolivar assignor of half to G. W. Round-leaf, Montezuma, Tenn. Harrow and Cultivator. Feb. 6, 1883. Filed Oct. 27, 1882.

1. In a combined cultivator and harrow, the beam B, extending through and pivoted directly to the link-shaped cross-frame A, the latter being pivoted to and extending about equidistant from the beam B, and having bar-rows *c*, *c*, apertured plate E, having a brace, G, at each end thereof, clip F, and a locking device, all in combination as and for the purpose set forth.

2. In a combined cultivator and harrow, the combination of the beam B, provided at its rear end with a cultivator or shovel or plow, B', the link-shaped cross-frame A, having bar-rows *c*, *c*, one of which forms a pivotal point for the beam B, and adjusting mechanism consisting of the serrated apertured curved plate E, apertured clip F, spring pawl I, lever H, and operating medium J, as and for the purpose set forth.

272,080. **ALBERT N. NORRIS**, Nashville, Ind. Cultivator. Feb. 13, 1883. Filed Sept. 22, 1882.

My invention relates to that class of cultivators in which the frame consists of laterally movable wings carrying cultivator-hoes slung thereon, said wings being pivoted at one end to a central draft-beam and capable of lateral adjustment at the other end, and in which an adjustable gage governs the depth to which the hoes may enter the earth.

In a cultivator, the combination, each plate *z*, provided with hinge-lugs *x* and break-pin lugs *y*, adapted to fit loosely over the loose-shank, of lugs *z*, located between said hinge lugs and break-pin lugs, and adapted to embrace and fit closely over the loose-shank, in the manner shown and described, for the purpose set forth.

273,224. **WILLIAM CARVER**, Scotts-ville, N. Y. Cultivator and Bean Harvester. Feb. 27, 1883. Filed Nov. 10, 1882.

The object of my invention is to supply to the rear of the frame of a common cultivator two carrier wheels to take the load off the hands of the operator, said wheels being secured to the frame that they may be raised or lowered or changed to numerous positions relative to the same in doing different kinds of work, such as cultivating wide or narrow spaces between rows of plants, harvesting beans, &c.

1. In a cultivator, the combination, with the rail A, of the bar C, adapted to be swung around upon said rail and made laterally adjustable thereon, and the vertical wheel-post *f*, secured to said bar C, and adapted to be rotated and vertically adjusted in its bearing, substantially as shown and described.

2. In combination with the rail A, the bar C and swivel clamp *d*, with means to secure said bar and swivel-clamp to the rail, and the adjustable post *f* and wheel D, with the clamping-bolt *i* for the post, substantially as and for the purpose set forth.

273,426. **FRANCIS M. ALLEN**, Knoxville, Tenn. Cultivator. March 6, 1883. Filed April 22, 1882.

1. The combination, in a cultivator, of plow A, handles D, standards H, and a frame connecting said plows in a gang, said frame having two or more yokes, Q, for intermediate plows, connected at the top by a bar, *r*, substantially as described.

2. The combination, in a cultivator, of plows A, handles D, standards H, and bars P', and bars P'' projecting below the connecting frame and forming pulverizing-points *d*, substantially as described.

3. The combination, in a cultivator, of plows A B and pulverizing points *d*, suspended from the beams of the plows in advance of the plows, substantially as described.

4. The combination, in a cultivator, of plows A, handles D, standards H, and a connecting frame consisting of angle-bars T, bar W, and connecting blocks V, substantially as described.

5. The combination, in a cultivator, of plows A, handles D, standards H, bars P', and roller-bars *a*, substantially as described.

6. The combination, in a cultivator, with two or more gang-plows having parallel beams coupled to the bar *c* by books, of the oblique struts *g*, pivoted to the respective plow-beams, so as to rise and fall independently of each other, substantially as described.

7. The combination, in a cultivator, of plows A, handles D, standards H, connecting frame T W, roller-bars *a*, and yokes Q, for intermediate plows, suspended from said roller, substantially as described.

8. The combination, in a cultivator, of plows A, handles D, standards H, connecting frame T W, roller-bars *a*, and pulverizing points *d*,

suspended from said roller-bars, substantially as described.

9. The combination, in a cultivator, of plows A, handles D, standards H, bars P', connecting frame T W, gibs M, and clips N, substantially as described.

273,957. **W. C. HAWKINS**, Lima, S. C. Plow. March 13, 1883. Filed Nov. 14, 1882.

My invention relates to improvements in double-shovel plows; and it consists of a strainer *f* peculiar construction, for grass and weeds, adapted to be attached to the front or rear end of the plow-beam, as hereinafter more fully set forth, and pivoted out in the claim.

The adjustable attachment *g*, consisting of a hooked arm or bar provided with a rake or stirrer *z*, at its lower end, and constructed with an upper lateral portion, *a*, and side clivet *7*, having oblong slots *g*, *h*, whereby the strainer arm can be secured to the front or rear end of a plow-beam, substantially as and for the purpose specified.

275,159. **EDER P. DAVIS**, Witchesville, Ark. Cultivator. April 3, 1883. Filed Dec. 9, 1882.

My improvement embraces a construction and combination in which the side shovel bar is braced directly from the main plow-standard and its hanger-brace in such manner as to relieve the side projecting screw-bolt, by which the side shovel bar is adjustably secured to the beam from the great force exerted upon the side shovel-carrying bar. This object is effected by a brace, *ab*, *b* is secured at its lower end to the main plow-standard and to its hanger-brace below the beam by the screw-bolt which it sustains. The brace, the main plow-standard, and its hanger-brace together, and at its upper end to the side projecting screw-bolt, so that the upward force exerted upon the side shovel-carrying bar is borne by an upward pull upon said brace, and not by an upward force upon the side projecting screw, which would otherwise tend to carry the side shovel in proper relation to the main shovel. In shovel-plows of this kind the side shovel-carrying bar has been adjustably connected to the beam in various ways and supported by a brace connected to a bracket on the side of the beam, in which the force upon the side shovel-bar tends to bend the brace or break the connecting-screws of the side bracket in the same manner as it would tend to bend the side projecting screw. In shovel plows of this kind the main plow-standard has been formed of a bent strap pivoted to the beam and adjustably combined with a hanger-brace, and it is with such construction that I have combined the detachable side shovel-carrying bar by a brace adapted for adjustment with the main plow-standard and supporting the side shovel-bar by its hanger-brace firmly bolted to the under side of the plow-beam, and by the main plow standard bolted to the sides of the beam.

1. The combination, in a shovel-plow, of the pivoted beam-standard *b* and its hanger-brace *h* with the side shovel-carrying bar, *r*, the side projecting screw-bolt, *k*, nuts *r*, the brace *i*, and the screw-bolt *l*, the said brace being secured to the plow-standard *b* and to its hanger-brace below the beam, and to the screw-bolt *k*, passing through the beam, substantially as described, for the purpose specified.

2. In combination with the plow-beam provided with the side hook, *m*, and the hanger-brace *h*, of the plow-standard *b*, the side shovel-bar, *r*, the screw-bolt *k*, nuts *r*, and the brace *i*, said brace being secured to the screw-bolt *k*, to the plow standard *b*, and to the hanger-brace, and adapted for adjustment with plow-standard, substantially as described, for the purpose specified.

275,260. **WM. H. PENNOCK**, Mermaid, Del. Cultivator. April 3, 1883. Filed Dec. 2, 1882.

In combination with a cultivator beam, the locking-latch *s*, having the lateral pin *t* and the vertical clamp *u*, substantially as specified.

275,462. **O. BURGHES**, Poughkeepsie, N. Y. Horse-Scuffle-Hoe. April 10, 1883. Filed Oct. 17, 1882.

The object of my invention is to furnish an agricultural implement that may be drawn by a horse, and which will scuff the surface of the ground like the common scuffle-hoe, cutting off all weeds at any desired depth and gathering the weeds in piles; and my implement is also well adapted to the removal of weeds from walks and smoothing the surface

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Addenda.

Insert after Claim 272,080.

272,701. FRANK H. JOHNSON, Biggs-ville, Ills. Cultivators. Feb. 20, 1883. Filed Sep. 1, 1882.

The combination of the beam C, bolt *f*, wedge-shaped washer F, provided with the radial slot or opening *g*, the beam A, and bar E, substantially as shown and described.

of walks and roadways, and may also be used to remove weeds from the space between rows of vegetables, trees, or plants.

1. The combination, with the cultivator frame and wheels, of the handles J, T-shaped arms P, adjustable cutter I, pivoted arms M, rake Q, and lever G, substantially as shown and described.

2. The combination, with the frame, and the pivoted handles carrying the adjustable cutter-bar and adjustable rake, of the rotating rest R, adapted to receive the handles and support the operative parts above the ground, substantially as shown and described.

277,786. J. RING, Milwaukee, Wis.
Plow. May 15, 1882. Filed Feb. 13, 1883.

1. In a plow of the described construction, the spoon shaped share Q, having a rearward extending longitudinal slot, *q*, and perforated projections or lugs P and S, substantially as and for the purpose shown and set forth.

2. In a plow of the described construction, the combination of the slotted spoon shaped share Q, having perforated lugs P and S, with the standards K and J, having bolt-holes O and U, and bolts R and T, substantially as shown and described.

277,949. H. L. SMITH, Watkins, N. Y.
Cultivator. May 22, 1883. Filed March 1, 1883.

1. As an improvement in cultivators, the combination, with the adjustable side beams, A A, carrying the cultivator-blades and connected together at their front ends by a single cross pin or bolt, of the intermediate central beam fulcrumed on the said bolt down between the side beams, so that it works between the same, and provided with the cultivator-blade and front wheel or roller, as set forth.

2. As an improvement in cultivators, the combination of the adjustable side beams, A A, having the slots in their front ends, by which they are capable of lateral adjustment, the cross pin or bolt connecting the said beams A A and passing through the said slots, the central intermediate beam, J, fulcrumed down between the beams A A on the said cross-pin and carrying the front wheel or roller, and means for retaining the central beam in the position to which it has been adjusted, as set forth.

279,277. G. RICHARDSON AND G. ENDERSON, San Jose, Cal. Orchard Cultivator. June 12, 1883. Filed Feb. 27, 1883.

1. An orchard cultivator having teeth arranged in opposite directions upon each side of the center, and provided with a central bearing adapted to fit and turn upon the trunk of the tree, as described.

2. An orchard cultivator consisting of a frame, A, having a central bearing, C, adapted to fit one side of the trunk of a tree, the teeth B, arranged in opposite directions upon each side of the center of the frame, and an adjustable bearing attached to the frame and adapted to fit the other side of the trunk of the tree, substantially as and for the purpose herein described.

3. An orchard cultivator consisting of the frame A, having a central curved bearing, C, the teeth B on each side of the center of the frame, the oppositely extending parallel draft bars D D, the curved bar C', pivoted on the frame, and means for adjusting and holding said bar to its place, consisting of the rod E, secured to said bar, and engaging with a suitable holding rack on the draft-bar D, and the runners F, all arranged and operating substantially as and for the purpose herein described.

279,429. H. L. P. POOL, Edinburg, Ark.
Combined Scraper, Plow and Cultivator. June 12, 1883. Filed Jan. 24, 1883.

The invention consists in a combined scraper, plow, and cultivator constructed with a beam provided with adjustable handles and with adjustable beam standards, the first and last of which are provided with plows, and the intermediate one with a scraper. The bolts that secure the plow standards to the beam are provided with blocks to be interposed between the front and rear standards and the beam to regulate the distance apart laterally of the three standards, and thus adapt the machine for use as a cultivator, as will be hereinafter fully described.

The combination, with the beam A and plow handles *h*, of the curved interchangeable standard arms H K, secured to opposite sides of the plow beam, and carrying, respectively, the trash plow J and scraper M, curved standard N, secured to the left hand side of the beam, and

bent around and to the right and under said beam, and provided with the plow P, lying behind and opposite the middle of the scraper M, elongated threaded securing bolts B L O and spacing blocks Q, the whole arranged, constructed, and operated in the manner and for the purpose set forth.

279,823. F. SHEAFFER, Liverpool, Pa.
Straddle-Row Cultivator. June 19, 1883. Filed Aug. 6, 1883.

In a cultivator, the combination with the stock A, cross bar B, and laterally adjustable side pieces, D, provided with standards F, of the shovels G, formed with their convex curved upper portion, H A I, and upper and lower standards, substantially as shown and described.

279,958. BARTHELEMY LANOIZELET, Bourbon-Lanay, France. Agricultural Implement. June 26, 1883. Filed March 8, 1882. Patented in France June 26, 1882. Belgium March 3, 1883. Luxembourg March 3, 1883. Germany Mar. 3, 1883. Austria Mar. 3, 1883. England Mar. 3, 1883. Italy Mar. 3, 1883. Prussia Mar. 3, 1883. Sweden Mar. 3, 1883. Norway Mar. 3, 1883. Denmark Mar. 3, 1883. and Russia Mar. 3, 1883.

1. The plow beam A, curved to form the plow standard, and provided at its front end with a socket, L, in combination with the detachable socket G, substantially as and for the purposes specified.

2. The plow beam A, constructed as described, and the mold boards B B and handle socket G, in combination with the adjusting plates C C and the thumb nuts and bolts D H, substantially as and for the purposes specified.

281,426. S. L. ALLEN, Cincinnati, N. J.
Cultivator. July 17, 1883. Filed Mar. 9, 1883.

1. The within described share blade, for cultivators, the same being indented at its side, so as to form a strengthening rib extending from the point to the body of the blade, and merging into the same, substantially as described.

2. The combination of the arm L and its notched head with the side bar, B, having a retainer adapted to the notches, and with a bolt or bolts for securing the several parts together, substantially as specified.

3. The within described arm L, made of struck up steel, and having a head bounded by a notched flange, in combination with a retainer on the frame of the machine, substantially as specified.

4. The combination of the arm L and its notched head, the stay D, and side bar, B, having a block, J, provided with a reception adapted to the notches in the head of the arm, with the staple-like bolt K, one leg of which passes through the head of the arm, through the stay, and through the side bar, the other leg passing through the said block J, all substantially as set forth.

282,341. S. O. MASON, Snow Hill, N. C.
Cultivator. July 31, 1883. Filed Mar. 12, 1883.

My invention relates to certain improvements upon the cultivator for which a patent was granted to me, in connection with McPhan and Pate and William H. Dail, January 17, 1882, which improvements are designed to give greater strength to the cultivator, prevent splitting of the cross beam, prevent turning of the shanks of the shovels, and make the blades of the shovels detachable, as hereinafter described.

1. The combination of the beams A and B, the braces P and G, the U shaped bracket *f*, the bolt *j*, connecting the two braces to the beam, and the through-bolt *f'*, connecting the lever G and the bracket *f* to the cross beam B, substantially as shown and described.

2. The combination, with the beam B, of the cultivator-tooth having a square shank with rounded and screw threaded end, the detachable square sleeve *s*, having flange *s'*, and teeth or points upon its upper surface, and the nut *h*, all arranged substantially as shown and described.

282,540. A. W. LIVINGSTON, Des Moines, Iowa. Cultivator. Aug. 7, 1883. Filed Feb. 15, 1883.

1. In a cultivator, the frame consisting of the curved beams *h*, united rigidly at their front ends and curved upward and backward to produce a clevis and a brace for the standard, substantially as shown and described.

2. The combination of the beams *h*, curved at their front ends to produce a clevis and brace,

h, the standards *g*, adapted to carry detachable shovels, the handles *m*, and a brace, *z*, substantially as and for the purposes set forth.

282,824. P. W. WILLIAMS, Dardanelle, Ark. assignor to himself, T. M. Gibson, and Z. L. Wise, same place. Cultivator. Aug. 7, 1883. Filed April 10, 1883.

1. The combination, with the beams *h*, of plows having a single blade, *f*, and a shank, *b*, inclined with respect to the edges *i*, *j*, to bring the cutting edge on a lateral incline to the line of draft, and thereby act upon the soil with a shear cut, as described.

2. The wedge shaped drill opener *n*, in combination with the rear end of the beam of a plow adapted to open ridges, as and for the purpose specified.

284,062. H. G. RIKARD, Monroeville, Ala. Cultivator. Aug. 28, 1883. Filed May 22, 1883.

My invention relates to an improvement in cultivators, and it consists, in combination with the standard and a bolt which secures the standard to the beam, of a pivoted colter which is placed upon the bolt and which is provided with a projection upon its inner side, so as to catch against the front side of the standard, and thus prevent it from being moved too far backward, as will be more fully described hereinafter.

1. The combination of the standard with a pivoted colter secured upon its side, substantially as set forth.

2. The combination of the standard with a colter which is pivoted thereto, and provided with a suitable projection upon its inner side to catch over the front edge of the standard, substantially as specified.

285,073. C. A., J. H., and A. P. RAIN, WATER, Veazey, Ga. Cultivator. Sept. 18, 1883. Filed June 21, 1883.

The combination of the beam A, having plates D D' extending in rear of the same, the lower plate being provided with a downturned hook, E, with the beam or bar K, having up turned end, and a slot extending through its entire length, and adapted to be changed for use either as a cultivator or shovel plow, as set forth.

285,193. H. WILCOX, Los Gatos, Cal.
Cultivator. Sept. 18, 1883. Filed May 26, 1883.

My invention relates to an improved apparatus for cultivating the soil, which is especially applicable to land between rows of trees, vines, &c., and upon hillsides; and it consists of a frame having teeth on a cutting blade or blades and a rigid pole or shafts for the attachment of a horse. In combination with this is a rolling cutter or colter mounted in one end of a lever, so as to travel in the ground near the cutter or colter, while the upper end of the lever is adjustable from right to left, and may also be moved vertically to throw the cutter out of or into the ground, as will be more fully explained by reference to the accompanying drawing, in which the figure is a perspective view of my cultivator.

1. In a cultivator having rigid handles and shafts or pole, as shown, a rolling cutter or colter pivoted at the lower end of a lever which has its fulcrum upon the frame, so that the lever and colter may be moved from side to side, substantially as herein described.

2. In a cultivator, the colter pivoted at the lower end of a lever, said lever being fulcrumed on a swivel, which allows it a horizontal and vertical motion, substantially as herein described.

3. In a cultivator, the combination of a rolling sharp-edged colter pivoted upon a lever which is swiveled and fulcrumed upon the frame, with a transverse notched or perforated bar, H, hook G, and bolt or catch I, substantially as herein described.

285,318. G. W. STACY, Marietta, Miss.
Cultivator. Sept. 18, 1883. Filed May 10, 1883.

The combination, with the curved beams A and the single plows *f* *f* *g*, of the sharp edged scrapers *d*, each removably secured to two shanks adapted to be held in the holes *h*, as and for the purpose specified.

285,469. J. B. DAY and T. J. GREGORY, Cornell, Ills. Cultivator. Sept. 25, 1883. Filed July 5, 1883.

This invention pertains to an improvement in cultivators, particularly gang cultivators, and is characteristic for its ready adaptation to the gang cultivators now in use, and for

cultivating cuts, pulverizing the ground, and plowing, &c. The nature of said invention consists of an additional shovel or plow standard, capable of ready attachment to and detachment from the ordinary cultivator, in the method of securing the shovel to the plow beam, adjusting the length and position of the shovel and plow standard with relation to the plow standards connected therewith, and of certain details of construction and arrangement of parts, substantially as hereinafter more fully set forth and claimed.

1. In a gang cultivator, the shovel beam A, having eye *c*, in combination with a T clip having a depending ball for securing beam A, brace bar H, and adjustable staple S, substantially as shown and described.

2. In a gang cultivator, the third shovel-beam removably secured by means of a clip having a depending ball, brace bar H, and beam loop staple, substantially as shown and described.

3. In a gang cultivator, the third shovel-beam removably secured by means of a clip having a depending ball, brace bar H, having notches for reception of a staple, and beam loop staple for adjusting the third shovel, all substantially as shown and described.

4. In a cultivator, the combination of the shovel beam composed of adjustable parts *f* and *g*, with the T clip, brace bar H, and adjustable staple S, substantially as shown and for the purpose described.

285,723. GEO. C. AVERY, Louisville, Ky. Double-Shovel Plow. Sept. 25, 1883. Filed Mar. 31, 1883.

In combination with the usual beam A, and the shovel or blade carrying beams C and D, longitudinally adjustable metallic shoes or their equivalent arranged on either side of the rear portions of the beam A, and provided with step-like projections 1, 2, and 3, intermediate blocks or chocking pieces, SS, adapted to operate as stays or braces between the inner faces of the shovel beams and the step-like projections of the metallic shoes, and a suitable fluted and nut, or the equivalents thereof, for clamping or holding in place (when adjusted) the said stay pieces and the said metallic shoes, all substantially in the manner specified, and for the purposes set forth.

286,485. JOHN T. PRIOR, Prior's Station, Ga. Plow and Cultivator combined. Oct. 9, 1883. Filed Jan. 23, 1883.

1. The combination, with the beams, of the longitudinally slotted adjustable sections, and the plowshares, U shaped connections, and wedges, substantially as and for the purposes specified.

2. The combination, with the beams having apertures in their curved ends, of the bolts or fastening devices, and the longitudinally slotted adjustable sections, adapted to embrace the web and to fit between the flanges, substantially as described.

287,163. WM. F. and H. C. REEVES, Meredith, Kan. Weed Cutter. Oct. 23, 1883. Filed July 12, 1883.

This invention has relation to improvements in weed cutters for listed corn; and it consists in the construction and novel arrangement of the various parts of which it is composed, all of which will be hereinafter more fully explained.

1. The combination, with the body A, constructed as described, of the adjustable handle B, hinged to the raised bar *d*, at its forward end, and provided with the hinged bail *d'*, strap plate *e'*, spring *f*, and hook *g*, the whole operating as described, and for the purpose set forth.

2. The combination of the handle B, bail *d'*, spring *f*, raised bar *d*, hook *g*, blocks *b*, *h*, cutters *E*, *E'*, perforated as described, and body A, the whole operating as described, and for the purpose set forth.

287,531. EDWARD FULMER, Mount Olive, Ala. Means for securing Cultivator and Harrow Teeth. Oct. 30, 1883. Filed July 10, 1883.

The combination of the rectangular frame having inwardly projecting flanges on its inner side, the blocks fitted in said frame, and having angular recesses in their sides, the standards fitted in the angular recesses between the said blocks, and having the harrow or cultivator blades at their lower ends, and the tightening screws in the ends of the rectangular frame, all arranged and operating substantially as set forth.

287,956. WM. ORD, Brooklyn, Ohio. Cultivator. Nov. 6, 1883. Filed April 21, 1883.

1. In combination with the side bar, B, and brace D, the clamp herein described, consisting of the part *b*, having longitudinal groove to receive said bar B, transverse space to receive the brace, and lug *i*, which is received into an aperture in said brace, and the cap plate *b'*, having downwardly extending lug *b'*, and the securing-bolts, as and for the purposes set forth.

2. In combination with the frame U, handles C C, and central bar, A, the clamp *b b'*, the latter having the ears *e*, the arm E, block F, having slot to receive the standard of the said frame U, and set-screw *f*, for giving any desired adjustment to the side wings, as set forth.

288,111. J. PLATTEN, Sr., Fort Howard, Wis. Cultivator. Nov. 6, 1883. Filed Jan. 6, 1883.

The plows are made with angular forward parts, and with their rear parts cut into strips bent into the form of mold boards and twisted through a quarter of a turn, so that the soil will sift through or between the said strips, while the weeds will fall to the surface of the ground from the rear ends of the strips. The plows are each connected with the frame by two standards of unequal length, so that the said plows will be firmly supported against the draft strain, as will be hereinafter fully described.

In a cultivator, the combination, with the center beam, C, projected in front of the frame, of the two end bent parallel guide rods, D, the bolt E, hook F, the draft-rod G, pivoted thereto, and the clamp I, bolted to rods D, as and for the purpose specified.

289,376. E. S. BENHAM, Attica, N. Y. Gang-Plow Frame. Dec. 4, 1883. Filed May 11, 1883.

By my invention a gang of plows may be as readily hauled as a single plow, and may be tipped to either one side or the other without changing the depth of the plows in the ground, thereby lessening the draft, and causing the plows to be as easily held and guided as a single plow. When one plow moves to one side, all of the plows in the gang partake of the same movement, (see Fig. 3, in which the plows are shown turned slightly to the right,) but they may be turned either way more or less, thereby adapting them to be used on side-hills or on uneven ground.

A gang plow frame consisting of the longitudinal bars *a a'*, jointed to the cross bars *a' a'*, substantially as specified, in combination with the diagonal bar *c'*, handles *f*, and plows *e*, all arranged for joint operation, substantially as and for the purposes described.

289,824. S. FRENCH, Silver Lake, Kan. Cultivator. Dec. 11, 1883. Filed Aug. 27, 1883.

1. In a cultivator, the combination of a suitable frame provided with the riding plank A, adapted to ride the ridges on either side of the row, the center beam, C, the knives D, secured to the said beam on opposite sides thereof, and extending rearward, outward, and upward, with the shields or scrapers F, adapted to follow the said knives, sweeping or scraping the sides of the ridges, protecting the plants from falling clods or sods, all constructed and arranged to operate substantially as and for the purpose set forth.

2. In a listing cultivator provided with a riding plank A, adapted to ride the top of the ridges on either side of the row, the beam C, carrying the pair of knives D, adapted to loosen the soil upon both sides of the row simultaneously, the front ends of said knives being set to enter the ground near the plants, and thence extending obliquely rearwardly, outward, and upward, so as to loosen the soil at a uniform depth on the sloping sides of the ridges, all substantially as shown.

3. In a listing cultivator, the plank A, adapted to ride the top of the ridges, the knives D, adapted to cut and loosen the soil at a uniform depth upon the sloping sides of the ridges, with the scrapers F, arranged at a short distance in the rear of the said knives, so as to sweep falling clods or sods off the sides of the said ridges and away from the plants, combined and arranged to operate substantially as and for the purpose set forth.

290,032. J. L. GILBERT, Hoboken, Ala. Plow. Dec. 11, 1883. Filed Feb. 10, 1883.

The combination, with a plow-beam, of the reversible strain-iron E, having its upper perforated arm projecting over the side of the beam, the double shouldered reversible stand and C, the tie-rod D and its fastening nut, and

the pendent brace-rod F, substantially as specified.

291,087. A. A. ROBERTS, Quitman, Ark. Plow. Jan. 1, 1884. Filed Sept. 12, 1883.

1. The combination of the beam, the cam-lever C, pivoted thereon and forked at the end, and the clamping-bolt having the cross-head which engages with the forked end of the cam-lever, substantially as specified.

2. The combination of the beam, the cutting implement having the looped shank extension E', the cam lever C, and the clamping device B, adapted to secure the extension to the beam, as set forth.

291,772. HUGH REA, Village Green, Pa. Combined Plow and Cultivator. Jan. 8, 1884. Filed Sept. 5, 1883.

1. In a cultivator, the combination of the saddle plate F, having parallel plate *d*, partition or flange *f'*, bolts *f' f'*, arms or plates E, having hooked bolt *f'*, thumb-nut *f'*, central beam, A, and lateral or swinging beam B, substantially as shown, and for the purpose described.

2. In a cultivator, the combination, with the central beam, the side-hinged beams, and the hinged arms of the latter, of the saddle-plate composed of an upper and lower plate bolted together, and one having a depending flange and hooked bolt, substantially as and for the purpose set forth.

3. In a cultivator, the combination of the T-shaped plate lever H', having sleeve *h'* and cross piece H', handle *h'*, pivoted plate H, having slots *h'*, screw-bolts *h'*, having adjusting nuts *h'*, and plows G, substantially as shown, and for the purpose described.

1. In a cultivator, the combination, with its beam and plow-standard, of the plate-lever, with an eye or sleeve about its middle, a slot at one end and turned upward at its opposite end, the T plate having an angular eye or aperture at one end, a middle diagonal portion, and a horizontal transverse slot at its other end, and adjusting or securing nuts, substantially as and for the purpose set forth.

292,070. H. D. TERRELL, Starsville, Ga. Cultivator. Jan. 15, 1884. Filed July 18, 1883.

The object of this invention is to provide single-beam cultivators constructed in such a manner that they can be readily adjusted for use as covering plows, and which shall be simple in construction and strong, durable, and effective in use.

In a cultivator, the combination, with the bracket G, connected to the beam, of an approximately U shaped clamp, H, with its arms or wings provided with upper and lower inwardly projecting flanges, P, and bolts I, substantially as shown and described, and for the purpose set forth.

292,091. P. BEELER, Jefferson City, Ky. Cultivator. Jan. 15, 1884. Filed Sept. 21, 1883.

This my invention relates to certain new and useful improvements in cultivators for pulverizing the soil, consisting first, in a central bar or beam with a clevis in front, and a set of handles screwed thereto in front, with the rear ends supported by metal braces extending down from the handle to the bar and secured thereto by means of a bolt. This central bar is provided with a detachable curved piece or hook on the rear end, to which one of the teeth is attached, and is further provided with a cross head immediately in front of the handles, to which a set of expanding side-bars are hinged, and held in place, when set, by means of flat bars hinged to the rear ends, with the inner ends lapping over each other and slightly curved laterally in the back, with a series of holes in each, and a bolt through them and the bar in the center, to hold the side bars in place when set at any angle required. These side bars are each provided with three sickle formed hooks, to which the teeth of the cultivator are secured, one in the rear, one on the outside near the end, and one on the inside near the front end. These hooks which are secured to the side bars are made flat, and hinged thereto by means of bolts inserted about three and one-half inches back of the ends, which are slightly widened, and corrugated on the inside to correspond with similar corrugations on the side bars for the purpose of setting the teeth at any required angle. The teeth on the rear end of the side bars are hinged or bolted on the top of the jaw flange of the adjustable cross bars, which flanges extend out beyond the boss, and

are corrugated on the upper surface, with the ends of the teeth so formed as to catch in the corrugations and hold them when set.

The adjusting cross bars G, G, hinged to the side bars, E, by means of flanges above and below, with the corrugated projection F and tooth hook H, as above described, in combination with the side bars, F, tooth hooks J, J, and teeth K, K, substantially as described, and for the purpose set forth.

292,501. H. L. MOORE, near Dawson, Ga. Plow, Jan. 29, 1884. Filed Oct. 26, 1883.

1. A plow having a stock, A, or beam, the central part enlarged, the handle, braces, or securing plates E, the adjustable standards and the plates or strips α being secured together at said central part of the beam by a single bolt, substantially as shown and described, and for the purpose set forth.

2. In a plow, the combination, with a beam hinged from the center to the ends thereof, of the adjustable standards, the outwardly springing strips α , and the handles, the ends of which rest on the top of the beam, the securing plates of which are bolted to the stock by a single central bolt, which also secures the bars α and strips α , substantially as shown and described, and for the purpose set forth.

292,876. WM. E. VENABLE, Nicholson, Ga. Plow, Feb. 5, 1884. Filed Sept. 15, 1883.

Heretofore plow beams of this class have been formed by flat metallic plates bolted together and having downturned ends forming standards, the heel bolts being secured between the ends of two of these plates; but in my invention the heel bolt is received by an integral hook formed by turning up the end of the standards, by which construction greater convenience in adjustment, simplicity, and durability are secured.

The herein described plow beam, comprising the main beam formed of a metallic rod having its rear end turned down and forming a plow standard, in combination with the corresponding short beam secured against one side of the main beam, and having its rear end also turned down to form a plow standard, the lower ends of these standards being bent up at one side of their main portions to form integral hooks adapted to receive the heel bolts of a plow blade, which hooks project at opposite sides of the standards, so as to be in the same longitudinal plane, substantially as set forth.

293,920. G. W. and S. TAYLOR, Smyrna, Del. Cultivator, Feb. 19, 1884. Filed Dec. 14, 1883.

Our invention relates to an improvement in cultivators; and it consists, first, in combination with the cultivator, of a pivoted presser-plate, and a spring which is applied thereto for the purpose of giving the necessary pressure upon the ridge of earth that is thrown up by the covering blades of the cultivator; second, in the construction and arrangement of parts which will be more fully described hereinafter.

1. The combination of the beam of a cultivator with a presser-plate having a recess in its top, so as to catch over the beam, a pivotal bolt, and a spring for keeping the presser-plate pressed downward, substantially as described.

2. The combination of the presser-plate having a recess in its upper portion, and provided with the inclined surfaces at the bottom of the recess, and the lug I, with the pivotal bolt, the beam of the cultivator, and the spring which is applied to the beam and the plate, substantially as described.

3. The combination of the presser-plate having a recess in its upper end, and provided with the lug I, with the pivotal bolt, the spring which is applied to both the beam and the plate, and the staples which are secured to the plate for holding the ends of the spring in position, substantially as specified.

294,091. I. A. SMITH, Dexter City, Mo. Cultivator, Feb. 26, 1884. Filed Aug. 16, 1883.

My invention relates to an improvement in cultivators and plows, designed to adjustably secure the standards of the frame in such a manner that when the teeth or shares come in contact with a large stone, root, or the like, the upper part of the standard is automatically disengaged from the beam, thus allowing the teeth to swing out of the ground.

The object of my invention is to provide this

difficulty; and to that end it consists of an attachment for connecting the standard of a cultivator or plow to the beam whereby the teeth or share are automatically thrown out of the ground when a stone or the like is struck, and are returned to their normal position by lifting on the handle sufficiently to enable the share or teeth to clear the ground and swing back into place.

1. The catch or cam F, of the form shown and described, centrally pivoted, and having the shoulder J and beveled or knif edge C.

2. The combination with a cultivator beam and a pivoted standard of the rotating catch F, of the form shown and described, and the spring H.

3. The combination with a cultivator beam and pivoted standard, of the catch F, of the form shown and described, spring H, and side spring, α , substantially as described.

295,189. C. W. MEADOR, San Jose, Cal. Cultivator and Horse-Tool, Mar. 18, 1884. Filed Mar. 12, 1883.

My invention relates to improvements in cultivators and horse-hoes having an iron frame, and in which a set of shares operate in conjunction with suitable guide wheels; and the object of my improvement is to provide for regulating the width and depth of the furrow, to secure an easy method of adjusting the several cutters or shares and greater strength in the cultivator frame.

The combination of the beam A, angular side pieces, B, B, transverse rod P, the adjustable guide rollers E, E, connected to each end of the beam, the adjustable share or cutter J, carried by said beam, the adjustable shares or cutters K, K, carried by the transverse portions of the side pieces, and the rods N, N, and links O, O, for bracing the standards of the rear cutters, substantially as shown and described.

296,121. D. W. BRANCH, Troy, Ala. Cultivator, April 1, 1884. Filed Jan. 19, 1884.

The object of the invention is to provide a frame having parallel beams, said beams being adapted to be adjusted nearer together or farther apart at will, according as certain holes in cross-bars are employed by securing-bolts. Each beam carries a series of pockets, in one of which is received a brace, which bears against a plow foot or standard, which is secured to the beam by bolts and capable of being readily adjusted to either of the series of pockets. The beams are arranged parallel when ready for service, and the cross-bars are held at right angles to the beams by suitable braces. The beams are three or more in number, and are secured to the cross-bars parallel with each other, and the pockets or brace blocks are preferably arranged in transverse rows of three.

1. In combination with the parallel adjustable beams A, having a series of pocket-blocks arranged in transverse and diagonal rows, the plow standards having interchangeable plows, and the braces E, operating between the pocket-blocks and standards, as and for the purposes set forth.

2. In combination with the parallel adjustable beams A, as shown, the standards or feet D, having interchangeable plows H, the braces E, and the blocks F, having pockets γ and holding-nibs δ , the said blocks being arranged in transverse and diagonal rows, and the whole adapted to serve as and for the purposes set forth.

297,069. THOS. J. CRAFT, Ellisville Depot, Miss. Cultivator, April 15, 1884. Filed Dec. 6, 1883.

1. The combination of the central beam, the triangular hollow casting, and the doubled outer beams, hinged at their doubled ends to the rear corners of the triangular casting, and secured at their inwardly bent rear ends to the rear end of the central beam, as and for the purpose shown and set forth.

2. The herein-described combined cultivator and gang-plow, consisting of the central beam, the triangular hollow casting, the outer doubled beams, hinged at their doubled ends to the rear corners of the triangular casting, and having slotted inwardly bent rear ends sliding with their slots upon the rear reduced end of the central beam, and connected adjustably together by means of a nutted bolt passing through the slots, handles secured movably at their forward ends to the triangular casting, uprights pendling from the rear portions of the handles and secured adjustably to the slotted end pieces by means of nutted bolts, and the braces hinged to the tran-

gular casting, crossing each other, and hinged at their rear ends to the rear ends of the outer bars, as and for the purpose shown and set forth.

297,657. DANIEL ARCHER, Madison, Cal. Cultivator, April 29, 1884. Filed Oct. 29, 1883.

1. In a cultivator, the combination of the draw beam A and cross pieces F, D, movable side bars, B, and means for adjusting the same to and from the draw beam, shares E, secured to the side bars, with a central share, γ , secured in front of the shares E, to the draw beam, substantially as herein set forth.

2. In a cultivator, the combination with the draw beam and frame, of the upright standards E, bearing the shares, and the horizontal bars G, having the narrow teeth g, g , said supports being secured to the standards E at one end, and supported by a rod, h , secured to the frame at the other, substantially as set forth.

298,334. THOS. H. BAIRD, Washington, Ark. Cotton and Corn Cultivator, May 14, 1884. Filed June 22, 1883.

In a cotton and corn cultivator, as above described, the combination of plates α —one being rigidly secured on the upper and the other on the lower edge of tongue A—with pins α' pivoting beams D at their front ends—some on either side of tongue A—with threaded rod E, passing transversely through the front ends of said beams D and the rear end of tongue A, threaded rod F, passing transversely through the rear ends of said beams, and hand nuts α working on said threaded rods and against either side of said tongue, and against clips α' , secured on the inner and outer sides of said beams D, all substantially as shown and described, and for the purposes set forth.

299,160. HENRY PARRISH, Homer, Ga. Cultivator Plow, May 27, 1884. Filed Nov. 14, 1882.

1. The combination, in a cultivator, with the handled beam A, B, C, of the plow or sweep G, with curved standard E, secured at the rear of the beam and adapted for adjustment to give the angle and depth of cut of the same, V shaped frame J, also secured to the beam A directly in front of the sweep, teeth N, having a curved body, divided top end, by which they are secured to the frame J, and sharp front edge, α , and point α' , strap K, L, and wedges Q, whereby the pulverizer-frame may be adjusted vertically to regulate the depth of cut of the teeth, substantially as described, for the purposes specified.

2. In a cultivator, the combination with the frame J and metal strip M, of the colters or teeth N, the body of which is curved in cross-section, with a sharp front edge, α , and point α' , and divided ends N', which ends pass between the said hand M and the frame J on alternate edges thereof, and are secured by screws α , which secure both the hand M and teeth N, substantially as described, for the purposes specified.

299,415. HENRY L. MILLER, Morris, Ills. Scraper-Cultivator, May 27, 1883. Filed Nov. 6, 1883.

This invention relates to certain improvements in scraper cultivators; and it consists in certain means for elevating and lowering the outer end of the tongue, so as to raise the scraper to run either deep or shallow.

In the scraper cultivator described, the combination of the tongue L, frame B, clips H, having the slots α, α for lateral adjustment, and vertical row of holes V, and clip α , having the vertical row of holes α , and arms α, α' , as and for the purpose set forth.

300,650. JOSIAH SHERMAN, Atlanta, Ga. Cultivator and Cotton-Chopper, June 17, 1884. Filed Oct. 4, 1883.

1. In a cultivator, the combination of the beams B, B, pivoted boxes L, L, composed of plates g, h, l , and bolts k , said boxes being provided with perforated standards α , and handles F, the balls p, p , springs e, e , and the laterally adjustable cultivators attached to said boxes, substantially as described.

2. In a cultivator, the combination of the beams B, B, boxes E, E, having perforated shanks m, m , the balls p, p , and pins for adjustably connecting said balls and shanks, substantially as described.

3. In a cultivator, the combination of the frame A, B, formed in detachable parts, the narrow teeth D, the pivoted boxes E, having shanks m, m , and levers F, the balls p, p , and the laterally adjustable cultivators G, H, attached to said boxes, substantially as described.

243,705. THOMAS E. JEFFERSON, Boston, Mass. Harrow. July 2, 1881. Filed April 26, 1881.

My invention relates to a harrow or cultivator for agricultural purposes having revolving disks or pivoted teeth hung upon a riding carriage or sulky, or operated independently of such device, the said teeth or disks being held in contact with the surface of the soil by the constant force of a spring, or its equivalent, or by gravity, in gangs or independently, and being susceptible of elevation independently or in sections or gangs, the novelty consisting in the construction and arrangement of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claims.

The object of the invention is to provide a harrow or cultivator capable of effective service with or without riding wheels, having revolving harrowing disks or teeth arranged in gangs or independently, and adapted to be adjusted laterally at will and to be regulated at any desired incline in relation to the line of travel to ride over obstructions and return to effective service upon the soil-surface independently by spring action, or to be elevated in gangs or separately by the driver or operator, as shown in the drawings, and herein after to be described.

1. In a harrow or cultivator, a series of revolving disks having independent action, combined with independent springs and arranged substantially as described, whereby each disk shall be held in constant contact and service with the soil except when one or more of the disks come in contact with obstructions and only the overriding disks are disturbed, as specified.

2. In a harrow or cultivator, the revolving disks or teeth hung independently to give independent action to each, and held in contact with the soil by a spring or springs, the said disks or teeth being adapted to be adjusted in the frames to any desired incline, as specified, for the purposes set forth.

3. In a harrow or cultivator, the teeth or revolving disks arranged in pairs or independent sets, and held in contact with the soil by a spring or springs, and hung or journaled in frames, said frames being adapted to be readily adjusted in relation to the line of travel at will, as specified.

4. In a harrow or cultivator, the teeth or revolving disks held in contact with the soil by a spring or springs, hung in frames and capable of adjustment therein, combined with such frames and springs and with means for adjusting the frames at any desired incline in relation to the line of travel, as specified.

5. In a harrow or cultivator, the teeth or revolving disks arranged in gangs of two or independently, held in contact with the soil by springs, and hung in frames held rigid in lateral position, combined with said frames, the main frame, and with means for giving comparatively permanent or ready adjustment at will without affecting the vertical position of the teeth or disks, as specified.

6. In a harrow or cultivator, the teeth or revolving disks pivoted or journaled in backwardly inclined carrying frames, and capable of adjustment therein, the said frames having vertical and backward independent play and being capable of oscillatory adjustment, as and for the purposes set forth.

7. In a harrow or cultivator, the independent gangs of revolving disks or teeth, the frames e e' , and springs, combined with the lever H H' , links k , and toothed segment h , and adjusting means e'' , as and for the purposes specified.

8. In a sulky harrow or cultivator, the combination of the revolving disks or teeth, the springs, and means for adjusting the incline of the disks or teeth, with means for throwing either the disks or riding wheels in or out of operation at will, the spring action serving, when the disks are in operation, to cushion the concussions in overriding obstructions, and in similar manner when coming in contact with protruding obstructions when the riding wheels are in operation and the disks elevated, as specified.

9. In a sulky harrow or cultivator, the combination of the frame and riding wheels with the disks or teeth, the springs and proper connections, and with a lever or levers, by which the duplex crank axle is turned in sections, as and for the purposes set forth.

10. The frame e e' , the springs, and the disks or teeth d , combined with the journaled bars D and an operating lever, as specified.

11. In a harrow or cultivator, the revolving disks or teeth having forward spring connec-

tions, combined with the journaled bars D or their equivalents, and with means for operating the same, as set forth, for the purposes specified.

12. The compound lever H H' and ratcheted segment h , combined with gangs of harrowing disks or teeth, and with holding means, as set forth.

13. The combination of the frame e e' and rod e'' , or its equivalent, with the disks or teeth d and a main frame, as and for the purposes set forth.

14. The combination of the springs f f' and bolt f'' with the nuts f' and disks or teeth, as and for the purposes set forth.

15. The combination of the rod e' and adjusting means e'' with the disks or teeth d and the frames e , as and for the purposes set forth.

16. In a harrow or cultivator, the revolving disks or teeth hung independently, arranged in the same plane as and under the axle, and held in constant contact with the soil by springs, whereby the machine becomes more efficient in service and is enabled to turn upon a common center without wrenching the disk or tooth bearings or supports when the disks or teeth are in the soil, as set forth.

17. In a sulky harrow or cultivator, the independent disks or teeth arranged in a plane with the axle held in contact with the soil by springs, and hung on inclined axles, whereby the side pressure due from turning on a common center in one direction will elevate the disks, and in the opposite direction the convex or inclined sides of the disks or teeth will serve a similar purpose, to prevent wrenching the disks or bearings, as specified.

18. In a harrow or cultivator, two or more independent gangs of inclined teeth, combined with independent springs, and with means, as e' , Figs. 5 and 9, for adjusting said teeth independently or in gangs of two, as specified.

254,723. GARLAND B. ST. JOHN Cedar Rapids, Iowa. Plow Truck. Mar. 7, 1882. Filed Sept. 27, 1881.

My object is to simplify the truck and render it lighter in draft, easier to manipulate, and more effective in its operation by the use of a landside wheel, which also serves as a carrying wheel for the truck and an improved device for raising and depressing the plow.

The invention consists in so constructing a wheel-plow as to have on one side a large wheel to run on the plowed ground, and for the bearing on the opposite side a convex-faced wheel or disk, whose face comes against the land side of the furrow when in use as plow, and which serves as a carrying wheel for the truck at all times.

It further consists in such an arrangement of the tongue, truck frame, and seat that a reciprocating motion of the latter raises or depresses the plow without the use of hand levers for that purpose, all of which will more fully appear in the particular description following.

1. The seat G , mounted on parallel hinged supports e c , regulated by suitable stops, combined with the chain c , sheave n , segment l , and tongue J , substantially as shown and described.

2. The combination of the landside wheel F , pivoted axle K , lever L , and quadrant o , or their equivalents, substantially as and for the purpose set forth.

257,666. CHAS. C. DAVIS and WM. H. MERCER, Menor, S. C. Cotton Scraper. May 9, 1882. Filed Feb. 21, 1882.

Our invention relates to an improvement in cotton scrapers; and it consists in the combination of the frame, made in a single piece with the standards, and a shaft having two cutting wheels attached thereto, which run just inside of the two scrapers, as will be more fully described hereinafter.

The object of our invention is to produce a scraper for cotton, corn, and other plants, and which is so constructed that the two cutting wheels run along upon opposite sides of the plants and press the earth toward them, so as to pack it around their roots, while the scrapers cut away the weeds which may be growing around their sides.

In a cotton-scraper, the combination of the two beams A , each made in a single piece with the standards, and having the handles D secured between their rear ends, the shaft B , having the two cutting wheels G secured thereto, and the scrapers C , which cut close to the outside of the wheels, substantially as shown and described.

258,928 HORACE M. KETH, Cambridge, assignor of one-half to J. P. Harger, Pontiac, Mich. Seed-Drill and Fertilizer. June 6, 1882. Filed Feb. 18, 1882.

1. The combination, substantially hereinbefore set forth, in a seed-drill, of a hopper having interior vertical seed-conducting tubes or chutes, provided with top inclined trays, with feed-wheels having internal buckets adapted to operate in relation to said trays, for the purpose specified.

2. The combination, substantially hereinbefore set forth, in a seed-drill, of a hopper having interior vertical seed-conducting tubes or chutes, provided with top inclined trays, with feed-wheels having internal buckets and means for laterally adjusting said feed-wheels in relation to the trays, for the purpose specified.

3. In combination, the hopper, the fixed vertical tubes or chutes therein, the open feed-wheels having internal buckets, the shaft upon which they are fixed, and means for effecting the endwise adjustment of said shaft, and the feed-wheels thereon, consisting of the screw-stems i , the coupling plates r , the screw-nuts j , and the spring f , arranged at the end of the hopper, whereby to set the feed-wheels toward and from the fixed hopper-tubes, for the purpose specified.

4. The feed-wheel band d , mounted at one edge upon spokes e , and having buckets e' , arranged upon the interior wall of said band, in combination with a fixed tube or chute having a tray extending within and beneath the said band toward its spiked side and below the path of the buckets, and the hopper through the bottom of which the said chute passes, substantially as described, for the purpose specified.

5. The combination, in a seed-drill, of the hopper for the fertilizer having longitudinal side slots, k , on a plane with its bottom, with feed-arms r , passing into and through said slots and having a reciprocating movement across and upon the bottom of the hopper, and means for producing such movement, whereby to effect the feed of the fertilizer from both sides of the hopper, substantially as described.

6. The hopper for the fertilizer adapted to have an endwise movement, and provided with longitudinal side slots, k , on a plane with its bottom, in combination with feed-arms r , adapted to operate within and through said slots and across the hopper-bottom, and means for operating both the hopper and the said feed-arms, substantially as described, for the purpose specified.

7. In combination, the hopper for the fertilizer adapted to have an endwise movement, and having longitudinal side slots, k , on a plane with its bottom, feed-arms r , adapted to operate within said slots upon and across the hopper-bottom, bell-crank levers pivoted to the frame and serpentine cams p , for operating said levers, the said feed-arms being carried by a bar pivoted to said levers and operated in the manner and for the purpose specified, by suitable drill drive-gear connections.

8. The hopper for the fertilizer adapted to have an endwise movement, having longitudinal side slots, k , and side strips, x , adapted for vertical adjustment in relation to said slots, the scraper G upon the rear side of the hopper, and the feed-arms r , adapted to operate within said slots upon and across the hopper-bottom and beneath the said regulating strips x , and the scraper, all constructed and combined with the seed-drill tubes and with the chutes h , substantially as described, for the purpose specified.

9. The combination, with the drill-tubes of a seed-planter, of the hopper for the fertilizer, the guides l for said hopper, the serpentine cam m for operating said hopper, the feed-arms r , operating through slots in the sides of the hopper, the bell-crank levers pivoted to the carrying-bar of said feed-arms, the serpentine cams p , and the shaft n , operated by the drive-gear of the drill, the said serpentine cams being arranged in relation to each other to operate simultaneously the hopper and the feed-arms to deliver the fertilizer from both sides of the hopper.

10. The combination, substantially hereinbefore set forth, in a seed-drill, of the drill-tubes thereof with a supplemental drill point or cutting-edge adapted for attachment to said drill-tube, and operating in front thereof, for the purpose specified.

11. The supplemental drill device, consisting of an arm, r , having a yoke and a dip, e' , whereby it is secured to a drill tube, and a harrow point or cutting edge, n , carried by said

arm in front of and below said drill tube, substantially as described, for the purpose specified.

12. The combination, substantially hereinbefore set forth, of a seed-conducting tube with a thin narrow cutting blade or point, *n*, and a covering device, substantially as described, and adapted to travel in the slit made by said narrow cutting blade, for the purpose specified.

13. The combination, substantially hereinbefore set forth, of a seed-conducting tube and an attachable thin or narrow cutting blade or point, *n*, with an attachable covering blade, *m*, constructed substantially as described, and adapted to travel in the slit or narrow opening made by said cutting blade, for the purpose specified.

14. The combination of the seed-conductor with the arm *r*, extending in front thereof, the clip *r'*, the narrow drill-forming point *u*, a clamp, *v*, therefor, and a covering dish-shaped wheel, *w*, substantially as described, for the purpose specified.

15. The combination, in a seed drill, of a seed conductor, a thin or narrow cutting blade or point, *n*, and a covering blade, *m*, as described, with the seed-hopper *C*, a feed device for feeding the seed continuously, and a chute, *c*, substantially as and for the purpose specified.

16. In combination in a seed drill and fertilizer, the hopper *C*, its feed device, the hopper *B*, its feed device, means, substantially as described, for connecting and operating the feeding devices of said hoppers, means for rendering the feed devices of the hopper *A* non-operative, a drill-forming point or cutting-blade adapted for attachment to the drill-tube, and a covering device adapted to travel in the cut made by the drill-forming point, substantially as described.

260,482 THOS. E. JEFFERSON, Boston, Mass. Combined Plow, Harrow, Seeder, &c. July 4, 1882. Filed May 6, 1882.

1. In a sulky-plow having a furrow-wheel, a furrow side wheel, and a colter serving as a bearing-wheel at the front, the hinged frame and plow beam or beams, combined with the plow situated between the furrow wheel and colter wheel, and bearing upon said wheels whether said plow is in or out of operation, as and for the purposes herein set forth.

2. In a sulky-plow, the combination of a wheel-frame hinged or pivoted to the rear end of plow-beam, the latter supported on a swivelled colter at its front end, and having means for elevating the frame and beam at the point of their hinged connection, and a balancing driver's seat, arranged in the rear of the axle of the rear bearing-wheels to aid the lever in lifting the plow, substantially as set forth.

3. In a sulky-plow, the plow proper and means for elevating the same in a horizontal plane, combined with the furrow-wheel, whereby the said wheel, riding up the incline formed by the partially elevated plow, serves to further force the plow out of the ground, as specified.

4. In a sulky-plow, the main frame pivoted on the axes of the riding-wheels, the plow beam or beams hinged thereto and supported by the colter and the hinged pole, all constructed, arranged, and combined as and for the purposes set forth.

5. The plowshare *C*, having V-shaped recesses cast vertically parallel with each other upon either side thereof, combined with a reversible point, *D*, having V-shaped parallel jaws *d*, and securing means, substantially as shown and set forth.

6. The combination, with a sulky plow or harrow, of a harrowing device consisting of the spring-arms *M* and the double teeth *O*, adapted to be used in connection with single teeth or disks to pulverize and level the soil as shown and described.

7. In a plow, a mold board the rear portion of which is separate or hinged and adapted to be adjusted vertically upon the fixed portion, as and for the purposes set forth.

8. In a plow, a hinged portion of the mold-board, adapted to be adjusted vertically upon the fixed mold board, whereby the operator may plow at any desired depth within the capacity of the device, as set forth.

9. In a plow, a hinged mold board susceptible of vertical adjustment upon the plow-body for the purpose described, combined with means, substantially as specified, for imparting to said mold board any desired angle with relation to the line of travel, as set forth.

10. In a plow, a mold board having teeth or

fingers secured or cast upon the rear portion of its face immediately forward of the rear edge thereof, said teeth being inclined rearwardly approximately in a line traveled by the furrow-slice, as shown, and serving not only to relieve the rear end of the mold-board of friction and assisting to turn the furrow, but also serving to pulverize the soil as the furrow is being inverted, and utilizing the side pressure arising from plowing for that purpose, substantially as set forth.

11. A hinged mold-board, *O'*, having fingers *O'* cast or secured upon its face forward of the rear edge thereof, said fingers being inclined rearwardly more or less as the hinged section may be adjusted to pulverize the soil as the furrow is being turned, as and for the purposes herein specified.

12. A hinged mold-board, *O'*, having rearwardly-inclined teeth or knives *O'*, combined with means, substantially as described, for imparting oscillatory adjustment to said mold-board *O'* in relation to the hinge *e*, as set forth.

13. The hinged mold-board *O'*, having rearwardly-inclined teeth or knives *O'*, combined with the threaded rod *O''*, perforated arm *O* upon the bracket *O'*, and with the adjusting nut *C'*, as set forth and herein described.

14. The hinged mold-board *O'* and bracket *O'* upon the plow-body *C*, combined with the threaded rod *O''* and nut *C''*, whereby the said mold-board may be raised or lowered at will to accommodate the depth of furrow, as and for the purposes specified.

15. The frame *A*, made of channel iron, with open bottom, and adapted to receive and house working parts of the machine, in combination with rock-shaft *K*, arm *K'*, and wheel *L*, substantially as shown and described.

16. The hand lever *F*, rigid with the plow beam, and the frame *A'*, hinged to said beam, combined with means, substantially as described, for adjusting the pitch of the frame and beam and the consequent elevation of the plow by hand or foot lever at will, as specified.

17. The hand-lever *F*, rigid with the plow beam, the segmental rack-bar *F'*, pawl *F''*, rod *F'''*, and spring *F''''*, combined with frame *A* and the hand and pedal trips *F'''''*, as and for the purposes herein set forth.

18. In a plow, and in combination with a jointed frame or beam, a loose link connecting the rear of the plow proper to the portion of the support in rear of the hinge or joint, and adapted to serve, with the plow-standard secured to the support forward of the said hinge or joint, to preserve the horizontal position of the plow whatever its vertical elevation, as set forth.

19. The combination of the hinged support, the standard *B*, hung from said support forward of the hinge, and the plow *C* with the link *E*, connecting the rear of said plow to the support in rear of the hinge, as and for the purposes specified.

20. The link *E* and standard *B*, combined with the plow, the main frame, the plow-beam, the hand-lever *F*, the segmental rack *F'*, the spring *F''*, and the double trips, as and for the purposes hereinbefore set forth.

21. The flanged furrow-wheel *G* and axle *G'*, combined with the lugs *g*, pivoted tilting bar *g'*, and adjusting bolts *G''*, as and for the purposes set forth.

22. The feed mechanism and adjusting and registering devices, combined with the feed-shaft, the gear *P*, lever *P'*, and the pinion *H* upon the tilting furrow wheel shaft *G'*, and the furrow wheel *G*, the gear *P'*, and pinion *H* being adapted to be thrown into mesh whatever the deflection of the wheel *G* and shaft *G'*, as and for the purposes specified.

23. The perforated partitions *f'*, the headed rod *f''*, and spiral spring *f'''*, all housed in the frame *A*, combined with said frame *A*, formed of angle-iron, as shown, and with the segmental rack-bar *P'*, hand-lever *F*, and trip-combinations, as and for the purposes set forth.

24. In a disk plow or harrow, independent springs or spring-arms secured to the cross-bar or bars, combined with independent removable concavo-convex disks, substantially as described and set forth.

25. The springs *M*, supporting the harrowing devices, secured to the cross-bar *A'*, and describing approximately a portion of an ogive curve, each independently combined with adjustable, removable, and reversible harrowing devices, and adapted to allow a universal play thereto, in a manner as and for the purposes set forth.

26. The flat springs *M*, as shown, having thin and apertures *m*, combined with the harrowing teeth or disk frames having curved slots *g*, and with set-screw *m'*, allowing such

teeth or frames to be adjusted at any desired angle in relation to the line of travel, or to be reversed at will, as and for the purposes set forth.

27. The combination of the independent flat springs *M* and adjustable removable reversible teeth or disks with the holding-bar *P*, threaded arms *P'*, nut *p*, and frame *A*, as and for the purposes described and set forth.

28. The disk journal-boxes *K*, having conical or rounded bearings *r* and spaces *r'*, combined with the disk-spindle *O''*, having annular flange *o'*, substantially as set forth.

29. The combination of the journal-boxes *K*, having annular recesses *r'*, internal chamber, *r'*, and bearings *r*, and the disk-spindle *O''*, having collars *o*, which rigidly embrace the disk, and having annular flanges *o'*, combined with the disk-frame *N*, having jaws *n'*, the whole being adapted to serve as and for the purposes set forth.

30. An interchangeable sulky plow and harrow having a cross-bar, *A'*, of angle-iron, with harrowing devices, as shown, adapted to receive a similar cross-bar having similar harrowing devices, combined with means substantially as described, for throwing either or both sides in or out of operation at will, as set forth.

31. In a sulky harrow, the combination of cross-bar *A'*, adapted to slide upon and be secured to a duplicate cross-bar or section, *S*, with the box *U*, having ears *u'*, the seat *X*, and pole *Z*, as set forth.

32. In a sulky harrow, a side section composed of the cross-bar *A'*, of channel iron, the springs carrying independent disks or teeth, the rock shaft *K*, with lever *K'*, and provided with crank arm *K* and wheel *L*, and adapted to receive a cross-bar provided with duplicate devices, arranged to slide into and be secured to the bar *A'*, as set forth.

33. The combination of a revolving colter, a right-angled standard, or the equivalent thereof, swivelled to the plow beam or frame, and a tongue properly secured to said standard, whereby the plow is enabled to turn in either direction, and describe the arc of a small circle without taking the plow out of the soil or injuring the colter-blade, as specified.

34. In a sulky-plow, a revolving colter combined with and adapted to receive motion and direction from the draft tongue, as and for the purposes hereinbefore set forth and described.

35. In a sulky-plow, a revolving colter which serves at all times as a bearing or riding wheel for the forward end of the plow-beam, combined with a pivoted pole, to which it is connected and from which it receives motion and direction, as and for the purposes set forth.

36. The colter *W* and standard *V*, combined with the arm *V'*, the adjustable pole *Z*, and the plow-beams *B*, substantially as set forth.

37. In combination with a sulky plow or harrow, the tongue *Z*, hinged to the frame thereof, and formed of band-iron cut diagonal, one piece being reversed to bring the narrow ends together, and both parts bent to form an approximate arc of a circle in transverse section and secured together, substantially as set forth.

261,876 HENRY M. ROSE, Waterman Station, Ills. Disk-Harrow. Aug 1, 1882. Filed Mar. 16, 1882.

1. In a disk-harrow, a gang of disks composed of two independent sections, substantially as described, a non-rotating axis-rod whereon said sections revolve, and a draft-connection attached to said rod at its middle, between said sections.

2. In a disk-harrow, a draft-tongue, *A*, and a cross-piece, *B*, at the rear of the same, combined with brackets or arms *B'*, attached to said cross-piece with joints which permit said arms to swing in a horizontal plane and also to partly rotate on a horizontal axis, combined with gangs of disks the axis-rods whereof are pivotally attached to the rear ends of said arms, and are thereby enabled to move in a horizontal and vertical direction, as set forth.

3. In a disk-harrow, a draft frame and gangs of revolving disks, combined with connecting arms or brackets *E*, each of which is provided with an arm, *J*, string-piece *K*, and hangers *L*, whereby the ends and middle of the axis-rods *G* are supported, as set forth.

4. In a disk-harrow, a draft frame and two independent gangs of disks attached by their centers to brackets extending backward from said draft frame, combined with rods *H*, extending from the inner ends of said gangs forward to the hand lever and the side *S*, whereby said gangs may be coupled or left independent in their movements, as set forth.

5. A section of harrow-disks constructed with a tubular axis, as set forth, to wit: said disks are placed upon a piece of suitable pipe of proper length, spaced by thimbles or sleeves of other pieces of pipe of proper size to slip over the first, and extending from one disk to another, and the whole rigidly fastened and held together by screw-nuts on the ends of the pipe first mentioned.

6. In a disk-harrow, a disk-gang set up in sections upon hollow shafts, as set forth, combined with non-rotating rod, which extends through the gang and constitutes a continuous axis, as described.

7. In a disk-harrow, disk-gangs set up upon tubular hubs, constituting complete and independent sections, substantially as described, combined with non-rotating axis rods secured to the hangers at their ends, and draft connections attached to the centers thereof.

8. In a disk-harrow, a set of disks comprising three or other number less than the whole number of the gang, connected rigidly together and fixed upon a shaft, whereby said section may constitute an independent member of the gang, as set forth.

9. In a disk-harrow, a series of revolving disks combined with U-shaped scrapers, the two vertical portions of each being in a plane or planes substantially parallel with the axis of said disks, one of said vertical parts constituting the scraper contiguous to the face of the blade and extending to the edge of the same, and the other vertical portion constituting the shank attached to that part of the frame whereby the scraper is supported, whereby matters detached from the blades may freely pass over the point of the scraper without arrest by the shank, substantially as set forth.

262,820 **FREDERICK NISHWITZ**, Millington, N. J. Harrow. Aug. 15, 1882. Filed Feb. 3, 1882.

1. The combination, substantially as set forth, of the tongue or draft frame, the vibrating crusher or gang bar, the vibrating cutter or gang bar in rear of the crusher, and the vibrating seat support or coupling, whereby the gangs may flex to conform to undulations of the ground.

2. The combination, substantially as set forth, of the vibrating tongue or draft frame, the vibrating crusher or gang bar, the vibrating cutter or gang bar in rear of the crusher, the vibrating seat support or coupling, and the vibrating lever, for the purpose set forth.

3. The combination, substantially as set forth, of the vibrating tongue or draft frame, the vibrating crusher or gang bar, the vibrating cutter or gang bar in rear of the crusher, the vibrating seat support or coupling, the vibrating lever, and a detent, for the purpose described.

4. The combination, substantially as set forth, of the tongue or frame, the crusher or gang bar, its hinge connection with the frame, the vibrating cutter-bar, the fulcrum or pivot on which it vibrates, and the hinge connection between the bars.

5. The combination, substantially as set forth, of the tongue or frame, the crusher or gang bar, its hinge connection with the frame, the cutter-bar, the pivot or hinge connection between the bars, and the fulcrum or pivot of the cutter-bar in rear of the hinge-connection.

6. The combination, substantially as set forth, of the tongue or frame, the crusher or gang bar, its hinge connection with the frame, the cutter-bar, the hinge connection between the bars, and a seat standard or coupling pivoted on the frame and supported on the cutter-bar by pivoted rods in rear of its hinge-connection.

7. The combination, substantially as set forth, of the tongue or frame, the crusher or gang bar, its hinge connection with the frame, the cutter-bar, the hinge connection between the bars, a seat standard or coupling pivoted on the frame and supported on the cutter-bar by pivoted rods in rear of its hinge-connection, and a lever for vibrating the gangs.

8. The combination, substantially as set forth, of the tongue or frame, the crusher or gang bar, its hinge connection with the frame, the cutter-bar, the hinge connection between the bars, a seat standard or coupling pivoted on the frame and supported on the cutter-bar by pivoted rods in rear of its hinge-connection, a lever for vibrating the bars, and a detent for locking the lever.

9. The combination, substantially as set forth, of the frame, the gang or crusher bar, its hinge connection with the frame, the cutter-bar in rear of the crusher, the hinge connection between the bars, harrow-teeth car-

ried by the bars, a seat standard pivoted on the frame and supported on the rear bar by pivoted rods in rear of its hinge connection with the front bar, a lever on the frame, a link connection between the seat-standard and lever, and a detent.

10. The combination, substantially as set forth, of a tongue or frame, a gang or crusher bar, a cutter-bar in rear of the crusher, harrowing teeth or devices, and hinge or pivot connections or joints between the bars and tongue or frame, which permit a vertical rocking vibration or flexure of the parts relatively to the ground and to each other.

11. The trailing or dragging harrow-tooth herein described, which is formed with a flat end for attachment to the gang-bar, and is then twisted and curved relatively to the draft-line to present a curved dragging cutting-edge to the soil, the cutting-blade of the tooth extending rearwardly in substantially the same general plane with the flat surface of attachment.

12. The combination of a crusher bar with a series or gang of curved trailing harrow-teeth having flat surfaces for attachment and secured on the under face of the bar, the flat surfaces extending rearwardly beyond the bar, substantially as set forth.

13. The combination, substantially as set forth, of a pole or tongue, a crusher bar secured thereto and having an upwardly-inclined crushing-face for operating upon the soil, and a series of disintegrating faces or spurs secured on the inclined crushing-face of the bar, so as to give it a ribbed surface, and projecting rearwardly beyond the face of the bar, the spurs being arranged with small open spaces between them to constitute an open-slotted comb-like crusher.

14. The combination of the crusher bar, the harrow-teeth having the flat surfaces of attachment, and the rearwardly projecting flat spurs, substantially as set forth.

15. The combination, substantially as set forth, of the tongue or draft frame, the vibrating gang bar or crusher binged thereto, the vibrating cutter or gang bar in rear of the crusher and binged thereto, an adjusting-lever on the frame, and a connection between the cutter-bar and lever.

263,565 **FREDERICK NISHWITZ**, Millington, N. J. Harrow. Aug. 23, 1882. Filed Jan. 25, 1882.

My invention relates to that class of harrows in which one or more gangs or series of disks arranged transversely to the line of draft are employed to cut, turn, and break up the earth; and the invention consists in certain improved organizations in which a crusher-bar is used in such machines to crush clods, break down minor irregularities, and level the surface for the action of the cutting disks, which improvements will hereinafter be specifically described.

1. The combination, substantially as set forth, of a gang or gangs of disk cutters, a clod crusher bar arranged in front of the disks, and mechanism for adjusting the crusher independently of and relatively to the disks.

2. The combination, substantially as set forth, of the disk cutters, mechanism for adjusting them relatively to the soil, and the clod crusher bar arranged in front of the disks.

3. The combination, substantially as set forth, of a tongue or frame, a gang or gangs of disk cutters, a crusher arranged in front of the cutters, and mechanism for adjusting the crusher and cutters relatively to the soil.

266,689 **EZRA G. GODDARD**, East Saginaw, Mich. Adjustable Rotary Sulky Plow. Oct. 31, 1882. Filed June 10, 1882.

1. In a rotary plow, the combination, with the frame A, consisting of the base *a*, beam *b*, and beam *c*, provided with extensions *d*, *e*, of the shaft *C* and the separate U-shaped frames D D', swinging upon said shaft *C*, substantially as specified.

2. In a rotary plow, the combination, with the frame A, consisting of the base *a*, beam *b*, and beam *c*, having the extensions *d*, *e*, of the shaft *C* and the swinging frames D D', the shaft being adjustably connected to the frame by bolts and holes, and the swinging frames constructed to slide on the shaft, as specified.

268,830 **CHARLES E. SACKETT**, Morristown, N. J. Combined Plow and Pulverizer. Dec. 12, 1882. Filed April 6, 1882.

My invention relates to the combination of a pulverizing device with a plow for the better pulverization of the earth as turned by the plow, and in one and the same operation.

It consists in the use of a forward skim-plow and weed-turning device, in connection with independent teeth or cutting-blades dragged in the furrow made by a rear or sub-soil plow, which raises a further cut of earth, and turns it over upon the teeth, dragging in the furrow for the better pulverization of the same; and it consists, further, in combining with the pulverizing devices a mold-board adapted to confine the earth in the furrow for the purpose of being pulverized.

1. In a plow, the combination of pulverizing devices operating in the furrow beside the plow with a forward plow or similar device to remove the sod or weeds and turn them below or out of the way of the pulverizing devices, substantially as set forth.

2. In a plow, the mold-board having a flat extremity, substantially parallel with the furrow, for the purpose of confining the earth in the furrow, in combination with pulverizing devices, substantially as described and shown.

3. The combination, with a plow, of the pivoted bar carrying upturned teeth and adapted to drag in the furrow last made, whereby the teeth operate below and up through the soil turned upon them by the plow, as set forth.

4. In combination with a plow, upturned teeth or points attached to a drag adapted to operate in the furrow last made, for the purpose of pulverizing the earth turned upon them by the plow, said teeth being adapted to move vertically independent of the plow, and to be dragged—not rotated—in the furrow, as set forth.

270,369 **THOS. M. BARNA**, Atlanta, Ga. Cotton-Planter. Jan. 9, 1883. Filed July 17, 1882.

1. In a cotton-planter, the combination, with a rotary hopper, of the furrow-opener consisting of the downwardly-projecting triangular share F, having the flaring oblique sweeps G G, extending rearwardly beyond the wheels of the hopper, and vertically-adjustable roller L, adapted to compress the sides of the furrow made by the opener, and of the covering device consisting of the hinged frame J, cross-bar K, receive disks L L, journaled obliquely upon said cross-bar, and roller M, all constructed and arranged substantially as shown and described, for the purpose set forth.

2. In a cotton-planter, the combination of a rotary hopper, D, having axle *a*, hitched or grounded at *a'* and *a''*, frame A, having journal-boxes A', removable hub consisting of the halves O and O', having tongues *o* and *o'* at their inner ends, and an annular spring P, constructed and combined to operate substantially as and for the purpose shown and described.

271,142 **HIRAM SKILLINGS**, New Bedford, Mass. Spade-Wheel Plow. Jan. 23, 1883. Filed Oct. 3, 1882.

The special advantages of the construction of the spade wheels are that the spades dig into the soil and turn the dirt over very thoroughly, and pulverize when they turn out in the revolutions of the wheel; and also that part of the teeth in the ground will hold the plow from turning sidewise during the entrance of the other teeth, thus making each wheel an independent plow in effect.

In a revolving plow, the combination, with the soil A and journal-shaft *b*, of the angular supports B B B', each provided at its rear end with the diagonally-arranged spade-wheel, the supports B B being rigidly secured to the soil, and the support B' binged to the shaft *b*, substantially as described.

274,267 **JOSEPH CAMERON**, Cynthia, Ohio. Harrow. Mar. 20, 1883. Filed Aug. 19, 1882.

My invention relates to certain new and useful improvements in harrows and means for raising and lowering the same; and it consists more especially in the construction of the harrow and elevating means, as will be hereinafter set forth, and pointed out in the claims.

1. A harrow provided with lateral series of rotary disks, the disks of the first series being set on a line with the draft and those of the following series set at angles therewith and adapted to rotate and intermesh between the disks of the adjacent series, substantially as shown and described.

2. In a cultivator or harrow provided with a frame supported on wheels and means for raising and lowering a supplemental frame, the combination of series of disks arranged upon the supplemental frame and adapted to intermesh with each other, each series being

fixed upon parallel transverse shafts and at different angles with each other, substantially as shown, and for the purpose set forth.

3. In a harrow, the combination, with a frame having a rear toothed section, of transverse shafts having secured thereto series of rotary disks attached to their respective shafts at different angles with each other, substantially as shown and specified.

4. In combination with a harrow-frame, a series of transverse shafts journaled to the sides of the frame and provided with series of disks arranged at different angles with each other, so that their disks will intermesh with those of the adjacent series, substantially as shown.

277,982 ALLEN BRADFORD, Dallas, Oregon. Combined Agricultural Machine. May 22, 1883. Filed June 28, 1882.

1. In combination with a rotary-disk harrow, the independent seedling attachment supported upon wheels and adjustably connected to the coupling iron *I*, the latter having the hinge joint *J* detachably secured to the tongue of the harrow, whereby the seedling attachment may be adjusted forward and back, as described, and may rise and fall vertically relatively to the harrow, substantially as and for the purpose set forth.

2. In combination with the harrow, substantially as described, and mechanism, substantially as described, for feeding the seed the mechanism for lifting the harrow, and the chain *e*², lever *e*¹, and frame *O* for throwing the feeding mechanism out of gear when the harrow is raised.

3. In combination with the lifting mechanism *e*², *e*¹, *e*, the rod *e*³, chain *e*³, with folding lever *e*⁴, and frame *O* for changing the gears, as described.

4. In combination with the crank shaft *e*², chain *e*³, and pulleys *e*¹, the clamping iron *e*⁵ for holding the disk-shafts against oscillation when raised.

5. In combination with lifting mechanism, substantially as described, and the frame *O*, carrying the gear, the folding lever *e*⁴, as and for the purpose set forth.

278,623 GARLAND B. ST. JOHN, Cedar Rapids, Iowa. Landside for Plows. May 20, 1883. Filed Sept. 24, 1882.

My object in this invention is to lessen the friction and thereby lighten the draft of the plow by substituting for the ordinary landside a revolving blade or disk so adjusted that its face, near the lower periphery, bears against the unplowed land and prevents the plow from running in that direction.

1. The combination of the plow-beam *A*, having a lug, *D*, with a revolving disk, *B*, said lug being arranged that the axle of said disk may be attached thereto, so that its outer face shall be practically in a line with the land-side of the furrow, substantially as described.

2. In a revolving landside, substantially as described, the hub *C*, axle *e*, bolt *e*, sand band *a*, wedged-shaped washers, and plow *F*, substantially as and for the purpose set forth.

278,711. JOSEPH LANE, Chicago, Ills. Rotary Plow. June 5, 1883. Filed Nov. 27, 1882.

This invention relates to that class of rotary plows in which disks or wheels are employed for doing the plowing, and has for its objects to simplify the construction and arrangement of the several devices composing the plow; to give the rotary disks or plows a free and independent support, by which each can rise or fall independent of the other, and a support by which both cutters or plows can be raised clear of the ground; to locate the plows in a better position relative to each other and to the carrying or supporting frame; to insure the holding of the cutters or plows down to the work without interfering with the vertical movement, and to improve generally the construction and relative arrangement of the devices; and its nature consists in the several devices and combinations of devices for producing the results above named, which are hereinafter described, and pointed out in the claims as new.

1. The combination, with a plow beam provided at each end with a rotary plow or cutter, of a support composed of chains or similar flexible devices connected with the beam adjacent to each end, whereby either end of the beam can freely rise and fall independently of the other end, and the entire beam is permitted to move bodily in a vertical plane, substantially as described.

2. The combination of a non-rotating plow beam having at each end a projecting spindle, a cutter or plow journaled to revolve on each

of the said spindles, and a support for the beam, which permits it to freely rise and fall at either end independently of the other end, or move

bodily in a vertical plane, substantially as described, whereby one cutter or plow can rise and fall independently of the other, as set forth.

3. The combination, with a stirrup or draw, *C*, of a plow-beam extending through an opening in the stirrup or draw, and provided at each end with a rotary cutter or plow, and a support for the plow-beam, which permits either end of the latter to rise and fall independently of the other end, substantially as described.

4. The combination, with the stirrups or draws *C*, of a plow-beam, *B*, extending through openings in the stirrups or draws, and provided at each end with a rotary cutter or plow, side-pressure bars, *e*, and a support for the plow-beam, which permits either end of the latter to rise and fall independently of the other end.

5. A plow beam, *B*, carrying, at each end a rotary plow or cutter, in combination with a lifting device for lifting the beam bodily, or allowing either end to rise and fall independently, substantially as and for the purposes specified.

6. A plow beam, *B*, carrying at each end a rotary plow or cutter, in combination with the chains *H* and biting wheel or drum *L*, for raising the plow-beam and plows bodily and allowing either plow to rise and fall independently when at work, substantially as specified.

7. The combination of a plow-beam, *B*, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of its other end, with the draw bar *D*, stirrups or draws *C*, and carrying wheels, substantially as described.

8. The combination of a plow beam, *B*, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of the other end, with stirrups or draws *C*, draw bar *D*, arched axle *E**E*, and carrying wheels, substantially as described.

9. The combination of a plow beam, *B*, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of its other end, with a draw bar, *D*, and a lever, *X*, pivoted at one end upon the draw-bar, and connected with the beam for holding both of the rotary cutters or plows to their work, substantially as described.

10. The combination of a plow beam, *B*, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of the other end, with a weight box or receptacle, *M*, and a lever, *X*, substantially as described.

279,986 WM. H. MERCER, Mercer, S. C. Cotton-Choppers. June 26, 1883. Filed April 4, 1883.

My invention relates to an improvement in cotton choppers or thinners; and it consists in the combination of the scrapers which are provided with curved fingers or other suitable devices which extend down into the ground below the scrapers, so as to catch against any obstruction against which the scrapers would be apt to strike, for the purpose of causing them to give backward, and thus prevent it from being injured.

The object of my invention is to provide a machine which is to be driven across the rows of growing plants and which is provided with wheels arranged in pairs and located between the scrapers for the purpose of protecting the growing plants from injury, and to provide means for preventing the scrapers from being broken in coming in contact with any obstruction.

1. In a cotton chopper or thinner, the combination of the scrapers with curved prongs or fingers, which extend forward in front of the scrapers, with the protecting wheels arranged upon each side of the scrapers, and a mechanism for raising and lowering the scrapers, substantially as shown.

2. The combination of the scrapers with a curved prong or finger, which extends forward in front of the scrapers, so as to protect the scrapers from injury by forcing their standards backward when an obstruction is encountered, substantially as set forth.

281,103. WM. H. MERCER, Mercer, S. C. Cotton-Scraper. July 10, 1883. Filed April 4, 1883.

My invention relates to an improvement in cotton scrapers, but which is adapted to be

used in connection with other plants which are planted in rows; and it consists in the combination of a suitable frame, suitable convex wheels which protect the growing plants, and at the same time cut shoulders upon each side of the growing plants, the scrapers which are attached to the frame outside of the wheels, and adjustable cultivator standards which will follow behind the scrapers, and which are made to dirt the plants, as will be more fully described hereinafter.

The object of my invention is to provide a cotton scraper, a cultivator by means of which the growing plants have a shoulder cut upon each of their sides, the dirt scraped away in between the rows, and a suitable quantity of dirt then thrown back toward the roots of the plants.

1. The combination of the axle, the wheels attached thereto, the handle-bars, and the standards for the scrapers, the standards being provided with lugs for the attachment of the cultivator, substantially as set forth.

2. The combination, in a cotton-scraper, of the axle, the wheels applied thereto, the handle-bars, and the scraper-standards stamped in a single piece, the standards being provided with sloped lugs, and the cultivator, whereby the cultivator can be adjusted back and forth in relation to the plants, substantially as specified.

3. The combination of the axle, the shouldered sleeve applied thereto, the wheels, the draft rod, and an adjustable cord, wire, or chain, by means of which the draft-rod can be held in position, substantially as set forth.

281,715. FORDYCE M. MOULTON, assignor to S. B. Ives, Vergennes, and H. Norton, Addison, Vt. Road-making Machine. July 24, 1883. Filed Oct. 2, 1882.

1. The draft frame provided with the two series of rotary disks or cutters and means, substantially as described, for adjusting the same, in combination with the rear frame, provided with the oblique scraper, and connected to the front frame by joints permitting a limited independent motion, substantially as described and shown.

2. The combination of the front frame, provided with the adjustable rotary cutters, as described, the rear frame jointed thereto, the scraper, and the adjustable wheel for controlling the elevation of said frame.

3. The combination of the front frame provided with the adjustable cutters and the driver's seat, the rear frame jointed to the front frame, the scraper, the sustaining wheel *g*, and the hand-lever *a*, connected with said wheel, and extending forward to a point adjacent to the driver's seat, substantially as shown and described.

4. In combination with the front frame, having the rotary cutters mounted thereon, the rear scraper frame connected to the front frame on one side by the eyebolt or swivel connection *r*, and on the opposite side by the vertically-sliding joint *u*.

5. In combination with the rotary cutters, the sleeve *h*, mounted upon said shaft, and the forked head *d*, pivoted vertically to the draft-frame and horizontally to the sleeve, as described and shown, whereby a universal motion of the shaft and cutters is permitted.

6. The front frame and the reversible cutter-shaft *e*, provided with collars *l* at its two ends, in combination with the detachable controlling rod *m* and a hand-lever, *p*, connected with said rod by intermediate devices, substantially as described.

7. In combination with the draft frame and the horizontally-swiveling cutter-shaft *e*, the hand-lever *p*, and devices, substantially as shown, connecting the hand-lever with the shaft, said devices provided with means, as set forth, to permit the adjustment of the lever forward and backward in respect to said intermediate connections, whereby the lever may be adjusted in position to be operated from the rear of the machine, as required.

8. In a machine for constructing and repairing roads, the combination of a front frame, a rear frame jointed thereto, and provided with a diagonal scraper, and two series of rolling cutters, jointed or swiveled to the opposite end of the front frame, one of said series being removable independently of the other.

282,526. JOHN IMLER, Zionsville, Ind. Combined Rotary-Disk Harrow and Seed-Sower. Aug. 7, 1883. Filed Mar. 21, 1883.

My invention relates to a means for combining a rotary-disk harrow with a seed sower; and the objects of my improvement are, first, to so combine the two machines that the operations of preparing the ground and sowing the seed may be simultaneous, or the harrow readily detached from the seed-sower and used independently when desired; second, to so connect and combine the two machines that the harrow may be raised out of contact with the ground or set to enter the ground to any desired depth; and, third, to so combine and connect the two machines that the seed sower will be thrown out of gear simultaneously with and by the same operation that raises the harrow out of the ground.

1. In a combined rotary disk harrow and seed-sower, the shaft *f*, arms *g g* and *h h*, lever *j*, pawl *k*, and rack *l*, bell crank levers *r r*, clutches *p p*, and pulleys *o o*, all combined in the manner and for the purpose specified.

2. In a combined rotary disk harrow and seed-sower, brace-rod *s*, secured to the seed sower, and means for detachably securing the free end of said rod to the draft pole, substantially as shown and described.

285,809. SCHUYLER S. GARDNER, Chicago, Ills. Rotary Plow. Oct. 2, 1883. Filed Sept. 18, 1882.

This invention relates to what are known or termed "rotary disk plows," or plows using a rotating cutting disk to perform the plowing, and has for its objects to improve the construction, arrangement, and operation of the rotary disks and their location and arrangement in relation to the supporting frame and wheels and the draft, to enable the draft to be readily and quickly changed to adapt it to the number of disks used, and at the same time overcome the natural tendency of the draft to raise the plows in use, to enable the frame and plows to be readily and quickly raised or lowered to travel from place to place or enter the ground, as required, and to improve generally the construction, arrangement, and operation of the devices forming the plow as a whole; and its nature consists in the devices and combination of the devices by which the above named objects are attained, which are hereinafter specifically described and pointed out in the claims.

1. The combination, with the disk carrying frame A, having extensions B B, of the boxes or brackets C C, the carrying wheels *s*, and the axle D, capable of longitudinal adjustment in the boxes or brackets for changing the location of the carrying wheels with relation to the number of plow disks employed, substantially as described.

2. The combination, with the disk carrying frame A, provided with the extensions B B and the boxes C C, with which the extensions are connected, of the wheeled axle D, passing through the boxes and capable of longitudinal adjustment therein, and means for rigidly securing the boxes and axle together when adjusted, as desired, whereby the harrow wheel of the axle can be brought into line with any one of the disks carried by the frame, substantially as described.

3. The frame A, having extensions B B, forming braces, boxes, or brackets C C, and axle D, in combination with seat support I, the seat J and diagonal brace K, for transferring the weight of the driver to assist in holding the machine down to its work, substantially as specified.

4. The frame A, disk L, backing plate *i*, and journal or pin *j*, in combination with a slotted plate *k*, and bracket or support M, substantially as and for the purposes specified.

5. The frame A, disk L, backing-plate *i*, and journal or pin *j*, in combination with the slotted plate *k* and slotted banger or bracket M, substantially as and for the purposes specified.

6. The combination, with the disk L, of rocking or swinging hangers or brackets M, bolts *o*, to which the hangers or brackets are swiveled, the connecting-bar N, and an operating-lever for the bar N, for changing the set of the disks, substantially as and for the purposes specified.

7. The hangers or brackets M and plate *k*, either or both having slots, in combination with the disk L, backing-plate *i*, and journal or pin *j*, for furnishing an adjustable support for the disks when attached, substantially as and for the purposes specified.

8. The disk L, backing-plate *i*, and journal or pin *j*, in combination with the plate *k*, having a bearing, *h*, for attaching the disk to an arm or support, substantially as described.

9. The tubular axle or standard E, having

slots *l*, in combination with the rod S, having pins *s* and a means for raising and lowering the rod, substantially as and for the purposes specified.

10. The axle or standard E, having slots *l*, rod S, having pins *s* and hand-wheel T, in combination with the frame A, for raising and lowering the forward end of the frame, substantially as and for the purposes specified.

287,336. GARLAND B. ST. JOHN, Cedar Rapids, Iowa. Rolling Landside-Culter. Oct. 23, 1883. Filed Nov. 10, 1882.

The nature of the invention consists in the vertically-adjustable revolving culter placed on the landward side of the plow, at a suitable distance therefrom, to cut the soil for a furrow in advance of the one being turned, and is well now be more fully set out and explained. The manner of connection to the plow is unimportant. It may be either connected to the track of a wheel plow by suitable adjustments by raising and lowering the culter, or arranged to connect upon the plow standard provided with adjusting devices. I deem the manner shown in the accompanying drawings as simple and effective, a brief description of which I will give by reference to the said drawings.

1. The vertically adjustable revolving culter placed on the landward side of the plow, and opposite thereto and at a suitable distance therefrom, to cut the soil for a furrow in advance of the one being turned, substantially as described.

2. In combination with a plow having a roller-culter, as described, the arm C, extending at right angles from the beam, to the end of which the culter is attached, and whereby the culter is capable of horizontal and vertical adjustment, substantially as described.

290,447. WM. T. MCGHEE, assignor to one-half to F. B. Snyder, of Thee the Mo. Attachment for Corn-Plant r. Dec. 18, 1883. Filed Aug. 9, 1883.

My invention relates to planting machines, the object being to provide this class of machines with adjustable devices for forming hills to receive the corn or seed. Where the seed is dropped in furrows or depressions, water collects around the young plant and either materially damages or destroys it entirely. This serious difficulty I overcome by my improved attachment, which consists in the combination, with a planter frame, of a pair of adjustable blades or disks adapted to form a hill in front of the dropping mechanism, and operated by a lever and suitable connections, as will be fully described hereinafter.

1. The combination, with the frame of a planting machine, of bearings secured thereto, vertical shafts or spindles supported within said bearings, hill-forming devices secured to said spindles, and means for oscillating the spindles within their bearings, as and for the purpose set forth.

2. The combination, with the frame of a planting machine, of bearings secured thereto, spindles supported within said bearings, hill-forming devices secured to said spindles, a rock-shaft supported upon the planter frame, and devices for connecting said spindles and shaft and for oscillating said spindles, substantially as set forth.

3. The combination, with the frame of a planting machine, of bracket-bearings adjustably secured to the front of said frame, oscillating spindles supported in said bearings and carrier hill-formers, arms secured to the upper ends of said spindles, and V-shaped links connecting said arms with a rock-shaft, substantially as set forth.

4. The combination, with the frame of a planting machine, of a bracket-bearing secured at each end of the front of said frame, a pair of oscillating spindles supported in each of said bearings, hill-formers secured to said spindles, a rock-shaft, links and arms connecting said spindles and shaft, and an operating-lever for simultaneously operating both pairs of spindles, and a dog adapted to engage a segmental rack, substantially as set forth.

291,127. JOHN AUSTIN, Chicago, Ills. Rotary Plow. Jan. 1, 1884. Filed May 16, 1883.

My invention relates to that class of plows provided with rotary disks for laying the furrows, and in which the said disks are set at an angle to the line of draft. In the example shown I have represented a sulky gang plow of the class referred to.

1. The combination, substantially as specified, with the frame of a rotary plow having a diagonally-arranged plowing-disk, of the draft-wheels T T, the vertically tilting sectional axles D D', carrying the said wheels and pivoted to the said frame, and an adjusting-lever jointed to the said axles, for the purpose of thereby admitting of the said wheels being both inclined laterally in the same direction by means of the same lever.

2. The combination of the wheels T T, the vertically tilting axles D D', the bar E', the T-lever E'', the links H H', and means for temporarily locking the said lever, in connection with the plow-frame, carrying diagonally arranged rotary plowing-disks, substantially as and for the purposes specified.

3. A rotary plow-disk consisting of the combination of the hub G and flange G', all made in one and the same piece, and having therein the pockets or depressions *c c*, and the blade H, made in sections, fastened to the rim of the said flange, the radial edges of the said sections having between their spaces opening into the said pockets, substantially as and for the purposes specified.

293,221. LOUIS A. BRINGIER, Donaldsonville, La. Cultivator. Feb. 12, 1884. Filed Oct. 20, 1881.

A cultivator composed of side pieces, C D, provided with yoke-standards *f* and revolving disks K, the said side pieces adjustably secured by strappings *e* to the arches A B, as described, and the machine provided with a beam, H, and having strengthening rods *g g*, braces *l*, and a guide handle, O, substantially as and for the purpose specified.

294,699. GARLAND B. ST. JOHN, Jackson, Mich. Plow. Mar. 4, 1884. Filed Dec. 1, 1883.

1. In a disk-landside plow, the combination of the pivot beam or standard with the bracket B, axle *o*, hub *h*, and disk A, secured by bolt *c*, substantially as described.

2. The combination, with a plow, of a frog, C, made separate from the standard or beam and latched to it, and also to the mold-board and share, said frog consisting of a vertical portion, a horizontal portion, and a curved or convex portion, substantially as and for the purposes described.

3. The combination, with the mold-board and beam or standard, of the angular bracket B, secured at one end to the standard, at the other end to the axle-arm of a hub, bearing a convex turning-landside disk, A, and also secured to the mold-board, substantially as described.

4. The combination, with the mold-board and beam or standard, of the angular bracket secured at one end to the standard and at or near the other end to the mold-board, of a hub bearing a convex turning-landside disk, said disk being set with its front part leading inward, and sustained by the said bracket, substantially as described.

5. The combination, with the plow-standard and mold-board, of the rotating-landside disk A, the bracket B, the flanged and recessed hub *h*, the axle having a sand-band, and the bolt *c*, substantially as described.

297,524. CHARLES LA DOW, Albany, N. Y. Wheel-Cultivator or Harrow. April 22, 1884. Filed Nov. 7, 1879.

1. The combination, substantially as hereinafter set forth, of a disk-gang shaft, a spool enveloping the shaft, a sleeve enveloping the spool, and provided with a spherical bearing, and a correspondingly-shaped socket in the boxing connected with the main frame.

2. The combination, substantially as hereinafter set forth, of the disk-gang shaft, the sectional ball loosely mounted thereon, and its socket.

3. The combination, substantially as hereinafter set forth, of the disk-gang shaft, the sleeve thereon, its hemispherical head, and the hemispherical section loose on the sleeve.

4. The combination, substantially as hereinafter set forth, of the disk-gang shaft, the recess *l* ball thereon, the socket therefor, the recess *h* therein, and the pin *o* (on the section of the ball next the socket-opening) working in said recess to prevent said section from turning, while permitting the ball to rock.

5. The combination, substantially as hereinafter set forth, of a disk-gang shaft, disks mounted thereon, spring-rollers interposed between the disks, a sleeve on the inner end of the disk-gang shaft having a hemispherical enlargement upon its end, a hemispherical

collar loosely mounted on the sleeve, and hemispherical enlargement and collar forming a sectional ball, a socket for the said ball, a pin on the hemispherical collar working in a recess in the socket, and a clamp nut upon the outer end of the axle.

6. The combination, substantially as hereinafore set forth, of a disk gang, a scraper bar, scrapers mounted thereon, and supporting bars pivoted on the spacing timbers and scraper bar.

7. The combination, substantially as set forth, of a disk gang, a scraper bar, scrapers mounted thereon, supporting bars pivoted on the spacing timbers and scraper bar, a lever on the frame for actuating the scraper bar, and a connection between the lever and the bar.

8. The combination, substantially as hereinafore set forth, of the main frame, the disk gangs, the scraper bars, the pivoted supports between the spacing-timbers and scraper bars, the pivoted supports between the scraper bars and main frame, scrapers, a rocking lever, and link-connections between the rocking lever and scraper-bars.

9. The combination, substantially as hereinafore set forth, of a main frame, a disk gang consisting of concave disks mounted on an axle, mechanism for adjusting the disk gang relatively to the line of draft, and a weight-box mounted on the disk gang and adjustable with it.

10. The combination, substantially as hereinafore set forth, of a frame, disk gangs composed of concave convex disks mounted on axles, weight boxes mounted above the disk-gangs, and a lever whereby the angle of the gangs and weight boxes relatively to the line of draft may be varied and a uniform depth of cut of the disks secured.

11. The combination, substantially as hereinafore set forth, of a main frame, a disk-gang, a scraper-bar and weight box mounted on pivoted supports above said disk-gang, so as to be free to vibrate laterally, a stop to limit said vibrations, and scrapers mounted upon the scraper-bar, whereby the scrapers are caused to approach and recede from the disks (to clear them of clogging matter) by the jostling of the machine.

12. The combination of the main frame, a disk-gang, mechanism for adjusting the gang relatively to the line of the draft, a weight support or beam mounted over and carried by the gang, draft connections extending from the frame to the gang, which permit the adjustment of the gang, and a brace extending from the frame to the weight support or beam.

13. The combination of the main frame, a disk-gang, a weight support or beam mounted over and carried by the gang, and the bifurcated connection H H', extending from said beam to the frame.

14. The combination, substantially as hereinafore set forth, of a main frame, disk-gangs flexibly connected at their inner ends, and also connected to the main frame, a lever, a bar connecting the lever and the flexible connection, and a guide plate in which said bar works endwise.

15. The combination of the main frame, the endwise-moving draw-bar *a*, the slotted guide-plate, and the disk gangs, for the purpose set forth.

16. In a harrow, the combination of a pole, a cross bar projecting laterally therefrom, disk-gangs hinged to the cross-bar, a lever on the pole, a bar connecting the lever to the disk-gangs, and a guide, between the prongs of which the bar is thrust back and forth by the action of the lever.

17. In a harrow, the combination of a pole, a draft-frame or cross bar, disk-gangs connected to the frame, a lever on the pole in front of the cross-bar, a bar connecting the lever and the disk-gangs, and a guide located between the gangs and lever to regulate the motion of the bar.

18. The combination, substantially as hereinafore set forth, of the main frame, disk-gangs connected to the frame by draft-connections, which leave the ends of the gangs free to vibrate vertically and horizontally, and stops or braces secured upon the main frame, applied at said draft-connections to prevent them from rising, and to relieve the draft-bars from vertical strain.

19. A seat supporting standard composed of sheet metal of concavo-convex form in cross-section, and tapering from its base to its top, substantially as described.

297,666. FRANK BRAMER, Little Falls, N. Y., W. W. Whitman and L. H.

Crandell, executors of said Brammer, deceased. Disk-Harrow. April 29, 1884. Filed June 22, 1883.

1. The combination, substantially as set forth, of the gang frames, the draft bars, the pivoted geared slotted adjusting plates, the projecting wings or plates in which they are pivoted, and a pin or stop for limiting the swing of the gangs.

2. The combination, substantially as set forth, of the pole, the disk gang frames hinged thereto, the draft bars, the pivoted adjusting plates to which the draft bars are hinged, and mechanism for controlling the movement of the plates so as to pivot the disks to automatically assume a position parallel with the line of draft when the machine is backed, and to hold the gangs at the desired angle when the machine is drawn forward.

3. The combination, substantially as set forth, of the draft-pole, the disk-gang frames hinged thereto at their inner ends, the draft-bars, the pivoted adjusting-plates, which permit the disks automatically to assume a position parallel with the line of draft when the machine is backed, and hold the gangs at the desired angle when the machine moves forward, mechanism for limiting the movements of the adjusting plates, and the hinge-connections between the draft bars and adjusting plates, placed on a lower plane than the hinge connections between the gang-frames and draft pole.

4. The combination, substantially as set forth, of the pivoted geared adjusting-plates, the gang-frames, connections between the gang-frames and the plates, and mechanism for controlling the movement of the adjusting plates so as to vary the angle of the gangs.

5. The combination, substantially as set forth, of the draft pole, the plate hinged thereon and having the laterally projecting wings, the geared slotted adjusting-plates with which the gang-frames are connected, pivoted in said wings, stop-pin apertures in the wings, and a pin or detent for limiting the movement of the gangs.

298,911 E. FOWLER STODDARD, Dayton, Ohio. Wheel-Harrow. May 20, 1884. Filed Sept. 6, 1883.

My invention relates to that class of harrows or cultivators having gangs of disks, preferably concavo-convex disks, adjustably connected to the draft-frame and arranged on each side of the tongue for the purpose of changing the angles of the gangs relatively to each other; and the novelty of my invention consists, first, in so connecting the draft-frame, disk gangs, and tongue, that the sliding of the tongue forward or back will cause the oscillation of the disk-gangs and enable them both to be brought in a straight line or angling to each other, and to be locked in any of their adjusted positions by the operator from his seat on the machine without loss of time and with no expenditure of labor; secondly, in the construction and application to each gang of disks of a series of simultaneously operated self-adjusting scrapers controlled by the driver in his seat while the machine is in operation, if desired, for cleaning the disks or wheels; thirdly, in the construction, combination, and arrangement of the parts, as will be herewith set forth and specifically claimed.

1. In a wheel or disk harrow, the combination, with the main frame and the wheel-gangs independently pivoted thereto, of the pole or tongue with connecting mechanism, whereby the sliding of said pole or tongue backward or forward carries the wheel-gangs and shifts their relative position from a straight line to any angle desired, or vice versa.

2. In a wheel or disk harrow, the combination, with the main frame and the wheel-gangs independently pivoted thereto, of the backwardly and forwardly sliding pole or tongue extending back between the adjacent ends of the gang-beams, and united thereto by adjustable connections, whereby the sliding of the pole in one direction from a straight line to a forward angle, or from a rearward angle to a straight line, and vice versa, as desired.

3. In a wheel or disk harrow having a main frame with independently pivoted wheel-gangs, the tongue or pole working through fixed guides secured to the main frame and adjustably connected to the adjacent ends of the gang-beams, and provided with a series of perforations, in combination with a slotted plate or coupling secured to the main frame, a superimposed perforated plate, and a removable coupling pin adapted to pass through

said perforations and the slot in the coupling-plate, whereby the forward adjustment or play of the pole can be regulated at will to shift the wheel-gangs by the driver from his seat on the machine, as set forth.

4. In a wheel or disk harrow having a sliding pole or tongue for adjusting the wheel-gangs simultaneously from a straight to an angling position, or vice versa, the combination, with said pole, of a stop for limiting the backward play of said pole, substantially as described.

5. In a disk-harrow having a sliding pole or tongue for adjusting the wheel-gangs simultaneously from a straight to an angling position, or vice versa, the main frame of the machine consisting, essentially, of the draft-beam A, cross-beam B, and brace-rods C, extending from the forward end of the beam B to the pivotal axes of the gang-beams, substantially as described.

6. In a wheel or disk harrow, the combination, with one or more series or gangs of harrow-disks, of a corresponding series of simultaneously-operated self-adjusting spring-scrapers, substantially as described.

7. In a wheel or disk harrow, the combination, with the rotating disk or disks, of a scraper blade for each disk pivoted at a point between the axis and periphery of said disk, whereby said blade can adjust itself to the surface of the disk at all points of its scraping surface from one end to the other.

8. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks, of a series of pivoted rocking arms carrying self-adjusting scrapers, which said arms are connected to and operated by a bar or rod, so as to be vibrated simultaneously through the medium of a lever or equivalent device.

9. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks, of a series of scrapers adjustably united to a reciprocating bar by spring-connections.

10. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks, of a series of pivoted arms carrying pivoted self-adjusting scrapers, and united to a reciprocating bar by spring connections.

11. In a wheel or disk harrow, the combination, with a series of rotating harrow-disks, of a series of pivoted arms carrying pivoted self-adjusting scrapers, and united to a reciprocating bar by an adjustable spring-connection.

299,057. GEORGE G. CROWLEY, Little Falls, N. Y. Disk-Harrow. May 20, 1884. Filed Jan. 14, 1884.

1. In a disk-harrow, the combination, with a gang plank or frame, of scrapers pivoted thereto, a rock-shaft mounted on said plank or frame, and pivoted arms or carriers, whereby the motion of the rock-shaft is transmitted to the scrapers, substantially as set forth.

2. In a disk-harrow, the combination, with a gang plank or frame, of scrapers pivoted thereto, a rock-shaft mounted on said plank or frame, pivoted arms or carriers connected with said rock-shaft, and springs interposed between said arms or carriers and the scrapers, substantially as set forth.

3. In a disk-harrow, the combination, with a gang-plank B, of a scraper C, pivot *d*, housing D, spring *f*, and rock-shaft *k*, substantially as set forth.

4. In a disk harrow, the combination, with a gang-plank B, of a scraper C, pivot *d*, housing D, provided with an arm *l*, rock-shaft *k*, and arm *h*, substantially as set forth.

5. In a disk-harrow, the combination, with the scraper C, of the housing D, provided with a shoulder *g*, and socket F, a spring *f*, seated in said socket, and a rock-shaft *k*, substantially as set forth.

6. In a disk-harrow, the combination, with the scraper C, of the housings D, provided with arms *l*, pivots *d*, provided with eyes *k*, shaft *k*, supported in said eyes, and arms *h*, secured to the shaft *k*, substantially as set forth.

300,697. GEO. G. CROWLEY, Little Falls, N. Y. Disk-Harrow. June 17, 1884. Filed Dec. 12, 1883.

1. The combination, with the main frame, of a gang plank or frame, a ball-and-socket joint, whereby the gang plank or frame is attached to the main frame, shaft-bearings secured to the gang plank or frame, and a disk-gang having its shaft journaled in said bearings, substantially as set forth.

2. The combination, with the disk-gang, of a spherical socket rigidly secured to the gang-

plank, and a pin-socket movably attached to the gang-plank, and provided with a spherical knuckle seated in said spherical socket, substantially as set forth.

3. The combination, with the main frame and the disk-gang, of a pin secured to the main frame, a spherical socket secured to the disk-gang, and a pin-socket adapted to receive the pin of the main frame, and provided with a spherical knuckle seated in said spherical socket, substantially as set forth.

4. The combination, with the gang-plank, of the spherical socket B, pin-socket D, having a spherical knuckle, *d*, hooks *e*, and link E,

substantially as set forth.

5. The combination, with the main frame, of disk-gangs, ball-and-socket joints, whereby the disk-gangs are attached to the main frame, and hooks *h*, whereby the inner ends of the disk-planks can be rigidly secured to the main frame, substantially as set forth.

6. The combination, with the main frame and disk-gangs, of an arm, F, having a gear-segment, *g*, connecting-rods *j*, and a worm-wheel, G, substantially as set forth.

7. The combination, with the main frame and disk-gangs, of an arm, F, having a gear-segment, *g*, connecting-rods *j*, worm-wheel G, pro-

vided with arm I, and catch *i*, substantially as set forth.

8. The combination, with the main frame, of disk-gangs attached to the main frame by swiveling connections, whereby each gang is adapted to adjust itself independently to the inequalities of the ground, and a drag or leveler arranged in rear of the disk-gangs and attached loosely to the main frame, substantially as set forth.

9. The combination with the disk-gang and disk-plank, of bearings B, oil-cups K, having bars *s*, cover S, rod *s*, and spring T, substantially as set forth.

253,458. JACOB WILLIAMS, Dublin, Ind. Cultivator. Feb. 7, 1882. Filed Oct. 13, 1881.

This invention relates to straddle-row cultivators, and has for its object to furnish a sulky which can be used without the use of a tongue or other similar pole extended from the axles to the breasts of the horses.

It consists in a substantial frame which passes under and to the rear of the axle, and is made fast to the latter and to the arch, and is provided with a cross-bar, which passes under the forward end of the cultivator beam, and has its forward end extended and provided with means for holding the whiffletree.

1. The combination of the axle, provided with pin f , the coupling f_1 journaled on said axle, and provided with slot f_2 , the beam e pivoted to the coupling f_1 and the cross-bar d of the frame e , extended under and arranged to support the rear end of the coupling, substantially as set forth.

2. The combination, substantially as hereinbefore set forth, of the arch b of axle a , provided with a series of vertical holes, the upright bar a' of axle a' , provided with eye a'' , and the clips c , provided with parallel ears projected part way across the flattened sides of bar a' , and the pins c' , as set forth.

255,877. LUPPE LUPPEN, Pe-kin, Ills. Cultivator. April 4, 1882. Filed Oct. 18, 1881.

1. In a straddle-row cultivator, the combination of an arched axle, a sliding frame, to which the forward ends of the beams are connected, and a draw-bar connected to the forward end of said frame, which is capable of lateral play at the draft end, substantially as and for the purpose set forth.

2. The sliding frame composed of rod or bar C , one end of which is provided with a spring, substantially as shown, the cross bars C' and C'' , and flat grooved guide-bar C'' , the parts being constructed and arranged to operate substantially as and for the purpose set forth.

3. The combination, with the axle B , of the sliding frame, the draw-bars B' , the forward ends of which vibrate laterally, and the pivoted clevis F , substantially as and for the purpose set forth.

260,164. JOHN B. CHRISTIAN, Han- burg, Iowa. Sulky Cultivator. June 27, 1882. Filed Mar. 6, 1882.

This invention has for its objects to provide an improved tongueless cultivator so constructed and arranged that it may straddle the rows of growing crops, and which can be adjusted to rows of different widths; also, to provide certain improved means for attaching the cultivator-beams to the frame of the machine, and for holding the beams up when the cultivator is traveling from place to place, and supporting the frame in the meanwhile to prevent it from tipping backward.

1. The combination, with the arch A , having horizontal extensions B and adjustable plates C , provided with vertical shafts F , of the frames H , the tubular bearings G , plates D , and bolts E , substantially as specified.

2. In combination with the connecting arch A and the tubular bearings G , the bifurcated connections constructed in two parts and secured together by a bolt, Z , substantially as and for the purposes specified.

3. In combination with the connecting arch A , the frames H , the tubular bearings G and their adjustable connections, the angular draft-frames m , provided with hooks at their ends, and the bifurcated connections S , to which the plow-beams are attached, substantially as and for the purpose specified.

261,738. T. A. LEVINS and G. W. OALL, Urbana, Ills. Cultivator. July 25, 1882. Filed April 8, 1882.

This invention consists of improvements in two-wheel cultivators, whereby it is designed to so construct them that they may be used with or without a tongue, as the nature of the work may require, the construction being such that when a tongue is used the cultivator may be guided independently of the tongue, as is desirable in some cases. It is also designed to connect the wheels to the axle by counter-wheel contrivances, by which the wheels have facility of lateral divergence, allowing the axle having the cultivator-beams attached to maintain its proper rectangular relation to the beams. It is also designed to provide simple and efficient means of adjusting the cultivators toward or from each other by an extensible device of the axle; also, means to regulate

the depth to which the cultivators work by a cranked contrivance of the axle; also, means to support the cultivator-plows above ground for transportation, all as hereinafter described.

1. The combination, with a shaft, B , having return bends F , of the independent right angled crank axles A' , having vertical pivots G , passing through eyes in the bend F , and connected at the vertex of the right angle with the shaft by hook-braces H , whereby the draft may be applied, as described.

2. The combination, with plow beams having pins k , of the bars d and braces k , each pivoted to the beams, and for the purpose specified.

271,164. G. W. VAN SICKLE, Burlington, Iowa, assignor to J. H. Bramhall and N. S. Hammack. Tongueless Cultivator. Jan. 23, 1883. Filed July 3, 1882.

My invention relates to improvements in double arched tongueless cultivators with metal frame-work, in which a metallic spring is attached at one end to the upright of the axle frame-work and at the other end to the under prong of the plow-beam.

1. In a double arched tongueless cultivator, the cross-bar A , provided with braces e and e' , and the arches c and c' , in combination with the upright X and spring R , substantially as and for the purpose described.

2. In a double arched tongueless cultivator, the cross-bar A , provided with braces e and e' , the arches c and c' , the upright X , and spring R , in combination with the axle B , substantially as and for the purpose described.

273,071. JOHN C. HART, Green's Fork Ind. Cultivator. Feb. 27, 1883. Filed Nov. 11, 1882.

1. The combination, in a cultivator of the described class, of the shaft C , fastened between upright E , and axle-plate B , with the head of the cultivator-beam H , having forward extending plate H' , downward projecting part H'' , having inner rounded sides, h , and rounded end h' , and plate H'' , fastened by screws h' , substantially as and for the purpose shown and set forth.

2. In a straddle row cultivator; the combination of the uprights E , having holes e , the brackets F , having eyes F' , recess F'' , and screws f , the transverse bar G , and the sleeves P , having projections p and p' , and set-screws Q , substantially as and for the purpose shown and set forth.

3. The clearers L , having toothed rim l and laterally-extending pins l_1 , as and for the purpose shown and set forth.

274,070. WM. S. WEIR, Monmouth, Ill Cultivator. Mar. 13, 1883. Filed Oct. 31, 1882.

1. In combination with the side frames composed of bars a' , connected by transverse bars a'' , the arches D , journaled to blocks on the bars a'' , substantially as and for the purpose specified.

2. In combination with the side frames with arches hinged or journaled thereto, and the plow-gangs, the bar b , to which the plow-gangs are hinged, arranged, substantially as described, with relation to the arches to permit adjusting the plow-gangs laterally at points between and also exterior to the vertical parts of the arches, substantially as and for the purpose specified.

3. In a cultivator, in combination with side frames and two or more arches hinged or journaled thereto, stops adapted to limit the extent of movement of said hinge-connection, substantially as and for the purpose specified.

4. In a cultivator, in combination with side frames provided with blocks E , having holes e and grooves e' , the arches D , having journals and shoulders on their vertical sides, which shoulders are adapted to coact with said grooves e' to limit the oscillating movements of the journals within said holes e , substantially as and for the purpose specified.

5. In combination with the wheeled side frames having each a bar or spindle, b , and bar b' at its rear end, the plow-gangs having plates g , hinged to the spindle b , and the lower one projected forward beneath the bar b' for the purpose of sustaining the arches, substantially as and for the purpose specified.

6. In combination with the wheeled side frames having each a spindle, b , and bar b' at its rear end, and arches D , journaled to said side frames, the plow-gangs having plates gg' , hinged to the spindle b and the lower one, g' , projected forward beneath the bar b' for the purpose of sustaining the arches, substantially as and for the purpose specified.

10,297. EDWIN W. JOY, Iowa City, Iowa, assignor, by mesne assignments, to Patten Plow Co., Monmouth, Ills. Cultivator. Original 182,449. Sept. 19, 1876. Reissued Mar. 20, 1883. Filed Jan. 5, 1883.

This invention relates to cultivators in which short independent axles are hinged to a yoke connecting the two axles to allow horizontal oscillation of wheels relatively to the beams, and which are used without a tongue; and it consists of the application of another yoke in a manner to regulate the oscillation of the wheels and prevent them from cramping too much and binding against the beams, as they do in common arrangement.

The combination of yoke H with the draft bars D' and with the wheels A , working on independent axles B , hinged to yoke E , substantially as specified.

274,555. BYRON C. BRADLEY, Chicago, Ills, assignor to Furst and Bradley Manufacturing Co. Tongueless Cultivator. Mar. 27, 1883. Filed Nov. 27, 1882.

The object of this invention is to provide novel and efficient means whereby I secure a forward and buck movement of the wheel-spindles and wheels independent of the arch or frame, and also a forward or back movement of either wheel-spindle and wheel independent of the other wheel-spindle and wheel and of the frame, and at the same time have the arch or frame supported in its vertical position irrespective of such independent movements of either the axle or the wheel-spindle and wheels, allowing one wheel to travel in advance of the other and of the frame, as required by the draft.

1. The combination, with a stationary arch or frame, A , of levers or heads B , arranged at the lower ends of the vertical or side portions of the arch or frame, and provided with passages or slots a and independent axles CD each having its vertical portion pivoted by a bolt or pin at its upper end, said axles passing through the passages or slots at or adjacent to the inner ends of their horizontal portions D , which carry the wheels, substantially as described.

2. A head or loop, B , having a longitudinal passage or slot, a , in combination with an axle-spindle CD and an arch or frame, A , to the vertical portion A' of which the axle C is pivoted, substantially as and for the purposes specified.

3. A head or loop, B , having a longitudinal passage or slot, a , axle-spindle CD , and arch or frame A , to the vertical portion A' of which the part C is pivoted, in combination with a pipe-box located on the spindle and a draft-bar attached to the spindle, substantially as and for the purposes specified.

4. A head or loop having a longitudinal passage or slot, a , axle-spindle CD , and arch or frame A , to the vertical portion A' of which the part C is pivoted, in combination with a pipe-box located on the spindle, and draft-bar attached to the spindle, and a wheel, substantially as and for the purposes specified.

274,784. THOMAS B. JEWETT, Steubenville, Ohio. Cultivator. Mar. 27, 1883. Filed Oct. 20, 1882.

This invention relates to certain improvements in straddle-row wheel-cultivators; and it has for its objects to provide certain improved means of hinging the plow-beams to the axle so as to permit the plows to be operated conveniently in cultivating growing crops, and to be quickly and easily elevated when turning the end of a row, and to perfectly balance the beams of the plows, so that they may be handled with ease, as more fully hereinafter specified. These objects I attain by the means illustrated in the accompanying drawings, in which—

The combination, in a cultivator, of the bent axle, the movable brackets screwed to the vertical portions thereof, and provided with studs having horizontal segments, the hooked levers adapted to engage the segments and hold the plows in an elevated position, and the plow-beams and the plows, substantially as and for the purposes specified.

275,846. FRANKLIN K. ORVIS, Dixon, Ills. Cultivator. April 17, 1883. Filed Oct. 9, 1882.

1. The combination of the arch E and the side frames, D , pivoted or hinged to the vertical portions of the arch, and having at their

upper ends the projecting arms *h*, with the transverse rod or bar *g* connecting the ends of the said arms, substantially as and for the purpose described.

2. The combination of the arch *E*, the side frames, *D*, carrying attached spindle plates *k*, and pivoted or hinged at their extremities to the vertical portions of the arch, and having at their upper portions the projecting arms *l*, with the transverse rod or bar *g* connecting said arms, and the plates or bars *C*, having swivelled connections at their ends with the side frames, whereby such plates or bars can rock independent of the frames, substantially as described.

3. The combination of the arch *E*, the side frames, *D*, pivoted or hinged at their extremities to the vertical portions of the arch, and provided with projecting arms *l*, with the transverse rod *g* connecting the said arms, the couplings *h*, secured to the upper and lower portions of the side frames and capable of adjustment thereon, and the plates or bars *C*, having their ends swivelled to the couplings, substantially as described.

4. The combination of the swinging side frames, *H*, of a height nearly equal to the central elevation, with the arch *E*, supported by said frames, whereby the straining of the arch is avoided, substantially as specified.

275,847. FRANKLIN K. ORVIS, Dixon, Ills. Cultivator. April 17, 1883. Filed Oct. 16, 1882.

My invention relates to two-wheeled tongueless straddle-row cultivators of the class commonly known as "parallel" cultivators; and it consists in an arched axle made in three parts, hinged together, and combined with a connecting rod, and in the combination of parts, all as hereinafter set forth and claimed as new.

1. In a cultivator, an arched axle consisting of a central arch and two side pieces, each side piece composed of a horizontal portion, *B*, and a vertical portion, *C*, and bearing plates connecting the three parts of the axle, in combination with a rod, *D*, connecting the upper bearing plates, the horizontal portion of the central arch, and the connecting rod, forming, in connection with the upper bearing plates, in effect, a parallel rule, substantially as and for the purpose specified.

2. In a cultivator, an arched axle consisting of a central arch and two side pieces, each side piece composed of a horizontal portion, *B*, and a vertical portion, *C*, bearing plates connecting three parts of the axle, and rod *D*, connecting the upper bearing plates, in combination with draft bars *E*, attached directly to the horizontal parts *B* of the axle, substantially as and for the purposes specified.

276,272. WM. H. PARLIN, Canton, Ills. Cultivator. April 24, 1883. Filed Sept. 4, 1882.

1. In a cultivator, the combination, with an arch or frame, *A*, having a horizontal portion, *a*, and vertical portion *b*, and a plow beam, *G*, pivotally connected with the portion *a* to move laterally, of the wheel-carrying bracket *B*, pivoted to the said vertical portion *b*, and provided at its upper end with a forward extension, *e*, and a connection between the forward extension and the plow beam, whereby lateral movements of the latter will swing the bracket on the vertical portion of the arch or frame, substantially as described.

2. In a cultivator, the combination of an arch or frame having the vertical portion *b*, and a plow beam pivotally connected with the arch or frame to move laterally, with the wheel-carrying bracket *B*, having top and bottom ears, *c*, pivoted on the said vertical portion *b*, the upper ear having a forward extension, *e*, and the connecting devices between the forward extension and the plow beam, whereby lateral movements of the latter will swing the wheel-carrying bracket on the vertical portion of the arch or frame, substantially as and for the purposes described.

3. In a cultivator, the combination, with the arch or frame *A*, the plow beam *G*, pivotally connected therewith to permit its lateral movement, and the pivoted wheel-carrying bracket *B*, provided with the forward extension, *e*, of the bar *E*, pivoted at its forward portion, and connected at or near the center of its length with the forward extension, and the rod *F*, connecting the rear end of the said bar with the plow beam, substantially as and for the purpose described.

4. In a cultivator, the combination of an arched bar, *A*, bracket *B*, hinged to the end *b* of the arched bar and provided with a wheel

spindle, an extension or arm, *e*, connected with the bracket *B*, the pivoted bar *E*, having a slot, *a*, connected with the arm or extension *e*, and a connecting device between the rear end of the shafted bar and the plow beam, whereby when a lateral movement is given to the plow beam the wheel will be thrown out of the line of progression, substantially as specified.

276,766 WM. E. BUTLER, Union, Iowa. Wheel Cultivator. May 1, 1883. Filed Sept. 28, 1882.

My invention relates to that class of cultivators that are constructed and operated without tongues in such a manner that there will be deviation in the axle and carriage to allow each horse to move its own plow independently of the other to a certain extent, so that when either of the horses on the opposite sides of a row of plants moves faster than the other or deeper from the line of draft it will not affect the direct line of advance of the plows, that are required to remain parallel with and a proper distance from the plants in the row.

It consists in combining a drag runner and a hand-lever with each plow frame in such a manner that the plows or shovels attached to the frame can be readily elevated and supported in an operative position, as hereinafter fully set forth.

1. In a cultivator, the combination of a drag or runner, *g*, hinged to the carriage, a lever, *h*, pivoted to the cultivator-frame, and a slide, *k*, swivelled to the end of said lever, substantially as shown and described, for the purposes specified.

2. The drag runner *g*, the loop *g'*, the lever *h*, the slide *k*, the spring pawl or bolt *l*, and the catch *m*, arranged and combined with a wheel cultivator, substantially as shown and described, for the purpose of elevating and holding inoperative the plows or shovels when ever desired.

284,380. JOHN B. CHRISTIAN, Hannibal, Iowa. Cultivator. Sept. 4, 1883. Filed Aug. 29, 1882.

This invention relates to certain improvements in arched wheel plows, which are intended to straddle a row of plants in cultivating the same, and it has for its objects to provide for an independent draft upon the separate plows, for elevating the plows when the machine is being transported from place to place, and to provide for holding the wheels in proper line of travel, as more fully hereinafter specified.

1. The combination, in a wheel plow, of the axle arch, upon the axle of which the wheels are mounted, the supplementary arch and its joints, the pivoted blocks and connected plow beams, the swivelled draft beams, and the bar to which they are attached, the latter being swivelled to an extension projecting from the axle arch, substantially as and for the purposes specified.

2. The combination, in a cultivator, of the arched axle and a supplementary arch pivoted thereto, and having connected to them a forward extension, with a bar attached thereto, and, respectively, with the arched axle and the draft beams, substantially as shown and described.

284,960 P. HIEN AND A. H. GRIMM, Rock Island, Ills. Cultivator. Sept. 11, 1883. Filed April 13, 1883.

1. The combination of the frame *B*, having eyes *b*, *b*, the axle *G*, having a stem, *a*, adapted to said eyes, and the cap *d* bearing upon the upper eye, *b*, and bolted to the upper end of the stem *a*, as set forth.

2. The combination of the frame *B*, having eyes *b*, *b*, the axle *G*, having a stem, *a*, adapted thereto, the draft bar *J*, hung to the said stem, *a*, and the rod *K*, connected to the draft bar and to the outer end of the axle, as set forth.

3. The combination of the frame *B*, the axle *G*, having a stem, *a*, adapted to eyes on the frame, the draft bar *J*, and the runner carrying arm *M*, hung to the draft bar, and having a projection, *s*, adapted to a central opening in the stem *a*, as set forth.

4. The combination of the frames *B*, the blocks *g*, pivoted thereto, and the beams *D*, the end plates, *l*, of which are pivoted to hubs *i* on said blocks *g*, as set forth.

5. The combination of the frames *B*, the pivoted blocks *g*, having slots *a'*, and the beams *D*, having end plates, *l*, pivoted to the blocks *g*, and having bolts *a*, adapted to the slots *a'*, as set forth.

6. The combination of the frames *B*, the bolts *a*, the blocks *g*, made in halves, and the beams *D*, with plates *l*, containing said halves, as set forth.

7. The combination of the arms *M*, the pivoted runners *N*, and the locking dogs *w*, as set forth.

288,764 JOHN M. BLADE, Alpha, Ills. Cultivator. Nov. 20, 1883. Filed Jan. 22, 1883.

This invention relates to that class of cultivators known as "parallel" or "tongueless" cultivators; and the invention consists in constructions and combinations relating to the joint or coupling which connects the plow beams to the axle or beam yoke, and to the connection of the runners to said yoke, all as hereinafter fully described.

1. In a cultivator, in combination with the plow beams, and the beam yoke *A*, and frame *C*, constructed as described, and secured to the frame *B* by a pivot bolt, *b*, the runners *D*, secured to the frame *C*, as described, and braced, substantially as and for the purpose specified.

2. In a cultivator, in combination with the beam yoke *A* and plow gangs, a coupling, formed of blocks *G*, *G'*, journal *g*, block *H*, having stud *h*, washer *I*, and stirrup *J*, substantially as and for the purpose specified.

3. In combination with the beam yoke, plow gangs, blocks *G*, *G'*, journal *g*, washer *I*, and stirrup *J*, with nuts *j*, the plate *K*, secured by staple *k* and catch *k'*, substantially as and for the purpose specified.

291,730. FREDERICK L. HILSABECK, Shelbyville, Ills. Assignor to himself and J. Ward. Cultivator. Jan. 8, 1884. Filed Oct. 6, 1883.

1. The combination with the beam *a*, of the two bars *b*, *p*, the former passing through a hole near the end of the latter, as shown and described.

2. The supporting device, having its bars *l*, *p*, hinged at *m*, *q* to the beam, one passing through a slot at the angle end *o* of the other, to enable said bars to be swung up or down together, as described.

291,930. WM. H. PARLIN, Canton, Ills. Cultivator. Jan. 15, 1884. Filed Sept. 7, 1883.

1. In a cultivator, two sleeves, *D*, *E*, upon the axle, one carrying a plow beam, the other connected with a draft bar and combined with each other, substantially as described, whereby either sleeve can have a limited rotary movement without affecting the other, for the purpose of providing for regulating the running depth of the shovels, and at the same time leaving the plow beam free to be raised at its rear end without affecting the draft.

2. The irons *a*, provided with sockets *b*, in combination with the main arch *A* and secondary arch and brace rod *C*, substantially as and for the purpose specified.

3. In a cultivator, a drag bar, *M*, in combination with the plate *K*, provided with the projections and stops *e*, *f*, the plate *L*, and a plow beam, substantially as and for the purpose specified.

292,283. JOHN B. CHRISTIAN and WM. D. HANSON, Hannibal, Iowa. Tongueless Cultivator. Jan. 22, 1884. Filed Aug. 16, 1883.

This invention relates to certain improvements in tongueless cultivators and like machines; and it has for its object to improve the efficiency of the transportation of these machines either in the field or on the road.

Our improvement consists in novel means for connecting the shoe or runner directly to the lateral supports of the frame work of the cultivator.

Our improvement further consists, in the combination with each gang of plows, of a pivoted iron shoe or runner for supporting the gang of plows from the soil while being moved from the field or upon the road.

Our improvement further consists in the novel construction and arrangement of parts, as will be hereinafter more fully set forth, and pointed out in the claims.

1. The combination, in a cultivator, of the arched axle *A*, of the couplings *C*, pivoted to the spindles of the axle, and provided with stops *e*, adapted to abut against the vertical portions of the axle, the plow beams pivoted to said couplings, and the sleeves *D*, fastened to the spindles of the axle, and serving to hold the couplings in place, and as attachments for the shoes *E*, substantially as specified.

2. The combination, with the plow beams and plows, of the flumm plate *h*, its stop *a*, the pivoted shoe *F*, and the catch *k*, the whole arranged to operate substantially as specified.

292,877. FRANK T. VERHAREN, Spencer, Iowa, Cultivator. Feb. 5, 1884. Filed May 28, 1883.

1. A drag-bar or runner and a connection therefor with a plow beam, by which movements of the plow beam vertically will produce a reverse movement to the drag bar, substantially as and for the purposes specified.

2. A drag bar, E, pivoted at its upper end provided with an arm, *e'*, in combination with a link, *e''*, and arm *b*, actuated by the movements of the plow beam for raising and lowering the drag-bar, substantially as specified.

3. A drag bar, E, pivoted at its upper end with the link *e''*, arm *b*, pipe box B, and a plow beam attached to the pipe box, for automatically raising and lowering the drag bar, substantially as specified.

4. An arm or support, F, and a connection with a plow beam and device connecting the beam with the arm or support, for automatically operating the arm or support as the beam is raised or lowered, substantially as and for the purposes specified.

5. An arm or support, F, link *e''*, and arm *b*, operated from the plow beam, for automatically raising and lowering the arm or support F, substantially as and for the purposes specified.

6. An arm or support, F, and link *e''*, in combination with the arm *b* and pipe box B, having a plow beam attached thereto, for automatically operating the arm or support by the movements of the plow-beam, substantially as and for the purposes specified.

7. An arm or support, F, link *e''*, arm *b*, pipe box B, arm *b*, link *e''*, arm *e'*, and drag-bar E, in combination with a plow beam attached to the pipe-box, for automatically operating the arm or support and the drag bar by the movement of the plow beam, substantially as and for the purposes specified.

293,030. THOMAS B. JEWETT, Steubenville, Ohio, Tongueless Wheel Cultivator. Feb. 5, 1884. Filed Oct. 29, 1883.

My invention relates to an improvement in tongueless wheel cultivators; and it consists—
First, in an axle having its ends turned backward at an angle, so that the wheels will be attached thereto at a point to the rear of the front end of the beams. The object of this part of my invention is to so construct the axle that its ends are turned backward, so as to throw the wheels and the points of draft to the rear of the front ends of the beams, and thus make the draft easier upon the animals.

Second, in an axle having its rear ends turned backward and upward, in combination with the draft-bars, which are applied to the upturned ends, and which draft-bars have the spindles for the wheels formed as a part of them. The object of this part of my invention is to bring the draft animals back as near as possible to the front ends of the beams, and so make the draft easier upon them.

Third, in the arrangement and combination of parts, which will be more fully described hereinafter.

1. In a wheel-cultivator, an axle having its ends turned backward at an angle, so as to bring the points of draft to the rear of the front ends of the beams, substantially as shown.

2. In a tongueless wheel-cultivator, the combination of the axle, having its ends turned backward at angle and then upward, with draft bars carrying the spindles for the wheels, the draft bars being applied to the vertical portions of the turned-up ends, substantially as described.

3. In a wheel-cultivator, the combination of the axle, having its ends turned backward and then upward, with the wheels applied to the upturned ends, substantially as set forth.

293,262. CONRAD HUEHN, Rochester, N. Y., Plow. Feb. 12, 1884. Filed June 30, 1883.

1. The combination of the beam, having the bifurcated rear end, with the standard, formed of a single plate, bent or doubled so as to form a pair of wings, connected by the curved front edge, and having their upper edges brought together so as to form a flange, fitted in the bifurcated rear end of the beam, and shoulders abutting against the under side of the latter, substantially as set forth.

2. The combination of the beams A A, having bifurcated rear ends, vertically adjustable wheels or casters at the front ends of said beams, uprights F' at the rear ends of said beams, handles V, secured to said beams and

uprights, which latter are thereby braced, braces connecting the said uprights, adjustable near their upper and lower ends, and adapted to permit the beams to move vertically independently of each other, and the standards secured to the forked rear ends of the beams, as set forth.

293,266. THOMAS MEIKLE, assignor to T. Meikle & Co., Louisville, Ky., Cultivator. Feb. 12, 1884. Filed Aug 7, 1883.

1. In combination with the beam B and drag bar A of a cultivator, a coupling consisting of the central piece, C, pivoted to the rear end of the beam, and the side pieces, F F, attached to the front end of the drag bar and pivoted to the piece C, said parts being constructed, respectively, and arranged to form a compound joint substantially as set forth.

2. In combination with the drag bars and beams of a straddle row cultivator, the arch yoke D, having stems D', connecting the beams and turning in the beams to permit the fore and aft independent play of the plows, and said stems D' also forming pivots on which the drag bars swing from side to side, substantially as set forth.

3. In combination with the vertically swinging drag-bars of a cultivator, the swinging bifurcated spring-foot H H', the elastic arm I I' of which is curved, substantially as shown, so as to perform the double function of supporting the spring foot itself on the cross-bar K of the drag bars, or of supporting the drag bars on the spring foot when the former are raised, so as to lift the shovels above the ground, substantially as set forth.

293,331. THOMAS B. JEWETT, Steubenville, Ohio, Tongueless Wheel Cultivator. Feb. 12, 1884. Filed Oct. 29, 1883.

My invention relates to an improvement in tongueless wheel cultivators; and it consists, first, in an axle or arch which has its two ends bent forward and then turned horizontally upward to receive the sleeves to which the front ends of the beams are attached; second, in the combination, with the arch or axle, of the draft bars, having lances therewith or secured to them suitable arms or levers, which project backward and form supports for the beams, in order to hold the machine still for turning around and in transporting it from place to place; third, in the combination of the axle with the sleeves, to which the front ends of the beams are loosely connected, the beams being provided with suitable recesses in their ends, in order to limit their movement, or having the pin holes turned at the inner end, all of which will be more fully described hereinafter.

The object of my invention is to provide a tongueless wheel-cultivator in which the beams can be adjusted laterally in relation to each other, and in which the beams can be made to stiffen the machine while being moved from place to place, and to throw the points of draft as near to the front ends of the beams as possible, so as to lighten the draft upon the animals.

1. In a cultivator, an arch or axle having its ends turned forward and then inward, for the purpose of having the front ends of the beams attached to them, substantially as shown.

2. In a wheel-cultivator, the combination of the axle, having its ends turned forward and then inward, with the sleeves, which are applied to the ends, the sleeves being provided with means for limiting the movement of the beams, substantially as described.

3. The combination of an axle with the sleeves, having the vertical portion I provided with pin or bolt holes, made at or near one end of the sleeve, whereby, when the sleeves are reversed from one end of the axle to the other, the distance between the beams is increased or decreased, substantially as set forth.

4. In a wheel-cultivator, the combination of the axle, the draft rods, the arms or braces, and the beams, whereby, when the beams are hung upon the arms or braces, the machine is locked rigidly in position, substantially as specified.

5. In a wheel-cultivator, the combination of an axle, having its ends turned forward and then inward, with the sleeves, provided with suitable means for regulating the vertical play of the beams, the draft rods, the arms or braces, which are formed with or secured to the draft rods, and the cultivator-beams, substantially as shown and described.

294,806. CHARLES W. POST, Springfield, Ills., Cultivator. Mar. 11, 1884. Filed Sept. 14, 1883.

This invention relates to an improvement in cultivators, in which the short axles located at the sides of the arch are hinged or otherwise hung so as to be capable of an independent lateral movement while the machine is being drawn over the ground, and in which the beams carrying the shovels are susceptible of lateral adjustment and a vertical tilt or play.

The objects of my invention are to provide means whereby, allowing for a lateral swing on the part of each axle, shall, when the lugs are slackened up, automatically right and hold in proper position the axles and wheels, and prevent the latter from swinging round to the front or back, also, to provide an improved means for supporting the arch upon the axle and for allowing a vertical adjustment of the arch and a lateral swing or play of the axles.

A further object is to provide novel means for allowing the beams carrying the shovels to have both a lateral adjustment and a vertical tilt or play, and at the same time prevent the machine from tilting down, finally, to provide certain improved details of construction, all as hereinafter described and claimed, and illustrated in the annexed drawings, in which—

1. A cultivator arch and the axle end thereof, composed of continuous parallel bars separated by intermediate blocks, said bars and blocks being secured together by bolts, substantially as described.

2. The combination, with the beams and with the arch of a cultivator, of blocks rigidly secured to the axle ends of the arch, and forming bearings for said beams, substantially as described.

3. The combination of the beams and arch of a cultivator with a block secured to the axle end of said arch, and forming a connection of the beams thereto, said block having one or more distinct bearings providing for a lateral adjustment of said beams, substantially as described.

4. In a cultivator, the combination, with the beams, of perforated bearing-blocks having one or more projecting conical seats or bosses, providing for a tilting movement of the beams, substantially as described.

5. The beam provided with a forked end, having slots in the ends of its fork, in combination with the block rigidly secured at one end of the arch, and bolts passing through said blocks and slots, substantially as described.

6. The combination, with the metal block formed with an upper and lower set of bosses, and rigidly secured at an end of the arch, of the beam having a forked and slotted end embracing an upper and lower boss, and a bolt passing through the block and its bosses, and also passing through the slots in the end of the beam, whereby the latter shall be capable of a vertical tilt or play, substantially as described.

7. The combination of the arch and an axle pivotally jointed thereto, with a flexible connection for exerting a force tending to maintain said arch and axle in alignment with each other, substantially as described.

8. The combination of the arch and an axle pivotally jointed thereto, with a spring connecting said arch and axle, substantially as described.

9. The combination of the arch and an axle pivotally jointed thereto, with a spring rigidly attached at one end to the arch, and at its other end having a shifting bearing in contact with the axle, substantially as described.

10. The arch, in combination with an axle pivotally jointed thereto, and provided with a rigid arm having a slotted bearing, and extending above the pivot of the axle, and a spring, one end of which is rigidly secured, and the other end working in said bearing, substantially as described.

11. The arch and the rigid bearing-block, in combination with the axle, and means, substantially as described, pivotally connecting and providing for a vertical adjustment of the axle with the arch, as and for the purposes set forth.

12. The arch and the rigid bearing-block, in combination with the sleeve seated and vertically adjusted in said block, and a pivot end braced by said sleeve and forming a connection between the arch and the axle, substantially as described.

13. The combination, with the draft rod, the

axle, the socket B, and pivot-bolt connecting said rod and axle, of a brace rod rigidly connecting the block, rod, and axle, substantially as described.

11. The combination of the arch, the axle, the draft rod, a pivot connecting said elements with each other on a concentric axis, and a flexible connection between the arch and axle, all substantially as described.

15. The combination, with the arch and the beams, of a bent hang-up arm, pivoted to the arch and provided with a right angular bend, substantially as described.

295,937. WM. S. PATES, assignor to Haggood Plow Co., Alton, Ills. Cultivator. April 1, 1884. Filed Jan. 11, 1884

1. In a tongueless cultivator, the frame consisting of the arched axle provided with horizontal arms, the spindles provided with the perforated head and the lug, the swivel E, the draft bar, constructed U shaped, one leg thereof attached to the outer end of the spindle, and the other leg attached to the said lug, and the axle bar G, in combination, all substantially as and for the purpose set forth.

2. The spindle D, provided with the perforated head and the lug, in combination with the arched axle provided with horizontal arms, the said spindle connected to the said axle by a swivel, permitting the said spindle to swing, as shown, and with the draft bar, the said lug attached to the said draft bar with a bolt, all substantially as and for the purpose set forth.

3. The swivel E, constructed with the open-mouthed eye or collar, with perforated lips adapted to be drawn together by means of a bolt and nut, the shoulder and the rounded extension screw threaded, as shown, in combination with the arched axle provided with horizontal arms, and spindles provided with the perforated head, substantially as and for the purpose set forth.

4. The draft bar, constructed U shaped, its legs straddling the wheel, in combination with the spindle provided with the perforated head and the lug, one leg of the said draft bar attached to the outer end of the said spindle, the other leg attached to the said lug, as shown, and for the purpose specified.

5. The stop lock I, constructed with an eye, *m*, and provided with the arm *g*, in combination with the sleeve J and the axle A, the said eye clasped to the sleeve with the bolt *g*, and the said arm adapted to stop and abut against the said axle, as specified, and for the purpose set forth.

6. In a tongueless cultivator, the combination of the axle A, wheels B, spindle D, swivel E, draft bar F, axle-bar G, sleeve J, stop lock I, and plow C, substantially as and for the purpose set forth.

296,025. ANDREW J. MARBERRY, Cabot, Ark. Cultivator. April 1, 1884. Filed Jan. 27, 1883.

1. In a cultivator, the device for securing the shovel to the shank and holding it in any desired position by means of a yoke, *i*, bent around the shank from the rear, the forward ends provided with wings or flanges to receive

the concave side of the shovel, and secured by means of bolts, and arranged for throwing the soil either to the right or left, substantially as herein set forth.

2. The combination, in a cultivator, of the yoke, the adjusting holes and bolts, and the shovel arranged on the shank so as to rock thereon laterally and adjust vertically, as and for the purpose substantially as herein set forth.

3. The combination of the gage rods J, J, bowed centrally to be used as cranks in moving the plows inwardly or outwardly, as desired, with the ring and hook to secure said rods in position, substantially as herein set forth.

4. The combination of the eyebolts provided with stems, as shown, and the plates G H, with the gage-rods having right and left hand screw-threads, substantially as herein set forth.

5. The combination, in a cultivator, of a double-tier, A, provided at each end with a series of oblong slots, the central part bowed as described, and the clevis formed of two plates connected by means of bolts to the beam, with the plates G H, the eyebolts I, and the gage rods J, the whole arranged and combined substantially as herein set forth.

296,860. MARION W. McOANN, Posey, Ind. Cultivator. April 15, 1884. Filed Nov. 5, 1883.

1. In a wheel cultivator, the combination, with the wheel spindle having a bracket, E, at its inner end pivoted on the axle, of a draft-rod journaled on said spindle and secured to said bracket, substantially as described, and for the purposes specified.

2. In a wheel-cultivator, the combination, with the wheel spindle B, provided with a bracket, E, and adapted to be hinged to the end of the axle, of the draft rod C, journaled on said spindle and adjustably secured to said bracket, whereby the draft-rod may have vertical adjustment on said spindle and bracket, substantially as set forth.

3. The combination of the bracket E, having in its front end the slot *b* and on its rear end the lip *b'*, the wheel spindle B, the draft-rod C, adjustable on said spindle and bracket, and the hinged axle A, substantially as shown and described.

4. The combination, in a wheel cultivator, of the axle A, the horizontal portions of which are in two parts, the link-shaped extension-pieces D, adapted to be adjustably secured to either of said parts, the wheel spindle B, hinged thereto, and the draft-rod C, adjustably mounted on said spindle, substantially as described, and for the purposes specified.

5. In a wheel cultivator, the combination, with the plow beam E, of the runner F, pivoted thereto at its front end, and provided with a notch, *e*, and the spring E', secured to said plow-beam and running back over the end of said runner when it is in a raised position, and engaging with the notch *e* when it is in a lowered position, substantially as described, and for the purposes specified.

297,914. BYRON C. BRADLEY, assignor to First & Bradley Manufacturing Co., Chicago, Ills. Drag Bar for Cultivator Beams. April 29, 1884. Filed Nov. 26, 1883.

The object of this invention is to apply a drag-bar to beams of that class of cultivators termed "tongueless," and have such drag-bar firmly backed in both its elevated and depressed positions, thereby preventing accidental displacement of such drag-bar in use, no matter whether it is elevated or depressed; and its nature consists in pivoting the drag-bar in a mortise or recess formed in the forward end of the beam, and leaving its upper end, when the drag-bar is depressed, project above the top of the beam and engage with the hole or opening in a spring-plate attached to the upper face of the beam, and thereby lock and hold firmly the drag-bar in its depressed position, and having this end, when the drag-bar is raised, engage with the spring plate and lock and hold the drag-bar in its elevated position, all as hereinafter more specifically described, and pointed out in the claim.

The combination, with a beam, A, of the drag-bar B, having a projecting end, *b*, and a spring or spring-plate, C, having an opening, *c*, substantially as and for the purposes specified.

299,626. RICHARD CRACRAFT, assignor to the Berwick Agricultural Co., Berwick, Ills. Cultivator. June 3, 1884. Filed Dec. 14, 1883.

1. In a tongueless cultivator, in combination with the arched axle and wheels, and plow-gangs connected to the axle by a joint which permits free movement of the gangs upwardly, but limits their downward movement, a draft-plate constructed in two parts, an angular part, D', rigidly connected with the wheel-spindle plate, and the part D'', hinged to the angular part D' at its rear end and its forward end adjustable vertically with reference to the part D', substantially as and for the purpose specified.

2. In combination with the arched axle and wheels, vertically-adjustable draft plate, and plow-gangs hinged to the axle, the blocks I, constructed as described, and adapted to coact with the beam-plate J, having shoulders *j*, substantially as and for the purpose specified.

3. In a tongueless cultivator, in combination with an arched axle and plow-gangs hinged thereto, and provided with devices for suspending the gangs to the axle, a shoe constructed as described and reversibly attached to the axle, substantially as and for the purpose specified.

4. In a cultivator, in combination with the plow-beams and plow-carrying standards, the plate *l*, having hole *l'* and stud *l''*, and the plate *m*, having tubular stud *m'* and bent brace *m''*, substantially as and for the purpose specified.

244,367. JOHN AUSTIN, Chicago, Ill. Plow. July 19, 1881. Filed Jan. 3, 1881.

1. The combination, in a rotary plow, of one or more diagonally-arranged rotary plowing disks, B B', and the landside C, the latter consisting of a thin vertical blade in the form of a shoe, constructed, adapted, and arranged, substantially as shown and described, to follow one of the said disks and to enter the soil vertically near the land side of the furrow, for preventing the tendency of lateral movement of the plow, owing to the diagonal arrangement of the plowing disks, as set forth.

2. The combination, with each other and the beam or frame of a rotary wheeled plow, of the pivoted and laterally-adjustable box H, the wheel D, the hanger or stock E, entering the said box and being rotary thereto, and carrying the said wheel, the lever I, applied rigidly to the said box, and the adjustable segment J, substantially as and for the purposes specified.

3. The combination, with each other and the beam or frame of a rotary wheeled plow, of the pivoted and laterally-adjustable box H, having elongated trunnions e b, the bearings F F', the adjustable collars c c', mounted on the said trunnions, the wheel D, the rotary hanger or stock E, and a lever and locking device for controlling the inclination of the said box, for the purposes set forth.

4. The combination of the frame A, having on its rear end the arms G G', the boxes F F', the laterally-adjustable box H, having trunnions b b', the wheel D, the hanger or stock E, the lever I and its bolt, and the laterally-adjustable cogged segment J, substantially as and for the purposes specified.

245,053. JAMES W. BODLEY, New Orleans, La. Rotary Cultivator. Aug. 2, 1881. Filed April 19, 1881.

My invention is an improvement on the devices shown in Letters Patent No. 239,219, granted March 22, 1881, for supporting the rotary plows and traction wheels. In that patent the rotary disks were journaled on swiveled standards with adjustable bearings and braces, for adjustment toward each other and to different angles to the line of draft. The swiveled axle-standard was held in position from moving sidewise by a side brace attached to the cross-beam of the machine and to the standard near the axle by means of a strap or band connection. To this strap or band was secured a spindler projecting outward from the machine, upon which the hand-lever having a traction-wheel attached was pivoted. There was also a brace attached to a plate or washer on the axle between the disk and upright standard, extending to the forward cross-beam of the machine. The draft-bar was also connected to this plate or washer on the axle, the forward end supported by a chain secured to the cross-beam above. This mode of attaching the braces to hold the axle-standard and support the swinging traction-wheels, and also the manner of connecting the draft-bar, is not considered sufficiently strong and rigid for the work the machine has to perform; so I have devised a form of axle-support to which the brace-rods and draft-bar can be attached, possessing the requisite amount of strength and durability, that will overcome the objections found in the other machine.

1. In a rotary-disk cultivator, the combination, with the standard F, bent to form the axle of the rotary disk, of the sectional support A, having the angular bearing for the axle-standard and provided with lugs for attaching draft and brace rods.

2. In a rotary-disk cultivator, the combination of the axle-standard, the lever K, adapted to adjust a traction-wheel, and the sectional support A, having an angular bearing for the axle-standard and a plain bearing for the pivot D of said lever K.

250,739. ISAAC N. KYLE, Troy, Ohio. Rotary Gang Plow. Dec. 13, 1881. Filed Feb. 17, 1881.

The novelty of my invention consists in the combination and arrangement, in a rotary gang-plow, of two series of disks, the rear ones of which is set diagonal to the line of draft of the machine, and is composed of concavo-convex disks, and the forward one of which, composed of flat disks, is set in line with the draft of the machine, with each disk at a point midway between the cutting-edges of the following disks; also, in other details of construction, as will be hereinafter specifically set forth.

1. In a gang-plow, the combination, with a diagonal series of concavo-convex disks having

continuous cutting-edges, of a front series of flat cutting disks arranged to operate in the line of draft, but equidistant between the cutting points of the concavo-convex disks, whereby the earth is first cut and then subdivided and turned over, substantially as described.

2. In a gang plow, the combination, with a diagonal series of concavo-convex disks having continuous cutting-edges, of a front diagonal series of flat cutting disks arranged to operate in the line of draft, but equidistant between the cutting points of the rear concavo-convex disks, substantially as described.

251,135. FRANKLIN RICE, ADAM APPLE and MOSES APPLE, Van Buren Township, Montgomery County, Ohio; said Moses and Adam Apple assignors to said Rice. Tobacco Hilling Machine. Dec. 20, 1881. Filed Oct. 10, 1881.

Our invention relates to a machine the frame of which is supported on a forward wheel and the rear end on a revolving scraper consisting of a series of loes, which are brought successively into operation by a trip operated by angular projections on the side of the said ground-wheel, thus forming hills at regular spaces as the machine is drawn across the field, and is found useful in forming hills for planting tobacco and for similar purposes.

In a hilling machine, the combination, with the frame of the supporting wheel D, provided with cams or projections e, the reciprocating bar E, the elbow lever F, spring S, and revolving loes or scrapers B, substantially as shown and described.

253,542 EDWARD E BOSTWICK, Union City, Mich. Cultivator. April 18, 1882. Filed Oct. 26, 1881.

In a rotary cultivator, the combination, with the transverse shaft and means, substantially as described, for operating said shaft, of the duplex arms L, having clutch-bands N and slots O, and the shanks P, secured within said slots by bolts a and break pins b, all constructed and adapted to operate as specified.

253,801 ISAAC HUFFER, Taylorville, assignor of two thirds to John W. Moore and James C. McBride, Christian County, Ills. Soil Pulverizer. April 18, 1882. Filed Aug. 25, 1881.

The nature of my invention consists in the combination, with a drum which is armed with knives of suitable form and mounted on a transporting-frame, of gearing for giving rapid rotation to the drum, and novel means for elevating and depressing the drum and for stopping and starting the rotation thereof, as will be hereinafter explained.

In a soil-pulverizer of the character described, the combination of the tubular slides on frame B, the shaft of drum E bearing in said slides, the levers h h', and the rods g g', connecting the levers with slides e, all arranged for the purpose of engaging pinions e with spur-wheels f or disengaging said wheels, substantially as described.

257,914. SAMUEL C. BAUCUM, Waco, Texas. Sulky-Plow and Cotton-Scraper. May 16, 1882. Filed Jan. 16, 1882.

This invention relates to an improvement in sulky-plows, its object being to render the plow right or left hand for operation, to adjust the angle of presentation of the plow with relation to the line of draft, and to adapt the plow as a cotton-scraper; and it consists of the combination and arrangement of parts, substantially as hereinafter more fully set forth.

1. The combination, with the beam F, having eye b, the bracket c f', and disk H, of the rod e, adjusting collars j, rod G, support d d', levers K, and slotted arms k', all constructed and adapted to operate as described.

2. The combination, with the beam F, carrying disk H, of the rod e, collars j, rod G, support d d', slotted arms k', and independent levers K, substantially as described.

259,894. OREN E. MILES, Cedar Rapids, Iowa, assignor to Daniel H. Richards, same place. Plow. June 20, 1882. Filed April 7, 1882.

1. The improved method of plowing herein shown and described, the same consisting in cutting a triangular slice from the soil along the furrow to be made by a vertical cut and excavating underneath said slice, causing it to drop, right side up, into the trench or furrow being made, and spreading the excavated earth over the slices of soil deposited in the trenches last made, substantially as shown and set forth.

2. A plow adapted to cut off a slice of earth triangular in cross-section from the surface of

the soil by a vertical cut and excavating underneath the same, causing the slice of earth to drop into the bottom of the trench or furrow right side up, substantially as set forth.

3. In a plow, the combination, with a rotary cutter or colter cutting in a vertical, or approximately vertical, plane, of an oblique cutter or cutter-head adapted to excavate earth in an oblique direction from the surface of the soil to its point of intersection with the cut made by the rotary cutter or colter, substantially as and for the purpose herein shown and set forth.

4. The combination, in a rotary plow, of the master-wheel G, shaft F, pinion E, level-wheel G, frame I, hung upon shaft F, and having the handle or lever J, shaft K, mounted in said frame and provided with the level pinion N and rotary cutter head L, and the rotary colter or cutting-disk O, all constructed and combined to operate substantially in the manner and for the purpose herein shown and specified.

260,596. ENOS M. MILES, Lawrence, Kan. Combined Revolving Plow or Spader and Roller. July 4, 1882. Filed Sept. 24, 1881.

My invention is an improvement in the class of cultivating-machines in which a series of cutters or spades are successively forced out of a revolving cylinder through slots in the periphery of the same and caused to cut or slice and dig up the soil. In connection with such machine, and virtually as part thereof, I employ rollers which are aligned with the slotted cylinder and mounted on the same axis or extensions thereof.

1. The combination, with the frame work A, shaft B, disks D, spades E, and slats F, of the collar c, provided with flanges c', springs e', disks G, having arms g', and lever I, substantially as and for the purposes specified.

2. In a spader, the combination, with the disks G, lever I, and cover K, of the lever L, support k, chain F, support P, pulley Q, and rack R, substantially as described, whereby the spades may be adjusted to any desired depth of thrust, as set forth.

3. In combination with the cylindrical body of the spader and its shaft E, the rollers V V', supplementary roller shafts X, screw-down shaft B, and having flanges r and nuts r', all arranged as shown and described.

4. The combination, with the shaft B, disks G G', and lever I, of the arms g', having slots g', and the dust-boxes H, having side openings h h', all as shown and described.

260,673. JACOB FEIERABEND, New York, N. Y. Plowing and Tilling Apparatus. July 4, 1882. Filed July 13, 1881.

My invention consists of a rotary helical plow constructed and arranged for operation in certain novel respects, and also the combination, with the plow, of attachments and contrivances for use in connection with it for facilitating its work and adapting it to various conditions of soils, service, &c., all as herein after more fully described, and illustrated in the accompanying drawings, in which—

1. A rotary plow consisting of a helix of thin metal-collared edgewise around and along a central shaft that is arranged in the line of the advances of the plow when at work, said helix being concave on the forward side and convex on the rear side, and being constructed and operated by means of driving-gear, so that it enters the ground at the hind point, C, and turns in the direction whereby the screw advances, with respect to the ground, in the direction of the movement of the screw along the ground, substantially as described.

2. The combination of the sheer I with the rotary helical plow A, having concave front and convex rear sides, and arranged on a shaft whose axis is in the line of the movement of the plow along the ground, substantially as described.

3. The combination of the clearer J with the rotary helical plow A, having concave front and convex rear sides, and arranged on a shaft whose axis is in the line of the movement of the plow along the ground, substantially as described.

4. The combination, with the rotary plow A, of the reciprocating saw-colter O, having a bore, X, substantially as described.

260,782. GEORGE PIRBUNG, Ravenswood, Ills. Rotary Plow. July 11, 1882. Filed April 22, 1882.

1. In a rotary plow, the combination, with a hand-lever, of a vertically-reciprocating piston located between the points of termination of the two half-axes, and the two rods connected thereto by swivel joints extending respective-

ly backward and forward to operate the clutches on the said half-axes, substantially as hereinbefore set forth.

2. In a rotary plow, the combination, with the axles, of the loose gear wheels *F*, clutches *g*, rods *i*, piston *J*, plow shaft *B*, pivoted levers *C'*, rock-shaft *L*, with arm *H* and link *K'*, and lever *G*, substantially as and for the purpose specified.

3. In a rotary plow, the combination, with lever *C*, fulcrum on the carriage axle, having a rectangular opening at one end and a recess at the other, of the movable head block *D'*, set-screw *d'*, adjustable bearing *C*, bolt *b'*, and oblique plow shaft *B*, substantially as described.

4. A rotary plow consisting of a hand lever, *G*, arms *H*, connecting rods *k*, levers *C'*, shaft *B*, and piston *J*, rods *i*, clutches *g*, gear wheels *F*, and pinions *e*, connected and arranged by the means and in the manner hereinbefore described and set forth.

5. In a rotary plow, the combination of the oblique plow-shaft, having pinions on or near its ends, with two half-axes terminating in a central longitudinal beam having loose gear-wheel meshing with said pinions, the whole arranged to drive said plow-shaft by the mechanism hereinbefore described and set forth.

6. In a rotary plow, a hub, *h*, having a flange in the face of which are recesses *m'*, formed to receive the shanks or standards of the plows, secured therein by nuts and bolts, as hereinbefore described and set forth.

262,577. WM. E. CROSSBY, Chelmsford, and ARTHUR CAREY, Rochford, County of Essex, England. Machine for Digging Land. Aug. 8, 1882. Filed Mar. 11, 1882. Patented in England May 24, 1881, 2,279, and in France Nov. 29, 1881, 134,092.

This invention consists essentially in the combination, with a series or number of spades, forks, tines, or digging instruments, of a bar or frame carrying the same, stationary guides for said bar or frame, and mechanism, which may consist of a crank-shaft and suitable connections, for reciprocating said bar or frame and its spades, forks, or tines upward and downward to force the latter into the earth, and for oscillating or rocking the bar or frame or the spades, forks, or tines, at or near the termination of their descent only, to throw up the earth by the said spades, forks, or tines with a quick movement, as more fully hereinafter described.

1. The combination, with the bar or frame and its attached spades, tines, or digging implements, of mechanism for reciprocating said bar or frame upward and downward, stationary guides wherein said bar or frame is guided during its ascent and descent, thereby causing the spades, tines, or implements to enter the ground in straight lines, and means for turning or swinging said spades, tines, or implements upward and outward quickly as said bar or frame approaches the end of its downward movement, substantially as and for the purpose specified.

2. The combination, with the bar or frame and its attached spades, tines, or implements, of mechanism for reciprocating said bar upward and downward, and guides for said bar adjustable to different inclinations, substantially as and for the purpose specified.

3. The combination, with the bar or frame and its attached spades, tines, or implements, of the crank-shaft and rod for reciprocating said bar, and guides for said bar or frame, provided at their upper ends with eyes, whereby they are suspended concentrically to said crank-shaft, substantially as specified.

4. The combination, with the bar or frame provided with journals, and its rigidly-attached spades, tines, or implements, of guides for said journals, wherein the bar or frame may turn, and a crank-shaft and connecting rod connected with said bar or frame for reciprocating it upward and downward and for turning it, substantially as and for the purpose specified.

5. The combination of the spades or tines *a*, the bars *b*, provided with journals *a'*, the slotted guides *f*, provided with caps *f'*, and the crank-shaft *c* and connecting-rod *d*, substantially as specified.

265,917. ANDREW J. COOHRAN, Indianapolis, Ind. Soil Pulverizer. Oct. 10, 1882. Filed June 20, 1882.

The combination, in a soil pulverizer, of the frame, the roller, the curved teeth *F*, the conical cutters and elements *G*, mounted on the rock shaft *H*, said rock shaft, the lever *I*, and

the catch *J*, all constructed, arranged, and operating substantially as shown and described, and for the purposes specified.

266,689. EZRA G. GODDARD, East Saginaw Mich. Adjustable Rotary Sulky Plow. Oct. 31, 1882. Filed June 10, 1882.

1. In a rotary plow, the combination, with the frame *A*, consisting of the base *a*, beam *b*, and beam *c*, provided with extensions *d, e, f*, of the shaft *U*, and the separate U-shaped frames *D D'*, swinging upon said shaft *U*, substantially as specified.

2. In a rotary plow, the combination, with the frame *A*, consisting of the base *a*, beam *b*, and beam *c*, having the extensions *d, e, f*, of the shaft *U* and the swinging frames *D D'*, the shaft being adjustably connected to the frame by bolts and holes, and the swinging frames constructed to slide on the shaft, as specified.

266,824. JUDSON B. HURD, Sour Lake, Texas. Revolving Plow. Oct. 31, 1882. Filed June 27, 1882.

1. A revolving plow constructed, substantially as herein shown and described, with a series of radial blades attached to a roller or cylinder and a series of radially-movable scraper-blades between the cutting-blades, as set forth.

2. In a revolving plow, the combination, with a cylinder and a series of radial blades attached to the same, of movable scraper-blades between the cutting-blades, and devices for moving the scraper-blades to and from the outer edges of the cutting-blades, substantially as herein shown and described, and for the purpose set forth.

3. In a revolving plow, the combination, with a cylinder and a series of radial blades attached to the same, of scraper-blades between the cutting-blades, and of circular blades at the ends of the cylinder, substantially as herein shown and described, and for the purpose set forth.

4. In a revolving plow, the combination, with a cylinder and radial blades attached to the same, of movable scraper-blades between the same, and of scraper-plates resting against the outer edges of the cutting-plates and attached to the frame of the plow or the end plates of the roller, substantially as herein shown and described, and for the purposes set forth.

5. In a revolving plow, the combination, with the cylinder *B* and the radial blades *A*, attached to the same, of the scraper-blades *D E* between the blades *A*, the pivots *F*, attached to the arms of the blades *D E*, and the end plates, *K*, each provided with a groove, *M*, in the shape of a semi-circle notched at the ends by a chord, substantially as herein shown and described, and for the purpose set forth.

6. In a revolving plow, the combination, with the cylinder *B* and the radial blades *A*, of the scraper-blades *D E*, the pivots *F*, attached to the ends of the arms of the same, the circular cutters *J*, provided with radial slots *H*, and the end plates, *K*, provided with grooves *M* in the inner surfaces, substantially as herein shown and described, and for the purpose set forth.

7. In a revolving plow, the combination, with the cylinder *B* and the radial blades *A*, of the scraper-plates *D E* between the blades *A*, the springs for pressing the outer edges of the blades *D E* against the blades *A*, and devices for moving the blades *D E* to and from the outer edges of the blades *A*, substantially as herein shown and described, and for the purpose set forth.

269,330. LUCIUS STEBBINS, Hartford, Conn. Cultivating Machine. Dec. 19, 1882. Filed Sept. 21, 1882.

1. In a cultivating machine, the combination of the rocking frame *C*, the bar *G*, the adjustable link *H*, and the cam *J* on the axle of the wheels *E*, substantially as described.

2. In a cultivating machine, the combination of the two rocking frames *C* and *D*, with the wheels *B* and intermediate mechanism, whereby said frames are operated alternately, substantially as described.

3. In a cultivating machine, the combination of the hinged frame *T*, the roller *S*, having blades *S'*, the cutters *U*, the cord *W*, and the lever *V*, substantially as described.

4. The pivoted frame *O*, provided with teeth *P* and handle *R*, in combination with the frame *A*, provided with the hook *Q*, and adapted to turn upward, substantially as described.

269,792. COLUMBUS JOHNSTON, Clarksville, assignor of one-half to Sylvester T. Johnston, St. Louis, Mo. Rotary

Plow and Pulverizer. Dec. 26, 1882. Filed April 21, 1882.

My improvement is shown and described with two rotary plows and pulverizers; but the machine may have but one of these plows; or it may have two or more, according to circumstances.

1. The combination of shaft *K*, wheel *U*, blades *V*, bar *N*, hanger *M*, having slot *m*, upright guide sides *O O*, shaft *K*, grooved pallets *Q Q*, chains *P P*, lever *S*, and stud bar *T*, as set forth.

2. In a rotary plow, the blades curved backwardly toward the wheel to adapt the body of each blade to enter the ground before the point, as and for the purpose set forth.

3. A rotary cutter and scatterer consisting of a wheel provided with radially-curved blades, substantially as shown and described, twisted slightly rearwardly at their upper sides and ends, the bodies of the blades adapted to cut and slice the surface, and the ends to follow and throw back and scatter the sliced surface, as set forth.

271,142. HIRAM SKILLINGS, New Bedford, Mass. Spade-Wheel Plow. Jan. 23, 1883. Filed Oct. 3, 1882.

In a revolving plow, the combination, with the sill *A* and journal-shaft *b*, of the angular supports *B B'*, each provided at its rear end with the diagonally arranged spade-wheel, the supports *B B'* being rigidly secured to the sill, and the support *B'* hinged to the shaft *b*, substantially as described.

272,631. GASPARD A. BETANCOURT, Havana, Cuba. Rotary Plow. Feb. 20, 1883. Filed Nov. 16, 1882.

The invention consists in a rotary plow constructed with a drum mounted in a frame, and provided with slots in its shell, through which pass standards having a point at each end, and provided with central longitudinal slots to receive the shaft of the said drum, whereby the movements of the said standards will be limited, as will be hereinafter fully described.

1. A rotary plow constructed substantially as herein shown and described, and consisting of a drum mounted in a frame, and provided with slots in its shell through which slide diametrically standards having a plow at each end, as set forth.

2. In a rotary plow, the combination, with the drum *D*, provided with slots in its shell, and the shaft *C*, of the diametrical standards *E*, having longitudinal slots *F* in their centers, and provided with a plow, *G*, at each end, substantially as herein shown and described, whereby the plows will be made to loosen and mellow the soil by the rotation of the said drum as it is drawn forward, as set forth.

3. In a rotary plow, the standards *E*, made, substantially as herein shown and described, with longitudinal slots *F* in their centers, and a plow, *G*, at each end, as set forth.

273,101. JOSHUA A. KAY, Melbourne, Victoria. Cultivating Machine. Feb. 27, 1883. Filed Aug. 25, 1882. Patented in Victoria Nov. 15, 1881, 3,125.

My invention consists in an improved construction and arrangement of machinery for plowing or digging or breaking up the earth prior to its undergoing the subsequent operations of turning over, sowing, and harrowing when the land is to be tilled, and prior to its being lifted and removed when the object is simply that of excavation, as in the forming of dams, &c. In the former case I add the contrivances for turning over, sowing, and harrowing to those for plowing, digging, or breaking up, so as to enable one machine to perform all these operations at one and the same time, but in due succession so far as the order of their procedure is concerned, and in the latter case I may add or omit the elevators for lifting the broken-up earth into a vehicle or conducting it to any required point.

1. The curved scoops *M*, having end plates, *M'*, the disks *M''*, secured to shaft *M'''*, said disks and plates being provided with dises, and secured in the manner and for the purposes set forth.

2. The combination of the driving wheels *I*, the clutch *K*, lever *L*, and jointed connecting-lever *l* with the compound lever *Q*, link *S*, and check-plates *T*, substantially as described, and for the purpose set forth.

3. The disks *E'*, provided with multiple picks *E''*, said disks being mounted on shafts *E'''*, said shafts being provided with sleeves *E''''*, and having a bearing in check-plates *D'*, substantially as described, and for the purpose set forth.

4. A series of pulverizing-teeth or multiple

picks secured to the sides of a series of disks, the butt end of each of said teeth being pivoted to the side, near the center of the tooth immediately following it, thereby forming a circular array of projecting joints, all equidistant from a common center, the whole of the series of disks being secured to a series of carrying-shafts, said shafts being vertically adjustable, substantially as described, and for the purposes set forth.

278,711. JOSEPH LANE, Chicago, Ill. Rotary Plow. June 5, 1883. Filed Nov 27, 1882.

This invention relates to that class of rotary plows in which disks or wheels are employed for doing the plowing, and has for its objects to simplify the construction and arrangement of the several devices composing the plow; to give the rotary disks or plows a free and independent support, by which each can rise or fall independent of the other, and a support by which both cutters or plows can be raised clear of the ground; to locate the plows in a better position relative to each other and to the carrying or supporting frame; to insure the holding of the cutters or plows down to their work without interfering with the vertical movement, and to improve generally the construction and relative arrangement of the devices; and its nature consists in the several devices and combinations of devices for producing the results above named, which are hereinafter described, and pointed out in the claims as hereinafter.

1. The combination, with a plow beam provided at each end with a rotary plow or cutter, of a support composed of chains or similar flexible devices connected with the beam adjacent to each end, whereby either end of the beam can freely rise and fall independently of the other end, and the entire beam is permitted to move bodily in a vertical plane, substantially as described.

2. The combination of a non-rotating plow beam having at each end a projecting spindle, a cutter or plow journaled to revolve on each of the said spindles, and a support for the beam, which permits it to freely rise and fall at either end independently of the other end, or move bodily in a vertical plane, substantially as described, whereby one cutter or plow can rise and fall independently of the other, as set forth.

3. The combination, with a stirrup or draw, C, of a plow beam extending through an opening in the stirrup or draw, and provided at each end with a rotary cutter or plow, and a support for the plow beam, which permits either end of the latter to rise and fall independently of the other end, substantially as described.

4. The combination, with the stirrups or draws C, of a plow beam, B, extending through openings in the stirrups or draws, and provided at each end with a rotary cutter or plow, side-pressure bars, c, and a support for the plow beam, which permits either end of the latter to rise and fall independently of the other end.

5. A plow beam, B, carrying at each end a rotary plow or cutter, in combination with a lifting device for lifting the beam bodily, or allowing either end to rise and fall independently, substantially as and for the purposes specified.

6. A plow beam, B, carrying at each end a rotary plow or cutter, in combination with the chains I, H, and lifting wheel or drum I, for raising the plow beam and plows bodily and allowing either plow to rise and fall independently when at work, substantially as specified.

7. The combination of a plow beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of its other end, with the draw bar D, stirrups or draws C, and carrying wheels, substantially as described.

8. The combination of a plow beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of its other end, with stirrups or draws C, draw bar D, arched axle E, E', and carrying wheels, substantially as described.

9. The combination of a plow beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of its other end, with a draw bar, D, and a lever, N, pivoted at one end upon the draw-bar, and connected with the beam for holding both of the rotary cutters or plows to their work, substantially as described.

10. The combination of a plow beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independ-

ently of the other end, with a weight box or receptacle, M, and a lever, N, substantially as described.

278,803. ROBERT B. LILLIE, Hanover, N. H. Soil Pulverizer. June 5, 1883. Filed Feb 25, 1882.

1. The combination, substantially as described, for supporting and elevating and depressing the shafts, of the two sets of pulverizing stars, such combination consisting of the tubular shaft I, solid shaft L, arms a and c, knee levers M and N, links O, O', and hand lever P, all being arranged and adapted to operate essentially as set forth.

2. The combination of the mechanism for supporting and elevating or depressing the shafts of the two sets of pulverizing stars, such consisting of the shafts I and L, arms a and c, knee levers M and N, links O, O', and hand lever P, with the mechanism for revolving the shafts of the two sets of stars by means of the wheels F, F', such mechanism consisting of the ratchetets h, the two gear trains G and G', and the pawls of the gears G, such pawls being provided with mechanism for operating them or forcing and holding them out of engagement with the ratchetets, as set forth.

279,818. CHARLES E. SACKETT, Morristown, N. J. Combined Plow and Pulverizer. June 19, 1883. Filed July 10, 1882.

1. The combination, substantially as herein before set forth, with a plow, of a pulverizing wheel for receiving the earth displaced by said plow, and consisting of thin, spokes radiating obliquely from said hub in the direction of said plow, a felly uniting the outer ends of said spokes, and a series of teeth projecting laterally from said felly.

2. The combination, substantially as herein before set forth, with a plow, of a pulverizing wheel having its axis of revolution inclined from a horizontal line, and consisting of thin, spokes radiating obliquely therefrom in the direction of said plow, a felly uniting the ends of said spokes, and a series of fangs radiating from said felly.

3. The combination, substantially as herein before set forth, with the plow and pulverizing wheel, of the retaining plate rigidly attached to the plow frame work confronting the open side of the wheel and serving to retain the earth thereon during the process of pulverization.

4. The combination, substantially as herein before set forth, of a plow, a pulverizing wheel, and an upturned lip upon the narrow side of the plowshare of said plow, for guiding the earth displaced by said plow within said pulverizing wheel.

279,819. CHARLES E. SACKETT, Morristown, N. J. Tilling Machine. June 19, 1883. Filed Feb 5, 1883.

First, to effect a complete reversal of the top layer of soils, weeds, &c., removed by the forward plow, I make the forward plowshare narrower than the rear plowshare, so as to leave a narrow mud strip upon the edge of the furrow, which strip acts as a hinge upon which the layer turns under the action of a mold board of appropriate shape, the strip retaining its hold long enough to produce the complete reversal.

Second, I have modified the construction of the pulverizing wheel or skeleton drum by giving to the transverse braces upon its inner circumference an inward curvature, so that in riding the inverted layer turned by the forward plow the pulverizer may sink as deep as possible into the furrow in which it travels.

Third, I also shorten both the rims and transverse bars for the purpose of cutting up the inverted layer, and I improve the details of construction in various other ways.

1. In a pulverizing wheel, the combination, substantially as hereinbefore set forth, of the wheel rims revolving in the furrow, and the curved transverse braces connecting said rims and forming a grooved tread, whereby said wheel, in riding the deposits within said furrow, is not materially elevated.

2. As an improvement in pulverizing wheels designed to ride the deposits within a furrow, the sharp cutting edges upon the rims and transverse braces of said wheel for the purpose of cutting the said deposits, substantially in the manner described.

3. In a skeleton pulverizing wheel, the combination, substantially as hereinbefore set forth, of the long hub, the end boxes thereon, the series of spokes radiating from each box, the circular rims, and the curved transverse braces.

281,149. CHARLES W. SMITH, Spring-

field, Ohio. Soil Pulverizing Machine. July 19, 1883. Filed Oct 12, 1882.

My invention relates to machines used for the purpose of manipulating the surface of the ground to render it smooth and in good condition for the subsequent operation of seeding.

My improvement consists in the combination and arrangement of the crushing roller, gang plows, and rotary cutters, as hereinafter described, and particularly pointed out in the claims.

1. The combination, with the crushing roller, of a set of gang plows, c, located in rear of said roller, and the strap, b, b', pivotally supported at one end, and at their opposite ends connected with a cross piece, a, the gang plows being hinged to the said cross piece, and being connected with each other by the cross piece, b, substantially as described.

2. The combination, with the main frame a, a', supported by the crushing roller and by a vertically adjustable castor wheel, of a set of gang plows, c, rigidly connected together and hinged to a cross bar, which is in turn connected with the main frame by supports pivoted to the latter, and a set of rotary cutters, a, located in rear of the gang plows, said members being constructed and organized substantially as described.

285,809. SCHUYLER S. GAEDNER, Chicago, Ills. Rotary Plow. Oct. 2, 1883. Filed Sept 18, 1882.

This invention relates to what are known or termed "rotary disk plows," or plows using a rotating cutting disk to perform the plowing, and has for its objects to improve the construction, arrangement, and operation of the rotary disks and their location and arrangement in relation to the supporting frame and wheels; and the draft, to enable the draft to be readily and quickly changed to adapt it to the number of disks used, and at the same time overcome the natural tendency of the draft to raise the plows in use, to enable the frame and plows to be readily and quickly raised or lowered to travel from place to place or enter the ground, as required, and to improve generally the construction, arrangement, and operation of the devices forming the plow as a whole; and its nature consists in the devices and combination of the devices by which the above named objects are attained, which are hereinafter specifically described and pointed out in the claims.

1. The combination, with the disk-carrying frame A, having extensions B, B', of the boxes or brackets C, C', the carrying wheels and the axle D, capable of longitudinal adjustment in the boxes or brackets for changing the location of the carrying wheels with relation to the number of plow disks employed, substantially as described.

2. The combination, with the disk-carrying frame A, provided with the extensions B, B' and the boxes C, C', with which the extensions are connected, of the wheeled axle D, passing through the boxes and capable of longitudinal adjustment therein, and means for rigidly securing the boxes and axle together when adjusted, as desired, whereby the wheeled axle can be brought into line with any one of the disks carried by the frame substantially as described.

3. The frame A, having extensions B, B' forming braces, boxes, or brackets C, C', and axle D, in combination with seat support I, the seat J, and diagonal brace K, for transferring the weight of the driver to assist in holding the machine down to its work, substantially as specified.

4. The frame A, disk L, backing plate c, and journal or pin j, in combination with a slotted plate k', and bracket or support M, substantially as and for the purposes specified.

5. The frame A, disk L, backing plate c, and journal or pin j, in combination with the slotted plate k' and slotted hanger or bracket M, substantially as and for the purposes specified.

6. The combination, with the disk L, of locking or swinging hangers or brackets M, bolt, c', to which the hangers or brackets are swiveled, the connecting bar M, and an operating lever for the bar N, for changing the speed of the disks, substantially as and for the purposes specified.

7. The hangers or brackets M and plate k', either or both having slots, in combination with the disk L, backing plate c, and journal or pin j, for furnishing an adjustable support for the disks when attached, substantially as and for the purposes specified.

8. The disk L, backing plate c, and journal or pin j, in combination with the plate k', hav-

ing a bearing, *k*, for attaching the disk to an arm or support, substantially as described.

9. The tubular axle or standard *K*, having slots *l*, in combination with the rod *S*, having pins *x* and a means for raising and lowering the rod, substantially as and for the purposes specified.

10. The axle or standard *K*, having slots *l*, rod *S*, having pins *x* and hand-wheel *T*, in combination with the frame *A*, for raising and lowering the forward end of the frame, substantially as and for the purposes specified.

287,479. BUDD SMITH, San Francisco, Cal. Rotary Harrow and Clod Breaker. Oct. 30, 1883. Filed Dec. 15, 1881.

My improvements relate, first, to a novel harrow and clod pulverizer, consisting of a number of segmental plates hinged to and forming the surface and periphery of a cylindrical frame or roller, to which a revolving motion is imparted by suitable mechanism as it is drawn along over the surface of the ground. These plates are attached at one side or edge to the surface of the frame or roller by hinge-joints in such manner that by the revolving motion of the roller they are alternately thrown out radially from its periphery into a position to drag against and be drawn over the soil beneath them as the machine progresses, and are then folded or brought back into place and position on the roller. By this construction and mode of operation the harrow has both a breaking and pulverizing action and a harrowing and leveling operation as it is drawn over the ground.

The second part of my invention consists in the combination, with the revolving harrow and clod pulverizer, of novel means for giving to it the required movement of revolution during the progressive movement over the ground, by which also the harrow can be thrown into and out of action at any time during work.

Another part of my improvement relates to a novel frame and running gear for supporting and carrying the revolving harrow in position for work, and also for receiving and holding in working relation to the harrow a seed, grain, fertilizer, or manure hopper and broadcast distributing device, by means of which, when desired, the operations of sowing or distributing such matter and of covering it up or harrowing it into the soil can be performed simultaneously by and during the one forward movement or progression of the machine. By means of this part of my improvement the harrow can be employed in operating upon the soil to bring it into proper condition for sowing, and then, by placing within the frame in front of the harrow a seed sowing and distributing device, the same machine can be used successfully and to great advantage in sowing and covering seeds and in other and similar operations.

1. In a revolving harrow and earth pulverizer, the cylindrical frame having a surface composed of curved toothed plates or segments conforming to the circumference of the cylinder, and hinged on one side to and adapted to swing out from said cylinder during certain portions of its revolutions, the cylinder being arranged to revolve backward during the progress of the machine, substantially as set forth.

2. In combination with the cylindrical frame or body *B*, supported and capable of rotation in a carrying-frame, substantially as described, the curved segmental plates or sections *J*, having teeth *r* thereon, hinged or otherwise loosely connected at one edge or side to the said cylindrical frame forming the exterior surface of the frame when closed, and mechanism for imparting to the said frame a rotary motion in a backward direction during its travel or progression over the surface of the

ground, substantially as hereinbefore set forth.

3. In combination with the cylinder-shaft *H* the eccentrically slotted disk bearings *U*, having the toothed segment portions, the pinions *W*, to engage with the said segments, the shifting pinions *y*, the gears *g* on the rear axle, and means, substantially as herein described, for throwing the said shifting pinions into and out of gear with the driving-gears, for the purpose set forth.

4. The herein described supporting-frame for the working parts of the apparatus, composed of the goose-neck *b*, adapted to rest in front upon the front axle, and rising therefrom, and having the two divergent sides or arms *b'* *b'* extended backward and downward and parallel with each other, as shown, and terminating in the axle-boxes *c c*, substantially as set forth.

289,118. JAMES D. MCKINNON, Portland, Oregon. Combined Harrow and Roller. Nov. 27, 1883. Filed May 21, 1883.

1. The combination, with the drum *e*, of the wheel rims *a a*, grooved at *b*, and rigidly connected by spokes with a hub on the axle, as described, whereby when the hubs are in place on the axle the drum is held securely between the rims, but when the hubs are moved to the ends of axle the drum may be removed, as set forth.

2. In combination with the roller-frame, the boxes *k*, having a hub on each side, the forked bars *u*, the yoke-straps *o*, and the revolving toothed drum, as shown and described.

291,127. JOHN AUSTIN, Chicago, Ills. Rotary Plow. Jan. 1, 1884. Filed May 16, 1883.

My invention relates to that class of plows provided with rotary disks for laying the furrows, and in which the said disks are set at an angle to the line of draft. In the example shown I have represented a sulky gang plow of the class referred to.

1. The combination, substantially as specified, with the frame of a rotary plow having a diagonally-arranged plowing disk, of the draft-wheels *T T*, the vertically tilting sectional axles *D' D'*, carrying the said wheels and pivoted to the said frame, and an adjusting-lever jointed to the said axles, for the purpose of thereby admitting of the said wheels being both inclined laterally in the same direction by means of the same lever.

2. The combination of the wheels *T T*, the vertically-tilting axles *D' D'*, the bar *B'*, the blade *H*, made in sections, fastened to the rim of the said flange, the radial edges of the said sections having between their spaces opening into the said pockets, substantially as and for the purposes specified.

T lever *F'*, the links *H' H'*, and means for temporarily locking the said lever, in connection with the plow-frame, carrying diagonally arranged rotary plowing disks, substantially as and for the purposes specified.

3. A rotary plow-disk consisting of the combination of the hub *G* and flange *G'*, all made in one and the same piece, and having therein the pockets or depressions *c c*, and
293,080. JOHN D. RANKIN and WM. C. KNOX, Groesbeck, Texas. Soil Pulverizer. Feb. 5, 1884. Filed July 20, 1883.

1. In soil pulverizers, the combination of rotating blades on a shaft adjustable forward and backward, the driving wheel shaft *B*, the intermediate operating mechanism, and the two transverse shafts *d d*, substantially as described.

2. The combination of the driving wheels, the multiplying gear wheels, the two shafts *d d*, blades *W*, shaft *M*, adjustable forward and backward by means of a lever, *S*, frame *C*, having recesses for journal boxes *P*, the lugs *Q* on the latter, and the connecting-rod *R*, all constructed and adapted to operate substantially as described.

293,104. DAVID F. SPANGLER, Santa Ana, Cal. Spading Machine. Feb. 5, 1884. Filed Sept. 30, 1883.

1. The spading frame *H*, composed of the shaft *P*, the bearing-block *h'*, secured on the shaft *P*, the side bars, *h h*, the spade-carrying rods *h'*, journaled in the ends of bars *h*, and the arms *h'*, extended at right angles from the ends of rods *h'*, and having one end arranged to bear on the block *h'*, the said frame being suitably journaled and adapted to be revolved, as set forth.

2. In a spading machine, the combination, substantially as hereinbefore set forth, of the wheels *b b'*, the pallets *l l*, and spading frame *H*, arranged and operating substantially as described, and means for revolving the frame *H*, as specified.

3. In a spading-machine, the combination of the wheels *b b'*, the revolving spading-frame *H*, the pallets *l l*, pivoted on a swinging support, means for revolving frame *H*, and springs *f*, connecting the pallets at a point in advance of their pivots, with the framing, substantially as set forth.

4. In a spading machine, the combination, substantially as set forth, of the frame *A*, having axle *B* and driving wheels *b b'*, the spading-frame journaled in the rear end of the frame *A*, the operating mechanism mounted on said frames, suitable belts and pulleys gearing the operating mechanism with the drive-wheels and with the revolving spading-frame, and the pallets *l l*, all arranged and operating as and for the purposes specified.

300,413. JOHN B. TURCHIN, Radom, Ills. Horse Spading-Machine. June 17, 1884. Filed Aug. 8, 1881.

1. In a spading-machine, a cylinder consisting of a hub or hubs carrying a series of curved arms, *a*, having curved wings *N* pivoted thereto transversely, with a fixed cam, *O*, and connecting rods or springs arranged to hold said wings in position for receiving the earth as it is cut, and then causing them to swing outward and deliver the earth into the furrow in rear of the cylinder, substantially as shown and described.

2. The combination of the stationary axle *K*, having the grooved cam *O* secured thereon, with the rotating spading cylinder or drum, carrying the pivoted buckets or wings *N*, and the slotted rods *P*, provided with a pin, *p*, arranged to work in the groove of said cam, said rods having one end connected to the buckets or wings, and their slotted ends working loosely on the axle *K*, substantially as and for the purpose set forth.

3. A rotating spading drum or cylinder provided with the pivoted wings or buckets *N*, arranged to operate as described, and mounted in the pivoted frame or bars *F*, in combination with the main frame *A*, mounted on wheels *B B*, with clutches *a*, and driving-wheels *D D*, connected by chains *M*, all constructed and arranged for joint operation substantially as shown and described.

4. A cylinder or drum for spading-machines, consisting of a series of curved arms, *a*, having cutters *c* secured to their outer ends, with buckets or wings *N*, pivoted to said arms in rear of the cutters, and arranged to operate substantially as shown and described.

243,231. JNO M. FALL, Indianola, Iowa, assignor of half to J. T. Huffman, Shovel Plover. June 21, 1881. Filed April 21, 1881.

My invention is intended to apply well known methods to the specific production, in a rapid and cheap manner, of a shovel blade of improved and superior quality; and my object is to provide an improved, light, strong, and durable wrought-metal shovel plover, by reinforcing blanks of common form cut from flat plate metal of uniform thickness, in such a manner that the cutting edges, point, and entire front face can be more readily tempered and made hard enough to scour well, while the part of the complete shovel-plover that is subjected to the greatest strain remains comparatively soft and retains its tenacity.

Heretofore blanks for cultivator-shovels have usually been cut from a steel bar having a longitudinal swell in its center, that formed an integral rib along the entire longitudinal center of each shovel blank cut therefrom, to strengthen it and to aid in protecting and re-fitting its point; but such a surplusage of metal along the entire length of the shovel is a needless expense, and produces a heavy, clumsy shovel.

As an improved article of manufacture, a wrought-metal shovel-plover or cultivator-shovel having a reinforcing piece, *c*, permanently fixed on or milled with its back and lower portion, substantially as shown and described, for the purposes specified.

9,788. CLARK M. STEVENS, Berlin, Wis. Means for attaching Cultivator Teeth. Original 236,377. Jan. 4, 1881. Reissued July 5, 1881. Filed April 21, 1881.

1. The combination, with a loosely-pivoted cultivator-tooth, of a friction device having the same center as that of the cultivator-tooth, and a pawl and ratchet for connecting the loosely-pivoted cultivator-tooth and friction device, substantially as set forth.

2. The combination, with a loosely-pivoted cultivator-tooth, a friction device having the same center as that of the pivot of the cultivator-tooth, and a pawl and ratchet connecting the loosely-pivoted cultivator-tooth and friction device, of an adjustable stop for limiting the forward movement of the tooth, substantially as set forth.

3. The combination, with a cultivator-beam, a friction device, and a clamping-bolt for securing the friction device to the beam at any desired degree of frictional contact therewith, of a cultivator-tooth loosely pivoted on the same center as the friction device, and a pawl and ratchet for connecting the loosely-pivoted cultivator-tooth and friction device, substantially as set forth.

4. The combination, with a ratchet and clamping-bolt for securing the ratchet in a varied degree of frictional contact, of the cultivator-tooth standard loosely pivoted, so as to freely move in one direction, and a pawl pivoted to the standard and arranged to engage with said ratchet for retaining the tooth against movement in the opposite direction by the frictional engagement of the ratchet, substantially as set forth.

5. The combination, with a cultivator-beam, a ratchet, and clamping-bolt for retaining the ratchet against rotation under any desired frictional engagement, of a loosely-pivoted cultivator-tooth, a pawl connecting the tooth-standard and ratchet, and spring engaging with said pawl, substantially as set forth.

6. The combination, with a cultivator-beam, a ratchet, and clamping-bolt for securing the ratchet to the beam and against rotary movement by frictional contact, of a cultivator-tooth standard loosely pivoted upon a bearing formed on the ratchet, and a pawl connecting the standard and ratchet, substantially as set forth.

246,169 FRANK B. MANLY, Malta, Ohio. Plover-Standard. Aug. 23, 1881. Filed May 14, 1881.

This invention has relation to adjustable shovel-standards; and it consists in the combination, with the standard and beam, of a curved rack-and-pinion connection; also, in the construction and novel arrangement of the flanged and recessed pinions designed to operate in connection with a square-headed clamping-bolt, as hereinafter shown and described.

1. In combination with a plover beam and standard pivoted together, the rack and pinion devices for adjustment, substantially as specified.

2. The rack branch or branches of the stand-

ard, in combination with a clamp bolt and nut, and the pinions respectively connected with the head and threaded end of said clamp-bolt, substantially as specified.

246,170. FRANK B. MANLY, Malta, Ohio. Attachment for Cultivator Blades. Aug. 23, 1881. Filed May 14, 1881.

This invention has relation to devices for attaching a narrow or bull tongue blade to the end of the standard or beam; and it consists in the combination, with the blade having a centering-recess, of the tubular attachment plate, having a pivot stop in its front and transversely slotted upper and lower ends for engagement with the threaded studs or bolts of the blade, as hereinafter shown and described.

1. The combination, with the beam and bull-tongue blade *B*, recessed at *a*, of the attachment *D*, its bearing *d* for the beam, front projection, *a*, serving as a stop and center of adjustment, transversely slotted end bearings, *k*, and the fastening bolts and nuts of the blade, substantially as specified.

2. The attachment for bull tongue blades having the rear bearing, *d*, offsets *g*, center stop, *a*, serving as a stop and center of adjustment, and transversely-slotted end bearings, *k*, extending beyond said offsets, substantially as specified.

247,658. JAMES F. KING, Aubrey, Kan. Cultivator-Shovel. Sept. 27, 1881. Filed July 2, 1881.

By this construction, it will be seen that the point is securely held in position by means of its beveled or lap joint connection with the upper plate and the single bolt passing through holes in the plover-point and supporting-plate, and that when a plover-point is worn or broken it can readily be removed and a new plover-point substituted for it. It will also be seen that in the operation of the shovel the principal strain is borne by the supporting-plate *h*, which in my construction is secured to the upper plate, *a*, to the plover-point, and to the standard, and if the supporting-plate is broken it can readily be removed and another substituted for it.

The combination, with the upper plate, *a*, having its lower straight edge, *b*, beveled downwardly and provided with the holes *c* *e* *d*, of the supporting-plate *h*, riveted to the upper plate and projecting below it, and provided with the hole *o* and hole *g*, registering with the lower hole, *e*, of the plate *a*, plover-point *k*, provided with a straight edge, *l*, beveled upwardly, and hole *m*, screw-bolt *n*, and nut *p*, substantially as described, and for the purpose set forth.

247,766. THEODORE GRISSINGER, Mechanicsburg, Pa. Cultivator. Oct. 4, 1881. Filed June 18, 1881.

1. The combination of a vertical toggle-lever, having a suitable spring connected therewith, with a pivoted shovel shoe or support and the upright portion of a curved cultivator beam, all constructed and arranged substantially as herein set forth.

2. The combination of a vertically arranged toggle-lever and a vertical guide stem or rod, having encircling spring, with a curved cultivator-beam, having the upper end of the toggle-lever pivoted to its upright portion, and a shovel shoe or support connected with the lower end of said toggle-lever, as and for the purpose specified.

249,879. WM. L. BOGART, Nebo, Ills. Cultivator. Nov. 22, 1881. Filed July 18, 1881.

This invention relates to a novel mode of attaching cultivator-teeth or shovels to their standards, whereby they can be set square to the land or adjusted so as to present their faces either outward or inward, as may be required in cultivating crops, and also whereby the teeth or shovels are rigidly and strongly secured to their standards and sustained against backward strain by a curved bracing-plate, to which each shovel is pivoted and stayed, as will be hereinafter explained.

The combination, with the shovel *A* and its eyes *B*, *B*, of the eyes *C*, *C*, bolts *i*, *i*, plate *D*, plate *F*, its adjusting-screws *E*, and its curved bracing-extension *G* for the shovel, all substantially as described.

250,530. JOHN C. HECK, Monroe, Mich. Cultivator Shovel. Dec. 6, 1881. Filed Aug. 15, 1881.

The object of my invention is to protect plants from injury by reason of large clods of soil or stones being turned or thrown upon them by the shovel when working close to the

plants, and to accomplish this result without the use of separate or special fenders, such as are now commonly employed.

1. As an improved article of manufacture, a cultivator shovel provided at one side with a forwardly extending wing or fender integral with the shovel or blade, substantially as shown and described.

2. The herein-described shovel for cultivators, consisting of the body *A*, and the wing or fender *a*, extending forward and side-wise therefrom and formed in one piece therewith, substantially as shown and described.

251,961. JOHN SMITH and FERDINAND STEINKE, Horicon, Wis. Cultivator. Jan. 3, 1882. Filed Oct. 24, 1881.

1. The combination, in a cultivator, of a beam or drag-bar, a shovel standard, a hub or boss, and an encircling annulus or band adapted to be contracted upon the boss, the boss and annulus being attached, one to the beam and the other to the standard, substantially as and for the purpose set forth.

2. In a friction device for cultivator-standards, the combination of a hub or boss and an encircling annulus or band provided with a clamping device, substantially as shown, one of said parts being stationary relatively to the other.

3. The standard *A*, having at its upper end the annulus or band *D*, open at one side, and provided with a bolt, whereby it may be contracted, substantially as set forth.

4. The shovel-standard *A*, provided with lips *g* and openings or holes *p*, substantially as and for the purpose set forth.

5. In a cultivator, the combination of a shovel standard, *A*, provided with slots or openings *p* and lips *g*, a shovel point or tooth, *F*, a strap or band, *G*, passing around the shank of the tooth and through the slots, and means, substantially as described, for tightening the strap or band.

6. In combination with the standard *A*, provided with openings *p*, a shovel point or tooth, and a strap or band, *G*, adapted to straddle the tooth-shank and to pass through said openings, and notched as described, a pin or bolt, *t*, and wedge *u*, all combined and operating as set forth.

251,976 DANIEL C. VAN BRUNT, Horicon, Wis. Cultivator. Jan. 3, 1882. Filed Sept. 27, 1881.

1. A clamp for cultivator-teeth having hub *B* and ears *b*, in combination with a tooth *D*, staple *i*, and securing-nuts.

2. A cultivator-beam having concavity *a*, in combination with clamp having hub *B*, the staple *C*, and nuts, as set forth.

252,279. WILLIARD A. VAN BRUNT, Horicon, Wis. Cultivator Tooth. Jan. 10, 1882. Filed Sept. 3, 1881.

1. The combination, with the slotted bar, of a slipping plate pivoted thereto and having the perforated shank, a spring-tooth secured to the latter, a clip-plate adapted to brace the tooth, and a clip for holding the tooth and clip-plate in position, substantially as set forth.

2. The combination, with the bar having an open slot at one end, and a slipping plate consisting of a body and shank, the body of the said plate adapted to be secured in the slot, while the shank extends outward to a rearwardly-inclined direction, and a pivotal bolt for retaining the plate in any desired adjustment, of a double-pointed reversible spring-tooth secured to the said shank, substantially as set forth.

3. The combination, with the bar, of the slipping plate pivoted thereto, a double-pointed reversible spring-tooth having a longitudinal rib, a clip-plate having a longitudinal groove corresponding to said rib, and devices for securing the slipping plate, clip-plate, and tooth together, substantially as set forth.

4. The combination, with the pivoted slipping plate having a perforated seat or bearing on its shank portion, of a spring-tooth provided with a strengthening-rib, a clip extending through the perforated seat or bearing, and a clip-plate provided with a longitudinal groove, substantially as set forth.

252,536. HARLOW C. STAHL, Ballville Township, Ohio, assignor to the Fremont Cultivator Co., Fremont, Ohio. Cultivator Standard-Clamp. Jan. 17, 1882. Filed May 11, 1881.

The object of my improvement is to provide a clamp or coupling, for securing a standard or cultivator-tooth to a plover-beam or drag-bar, which may be easily applied to any beam and

by simple and convenient means, will provide for the standard a vertical adjustment, a forward and back adjustment of the plate, and also the lateral inclination of the standard.

1. The cultivator standard clamp or coupling composed of the sliding plate C, embracing the standard A and provided with the longitudinal slots F and the set screw B, the plate D, also having aperture to fit the standard A and having cross-slots H H, the bolts G G, and the beam B, as shown and described.

2. The combination of the plates C and D, slotted and perforated as described, the hollow standard A, the set-screw B, the beam B, and the bolts G G, as and for the purposes set forth.

10,076. JOHN S. ROWELL, Beaver Dam, Wis., Cultivator Tooth. Original 232,850. Oct. 5, 1880. Reissued April 4, 1882. Filed Oct. 27, 1881.

1. The double-pointed reversible tooth described, consisting of the metal shank S, having fixed similarly-curved shovel-points T at its opposite ends, the whole constituting a unitary structure of substantially the usual length of seeder-teeth, combined with a slipping plate adapted to hold the tooth by clamping near its upper point, substantially as described.

2. In combination with a beam and with a plate having a slipping connection with the beam, a double-bladed tooth, S T, detachably and reversibly secured to the slipping plate by a fastening independent of the fastening which secures the plate to the beam, whereby the tooth may be reversed without disturbing the plate, substantially as described.

3. The combination of the cleft-beam A, slipping plate B, clamped within and extending out of the beam cleft, the double-pointed reversible tooth S T, fitted to the protruding portion of the slipping plate, and mechanism for detachably securing the tooth to the exposed part of the plate, substantially as and for the purposes specified.

4. In combination with a cultivator-beam and with a double shovel-pointed reversible tooth, S T, an intermediate plate having a slipping connection with the beam, a fastener for rigidly but detachably securing the tooth to the plate, and means for guarding the upper tooth-point, substantially as set forth.

5. In combination with the beam and with a double-pointed reversible tooth, S T, having similar curved shovel-points, a plate having a slipping attachment with the beam, and a fastening for holding the tooth by its upper end to the plate, said slipping plate being extended to afford a guard to the unused tooth-point.

6. In combination with a beam and with a double shovel-pointed reversible tooth, S T, a plate having a slipping connection with the beam and rigid detachable connection with the tooth, said plate being extended and arranged to hold the tooth at the rear of the beam, substantially as described.

7. The slotted beam A, the pivoted slipping plate B, slotted to receive the binding-bolt b and provided with the clamping-bolt C, and shoulders outside of the beam, combined with the adjustable or reversible tooth S T, rigidly but removably secured thereto, substantially as described.

8. The slipping plate B, adapted to be pivoted at its front end by bolt p and provided with slot z, whereby the clamping bolt b may pass through said plate, combined with a hook-shoulder, P, and hook-headed clamp bolt C, whereby the shank S may be firmly but detachably held, substantially as described.

9. Combined with the reversible tooth S T, a slipping plate, B, adapted to be located in a cleft in the beam A and provided with a hook-shoulder, P, offset laterally from said plate, and the clamp-bolt C, whereby the shank S will be held in line with said plate, but capable of adjustment up and down thereon, as shown.

10. Combined with the reversible tooth S T, the slipping plate B, constructed with laterally-projecting flanges along its rear edge, whereby the unused tooth is guarded while the machine is in operation.

11. A slipping plate, B, pivoted and clamped within a cleft in the beam A by separate bolts and provided with a holding-shoulder, P, and clamp-bolt C, in combination with the reversible tooth S T, as set forth.

258,356. JOHN MORTER, Bloomington, Ohio, Cultivator Tooth. April 11, 1882. Filed Dec. 19, 1881.

My invention relates to an improvement in cultivator teeth; and it consists in the combination of a pivoted tooth and a pivoted an-

gular lever, which bears against the upper end of the tooth-frame at its lower end, and which has its upper end secured to a suitable spring, which is secured to the under-side of the beam, as will be more fully described hereinafter.

The object of my invention is to hold the tooth in its normal position by means of a pivoted spring-actuated lever while the tooth is being drawn freely along through the ground, but which lever will allow the tooth to give backward in case an obstruction is encountered, and thus enable the tooth to ride over the obstruction without being broken or stopping the team.

The combination of the beam A, the pivoted tooth-holder B, the supports E, which project beyond the front edge of the beam, the angular lever G, which bears against the upper end of the tooth holder spring C, and set-screw V, substantially as shown.

256,922. JOHN S. ROWELL, Beaver Dam, Wis., Seeder or Cultivator Tooth. April 25, 1882. Filed Oct. 12, 1881.

1. The double-pointed reversible seeder-tooth described, having its opposite ends similarly sloped and its intermediate portion or shank bent to the right shown, said tooth being struck from a single piece of sheet metal, substantially as described.

2. In combination with the beam and with a plate having a slipping connection therewith, a double-pointed tooth consisting of a shank having a blade at each end, and being, as a whole, detachably and reversibly secured to the slipping plate, the elevated pointed portion being arranged beneath and near the beam, so as to be guarded thereby, substantially as described.

3. In combination with the beam having an open vertical slot at its rear end, the slipping plate B, connected to said slot, and provided with an extension on its lower margin, a double-pointed tooth, and a means, substantially as described, for securing the tooth directly to and beneath the lower projection of the slipping plate, substantially as and for the purposes set forth.

4. Combined with the beam and with the bent sheet-metal double-pointed tooth described, a slipping plate having a projection thereon shaped to fit the rear concave face of the tooth, and a bolt, D, or its equivalent, for securing the tooth to said projection, substantially as described.

258,263. WM. D. STROUD, Oskosh, Wis., Cultivator Tooth. May 23, 1882. Filed Feb. 14, 1882.

The nature of my invention relates to the use of a cultivator tooth or blade so attached to the shank as to be flexible or yielding when the blade strikes a stone or other obstruction.

It further relates to a device for changing and adjusting the lateral angle of the blade so as to throw the earth to the right or the left at will.

It further relates to a combination of the two devices mentioned, which together form a universal joint, by which both the longitudinal and lateral position of the blade may be changed, all of which will be more readily understood by reference to the drawings, in which—

1. The combination of the cultivator-tooth H, key-seated wrist G, and gib S with the pivoted yoke K, substantially as shown and described.

2. The cultivator-tooth H, having a key-seated wrist, G, and gib S, in combination with the pivoted yoke K, link E, and spring B, substantially as and for the purpose shown and described.

261,499. ROBERT L. TURNER, Olena, Ohio, Cultivator. July 18, 1882. Filed Oct. 17, 1881.

My invention relates to an improved form of cultivator designed to secure a more perfect and uniform pulverization of the soil and an easier draft, and also to avoid displacing the soil in the leaving of the same in furrows.

It consists partly in the form of the tooth, which is made in the nature of a plain curved blade, and partly in its position in relation to the frame, the plane of the upper portion of the blade being arranged to work in the line of draft, while the body of the blade is inclined to the vertical, with its lower bent part to the rear, which structure and its relation to the frame serve the desirable result of causing the upper portion of the blade to enter the ground like a roller blade and with a shear-cut, while the oblique curved portion scrapes, breaks, and pulverizes the soil more and more from the point where the blade first

strikes the earth, and leaves the earth with a surface behind which is not broken up by furrows, as hereinafter more fully described.

A cultivator-tooth consisting of a two-edged blade curved at its lower end, as shown, combined with a frame-work and arranged inclined thereto, with the plane of its uncut portion in the line of draft, substantially as and for the purpose described.

261,636. JAMES H. SMITH, Fond du Lac, Wis., assignor to the Wheeland Seeder Co., Cultivator Tooth. July 25, 1882. Filed May 3, 1882.

This invention relates to certain new and useful improvements in devices for bracing a cultivator tooth, more especially designed for use in connection with the class of cultivator-teeth that have a shank and a shovel at each end, and to this end the invention consists in novel features of construction, and combination and arrangement of parts, all as will be hereinafter fully described, and set forth in the claims hereto annexed.

1. The combination, with the beam A, reversible cultivator-tooth D, and pivoted standard B, of the double-brace C, connected at its upper end to the rear end of said beam, and its lower end embracing and connected to said standard and the shank of said tooth, substantially as and for the purpose herein shown and described.

2. The combination, with the beam A, reversible cultivator tooth D, and pivoted standard B, of the double-brace C, connecting said standard and tooth with the beam, and the clips H H for centrally connecting the shank of the tooth to the standard, substantially as and for the purpose specified.

3. The combination, with the beam A, composed of the parallel bars a a, and having a friction clutch at its rear end, of the standard B, pivotally connected at its upper end between said bars a a, the reversible tooth, the double-brace C, connected at its upper end to said beam by the friction-clutch and embracing and connected to said standard and tooth, and the clips H H, all arranged substantially as herein shown and described.

267,739. ARTHUR S. CORE, Rochester, N. Y., Cultivator Tooth. Nov. 21, 1882. Filed July 21, 1882.

The object of my invention is to divide the sides of a cultivator-tooth of common form into laterally-projecting blades, and form said blades in such a manner that masses of earth and weeds moving upward along the face of the tooth during its advance through the soil will encounter the edges of the successive blades and be cut or broken up, the lower or cutting edges of said blades being inclined upward toward their respective free ends, so as to have a sliding or shearing cut upon the masses of earth and weeds as they are pressed upward and outward by the advance of the tooth, the tooth in its operation acting as a pulverizer of the soil.

A cultivator-tooth formed with a point, d, and lateral blades, e, extending obliquely at each side and back of a central ridge, g, of the tooth, the lower or cutting edges of said blades being inclined obliquely outward and upward for the purpose of giving a shearing cut to the same, and the plane of either blade passing in rear of the next blade above, substantially as shown and described.

268,234. ZADOCK HOWE, Lowell, and ELLIOTT OATLEY, Greenville, Mich., Cultivator. Nov. 28, 1882. Filed July 22, 1882.

The combination, with a cultivator standard having a front bearing or foot, e, having perforations f and lateral recesses g, of the triangular plate or blade a, and the bolts A A and nuts a, whereby said blade is secured to said foot, substantially as specified.

268,358. JOSIAH J. DEAL, assignor to Wm. M. Johnston, Wilmet, Ohio, Cultivator. Nov. 28, 1882. Filed July 6, 1882.

In cultivators, the foot or standard F, having its lower section, f, cylindrical and at an angle to the upper section, and which is made to be reversible upon the beam, so that when reversed the angle of the blade will be changed, substantially as and for the purpose described.

270,855. HARLOW C. STAHL, assignor to the Fremont Cultivator Co., Fremont, Ohio, Standard-Clamp. Jan. 16, 1883. Filed Sept. 6, 1882.

My invention has relation to fastening devices or clamps for securing a standard or cultivator-tooth to a plow-beam or drag-bar; and it consists in an improvement upon the cultivator-standard clamp for which Letters Patent of the United States No. 232,536 were granted to me on the 17th day of January, 1882. The coupling or fastening device described in the said Letters Patent is composed of two plates of substantially the same shape as the plates C and D, (shown in the accompanying drawings,) which are made, by preference, of malleable cast iron, but which may, if desired, be cast or stamped from metal plates.

The cultivator-standard clamp or coupling composed of the sliding plate C, encircling the standard A, and provided with the longitudinal slots F F, the plate D, having cross-slots H H, and provided with the lug L and binding-screw E, bolts G G, and beam or drag-bar B, constructed and combined substantially as and for the purpose herein shown and described.

271,432. AMENZO W. DIEFENDORF and PETER H. MERRILL, Wyocena, Wis. Cultivator. Jan. 30, 1883. Filed Sept. 22, 1882.

1. The stock *a*, provided with the groove *d* on its front side, the slot *e*, the recesses *b* *k* on its rear side, and the yoke *i* at its upper end, and adapted to be pivoted to a plow or cultivator beam, and acted upon by a spring attached to said beam, substantially as herein shown and described.

2. The combination, with the plow or cultivator beam *b*, of the stock *a*, provided with the groove *d*, slot *e*, recess *b*, groove *k*, and yoke *i*, and pivoted at its upper end to the said beam, and the spring *j*, secured to the beam and having its free end resting against the lower end of the stock, substantially as herein shown and described.

271,791. EDWIN CHILDREN, East Duquaine, Ills. Cultivator Shovel. Feb. 6, 1883. Filed Sept. 18, 1882.

The object of the invention involved in the subject-matter of this specification is to produce a more perfect adjustment of the cultivator-shovel upon its standard. One of the great difficulties in the way of the successful operation of cultivators is to make the shovels scour under all circumstances. The couplings in common use provide means for turning the shovel in the seat in which it rests, and when turned to either side the friction is largely thrown to the side to which it is turned, and the shovel is thus placed in an unfavorable position to scour. By means of my improvement, hereinafter described, I am enabled to turn the shovel on the standard, and also at the same time to place its point to a position so as to distribute the pressure more evenly over the whole surface of the shovel, thereby causing it to scour more perfectly, and to handle more soil and with less liability to injure the roots of the corn.

To the accomplishment of the above results the invention consists principally in interposing a block or washer between the standard and the shoe or casting to which the shovel is secured, the same to be of the shape and size to conform with and accommodate the various models of such shoes or castings, all as more fully hereinafter described, and pointed out in the claim.

In the coupling-joint described, block or washer B, provided with the longitudinal concave cavity *a*, and pivotally interposed between the standard A and the shoe or casting C, substantially as described, shown, and for the purpose set forth.

272,301. JOHN E. MITCHELL, Fowler, assignor of one-half to A. D. Rault, Earl Park, Ind. Shovel for Cultivators. Feb. 13, 1883. Filed Nov. 13, 1882.

My invention consists of an improved gopher attachment to cultivator-shovels for cultivating corn, the said attachment being contrived for ridging the earth up around the plants in the later dressing, when they are well grown, without injury to the roots, all as hereinafter fully described.

A shovel or cultivator blade made with a lateral extension, *b*, at about the middle of its shank, and inclined upwardly at an oblique angle to the latter, as shown in Fig. 2 of the drawings, whereby it may be adapted to be used as described.

273,550. JOHN W. JONES, Centropolis, Kan. Cultivator Shovel. Mar. 6, 1883. Filed Nov. 22, 1882.

My invention consists of a detachable point section for cultivator-plows to enable new points to be applied when required; and it also consists of an adjustable and detachable shovel connection with the plow-stock, the said device being contrived, as hereinafter fully described, to provide simple and efficient means of removing the points and of setting the plows to any required pitch.

In a cultivator-shovel, the combination, with the oval faced stock *c*, of the correspondingly recessed shank *d*, provided with a widened lower section, *g*, an upper forwardly-projecting portion, and the upper plate-section, *b*, the point-section *a*, bolted to the wings or sections *g* of the shank, the apertured yoke or strap *h*, embracing the shank *d* between its widened section *g* and forwardly-projecting portion, and the fastening composed of the recessed key *j* and gib *i*, essentially as shown and described.

274,126. JOHN L. LAUGHLIN, Racine, Wis. Cultivator. Mar. 20, 1883. Filed Aug. 1, 1882.

This invention relates to improvements in cultivators, and has for its object to provide a novel construction of parts for attaching the shovels to their supports, whereby they can be so adjusted as to stand in a plane at right angles to the line of draft, or in a plane obliquely thereto. The manner of accomplishing this will be hereinafter explained in detail, and pointed out in the claims. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

1. The combination, with the forked sleeve C, of the shovel-block B, having its front side constructed to form a seat for the shovel, and provided on its back with the rib B', having one of its faces arranged obliquely and the other face at right angles to the face of the shovel, and rib being detachably secured to the lower end of the forked sleeve, whereby either face of the rib can be secured against the said sleeve, substantially as and for the purpose described.

2. The combination, with the shank D and the forked sleeve C, pivoted at its upper end to the shank and provided with the series of holes E and H, of the shovel-block B, constructed to receive and support the shovel, and provided on its rear with the lugs I, and the rib B', having one of its faces oblique and the other at right angles to the face of the shovel, substantially as described.

274,962. JAMES H. NUTTT G, Callahan, Texas. Cultivator. April 3, 1883. Filed Feb. 5, 1883.

My invention has relation to plows, cultivators, and like agricultural implements; and its object is to so construct the standard that when the point or tooth strikes an obstruction the point will give, so as to prevent the parts breaking, and after the obstruction is passed the parts will readjust themselves and assume their former position; and to that end the novelty consists in the construction of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

1. The standard A, having the slot F and the enlarged portion E, in combination with the hollow box B, the spring D, follower W, and extension or shovel-block C, as set forth.

2. The standard A, slot F, and extension B, in combination with the pin H, springs K, screw L, and shovel-block C, having spring D, as set forth.

275,146. ALVIN B. CLARK, assignor of one-half to Jno. B. Dungan, Richmond, Ind. Spring-Hoe for Cultivator. April 3, 1883. Filed Dec. 7, 1882.

The object of my invention is to construct a plow-standard that will, when the point or sides of the plow strike an obstruction, readily yield to a certain extent, to prevent breakage, until the obstruction is passed, when it will again assume its normal position. I accomplish this object by means of the following construction, which will be more fully pointed out in the specification and claim.

In a plow or cultivator, the standard A, beam B, having loop *c*, roller *c*, pin *d*, spring *f*, rod *i*, and spring *j*, in combination with the beam C, having loop *h*, pin *h*, and cross-bar *g*, having inclined upper surface, as shown and specified.

275,546. HARVEY N. TIMMS, Kent, assignor of one-half to B. Timms, Lena, Ills. Cultivator Shovel. April 10, 1883. Filed Mar. 28, 1881.

My invention relates to that class of shovels used upon what are generally known as "shovel-plows" and the various kinds of cultivators more particularly designed for the cultivation of young and growing corn; and it consists of a shovel having its blade slightly curved in the direction of its length, and having a pointed lower end, and tapered in an easy curve to a forwardly-projecting cutting edge at one side, all as I will now proceed to describe.

The herein-described cultivator-shovel consisting of the blade curved slightly in the direction of its length, and having the pointed lower end, and tapering in an easy curve to a forwardly-projecting cutting edge *b* at one side, as set forth.

277,907. JOHN LANE, Hyde Park, Ills. Corn Cultivator or Blade, or Shovel. May 22, 1883. Filed Oct. 21, 1882.

My invention relates to corn-cultivating blades or shovels; and the object of my invention is so constructing the blade that it will run straight, following the center draft, and throw its furrow-slice lowly and horizontally to one side, scattering the loose soil in among the plants, and not break down or cover up the small plants. Heretofore blades called "twisted shovels" have been used intended for such purpose, which in operation run the soil high up the blade, from which high elevation the soil is thrown to one side, falling, breaking down, and covering up corn-plants, as well as weeds, for reason of which it has been the custom to turn the soil away from the planted row when first cultivating, and also such shovels or blades, being set twisted or oblique to the center of draft, tend to crowd to one side and do not run straight. It is to obviate such side pressure and make the blade run straight, and also to throw the soil lowly, that I have invented and made the herein-described blade.

The cultivator blade or shovel A, when constructed, substantially as described, of a truncated rhomboidal form, with its advancing point *c* one side of the center of the blade, as shown, a short cutting-edge from the point *c*, on the forward side of the blade, and a longer cutting-edge on the other side, the body curved and twisted, the forward side bent upon a small curve, and the rear side bent upon a larger curve, and the corner *z* arranged to enter the ground deeper than the corner *x*, all substantially as and for the purpose set forth.

280,263. DANIEL C. VAN BRUNT, Horton, Wis. Cultivator. June 26, 1883. Filed Mar. 29, 1883.

My invention relates to an improvement in cultivators, the object of the same being to provide strong and durable means for detachably securing a double-pointed tooth to a drag-bar in such a manner as to withstand a predetermined amount of pressure, which pressure, if exceeded, will cause the tooth to slip and allow it to ride over obstructions without damaging the parts; and with these ends in view my invention consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

1. The combination, with a cultivator-beam provided at its rear end with a curved arm rigidly secured thereto, of a slip-tooth clamped to the said curved arm, with its upper end resting on or getting its support from the rear end of the beam, substantially as set forth.

2. The combination, with a cultivator-beam having a slotted curved arm (one or more) rigidly secured to its rear end, of a slip-tooth clamped to said curved arm or arms, the upper end of the tooth being held against this placement, substantially as set forth.

3. The combination, with a cultivator-beam having a slotted curved arm (one or more) rigidly secured to the rear end of the beam, and a clip or loop, of a double-pointed slip-tooth, one end of which engages in a clip or loop, while its shank is clamped to the curved arm or arms, substantially as set forth.

281,126. WM. B. PATTERSON, Secor, Ills. Cultivator. July 10, 1883. Filed April 17, 1883.

This invention relates to certain new and useful improvements in that class of devices for attaching cultivator teeth or shovels to their beams, by which the tooth or shovel is permitted to swing backward when it encounters an obstruction, and more particularly to the class of devices in which the usual wooden break-pin is dispensed with.

The invention has for its object the production of an effective and durable device for

such purpose, involving simplicity and cheapness in its construction; and to this end the invention consists in novel features of construction and combination and arrangement of parts, all as will be hereinafter fully described, and set forth in the claims hereinafter.

1. The combination, with the pivoted shovel foot or sleeve B, and the curved portion or upright of a cultivator beam, of a locking lever pivotally connected to and embracing said beam, with its lower end engaging the upper end of said foot or sleeve, and a spring for locking the shovel in working position, substantially as herein shown and described.

2. The combination, with the curved or upright portion of a cultivator beam, of the notched shovel foot or sleeve B, and the locking lever pivotally connected to and embracing said beam, and provided with the projection, *e*, lugs *e*, *e*, and clip *o*, and a locking spring, substantially as and for the purpose herein shown and described.

3. The combination, with the curved or upright portion of a cultivator beam, of the pivoted foot or sleeve B, pivoted lever connected to and embracing said beam, and having the finger arm, *D*, of said lever notched and beveled, as described, and the spring *B*, having an outwardly curved end, *e*, all constructed and arranged to operate substantially in the manner, as and for the purpose herein shown and described.

282,852 WM. J. DAVIDSON, Big Spring, Va. Cultivator. Aug. 7, 1883. Filed Jan. 4, 1883.

The object of my invention is to reduce the strain upon the bolts connecting plow standards to brackets or to the beam—similar, for instance, to those standards shown in my Patent No. 265,763—and also to avoid injury to any part of the plow from an unyielding connection of the standard therefor; and to these ends my invention consists in the improved construction, fully described hereinafter.

The curved standard C, formed with an inclined elongated serrated slot, *e*, at one end, and an upwardly extending notch, *f*, in its inside face, in combination with the plow beam, slotted bracket B, and bolt *g*, as shown, for the purposes specified.

282,880 LORENZO D. GAVITT, Los Angeles, Cal. Cultivator Blade. Aug. 7, 1883. Filed Feb. 12, 1883.

The object of my invention is to make the blade adjustable, reversible, and self-sharpening.

1. In a cultivator, the straight flat blade A, with its shank B, pivoted and secured to the slotted support C, substantially as and for the purpose shown and described.

2. The combination, substantially as shown, of the straight flat blade A, slotted shank B, slotted standard C, pivot bolt D, and clutch bolt E, for the purpose described.

284,093. DANIEL C. VAN BRUNT, Hannan, Wis. Cultivator Beam. Aug. 28, 1883. Filed Mar. 29, 1883.

My invention relates to an improvement in cultivator beams or drag bars, the object of the same being to provide strong and durable means for detachably securing a tooth to a cultivator beam to withstand a certain or predetermined amount of pressure, which if exceeded will cause the tooth to slip and allow it to ride over obstructions without changing the parts; and with these ends in view my invention consists in certain details in construction and combinations of parts, as will be more fully explained, and pointed out in the claims.

As an improvement in cultivators, the combination of the slotted beam A, having aperture G, and rounded at its lower end, shovel-holder composed of the flat piece B, inserted into the slotted beam, and tongue C, recessed at D to conform to the curvature of the lower end of the beam, pivot bolt E, inserted through the center of the arc formed by the recesses D, removable and adjustable shovel I, having on its under side the saddle J, yoke L, and set-screw M, the whole constructed and combined to operate substantially in the manner and for the purpose herein shown and described.

284,565. DAVID N. LUSE and JOHN W. BELL, Audubon, Iowa. Cultivator. Sept. 4, 1883. Filed June 15, 1883.

Our invention has relation to cultivators, and is especially adapted for corn cultivators.

It consists in an improved construction of the shovel beams and of the shovels, whereby not only the pitch of the shovels may be readily adjusted, but the position of the shovels upon the beams may be adjusted sideways, so as to regulate the angle at which they are to penetrate the soil.

287,171. GUILFORD D. ROWELL, Appleton, Wis. Seed-Bar Tooth. Oct. 23, 1883. Filed July 25, 1883.

My invention relates to an improvement in seed bar teeth; and it consists, first, in the combination of a suitable friction block, which is to be applied to the end of the drag bar, with a standard or bar which is clamped thereto, and a brace which has its upper end to bear against the block and its lower end secured to the bar or standard, so as to form a continuous brace; second, in the combination, of the friction block, the bar or rod which is secured thereto, the brace which is placed between the lower end of the bar and the lower end of the block, and reversible shovels, which are applied to the bar, as will be more fully described hereinafter.

1. The combination of the block with the bar and the brace which extends between the lower end of the block and the lower end of the bar, substantially as described.

2. The combination of the block, the reversible bars secured thereto, and provided with reversible teeth at each end, and the brace placed between the lower end of the block and the lower end of the bar, substantially as set forth.

3. The combination of the block having a recess in its lower end, the standard bolted thereto, and the brace notched at its upper end, the brace and block being brought loosely in contact with each other, so as to allow the standard a slight vibration, substantially as specified.

287,172. GUILFORD D. ROWELL, Appleton, Wis. Reversible Cultivator Tooth. Oct. 23, 1883. Filed Nov. 27, 1882.

1. The combination, with a cultivator beam or drag bar the rear end of which is curved, substantially as shown, and a depending holder secured to the said beam, of a tooth the shank of which is adjustably secured to the curved end of the beam, while the upper end or point thereof is held in position by the holder.

2. The combination, with a cultivator beam the rear end of which is curved, substantially as shown, and a tooth adjustably secured to the said curved end, of a depending holder secured to the beam for the purpose of supporting the tooth when the machine is moved forwardly, and for preventing the tooth from turning when the machine is backed.

3. The combination, with a cultivator beam the rear end of which is curved and slotted, as described, and the holder H, secured to the beam in front of the curved portion thereof, of the tooth M, secured to the beam, with its upper end resting in the holder, all of the above parts combined and adapted to operate substantially as set forth.

My invention relates to an improvement in reversible cultivator teeth; and it consists in the combination of the beam having its rear end divided into two or more parts, the holding block made in two separate parts, and pivoted in slits in the rear end of the beam, a spring tooth, and the clamping bolts, by which the two parts of the block are clamped against the tooth.

It still further consists in the combination of a slitted beam, the curved holding block made in two parts, and provided with the lugs or projections and the flanges, the spring tooth, and the clamping bolts, as will be more fully described hereinafter.

The object of my invention is to provide two friction blocks for holding the spring tooth, which will both allow the tooth to be reversed and to hold the tooth rigidly in position at any desired angle until an obstruction is struck, when the tooth will give backward without the danger of being broken.

1. The combination of the beam, the holding block made in two separate parts, and pivoted in slits in the rear end of the beam, a spring tooth, and the clamping bolts, by which the two parts of the block are clamped against

the tooth, substantially as described.

2. The combination of the slitted beam, the curved holding block made in two parts, and provided with lugs or projections and the flanges, the spring tooth, and the clamping bolts, substantially as described.

288,514. HENRY V. THOMPSON, Bush-ton, Ills. Cultivator. Nov. 13, 1883. Filed July 23, 1883.

The combination of the cultivator-standards, the blocks having stepped recesses in their outer faces, the bolts having flaring heads, and inserted through the blocks and standards, the sockets or slides having inwardly projecting flanges, and the scraper or shovel blade having the said sockets or slides fastened upon its inner side, as and for the purpose shown and set forth.

292,795. WM. F. DICKINSON, Moss-ville, Ill. Cultivator Shovel. Feb. 5, 1884. Filed July 23, 1883.

The object of this invention is the construction of a shovel blade for cultivators, whereby the soil can be thoroughly loosened to the very roots of the corn, potatoes, or other plant to be tilled, and that shall be capable of angular adjustment in any desired direction.

The shovel-blade A, with a point formed with unequal sides, as shown, having the spur B, the upper side of which is approximately horizontal, and a shorter extension on the opposite side, and extending from each corner in a straight line to a central point, forming working edges of different angles to the upper portion of the shovel, substantially as shown and described.

295,779. JOHN M. LONG and CHAS. E. McBETH, Hamilton, Ohio. Cultivator. Mar. 25, 1884. Filed Jan. 4, 1884.

This invention pertains to that class of cultivators having one or more cultivator teeth attached to the draft beam; and it relates particularly to the construction of the device for securing the teeth to the beam and effecting their side adjustment with reference thereto.

1. The combination of a tooth-shank provided with a stud of parallel form projecting at right angles from the side thereof, a beam provided with a receiving feature suited to receive said stud and permit its endwise adjustment without permitting rotation, and a clamp for drawing said stud firmly into engagement with said receiving feature, substantially as and for the purpose set forth.

2. The combination of a shank B, the cylindrical ribbed sliding stud secured thereto, the saddle F, fitting said ribbed stud, the beam A, and the strap I, engaging the stud, the saddle, and the beam, substantially as and for the purpose set forth.

296,983. DAVID N. LUSE, Ross, Iowa. Cultivator. April 15, 1884. Filed Feb. 5, 1884.

My invention has relation to that class of cultivators, especially corn cultivators, which are so constructed as to admit of the adjustment of the shovel-blades at any desired angle; and it consists in the improved construction and combination of parts of the shovel beams and shovels, whereby the most delicate adjustment of the shovel-blades may be obtained with the greatest degree of accuracy, as will be hereinafter more fully described and claimed.

As an improvement in cultivators, the combination of the curved beam A, having apertures A', A', and rounded at its lower end, shovel-holder consisting of the curved rounded tongue B, having the longitudinal grooves G and lugs or projections F, and jaws C, adapted to fit on either side of the lower rounded end of the beam A, pivot-bolt D, removable and adjustable shovel, comprising the blade J and saddle I, secured to the rear side of the shovel-blade, and provided with the recess K and longitudinal grooves H, and yoke L, having cross piece M and nuts N, all constructed and arranged to operate substantially in the manner and for the purpose shown and described.

263,978 THOMAS M. SMITH, Batesville, Ark. Combined Scraper and Harrow. Sept. 5, 1882. Filed May 10, 1882.

The object of this invention is to produce a machine constructed in such a manner as to scrape and cultivate a row of cotton or other plants at one passage along the said row.

1. A combined scraper and harrow constructed substantially as herein shown and described, and consisting of the frame A, the adjustable bearing bars C, the adjustable bars and scrapers E D, and the adjustable beams and teeth F H, as set forth.

2. In a combined scraper and harrow, the combination, with the frame A, of the adjustable scrapers D, the slotted adjustable scraper-carrying bars E, the slotted adjustable stand and G, and the slotted cross bar M, substantially as herein shown and described, whereby the scrapers can be readily adjusted as the work to be done may require, as set forth.

266,236 WILLIAM H WEST, Grand Island, Neb. Cultivator. Oct. 17, 1882. Filed Mar. 13, 1882.

This invention has for its object the production of a cultivating implement which shall be adapted for several distinct purposes—that is, the preparing of land for grain and the cultivation of corn in all its various stages; and it consists mainly, first, in the special construction of parts by means of which the implement is adapted to cultivate corn two rows at once; and, second, in the combination, with the double cultivator, of a head-block of special construction, by means of which the implement is adapted for preparing land for grain, as will be fully described hereinafter.

1. The combination, with the inner beams, A, united by rods *a*, of the slotted outer beams, D, hinged to the beams A, the transverse beams E F G, secured to the inner beams and working in the slots of the hinged beams, and means for securing the hinged beams to the transverse beams, substantially as and for the purpose set forth.

2. In combination with a double cultivator, substantially as described, a removable head-block, I, as and for the purpose set forth.

3. In combination with the cultivator-beams A A, having the recesses P P', the head-block I, with pins I', as described.

4. The combination, with the hinged beams D and the transverse beams F of the two frames, of the detachable draft bars J, substantially as and for the purpose set forth.

5. The cultivator described, having the inner beams, A A, united by the arched rods *a*, the outer beams, D D, with capacity for lateral adjustment, the beams E F G, and the head-block I, substantially as set forth.

266,734. JAMES W. SURSA and JOHN T. DOWDALL, St. Louis, Mo. Cotton Cultivator. Oct. 31, 1882. Filed June 26, 1882.

1. In combination with the cutter blades A A', plowshares C C', frame-pieces B B', having lateral arms or plates *d d'*, the transverse straps or plates E E', having elongated slots, and the fastening bolts, by means whereof the lateral adjustment and inclination of the said cutter-blades and plows can be made, in the manner and for the purposes set forth.

2. The combination, with tongue F, of the cutter blades A A', having level cutting edges *a a'*, the plowshares C C', having their inner cutting point, *b'*, raised higher than the said level cutting edge, the latter also extending forward of the plows, as shown and described, the frame-pieces B B', having lateral arms *d d'*, transverse straps or plates E E', having elongated slots, and fastening bolts, all said parts forming the improved cultivator, substantially as set forth.

269,871. THOMAS MEIKLE, assignor to T. Meikle & Co., Louisville, Ky. Combined Plow and Cultivator. Jan. 2, 1883. Filed Aug. 5, 1881.

This invention has for its object the construction of a plow which may be used either as a billing or a breaking plow.

1. In combination with the beams, bows, and flanged and recessed plates C, the T-formed brackets E, whereby the bow and one end of the bracket can be secured to the beam by a single bolt, substantially as set forth.

2. In combination with the plow-beams and standards carrying the plows, the wheels attached to vertically-adjustable standards, and flanged and recessed plates G, whereby the vertically-adjustable wheel-standards may be secured to the beams by a single bolt, substantially as set forth.

3. In combination with the forward bow and clevis, the brace to which the bow and clevis are secured, adjustable by a single bolt, substantially as set forth.

290,814. WASHINGTON C. THOMPSON, Covington, Ky. Cotton Scraper and Cultivator. Dec. 25, 1884. Filed June 2, 1882.

My device relates to cotton scrapers and cultivators, and it consists in certain details of construction and arrangement of the several parts, as illustrated in the accompanying drawings, fully set forth in the specification and particularly pointed out in the claims.

1. A cotton-cultivator provided with braces C C', adjustably secured to the handles at their rear ends, and pivotally attached to the forward part of the cultivator, in combination with the braces I, secured to the cutting-knives and the handles of the cultivator, substantially as shown and described, and for the purpose set forth.

2. In a cotton-cultivator, the slotted uprights G, adjusted to move horizontally in a slot in the bench F, in combination with the handle moving in said uprights, and the adjustable braces C C', secured to the handles at the forward end of the machine, and having the adjustable knives or scrapers secured to said braces, substantially as shown and described, and for the purpose set forth.

3. In a cotton cultivator and scraper, the combination of the handles D, the adjustable handles *e*, braces B C C', and knives A, substantially as shown and described.

294,604. SETH H. FOUNTAIN, Amite City, La. Cotton Scraper and Cultivator. Mar. 4, 1884. Filed July 17, 1883.

1. The combination, in a cotton cultivator, of the two front scrapers, beveled at *g*, and having an open space between them, and two shovels, *h*, arranged in the rear of each scraper, the scrapers being made vertically adjustable and the plows laterally adjustable, as and for the purpose specified.

2. The bar *h*, bolt *j*, screw-bolt *s*, and nuts *r r'*, in combination with the beam *a*, handles *g*, and frame *p q*, jointed together to allow the scrapers to be graduated in depth, as described.

244,773. PAUL SINNHOLD. St. Louis, Mo. Cultivator, July 26, 1881. Filed Jan. 18, 1881.

1. The combination of the beam *a*, wheel B, wheel C, arm *c*, rods E F, and cross beam D, substantially as described.
2. The combination of the cross-beam D, shafts F F', and plow beams G G, said beams being jointed to said shafts, substantially as described.
3. The combination of the cross-beam D, wheel C, arm *c*, and plow beams G G, said cross-beam being vertically adjustable upon said arm, and said beams G G being connected with said cross-beam.
4. The combination of the shafts F F', having the balls *f f'*, plates H H, bolts *h h'*, stops *f' f'*, and screws *C C'*, substantially as described.
5. The combination of the beam D, shafts F F', plow beams G G, and clamps H H, substantially as described.
6. The combination of the shaft F, clamp H, and beam G, substantially as described.
7. The combination of the shaft F, clamp H, and beams *g' g'*, said beams being longitudinally adjustable upon each other, substantially as described.
8. The combination of the beam G and the beam J, the latter being pivoted to the former and the beam G being jointed to the shaft F, as and for the purpose described.
9. The combination of the wheel C, pivoted arm *a*, scraper *a'*, and wheel Q, substantially as described.
10. The combination of the wheel B, wheel C, pivoted arm *a*, shovel N, chain *n'*, and beam *a*, substantially as described.
11. The combination of the draft-rods O O, screws *o' o'*, and beams G G, substantially as described.
12. The combination of the tree *a*, cross-piece *a'*, screws *o' o'*, and beams G G, substantially as described.
13. The combination of the wheel C, arm P P, bolt *p'*, beam *a*, and wheel Q, substantially as described.

245,456 WM. H. DENISTON, Peru, Ind. Cultivator, Aug. 9, 1881. Filed April 15, 1881.

My invention relates to improvements in implements for cultivating corn and other growing crops; and the objects of my improvements are, first, to provide such a combination of devices as will enable the operator to set the shovels or hoers at the required height upon their arms, and at the required angles with reference to the rows of the crop, as well as the distance at which the parts shall run from the rows; second, to combine with the beams of the implement adjustable shovels or hoers and harrows, in such a manner that their relation to the rows of the crop can be readily adjusted to meet the different conditions under which the implement is to be used; and, third, to combine with the beams and harrows adjustable levers for the purpose of adjusting the angularity of the harrows with reference to the rows of the crop.

In straddle-row wheel cultivators, the beams D' and D'', carrying cultivator-shovels G, in combination with beams D and D'', extending to the rear of said beams D' and D'', and carrying harrows *h*, and arranged in relation to said cultivator shovels, as shown and described.

246,224. GEORGE SHAVER, Florence, Town-ship, Ills. Cultivator, Aug. 23, 1881. Filed Feb. 13, 1880.

My invention has relation to that class of devices or attachments which are adapted to exercise a gradually increasing pull upon a chain secured at one end thereof, and is therefore particularly adapted as an attachment to walking and riding cultivators, sulky-rakes, and similar agricultural implements which are provided with shovel or teeth carrying beams hinged upon a frame and adapted to be raised or lowered to bring the shovels or teeth, as the case may be, out of or into operation or contact with the soil. To raise the hinged beams of implements of this nature up from the ground requires the exertion of considerable power, the force or power required for this purpose increasing in the same ratio as the distance from the ground. Hence the object of my invention is to construct a simple and efficient device or attachment consisting, essentially, of a cam-sheave which is turned by the force of a spring and connected to one end of the chain, which, on being wound up by the sheave, raises the beams, so that very little power is required for this operation of raising the beam or beams, as the force of the

spring is increased in exactly the same ratio as that of the resistance to be overcome, as will more fully appear by reference to the following description of my improvement as applied to and forming a part of a cultivator.

1. The combination of the stationary hub or spindle B, sleeve H, provided with the grooved or channelled eccentric cam-sheave I, chain M, and spring K, substantially as set forth.
2. In combination, the stationary hub or spindle B, having perforated shoulder F, and arm G, sleeve H, provided with the eccentric grooved and perforated cam-sheave I, spring K, and chain M, substantially as and for the purpose herein shown and described.

246,551. MOSES S. E. PITTMAN, Harlem, Mo. Cultivator, Aug. 30, 1881. Filed Mar. 19, 1881.

In a cultivator, the combination, with the draft-bar or axle B, of the fanged sleeve C, having a series of holes, the plates E, pivoted on vertical bolts D, the beams F F', pivoted on plates B by vertical bolts G, the handles K, and the connecting-bars H J, slotted to work on bolts I L, as shown and described.

247,856. JONATHAN C. TAYLOR, Westport, Conn. Weeding Carriage, Oct. 4, 1881. Filed May 14, 1881.

1. The rigid cross-frames A' A', and suitable end connections, A' A', provided with wheels C, adapted to support the body of the operator near the earth, with his hands free to work in the earth below, as herein specified.
2. The carriage described, adapted to support the upper portion of the body of the operator either at or near the forward portion, or at the rear, as herein specified.
3. In a weeding carriage, the spring arms E and straps G, adapted to support additional operators, in combination with the framing A, wheels C, and suitable connecting arms, B, as herein specified.
4. The adjusting screws M, in combination with the springs E, straps G, and carriage A B C, adapted to allow the raising and lowering of either or both springs relatively to the carriage, as herein specified.

247,990. CHAS. B. DOUGLAS, Troy, Ala. Cultivator, Oct. 4, 1881. Filed July 14, 1881.

1. In combination with the main frame, provided with slotted guides and with a slotted spring, the plow beams having a segment in front adapted to be secured to a slotted projection on a transverse bar secured to said frame and vertical flat bars adapted to pass through the slotted guides and slotted spring, the bar passing through the spring being secured to the same, substantially as and for the purposes specified.
2. In combination with the side beams, hinged to the central beam and provided with set screws passing through slots in a curved bar secured to the central beam, the chains connecting said side beams with a transverse bar secured to the main frame to relieve the set screws, substantially as specified.

248,991. GEORGE W. BROWN, Galesburg, Ills. Cultivator, Nov. 1, 1881. Filed June 15, 1880.

1. In combination with the vertically-swinging plow beams or gangs, and with the vertically-swinging spring L, the vertically-swinging links connected at their distal ends with the spring, so as to exert an upward-acting force thereon, and connected to the plow-beams by a sliding connection, so as to permit of oscillating them in a vertical plane.
2. In combination with the vertically-swinging plow-beams, vertically-swinging links J, and spring L, adapted to exert an upward force on the links J and plow beams, a standard to which the front end of the spring is connected, and which is adjustable vertically, substantially as and for the purpose specified.
3. In combination with the vertically and laterally-swinging plow-beams and vertically-swinging links J and spring L, the bar H, hinged so as to swing laterally and permit the spring and links J to swing laterally also, substantially as and for the purpose specified.
4. In combination with the hinge or coupling plates D E, bolt C, plow-beams, and slotted plate G, the bolt A, the head of which is adapted to set as a keeper, substantially as and for the purpose specified.
5. In combination with the laterally-adjustable plow-beams, the slotted plate G, bolt A, and laterally-adjustable bar H, substantially as and for the purpose specified.
6. In combination with the vertically swing-

ing plow beams and vertically-swinging links J and spring L, the grooved plates K, adapted to receive the studs or projections *j'* of the links J, substantially as and for the purpose specified.

7. In combination with the vertically-swinging plow-beams, vertically-swinging links J, and springs L, the plates K, having grooves *k*, curved upwardly at their forward ends, whereby they will resist to a limited extent the descent of the plow-beams and sustain them in an elevated position, substantially as and for the purpose specified.
8. In combination with the vertically-swinging plow-beams, vertically-swinging links J, and spring L, the plates K, having grooves *k*, in which the studs *j'* slide, and against the ends of which grooves said studs strike to limit the extent to which the plows may be raised and lowered, substantially as and for the purpose specified.
9. In combination with a socket-plate, N, attached to the plow-beams, a hemispherical plate, P, attached to the plow-handle, and adapted to be adjusted in the socket *n'*, for the purpose of adjusting the plow-handle laterally and vertically, substantially as and for the purpose specified.
10. In combination with the plate N, secured to the plow-beams, and having a socket, *n*, and slot *n'*, and hemispherical shell P, secured to the plow-handle, and having a hole, *p*, the bolt *n''*, adapted to pass through the hole *p* and slot *n'*, and secure the parts after adjustment, substantially as and for the purpose specified.

248,992. GEORGE W. BROWN, Galesburg, Ills. Cultivator, Nov. 1, 1881. Filed June 19, 1880.

This invention relates to cultivators of that class in which a gang of plows is hinged to each end of an axle or side of a frame and adapted to operate a gang on each side of a row of plants, so as to cultivate both sides of a row of plants at each passage of the machine; and the invention consists, first, in the combination, with an axle or frame and plow-gang, of a spring arranged on substantially the same longitudinal plane as the plow-beam, and connected at one end to the plow-gang, and adapted to move therewith, its other end fulcrumed or connected at or near the pivotal connection of the plow-gang; second, in improvements in the coupling of the plow-beams to the axle, relating to means for adjusting the distance between the plow-gangs, the height of the front ends of the plow-beams holding the plows in the direct line of draft and connection of parts to the axle, as hereinafter set forth, and described in claims hereto annexed; third, in improvements in the connection of the handles to the plow-beams, and of the shovels to the standards, as hereinafter described, and set forth in the claims hereto annexed.

1. The combination, with an axle or frame and plow gang, of a spring arranged on substantially the same longitudinal plane as the plow beam, and connected at one end to the plow-gang and adapted to move therewith, and its other end fulcrumed or connected at or near the pivotal connection of the plow-gang, substantially as and for the purpose specified.
2. In combination with an axle and plow-gang, a spring adapted to exert an upward-lifting force on the gang when its rear end is elevated above a working position, and to strike a stop when lowered to a working position or below it, which stop will retain plow-beams and spring in same planes and prevent the spring from exerting either lifting or depressing force on the gang.
3. The combination, with the plow-gang, of the adjustable socket-plate R and sliding handle adjustably secured in said plate, whereby said handle is adapted to be adjusted laterally and higher or lower, substantially as and for the purpose specified.
4. The combination of the separate plates T T', connected to the lower end and opposite sides of the beam or standard, and extending below the same, the plate U, provided with longitudinal grooves *u u'*, and the washer *u''*, with similar grooves, *u''' u'''*, in which the lower side edges of said plates T T' fit, substantially as and for the purpose herein shown and described.
5. In combination with the shovel, plates T, plate U, and bolt *u*, the shovel-block V, slotted substantially as described and for the purpose specified.
6. The combination, with the shovel and standard, to which it is secured by a bolt, *u*, of a shovel-block, V, slotted as described, and

the slot W' , closed by a removable plate, W' , substantially as and for the purpose specified.

7. In a cultivator coupling, the plate I , forward of and hinged to the axle, and provided with notches i in its front side, in combination with the plate K , adjustably attached thereto, substantially as and for the purpose specified.

8. In combination with the plate I , forward of and hinged to the axle, and with the plate K , attached thereto, and provided with projecting bolts i , in the brackets H , having segmental slots h' in their forward ends, substantially as and for the purpose specified.

9. The plates J , constructed as described, in combination with the journal a'' , plate I , having extensions f , with holes for journal a'' , and the set screw j , substantially as and for the purpose specified.

248,993. GEORGE W. BROWN and SAMUEL G. HOLYOKE, Galesburg, Ills. Cultivator. Nov. 1, 1881. Filed Mar. 2, 1880.

Our invention relates to improvements in wheel-cultivators of the straddle-row class; and the objects of our improvements are, first, to provide a two way joint for connecting the plow-beams to the axle, which shall relieve the bolt which retains the parts of the joint from the strain of the draft of the plows, and which shall have its surfaces of contact on which lateral movement of the plows is obtained so constructed that they will retain a lubricant, and which are connected to the plow beams in a manner to protect the beams; second, to provide a spring which shall exert a downward pressure on the plows when in operation, and an upward or lifting force when the plows are raised above a working position, and which springs are connected with the parts of the joint, and of the axle in close proximity to the joint, and not with the plow-beam, and hence do not interfere with the movements of the plow-beams; third, to provide braces which do not require adjusting when the axle is adjusted to fix the distance between the plows; fourth, to provide practical and comparatively cheap means of securing a pivoted tongue to an axle; fifth, to provide means of preventing neck-draft of the tongue; sixth, to provide plow-handles which may be adjusted at different angles to the plow-beams, for the purpose of adjusting the rear ends of the handles transversely to the machine; seventh, to provide an attachment of the shovels to the standards, which provides means of removing the bolt by which the parts are attached to the standard without removing the shovel block from the shovel, and which also provides for the use of a wooden "break-pin." We attain these objects as follows:

1. In a cultivator coupling, the plate J' , provided with lugs which rest on the sleeve or journal, and with an upper bearing surface, in combination with the bolt J and plate K , secured to the plow-beam and provided with an annular flange which extends downward around the plate J' , so as to bear the draft of the plow, substantially as and for the purpose specified.

2. In a cultivator, the combination, with an axle or frame and plows hinged thereto, so as to have both vertical and lateral movement, of a spring N , and arm M , adapted to move with the plow beams when moved vertically and to exert a lifting force on the plow, substantially as and for the purpose specified.

3. The spring N , attached to the journal, on which the plows have vertical motion at one end, and to an oscillating arm, M , at the other end, in combination with the plow-beam and the axle of a cultivator, substantially as and for the purpose specified.

4. The spring N and oscillating arm M , arranged substantially as described, in combination with the arm J' , extending rearward from the plate J' , and with the plow and axle, substantially as and for the purpose specified.

5. In combination with the coupling of a cultivator, a spring, N , attached to an oscillating arm, M , which has a sliding connection with an arm, J' , projecting from one of the coupling-pieces, substantially as and for the purpose specified.

6. In combination with the axle adjustable by means of the sleeve and set screws, as described, and with the bars C and tongue C' , the braces D , having a joint, d , substantially as and for the purpose specified.

7. In combination with the axle having arcs A'' , with series of adjusting-holes, and extending forward of the vertical parts of the axle, and provided with wheel-journals A''' at their forward ends, the draft links c , connected at their front ends with the draft rods, and at their rear ends in the series of holes c' ,

so that the draft of the team may be made to balance the parts and relieve neck-draft from the tongue, substantially as and for the purpose specified.

8. In combination with the plow-beam and handle, the plate G , secured to the plow-beam, and the plate G' , secured to the handle, and having convex and concave faces, respectively, and the stirrup G'' , substantially as and for the purpose specified.

9. The shovel-block H , constructed in two parts, H' and H'' , hinged to each other, in combination with the shovel and standard, the part H'' , provided with a slot, h'' , having an enlarged end for the reception of the bolt f , and the removal of the shovel-block without removing the bolt, substantially as and for the purpose specified.

250,180. FRANCIS O. WILLIAMS, North Cohocton, N. Y. Wheel-Cultivator. Nov. 29, 1881. Filed Mar. 7, 1881.

The combination, with a plow-frame composed of the bars A and A' , slotted adjustable cross-bars C and tongue B , carrying the seat N and lever L , all supported upon the wheels E at the rear of said frame, of the elbow plow-standards D , pivoted at their angles in the slots of the cross-bars, and provided with segments J , having adjusting-holes j , and connected by a rod, K , substantially as described, and for the purpose set forth.

250,361 JOHN W. HUDSON, Wellington, Ills. Cultivator. Dec. 6, 1881. Filed July 27, 1881.

This invention has reference to that class of cultivators termed "wheel-cultivators," having relation to improvements upon my patent, dated July 6, 1880, No. 229,531, which contemplate the universal adjustment of the plow-beams and the more efficient working of the plants, and the desired adjustment of the shovels which perform the latter operation; and it consists in the employment of certain mechanism and the form of the corn or plant shovels and their manner of adjustment, substantially as hereinafter more fully set forth.

1. In a cultivator, the combination, with the beams, of the universally-jointed yoke A , having springs connecting it to the said joints, substantially as and for the purpose set forth.

2. In a cultivator, the combination, with the beams, of the yoke A , composed of the frame a , having the springs or straps c , substantially as and for the purpose set forth.

3. In a cultivator, the combination, with the beams, of the yoke A , composed of the frame a , provided with the perforated lateral extended portions a' , having the adjusting pin b , and the straps or springs c , substantially as and for the purpose set forth.

4. In a cultivator, the combination, with the beams having the swiveled clips d and fixed clips d' of the yoke A , having the springs or straps c , substantially as and for the purpose set forth.

5. In a cultivator, the combination, with the foot-bar B' of the shovels B , of the shape shown and described, each turned upward at its front end and curved rearwardly, with one side presented obliquely to the ground and pivoted at one corner to the bar, and provided at its other corner with a slot and adjusting-screw, substantially as and for the purpose set forth.

250,512. AARON EVANS and JAMES DRAPER, St. John, Cal. Cultivator. Dec. 6, 1881. Filed June 14, 1881.

A cultivator comprising two series of diverging independent arms, E , having their forward ends each pivoted at or about the center of the next preceding one, the front central arm E having a shank extending forward and secured to the shaft h , upon which it has vertical play, the rigid arm B , connecting the two series of arms, the guides P , the diverging bars K , the crank arms J and H , the lever N , and the series of independent chains L , one for each arm E , the whole constructed so as to act in combination in the manner and for the purpose set forth.

250,876. JAMES BRADY, Dixon, Ills., assignor to the Orvis Plow Co., same place. Cultivator. Dec. 13, 1881. Filed June 24, 1881.

1. The combination, with the arch or frame A , having inwardly projecting portions A' , of the adjustable blocks a , arranged to slide horizontally on the arch or frame, and provided with the bearings c , and the upright plates I , having their upper ends arranged in the bearings on the sliding blocks and their lower ends adjustably connected with the inwardly project-

ing portions of the arch or frame, substantially as and for the purpose described.

2. The combination, with the arch or frame A , of the sliding blocks a , constructed to embrace the arch or frame and provided with the front bearings, c , and adjusting set-screws b , and the upright plates I , having their upper portions arranged in the bearings on the sliding blocks and their lower portions adjustably connected both with the arch or frame and the forward ends of the plow-beams for adjusting the beams both laterally and vertically, substantially as described.

3. The combination of the arch or frame A , constructed as described, with the braces H and D , tongue C , pivoted plates I , and laterally adjustable blocks a , provided with bearings c , in which the upper ends of the plates are arranged, substantially as set forth.

251,656. ALBERT TSCHEP, Harrisburg, Pa. Cultivator. Dec. 27, 1881. Filed Sept. 30, 1881.

1. In a corn-cultivator, the combination, with the cultivator-frame A B , of the hounds M , secured thereon, the tongue M' , bolted loosely between their forward ends, and the slotted bracket N , provided with the studs d d' , secured to the hounds and tongue by the set-screws f f' , and the screw e , substantially as specified.

2. In a corn-cultivator, the combination, with the plow-beams I and the pivoted standards A' , recessed at A^2 and bored through for the rod c' , of the rod c' , link c'' , elastic spring b' , nut b'' , washer c'' , and the lever d' , pivoted at its lower end to the link c' and rod c' and at its upper end to the shorter lever d , the latter being pivoted to the plow-beam I in the rear of the stop d' , substantially as specified.

3. In a corn-cultivator, the plow-standard A' , having the rounded plow-foot provided with the slot f' , in combination with the perforated plano-concave block m , bolt m' , plow-point m'' , the concavo-convex clamp n , and the nut n' , substantially as specified.

4. In a spring cultivator tooth, the combination, with the beam and standard or tooth, of the bent lever d' , pivoting-link c' , rod c' , spring b' , lever d , and stop d' , substantially as shown and described.

252,163. FRANCIS O. WILLIAMS, North Cohocton, N. Y. Cultivator. Jan. 10, 1882. Filed Aug. 26, 1881.

1. The combination, with the frame A and tongue B , of the wheel-standards swiveled to said frame, and provided with rigid arms E , the connecting-rods F , the foot-lever G , the rod J , and the hand lever X , as and for the purpose described.

2. The combination, with the shaft O , having arms Q V , the lever X , and the connecting-rod W , of the coil-spring P on said shaft, the standards S , connected with the frame by adjustable chains V , and the rods R , as and for the purpose specified.

252,174. OSSIAN O. BOOTH, Brimfield Township, Ills. Cultivator. Jan. 10, 1882. Filed April 14, 1881.

1. In a cultivator, in combination with an axle or frame, and plow-gangs hinged thereto, a cord or wire, with its median portion passed over a pulley journaled to the upper part of the axle or frame, and its ends passed beneath pulleys secured to the plow beams or gangs in rear of the axis on which they swing vertically, whereby the force of the draft-animals, which are connected to the ends of the cord or wire, may be partly utilized in exerting an upward force on the plow beams or gangs, for the purpose specified.

2. In a cultivator, in combination with the axle and plow beams or gangs, and a projection, C' , in rear of the axle, a cord or wire, I , passed over a pulley, G , journaled on the part C' , and under pulleys H , journaled to the plow beams or gangs, in rear of the axis on which they are oscillated vertically, and its ends extending thence forward for the attachment of the draft-animals, substantially as and for the purpose specified.

3. In combination with the axle, plow beams or gangs, wheels, and tongue having its rear end extended in rear of the axle, pulley G , journaled on the rear-extended end of the tongue, and pulleys H , journaled to the plow beams or gangs, in rear of the axis on which they turn to oscillate vertically, the cord I , passed over the pulley G and under the pulleys H , substantially as and for the purpose specified.

4. In combination with the axle, wheels, plow gangs or beams, projection C' in rear of the axle, pulleys H , and cord I , the pulley G , adjustably secured to the extension C' , substan-

tially as and for the purpose specified.

5. In combination with the axle, wheels, plow gangs or beams, projection C' in rear of the axle, pulley G, and cord I, the pulleys H, adjustably secured to the plow beams or gangs, substantially as and for the purpose specified.

6. In combination with the axle, wheels, plow gangs or beams, pulley G, and cord I, the pulleys H, adjustably secured to the plow beams or gangs, substantially as and for the purpose specified.

7. In combination with the axle, wheels, plow gangs or beams, pulley G, and cord I, the pulleys H, hinged to the plow beams or gangs, so that they may align themselves to the cord I when the plow-beams are oscillated vertically or laterally, or adjusted at different distances from each other, substantially as and for the purpose specified.

252,637. PHILIP P. WELLS, Milford, Mich. Wheel-Cultivator. Jan. 24, 1882. Filed Nov. 10, 1879.

The nature of my invention consists in the peculiar construction of a wrought-iron frame for wheel-cultivators, and in the combination, with this frame, of the draft or draw rods and lateral braces, as will be hereinafter more fully set forth.

1. In a wheel-cultivator, the combination, with the handle or lever J, of the cultivator-frame consisting of the front and side bars, A' A A, the separate rear bar, B, the latter provided with inclined portions g, g, and connected to the cross-bar D by a rectangular portion formed with the sides l, l, thereby constituting the deep recess L between the side bars, A A, and the central standards, substantially as set forth.

2. The wheel-cultivator frame composed of the two pieces A and B and cross-bars D and G, the said pieces A B bent substantially as shown and described, and for the purposes set forth.

3. The combination of the frame A B, constructed as described, the front bar, G, the plow-standards, the draw rods b, and lateral braces d, substantially as and for the purposes herein set forth.

252,794. THEODORE A. PALM, White House, Pa. Wheel-Cultivator. Jan. 24, 1882. Filed Aug. 26, 1881.

1. In a wheel-cultivator, the combination, with the cross-beam A, having hinges or ears, of the swiveled wheel parts a, the upper and lower brace-bars, D' D', the cross-bar B, having foot rests D', and the lever H, substantially as and for the purpose described.

2. The combination of the drag-bars G, with bifurcated straps g, and adjustable brackets F I, with the slotted yoke bars E, elbow-lever E', and hook K, substantially as and for the purpose described.

3. The shovel-blades B, having central ears, b, hinged to the standard-brackets, in combination with standards C, tension-rods e, and springs e', substantially as and for the purpose described.

252,837. ALEXANDER GUMP, Fletcher, Ohio, assignor of one-half to Jacob Gump, same place. Cultivator. Jan. 24, 1882. Filed Oct. 20, 1881.

1. The combination, with a suitable transposing-frame, of the vertically adjustable frame G, having brackets H, the rods J, hinged upon said brackets, and the cultivator-beam hinged between the lower ends of said rods, substantially as set forth.

2. The combination of the frame G, having brackets H I, the arms J, hinged upon brackets H, the rods or braces K, hinged upon brackets I and connected to arms J, and the cultivator-beam hinged between the lower ends of arms J, substantially as set forth.

3. The combination of the frame-beam B, having upright F, the sliding frame G, having brackets H I, the arms J, the braces K, and the cultivator hinged between the lower ends of the arms J, substantially as herein described, for the purpose shown and specified.

253,761. THOMAS V. PLICE, Polk, Ohio Sulky-Plow. Feb. 14, 1882. Filed Nov 3, 1881.

This invention relates to improvements in wheel-cultivators; and it consists in a novel arrangement of shovel-plows, shields, and a scraper, the object being to provide a simple, light, and effective cultivator for working corn or other crops grown in rows, as will be hereinafter more fully described.

The combination, in a sulky-cultivator, with the swiveled rods J J, of the pivoted beams K K, shovel-beams L L, pivoted thereto, and

provided with handles N N and shovels M M, and the scraper R, connected with one of said beams by a curved bar, substantially as shown and described.

253,869. JAMES H. JONES, Rockford, Ills. Cultivator. Feb. 21, 1882. Filed Oct. 4, 1881.

My invention consists in a compound-lever frictional slip-tooth and in a jointed flexible raising and holding lever. These in their several parts, and in their combinations with each other and with the several parts of the cultivator, all of which will be hereinafter more fully described, constitute the subject-matter of this specification.

1. In a cultivator-slip-tooth, the combination, with the bed-plate, of a lever-support for the shovel-standard pivotally supported in a bearing of the bed-plate, a slotted lever for holding the support, and a screw-eyebolt adapted to receive the shovel-standard, and connect the standard-lever and bed-plate, substantially as set forth.

2. The combination, with the bed-plate and the standard-support, the latter being pivoted to the bed-plate, of a friction-lever pivoted on the bed-plate, and having a gear-tooth connection with the standard-support, substantially as set forth.

3. The combination, with the bed-plate and with the lever-standard support having a pivotal connection therewith, of a friction-lever having a screw-clamping bolt, pivotal connection with the bed-plate, and a gear-tooth connection with the lever-support, substantially as and for the purpose hereinbefore set forth.

4. The combination, substantially as herein described, of the bed-plate capable of use on either side of the drag-bar, a lever-standard support and standard, having a screw-eyebolt pivotal connection with the bed-plate, and a friction-lever having pivotal clamping-bolt connection with the bed-plate and a gear-tooth-like connection with the pivoted lever-support, substantially as and for the purpose hereinbefore set forth.

5. The combination, with the bed-plate and the standard-support, of the pivoted friction-lever, having a gear-tooth-like connection with the said support, and provided with an enlarged end adapted to engage with the bed-plate, substantially as set forth.

6. In a cultivator, the combination, with the main frame, a ratchet-segment mounted thereon, and a drag-bar, of a two-part raising and holding lever, having a handle portion and a pendent portion capable of a slight upward movement independent of the handle portion, and a link connected to the lever and to the drag-bar, substantially as set forth.

254,556. WM. A. KNOWLTON, Rockford, Ills. Cultivator. Mar. 7, 1882. Filed Dec. 15, 1881.

1. The combination, with the main frame of a cultivator, of pendant E, having a suitable connection therewith, the truss-braces c'', connecting its dependent portion with the tongue-beam both in front and rear of said pendant, the collar e, and brace e', said parts being constructed and arranged substantially as described.

2. The combination, with a pendant provided with an annular groove, of a socket to receive the pendant and a bolt to engage the annular groove in the pendant, said bolt also serving to secure the shovel-beam to the socket-piece, said parts being arranged and operating substantially as described.

3. The combination, with the pendant and with the socket provided with a lateral tabular stud-journal, of a shovel-beam journalled on the stud-journal and a bolt to connect the parts, substantially as and for the purpose hereinbefore set forth.

4. The combination, substantially as hereinbefore set forth, of the shovel, the skeleton socket fixed to the shovel, the grooved or slotted screw-nut and set-screw, and the shovel-standard, the several parts constructed and operating substantially as and for the purpose hereinbefore set forth.

254,567. WM. A. KNOWLTON, Rockford, Ills. Cultivator. Mar. 7, 1882. Filed Dec. 17, 1881.

My invention relates to that class of cultivators known as "straddle-row walking-cultivators," employed mainly in the cultivation of billed or rowed crops; and the object of my invention is to support a suitable portion of the weight of the shovel-beams and their attachment on the main frame mounted on the carrying-wheels, to enable the operator to han-

dle the plows with greater ease and more certainty, to support the plows in an elevated position independently in a manner to be readily lowered by means of the handles, and to securely fix the plows in an elevated position for the purpose of transportation, all of which and the means to accomplish these results will be hereinafter more fully described.

1. The combination, with the mounted frame of a cultivator and the shovel-beams having a suitable connection therewith, of the volute spring provided with the cap I and radial arm k, and link-connection o, substantially as and for the purpose described.

2. The combination, with the volute spring mounted upon the supporting-frame of a cultivator and a supporting link-connection with the shovel-beams, of the uprising ears or other equivalent, to receive the supporting-link when the shovel-beams are elevated, substantially as and for the purpose hereinbefore set forth.

3. The combination, substantially as herein described, of the axle, the tongue-beams, and the herein-described spring-support with spring mounted therein, a radial arm, and link connection with the shovel-beams, substantially as and for the purpose hereinbefore set forth.

4. The combination, substantially as hereinbefore set forth, with the cultivator-frame, drag-bar, and connecting-rod, of the drum-like portion of the spring-case, a removable cap with radial arms attached, and a volute spring, the said parts being constructed and arranged substantially as described.

5. The herein-described spring-case, consisting of the drum-like portion fitted to engage the outer end portion of the spring, and provided with an axial shaft, a cap provided with no axial tabular shaft to receive the axial shaft of the drum-like portion of the case, and fitted to engage the inner end of the spring, substantially as and for the purpose hereinbefore set forth.

254,608. JOHN W. BUNCH, Commercial Point, Ohio. Cultivator. Mar. 7, 1882. Filed Jan. 3, 1882.

The object of this invention is to enable the plowman to so adjust his cultivator in cultivating small plants that the shovels, when brought close together, will not be turned away from the plants.

The invention consists in the combination, with the arched axle of a cultivator, of couplings and a cross-bar to receive the plow-beam couplings and allow the plow-beams to be adjusted close together for cultivating small plants, as will be hereinafter fully described.

In a cultivator, the combination, with the arched axle B, of the couplings F and the cross-bar I, substantially as herein shown and described, whereby the plow-beams can be adjusted close together for cultivating small plants, as set forth.

254,776. GABRIEL MARTIN, Monroe Township, Logan County, Ohio. Cultivator. Mar. 7, 1882. Filed July 16, 1881.

My invention particularly relates to those cultivators adapted for straddling a row of corn; and it consists in providing such a cultivator with supplemental and independent shovels for stirring the ground between the rows, said supplemental shovels working outside of the central straddling shovels, and being held down by a spring mechanism, which adapts them to yield to immovable obstructions, the pressure of the springs being varied by adjusting levers so as to regulate the depth of penetration of the supplemental shovels.

In a cultivator adapted for straddling the row of corn, the combination of supplemental cultivators O S, hinged near their centers to the axle, springs P at the forward end of the beams of said cultivators, handles or levers Q, extending from said springs to the rear of the cultivator, and racks R, all arranged substantially as and for the purposes set forth.

255,669. THOS. A. PURKET, Charleston, Kan. Cultivator. Mar. 28, 1882. Filed Mar. 24, 1881.

The combination, with axes F, swiveled in parts A B G, substantially as described, of the gears P, rigidly attached to said axes, and the gears O, connected with a pivoted beam-coupling, as shown and described.

255,983. LESLIE P. HIATT, Peru, Iowa. Cultivator. April 4, 1882. Filed Dec. 20, 1881.

This invention consists of a divided beam pivoted to a coupling secured to the axle and to a coupling provided with arms, between which arms the shovel-shanks are secured, the

said shanks being formed of a single piece, as hereinafter described.

It also consists in a novel hitching device, whereby the cultivator is relieved from sudden strain or injury and the resistance to the draft is thrown upon the points of the shovels.

1. In a cultivator, the combination, with the axle B and the coupling G, of the coupling I, provided with the arms A, the shovel-shanks E, formed of a single piece and secured between the said arms, and the divided beam D, pivoted at each end to the said couplings, substantially as and for the purpose set forth.

2. The hitching device composed of a pulley, O, carried by a spring-support, N, mounted on the tongue of the cultivator, side pulleys, M M, connected with the axle, and the rope or chain R, substantially as shown and described.

256,012 JOHN M. LONG, Hamilton, Ohio. Cultivator Spring. April 4, 1882. Filed Jan. 27, 1882.

This invention relates to springs for rendering the plow-beams of cultivators easy to handle by balancing the weight of the beam and its attachments. Such springs are well known and in general use; but many of them are inefficient on account of the changing strength of the springs as it becomes more or less strained. In my device a toggle system compensates for the varying stiffness of the spring, and thus gives a practically constant effect.

In a cultivator, the combination, with the axle and frame, of pivoted beam B, arm or housing E, toggle system H, fixed pivot N, moving pivot F, and spring O, substantially as and for the purpose set forth.

256,029 GILPIN MOORE, Moline, Ills., assignor to Deere and Company, same place. Cultivator. April 4, 1882. Filed Nov. 8, 1881.

The present invention is an improvement in cultivators such as used in tilling cotton, having the shovel-beams arranged in pairs and each pair manipulated by a single handle.

It consists in the improved means, hereinafter especially described, for enabling the two beams to be set at the same or different levels, and the plowing of the shovels respectively of the two beams to be done accordingly at the same or different levels.

1. In a cultivator, and in combination with the pivoted shovel-beams, the brackets H H', having slotted face-plates k k' attached respectively to said beams and adjustable on each other by means of slot, bolt, and nut, substantially as set forth.

2. In a cultivator, the bracket H H', consisting of two parts having respectively faces k k', slotted at k', and adjustable by bolt k' and nut k', and adapted to be secured on the shovel beams, all substantially as set forth.

256,044 CHARLES W. POST, Springfield, Ills. Cultivator. April 4, 1882. Filed Nov. 16, 1881.

My invention relates to wheel cultivators in which the two parallel beams carrying the shovels may be swung vertically to adjust the depth of the shovels in the soil or raise them out of their operative position when not in use, and laterally, so as to increase or diminish the distance between the beams, to cultivate as near to or far from the row as desired or necessary.

The object of my invention is to cause cultivator-beams, not affected by the hitch, to automatically adjust themselves with reference to the shovels when plowing mixed soil—i. e., hard and soft soil—so that the shovels will resist the tendency of the hard soil to throw them out, and thereby an even depth of furrow be maintained. I attain these objects by devices illustrated in the accompanying drawings, in which—

1. In a cultivator, the combination of the drag-bar with the axle or frame by means of a yielding or movable coupling adapted to permit the front end of the drag-bar to fall or rise as the shovels or teeth encounter a greater or less resistance from the soil, thereby causing the shovels to stand more or less vertical to the ground, substantially as described.

2. In a cultivator, the combination, with the drag-bars, of yielding or movable couplings connecting the drag-bars with the axle, and adapted to permit the forward ends of said drag-bars to fall and the shovels to automatically adjust themselves toward a vertical position as the resistance of the soil increases independently of the hitch of the team, substantially as described.

3. The combination, in a wheel-cultivator, of

the beam or drag-bar and a movable coupling at its front end, the bearing of which reciprocates at an angle of approximately forty-five degrees, substantially as described.

4. The combination, with the axle of a cultivator and the oblique guide-bracket, of the shovel-beam and the shaft to sustain the same in said bracket, substantially as described.

5. The combination, with the shaft supporting the beam and with the oblique guide-bracket, of a spring seated reciprocating block forming a bearing for said shaft, substantially as described.

6. The shaft supporting the beam and the slotted oblique guide-bracket, in combination with the reciprocating bearing block, the guide-rod, and the coiled expansion spring, substantially as described.

256,374 HENRY A. ROBERTSON, Haskins, Ohio. Cultivator. April 11, 1882. Filed Aug. 31, 1881.

1. The combination of the perforated and grooved bearing-plates T V, provided with forwardly-projecting ends, the standard W, the eyebolt X, and the ribbed recessed block Y, whereby the standard W may be readily adjusted, as specified.

2. In a cultivator, the combination, with the inclined draw-bars H and the plow-beams O, of the arched bar L, the hangers M, the slotted keepers N, and the clamping eyebolts and blocks P Q, substantially as herein shown and described, whereby the plow-beams are adjustably connected with the inclined draw-bars, as set forth.

3. In a cultivator, the combination, with the beams O and the plow-standards W, of the cranks h and the connecting-bars k, substantially as herein shown and described, whereby the plow-standards and plows of each beam will be held in corresponding positions, and can be adjusted at the same time, as set forth.

4. In a cultivator, the combination, with the inclined bars H and the plow-beams O, of the bearing-plates m, the cranks p, the keepers a, and the clamping eyebolts and blocks s t, substantially as herein shown and described, whereby the plow-beams can be readily leveled, as set forth.

5. In a cultivator, the combination, with the axle B, the tongue C, and the inclined draw-bars H, of the bearing-brackets u, having arms l, the rod r, having arms v or c, the levers z z', the connecting rod T and lever S, and the cords x, substantially as herein shown and described, whereby the inclined draw-bars and their plow-beams and plows can be raised together or separately, as set forth.

256,612 ROBERT H. AVERY, Galesburg, Ills., assignor of one-half to Cyrus M. Avery, same place. Cultivator. April 18, 1882. Filed Sept. 9, 1881.

1. In combination with the axle and wheels hinged thereto and arms projecting from the wheel-spindles, the transverse pivoted bar I and links P, connecting the arms J, a bar, Y, extending rearwardly from the bar I, by means of which the bar I may be oscillated and the wheels deflected, substantially as and for the purpose specified.

2. In combination with the axle or frame having swinging wheels with arms J, the bars I P, sliding bar K, and plow-beam D, the rod or arm L, adapted to move the wheels by the lateral movement of the plow-beam, substantially as and for the purpose specified.

3. In combination with the bars I P for operating the swinging cultivator-wheels, and with the sliding bar K, the rigid bar N, to which the bar P may be locked, substantially as and for the purpose specified.

4. In combination with the sliding bar K and plow beam or gang, the rod L, adapted to move freely in the bar K to permit the plow-beam to swing vertically without moving the bar K, and to move said bar K when the plow-beam is swung laterally, substantially as and for the purpose specified.

5. In combination with the axle or frame having swinging wheels with arms J, the links z, bars l P, sliding bar K, having a series of adjusting-bolts, k', and plow-beam D, the rods or arms L, adapted to move the wheels by the lateral movement of the plow-beam, substantially as and for the purpose specified.

257,063 JOHN M. PHILLIPS, Gillsville, Ga. Sulky-Plow. April 25, 1882. Filed Feb. 21, 1882.

This invention has for its objects to provide a sulky-plow the parts of which will be adjustable with respect to each other, to adapt the plow to various descriptions of work, as more fully hereinafter specified. These objects I at-

tain by the apparatus and mechanism illustrated in the accompanying drawings, in which—

1. The combination, with the frame A and axle B, of the adjustable segments H and sliding boxes I, the stirrups P L, the plow-beams N, pivoted thereto, and the compound elbow-levers T and operating lever S, all constructed and arranged to operate in the manner specified.

2. In combination with the segments A', the levers B' and C', the sliding boxes P', mounted upon the stirrups L, and the plow-beams N, pivoted to said boxes, all constructed and adapted to operate substantially in the manners specified.

257,074 JOHN W. ROCKAFELLOW, Stockton, N. J. Sulky-Cultivator. April 25, 1882. Filed Dec. 22, 1881.

1. The combination, with the carriage A B C D and the plow-beams L O P, of the inclined bars E, the uprights G, the cross bars P H, and the longitudinal bar I, substantially as herein shown and described.

2. In a sulky-cultivator, the combination, with the inclined gage-bars E and the tongue C, of the draw-rods X and their supporting-chain Y, substantially as herein shown and described, whereby the draft is applied to the said inclined bars and the double-tree and whiff-trees are supported above the plants, as set forth.

3. In a sulky-cultivator, the combination, with the inclined bars E and the upright bars G, of the plow-beams L, substantially as herein shown and described.

4. In a sulky-cultivator, the combination, with the tongue C and the cross-bar H of the gage-frame, of the hook-rod a and the eyebolts or staples b, substantially as herein shown and described, whereby the plows can be suspended above the ground, as set forth.

5. In a sulky-cultivator, the combination, with the axle B and the uprights G of the gage-frame, of the hook-rods c and the eyebolts or staples d e, substantially as herein shown and described, whereby the gage-frame and the carriage can be rigidly connected, as set forth.

257,228 EDWARD P. LYNCH, Davenport, Iowa. Cultivator. May 2, 1882. Filed Feb. 24, 1882.

1. In a wheeled cultivator, the combination of the axle, the vertically and laterally swinging beam journaled to the axle, the lifting-arm journaled upon the axle independently of the beam-coupling, the vertically-sliding rod jointed to the lifting-arm, the spring depressing said rod, and the connection extending from the lifting-arm to the beam, substantially as shown and described.

2. The combination of the axle, the coupling-box mounted upon the axle, the beam jointed to the coupling-box, the lifting-arm mounted upon the axle independently of the coupling-box, the vertical rod jointed at one end to the lifting-arm, the spring, and the connection from the beam to the lifting devices, substantially as shown.

3. In combination with the laterally and vertically swinging beam, the lifting-arm arranged to swing about a horizontal axis, and a jointed connection between the lifting-arm and the beam, and a spring, applied substantially as described, to urge the upper end of the lifting-arm downward.

4. In combination with the beam, the axle, and the coupling-box connected to said parts, the lifting-arm arranged to straddle the coupling-box and connected by intermediate devices, substantially as shown, with the beams.

5. The combination of the axle, the coupling-box, the beam, the lifting-arm independent of the coupling-box, the connection between the lifting device and the beam, the vertical rod with forward extension at its foot, and the two springs, applied substantially as described and shown.

257,229 EDWARD P. LYNCH, Davenport, Iowa. Cultivator. May 2, 1882. Filed Feb. 8, 1882.

The primary objects of the invention are to suspend the shovels with a spring action at the exact depth desired in practice, and to relieve the axle and coupling-box from the friction upon the axle incident to the downward pressure of the spring under the ordinary arrangement.

With these ends in view the invention consists in introducing between the arm of the beam and the spring-actuated rod an intermediate arm sustained upon the axle, and in connecting the two arms by a spring, as well as in various minor details.

1. The combination of the beam and the arm connected therewith, the secondary arm having a limited play in relation to the first arm, the rod, pivoted to the second arm, and the two springs, applied substantially as described and shown.

2. The combination of the beam and the arm connected therewith, the second arm mounted loosely on the axle, and the lifting spring and the suspending spring, substantially as described and shown.

3. In combination with a beam and a rigid arm connected therewith, a second arm, actuated by a beam-lifting spring, and a suspension-spring between the two arms, substantially as shown.

4. The combination of the beam and its arm, the independent arm, the suspension spring, and the spring-adjusting device.

5. The combination of the beam, the upright arm connected therewith, the independent arm, the intermediate spring, the rod united to the independent arm, the knuckle-joint, and the spring mounted upon the rod, as shown.

6. In combination with the vertically-swinging cultivator-beam, a spring tending to elevate the same, and a second and stronger spring located intermediate between the arm and the first spring, in the manner and for the purpose substantially as described and shown.

257,257. ALANSON P. WEBBER, Saratoga, Ills. Cultivator. May 2, 1882. Filed Mar. 19, 1880.

It has become common to use springs in cultivators for the purpose of partially supporting the plow-beams when in use, the tendency of such springs being to elevate the beams; hence, if the operator wishes to press the beams downward to plow deeper, he has to overcome the tension of the springs.

The object of my invention is to provide cultivators with springs connected with the beams, which springs will be free to act at all times, but which, when the shovels are in the ground, will not operate so as to have a tendency to elevate the rear ends of the beams, but when the rear ends of the beams are raised a little will come into action and will raise and hold or assist in raising and holding the shovels out of the ground. A further object is to so arrange the springs that if desired they can also be used for the purpose of aiding in holding the shovels in the ground. These objects I accomplish by means of coil-springs—one for each beam—the upper end of each spring being secured to the main frame, and the lower end being provided with a pulley which travels longitudinally under and along a rod or track connected at the ends to the beam, as hereinafter more fully set forth.

The combination, in a cultivator, of the axle with the swinging shovel-beams B, the springs secured at their upper ends to the axle and at their lower ends provided with pulleys or rollers, and the rods C, secured to the shovel-beams and passing over the said rollers, said members being constructed and adapted for operation substantially as described.

257,730. EDWARD P. LYNCH, Davenport, Iowa. Wheel-Cultivator. May 9, 1882. Filed Feb. 8, 1882.

1. In combination with a vertically-swinging plow-beam, a lifting-spring and a suspending-spring, arranged to operate substantially as described and shown.

2. In combination with a vertically-swinging beam, a spring to raise the same out of action and a spring to suspend the same in an operative position, the two arranged to operate alternately.

3. In combination with the plow-beam and the upright arm connected thereto, the rod pivoted to said arm and provided with the finger, the guide for the rod, and the two springs applied substantially as shown.

4. The combination of the beam and its rigid arm, the movable rod pivoted to the arm, and the compression-spring located between the rod and arm forward of their connecting-pivot, to suspend the beam in an operative position, substantially as described.

5. In combination with the vertically-swinging beam and the arm D, connected therewith, the rod J, jointed to said arm, the spring F, to limit the descent of the beam, located directly between the arm and rod, forward of their connecting-joint, and the adjustable spring-sustaining spindle L, as described and shown.

6. The combination of the beam, the upright arm connected rigidly therewith, the movable rod pivoted to said arm, the suspending spring F, located between the arm and rod, to sustain the beam in an operative position, and the ad-

justable spindle L, mounted and arranged to support the spring.

7. The coupling-box for a cultivator, provided with the upright arm D, and a spindle, L, adapted to support a spiral spring, as described and shown.

8. In combination with a vertically-moving beam, two springs, substantially as described, one tending to raise and the other to depress whereby the beam is held by spring-pressure from either rising or falling, as set forth. The beam when the latter is in an operative position.

9. In combination with the vertically-swinging beam, the spring attachment constructed, substantially as shown, with two springs, which tend one to raise and the other to depress the beam when it is in an operative position, 258,067. ALFRED MESSERSMITH, Munster, Ills. Wheel-Cultivator. May 16, 1882. Filed Oct. 21, 1881.

The combination, with the arms *b c i j*, secured to the opposite sides of the rear end of the plow-beam and bent outwardly, substantially as set forth, and provided with adjusting-bolts in their downwardly-projecting ends, of the arms *k l m n*, secured to the arms *b i*, and bent as shown, and threaded bolts *o s*, serving the double purpose of braces for the arms and a means of laterally adjusting the teeth, substantially as described.

258,724. THOMAS C. DODSWORTH, Ottawa, Kan. Cultivator. May 30, 1882. Filed Oct. 26, 1881.

My invention relates to wheeled cultivators in which divided plow beams are pivoted to the arms of an arched or bent axle and adapted to carry cultivator-plows, one in advance of the other, upon a divided beam, the said beams being hung up in going to and from the field. With such a divided plow-beam I use interchangeably with the plowshares a curved or bent toothed bar adapted to be connected with and to extend between and in the space across the line of the standards, which are of long and short branches, of said divided beams, whereby the usual double cultivator-plow beams are formed into harrow-beams of toothed bars, which take the place of the cultivator-plows and are firmly supported and braced by and between the standards of the divided beam. The toothed bars stand at right angles to the line of the beams, and are attached to the lower ends of the curved standards by clips, whereby they are made interchangeable with the usual plow-beam shares in converting the wheeled cultivator into a wheeled harrow, using the curved standards of the pivoted beams for both the share and toothed bar attachments; and the particular improvements which I have made in such a straddle-cultivator attachment will be the subject of specific claim.

In combination, the beams of a straddle-row cultivator, the single-tooth carrying-bar crossing between the beam-standards, having opposite return ends, the braces *i f*, secured to said bar between its return ends and its middle part, and the clips *g* for securing the ends to said beam-standards, substantially as set forth.

259,626. EDGAR A. WRIGHT, Moline, Ills. Cultivator. June 13, 1882. Filed April 6, 1882.

My invention relates to what are commonly known in the art as "walking straddle-row cultivators," wherein a wheeled frame or axle, arched at the middle to pass over the standing corn, is provided at its two ends with sustaining-wheels and with rearwardly-extending beams, the latter being provided with shovels to enter the ground, and being jointed at their forward ends to the frame in such manner that they may swing both laterally and vertically.

The invention relates to an improved manner of constructing the frame and applying the springs for the purpose of raising or assisting the operator to raise the beams or drag-bars, the springs having in some cases the additional function of holding the shovels to their proper places in the ground.

The improvement consists mainly in providing the frame with axles capable of rotating independently of the wheels, coupling the wheels directly to said axles, and at providing the axles with arms arranged to co-operate with a spring, a weight, or with draft devices to which the team is attached, as hereinafter more fully explained.

As regards the combination of the loosely revolving axles with the beams and lifting springs or other equivalents, the invention is

designed more particularly as an improvement upon those machines in which the axle is stationary and the beams and springs combined with sleeves or coupling-boxes arranged to rotate upon the axles.

One of the primary objects of the invention is to avoid the use of the rotating sleeves or boxes mounted upon the axle, which, for various reasons unnecessary to detail, are open to serious objection.

1. In a cultivator, the combination of the frame, the wheels, the two axles rotating independently of the frame and wheels, the plow beams coupled to the axles, substantially as described, and the arms applied to the axle and adapted to co-operate with springs, weights, or draft devices, substantially as described.

2. The combination of the arched frame, the wheels, the independently-rotating axles, each provided with an arm, the spring attachments co-operating with the arms, substantially as described, and the beams connected with the axles, substantially as shown, to swing vertically therewith.

3. In a cultivator, the combination of a draft-frame, an axle revolving freely in said frame, a ground-wheel revolving freely on the axle, a plow-beam vertically pivoted to the axle, and an arm or projection, substantially as described, secured to the axle, and a spring connection interposed between the frame and arm, substantially as described, for the purpose of acting through the arm and axle upon the beam.

4. The combination of the arched frame *a* and standards *c*, provided with the axle-bearing *b*, the two independent loose axles, the two loose wheels, the two beams connected with the axles by vertical axes, the arms rigidly secured to the beams, the rods pivoted at one end to the arms and sliding at the opposite ends in guides, and the springs mounted on the rods, as shown.

5. In combination with the rotating axle and the beam having a forked head, the coupling consisting of the tube, the bearing block between the tube and axle, the clamping devices, and the vertical pivot.

6. The combination of the draft-frame, the ground-wheels, the rotating axle, the beam connected with the axle by a vertical axis, and the arm secured rigidly to the axle and extending downward therefrom.

260,447. DANIEL BERLEW and MAR TIN L. KISSELL, Springfield, Ohio, assignors to P. P. Mast & Co., same place. Cultivator. July 4, 1882. Filed April 14, 1882.

1. The combination of the plow-beam, the rotary draft device to which it is connected, the arm attached to said device, the pitman jointed to the arm, the sliding rod mounted in a guide and jointed at one end to the pitman, and the spring upon said rod tending to depress the same, as described and shown.

2. In a cultivator, the combination of the axle, the coupling head or sleeve, journaled loosely upon the axle and provided with an upright arm, a vertically-sliding rod mounted in a guide upon the main frame and connected by a pitman with the upright arm, and the spiral spring applied to urge the sliding rod downward, substantially as described and shown.

3. In a cultivator, the combination of the rotary coupling or draft head, having the upright arm Q adjustably attached thereto, the pitman R, the vertically-sliding rod S, the cylindrical case surrounding the rod and secured rigidly to the frame, and the spiral spring mounted within the case and acting to depress the rod, as described and shown.

4. In a spring attachment for cultivators, the combination of the axle, the draft-bar X, and the spring-sustaining guide T with the stirrup U, applied, as shown, to unite both the guide and the axle with the draft-bar.

5. In a cultivator, the combination, with the rotary coupling-head C and the plow-beam, of the draft link pivoted vertically to the coupling-sleeve and to the beam, and means, substantially as shown, for securing the link against lateral play upon the sleeve.

6. The coupling-sleeve provided with the curved flange *o*, in combination with the draft-link, pivoted vertically at one end of the sleeve and arranged to swing laterally in relation thereto, the plow-beam pivoted vertically to the rear end of the link, and the fastening-pin P, connecting the link and coupling, as shown, whereby the beam may be adjusted laterally and fixed in position without being disconnected from the coupling.

7. In a cultivator, the laterally-adjustable draft-link, pivoted vertically at its forward end

to the draft device and adjustable laterally by a swinging motion, as described, in combination with the vertical rod K, mounted in the rear end of the link, and the plow beam adjustable vertically on said rod, as described.

8. In combination with the beam, its arm, and the connecting rod, the spring, and the spring sustaining rise, adjustable vertically, substantially in the manner described and shown.

9. In a wheeled cultivator, the beam lifting spring, arranged to operate substantially as described, in combination with the supporting case T, provided with notches, and a stirrup, U, serving to secure the ease in position and admit of its being adjusted vertically to vary the force of the spring.

260,664. WM. L. COLTON and HERSCHEL A. SCHERMERHORN, Waterman, Ills. Cultivator. July 4, 1882. Filed April 25, 1882.

Our invention has relation to so called "riding" or "silty" cultivators; and it consists in the means or mechanism for adjusting the position of the shovel beams in relation to the line of draft, substantially as hereinafter more fully described and claimed.

In a cultivator, the combination of the tongue A, having cross bar D, provided with the sliding hangers D D', axle B, having swiveled or pivoted boxes I I', jointed parallel drag-bars E E' and E E', connected respectively by the boxes e, and having couplings II II', provided with the set-screw i, and transverse connecting-arch G, substantially as shown and described, for the purpose set forth.

261,092. CARLOS W. HINDS, Waterman, Ills., assignor of one-third to J. J. A. Zeller, L. E. Phelps and R. K. Swift, all of same place. Cultivator. July 11, 1882. Filed April 20, 1882.

In a cultivator having jointed plow-beams, the combination, with the parallel rear sections, e, provided with the handles x and connected by the transverse brace h, of the parallel-moving front sections, d, connected to the draft-beam, and the vertical pivot in the joints connecting the front and rear sections, d and e, substantially as specified.

261,093. CARLOS W. HINDS, Waterman, Ills., assignor of one-third to J. J. A. Zeller, L. E. Phelps and R. K. Swift, all of same place. Cultivator. July 11, 1882. Filed Mar. 16, 1882.

1. In a cultivator, the standards having the pivotal bearings a, the swinging beams provided with boxes D, engaging said pivotal bearings, and the transverse bar E, connecting said standards, substantially as specified.

2. In a cultivator, the combination, with the swinging beams G, of the standards A, swiveled thereto, and the connecting transverse bar or arch E, rigidly secured to said standards, substantially as specified.

261,863. LUPPE LUPPEN, Pekin, Ills. Cultivator. Aug. 1, 1882. Filed Mar. 29, 1882.

My invention relates to improvements in cultivators of that class in which plow-beams are hinged to an axle, so as to permit swinging the plow-beams both laterally and vertically, whereby said plows or gangs may be used to cultivate both sides of a row of plants at the same time; and the invention consists in constructions and combinations hereinafter described, and set forth in the claims hereto annexed.

1. In a cultivator coupling joint, in combination with the axle, plow beam, and sleeve C, a joint-piece, D, having rearwardly-projecting arms, by which it is secured to the plow-beam, and forwardly projecting arms d, by which it is secured to a clevis, E, having means of securing the draft-hooks thereto in higher and lower planes, substantially as and for the purpose specified.

2. In a cultivator coupling-joint, in combination with the axle, plow-beams, clevis E, and sleeve C, mounted on the axle, substantially as described, a joint-piece, D, which partially surrounds the sleeve C and is intermediately between the plow-beam and clevis, and connected to both by joints, which, while they permit lateral flexure, hold the parts rigid as regards vertical flexure, substantially as and for the purpose specified.

3. In combination with the axle, plow beams, sleeve C, and joint-pieces D, having rearwardly projecting arms, by which it is secured to the plow-beam, and forwardly projecting arms d, by which it is secured to a clevis, E, construct-

ed substantially as described, a spring connected at one end to the axle and at its other end to the plow-beam, and adapted to coact with the draft clevis, substantially as and for the purpose specified.

262,487. WM. SCOTT, Buffalo, W. Va. Cultivator. Aug. 8, 1882. Filed Jan. 23, 1882.

1. In a cultivator, the carriage constructed substantially as herein shown and described, and consisting of the wheels A, axles B, arched bars C, slotted seat-board P, and king-bolt Q, as set forth.

2. In a cultivator, the combination, with the forward axles B and plow-beams E, of the rigid slotted clevises J, the angle-bars K, and the pins L, substantially as herein shown and described, whereby the plow-beams will be free to play in turning the cultivator, as set forth.

3. In a cultivator, the combination, with the plow-beams E and the rear axles B, of the facing-plates M, having their projecting rear ends perforated, and the upright rods N, substantially as herein shown and described, whereby the rear ends of the plow-beams are supported and are allowed to have a free vertical play, as set forth.

4. In a cultivator, the combination, with the seat-board P, of the U-shaped rods e, hinged to the said seat-board and provided with the foot-rests d at its ends, substantially as and for the purpose set forth.

262,726. DAVID L. BARNUM, Wilson, N. Y. Combined Wheel-Cultivator and Gang Plow. Aug. 15, 1882. Filed April 26, 1882.

1. In a combined wheel cultivator and gang-plow, the combination of the short axle E, having arm F and stand G, the perforated plate L, rigidly secured to the inner side of the axle-arm, and the lever M, having its lower end inserted in and secured to the grooved portion of the plate L, substantially as shown and described.

2. In a combined wheel cultivator and gang-plow, the combination, with the frame having segmental racks K, of the short axle E, supported in bearings a b, and having arms F, provided with stands G, the wheels H, mounted on said stands and having hubs I, the perforated bearings L, secured to the inner sides of the axle-arms and provided with grooves for the reception of the levers M, which are securely bolted to said plates and are provided with spring-pawls N, substantially as shown and described.

263,187. EDWARD P. LYNOH, Davenport, Iowa. Cultivator. Aug. 22, 1882. Filed June 13, 1882.

This invention relates to that class of cultivators in which the shovels are attached to beams jointed at their forward ends to a wheeled draft frame in such manner that they may be moved horizontally to follow the rows of corn and vertically to throw them into and out of action, and particularly to an improved spring attachment designed to raise or assist the operator in raising the beams above an operative position without interfering with their lateral motion when in action. The arrangement is designed so that when the beams are in an operative position they will be subjected to little or no lifting strain.

The invention consists essentially in mounting on the frame of the machine, in any suitable position, a pair of arms or levers acting on the principle of the familiar knee-lever or toggle-joint, and combining therewith an actuating spring or springs and a penulous rod or chain connected to the plow-beam or its adjuncts, as set forth.

1. In combination with the vertically swinging beam, the suspending rod or chain, the sleeve provided with the horizontal arm to which the suspending device is attached, and also with the depending arm, the movable rod jointed to said depending arm, and the spring arranged to urge the rod upward, as described and shown.

2. In combination with the beam and the arched axle, the arm or journal F, secured to the axle, the sleeve provided with the two arms and mounted upon the journal, the suspending device extending from one of said arms to the beam, and the spring-actuated device operating upon the other of said arms, substantially as described and shown.

3. In combination with the beam, the elevated rotary sleeve or bearing provided with two arms, the connecting device extending from one of said arms to the beam, provided

with the spiral spring J, and the rod H, mounted at one end in the guide I, and having its opposite end pivoted to the arm of the sleeve and provided with the finger c, co-operating with a corresponding finger on the sleeve, substantially as and for the purpose described.

265,830. BRADFORD A. KNIGHT, Beatrice, Neb. Cultivator. Oct. 10, 1882. Filed April 26, 1882.

1. The combination, with the beam G and bar M, hung to the beam E by the universal joint H O, of the plow consisting of the parallel bars I for supporting the plows, the cross-bar J, pivoted to the drag-bar M, and the cross-bar K, horizontally pivoted in boxes which are vertically journaled at L, in ears projecting from the beam G, as shown and described.

2. The plows S, connected to bent or crank rods T U, in combination with plow-stocks I J K by hook-bolts X, as shown and described.

3. The combination of the plows S, connected to and fitted adjustably on bent rods or cranks T U, with the stocks I and means for adjusting them on said stocks, as shown and described.

4. The combination, with plow-beams G, of plow-stocks consisting of vertical bars I and cross-bars J K, pivoted to said beams, and having plow-rods T and plows S connected to said stocks, substantially as specified.

5. The combination of the shields K, the bars I and P, and chain m with the plows S and plow stocks, as shown and described.

6. The combination of the swivel jointed rod g, eyes h, and pins i with the laterally adjustable plow-beams G and slotted plates j, attached to said beam, as shown and described.

7. The combination of fixed catches d with the latches b of the lever-pulleys Y Z, said lever-pulleys being arranged for lateral motion on the pivots f, substantially as specified.

8. The plow-rods T, connected to the plow-standards by upper and lower hook-bolts, X, and the lower hook-bolts fitted adjustably in slots N' of the plow-standards to alter the pitch of the plows, substantially as specified.

266,066. JOHN Q. ADAMS, Marseilles, Ills. Cultivator. Oct. 17, 1882. Filed Nov. 16, 1881.

1. In a cultivator, the axle provided with a longitudinal groove, a forked beam-cooper mounted loosely on the axle, a bracket also mounted loosely on the axle between the forks of the coupler, and provided with an interior chamber, a spline-block set loosely in the chamber over the axle-groove, and a setting device for forcing the spline down into the groove and firmly holding it in place, substantially as and for the purposes set forth.

2. In a cultivator, the shovel-beam connected to the axle by a double-jointed coupling, permitting both vertical and lateral movement of the beam, in combination with a vertical pivot secured to the axle at or near the pivotal coupling of the shovel-beam, and a spring secured at one end to said vertical pivot extending upward and backward and connected at its other end to the shovel-beam, substantially as and for the purposes set forth.

3. The shovel-beam connected to the axle by a double-jointed coupling, in combination with the bracket attached to the axle substantially in line with the vertical pivot of the beam coupling, a vertical pivot-bolt mounted on the bracket, and the spring attached at one end to the pivot-bolt so as to turn with it and at the other end connected to the beam back of its coupling, substantially as and for the purposes set forth.

4. The bracket b, provided with projections b', the pivot-bolt c, mounted on the bracket, with its bearings in the projections, and the beam-lifting spring C, having the bend c' at its extremity, which receives the projecting lower end of the pivot-bolt, and fastened rigidly to said bolt at a point above the lower bearing thereof, substantially as and for the purpose set forth.

5. The axle A, in combination with the beam d, connected to the axle by a double-jointed coupling, the bracket B, the spring C, pivoted to the bracket substantially in line with the vertical beam pivot and extended back over the beam, and the rod D, connecting the rear end of the spring to the beam, substantially as and for the purposes set forth.

6. The vertical pivot-pin f of the beam-coupling, in combination with the spindle F, sleeved thereon and provided with a wedge-shaped enlargement or rib on one side, and the sleeve e' of the coupling link, the opening h which conforms to the wedging shape of the spindle that is received therein, substantially as and

for the purposes set forth.

7. The coupling-sleeve *e'*, the opening of which is *V* shaped on one side, in combination with the spindle *F*, having a wedge-shaped rib on one side formed to fit the *V*-shaped opening of the sleeve, the pivot-pin *f*, the set-screw *f'*, and the beam-levers *G*, substantially as described.

8. The axle *A*, in combination with the sheaves *I*, mounted and turning on the axle, the block *H*, inclosing the sheaves, and provided with openings in front and rear for the draft-chains, and the draft chains *K*, substantially as described.

266,086. WM. P. BROWN, Zanesville, Ohio. Wheeled Cultivator. Oct. 17, 1882. Filed May 12, 1882.

My invention relates to certain improvements in wheeled cultivators of that class of which my Patent No. 130,810, granted May 15, 1877, is a type—that is to say, in which an elevated tongue is connected to the upper part of a crank-axle whose lower ends are mounted upon wheels, between which wheels and the vertical section of the crank-axle is located a coupling attachment for the plows or cultivators, which coupling attachment is provided with a spring which co-operates with the lift of the plowman in raising up the cultivator on the rear hooks of the tongue, while a draft attachment is provided for straining the coupling one way or the other to make the plows run deeper or shallower, as may be desired.

The object of my present invention is principally to so construct the coupling for the cultivator-plows as not only to lift or depress the plows, but also to control the plows against any tendency to sway sidewise, and make them travel more directly in line with the point of attachment with the axle or truck, and also to prevent the springs (when applied to the plow coupling or head) from pulling the plow around to one side whenever they are thrown out of

1. The plow-head *G*, having a forward projection, in combination with a spring connected to the said projection of the plow-head at a point over or in front of the vertical pivot-bolt to assist in lifting the plows in the rear and prevent side swing, as described.

2. The combination, with the pipe-box and its bracket *H*, the pivot-bolt, the plows, and the spring *F*, of the head *G*, having a projection extending over and to the front of the pivot-bolt and there connected to the spring, as and for the purpose described.

3. The combination, with the pivot-bolt *I*, of the bracket *H*, having flanges with a series of line of draft in the rear, as will be more fully described hereinafter.

4. The combination, with the head *G*, having flanges with a series of vertical bolt-holes, and a neck or arm, *b*, extending over and to the front of the pivot for connection with the spring, whereby the tension of the latter is made to hold the plows straight or give them a lateral drift, as described.

5. The combination, with the pipe-coupling and the spring *F*, of the plow-head having projection *b*, with vertical sockets *f* at its end, and a pin, *g*, and a loose sliding connection with the spring, as and for the purpose described.

6. The draft ring *P* and perforated loop *Q*, the latter surrounding the pivot-bolt below the pipe-coupling and combined with the same, the plow-head *G* and bracket *H*, as shown and described.

7. The clamp composed of the three parts *R* *S* *H*, fastened together by bolts *a*, the parts *S* and *H* having clutch-faces and a slotted connection that permit of the adjustment of *H* over *S* to secure a rotary adjustment of the plows about their longitudinal axis.

266,123. WM. EVANS, Moline, Ills., assignor to the Moline Plow Co., same place. Cultivator. Oct. 17, 1882. Filed June 29, 1882.

This invention relates to that class of wheeled cultivators and similar machines wherein a shovel or plow beam is jointed at its forward end to a draft frame in such manner as to be capable of swinging both horizontally and vertically, and particularly to those machines wherein springs are employed, in connection with the shovel-beams, for the purpose of assisting the operator in controlling their vertical adjustments.

1. The combination of the axle *A*, rock-shaft *B*, the draft-head or coupling *P*, and the lifting-spring, arranged substantially as described, to rotate the rock-shaft.

2. In combination with the axle *A*, bearings *a* and *b*, the horizontal rock shaft *B*, having the arm *E* thereon, the rod *F*, guide *G*, and

spring *H*.

3. In combination with the main axle and the rock-shaft *B*, having the spring applied, as shown, to give the same a forward rotation, the draft head *D*, connected to the rock-shaft by means of the tube *f*, pivot *j*, plates *c* and *g*, and bolt *i*.

4. In a cultivator, the horizontal main axle, in combination with the horizontal rock shaft *B*, sustained therefrom, substantially as specified, the forked draft-head *D*, and the vertical axis *j*, connecting the draft-head and rock shaft, and adjustable both vertically and laterally upon the latter by means of the clamping device, substantially as shown.

5. In a cultivator, the combination of the main axle, the independent rock shaft mounted upon and in advance of said axle, the draft-head passing loosely around the axle and jointed to the rock shaft, and the spring attachment, substantially as shown, connected with the rock shaft for the purpose of turning the same forward.

6. In combination with the main axle and the supplemental rock shaft *B*, the draft-head jointed to said rock shaft, substantially as shown, and the depending arm *J*, connected rigidly to said rock-shaft.

7. In combination with the angular horizontal rock-shaft *B*, the beam connection or coupling consisting of the forked draft-head *D*, flanged plates *c* and *g*, tube *f*, bolt *i*, and pivot *j*.

8. In a cultivator, the combination, with the axle or arch *A*, of the supplemental rock shaft *B*, sustained substantially as described, and provided, with one or more projections adapted to operate, as described, with a spring, weight, or draft device.

266,482. WM. A. KNOWLTON, Rock-fool, Ills. Cultivator. Oct. 24, 1882. Filed May 26, 1882.

1. A sleeve capable of an oscillating motion and lateral adjustment on the axle-tree of a cultivator, provided with a transverse socket-piece on its inner edge to receive the vertically-adjustable coupling, in combination with a yoke adapted to be connected herewith and with the shovel-beams, substantially as described.

2. The combination, with a shield, of a curved wire or rod extending from the forward lower portion thereof to the upper rear portion, substantially as and for the purpose described.

3. The herein described shield, having a curved wire or rod fixed to its inner face and extending diagonally across the same, in combination with the shovel-beams, substantially as and for the purpose described.

267,670. HOWARD H. BUTLER, Zanesville, Ohio, assignor of one-half to Thos. Jenkins, Moline, Ills. Cultivator. Nov 21, 1882. Filed May 27, 1882.

In my improvements I aim to overcome some objectionable results from springs now used in wheeled cultivators. That I may be more readily understood I will refer to the springs in general use and the results. First, a spring so constructed and adjusted as to exert an upward or raising force upon the plow-beam, also to exert a downward or depressing force upon the plow-beam, depends for this result upon the plow-beam passing above or below a given point. It is apparent, therefore, if the ground be uneven the spring will exert a force when least needed, or a force in the opposite direction of that required. If a portion of the ground be hard, as compared with other portions, or very soft, it will be seen that springs of this class may work improperly.

Another class of springs in general use are those which exert a continuous upward or raising force upon the plow-beam, and in this class, unless the plows are firmly held in the ground by the operator, the tendency is for the plows to rise out of the ground, or partially so, in striking hard soil. The springs now in common use are constructed with other parts so as to frequently get out of repair, and they also take up much of the space between the wheel and arch.

Another objection existing in wheeled cultivators now in use is the inability to use an arch of sufficient width to avoid injuring the stalks of corn when at an advanced stage of growth, and yet permit the cultivation of the corn in an early stage of its growth sufficiently near to the plants without the operator using considerable power to hold the plow-beams so as to bring the plows near to the plants.

It can be readily seen that whenever the plows follow in a direct line from where the beam is attached to the axle it is easier for the operator: but if the operator is required to

hold the beam in such position that the plow will be in the ground at the right or left of such direction it requires the exertion of more or less strength by the operator, and is necessarily very fatiguing. I obviate this objection by a device which I shall more fully explain hereinafter, whereby I can so regulate the connection of the front end of the plow-beam to the axle as to have such point of connection inside of the arch or outside thereof, at pleasure.

1. The combination, with the arched axle and the plow-beams, of the coiled spring *E*, placed around the axle and secured one end to the axle, the other end forming a projecting arm, *g*, secured by links to the plow-beam coupling, substantially as shown and described.

2. The yoke or frame *J*, having perforated arms or brackets *l* and lever-arm *k*, in combination with the yoke-head *M*, having perforated extension and set-screw, the plow-beam *C*, bolt *o*, and staple *n*, substantially as shown and described.

3. The combination of the draft lever *P*, having projection *r* and perforations above and below the axle, with the spring *E*, the yoke *J*, yoke-head *M*, plow-beam *C*, and draft attachment *s*, substantially as shown and described.

268,887. JAMES T. HAMILTON, Council Bluffs, Iowa, assignor to himself and Wm. K. Hoagland, Peru, Ills. Lifting device for Cultivator Beams. Dec. 12, 1882. Filed Feb. 20, 1882.

The lifting or raising of the beams and shovels of a cultivator as ordinarily constructed is attained in some instances with considerable trouble and labor, and to obviate this objection various devices have been applied to cultivators for the purpose of assisting the operator in raising or lifting the beams and shovels and rendering the operation more easy and less laborious. Such devices have been made in various forms and have been applied in various ways; and the object of this invention is to construct a raising or lifting device for the plow beams and shovels which can be easily applied, and which will do the required work in a reliable and effectual manner without interfering with the operation of the plows when in the ground. Its nature consists in providing a curved bar, forming a spring, adjustably attached at one end to the frame or arch of the cultivator and at the other end connected with the collar located on the wheel-spindle, and carrying the beams and shovels; in providing the arm or extension to receive the end of the curved bar or spring, and furnish a means for rocking or turning the sleeve to raise or lift the beams and shovels; in providing a support for the upper end of the curved or spring bar, by means of which such end can be adjusted to produce a greater or less resistance in the action of the bar or spring, and in the several parts and combinations of parts hereinafter set forth as new.

1. In a cultivator, the curved bars or springs *O*, connected at their lower ends with an arm or extension located on the sleeve or collar which carries the plow beams and shovels, and having their upper ends adjustably connected with the frame or arch of the cultivator for adapting the bars or springs to resist the varying strains incident to working light and heavy soil, substantially as described.

2. The combination, with a cultivator-frame and plow-beams or drag-bars, of a spring or curved bar, *O*, and adjusting-bar *N*, pipe box or sleeve *C*, having an arm, *P*, and the coupling *E* *F*, substantially as described.

3. In a cultivator, the curved bar or spring *O*, in combination with the adjusting or tension bar *N* and arm or extension *P*, having a fulcrum, *r*, and attached to the beam sleeve or collar, substantially as and for the purposes specified.

269,639. WM. H. LUCE, Prairie Centre, Ills. Cultivator. Dec. 26, 1882. Filed Sept. 4, 1882.

1. The combination of tongue *b*, bar *m*, slotted post *a*, spring pin *g*, and lever *x* with the cultivator frame mounted on cast-iron wheels, substantially as described.

2. The plows *b'*, attached to the shanks *e'* of *T*-heads *e'* of crank-arms *e'* in tubular shaft *f'*, said *T*-heads being arranged obliquely to the axle-line and in the line of the plows, substantially as described.

3. The draft-rod *g'*, in combination with plow-shanks *e'*, the crank-arms *e'*, and the tubular shaft *f'*, whereby the plows are adapted to be shifted forward and backward, said rods being adjustably connected to the front beam

by sockets *h'* and pins *i*, substantially as described.

4. The combination of the crank-arms *e'*, having the plows attached to them, tubular connecting-shaft *f'*, beams *c*, and the binding screws *P*, substantially as described.

269,732. HENRY S. SMILEY, Meadville, Mo. Cultivator. Dec. 26, 1882. Filed Aug. 5, 1882.

The combination, with the beam, of the standard-plate pivoted thereto and having the integral lateral shank formed with a horizontal slot in its outer end, in which is adjustably secured the spring curved cultivator-blade, as set forth.

270,251. PATRIK ROONEY, Chariton, Iowa. Straddle-Row Cultivator. Jan. 9, 1883. Filed July 6, 1882.

My invention consists in forming and combining cultivator frames direct with carriage in such a manner that they will have vertical and also lateral play, and readily adjusted and directed relative to plants in rows by means of the driver's feet in stirrups, and also readily raised and lowered by means of a hand-lever within reach of the driver when seated on the rear end of a carriage body and pole formed integral with each other, all as hereinafter fully set forth.

1. In a cultivator frame, a drag bar or beam having an upward bend or loop, in combination with one or more beams having straight front ends, substantially as shown and described, for the purposes specified.

2. The cultivator frames composed of the drag-bar *a*, having at its front end a bend, *a'*, the adjustably-connected bars *b* *c*, and the cross-rod *d*, in combination with the arched axle *h*, having bows *i*, substantially as shown and described.

3. The carriage-frame *g* *h*, the yoke *k*, the lever *l*, the connecting rods *m*, the hangers *r* *s*, and the suspended cultivators having posts *t*, arranged and combined substantially as shown and described, to operate in the manner set forth, for the purposes specified.

270,629. BYRON C. BRADLEY, assignor to the First & Bradley Manufacturing Co., Chicago, Ills. Cultivator. Jan. 16, 1883. Filed Feb. 29, 1882.

This invention relates to devices or means for assisting the operator in raising the plows, whereby such raising will be more quickly and easily performed without necessitating the exertion of any considerable amount of lifting force on the part of the operator, and has for its objects to give the operator the required assistance by devices or means which are simple in construction and easily applied, and which will do the required work in an efficient and reliable manner, and without interfering with the vertical and horizontal movements of the beams required by the plows to do their work; and its nature consists in providing a vibrating or swinging arm or support attached to the arch or frame of the cultivator above the axle or spindle, and connected by a flexible connection with a spring or spring-arm, and also connected by a flexible connection with the coupling by which the beam is connected with the axle or spindle, and in the several parts and combinations of parts hereinafter specifically set forth, and pointed out as new in the claims.

1. The combination, with the coupling which connects the beam with the axle, of the vibrating lifting or raising arm *d*, having one end joined to the end of the spring *a* by a flexible connection, *b*, and the flexible connection attached at one end to the coupling which connects the beam to the axle, and at its other end attached to the end of the vibrating or raising arm, substantially as described.

2. The coupling which connects the beam to the axle, provided with the hook *h*, in combination with the flexible connection *b* and *k*, attached at one end to the hook on the coupling and at the other with a vibrating or raising arm, *d*, hung on the arch or frame, and which connects by a flexible connection *b*, with the spring *a*, substantially as described.

3. The combination, with the arch or frame, of the horizontal bracket or support *h*, attached to the said arch or frame, the spring *a*, the flexible connection *b*, and the interposed vibrating arm *d*, hung on the bracket or support *h*, substantially as described.

272,460. EDWARD L. MURRAY, Atlanta, Ga., assignor of one-half to G. T. Pringle, Charleston, S. C. Combined Wheel-Cultivator and Plow. Feb. 20, 1883. Filed May 15, 1882.

1. The combination, with the central transverse beam of the sulky-frame, provided at each end with a vertical tongue and near each end with a segment and lever, of a segment-rack secured upon said beam and means for engaging the lever with the rack, boxes each provided with a T-shaped slot, in which the vertical tongues of the beam move, and with a rack-bar with which said segments engage, and axles adjustably secured in the lower ends of the boxes, substantially as set forth.

2. The combination, with the front transverse bar of the frame and the sliding bars or extensions secured thereto, the said latter being provided with depending arms, of the adjustable axles, and braces connecting the said axles to the said depending arms.

3. The combination, with the front transverse bar of the frame and the sliding bars or extensions secured thereto, the said latter being provided with slotted depending arms in which the plow or cultivator clevises are adjustably secured, of the adjustable axles, and braces connecting the said arms and axles, substantially as described.

4. The combination, with the front transverse bar of the frame, provided near its opposite extremities with metallic collars, of the sliding bars or extensions provided on their outer ends with depending slotted arms, and provided on their inner ends with metallic collars, and set-screws for holding the sliding bars in position on the transverse bar, the whole being arranged and adapted to operate as shown.

5. The combination, with front transverse bar and the two sliding bars, the latter being provided with depending slotted arms in which the plow or cultivator clevises are adjustably secured, of the draft-bar the rear face of which is connected to the plows or cultivators, while the front face thereof is provided with double or single trees for the attachment of the team.

6. The combination, with the adjustable axle, the front transverse bar, and the sliding bars or extensions adjustably secured thereon, the latter being provided on their rear faces with pulleys and on their low or faces with depending slotted arms in which the cultivator or plow clevises are adjustably secured, of the plows or cultivators, and a chain or rope passing over the said pulleys and removably connecting the said plows or cultivators with suitable levers for raising and lowering the said plows or cultivators.

7. The combination, with the parallel longitudinal bars, of a box adjustably supported between said bars, an operating lever fulcrumed in said box, a central plow or cultivator the front end of which is connected directly to the draft-bar, and a chain or rope connecting the said lever to the plow-beam, substantially as set forth.

8. The combination, with the two parallel longitudinal bars of the frame, of a box adjustably supported between said bars, an operating-lever interlurmed in said box, a central plow or cultivator whose forward end is connected to the draft-beam, a seat provided with a pulley on its under side, and a chain passing over said pulley and connecting said lever and plow or cultivator, substantially as set forth.

9. The combination, with the central lever and the adjustable box, constructed substantially as described, in which the said lever is pivoted, of a yoke pivotally secured to the said box and adapted to be secured to the plow or cultivator beam, and a chain connecting the said lever and plow or cultivator beam, substantially as described.

272,490. GEORGE F. SKANK, Lincoln Township, Iowa. Cultivator. Feb. 20, 1883. Filed Mar. 9, 1882.

My invention consists in improvements in cultivators, first, in the gangs, being especially adapted to the cultivation of lister corn, being so arranged that they can be changed at the will of the operator in regard to depth and distance apart by simply drawing a pin in the casting on the end of the beam, and raising or lowering them to regulate the depth and putting them closer together or farther apart, as may be desired.

In a cultivator, the combination of the adjustable evener *C*, pivoted between the adjustable slotted castings *F*, slotted braces *C'*, arch or frame *H*, chains *F*, and pulleys *G*, all constructed as herein shown and described.

272,962. JOHN KESTER, Clay City, Ind. Cultivating Plow. Feb. 27, 1883. Filed Sept. 4, 1882.

1. In a corn-cultivator, the combination of slotted pole *F* and stirrups *H* *H'* with the

swinging plow-beams *G*, having uprights *B* *B'* and connecting-rods *b*, substantially as shown and described, and for the purpose set forth.

2. In a corn-cultivator, the combination, with pole *F* and beams *G*, of lever *A*, segment *M*, rock-shaft *K'*, crank *K*, link *O*, crank *IP*, and stirrup *H*, adapted to raise or lower the plow-beams *G*, substantially as shown and described, and for the purposes set forth.

273,673. THEODORE M. FLENNIKEN, Rockford, Ills. (Wm. McGregor administrator of said Flenniken, deceased), said Flenniken assignor to N. C. Thompson, Cultivator. Mar. 6, 1883. Filed Feb. 27, 1882.

The object of this invention is to produce a cultivator capable of being handled with greater ease and certainty, to enable the operator to produce better results; and it consists in mechanism capable of adjustment to cause the cultivator-teeth to engage the ground with greater or less force; in mechanism to assist in elevating the shovel-beams; in mechanism to hold the shovel-beams elevated in turning and getting into position to employ the cultivator, and from which position they may be lowered to their working position by a downward pull on the handles, and in mechanism to suspend the shovel-beams for the purposes of transportation. These and other features, including the necessary devices and their several combinations, all of which will be hereinafter more fully described, constitute the subject-matter of this specification.

1. The combination, with the sleeve to which the shovel-beams are pivoted, provided at its inner end with an uprising lateral arm, of a lever pivoted to the main frame or axle and adapted to engage the uprising lateral arm, but disconnected therefrom, substantially as and for the purpose set forth.

2. The sleeve to which the shovel-beams are pivoted, provided with an uprising arm and a depending arm, and a pivoted lever, one end of which is adapted to engage the lateral arm, but disconnected therefrom, in combination with the spring connected to the free end of the pivoted lever and with the depending arm of the sleeve, substantially as and for the purpose set forth.

3. A spring, substantially as herein described, having an adjustable connection with the depending arm of the sleeve to which the shovel-beams are pivoted, and a suitable connection with the free arm of the lever which engages the lateral uprising arm of the sleeve, for the purpose of varying its action on the shovel-beams, substantially as hereinbefore set forth.

4. A spring, substantially as herein described, having a suitable connection with the depending arm of the sleeve to which the shovel-beams are pivoted, and an adjustable connection with the free arm of the lever which engages the lateral uprising arm of the sleeve, for the purpose of varying its spring force, substantially as and for the purpose hereinbefore set forth.

5. The combination, with the pivoted lever having a depending arm for engaging the uprising lateral arm of the sleeve to which the shovel-beams are connected, of a guideway, *r*, for engaging the free arm of said lever for directing the vibratory movement of the same, substantially as and for the purpose hereinbefore set forth.

6. The pivoted lever having a depending arm for engaging the uprising lateral arm of the sleeve, in combination with a stop for limiting the throw of said lever, substantially as and for the purpose set forth.

7. The combination, with the pivoted lever for automatically controlling the movements of the shovel-beams, of a guide bar or way to direct the movements of said lever, and a stop to limit its rearward movement, substantially as described.

8. The combination, with the sleeve to which the shovel-beams are pivoted, provided with an uprising lateral arm, of a pivoted lever, one end of which is adapted to engage the lateral arm of the sleeve, and having a free hooked end to engage the shovel-beams, substantially as and for the purpose set forth.

273,787. JOHN B. WEIR, assignor to W. S. Weir, Monmouth, Ills. Cultivator. Mar. 13, 1883. Filed Oct. 31, 1882.

This invention relates to that class of "long-neck" or parallel cultivators in which two or more arches that constitute the central part of the axle, or connection between the stub axles or spindles, on which the supporting-wheels are journaled are hinged to the side frames or plates to which said stub-axles are fixed, in

such manner that the wheels and side frames will be held in parallel planes by the arches when either wheel is advanced relatively to the other; and the invention consists in constructions and combinations hereinafter described, and set forth in the claims hereto annexed.

1. In combination with arches A A', having elevated central parts and horizontal ends or arms a, the plates B, provided with stub-axes for the wheels, and hinged to the horizontal ends a of the arches A A', substantially as and for the purpose specified.

2. The arches A A', having horizontal ends hinged to plates B, to which the supporting-wheels are attached, in combination with gangs of plows hinged to the horizontal ends of one of the arches, substantially as and for the purpose specified.

3. Twin arches A A', having horizontal ends hinged in slotted plates B, in combination with plow-gangs hinged upon the horizontal end of the arch A A', substantially as and for the purpose specified.

4. In combination with the arches A A', having elevated central parts and horizontal ends or arms a, plates B, provided with stub-axes for the wheels, and hinged to the horizontal ends a of the arches, and the plate D, hinged to the upper central part of the arches A A', substantially as described.

5. In combination with the arches A A' and wheel-plates B, hinged to the horizontal ends of said arches, the plate D, hinged to the upper central parts of the arches, and the tongue E, hinged to the plate D, substantially as and for the purpose specified.

6. In combination with arches A A', hinged to the side plates B, plow-gangs hinged to the horizontal ends of the rear arch, and provided with plates which extend forward, one above and one below the horizontal end of the forward arch, substantially as and for the purpose specified.

7. The arches A A', having horizontal ends a, hinged to side plates B, in combination with plow-gangs having beam-plates b b', hinged to the horizontal end of the rear arch, and extended forward, one above and one below the end a of the forward arch, substantially as and for the purpose specified.

274,616. SAMUEL D. B. KISE, Kingwood, N. J. Cultivator. Mar. 27, 1883. Filed Nov. 15, 1882.

The object of this invention is to provide cultivators constructed in such a manner that the plows can be readily adjusted to work at any desired depth in the soil and to throw the soil toward or from the plants. To the arched axle are attached the forward ends of inclined connecting-bars and curved supporting-bars, the rear ends of which are attached to the ends of an arched bar connected with the arched axle by the handles of the cultivator, whereby all the plows can be raised from the ground at a time and the depth to which the plows enter the ground will be limited. To the rear ends of the inner beams are attached curved and slotted bars, which are secured by bolts to the inclined supporting-bars, so that the said inner beams can be adjusted toward or from each other, as will be hereinafter fully described.

1. A cultivator constructed substantially as herein shown and described, and consisting of the arched axle B, with the end parts of which the forward ends of the beams and braces H I, that carry the plow standards K, are connected, and the arched bar P, connected with the axle B by the inclined bars O, the curved bars or runners S, and the handles R, as set forth.

2. In a cultivator, the combination, with the arched axle B, the plow-beams H, and the plow-standards K, of the braces I, the clamping-joints J, the keepers L, and the break-pieces M, substantially as herein shown and described.

3. In a cultivator, the combination, with the arched axle B and the plow-beams H, of the inclined bars O, the arched bar P, the handles R, and the curved bars or runners S, substantially as herein shown and described.

4. The combination, with the axle and beams, of the bars or braces I, the clamps J, and the keepers L on the beams, whereby the standard K may be held adjustably, as described.

274,720. CHAS. D. CARTER, Spring Arbor, Mich. Wheel-Cultivator. Mar. 27, 1883. Filed Dec. 8, 1882.

My invention relates to an improvement in wheeled cultivators; and it consists in a suitable standard, within the lower forked end of which the bearing-wheel is journaled, and

which is provided with a projection upon its front side terminating in a hook, so as to be used, when disconnected from the axle and frame in connection with a single-horse cultivator.

It further consists in the combination of the standard, having the bearing-wheel journaled in its lower end, having a socket formed in its upper end to receive the end of the beam, and provided with a hook upon its front side, with the two part coupling by which the cultivator is connected to the standard, as will be more fully described hereinafter.

The object of my invention is to so construct the beams to which the cultivators are attached that they can be fastened to the axle and the frame, so as to be used as a two-horse cultivator, or so that the standards can be detached from the frame and used in connection with a single cultivator only.

1. The combination of the standards adapted to be connected to the axle, and provided with the extensions upon their front sides, so as to be used in connection with a single beam, substantially as described.

2. The combination of the standards, provided with the extensions upon their front sides, with the couplings P, clamping-belts, and connections for the cultivator, the clamping-bolt serving as a pivot for the front end of the cultivator-beam, substantially as set forth.

3. The combination of the standards having the wheels pivoted in their lower ends, and provided with the extensions terminating in hooks upon their front sides, with the couplings P, having perforated extensions, the clamping-bolts, and the cultivators, substantially as specified.

274,798. LUPPE LUPPEN, Pekin, Ills. Cultivator. Mar. 27, 1883. Filed Oct. 28, 1882.

My invention relates to improvements in combined riding and walking cultivators, in which the plows, cultivators, drills, and harrows connected to the frame are operated by levers under the immediate control of the operator; and the objects of our improvements are, first, to provide suitable means for adjusting the plows, cultivators, &c., in a vertical plane; second, to so adjustably attach the handles to said cultivators, plows, &c., that the operator can remain in his seat and operate the same, or can dismount and operate the same while on the ground, when walking I attach these objects by the mechanism illustrated in the accompanying drawings, in which—

1. In a combined walking and riding cultivator, the combination, with the plow-beams and handles, formed as described, of the levers secured upon the arch of the axle and connected by books and chains to both the plow-beams and handles, substantially as shown.

2. In combination with the arched axle A, the levers B H, connecting chains j n, pivoted lever-handles o o, and plow-beams l, substantially as shown and specified.

274,920. SAMUEL and REASON DAY, Delavan, Ills. Cultivator. April 3, 1883. Filed Aug. 14, 1882.

This invention is an improvement upon a cultivator patented by Samuel Day, November 10, 1868, No. 83,338, and relates to a means of changing the direction of the line of draft of the cultivator relative to the tongue, for the purpose of guiding the machine.

The object of this invention is to produce the maximum variation between the cultivator and its tongue with the minimum movement of the hand applying the force consistent with the amount of strength convenient to be used.

1. The tongue A, cultivator-frame B B', and bridge C, in combination with the link D, having slot M, rods R R', and handle S, and the link E, having slot G and bolt F, substantially as and for the purpose set forth.

2. A cultivator frame, B B', tongue A, pivoted thereto, and bridge C, having bosses J and K, in combination with the slotted link E, having bolt F, and slotted link D, having a moving-lever.

275,502. JOHN LANE, Hyde Park, assignor to the Peru City Plow Co., Peru City, Ills. Cultivator. April 10, 1883. Filed Nov. 2, 1882.

The invention consists in mounting on the frame of the cultivator, above the horizontal ends of the axle, a spring having a connection with an arm depending from the sleeve, and in certain combinations of parts, which will first be described, and after ward pointed out in the claims, as follows:

1. In a cultivator, the combination of the vertically swinging beam, the sleeve provided with the depending arm, the spring having one of its ends connected to the outer end part of the said arm below the center of motion of the sleeve, the other end of the spring attached to the axle above the sleeve, and the spring arranged to urge upward on the depending arm, whereby when the beam is in a horizontal position the center of motion of the sleeve will be as in a dead lock between the two ends of the spring, and the lifting force of the spring spent against the axle, all constructed and arranged to operate substantially as shown.

2. In a cultivator, the arched axle, the beam connected to the axle by a coupling permitting both vertical and lateral movement of the beam, in combination with the sleeve rotary on the axle, the arm depending from the sleeve extending downwardly at about right angle with the beam, the spring S, the link g, and the bracket F, all constructed and arranged to operate substantially as shown.

275,677. ADOLPHUS E. BROOES, Jefferson, Ga. Cultivator. April 10, 1883. Filed Nov. 2, 1882.

1. The combination, with the frame, of the separated hollow shafts d d', clamped detachably beneath the front bars of the frame, supporting the hollow boxes of the plow-beams and adapted to receive the ends of a yoke-bar G, substantially as set forth.

2. The combination of the frame, separated hollow shafts d d', bar G, the ends extending into the shafts, and beam supported thereby, as specified.

276,160. JOHN W. COLLINS, St. Louis, Mo. Cultivator. April 24, 1883. Filed Oct. 18, 1882.

Considered generally, the improved implement consists of a double set of cultivator shovels or plows attached to and drawn by a single carriage which straddles the two rows being cultivated. One of the sets of plows is used in cultivating one of the rows and the other of the sets in cultivating the other row. The two sets are spaced apart to suit the distance between the rows, and are suitably jointed to the carriage to enable the sets to be adjusted laterally and to be raised and lowered, and each set is managed by a single handle, enabling the entire implement to be managed by a single person.

1. In combination with the carriage C, the yoke G, as described, beams F F' F', connected therewith as set forth, and the arched yoke H, substantially as described.

2. The combination of the carriage C, the sets B B' of plows or shovels, the handles B' B', and the rests J J, each provided with springs K, substantially as described.

3. The combination of the carriage C, the shovels E E' E'', the beams F F' F'', the yokes G and H, the bearings I I, and the handles B' B', substantially as described, and for the purpose set forth.

4. The combination of the carriage C, having the tongues c' c', arranged as described, the sets B B' of plows or shovels, the yokes G and H, the bearings I I, and the handles B' B', substantially as described.

276,675. WM. H. DETTER, Kenton, Ohio. Convertible Plow. May 1, 1883. Filed Nov. 17, 1881.

My invention relates to that class of plows commonly known as "convertible"—that is to say, in which the parts are so constructed as to adapt the frame for use with cultivators or with subsoil-plows, and as a sulky or walking plow or plows; and it consists, first, in novel means for vertically adjusting the main frame of the carriage upon the carrying-wheels; secondly, in the peculiar construction of the main-frame supports, whereby said supports may be tilted according to the nature of the cultivating implement employed therewith; thirdly, in the peculiar construction of main frame, in combination with its adjustable supports and the carrying-wheels; fourthly, in the construction and combination of parts whereby one or more gangs of shovel-plows or cultivators may be attached to the main frame and used as a sulky plow; and, lastly, the invention consists in certain details of construction and combination of parts, all substantially as here more fully described.

1. In a convertible plow, the combination, with the independent wheel-bearings B B' and the side pieces, F, of the main frame, adjustably secured thereto and capable of being tilted thereon, of the standards of said main frame

and parts connected therewith, pivoted to the side pieces, P, and means, substantially as described, for locking said parts rigidly into position when adjusted relatively to each other, substantially as and for the purpose specified.

2. The combination of the main frame and its side pieces, P, with the independent slotted bearings B B', the carrying wheels A A', the latter provided with a square journal, a', and the crushing-roller A', all arranged and operating substantially as and for the purposes specified.

3. The combination, with the bearings B B', having slots B' and the bolts B', of the recessed side pieces, P, and the standards F', pivoted within the recesses of said side pieces, substantially as and for the purposes specified.

4. The combination of the bearings B B' and the side pieces, P, of the main frame with the standards F' and the parts connected thereto, the sector I and hand lever L, all arranged for operation relatively to each other, substantially as and for the purposes specified.

5. The combination, with the carrying-wheels A A', their bearings B B', having slots B', and the locking-bolts b', of the side pieces, P, the standards F', the transverse girders f' f', the braces f', the rock-shaft K, sector N, and lever M, all arranged and operating substantially as and for the purpose specified.

6. In a convertible plow, the combination, with the adjustable main frame, constructed as described, its tongue T, and a pair of cultivator-plow beams, of the clevises D H, the draft-bars k, carrying the single trees, and the cross-bar k', all arranged substantially as and for the purpose specified.

7. In a convertible plow, the combination, with the adjustable main frame, constructed as described, and a pair of cultivator-plow beams, of the clevis D, and the adjustable hangers G, and the supporting-arms I, all arranged and operating substantially as and for the purpose specified.

8. The combination, with the adjustable main frame, constructed as set forth, and a pair of plow-beams, of the clevis D, arms I, hangers G, and braces P, all arranged and operating substantially as and for the purposes specified.

9. In a convertible plow, the combination, with two pairs of plow-beams and a supporting frame therefor, of the slotted dividing-yokes E and the adjustable connecting brace or bar E', arranged for operation relatively to each other, substantially as and for the purposes specified.

10. The combination, in a convertible plow, of the adjustable main frame, its tongue, and a pair of plow-beams, of the clevises D H, the adjustable hangers G, the supporting bars I, braces P, draft-bar k, and cross-bar k', all constructed and arranged for operation relatively to each other, substantially as shown, and for the purposes specified.

276,984 MORRIS L. UTTER, Rockford, Ills. Cultivator. May 1, 1883. Filed July 27, 1882.

In a cultivator having my improvement attached, when in use on a hill-side, the spring on the side of the cultivator on the upper side of the hill is connected with the bracket-plate and adjusted in its connection therewith as near as may be within the provisions of the device to exert a sufficient force to hold the shovel-beams in a position substantially parallel with the direction of its forward movements, and in such a manner as to enable the operator without extra exertion to carry the shovel-beams to either side for the purpose of properly cultivating the plants, substantially in the same manner as in the use of the cultivator on level land without the employment of my improvement. These springs are arranged on both sides of the machine in such a manner that either can be used to adapt the machine for use in a back-and-forth movement on the same hill-side or in the same direction on opposite hill-sides. In this instance I have employed a spiral spring in one piece, having a slipping or sliding connection on their bracket-supports on the main frame to permit of a lateral movement of the shovel-beams beyond the capacity of the springs; but this same result can be obtained without the slipping action of the spring by the employment of a centrally-link-jointed two-part spring, in which instance its outer end may have a suitably fixed link or hinge connection with the main frame.

From the foregoing it will be seen that I produce a spring-connection between the main frame and the shovel beams of the cultivator, by which I render it an efficient machine for the cultivation of crops on the hill-side.

1. The combination, with the supporting-frame of a cultivator, and with the sway-bar having a suitable connection with the shovel-beams, of a spring connected to the main frame and adapted to be connected with the sway bar, for the purpose and substantially as described.

2. The combination, with the supporting-frame of a cultivator, and with the sway-bar having a suitable connection with the shovel-beams, of springs connected to the main frame upon opposite sides thereof, either of which is adapted to be connected with the sway-bar, for the purpose and substantially as described.

3. The combination, with the supporting-frame of a cultivator, and with the sway-bar having a suitable connection with the shovel-beams, of a spring connected to the sway-bar and to a supporting-frame, and capable of a sliding movement on its bracket-connection with said supporting-frame, substantially as and for the purpose set forth.

4. The combination, with the supporting-frame of a cultivator, and with the sway-bar having a connection with the shovel-beams, of a spring having a bracket-connection with the main frame and an adjustable detachable connection with the sway-bar, substantially as and for the purpose set forth.

5. The combination, with the sway-bar connected with the shovel-beams, of an angle bracket-plate detachably connected with the sway bar, and a spring connected with the supporting-frame, and having an adjustable detachable locking connection with the angle bracket-plate, substantially as and for the purpose set forth.

277,874. THOS. W. and DANIEL J. BRENNAN, Wexford, Iowa. Wheel-Cultivator. May 22, 1883. Filed May 20 1881.

The present invention relates to that class of "straddle-row cultivators" in which an arched axle and elevated draft-tongue constitute the frame for supporting a pair of parallel plow or shovel carrying beams, the latter being combined with devices for throwing the shovels toward or from a row of growing plants, so as to adapt themselves to any irregularities thereof.

1. In a wheel-cultivator, the draft-bar G, having its ends doubled or formed with return-bands, and the heaves H, having their bearings in said doubled ends, in combination with the wheeled frame, axle I, chain J, and whiffletrees K, substantially as described.

2. In combination with the shovel-beam, the curved pivoted standard U, having beveled front end, the bolt a', and oblique friction-disk V, all constructed and adapted to operate as set forth.

278,366. HANS H. SATER, Dubuque, Iowa. Cultivator. May 23, 1883. Filed Feb. 21, 1883.

1. The combination of the axle B, the equalizing-bar, the perforated loops 42, the slotted draw-bars, the chains and drums, and the single-trees.

2. The combination, with the arms I I and the plates 50 51, having the integral cone-bearings, of the horizontal and vertical sleeves connected to the drag-bars.

3. The combination of the drag-bar, the plate 16, the perforated boss, the plate 18, the plate 20, pivoted thereon and having the slot 21, and the shovel-arm rigidly secured to the said plate.

278,541. ERASMUS R. HAM, New Market, Ga. Cultivator. May 29, 1883. Filed Dec. 2, 1882.

This invention relates to wheeled cultivators in which a number of plow-beams are secured to the axle and arranged side by side, with flexible connections to adapt them for various movements independent of the axle and of each other; and the invention consists of the novel features of construction hereinafter described and claimed.

The combination of pivoted beams F and flexible cross-bars K with the slotted axle A, having the central arch, B, the loops G, and adjustable bolts I, substantially as shown and described.

278,543. GEORGE W. HAMMOND, assignor of one-half to George W. Henry, Earl Park, Ind. Cultivator. May 29, 1883. Filed Oct. 29, 1882.

In a cultivator, the combination of the handle or lever X, pivoted at the end to a beam-standard, Y, the hanger U, having a series of transverse perforations connected at the lower

end with the wing-bars T, and attached to said lever, the beam N, vertically apertured and perforated transversely, and the pins W, whereby the wings may be raised or lowered along or with the plow, as shown and described.

278,672. DANIEL UNTHANK, assignor to the Unthank Plow Co., Indianapolis, Ind. Cultivator. May 29, 1883. Filed Dec. 4, 1882.

1. In a cultivator, an axle formed of two parts overlapping to form the central portion of the axle, and provided with cogs, as shown and described, combined with a cog-wheel embraced between said overlapping parts, a slotted adjustable draft-pole, and a bolt serving as a shaft for said cog-wheel and a fastening for said draft-pole, substantially as and for the purpose herein shown and described.

2. In a cultivator, the combination, with an extensible axle, of a draft-pole slotted and connected thereto, substantially as shown and described, braces c e and f f', pivoted in lugs h h and i i, and cross-bar g, for the purpose set forth.

3. The combination of frame F, provided with radially-projecting studs m, plow-standards k and l, provided with corresponding interlocking recesses, and bolt o, for the purpose set forth.

4. In a cultivator, plate L, socket K, bar N, arms y y, friction-wheels O P, collar R, spring S, and nut T, combined with each other and with the plow-beam, substantially as shown and described, and for the purpose set forth.

5. In a cultivator, the combination, with an extensible axle, of a draft-pole having a vertical slot through its rear end and adjustably connected thereto, whereby it is adapted to have the necessary play in adjusting the axle, substantially as shown and described.

6. In a cultivator, the combination, with the plow-beam, of a spring connected thereto, arranged substantially parallel therewith and above the same, and an inclined or tapering support, substantially as shown and described, to which the inner end of the spring is connected, and adapted to have free vertical play thereon, for contracting and expanding it in accordance with the vertical movements of the plow-beam, substantially as and for the purpose set forth.

279,245. JOHN H. HOOBER, Kentland, Ind. Cultivator. June 26, 1883. Filed Nov. 20, 1882.

1. The truck having the arched axle B', and hounds C', having the brackets C' and bolt D, in combination with the cultivator-beam having the looped forward end, and hooks G, substantially as herein set forth.

2. In cultivators, the combination of the beam having the rear transverse slotted bar, H, with the upturned ends and the handles K, and the clips T with the crossed arms L R, substantially as herein set forth.

279,980. CHARLES W. POST, Springfield, Ills. Cultivator. June 26, 1883. Filed Nov. 20, 1882.

1. The combination, with the axle-sleeve E and with the coupling D, of the double yoke d and blocks e f, embracing the coupling and sleeve, substantially as described.

2. The combination, with the sleeve provided with a longitudinal rib and with the coupling, of a yoke embracing the coupling and notched to fit the rib of the sleeve, and longitudinally adjustable upon the sleeve, substantially as described.

3. The combination of the sleeve, the coupling, the plate, and the yoke provided with a bolt projecting therefrom, and a nut working upon said bolt and bearing against the plate to lock the several parts together after adjustment, substantially as described.

4. The combination, with the sleeve, of a coupling pivoted to the beams and partially surrounding and closely embracing the sleeve, and mechanism, substantially as described, adapting said coupling to be both laterally and perpendicularly adjusted, as set forth.

5. The combination, with the sleeve, the yoke, and the coupling having its inner face embracing the sleeve and its outer face serrated, of a correspondingly serrated plate, and means for locking said plate to the coupling, substantially as described.

6. In a cultivator, the combination, with the sleeve, of a bent arm rigidly secured thereto and extending toward the beam, and a lifting spring arranged forward of the sleeve and connected with the bent arm, substantially as described.

7. In a cultivator, the combination, with a lifting spring, the axle sleeve, and the beam, of an arm attached directly to the sleeve and to the spring, the arrangement of said arm being such that as the tension of the spring decreases when lifting the beam, the leverage of the arm will increase, substantially as and for the purpose described.

8. The combination, with the beam, the sleeve, and the bent arm cast therefrom and projecting forward and substantially parallel with the beam, of the lifting spring and the bifurcated hook-arm pivotally connecting the bent arm and spring, substantially as described.

280,021. JOHN B. ENNIS, Ottumwa, Iowa. Cultivator. June 26, 1883. Filed Feb. 16, 1883.

This invention relates to certain new and useful improvements in adjustable cultivators, the object thereof being to produce such an implement as will be simple in its construction, effective in its operation, and at the same time admit of the ready adjustment of the plows or shovels to or from the line of plants, said plows or shovels being also readily adjusted upon their standards to throw the dirt either toward or away from said plants, as the operator may find necessary, according to the nature of the ground or the prevalence of weeds.

1. The shovel or plow G, having connected thereto the conical hollow castings h, provided upon its interior with suitable teeth, in combination with the conical casting i, connected to the standard H, and having the cap U to exclude the dirt or grit from the hollow conical casting, and teeth upon the under side of the cap, and the screw rod w, substantially as and for the purpose set forth.

2. The combination, with the beam-frames C, adapted to receive the axles D, of the wheels E, and adjustably connected to the arched tongue-support A, said beam-frames having suitable brace-plates d, e, and perforated latch-plates f, substantially as and for the purpose described.

3. The combination, with the sliding boxes a upon the axle D, operated by the levers c, having their bearings in the perforated brace-plates d, e, and working in the slotted latch-plate f, of the beam frames C, said sliding boxes having pivotally connected thereto the plow or shovel beams F, single-tree hooks b being also connected to these sliding boxes and axles, substantially as and for the purpose set forth.

4. The combination, with the beam frames C, supporting the axles D, and provided with brace-plates d, e, and latch-plates f, constructed substantially as described, of the sliding boxes a, operated by levers c, and the pivotally-secured plow or shovel beams, substantially as shown and described.

280,615. JONATHAN HARMAN, Solomon City, Kan. Attachment for Plow and Cultivator. July 3, 1883. Filed Mar. 27, 1883.

The invention consists in an attachment for corn plows and cultivators constructed with flanged and slotted bars attached to the plow-beams, and having secured to them cross-bars having one arm horizontal and the other curved, and provided at their ends with upwardly-projecting rearwardly-inclined lugs, to which the plow-shanks are secured by bands and set-screws, as will be hereinafter fully described.

1. In an attachment for plows and cultivators, the bar F, having side flanges and a slot, said bar embracing the lower end of the plow-beam, and pivoted at about its middle to the latter, in combination with the bolt J, grooved washer L, and cross-bar K, having at the ends upwardly-projecting lugs N, and the bands and set-screws Q, R, substantially as and for the purpose set forth.

2. In an attachment for plows and cultivators, the combination, with the bars F, connected to the plow-beams, and having vertical slots and washers L and bolts J, of the cross-bars K, having middle horizontal portions, with one end curved longitudinally and extended to the front or rear, said extensions having upward-inclined lugs N at their free ends, the latter being adapted to be connected to the plow-shanks, substantially as and for the purpose set forth.

281,957. JOHN C. BAYLEY, assignor of one-half to A. Davis, Battle Creek, Mich. Sulky Cultivator. July 24, 1883. Filed Sept. 25, 1882.

The combination, with a cultivator frame, of the divergent harrow-beams, secured together

at their forward ends, the divided cross-bars, having means for clamping them to the beams, and the flat curved spring teeth, interposed and secured between the parts of the cross-bars, substantially as shown and described.

282,198. JAMES O. JAY, ISAAC JAY and B. L. CHAMBERS, Arapahoe, Neb. Cultivator. July 31, 1883. Filed Oct. 11, 1882.

This invention consists of a contrivance whereby the wheels of the cultivator may be guided by lateral movements of the plows, or one of them, to enable the plowman to so control the machine that he can protect the corn from injury by the wheels when the horses fail to properly guide the machine, as hereinafter described and claimed.

1. The combination, with the wheels a and their axles, having vertical extensions pivoted in the frame, and provided with cross-bars connected together, of the plow-beams g, the pivoted rods h, cross-bar i, and rods j, substantially as shown and described.

2. The combination, with the wheels a and their axles, having vertical extensions pivoted in the frame, and provided with the cross-bars g, of the parallel rods f, the pivoted beams g, the cross-bar i on the end of one of the pivots h, and the rods j, substantially as and for the purpose set forth.

3. The combination, with the wheels a, mounted on axles pivoted vertically in the frame, and provided with cross-bars c on their upper ends, connected together by rods f, of the pivoted plow-beams g, the cross-bar i, the rods j, the hook k, and the sector l, substantially as and for the purpose set forth.

282,885. ASA HALL, assignor to N C Thompson, Rockford, Ills. Cultivator. Aug. 7, 1883. Filed April 23, 1883.

1. The combination of a sleeve having its opposite sides provided with cylindrical bearings, joint-plates provided with the stud-journals to enter the cylindrical bearings, the sleeve, a tubular bar placed between the rear end portions of the joint-plates, and an axial bolt to fix the joint-plates to the tubular bar, substantially as and for the purpose set forth.

2. The combination, with the bar connecting the rear ends of the joint-plates, of shovel-beams having their forward end portions bent or kinked to engage the bar connecting the joint-plates, substantially as and for the purpose set forth.

3. The combination, with the tubular bar connecting the rear ends of the joint-plates, said bar having a rectangular outline in section, of shovel-beams having their forward end portions bent or kinked to engage the opposite angles of the connecting bar, said shovel-beams held in position and made vertically adjustable on the connecting-bar by means of clamping-bolts, substantially as and for the purpose set forth.

4. The combination, with an arm having a pivotal connection with the vertical arm of the axle-tree, and with the angle-arm arising from the inner end of the joint-sleeve, of a spring supporting bar having a pivotal connection with the angle-arm, and a free connection with the pivoted arm, to permit of an endwise sliding movement of the bar in its connection with the pivoted arm, substantially in the manner set forth.

5. The combination, with the spring supporting bar having a pivotal connection with the uprising angle-arm, and a free connection with the pivoted arm, of a spring surrounding the supporting-bar between its connections with the uprising angle-arm and the pivoted arm, substantially as and for the purpose set forth.

6. The combination, with the spring supporting bar, and with the spring wound thereon, of a pivoted arm having a free connection with the spring supporting bar, and a pivotal connection with the vertical arm of the axle-tree, and made vertically adjustable thereon, substantially as and for the purpose set forth.

283,390. LEROY GRAY, Sycamore, Ills. Beam for Shovel-Plow. Aug. 21, 1883. Filed Nov. 6, 1882.

The object of this invention is to make an iron cultivator or shovel-plow beam lighter and cheaper in its construction than has been heretofore made; and its nature consists in bending and bracing the beam, as hereinafter more fully described.

The metallic cultivator-beam or shovel-frame herein described, consisting of the bar a, having the oppositely bent or oblique portions a' and a'', the straight portion a'', connecting the

same, the straight rear portion, a'', forming a continuation of the oblique portion a', the straight oblique brace b, secured to the front and rear straight portions, a' and a'', and the front coupling clevis or hanger, h, substantially as herein set forth.

283,775. LEROY GRAY, Sycamore, Ills. Cultivator. Aug. 28, 1883. Filed Nov. 6, 1882.

The object of this invention is to improve the construction, action, and operation of single-row or double cultivators; and its nature consists in an improved construction and application of the parts for connecting the evener-bar with the frame for attaching the draft of the team; in an improved construction and operation of the beam-couplings; in an improved construction and operation of springs for aiding the movements of the beam, and in the several combination of parts, as hereinafter set forth and claimed as new.

1. The chain N, or chain and rod, in combination with the sheave P O and coupling-plate n, and the evener bar E, substantially as described.

2. The combination of the chain N, or chain and rods, coupling-plate n, evener-bar E, and sheave P O with the adjusting bracket or hanger R, substantially as set forth.

3. The combination of the chain N, or chain and rods, evener E, and sheave P O with the adjusting hanger R and the adjusting-plate r of the coupling, substantially as specified.

4. The combination of the hub g with the swinging arm k, spring w, and adjusting-cap h, substantially as set forth.

5. The combination of the cap k, spring w, and arm k, supported on the hub g, with the coupling-plate a, having the arm p, substantially as specified.

6. The coupling-plate a, in combination with the half-box q and the adjustable half-box r, substantially as described.

7. The coupling-plate a, in combination with the half-box q, the adjustable half-box r, and the draft-adjusting plate r, substantially as and for the purposes specified.

8. The combination of the plate a, half-boxes q and r, plate p, and arm p, with the swinging spring arm k, all constructed and operating substantially as specified.

9. The clip c, having the hub g, serrated at its end, and bolt B', with the serrated cap k, having the pin i for adjusting the tension of the spring, substantially as described.

283,910. MARION W. McOANN, Posey, Ind. Cultivator. Aug. 28, 1883. Filed May 1, 1883.

My said invention principally consists in an improved means of attaching the plow of that class of cultivators having arched axles to said axles, whereby said plows are adapted to be moved nearer to each other than when only the ordinary means of attachment are provided, as will be hereinafter more particularly described.

1. In an arched-axle cultivator, the combination, with said axle, of the extension-pieces B, secured thereto by means of the collar-like ends b, provided on the ends next to the ends of the axle, whereby said extension-pieces are adapted to slide upon said axle and extend nearly their whole length beyond the upright part of the axle, thus practically forming a straight axle, substantially as set forth.

2. In a cultivator, the combination of the arched axle, the link-shaped extension-pieces B, and the plows, one side of said extension-pieces being secured to and adapted to slide upon the horizontal portions of said axle, and said plows being secured to and adapted to slide upon the other side of said extension-pieces, substantially as set forth.

3. The combination, in a cultivator, of the arched axle A, the sliding extension-pieces B, secured thereto by collar-like ends b and axle-clips C, and the plows E, secured to said extension-pieces by the clevises D and pivot-bolts e, substantially as set forth.

284,379. JOHN B. CHRISTIAN, Hamburg, Iowa. Cultivator. Sept. 4, 1883. Filed Aug. 1, 1882.

This invention relates to certain improvements in cultivators; and it has for its objects to provide certain means for rendering the elevation of the gang-beams more convenient and easily accomplished, for coupling the same to the cultivator-frame, and for adjusting said beams upon the frame, as more fully hereinafter set forth. The above-mentioned objects I accomplish by the means illustrated in the accompanying drawings, in which—

1. The combination, with the axle frame, bent as described, of the split sleeve loosely mounted on the wheel-spindle, and having a projecting arm connected with a bent lever fulcrumed to an arm attached to the frame, the bifurcated bent link pivoted to the bent lever, and the spiral spring connecting the link and arm, substantially as specified.

2. In combination with the split sleeve mounted on the spindle of the bent frame, the movable clamp, its pins and clamping screw, and the drag-beam and its extensions, in which the pins have bearings, substantially as and for the purposes set forth.

3. In combination with the lower bifurcated extension of the drag-beam and the lower pin of the clamp, the loose collar mounted on the lower pin of the clamp, and the set-screw adapted to bind the collar to the pin, substantially as specified.

284,403. WM. J. FLOWERS, Reado, Mo. Cultivator. Sept. 4, 1883. Filed April 27, 1883.

In a cultivator, the combination, with the axle A, having a depressed middle portion and elevated side portions, and the draft bars D, attached to said elevated portions of the axle, of the draft equalizer consisting of the whiffletrees B, arranged upon the draft bars and connected together at their inner ends, the chain effecting this connection being connected by a second chain to the depressed middle portion of the axle, and of additional whiffletrees, essentially as shown and described.

284,558. JOHN J. HUSSEY, Brodeaux S. C., assignor to himself and W. W. Tinsley, Huntsville, Texas. Sulky Plow Sept. 4, 1883. Filed Mar. 10, 1883.

This invention consists of a contrivance for the construction of sulky-plows in a simple and cheap manner, and so as to make an efficient machine, capable of working easily and doing the work well, and adapted for the use of any form of plow and for the substitution of a harrow and also a cultivator, the plow, harrow, and cultivator attachments being all contrived for like application to the sulky, all as hereinafter fully described.

The combination, with the wheel *a*, axle *c*, and elongated open frame *a b*, provided with opposite staples or journal-bearings, *i*, on the under face of the front of its side bars, *a*, of a shaft, *j*, having journals *k* fitting in the bearings *i*, and adapted to carry a plow, harrow, or cultivator attachment, blocks *l*, and a seat, *e*, arranged in rear of the plow, harrow, or cultivator, substantially as described, whereby the latter can be adjusted vertically as desired, and be in view of the driver, as set forth.

284,734. BENJAMIN J. HALL and JAMES E. MUSTARD, Glen Hall, Ind. Cultivator. Sept. 11, 1883. Filed Feb. 2, 1883.

The principal object of our said invention is to produce a cultivator in which the gauges of plows are adapted to be drawn independently of each other, and are permitted to move back and forth as the animals drawing them move ahead or drop behind one another, while at the same time they are connected together through the axle. This object is accomplished by making the axle in two pieces, each of which is independently mounted in bearings on the tongue, and are connected together by a gear, connecting-rod, belt, or some similar device, whereby when the lower horizontal portion of one axle is advanced the other will be caused to recede in its relation to the tongue a corresponding distance, as will be herein after more particularly described.

1. The combination, in a cultivator, of a two-part axle, the parts being journaled in separate bearings on the tongue or frame parallel to each other, and connected together by devices, substantially as described, whereby they are permitted to vary in their relative positions in the line of advancement without changing the course of the plows or varying the distance between them laterally, substantially as set forth.

2. The combination of the plows, the wheels, the two-part axle *C*, devices, substantially as described, for connecting said axle parts, the tongue, and means of attaching the animals to the plows, forming a cultivator, substantially as set forth.

3. In a cultivator, the two-part axle *C*, each part being journaled on the tongue or frame parallel to the other, and provided with a cog gear, *e*, which engages with a similar gear on the other, substantially as described, and for the purposes specified.

4. The combination, with the plows and axle

of a cultivator, of the rod *e'*, pin *e'*, and set-screw *a'* as a means of securing the plows in position upon the axle, substantially as specified.

285,797. LEBEUS C. CHAPIN, Kalamazoo, Mich. Wheel-Cultivator. Oct. 2, 1883. Filed June 2, 1883.

The leading feature of my invention consists in combining independently hinged both bars having a spring located upon each, a cross-bar connecting the upper end of said springs, and a lifting-lever connected with said cross-bar, with a steel spring pressure-bar so constructed and arranged in relation to the lifting-lever that a ready and convenient elastic control may be exerted on the springs of the independently hinged tooth-bars.

1. The combination, with independently-hinged tooth-bars, a spring on each of said bars, a cross-bar connecting said springs, and a connecting lifting-lever, of a spring metal pressure-bar having the rearwardly extending free end provided with the sliding hook, substantially as set forth.

2. The combination of vertically playing hinged tooth-beams, the tooth-beam springs, a lifting-lever and means connecting it with said springs, the spring metal pressure-bar having the S-shaped slotted end, a curved seat therefor, and means for connecting the free end of the pressure-bar with the lifting-lever, all substantially as described.

3. In a wheel-cultivator, a lifting-lever having a spring-actuated pawl provided with an operating-dog fulcrumed to said lever, and connected with the pawl by a rod pivoted to the dog at a point radially removed from said fulcrum, substantially as specified and shown.

4. In a wheel-cultivator, the combination of a lifting-lever and vertically-playing tooth-beams with the S-shaped spring pressure-bar having the free end provided with the sliding hook, substantially as set forth.

5. The combination of vertically-playing tooth-bars and springs, a lifting-lever and connecting means, the spring pressure-bar, and an operating pawl-dog adapted for raising the pawl from the ratchet and holding it raised, substantially as described and shown.

6. The combination of the ratchet-casting having the curved seat, the lifting-lever, and the spring pressure-bar having the slotted S-shaped end for adjustable location in said curved seat, and the rear free arm provided with the hook, all substantially as set forth.

286,730. JOSIAH J. and EDWARD R. PIATT, LaPort, Ind. Plow. Oct. 16, 1883. Filed July 28, 1881.

Most beams or plows are attached to the horizontal part of the axle; but we attach them to the vertical part of the axle, as the plows can be more readily raised or lowered to give the shovels the proper slant by attaching to the upright part of the axle, and having the upright part thereof pierced with holes, through which to fasten the front end of the plow-beams; or the same end may be accomplished by a set-screw and other means. This also gives more open space between the bends in the axle for the top of tall corn.

1. The combination, with the plow-beams and the vertical portion of the arched axle, perforated as shown, of the boxes D, composed of two plates or half-boxes, each having lifting-slots *d* and bolt-holes *d'*, with bosses or hubs to protect the coupling-bolt, substantially as shown and described.

2. The combination, with the axle and plow-beams, of the box D, the vertical bars G, the swiveling yoke or bars G', the spring E, and roller or fulcrum F, all arranged to swing laterally together, substantially as shown and described.

286,983. DAVID WISE, Cottondale, Texas. Cultivator. Oct. 16, 1883. Filed Feb. 24, 1883.

1. In a cultivator, the combination, with the axle B, the rigid tongue *d*, the two frames C D and F G, and the hinging-rod E, of the plow-beams R, slotted hangers H, coupling-plate K, provided with holes M, set-screws L, and lap-ring Q, substantially as described, and for the purpose set forth.

2. In a cultivator, the combination, with the axle B, the rigid tongue *d*, the two frames C D and F G, and the hinging-rod E, of the plow-beams R, slotted hangers H, coupling-plate K, provided with holes M, set-screws L, stationary right and left bolts W, tubular connecting-bar X, and foot levers Z, provided with stirrups *b*, substantially as described, and for the purpose set forth.

3. In a cultivator, the combination, with the rigid tongue *d*, and the hinged frames F G and C D, of the bar *f*, having slot *g*, the crank *h*, and the lever *j*, substantially as herein shown and described, whereby the plow-beams and plows can be raised and lowered, as set forth.

287,196. JOHN G. TRUMP, Richville, Mich. Cultivator. Oct. 23, 1883. Filed July 12, 1883.

The lever D, in combination with the wooden bars I and metal rod *i*, drag-bars F, standards G, braces H, and teeth *g*, all constructed to operate substantially as and for the purpose herein described.

287,536. TYRELL L. GRIGSBY, Yountville, Cal. Gang-Plow. Oct. 30, 1883. Filed May 17, 1883.

My invention relates to certain new and useful improvements in that class of gang-plows which are specially adapted for work in vineyards, cotton-fields, and in all places in which rows are planted.

My invention consists in the means for connecting the plows with the frame, whereby they may be adjusted, and in a center plow and the means for connecting it, all of which will be hereinafter fully explained, reference being made to the accompanying drawings.

1. In a gang-plow, the frame C, in combination with the central plow, F, and the means for securing it to the frame, consisting of the standard *f* and oscillating shaft G, and the means for bracing it, consisting of the rods *g*, strap *h*, and wooden pin *i*, all arranged and operating substantially as and for the purpose herein described.

2. In a gang-plow, the adjustable frame C, and the right and left hand plows, E, E', secured to opposite sides of said frame, in combination with the central shovel-plow, F, having standard *f*, the oscillating shaft G, brace-rods *g*, strap *h*, and wooden pin *i*, all arranged and operating substantially as and for the purpose herein described.

287,703. JOSEPH B. NEFF, assignor to the Burlington Plow Co., Burlington, Iowa. Cultivator Spring. Oct. 30, 1883. Filed June 26, 1883.

The object of my invention is to provide a cultivator-spring so effectively and controlled that it will not only attach and control the operator to elevate the gang, but that will also prevent the passing of a dead-center by a counter-spring sustaining the gang when the lifting-spring arrives at the dead-center, the carrying-spring being independent of the lifting-spring, and providing a lifting-spring with accessory aids or peculiar adjustments that give it greater effectiveness, and providing a counter or carrying spring with adjustable tension to check the gang at a higher or lower point and affect the depth of plowing, and providing a double spring that suspends the gang at any desired working point and maintains an even depth of plowing.

1. In a cultivator-coupling, the spring-bar J, made L shape, with a long and short arm, and pivoted in the long arm above the angle, and adapted to receive springs upon both arms, substantially as shown and described.

2. The angular spring-bar J, pivoted above and distant from the angle, in combination with the springs L M, clamp-socket K, and sleeve F, having rigid arms I, substantially as shown and described.

3. The combination of the angular spring-bar J, pivoted above the angle in the long arm, the sleeve F, having arms I, the springs L M, and the clevis H, substantially as shown and described.

4. The combination, with the arched axle of a cultivator, of the right-angled spring-bar J, with a long and short arm, and pivoted in the long arm above the angle, the adjustable springs L M, clamp-socket K, sleeve F, with arms I, and clevis H, and the beam-coupling E G, all substantially as shown and described.

288,003. WM. P. BROWN, Zanesville, Ohio. Wheel-Cultivator. Nov. 6, 1883. Filed June 13, 1883.

My invention relates to wheels run upon opposite sides of the row of plants and sustain above the same a truck or frame work having a draft attachment for the team in front and plows behind, which are attached to and drawn by the truck, which may or may not have a tongue.

My improvements consist, principally, in the construction, arrangement, and adjustment of the plow-beams and their couplings,

whereby the plows next to the row of plants may be set in a higher horizontal plane, to adapt them to the elevation of the row or ridge upon which the plants are, and whereby the plows may be adapted to a minimum width of track and still preserve the proper lateral movement of the inner plows without throwing the outer ones against the wheels, and whereby, also, the lateral movement of the inner plows is made to have the least effect upon the outer plows consistent with their connection thereto, all as more fully described hereinafter.

1. Plow-beams combined with and attached to a wheeled cultivator, and adapted to operate in pairs, which approach when moved outwardly from the plants and separate or move apart when moved inwardly to the plants, as and for the purpose described.

2. Plow-beams combined with a wheeled cultivator and attached to the same and to each other, substantially as described, whereby the inner beams are adapted to have a lateral throw greater than the outer ones, as set forth.

3. Plow-beams combined with a wheeled cultivator by a swiveled or hinged connection in front, and hinged or coupled together in the rear of this by a connection which causes the beams to approach when moved away from the plants and to separate when moved toward the plants, as described.

4. A wheeled cultivator having on each side of the row of plants two or more beams, one of which is set to work in a higher plane at its draft-connection than the other, the said beams being coupled by oblique connections for a variable lateral throw, as described.

5. The combination, with the axle of a wheeled cultivator and two or more plow-beams disposed to run upon each side of the row of plants, of two or more brackets attached to the axle on each side of the space for the row of plants, and connections for fastening the plow-beams independently at different vertical heights to said axle on the same side of the row of plants, as set forth.

6. The bracket P, having a perforation in one arm and a slot in the other, in combination with the bolt *b*, inclosing tube *c*, and plow-beam coupling *d*, substantially as shown and described.

7. The combination, with two plow-beams hung about vertical centers at their draft ends, of a cross-coupling bar jointed to both beams, and having one end closer to the center of oscillation of the beam to which it is attached than the other end is to the center of oscillation of the other beam, as and for the purpose described.

8. The bracket S, having a bolt, *g*, surrounded by a tube, *h*, in combination with the inner plow-beam and the diagonal cross-bar T, having elevis-coupling *j*, as and for the purpose described.

9. The combination, with the two plow-beams, of the diagonal cross-bar T and coupling at the end thereof, having a longitudinal adjustment on the plow-beams, as shown and described.

288,289. NICHOLAS H. WILLIAMS, Joliet, Ills. Cultivator. Nov. 13, 1883. Filed July 3, 1883.

My invention relates to the peculiar mechanism by means of which the shovel or plow of a cultivator is made to assume a position suitable for throwing a furrow in either direction at the will of the operator.

The object of my invention is to furnish suitable mechanism to deflect or turn the shovel or plow of a cultivator from a direct course and to raise the same or lower it at will, and thus conform to the various wants of agriculture.

1. In a cultivator, the combination, with the beam *a*, of the shovel-standard *m*, slotted arm D, rigidly attached thereto, and bolt D', whereby a pivotal and a sliding movement is permitted upon the bolt D', as and for the purpose described.

2. In a cultivator, the combination of the rocking bead *a'*, the guideways *g*, the slotted arm D, the shovel-standard *m*, and the beam *a*, as and for the purpose described.

288,292. JAMES H. ALLEN, Wenona, Ills. Cultivator. Nov. 13, 1883. Filed May 11, 1883.

This invention relates to cultivators, and especially to that class of the same known as "wheel-cultivators;" and it has for its object to thoroughly pulverize the ground and kill the weeds without injury to the corn or other grain. To attain these objects and other important advantages, I provide certain novel im-

provements in the construction and arrangement of parts, as hereinafter fully set forth, and specified in the claims.

1. In a cultivator, the combination of the curved beams A A', of unequal length, with the beams B B', secured to the beams A A', the beam B' having a shank at both front and rear ends, the parts being so arranged that no two plows carried by the shanks of said beams will come opposite each other, and connected by transverse rods C C, all arranged and operating substantially as shown and described.

2. In a cultivator, the bifurcated adjustable plow *f* of H, formed with a vertical slot, N, in each of its arms M, in combination with the shanks formed with the lateral slots *u*, and the screw-bolt N', substantially as set forth.

289,093. REUBEN D. HALL, New Hampton, Mo. Cultivator. Nov. 27, 1883. Filed Aug. 9, 1883.

My invention has relation to cultivators; and it consists in the improved construction and combination of parts of a cultivator of that class in which the depth of draft and also the distance between the shovel-beams may be regulated, as will be hereinafter more fully described and claimed.

The combination, in a harrow of substantially the described construction, of the pivoted shovel-beams K K, adapted to be adjusted in a horizontal plane, with the handles L L, having their forward curved ends pivoted to the forward curved ends of the shovel-beams K K, and adapted to work freely in the yokes M M, as set forth.

289,127. RALPH K. NICHOLS, Lower Lake, Cal. Cultivator. Nov. 27, 1883. Filed July 30, 1883.

My invention relates to an improved apparatus for elevating and depressing the teeth of the cultivator, operated from the driver's seat, and to the use of a swivel trail-wheel in the rear, which keeps the machine level, prevents its burying behind, helps in holding it upon a side-hill, and greatly facilitates the operation of the machine; and it consists in the details of construction particularly described below.

1. In a two-wheeled cultivator, the combination, with the two front wheels, of a central swivel trail-wheel pivoted to the cultivator-bed in front of the cultivator drag-bars and directly in the rear of the axle, and free to assume any position, substantially as hereinbefore set forth.

2. In a two-wheeled cultivator, the combination of the axle, the swivel-wheel close in its rear, the frame-braces forked at their rear ends, the cross-braces E E', the former arched to form a wide bearing for the swivel-wheel, the curved drag-bars made rigid to each other by the cross-bar L and the shaft I, substantially as hereinbefore set forth.

3. In a two-wheeled cultivator, the combination, with the axle, of the cultivator-bed, as shown and described, the shaft I, passing through the forked beams and the shovel-bars, the rigid arms M, connecting-rods N, the lever, and rock shaft having arm O', and the bar L, substantially as hereinbefore set forth.

289,708. HENRY C. PRATT, Canandaigua, N. Y. Cultivator. Dec. 4, 1883. Filed Aug. 15, 1883.

1. The axle *a*, provided with a slot or holes in its spindles, whereby the wheels may be changed thereon to vary the distance between them, and are held in place by the plates *g*, substantially as specified.

2. The cultivator-frame consisting of the four rails, arranged as shown, and having the standards for the cultivator-points secured thereto by the plates *f'* on the castings, for the standards and bolts passing through the rails, castings, and plates, substantially as specified.

3. The cultivator frames secured to the projecting arms *g* on each side of the wheels, said arms being secured to the axle by corrugated castings upon the axle, and bolts passed through arms, castings, and axle, whereby the frames may have lateral movement, substantially as specified.

4. The combination, with the frames secured to the axle, as described, of the foot-levers *h*, having foot-rests, and intermed at their forward ends in castings forward on the frames and between the wheels, so as to have lateral movement in guides K on the frames, and the lever-chains connected to the ends of the said levers, passed over adjustable pulleys in slots in a cross-piece, *l*, secured to the rear end of the tongue, and connected at their other ends

to the needles of the frames, substantially as specified.

5. The cultivator frames connecting at the forward ends to the adjustable arms *g*, projecting forward from the axle, and provided near the rear ends with the spring-steel guides *h*, which are vertically adjustable in bearings *h'*, for regulating the depth to which the points may run, substantially as specified.

6. The projecting arm *g*, slotted at the rear and front ends, the rear end being corrugated in its under face, in combination with casting flanged and corrugated on its upper face to receive the rear end of the projecting arm and hold it from lateral motion, and a bolt for securing the arm and casting upon the axle, substantially as specified.

7. The combination of the standard F, with the casting G, having the vertical portion and the horizontal portion G', the bolt G', and washer G'', the plates *f'*, the projections forming the bearing for the break-pin, and the bolt for securing the standard to the rail of the frame, substantially as specified.

290,059. HENRY IVES, assignor of one-half to H. Easton, Batavia, N. Y. Cultivator. Dec. 11, 1883. Filed Mar 15, 1883.

This invention relates to an improvement in the construction of wheel or sulky cultivators; and it consists in a novel arrangement of the teeth, whereby, in cultivating between the rows of plants, the first tooth is arranged nearest the row of plants and the succeeding teeth are farther and farther removed from the plants; also, of a novel mechanism for adjusting the height of the frame which carries the teeth, and for supporting the teeth when elevated from the ground; also, of the means whereby the teeth are adjustably secured to the supporting-frame, and of the peculiar construction of the parts, whereby the sets of teeth are made laterally adjustable to adapt the machine to operate between rows arranged at varying distances apart, as will be hereinafter fully set forth, and pointed out in the claims.

1. The combination, with the axle *c*, wheels C, frames B, and pole A, provided with an elongated opening, *i*, of the tooth-supporting frames D, shaft *d*, to which the front ends of the frames D are attached, braces H, attached with their rear ends to the shaft *d*, and bolt *j*, whereby the front ends of the braces H are adjustably connected to the pole, substantially as set forth.

2. The combination, with the frames B, shaft *c*, and wheels C, of the tooth-supporting frames D, surrounding the wheels, shaft *d*, connected with the front ends of the frames D, hangers E, whereby the shaft *d* is connected with the axle *c*, and braces H, whereby the shaft *d* is connected with the pole, substantially as set forth.

3. The combination, with a tooth-supporting frame, of a tooth-supporting arm or shank constructed with lips *r*, overlapping two sides of the frame, and a clamp or loop, *s*, surrounding the frame and the tooth-supporting shank, and means whereby the clamp is adjustably secured in place, substantially as set forth.

4. The combination, with a tooth-supporting arm, *a*, provided with a beveled lower end, *a'*, of a tooth, N, provided with a bearing, *n*, and a pivot-bolt, *p*, whereby the tooth is attached to the arm *a*, substantially as set forth.

5. The combination, with a tooth-supporting arm, *a*, of a tooth, N, provided with a bearing, P, having two rows of openings, *p* and *q*, and a pivot-bolt, *p'*, and a safety-pin, *q'*, whereby the tooth is attached to the tooth-supporting arm, substantially as set forth.

290,111. CHARLES D. REED, Polo, Ills. Cultivator. Dec. 11, 1883. Filed Aug. 2, 1883.

The object of this invention is to keep the shovels of a cultivator at any desired angle with the line of draft, however they may be moved laterally.

In a cultivator, the combination, with a pivoted beam, E, a coupling, C, and standards I I, of the box-coupling H, receiving within it the rear end of the beam on a median pivot, G, receiving on the outside the plow standards I, and having an arm at one side of the top, in which is pivoted the rod K, parallel to the beam E, as shown, whereby the line of draft will always pass through the center of the beam, whether the rod is on or off the couplings.

290,366. SIMON P. SNYDER, SAMUEL S'FOUGH and TOMMY D. ULRICH, Walton, Ind. Cultivator. Dec. 18, 1883. Filed July 19, 1883.

In a cultivator, the standard S, bifurcated at its lower end and provided with a bail, *s'*,

as shown, and at its upper end with a spring, *z*, in combination with the pivoted shovel-carrying standard *x*, provided with a loop, *r*, the parts being organized and constructed so that the standard *x* may pass through the slot in the main standard *S*, substantially as shown and for the purpose set forth.

290,376. MADISON M WARMOTH, Brandenburg, Ky. Cultivator. Dec. 18, 1883. Filed Oct. 13, 1883.

1. The combination, in a cultivator, of a draft frame provided with depending sections extending rearwardly and adapted to enter between plates connected to the cultivator-frames, and curved members secured to the draft frame and having their rear ends embracing the sides of the plates of the cultivator-frames, the said depending extensions, plates, and members being perforated for the passage of a retaining bolt, substantially as set forth.

2. The combination, in a cultivator having a draft frame provided with the depending sections and curved members, perforated as described, of cultivator-frames carrying plates *o p*, having a vertical series of perforations for the passage of a bolt, *l*, substantially as set forth.

3. The combination, in a cultivator, of a draft frame supported by the carrying-wheels turning on the ends of the main axle, which is formed with a central shoulder to support the draft tongue, to which is secured the bar *F*, having the extensions and members connecting with the cultivator frames, one of said curved members leaning against a rigid disk secured on the axle, while the other bears against the hubs of the wheels, the curved form of the members being preserved by sleeves on the axle, substantially as set forth.

4. The combination, in a cultivator, of cultivator-frames connected to a draft-frame, and provided with handles arranged at their inner sides, and connecting chains *J K*, arranged as herein described.

290,440. GEORGE W. LILLY and JAMES E. NORMAN, Centre, Mo. Cultivator. Dec. 18, 1883. Filed Aug. 29, 1883.

The object of this invention is to keep the plows of each part of the cultivator-frame at the same distance apart laterally, and at the same angle with the line of draft, whatever lateral movement may be given to the said part of the frame in guiding the plows.

1. The combination, with the single-piece standards *H I*, of the curved brace *J*, attached at each end to a standard at or near the beginning of the downward bend, as shown and described.

2. The combination, with the plow beams and standards, of the cross-bar *G*, forming a rigid connection with and between the standards, and carrying the pivots *F*, on which the beams turn, as shown and described.

290,539. JAMES W. COOK, assignor of one-half to Wm. S. Parker, Moravia, N. Y. Cultivator. Dec. 18, 1883. Filed April 9, 1883.

The invention also consists in novel means of adjustably connecting the aforesaid frames with the axles of the sulky.

It also consists of a duplex tongue separately united at its free end, and adapted to be used in the form of thills to receive a horse between them, and one at each side thereof, so that the machine may be operated either by two or three horses, all as hereinafter more fully described, and specifically set forth in the claims.

1. In combination with the sulky, two cultivator-frames, each formed of two bars joined at one end back of the wheel and extended divergently along opposite sides of the wheel, and terminating with supports on the axle, substantially as set forth.

2. In combination with a sulky, two V-shaped cultivator-frames, each extended around the rear portion of one of the wheels and along opposite sides thereof, and terminating parallel with the line of draft at the axle, and supported by the axle, substantially as set forth and shown.

3. In combination with a sulky, two V-shaped cultivator-frames, each extended around the rear and along opposite sides of one of the wheels, and terminating with yokes extended over the axle and supported thereon, substantially as described and shown.

4. In combination with the sulky, the frame *A*, composed of two bars connected at one end and disposed divergently at opposite sides of

the wheel *W*, the standard *a*, clamped between the connected ends of said bars, standards *a'* and *a''*, connected to the bars at different points of their length, and yokes supporting the forward ends of the said bars from the axle of the sulky, substantially as shown and described.

5. In combination with the sulky, the frames *A*, provided at their free end with the yokes *B*, extended over the axle, and the arm *C*, fixed to the axle and having its free end connected with the yoke *B*, substantially as set forth and shown.

290,593. WATSON MARKLEY and ELIAS INGRAHAM, Minneapolis, Kan. Cultivator-Plow. Dec. 18, 1883. Filed Sept. 13, 1882.

Our cultivator is adapted for a variety of work in which the plows may be shifted from one beam to another and reversed in positions in such manner as to be used for stirring the ground for sowing small grain, for cultivating corn before and after it comes up, and for plowing up potatoes. For such variety of work we combine with a straddle-axle three pivoted plow-carrying beams, the middle one of which is removably pivoted in such manner as to have only a vertical movement at its free end, while the side beams are adapted for both vertical and lateral movements at their free ends.

1. The straddle or yoke axle having the loose sleeves *b b* and the fixed eyes *g g*, the plow-beam *A A*, pivoted to said sleeves, and the removable intermediate plow-beam, *B*, having hooked ends *f f*, adapted to hook into and be laterally braced by the axle-eyes *g g*, whereby the side plow-beams are free to have both vertical and lateral movements at their plow-carrying ends, and the middle plow-beam is free for vertical movement only at its rear end independent of the side beams, substantially as described, for the purpose specified.

2. The straddle or yoke axle having the fixed eyes *g g* and loose lapping sleeves *b b*, having perforations *e* in their lapped ends, and the laterally-adjustable plow-beams *A A*, pivoted to said perforated sleeves, with the removable intermediate plow-beam, *B*, having hooked ends *f f*, adapted to be hooked with and hooked from the said fixed axle-eyes, substantially as described, for the purpose specified.

290,778. JOHN N. LAMM, Paola, Kan. Cultivator. Dec. 25, 1883. Filed Sept. 5, 1883.

This invention relates to improvements in cultivators, and has for its object to straddle the rows of corn and to enable the cultivator to go nearer to the fence as well as to lighten the draft on the horses.

In a corn-cultivator, the combination of the arched axle *B*, the metal plates *A A*, the pivoted pole *P*, and the wheels *E*, substantially as shown and described, and for the purposes set forth.

290,960. EARL L. B. BELLINGER, Kalamazoo, assignor to self and H. F. Bellinger, Barry, Mich. Cultivator. Dec. 25, 1883. Filed May 22, 1883.

The invention relates to a cultivator constructed with a frame provided with pivoted standards made with curved lower parts and vertical upper parts, and connected at their upper ends in pairs by rods or chains and pivoted bars. The frame is supported adjustably upon wheels which are journaled to levers pivoted to the said frame, and held in place by lever pawls and catch-plates, as will be hereinafter fully described.

1. The combination, with the right-angled standards *D*, of the chains *P*, and the middle pivoted bars or draft-equalizers, *G*, as shown and described.

2. The combination of the removable and adjustable center bars, *A'*, the pivoted angular standards *D*, chains *P*, pulley *I*, and adjusting-bar *H*, with the frame, as and for the purpose described.

3. In a cultivator, the combination, with the frame *A B*, of the wheels *J*, the levers *L*, and pawls *M*, and catch-plate *N*, substantially as herein shown and described, whereby the said frame can be raised to and supported at any desired distance from the ground, as set forth.

291,577. NATHAN COLEMAN, Oneida, Kan. Cultivator. Jan. 8, 1884. Filed Oct. 13, 1883.

1. In a cultivator, the combination, with the slotted beam *D*, provided with yokes or hails *F*, secured to the same in the manner shown, of the plow beams *J*, provided with

plates *I* at their front ends, said plates connecting a pair of blocks, *K*, between the same, the blocks being formed with grooves *l*, to receive the yokes or hails, said parts being arranged to permit the vertical and lateral movement of the plow-beams, as set forth.

2. In a cultivator, the plow-beams having standards *M* projecting downwardly therefrom, in combination with the rods *Q*, attached to the standards and provided with notches or recesses, a locking bar or bolt journaled in the beams and arranged to engage the recess to lock the rods *Q*, cross-pieces *N*, connecting the standards and slotted at the ends, and plow-feet adjustable in the slots of said cross-pieces, as and for the purposes set forth.

292,297. WM. FRUHLING, Sr., San Jose, Cal. Grape and Orchard Cultivator. Jan. 22, 1884. Filed Sept. 22, 1883.

This invention pertains to improvements in cultivators, having for its object to effect the thorough and proper cultivation of the plants, and to permit the machine to be drawn closely to the vines or trees during such operation, to enable the working of all the plants; and the invention consists of the combination and construction of parts, substantially as hereinafter fully set forth and claimed.

1. In a grape and orchard cultivator, the beams *D*, brackets *E'*, cross bar *C'*, and rod or cylindrical bar *d*, in combination with the shovel-beams *D'*, jointed to hub sleeves *d'*, and frame *E*, substantially as shown, and for the purpose described.

2. The combination of the shovel beams *D'*, jointed to the hub-sleeves *d'*, with the shovel-beams *D*, secured to frame *E'* by brackets *E'*, connecting-bars *C'*, and rod *d*, substantially as shown, and for the purpose described.

292,639. HARVEY W. FERGUSON, North's Mills, assignor of one-half to Wm. M. Dight, Mercer, Pa. Cultivator. Jan. 29, 1884. Filed Mar. 15, 1883.

The combination, with the main frame and axle, of cultivator-frame *E E'*, the suspending rods *S*, the lever *H*, and the inclined braces *F F'*, rigidly screwed to the front end of the cultivator-frame, and arranged to bear against the rear cross-bar and take the strain off the axels when at work, substantially as shown and described.

292,674. REUBEN O. NORTON, assignor to Union Foundry and Machine Co., Rockford, Ills. Cultivator. Jan. 29, 1884. Filed July 14, 1883.

This invention relates to that class of cultivators known as "straddle-row riding-cultivators," and its object is to produce a machine capable of adjustment to fit the machine to be successfully used by operators varying in height or weight, or both; and it consists in a seat mounted upon a seat-frame made adjustable both vertical and lengthwise of the machine, all of which I accomplish by the devices represented in the accompanying drawings, in which—

The combination of the tongue beams provided with the slotted adjustable flanged bed-plates, the seat frame beams provided with the brackets *F*, having a series of adjusting holes, and said journals connecting said parts together, substantially as and for the purpose set forth.

292,996. JOSEPH DIVORA, Peru, Illa. Cultivator. Feb. 4, 1884. Filed July 28, 1883.

1. The combination, with the arched axle and braces connecting the sides of the end arches of the axle, of standards swiveled to the braces and axle, drag-bars pivotally secured to the standards, and clod-crushers or other suitable implements secured to the drag-bars in such a manner whereby they are allowed to tilt or change their relative positions to the drag bar, substantially as set forth.

2. The combination, with an arched axle and wheels mounted thereon, of braces connecting the sides of the end arches of the axle, standards connecting the braces and axle, drag-bars secured to the standards, and a sectional adjustable yoke connecting the rear ends of the latter, substantially as described.

3. The combination, with an arched axle and wheels mounted thereon, of braces connecting the sides of the end arches of the axle, standards connecting the braces and axle, drag-bars, a yoke, a bell-crank, and a dog adapted to raise and sustain in place the drag-bars, substantially as described.

293,017. WILLARD M. HARRIS, Wyoming, Del. Cultivator. Feb. 5, 1884
Filed Nov. 17, 1883

1. In a cultivator of the class described, the three pairs of shovels, each pair constructed as shown and pivoted to the frame independently of the others, substantially as specified.

2. In a cultivator of the class described, the three separate pairs of shovels independently and pivotally connected to the frame, substantially as specified.

3. In a cultivator of the class described, the combination, with the frame, of two independent outside linkages, each carrying a pair of shovels, and a central independent pivotally connected linkage carrying a pair of shovels, substantially as specified.

4. In a cultivator, the combination of a brake comprising two beams and a miting band or strap, a bracket with a sliding clevis, provided with a link horizontally pivoted thereto and vertically pivoted to said beams, substantially as specified.

5. The combination of the beams H H, link L, having vertical pivots *h* and horizontal pivots *l*, and the clevis K, substantially as shown and described.

6. The combination of the brakes F F, the central linkage E, links L, clevises K, brackets J, chains X, shaft O, pulley O', and lever P, substantially as shown and described.

7. The combination of the side brakes, F, straps R, links S, and bracket T, substantially as shown and described.

8. The combination of the central pivotally connected linkage, E, provided with straps H, with the independent side brakes, P, on each side thereof, provided with the chain X, strap R, and with the link S and means for adjusting the same as to its length, substantially as shown and described.

293,616. CHARLES A. BAKER, Mohuc, Ills. Wheel-Cultivator. Feb. 19, 1884
Filed Aug. 4, 1883.

1. In a riding and walking cultivator, the combination of the following elements: a wheeled frame, shovel carrying beams free to swing in a lateral direction, jointed at the forward ends to said frame and provided with operating handles at the rear, a driver's seat mounted upon the frame, hand levers mounted upon the frame, devices for locking said levers in different positions, rods connecting the hand levers to the respective beams, and means, substantially as described, whereby said rods may be given a rigid or a sliding connection at one end, as occasion may require.

2. In a wheeled cultivator, laterally and vertically swinging shovel beams, jointed at their forward ends to the frame, combined with hand levers mounted upon the frame and provided with devices whereby the levers may be locked in different positions, rods connecting the lower ends of the hand levers with the respective beams, said rods being arranged to slide through their connections at one end, as described, and the removable keys or pins inserted through the sliding end of the rod for the purpose of preventing the sliding movement, whereby the levers may be caused to act simply for lifting the beams, for suspending the same at a given elevation, or for the additional purpose of locking the beam down positively in an operative position.

3. The wheeled frame having the laterally and vertically swinging shovel beams jointed thereto at their forward ends, the hand levers having their lower ends substantially over the forward ends of the beams, the locking devices for said levers, the rods N, having their upper ends jointed to the levers substantially over the forward ends of the beams, and their rear ends extended through eye plates on the beams, and provided with nuts or heads at the lower end, and a key or locking device combined with said rod above the eye plates.

4. In combination with the shovel beams and suspending or lifting rods, the combined eye and foot plates, as described.

5. In combination with the shovel beam and the lifting rod, the plate attached to the beam and provided with a series of openings, as described, whereby a lateral adjustment of the lifting rod with respect to the beam is permitted.

293,717. READING L. CARVER, Free-Eruption, Ills. Sulky-Cultivator. Feb. 19, 1884. Filed Sept. 7, 1883.

1. In a cultivator, the combination, with the cranks E, connected to the draw bars having the wheels and shovel or plow beams connected thereto, of the cross-frame F, with the

upper portions of the cranks bearing thereon, and the plate H, pivoted on the under side of the said frame, and having slots at its ends which receive the side bars of the cranks, substantially as and for the purpose set forth.

2. In a cultivator, the combination, with the cranks E, frame F, and the draw-bars C, pivoted on the lower ends of the cranks, and having apertured projections at about their central forward ends, of the arms J, affixed to the ends of the frame F, and the rods or chains J', substantially as and for the purpose set forth.

3. In a cultivator, the combination, with the frame F, having the end slotted, pivoted bar H, and the cranks E, bearing in the former, of U-shaped draw-bars C, pivoted upon the lower arms of said cranks, and connected at their forward ends, by rods or chains J, to the arms J of the frame F, and at their opposite ends to the tongue G by the rods or chains K and pivoted bar M, substantially as and for the purpose set forth.

4. In a cultivator, the combination, with the frame F, having the end slotted, pivoted bar H, and cranks E, pivoted thereon, of U-shaped draw-bars C, pivoted upon the lower arms of the cranks, the rods or chains J, arms I, secured to the frame F, rods or chains K, bars M, sleeves P, disposed upon the cranks between the arms or sides of the draw bars, and the cultivator beams O, substantially as and for the purpose set forth.

295,080. AUGUSTUS C. and JUSTUS D. TOWER, Mendota, Ills. Cultivator. Mar. 11, 1884. Filed June 13, 1883.

Our invention relates, especially, to devices used in cultivating corn, &c., and is adapted to pulverize the ground close up to the hill without disturbing the roots, and is in part an improvement on the cultivator patented to Augustus C. Tower on January 14, 1873, and July 7, 1874; and it consists in certain peculiarities of construction, as will be more fully set forth hereinafter.

The present device, like those on which it is an improvement, consists, primarily, of two front beams carrying teeth or knives and connected to an adjustable draft device, and having other beams extending backward from the tooth-beams, which backward-extending beams have near their rear ends clod-crushing plates attached thereto; but the construction and manner of attaching and adjusting the various parts in the present invention are essentially different and novel.

1. In a cultivator, the combination, with the frame, of the clod-crushing plates F, loosely suspended from the rear part of the machine by adjustable bearings, whereby the vertical elevation and inclination of the said plates may be regulated at will, substantially as set forth.

2. In a cultivator having two tooth-beams adapted to operate on each side of a row of corn, &c., backward-extending beams bearing clod-crushing plates at their rear ends, in combination with the rear bow connecting said beams, and formed in two parts, C and C', adjustably united at top to regulate the distance apart of the rear end of the machine, substantially as set forth.

3. In a cultivator, the combination of the tooth-beams A with the backward-extending beams B, pivoted thereto, and the rods B', connecting the beams A and B, and having slots *b'* at their forward ends, whereby the said beams may be adjusted at the angle desired with respect to each other and secured in such position, substantially as set forth.

4. The plate F, having vertical arm *f*, with slot *f'*, and inner horizontal ridges, *f''*, washer F', with horizontal ridges on one side and radial ridges on the other, and hanger F'', with flange having inner radial ridges, in combination with the plate P, having loops or brackets *f''*, substantially as set forth.

5. In combination with the rear beams and handles of a cultivator, the braces D and D', having diagonal slots *d* and *d'* and arms *e* and *e'*, and the connecting bow consisting of two arms, C and C', perforated and slotted at their upper overlapping ends, and pivoted at their lower ends to the said braces, and adapted to be adjustably secured by the bolts *e*, *e'*, and *e''*, substantially as set forth.

6. The metallic tooth-beams A, formed of double-angle iron, the front vertical flange of which is of less depth than the rear vertical flange, and each provided with the notches *a* on the under side, in transverse line with each other, and with perforations in the top flange, in combination with the teeth or knives A', having curved cutting-blades and round

shanks, and the eyebolts *a'* and nuts *a''*, whereby the said teeth or knives may be secured with their blades at any inclination from a vertical line desired, and with their rear ends projecting downward, substantially as set forth.

7. In combination with the front beams of a cultivator having the eyebolts *a'*, the tongue K, rear cross bar, K', with vertical braces K', diagonal braces J, L, bolted to the tongue and to the vertical braces K', and ending in hooks L', for engagement with the said eyebolts *a'*, eveners K'', having metal straps M, suspended therefrom, and rods M', connecting the lower ends of the said straps with the diagonal braces L, substantially as set forth.

8. In combination with the diagonal braces L, the clamping-plates N, adjustably secured thereto, and having hooks *n*, integral with said plates, whereby the closed links at the ends of the chains may be readily attached thereto or detached therefrom, substantially as set forth.

295,082. NEWTON TROWBRIDGE, Council Grove, Kan. Wheel-Cultivator. Mar. 11, 1884. Filed Oct. 11, 1883.

This invention relates to improvements in what are commonly known in the art as "straddle-row cultivators," in which a main frame sustained by two wheels is provided, with drag bars or beams jointed thereto in such manner as to swing both laterally and vertically, the bars being provided with shovels to enter the ground.

1. In a cultivator, the combination of the wheeled draft-frame having cultivator-beams jointed thereto, the eveners D, pivoted to the under side of the frame in advance of the axle, and provided with hangers E, the rear eveners, G, pivoted to the upper side of the frame at a distance substantially such as specified in rear of the axle, and the connecting-rods F, extended from the ends of the rear eveners to the lower ends of the respective hangers, whereby the power or draft applied to propel the machine is caused to sustain the forward end of the draft frame or tongue.

2. In combination with a drag bar or beam, the bracket *a*, having its ends secured to the beam, and its central portion offset laterally and slotted vertically, as described, the shovel-standard inserted between the bracket and the beam, and the fastening-bolt, applied as described.

3. The improved bracket, having its two ends adapted for attachment to the beam, its middle portion offset laterally and elongated vertically, to receive the shovel-standard on the inside, with a slot in said elongated portion.

295,292. ALVA SOHOONOVER, Jr., Elliott, Iowa. Cultivator. Mar. 18, 1884
Filed Dec. 28, 1883.

In a cultivator, the combination, with the lower forward part, C, of the axle C, and the plow-beams X, of the coupling-bearings R, and pins T, and the adjustable clevis-straps U, substantially as herein shown and described, whereby the rear ends of the said plow beams can have a free vertical and lateral movement, and their forward ends can be adjusted inward or outward, as set forth.

295,520. BYRON C. BRADLEY, assignor to the Furst & Bradley Manufacturing Co., Chicago, Ills. Cultivator. Mar. 25, 1884. Filed Nov. 27, 1883.

This invention relates to that class of cultivators in which a divided arch is used for the purpose of allowing one wheel to advance ahead of the other, to equalize the draft and make each horse perform its proportion of the work; but some of the improvements can be applied and used with other forms of cultivators.

The principal objects of the invention are to enable the wheels and gangs to be set at varying distances apart to suit the width of rows, to give the double-tree a firm support and bearing, and to improve the devices by which the adjustment of the wheels and beams and the bearing for the double-tree are attained, and its nature consists in providing a divided arch, each section of which is held or supported by a socket-plate and a set collar; in providing a stop-plate on which the double-tree is mounted; and in the several parts and combination of parts hereinafter described, and pointed out in the claims as new.

1. The combination of the arch-sections A A', the plate B, formed with the sockets *b*, divided into sections, and the set-thimbles *b'*, encircling the arch-sections in the spaces between the sections of the sockets, to adjust and hold the arch-sections, substantially as described.

2. The combination of the arch-sections A

A', plate B, formed with the sockets *b*, divided into sections, the set-screws *b'* overlying the arch sections in the spaces between the sections of the sockets, the carrying wheels *M* on the arch sections, and the plow-beams, whereby the wheels and beams can be adjusted to suit the width of row of the plants, substantially as described.

3. The double tree *D* and plate *E*, having a central tubular stud, *e'*, and recess *e* in its periphery, in combination with the tongue *C*, plate *E'*, and the hammer-strap *e*, connected with tree *D* and fitting in recess *e*, substantially as described.

295,607. JOHN WOOLRIDGE, Libertyville, Ills. Cultivator. Mar. 25, 1884. Filed Dec. 12, 1883.

This invention relates to riding straddle-row cultivators, and has for its objects to improve the devices by which the plows or shovel-earns swing out of line for dodging uneven plants, to improve the means for raising the beams and regulating the depth of cultivation, and to improve generally the construction and operation of the machine; and its nature consists in providing jointed or pivoted bars swinging laterally at the center for carrying the beams in or out, as required for the condition of the plants; in providing a bracing and support for the pivoted bars, formed of a horizontal bar at the top, with vertical standards and diagonal bracing, as hereinafter more specifically described; in providing a sliding standard, to the lower end of which the forward ends of the beams are connected, and having devices by which the standard can be raised or lowered to regulate the plowing depth; in providing a treadle operated by the foot for throwing the beams out of operation, and in the several parts and combinations of parts hereinafter described, and pointed out in the claims as new.

1. The bars *D* and *E*, pivotally connected at their inner ends to permit of side movement, for changing the travel of the plow-beams, substantially as and for the purpose specified.

2. The bars *D* and bars *E*, having slots *d* in their rear ends, in combination with a post or standard carrying the plow-beams and forming a pivot for the inner end of the bars *D* and *E*, substantially as and for the purposes specified.

3. The bars *D* and *E*, in combination with the braces *G* and *H*, cross-bar *F*, and posts or standards *J*, substantially as and for the purposes specified.

4. The bars *D* and *E*, in combination with the cross-bar *F*, posts or standards *J*, and braces *G*, *H*, and *I*, for forming a frame-work and support which permits of free side movement, substantially as and for the purpose specified.

5. The bars *D* and *E*, cross-bar *F*, posts *J*, and suitable bracing, in combination with the sliding shanks *K* and the plow-beams, for adjusting the running depth of the plows and allowing of side movement, substantially as and for the purpose specified.

6. The posts *J*, forming a pivot for side movement, in combination with sliding shanks *K*, for attaching the plow-beams and locating both movements at a common point, substantially as specified.

7. The bars *D* and *E*, cross-bar *F*, post *J*, and suitable bracing, in combination with the sliding shanks *K*, plow-beams, and foot treadle, substantially as and for the purposes specified.

296,615. OHAUNCEY M. PINCKNEY, assignor of one-half to A. W. and M. A. Cole, Alamo, Ills. Cultivator. April 8, 1884. Filed Nov. 18, 1882.

1. In a draft and weight equalizer for cultivators, the combination of the suspended draft-bars *H*, situated forward of the axle of the machine, vertically swinging cross-lever *I*, situated back of the axle, bell-crank levers *J* and *K*, horizontal rods *d*, connecting the said hanging bars and the bell-crank levers, and vertical rods *e*, connecting the cross-lever with the bell-crank levers, substantially as and for the purpose herein specified.

2. The combination of the plows *C*, rock-shafts *K*, provided with adjusting pivot-bolts *k*, bearings *L*, provided with adjusting slots *l*, and bolts *m*, with arched frame *B*, substantially as and for the purpose herein specified.

296,760. AUGUST LINDGREN, assignor to the Moline Plow Co., Moline, Ills. Wheel-Cultivator. April 15, 1881. Filed Jan. 5, 1884.

1. The wheeled frame and the shovel-beam jointed thereto, in combination with a later-

ally swinging suspension-rod for said beam, a foot-lever pivoted to the beam, an independent suspending device for said lever, and a hand-lever and locking devices mounted on the frame, and connected to the beam suspending and also to the lever suspending devices, substantially as described, whereby the two suspension devices may be adjusted simultaneously.

2. In a cultivator, the combination of the following members: the wheeled frame, a vertically swinging shovel-beam, a hand-lever mounted on the frame and provided with locking devices, a beam suspending device extending directly from said lever to the beam, a foot-lever pivoted to the beam, and an independent suspending device for said foot-lever connected to the hand-lever, substantially as described, whereby the movement of the hand-lever is caused to adjust the beam and also adjust independently the fulcrum of the foot-lever.

3. In a cultivator, the combination of the wheeled frame, the shovel-beam, the hand-lever, and devices to lock the same mounted on the frame, the link or chain extending from the hand-lever to the beam, the foot-lever *fl*, pivoted to the beam, the lever mounted on the frame, and the connecting devices extending from opposite ends of said lever to the hand-lever and the beam, respectively.

296,800. NEWTON TROWBRIDGE, Council Grove, Kans. Cultivator. April 15, 1884. Filed Aug. 8, 1882.

My invention relates to that class of straddle-row cultivators wherein a wheeled draft-frame is combined with two laterally and vertically swinging shovel-beams coupled thereto, and particularly to those machines which are convertible at will, in order to adapt them to be operated by an attendant riding upon the machine or by an attendant walking behind the same.

The invention relates to various features of construction, which will be hereinafter described in detail, but particularly to a reversible bracket, whereby the connection of the shovel-beams with the draft-frame may be shifted forward and backward, according as the machine is to be adjusted to carry the operator or not; in shovels provided with horizontal blades following thereafter beneath the surface of the ground, for the purpose of serving and destroying weeds; in various details of construction relating thereto; in combining with flexible chains or equivalent supports, by which the beams are carried, an adjustable connection between said chains, whereby the normal distance between the beams may be varied to suit the distance between the rows of plants; in a weed-pulling arm of peculiar construction adapted to enter slightly beneath the surface of the ground and remove weeds, at the same time loosening the soil adjacent to the plants, and in a peculiar manner of supporting and adjusting the detachable seat.

1. In a cultivator, a wheeled main frame, in combination with a drag bar or beam and an intermediate connecting-bracket pivoted to the main frame, and reversible end for end thereon, as described, whereby the point of connection between the beam and frame may be moved forward and backward.

2. In combination with the wheeled main frame and the drag bar *F*, the intermediate reversible bracket, *G*, pivoted to the main frame, and provided with the journal to receive the beam coupling, substantially as described and shown.

3. In combination with the main frame and the reversible bracket *G*, as described, the brace rod or arm *e*, adapted for connection with the frame in the two positions described.

4. The combination, with the main frame and the drag-bar, of the beam, the pivoted reversible bracket *G*, provided with the slot *d*, and with the brace-arm *e*, having the slotted end, as shown, whereby the bracket is adapted to be reversed end for end and also to be adjusted laterally.

5. In combination with a cultivator-shovel having a flat curved surface, substantially as shown, two cutting blades, *o*, located in rear of said shovel, and extending horizontally beyond its opposite sides, said blades being adjusted above the point of the shovel and adapted to travel beneath the surface of the ground.

6. In combination with a cultivator shovel, the rear plate provided with the two laterally extending knives, and the intermediate eyebolt or washer, *n*, substantially as and for the purpose set forth.

7. In a cultivator, the combination of the following elements: a wheeled main frame,

two laterally swinging beams or drag-bars, a flexible chain or suspending device attached to each beam, a device, substantially as shown, adjustable in length, connecting the suspension devices one with another, whereby the suspending devices may be subjected to lateral strain and caused to maintain the beams normally at a given distance apart, while permitting said distance to be momentarily varied at the will of the operator.

8. In combination with the laterally swinging beams or drag-bars *F* and *F'* and the chains *J* and *J'*, the adjustable connecting strap *L*, substantially as shown.

9. In combination with the seat supporting arms, the pivoted seat provided with the notched plate *n*, and the sliding bolt *r*, mounted upon the arm and arranged to engage with the edge of said plate, as described and shown.

297,637. HANS H. SATER, Dubuque, Iowa. Cultivator. April 29, 1884. Filed Aug. 31, 1883.

My invention relates to attachments for cultivators, the object of which is to hold the shovel-bar either in or out of working position, as desired, and when in working position to hold it in contact with the ground, so that it may cut constantly at the proper depth.

The invention consists in combining with the axes and coupling of the cultivator a joining connection-rod and a spring secured to the arch of the axle; further, in combination with such connecting-rod, spring, and rod, a roller working on the track secured to the arch of the axle; and, further, in various details of construction, all fully hereinafter explained, and illustrated in the accompanying drawings, in which—

1. The combination, with the shovel-bars, of the pivoted standards *K*, the lever *G*, the spring secured to the said lever and connected to the frame of the cultivator, and the roller *J* and its curved track.

2. Combined with the arch of the cultivator, axes, semi-tubular sleeve *A*, curved track *H*, in combination with the spring *B*, secured to said sleeve, the bar *G*, having a roller, and a pivoted standard, *K*, connected to the shovel-bars.

3. The combination, with the coupling *T* and the bars attached thereto, of the standard *K*, locked to such coupling, the bar *G*, having forked ends, and the spring *B*, connected to the semi-tubular sleeve *A*.

297,933. CHAR. H. HILL, Lombardville, Ills., and J. T. RYAN, Manning, Iowa. Adjustable Seat-Lift Cultivator. April 29, 1884. Filed Dec. 31, 1883.

This invention is in that line of cultivators in which the driver is enabled to ride thereon, and, by means of various mechanisms, control the paths of the cultivator-blades.

Our invention consists, essentially, of a frame pivoted near its center to the axle-tree of the cultivator, a seat fixed upon the rear end of said frame, and connections joining the opposite end of said frame to the plow-blade frames pivoted as in other machines of the class.

1. In a cultivator, a frame centrally pivoted to the axle or frame of the cultivator, and having a seat upon its rear end, in combination with a pulley secured to the forward end of said pivoted frame, and a chain or other flexible band passing over said pulley and fastened at its ends to the plow-beams of the cultivator, whereby the weight of the driver in said seat shall support said plow-beams and permit them unequal and opposite vertical motion, as set forth.

2. The frame *A*, seat *D*, and bearings *B*, in combination with the pulley *P*, chain *S*, and the beams *E* of a cultivator, for the purpose described.

3. The frame *A*, seat *D*, bearings *B*, and pulley *P*, in combination with the chain *S*, hooks *S'*, beams *E* of a cultivator, the yoke *R*, and stirrups *R'*, substantially as specified.

4. In a cultivator, the frame *A*, having several bolt-holes therethrough, in combination with the bearings *B*, having corresponding bolt-holes, and pivoted to the axle or frame of a cultivator, and the bolts or pins *E'*, whereby the leverage of said frame *A* may be changed without altering the longitudinal position of the same.

5. The combination, in a cultivator, of a frame centrally pivoted to the axle or frame thereof, and having a seat upon its rear end, and means whereby the plow-beams are suspended from the front end of the said pivoted frame, so that these plow-beams shall counterpoise each other and enable the elevation and depression of one to oppositely affect the other, for the purpose set forth.

298,609. GILPIN MOORE, assignor to Deere & Co., Rock Island, Ills. Cultivator May 13, 1884. Filed Nov. 9, 1883.

1. In a cultivator, in combination, a central part or yoke, A, a wheel and draft-plate hinged to each end of said yoke, and adapted to swing relatively thereto, substantially as described, plow-gangs, a pole hinged in front of the yoke to swing laterally in reference thereto and independently of the wheels, and adapted to sustain the yoke in an elevated position, and springs connected at the forward ends with the yoke A or a projection in front of the yoke, which projection is connected rigidly to the yoke, and at their rear ends connected with the plow-gangs and adapted to exert an upward force thereon, substantially as and for the purpose specified.

2. In combination, the yoke A, wheels C, hinged to the yoke A, draft-plates D, plow-gangs E, bars F and H, said bar H rigidly connected with the bar F, springs I, and pivoted pole J, substantially as and for the purpose specified.

3. In combination with the yoke A, formed of two parts, $a a'$, and the wheels and draft-plates hinged thereto, the bar F, and pole J, hinged to the bar F, and its rear end supported between the bars $a a'$, substantially as and for the purpose specified.

298,863. JOSEPH E. LADD, North Topeka, Kans. Weeding Machine. May 20, 1884. Filed June 22, 1883.

1. In a weeding machine, the combination, with the axle and a bail piece, adjustably secured to the frame so as to be raised or lowered, and arms journaled at one end on the axle and secured at their other ends to the bail, of drag-bars pivotally secured at their forward ends to the bail, and levers for raising and lowering said drag-bars, substantially as set forth.

2. The combination, with the vertically-adjustable bail and vertically and laterally adjustable drag-bars secured at their forward ends to the bail, of a lifting-lever pivoted to a laterally-adjustable plate or support pivoted to the main frame, substantially as set forth.

3. The combination, with the vertically-adjustable bail and vertically and laterally adjustable drag-bars, of a lifting-lever pivoted to a laterally-adjustable plate or support, a segment secured to said plate or support, and a holding-lever pivoted to the lifting-lever and adapted to engage said segment, substantially as set forth.

4. The combination, with the drag-bars E, lifting lever K, rod G, and spring e , of the pivoted plate I, having a segment, M, secured thereto, and lever L, pivoted to lever K, and adapted to engage the segment M, substantially as set forth.

299,157. JOSEPH B. NEFF, assignor to the Burlington Plow Co., Burlington, Iowa. Foot-Lift for Riding Cultivators. May 27, 1884. Filed Nov. 23, 1883.

My invention relates to improvements in riding-cultivators, in which foot-levers, for the purpose of raising the plow-gangs, are attached to an arm on the coupling parts by a link in such a manner as to allow the gangs to be adjusted laterally.

In a riding-cultivator, the foot-lever D, the arm C, and the link E, pivoted at both ends and connecting the lever D and arm C, said arm C being rigidly attached to a coupling device, preferably a pipe-box, whereby it remains stationary while the beam can be adjusted laterally, in combination with said coupling device to which said beam is attached, as and for the purpose specified.

299,627. BURWELL J. CURRY, Huntsville, Ala. Cultivator. June 2, 1884. Filed Dec. 15, 1883.

This invention relates to machines for cultivating and chopping cotton, peas, beans, sorghum, and other plants grown in furrows. The machine consists of a rectangular frame mounted upon wheels, and provided with supporting devices for the cultivator-shanks or stocks, that are adjustably connected to suitable shafts in such a manner as to be raised and lowered with great facility.

1. The combination of the frame A, having a transverse rod or shaft, a , provided with laterally adjustable pendants $b b$, the brace-rods $e e$, the cultivator-stocks $c c'$, carrying suitable blades, the rock-shaft m , having adjustable arms $l l$, and the rods or bars $k k$, for connecting said arms to the cultivator-stocks, whereby the latter may be raised or lowered, substantially as described.

2. The combination of the cultivator-frame A, having transverse shaft a , the two-part pendants $b b$, mounted on said shaft, the brace-rods $e e$, and the adjustable cultivator stocks or beams $c c'$, pivoted in the slotted lower ends of the pendants b , and carrying cultivator-blades, substantially as described.

300,055. JAMES C. DOANE, Western, Neb. Cultivator. June 10, 1884. Filed Dec. 15, 1883.

The object of this construction is to provide for adjusting the plows or teeth at any angle that may be desired with the line of draft, and at a greater angle than if only one slotted cross-head were employed, so that the plows will work to a greater or less depth, to suit the circumstances required in use. A further object is to make the ordinary slip joint or connection so that should the plows be obstructed by a root or stone the coupling could slip or give way and would have a greater swing than would the ordinary single slip joint.

In a cultivator-drag, the combination of main beams and extensions, each provided with slotted cross-heads and secured together, as described, whereby the adjustment and relief of the plows is secured, as specified.

300,649. JOSIAH SHERMAN, Atlanta, Ga. Cultivator and Cotton-Chopper. June 17, 1884. Filed Oct. 4, 1883.

1. In a cultivator, the combination of the front pieces, A A, the crooked beams B B, of varying length, each being bent to form two or more broken lines for the attachment of cultivating devices, the ends D, adjustable harrow-teeth C, and the pivoted boxes E, carrying cultivating mechanism, substantially as described.

2. In a cultivator, the combination, with the beams B B, of cultivating devices pivoted between the rear ends of the adjacent beams, and provided with levers K K and springs L L, whereby a vibratory or oscillating movement is imparted to said cultivating devices, substantially as described.

3. In a cultivator, the combination, with the beams B B, of the pivoted boxes E E, carrying cultivating devices, and provided with adjusting mechanism, substantially as described.

4. In a cultivator, the combination of the beams B B, pivoted boxes E E, carrying cultivating devices, and provided with levers K K, springs L L, and yokes F F, the perforated curved standards G G, and pins $c c$, substantially as described.

5. In a cultivator, the combination, with the frame A B and pole U, of the lever V, having foot k , the rods $m m$, bell-crank p , bolt t , and cord r , whereby the machine may be turned and held to any desired angle with the line of draft, substantially as described.

300,686. THOMAS J. BOWEN and JAMES F. BARNES, Dickens, S. C. Cultivator. June 17, 1884. Filed Mar. 5, 1884.

This riding or sulky cultivator is adapted to be used both on level land and hillside land, the tongue of the implement being pivoted at its rear end to the arched or bowed axle of the machine, and provided with a pivoted ratchet-lever engaging a serrated ratchet-loop to shift the line of draft from a center line to both the right and left of the center line to an angle of about forty-five degrees, as shown, the ratchet-lever being held to its adjustment in notches in a cross-bar on the main frame in front of the driver's seat.

1. In a sulky-cultivator, the combination, with the frame provided on its forward transverse bar with a loop-rack, p , of a tongue pivoted at its rear end to the arched axle, the ratchet-lever pivoted on the pivoted tongue engaging the loop-ratchet, and the transverse notched bar m , for seating the lever in its adjustment, substantially as specified.

2. The combination, in an arched axle, of the angle-irons e , with spindles d , having fulcrum-brackets i and studs f , with the axle-bar c , having slots h , and the bolts f , substantially as specified.

301,011. CHRISTOPHER L. SCHOENSTEDT, Morell, Ills. Cultivator. June 24, 1884. Filed Feb. 14, 1884.

1. A central share for attachment to a cultivator, to extend behind the side shares, in combination with mechanism, substantially as described, for connecting the said share flexibly to the said cultivator, whereby the central and side shares may be raised and lowered together by the simultaneous operation of both levers of the side beams, but whereby the independent vertical movements of the share-carrying side beams shall not be prevented, as set forth.

2. The combination, with the share carrying side beams of a cultivator, of a central share exceeding behind the side shares, and mechanism for connecting the said central share flexibly to the said side beams, whereby the central and side shares may be raised and lowered together by the simultaneous operation of both levers of the side beams, but whereby the independent vertical movements of the said side beams shall not be prevented, substantially as described.

3. A central share, F, for attachment to the share-carrying side beams of a cultivator, and to extend behind the side shares, in combination with the frame D, holder m , secured to the said frame, and provided with an opening to receive the central share, F, brace G, slotted upright bar H, secured to the said brace, transverse bar I, adjustably secured to the slotted upright bar H, mechanism upon each side beam, B, of the cultivator, to receive the bar I and permit a longitudinal sliding movement of the same, and mechanism for flexibly securing the frame D to the side beams, B, all being constructed and arranged to operate substantially as described.

252,572. WM. E. YOUNG, Alton, Ills. assignor to Haggard Plow Co., same place, Cultivator. Jan. 17, 1882. Filed Nov. 7 1881.

My invention relates to that class of cultivators known as "straddle-row walking cultivators;" and the object is the construction of a coupler and coupling device which shall hold the plows rigidly in an upright position, while permitting both lateral and perpendicular play to the rear end of the plows.

My invention consists, first, in a double-headed coupler having two open ring clasps in a cross direction to each other, made solid in one piece, with mouthed ends and perforated lips; and, second, in the combination of the parts of the coupling device, as hereinafter specified.

1. In a cultivator, the double-headed coupler A, having two open ring clasps in a cross direction to each other, made solid in one piece, with mouthed ends and perforated lips, substantially as and for the purpose set forth.

2. In a cultivator, the double-headed coupler A, having two open ring clasps in a cross direction to each other, made solid in one piece, with mouthed ends and perforated lips, and held in place by clamping bolts with nuts, in combination with the thimble a and thimble b, substantially as and for the purpose set forth.

3. In a cultivator, the combination of the double-headed coupler A, having two open ring clasps in a cross direction to each other, made solid in one piece, with mouthed ends and perforated lips, and with thimble a, thimble b, axle-arm B, yoke C, having the arms y, y, and with bolt c, substantially as and for the purpose set forth.

252,763. JAMES T. HAMILTON, Moline, Ills., assignor to himself and Wm. K. Hoagland, Council Bluffs, Iowa. Coupling for Cultivator Beams. Jan. 24, 1882. Filed Nov. 10, 1880.

1. In a cultivator, a coupling for the plow-beams, having a section, A, A', provided with the slot B and adapted to receive the forward end of the plow-beam, in combination with an eyebolt or connection with the sleeve or axle, for allowing vertical play of the section to raise and lower the forward end of the plow-beam, substantially as and for the purpose specified.

2. In a cultivator, a coupling for the plow-beams, having a section, A, A', provided with the slot B and adapted to receive the forward end of the plow-beam, in combination with an eyebolt having a body, G, to receive the axle-sleeve, a screw-threaded stem, H, to receive a nut, and shoulder or flange I, to enter the slot B and sustain the section in a vertical position when the parts are together, substantially as and for the purposes specified.

3. In a cultivator, a coupling for the forward end of the plow-beams, having a section, A, A', provided with a slot, B, with the edges or faces adjacent to the slot serrated or grooved, and adapted to receive the forward end of the plow-beam, in combination with an eyebolt, C, D, E, and sleeve G, having a serrated or grooved face to engage the corresponding face of the part A for maintaining the coupling in a vertical position and adding steadiness to the parts, substantially as specified.

4. In a cultivator, a coupling for attaching the plow-beams, consisting of the section A, A', having a slot, B, the eyebolt C, D, E, the sleeve G, having the longitudinal opening H, the plate I, J, and the bolt K, all constructed and arranged substantially as and for the purposes specified.

276,203. JASPER P. WARNER, Dowagiac, Mich. Swivel Coupling. April 24, 1883. Filed Sept. 21, 1882.

The object of my invention is to furnish a coupling for attaching harrows or cultivators to the frame-work of wheel machines, known as "sulky" or "riding" machines, to make a cheap, durable, and simple coupling, and one that may be readily attached and cheaply repaired.

1. The combination of the beam C, having slot b, and containing box Y, having a flange with concavity a' engaging with the bolt c', as and for the purposes specified.

2. In a swivel coupling, the combination of the beam C, containing box Y, having an elliptical hole containing thimble c' and bolt c, with braces a, a, and beam D, when arranged and combined as and for the purposes specified.

276,718. HANS H. SATER, Dubuque, Iowa. Cultivator. May 1, 1883. Filed Jan. 8, 1883.

My invention relates to an improvement in cultivators; but it relates more particularly to improved coupling devices for connecting the plow-beams to the axle and frame-work, the object being a simple and inexpensive construction, easy in adjustment and operation, and durable and effective in use.

The invention consists, first, in the peculiar novel construction and arrangement of the coupling proper; further, in peculiar stops or sleeves on the axle for limiting the movement of the axle-sleeve; further, in peculiar draft-attaching devices; and, finally, in the general construction of the cultivator, and in novel details and combinations, all fully hereinafter explained.

1. The combination, with the axle and its toothed sleeve, of the vertical toothed sleeve G, engaging with the said sleeve on the axle, and having bearings formed directly upon its ends, and a bolt passing through said sleeve and bearings, a drag bar, and the fork I, connected to the drag-bars and mounted upon the bearings on the ends of the said sleeve G, substantially as described.

2. The combination of the axle and its toothed sleeve, the vertically toothed sleeve G, having bearings at its ends, the drag bar, the forked connection I, connected to the drag-bar and mounted on the bearings of the sleeve G, and the loop embracing the said axle and sleeve G, and having the set-screw, substantially as described.

3. Combined with the arched axle A, the clip E, having ears 11 for attaching the tongue-braces, and the prongs 5, 5, adapted to be bent down to bear directly upon the axle at the base of the arch, for the purpose set forth.

4. The combination, with the vertical sleeve connected to the axle-sleeve, of the fork having one arm connected directly to the bearing or journal formed on such vertical sleeve, and the eye J, which forms the connection between the other arm of the fork and the sleeve G.

5. Combined with the drag-bars M, N, the cross-block O, having bruce-connection 24, beveled and flanged ends 23, and the adjusting slots 25 in such ends, substantially as described.

287,443. WM. A. ENOWLTON, Rockport, Ills. Cultivator. Oct. 30, 1883. Filed Dec. 21, 1882.

This invention relates to that class of cultivators known as "straddle-row wheeled walking cultivators," in which the shovel-beams are hinge-jointed to the horizontal portion of the crank-formed axle; and it consists in the hinge-joint connection of the shovel-beams with the axle-tree made laterally and vertically adjustable, and in the draft-connection therewith.

1. The combination, with the wheeled supporting-frame, of a slotted sleeve, a grooved pillow-block, and a clamping eye-block, these several parts combined for joint action, substantially as and for the purpose set forth.

2. The combination, with the slotted sleeve, the grooved pillow-block, and the eye clamping-block, of a yoke and coupling pin producing a hinge-joint connection of the shovel-beams with the sleeve, capable of a lateral and vertical adjustment thereon, substantially as and for the purpose set forth.

3. The combination, with the yoke-coupling of the shovel-beam, made vertically adjustable relatively with its connection with the wheeled carrying-frame, of a draft attachment connected to the coupling pin so as to be adjustable therewith, substantially as and for the purpose set forth.

298,823. GEO. W. BROWN, Galesburg, Ills. Cultivator. May 20, 1884. Filed Feb. 2, 1883.

This invention relates to that class of cultivator couplings in which the plow-gang swings laterally on journals or standards, arranged above the horizontal ends of the axles, which ends of the axles constitute journal bearings for said standards in swinging the plow-gangs vertically.

The principal feature of the invention consists in a draft plate or clevis connected with the upper end of a tubular standard on the beam-plate, which standard turns on a suitable bearing, to permit lateral swing of the plow-gangs, and which draft-plate extends downward forward of the coupling, and is provided with a series of holes, by means of which the draft may be utilized to exert either downward or upward force on the plows or shovels, or no force at all, as desired, and the draft on which, when the plows are in operation, will resist the tendency of the plow-gangs to turn the couplings on the horizontal ends of the axle.

1. In a cultivator coupling, in combination with the bolt D, having eyes d, through which the arm A' passes, and long tubular standard E, seated on the bolt D, and held by projections e, which rest on the arm A', the beam-plate provided with a tubular standard, G', journaled on the standard E, and nut I for securing the parts together, substantially as and for the purpose specified.

2. The combination, with the plow-beam and axle, eyebolt D, standard E, and beam-plate G', of the draft-plate H, extended forward and downward, and provided with a series of holes for the draft attachment to adjust the draft to exert a downward or an upward force, or not to exert any vertical force upon the beams, substantially as and for the purpose set forth.

3. In combination with the bolt D, journaled on a horizontal part of a cultivator, long tubular standard E, having lugs e, beam-plate G, having tubular standard G', journaled on the standard E, the draft-plate H, journaled on the standard G', and provided with holes k', substantially as and for the purpose specified.

300,563. HENRY BORRELT, Jr., and LUCIAN P. DORRELL, Havana, Ills. Cultivator. June 17, 1884. Filed May 10, 1883.

The present invention has relation to certain new and useful improvements in means for attaching the plow-beam to the axle of a cultivator-frame; and the object thereof is to provide a coupling device simple in construction, whereby the teeth of the cultivator or shovels of the plow may be raised or lowered to plow as deep as may be desired, while the peculiar construction of the coupling renders it both strong and durable and capable of being manufactured at a comparatively small cost. These several objects are attained by the construction substantially as shown in the drawings, and hereinafter described and claimed.

A clevis of a plow or cultivator beam, having suitable arms, one of said arms having upon its inner side a mortise, and the opposite arm a hole of equal diameter, in combination with a sleeve through which the axle passes, provided with arms having a hole and a mortise similar to those on the arms of the clevis, and thimbles fitting therein, and a bolt passing through the arms to hold them together, the mortises being arranged with relation to each other, and also the thimbles, as shown and described.

106,294. JOHN E. SWALLOW, Hagers-town, Md. Wheel-Plow. Aug. 9, 1870.

This invention is designed to remedy the objection above referred to; and to this end it consists in combining with the axle of the carriage a side for the purpose of elevating one end of such axle above the other, or, in other words, for dropping one wheel below the other; and it further consists in providing a vertical slot or guide in the axle, in which the beam of the plow moves, and by which it is guided; and it further consists in the arrangement of the axle of the carriage, and in the combination and arrangement of the parts connected therewith, as will be more fully described hereinafter.

1. The axle I of a sulky-plow, having a guide box or slot, 2, substantially as and for the purpose set forth.

2. The arrangement, in a sulky-plow, of the axle I, guide-box 2, socket 3, having a quadrant upon its upper portion, lever 5, sliding arm 3', segmental gear 4, draft-rod 9, and segmentally slotted guide C', substantially as herein shown and described.

244,708. EDMUND YEISER, Newmans-town, Pa., Sulky-Plow. July 19, 1881. Filed May 25, 1881.

This invention relates to certain improvements in sulky-plows, and it has for its objects to provide for conveniently depressing the plow so that it will properly enter the ground, for elevating it so as to pass over stones, stumps, or other obstructions, or to permit the apparatus to be transported from place to place, and to provide for readily adjusting the parts relatively so that the plow may be worked close up to a fence, wall, or hedge, as more fully hereinafter specified. These objects I attain by the apparatus illustrated in the accompanying drawings, in which—

1. In combination with the bent axle A, the knuckle or jointed lever R, secured thereto and to the plow-tongue U, the said lever being provided with an extension, W, on one member, which is adapted to engage the other member, substantially as and for the purpose specified.

2. In combination with the jointed lever R, bent axle A, and tongue U, the set-screw B', adapted to bear against the lever, substantially as and for the purpose specified.

3. In a sulky-plow, the combination of tongue U, having at its rear end and attached thereto plates D' D'', with axle A, clips E' E'', adjustable collar a', and stirrup F, which secures to the beam of the plow both the axle and tongue, all substantially as herein described.

4. In a sulky-plow, the combination of the slotted and adjustable clamp G, having a collar or gage wheel attached to its lower end, with the tongue U and the plow-beam, substantially as and for the purpose set forth.

244,825. DENNIS P. SHARP, Ithaca, N. Y., assignor to C. M. Sharp, same place Sulky-Plow. July 26, 1881. Filed May 21, 1881.

This invention relates to a novel construction and combination of a sulky and certain devices connected therewith, which are adapted to be applied to and co-operate with any ordinary plow, and by means of which said plow can, when required, be raised out of the ground with the greatest facility and without materially straining the sulky.

In combination with the wheel W, provided with the concentric rim R, bail B, pivoted on the sulky-frame, step S, and clutch b c, connected to said bail, the bail B', arranged at the rear of bail B, and connected therewith by the strap d, the rearward-projecting arm A, secured to the bail B', the plow P, pivoted to the sulky-frame, and the chain e, connecting the arm A with the rear extremity of the plow-beam, all constructed and combined substantially in the manner described and shown, for the purpose set forth.

244,852. JOHN F. CARNAGY, Covington, Ind., Sulky or Wheel-Plow. July 26, 1881. Filed June 1, 1881.

My improvement relates to a novel construction adapting the power of the team to be applied directly to the freeing the plow from obstructions in its path—such as stumps, heavy stones, &c.; and it consists in providing the wheel-carriage with a telescopic or sliding tongue, to the sliding part of which the plow is connected by a chain or other suitable flexible connection, in such manner that when the team is backed to free the plow from an ob-

struction the sliding tongue acts directly upon the plow to swing it clear of the obstruction, instead of indirectly through the carriage, as hereinafter explained.

1. In a wheel-plow, the combination, with the plow, of the sliding pole or tongue, and means adapting the backward sliding movement of said tongue to lift the plow free from obstructions or out of the ground.

2. The combination, in a wheel-plow or its equivalent, of the sliding pole or tongue, the plow having a hinged connection with the frame, and the cord or chain connecting said plow and tongue, arranged to lift the plow when the tongue is backed, substantially as described.

3. The combination, with the frame of a wheel-plow or its equivalent, of the fixed pole-beam E, sliding pole F, and cord or chain G, arranged and operating substantially as described, whereby the backward movement of the tongue is made to lift the plow free from an obstruction.

245,587. JOHN TURNER, Springfield Ills., assignor to C. R. & C. W. Post, same place. Sulky-Plow. Aug. 9, 1881. Filed June 9, 1881.

The invention consists in the combination, with the forward part of the plow-beam, of a hook or catch to engage with the foot-rest or a catch attached thereto, whereby the said forward end of the plow-beam will be locked in place as the plow is raised and unlocked as the plow is lowered, as will be hereinafter fully described.

The combination, with the forward part of the plow-beam D of a sulky-plow, of a hook or catch, N, to engage with the foot-rest M or a catch attached thereto, substantially as herein shown and described, whereby the said forward end of the plow-beam will be locked in place as the plow is raised and unlocked as the plow is lowered, as set forth.

246,080. EDWIN M. CARROLL, Pittsford, Mich. Sulky Attachment for Plow and Harrows. Aug. 23, 1881. Filed July 11, 1881.

1. The combination, with the sulky-frame c, provided with the vertical rods d, of the reversible blocks f and carriage h, pivoted in said blocks, whereby plows having beams of different lengths can be attached to the sulky-frame, substantially as described.

2. The combination, with the carriage h, of the reversible slides i, provided with eyes j and rock-shaft k, whereby plows of different heights of standards can be attached to the carriage, substantially as described, and for the purpose set forth.

3. The combination, with a plow-beam or harrow-frame provided with the uprights m p and sulky-frame c, having vertical rods d, of the carriage h, pivoted in the reversible sliding blocks f, reversible slides i, rock-shafts k, link r, arm u, rod v, and bent lever x, substantially as described, and for the purpose set forth.

4. The combination, with a plow-beam provided with the uprights m m and adjustable chains a' a', and the sulky-frame c, having vertical rods d, of the carriage h and reversible sliding blocks f, substantially as described, and for the purpose set forth.

5. The combination, with a plow-beam provided with the uprights m m and adjustable chains a' a', and the sulky-frame c, having vertical rods d, of the carriage h, pivoted in the sliding blocks f, a set-screw passing through a hole in the right-hand sliding block f, adjustable link c', and bent lever d', substantially as described, and for the purpose set forth.

646,203. EDMUND D. REYNOLDS and OLIVER B. REYNOLDS, Brockton Mass. Wheel-Plow. Aug. 23, 1881. Filed May 21, 1881.

1. The oscillating bar G, sustaining the frame, share, and plow, and the axle A, in combination with the centrally-located clamping or journal box, E, all constructed, arranged, and operated as set forth.

2. The sliding box B, provided with the beveled opening d, in combination with the box W and its adjustable wheel-standard, substantially as and for the purpose described.

3. The tongue-plate T, provided with slots 2 and projection 3, in combination with the movable draft-standard 5 and movable hooked draft-bar 6, all constructed, arranged, and operated as described.

4. The hanger N, link O, toggle-link c', bell-crank lever f, and plow-beam I, in combination with the standard P and pivoted supporting bar S, passing through the upper end of the said standard, as and for the purpose set forth.

5. The open-end standard P, provided with a latch, R, in combination with the supporting-bar S, provided with offsets i i, substantially as described.

6. The box W to receive the adjustable wheel-standard C, arranged in a plane diagonal to the vertical plane of the axle and raking forward toward the bottom, as shown and described.

246,496. ISAAC R. GILBERT, Charleston, Ind. Sulky-Plow. Aug. 30, 1881. Filed April 19, 1881.

1. The combination, in a sulky-plow, of an adjustable incline arranged upon the arch, with pawl M, having pin or stud a, ratchet-wheel C, and lever G, all substantially as and for the purpose set forth.

2. The combination, in a sulky-plow, of arch E, bail F, and incline or lifting device R with ratchet C, lever G, pawl M, and connecting rods L N, all arranged to operate substantially as herein set forth.

3. The combination, in a sulky-plow, of the rock-segment H, spring-latch I, lever G, latch-lever K, rod L, which rod is connected with latch-lever at a point above its pivot, slotted connecting-rod N, pawl M, and ratchet C, all arranged to operate as herein set forth.

246,698. WM. L. CASADA Y., New Carlisle, Ind. Sulky-Plow. Sept. 6, 1881. Filed May 18, 1881.

1. In a sulky-plow, the combination, with an axle bearing or frame provided with two elongated slots located one above the other, of an axle and bolts extending through the axles and said elongated slots, thereby securing the axle to its bearing or frame at an angle of inclination thereto, substantially as set forth.

2. In a sulky-plow, the combination, with an axle bearing or frame provided with two elongated slots located one above the other, of an axle, a perforated plate, and bolts extending through the axle, elongated slots, and perforated plate, substantially as set forth.

3. In a sulky-plow, the combination, with an axle bearing or frame provided with two elongated slots located one above the other, of an axle provided with an elongated slot in its inner end and bolts extending through the axle and elongated slots in the bearing or frame, the parts being constructed and arranged to allow the axle to be adjusted both internally and vertically, substantially as set forth.

4. In a sulky-plow, the combination, with an axle bearing or frame provided with two elongated slots located one above the other, of an axle provided with an elongated slot and serrated face at its inner end, a plate interposed between the axle and its bearing or frame, said plate provided with a boss that fits in one of the elongated slots in the axle-frame, and constructed with a serrated face that engages the serrated face on the axle, and bolts extending through the axle and the two elongated slots, substantially as set forth.

5. In a sulky-plow, the combination, with a roller journaled on a plate attached to the plow-beam, of a toothed sector formed integral with a post on the axle-frame, a sleeve journaled between said sector and a vertically-adjustable guide-bar, and a lifting-lever and screw-bill connected to said sleeve, substantially as set forth.

6. In a sulky-plow, the combination, with a roller journaled on a plate attached to the plow-beam, of a vertically-adjustable guide-bar, and a screw-bill consisting of two curved arms, one rigidly secured to a sleeve and the other revolvably secured thereto, substantially as set forth.

7. In a sulky-plow, the combination, with a vertically-adjustable guide bar, having a plain flat face on one edge and a rib located on its opposite edge, of a plate attached to the plow-beam, said plate provided with two vertical guides or jaws, one of said jaws having a plain flat face and the other provided with a groove in which is received the rib on the guide-bar substantially as set forth.

8. In a sulky-plow, the combination, with a plate attached to the plow-beam, said plate being provided with vertical jaws or guides, of a vertically-adjustable guide-bar, having an inclined axle connected with its lowest end, and a bar supporting the driver's seat with its upper end, substantially as set forth.

9. In a sulky plow, the combination, with a plate attached to the plow beam, said plate be-

ing provided with two vertical jaws or guides, and a guide bar provided with a rim adapted to be received within a groove in one of the vertical jaws or guides, of a roller journalled on a stud attached to one of the jaws or guides, and a cross bar adapted to engage with said roller and to be moved to the right or left and raise and lower the plow beam, substantially as set forth.

10. The combination, with a guide and a spindle frame provided with a guideway and a rack, of a recessed cog wheel adapted to engage with the rack, and a coiled spring located in the recess of the cog wheel and having its inner end fixed and its outer end engaged with a lifting-lever the movements of which control those of the cog wheel.

11. In a sulky plow, the combination, with a guide having a spindle connected therewith and a guide bar, of a cog-wheel meshing with a rack on the guide, and a spring one end of which is fixed and its outer end connected with the lifting lever, substantially as set forth.

12. The combination, with a guide and a spindle frame provided with a guideway and a rack, of a recessed cog wheel, and a coiled spring located in the recess of the wheel and having its inner end fixed and its outer end interposed between two lugs on the face of the wheel, sufficient space being left between the lugs and spring to allow it to coil and uncoil to a limited degree independent of the motion of the lifting-lever.

13. In a sulky-plow, the combination, with a lever adapted to be retained in desired adjustment by engagement with a sector secured to the foot rest, of a brace connecting said lever and the land-side wheel bearing, and a guide plate and a bearing-plate secured, respectively, to the wheel frame and the plow-frame, and adapted to have pivotal movement upon each other when the lever is raised and oscillated.

247,446. JAMES WARD and RUFUS WASHBURN, Hamilton, Texas. Sulky-Carriage for Plows. Sept. 20, 1881. Filed Jan. 26, 1880.

In a sulky plow, the combination of the longitudinal bar A, the transverse front bar, C, the longitudinal bar B, having rear outwardly projecting arm, B', and castor wheel Q, mounted therein, the short longitudinal bar D, having a front plate, E, connected with the bar B, and the pivoted plow hanger or yoke H, arranged between the bars B, D, with the ground or bearing wheel, draft tongue, and devices for raising and lowering the plow-hanger and bearing wheel, as and for the purpose set forth.

247,630. JOHN L. GERNSEY, Maple Grove, Mo. Sulky-Plow. Sept. 27, 1881. Filed July 11, 1881.

1. The combination of the beam E, toogee

F, pivoted thereto, lever *t*, hanger *a*, plow-beam C, braces *g*, *h*, attached to the bent axle B by means of the bearing blocks *e*, *d*, and bolt or loop *i*, segment-plate having levers *f*, *j*, and lever *k*, the said lever being rigidly secured to the axle, whereby the axle may be caused to rock, substantially as shown and described.

2. The axle B, made in two parts, the two parts being connected to the lever *k*, in combination with the segment-plate *e*, having levers *f*, braces *g* and *h*, and bearing blocks *e*, *d*, the levers *f*, braces *g* and *h*, and bearing blocks *e* and *d* being fastened together in any suitable manner, whereby the axle can be rocked or rotated, thereby raising or lowering the plow without disturbing the sulky-frame, substantially as described.

249,020 EBENEZER B. DANIELS, Liberty Township, Tioga County, Pa. Sulky-Plow. Nov. 1, 1881. Filed Mar. 24, 1881.

1. The combination of the frame A, plow beam K, having clevis *m*', centrally pivoted foot lever or frame N, and adjustable connecting-rod M, substantially as set forth.

2. The combination, with the frame A and plow-beam K, of the bail B, having fixed bearing *c* at one end and the notched sliding block *d* at the other end, the lever H, with toothed segment *h*, and the lever F, loosely attached to its socket on the bail to allow limited rise of the plow when the lever is locked, all substantially as shown and described.

249,501. EDWIN M. CARROLL, Pittsford, Mich. Sulky-Plow. Nov. 15, 1881. Filed Oct. 10, 1881.

1. The double-crank shaft *o*, having opposing cranks, and the laterally-rocking bar *k*, the latter firmly clamped to the beam, in combination with the vertically-sliding blocks *e*, loosely fitted to the parts *d* of the frame *c*, and articulating guide-rods *h*, provided with supports for the ends of the rocking bar *k*, substantially as and for the purpose described.

2. The combination of the double-crank shaft *o*, having opposing cranks, connecting pitmen, sliding blocks *e*, and frame *c*, *d*, substantially as described.

3. The combination of the crank shaft *b*', pitman *d*', clamping device *c' p' m'*, articulating guide-rods *h*, bar *k*, and longitudinally-sliding blocks *j*, substantially as and for the purpose described.

4. In combination with the beam *i*, the clamping device consisting of the bar *e*', provided with perforated ears *e*', the screw threaded hooked eyebolts *l'*, link *m'*, and nuts *n'*, substantially as described.

5. The clamp *l* *m* and plow-team *i*, in combination with the laterally-rocking bar *k*, blocks *j*, and guide-rods *h*, substantially as and for the purpose described.

6. The combination of the bar *k*, having both a rolling and rocking motion, beam *i*, articulating guide-rods *h*, longitudinally-sliding blocks *j*, vertically-sliding blocks *e*, frame *c*, *d*, and crank shaft *o*, having opposing cranks, substantially as described.

7. The two loosely-fitted sliding blocks *e*, connected to the plow-beam and frame *c*, *d*, and to the double-crank shaft by suitable intermediate means, and operated by a lever from the driver's seat, whereby one sliding block is raised and the other lowered simultaneously, and the plow thereby winged or leveled, substantially as described.

249,509. GEORGE T. DRAKE, Indianapolis, Ind. Wheeled Plow. Nov. 15, 1881. Filed April 13, 1881.

1. In a sulky plow, the combination of an axle having a central crank, a plow mounted loosely upon said crank, and a spring acting upon the shaft to rotate its crank.

2. In a sulky-plow, the combination of a main axle provided with a central crank, and end cranks with ground-wheels attached, a plow sustained directly and loosely upon the central crank, and a spring connected with and tending to rotate said shaft.

3. In a sulky-plow, the combination of a draft-frame, a supporting-axle provided with a central crank, and with end cranks having wheels thereon, a spring tending to rotate the axle, and a hand lever and locking device, substantially as shown, for rotating and securing the axle.

4. In a sulky plow, a rolling axle provided with a crank, a plow mounted directly and loosely upon said crank, and a spring connected directly with the crank and tending to raise the plow, substantially as shown.

5. The combination of the frame, the axle provided with cranks at the middle and the end, the ground-wheels, the plow attached to the crank of the axle, and the extension-spring extending from the plow-supporting crank to the frame.

6. In a sulky-plow, a rolling axle provided at one end with a fixed crank with ground-wheel, at the middle with a plow-supporting crank, and at the opposite end with an adjustable wheel-carrying crank, in combination with a spring tending to rotate the axle, and two independent levers and locking devices, one attached to the main axle and the other to the adjustable crank.

249,869. GEORGE APPLGATE, Yoncalla, Oregon. Sulky-Plow. Nov. 22, 1881. Filed June 1, 1881.

1. The plow A, formed with the auxiliary beam C, in combination with the hinged beam B, and the lever D, substantially as and for the purposes specified.

2. In a sulky-plow, the combination, with the upright G, hinged at the lower end to the landside of the plow, of the plate F, hinged to the side of the plow beam, and the axle-plate H, secured to the upper end of said upright, as shown and described.

3. The beam C and the hinged beam B, united and operated by the lever D, in combination with the hinged upright G, plate F, and the sulky-axle H, substantially as and for the purposes specified.

4. The hinged beam B and the axle H, in combination with the tongue K, connecting-bar L, and chain or similar connecting device

j, substantially as and for the purpose specified.

5. The upright G, adapted to be hinged to the plow, in combination with the axle H and the sulky, and the plate F, substantially as and for the purposes specified.

249,890. LEROY BROWN, Waukegan, Wis. Sulky-Plow. Nov. 22, 1881. Filed April 10, 1881.

1. In a sulky-plow, the combination, with the bent bar D, the tongue H, and the lever O, of the keeper N, the spring-catch Q R, and the ratchet and pawl U V, substantially as herein shown and described, whereby the tongue can be readily adjusted, securely held, and conveniently released, as set forth.

2. In a sulky-plow, the combination, with the rotary colter *t* and the plow-beam *g*, of the standard formed of two bars, *u*, secured to each other by a bolt *s*, passing through a hole in the one bar and a slot in the other, substantially as herein shown and described, whereby the said colter can be readily adjusted into line with the draft, as set forth.

251,271. RICHARD MILLS, Buffalo, Ills. Gang-Plow. Dec. 20, 1881. Filed July 22, 1881.

1. In a gang-plow, the combination, with the plows D, of the guards F, secured upon the furrow edges of the said plows, substantially as shown and described, whereby the furrow-slices are prevented from slipping off the mold-boards before reaching the proper point.

2. In a gang plow, the plows D, constructed with forwardly-projecting prongs E upon their shears and guards F upon their mold-boards, substantially as herein shown and described, whereby the furrow-slices will be raised and kept upon the mold-boards till they reach the proper point to be turned, as set forth.

3. In a gang-plow, the combination, with the plow-beams H, the plow-standards G, and the colter-standards J, of the bars I and the swiveled screws L, substantially as herein shown and described, whereby the said plows and colters can be adjusted to work at any desired depth in the ground, as set forth.

4. In a gang-plow, the combination, with the plow-beams H, the frame C, the pairs of standards N, and their connecting-bar O, of the rigid inclined levers Q, the hinged bars R, having hooks S and links T, and the pins U, substantially as herein shown and described, whereby the plows can be locked in either a working position or when raised from the ground, as set forth.

5. In a gang-plow, the combination, with the side bars, C, of the frame, the standards N, and the rotary colters K, of the levers V, the link W, and the longitudinally-slotted vertical colters X, substantially as and for the purpose set forth.

251,287. CHARLES H. REMINGTON, Gilroy, Cal. Plow. Dec. 20, 1881. Filed July 29, 1881.

The combination of the tongue B, having fastened to its inner end the plates *b*, pivoted at *b'* to the supplementary beam *e'*, and having formed upon them lugs or projections *b''*, with the supplementary beam *e'*, to which is securely attached the beam C, and the lever D, pivoted to the lugs *b''* and to the supplementary beam *e'*, and ranging upon the toothed rack *a'*, substantially as described and set forth.

251,357. CHAS. F. GODDARD, West Mitchell, Iowa. Roller Plow. Dec. 27, 1881. Filed Dec. 20, 1880.

1. In combination, a land-roller, C, a disk-colter, D, attached thereto, beam B, and a plow supported by the roller, substantially as shown and described.

2. In a plow attached to a land-roller, the combination of the roller C, having disk-colter D, shaft O, beam B, plow standard S T, and plow A, substantially as shown and described.

3. The lever D and wheel W, in combination with roller C, disk D, beam B, shaft O, and plow A, substantially as shown and described.

251,445. JULIUS KONIG, Saydersburg, Md. Plow. Dec. 27, 1881. Filed Aug. 4, 1881.

In combination with the perforated adjustable beam and mold-boards, the front truck having wheels of unequal size, a fifth wheel adapted to be secured to the B arm, and an upwardly projecting king-bolt, as and for the purpose set forth.

254,766. THOMAS A CONLEE and JOHN H. KENNETH, assignors to the Grand Detour Plow Co., Dixon, Ill. Sulky-Plow. Jan. 3, 1882. Filed Mar. 21, 1881.

The object of this invention is to utilize the draft of the team in raising the plow out of the ground, and have the team lifting devices combined and arranged with and having such relation to the hand lifting devices that either form of lift can be used, as desired, without any change of the parts, and without in any manner impairing the effectiveness of either arrangement in use or interfering with the successful operation of each as separate and distinct operating devices, so far as the method of lifting in each case is concerned, and have the same locking arrangement, by which the plow is held either in the ground or out of the ground, as required, common to both forms of lift, and operative with either in precisely the same manner so far as the lock is concerned, and so arranged with reference to the tenon-lift that it will be automatically thrown into lock at the completion of the lift and hold the plow suspended, while the levers by which the lock is released and the sliding catch or wheel-lock thrown into engagement have such relation to each other that the movement of either lever operates the other.

1. The combination, with the crank C, of the notched plate *a*, located on the furrow wheel hub, the sliding arm or catch *c*, located on the lifting-arm *l*, the strap or bar *d*, the link *e*, provided with an extension, *z*, the connecting-rod *f*, the bell crank levers *g* *h* upon the arm *N*, and the strap *o*, for automatically raising the arm or catch when the plow is raised, substantially as described.

2. The combination, with the lifting-lever *N*, of the segmental rack O, the connecting-link P, arranged between the lifting-lever and lifting-arm, and the lifting-arm R, the bail or crank connected with said lifting-arm, the notched plate *a*, located on the furrow wheel hub, the sliding arm or catch *c*, the strap *d*, link *e*, connecting-rod *f*, and bell-crank levers upon the lifting-lever *N*, said members being organized for operation substantially as described.

251,895. MICHAEL KITE, Prairie, Mo. Combining for Sulky-Plows. Jan. 3, 1882. Filed Oct. 24, 1881.

The object of this invention is to allow a sulky-plow to be turned at the corner of a "land" without raising the plow from the ground, and also to prevent side draft upon the sulky-tongue.

The invention consists in a double hinge coupling for sulky-plows, constructed with a U-shaped bar and a bolt for clamping the plow-beam, and the three bent bars hinged to the clamp-bolt and to the draw-bail of the sulky, whereby the plow-beam will have a free lateral and vertical play, as will be hereinafter fully described.

The combination, with a draw-bail, D, of a plow-beam clamp, I, bolt J, and bracket L, O P, the clamp turning horizontally on the bolt and the bracket vertically on the bail, as and for the purpose specified.

252,213. ASA CHANDLER HINSON, Plowville Ranch, Texas. Stack for Plow Tracks. Jan. 10, 1882. Filed May 24, 1881.

The object of my invention is to provide an improved stack and suitable devices for connecting a plow to any pair of wheels and axle forming a part of a wagon, by which simple additional connections a farmer may construct a sulky-plow in a cheap and simple manner, and the improvements consist in devices hereinafter more fully described.

The combination, with the stack G G', plow-beam I, and axle A, of the plates having eyes *h*, the ear-plates I, having a series of perforations, the clips P, connected at their ends by bolts *h*, and the bolt *k*, as and for the purpose specified.

252,615. HERMAN MILLER, New Chicago, Minn., assignor of one-half to M. Mullen, same place. Sulky-Plow. Jan. 24, 1882. Filed Oct. 15, 1881.

1. As an improvement in sulky-plows, the combination, with the axle and plow-beam, of the device for securing them together, consisting substantially of the two-part hub G, encircling the axle, the upper half of which is formed with laterally-projecting lugs *g* *g*, and is grooved transversely to receive the plow-beam, and the

lower half with similar lugs, *g'*, all being held securely together by clips *g'*, which embrace the lugs, substantially as and for the purpose herein shown and specified.

2. The combination of the lever *l* with the sliding toothed hub *N* upon the axle, the bent rod O, pivoted and engaging said hub, the axle-skein P, flanged at its inner end, and the wheel with the toothed hub rim, said members being constructed and organized substantially as and for the purpose described.

3. The combination, with the toothed hub *N*, axle-skein P, toothed hub rim, and rod O, of the sand cap R, provided with openings for the lower arm of said rod, and arranged to cover the said parts, substantially as described.

252,866. WM. L. CASADAY, South Bend, Ind. Jointed Plow Tongue. Jan. 31, 1882. Filed Nov. 15, 1881.

My invention relates to an improvement in jointed plow-tongues, the object being to enable the plow to be turned in its furrow by the draft of the team, instead of being crowded around, as it must be when it is in attachment with an inflexible tongue.

A further object of my invention is to produce a jointed plow-tongue which shall combine simplicity and cheapness of construction with durability in use, and which shall be adapted to be easily operated by the plowman and to be turned to a full right angle with the plow without interfering with or straining it.

1. The combination, with the two sections A B of a plow-tongue, of the metal plates C P, for securing said sections together, the plate E, provided with the beveled portions Q and slot J, and spring dog H, substantially as set forth.

2. The combination, with the plow tongue sections A B, placed end to end, and metal plates C P, for connecting said sections, of the plate E, provided with the arc-shaped slot T and pin or stud P, for limiting the movement of the pivoted tongue section, substantially as set forth.

3. The combination, with the plow-tongue sections A B, placed end to end, and plates C P, for securing said sections together, of the plate E, provided with slot J, the dog H, and the guide flanges L L, formed on plate C, and adapted to relieve the dog of lateral strain, substantially as set forth.

253,094. PETER PETERSEN, Laporte City Iowa. Plow. Jan. 31, 1882. Filed Nov. 9, 1881.

In a plow, the axle-block C, mounted on the wheels E and F, the broad tongue G, and the plow-beam A, having perforations *a*, in combination with the brackets K and L, the links N, and the pin *b*, substantially as specified.

253,807. JAMES K. WORTHINGTON, Kirkwood, Mo. Sulky-Plow. Feb. 14, 1882. Filed June 7, 1881.

1. A riding or sulky plow having all the wheels which support the sulky when upright in the rear of the plow, and arranged to travel in the furrow being turned.

2. The combination, in a sulky-plow having a seat, of the plow B, and sulky-wheels D D', used in supporting the sulky in an upright position, and constituting the entire support when in that position, all of said wheels being arranged to travel in the furrow being turned.

3. The combination of the axle E, the wheels D D', the grooved collar K, the chain K, the beam C, bearings *k* *k*, lever J', link J, beam B', and plow B, substantially as described.

4. The combination, in a plow, of the chain K and the pulley G', said chain at its forward end being connected directly or indirectly with the plow B, and to enable it, when tightened upon the pulley G', to draw and lift the plow B.

5. The combination, in a sulky-plow, of the axle E, the bearing G', the chain K, the bearings *k* *k*, and the beam C, substantially as described.

6. The combination, in a sulky-plow, of the axle E, bearing G', chain K, beam C, lever J', link J, and plow-beam B', substantially as described.

7. The combination, in a plowing device, of the beam C, the plow B, the beam B', the spring L, the handle M, and the spring L', substantially as described.

8. The combination, in a plowing device, of the plow B, handle M, beam C', and spring L, substantially as described.

9. In a sulky-plow, the combination of the plow B, the carriage-beam C, the arm I, the link P, the lever P in the form of a spring, and the bearing P', substantially as described.

10. A sulky-plow having the side wheel O, and the fender P, neither said wheel nor fender touching the ground saving when the sulky is tilted, substantially as described.

11. The combination of the plow A, wheel O, brace *o*, and step *o*, substantially as described.

12. The combination of the axle E, loop H, arm I, and plow B, serving to guide said arm as the plow is lifted at the heel, and also allowing the plow to be acted by means of the handle M, substantially as described. Witness my hand.

254,394. NATHANIEL SHAFFSTALL, Flint, Ind. Plow. Feb. 28, 1882. Filed Dec. 7, 1881.

1. The combination, in a sulky-plow, of the arched frame *b*, the crank E, journaled therein, the grooved pulley *c*, the bar *c'*, connecting the crank to the front end of the plow-beam, and the lever G, provided with a chain, *g*, substantially as shown and described.

2. In a plow, the combination, with the frame and plow-beam, of the connecting-bar and crank E *c* *c'* and the lever G, having its chain *g*, attached to its lower end, passed around pulley *c* and secured to the lever above its fulcrum, and also provided with chain *g'*, attached to the rear end of the plow and passing over pulley *g'*, substantially as and for the purposes shown and described.

3. The combination of the plow-beam, its vertical bar *c'*, the crank E, and its pulley *c*, with the lever G, chain *g*, adapted to operate the forward end of the plow, and the chain *g'*, passing over the pulley *g'* and adapted to operate the rear end of the plow, substantially as shown and described.

254,418. WM. H. WILDE, Bushnell, Ill. Wheel-Plow. Feb. 28, 1882. Filed Sept. 29, 1881.

1. In a wheel-plow, in combination with the axle or frame, bail, and plow, a spring connected with the axle or frame or a projection therefrom at one end, and with the bail at its other end by a slotted connection, whereby it may be utilized in lifting the plow, and may be placed in position to exert no force on the plow when in operation, and permit it to rise and fall freely and independently of the spring, substantially as and for the purpose specified.

2. In a wheel-plow, in combination with the axle, plow, swinging bail, and lifting-lever connected with the plow by a slotted connection, a spring connected with the axle or a projection therefrom at one end and at its other end with the lifting-lever, whereby the lifting-lever may be locked in position and the entire force of the spring will be exerted thereon, and none of its force exerted on the plow, substantially as and for the purpose specified.

3. In combination with the axle, swinging bail having a slotted standard, G, and the lifting-lever having its arm *c'* pivoted in said slotted standard, a spring, H, connected at one end with the axle or a projection therefrom and at its other end with the distal end of the arm *c'*, substantially as and for the purpose specified.

4. In combination with the axle, swinging bail, plow, and lifting-lever loosely connected with the bail by a slotted connection, a spring adapted to be locked from action on the plow by the lifting-lever in one position, and permitted to act in raising the plow with the lifting-lever in other positions, substantially as and for the purpose specified.

5. In combination with the axle, plow, swinging bail, and lifting-lever having an arm, *c'*, connected with the plow, a spring adapted to act on the arm *c'*, and thereby on the plow, substantially as and for the purpose specified.

254,481. FRANKLIN B. HUNT, Bushnell, Ill., assignor of one-half to D. B. Robbins. Sulky-Plow. Mar. 7, 1882. Filed July 8, 1881.

1. The quadrant A', cast in a single piece and provided with notches in its periphery, holes P', and integral bearing U' for the lever, in combination with said lever and the adjustable pin S', for the purpose specified.

2. The quadrant A', cast in a single piece and provided with notches in its periphery, holes P', and integral stud or bearing U' for the lever M.

3. The quadrant A', cast in a single piece and provided with notches in its periphery, holes P' for the pin S', stud U', cleats V V', and held onto the timber A'' by means of bolt W', in combination with levers M N, clamp X', and pawl Y', substantially as set forth.

4. The quadrant A', cast in one piece and provided with notches in its periphery, holes P', and integral stud U', in combination with levers M, N, clamp X', pawl Y', and pin S', substantially as set forth.

5. The step K', attached to the plow-beam D, and made adjustable by means of clamp L', incline N', lip O', and bolt M', substantially as set forth.

6. In a wheel-plow, the combination, with the plow-beam, of the oscillating or vibrating leveling device I, through which the plow-beam passes, said device being provided with a wedge-shaped hole and set-screws for the oblique adjustment of the beam, substantially as set forth.

7. In a wheel plow, the combination of the seat-arch, the stationary furrow-wheel axle, and the hand-wheel axle, attached to the slide Y', and both connected to and by said seat-arch, and each operating independent of the other, the slide carrying the hand-wheel being locked to the seat arch by means of cam-lever C' and block D'.

8. In combination with the axle of a wheel-plow, the pendant G', suspended from said axle and carrying a conical roller the axis of which is turned outward, substantially as set forth.

9. The pendant G', attached to the axle and provided with the shield P, in combination with a conical roller arranged with the side next the land perpendicular, substantially as set forth.

10. In combination with lever M, clamp X', and pawl Y', the set-screw Z', for the purpose specified.

11. The seat-arch B, provided with integral double socketed bearings Z Z', in combination with the tongue-timbers A' A', permanently fixed therein, for the purpose specified.

12. In combination with the seat-arch, provided with bearing Z, and tongue-timber A', the foot-rest L' and seat-spring, the whole being held together by means of the bolts M'.

13. In a wheel-plow, the combination, with the plow-beam D and bail C, of the pivoted hanger I and oscillator J, forming a direct connection between said plow-beam and bail, the beam passing through the hanger and oscillator, the said hanger and oscillator being provided with corrugations X, and being held together by means of the bolts W and U, substantially as set forth.

254,555. CHARLES E. KNEBERG, Moline, Ills., assignor of two-thirds to the Moline Plow Co., same place. Sulky-Plow. Mar. 7, 1882. Filed Jan. 3, 1882.

1. In a plow, the combination, with the hand-lever, of a pawl, a locking device for the lever, and a finger-lever attached to the hand-lever and connected with the pawl and locking device, substantially as described, so that upon being moved in one direction the finger-lever operates the locking device only, and upon being moved in the opposite direction it operates both the locking device and the pawl.

2. In combination with the hand-lever, its locking device and pawl, the pivoted finger-lever connected at one end with the pawl and at both ends with the locking device, substantially as described, whereby the finger-lever is adapted to operate the pawl alone or both the pawl and the locking device, according as it is moved in one direction or the other.

3. In combination with the hand lever, a finger-lever adapted to swing in opposite directions from its normal position, a locking device for the lever, a lifting-pawl attached to the lever, a connection, substantially such as described, extending from the finger lever to the pawl, and double connection from the finger-lever to the locking device.

4. In combination with the stationary rack-bar, the hand lever, its pawl, the locking device mounted upon the lever and engaging with the rack-bar, the central pivoted finger, the lever, the rod b, and the slotted rods c d.

254,558. AUGUST LINDGREN, Moline Ills., assignor of two-thirds to the Moline Plow Co., same place. Sulky-Plow. Mar. 7, 1882. Filed Jan. 12, 1882.

1. In combination with the hand-lever, the arm b, pivoted thereto, and the finger-lever d, pivoted to said arm, substantially as described and shown.

2. In combination with the hand-lever, the arm pivoted thereto, and the finger lever pivoted to the arm, connecting devices, substantially such as shown, extending to the pawl, and the locking device.

3. In a sulky-plow, the combination, with the

rack-bar and the ratchet-wheel or equivalent lifting device, of a hand-lever, the arm pivoted to said lever, the finger-lever pivoted to the arm, and the two rods extending from the finger-lever to the pawl, and the locking device, substantially as shown.

4. In a sulky plow, the combination of the hand-lever, its locking device, a pawl, a finger-lever mounted upon the hand-lever, and arranged, substantially as described, to swing upon different centers, according as it is moved to one side or the other of its normal position.

5. The combination of the hand-lever, its pawl, and a locking device, the pivoted arm, the finger-lever pivoted to said arm, the connecting rods, and a spring, substantially as described and shown.

6. In combination with a hand-lever and two co-operating rods, a finger lever pivoted to the hand-lever, and arranged to swing from different centers, according as it is moved to one side or the other of its normal position, substantially as described and shown.

254,620. FRANCIS CREMER, St. Louis, Mo. Combined Plow and Cultivator. Mar. 7, 1882. Filed Sept. 12, 1881.

1. An arch-axle in which are combined wooden vertical side pieces, e e, wedge-shaped or key piece e', metal plate e', angle-iron e', and short axes B B, as set forth.

2. The combination, with the carriage and plow, made substantially as set forth, of the uprights P P, connected by their upper and lower ends to the carriage and plow, respectively, and furthermore connected to the former by a coupling, Q Q', as and for the purpose set forth.

3. The rocking beam F, connected to the cross-beam E, substantially as set forth, and forming support to the forward and rear ends of the plow-beam.

4. The adjustable connections G I, in combination with the plow-beam H, rocking beam F, and cross-beam E, substantially as shown and described.

5. The wheel J, connected to the rear end of the beam F, and made, substantially as set forth, with grooves on each side for receiving the adjusting-ropes K, and a central groove having cogs engaging with the rack I to raise the plow.

6. The combination of the rope K, wheel J, beam F, having pulleys K', and pulley L, as set forth.

7. The combination of pulley L, sliding lever M, locking-lever N, rope K, wheel J, rack bar I, and plow-beam H, as set forth.

8. The combination, with the carriage and plow, made substantially as set forth, of the uprights P P, connected by their upper and lower ends to the carriage and plow, respectively.

9. The combination of angle-iron e', yoke C, tongue I, and uprights P P, adjustable in said angle-iron, as set forth.

254,723. GARLAND B. ST. JOHN, Cedar Rapids, Iowa. Plow Truck. Mar. 7, 1882. Filed Sept. 27, 1881.

1. The set G, mounted on parallel hinged supports e e, regulated by suitable stops, combined with the chain e, sheave a, segment I, and tongue J, substantially as shown and described.

2. The combination of the hand-side-wheel F, pivoted axle K, lever L, and quadrant o, or their equivalents, substantially as and for the purpose set forth.

255,165. FERDENAND FENSKE, Milwaukee, Wis. Plow. Mar. 21, 1882. Filed Nov. 22, 1881.

1. The yoke F and sleeve I, in combination with the draft-chains H H, and the axle X, provided with the perforations a, the said chains being rigidly attached at one end in perforations in the outer ends of the yoke F, and adjustably attached at their other ends in any two of the perforations a, as desired.

2. The beam A, having open head I, in combination with cross-piece N, having yoke K, the standard B, having perforations e e, and a supporting device adapted to enter the perforations.

3. The head L, having an open horizontal extension in which is a threaded opening, in combination with cross-piece N, screw-bolt d, and standard B, as set forth.

4. The axle X, having uprights g g, perforated to receive the rock-bar T, in combination with standard B, adjustably secured thereon by means of square slot in lower end of said

standard, and the wedge s and set screw, as described.

255,391. GILPIN MOORE, Moline, Ills., assignor to Deere & Co., same place. Sulky-Plow. Mar. 21, 1882. Filed Nov. 4, 1881.

This invention relates to that class of plows wherein by the locking of the wheels the plow may be raised by the team; and the novelty consists in the construction and combination of several parts, all as will now be set out and explained.

1. The combination of the wheels B B', the axle D D', the plow-beam e', and ratchet F with the lever G, pawl H, lever I, rod J, part K, rod L, and spring O, substantially as set forth.

2. The combination of the wheels B B', axle D D', and ratchet F with the lever G, the part K, tooth k', the segment M, and spring O, substantially as set forth.

3. In a wheel-plow, as described, the combination of the axle D D', levers G and I, and rod J with part K, tooth k', rod L, spring O, and segment M, substantially as described.

4. The combination of the axle D, the lever G, having the boss g', the cam N, and the pawl H, substantially as described.

5. The combination of the axle D, the lever G, the wheel B, the ratchet F, the pawl H, the cam N, the segment M, the part K, and tooth k', substantially as described.

6. The combination of the axle D, the wheel B, the ratchet F, the lever G, the boss g', the cam N, and means for keeping the cam from turning on the boss.

7. The combination of the loose cam N and the rod P, substantially as and for the purpose described.

255,557. WM. E. YOUNG, Alton, Ills., assignor to the Hapgood Plow Co., same place. Sulky-Plow. Mar. 28, 1882. Filed Dec. 28, 1880.

1. In a sulky-plow, a central bail having pivotal connection with the axle, and an arm extending connecting by a link with the operating-lever, a pawl mounted loosely upon said bail, and a spring acting upon the said bail in rear of the axle to elevate the plow, substantially as shown.

2. In a sulky-plow, the combination of an axle elevated in the center, with perpendicular sides and horizontal arms, one arm extending and having the wheel rotating thereon, a central bail having pivotal connection with the axle, and an arm extending connecting by a link with the operating-lever, a pawl mounted loosely upon said bail, a spring having one end connected to the bail in rear of the axle and the other end connected above to the frame or tongue, and the spring acting upon the bail to elevate the plow, substantially as and for the purpose set forth.

255,977. THOS. T. HARRISON, Aubrey, Kan. Sulky-Plow. April 4, 1882. Filed Oct. 27, 1881.

In a sulky-plow, the combination, with the cross-bar M, having curved extension I upon its land-side end, and the bar L, attached to the upper end of the land-side axle D, of the keeper 2 and the stops 3, substantially as herein shown and described, whereby the machine can be turned at a right angle without raising the plow from the ground, as set forth.

256,422. MYRON G. WOOD, Church's Corners, and **WALTER C. PRATT**, Hudson, Mich. Sulky-Plow. April 14, 1882. Filed Mar. 9, 1882.

1. In combination with the bent axle and the tongue or pole of a sulky-plow having a ratcheted segment, the angle-lever fulcrumed to the segment and loosely connected to the forward part of the plow-beam, the curved lever fulcrumed to said segment and provided with a slotted head adapted to play upon a bolt upon the angle-lever, and the pivoted frame D, provided with a friction-roller and pin between which the curved lever plays, substantially as and for the purpose specified.

2. In combination with the frame D, pivoted to the bent axle, and the segment T at the rear thereof, the plow-beam provided with the yoke U V Y, the bell-crank, connecting rods, and the lever D' for operating the plow to wing the same, substantially as and for the purpose set forth.

3. In combination with the bent axle and plow-beam, the angle-lever I, fulcrumed to the

axle, the connecting-rods L^1 and the beam clamp M^1 , whereby the width of the furrow may be regulated, substantially as specified.

256,695. FRANKLIN B. HUNT, Richmond, Ind., assignor to L. L. Lawrence and H. E. Moon, same place. Sulky-Plow. April 18, 1882. Filed Mar. 13, 1882.

1. The oscillator J , provided with a wedge-shaped hole for the oblique adjustment of the plow-beam, in combination with the set-screws RR , by which the beam is adjusted obliquely and held in place when adjusted, substantially as set forth.

2. The oscillator J , provided with a wedge-shaped hole and set-screws for the oblique adjustment of the beam, and the hole T and slot V for the lateral adjustment of the plow, substantially as set forth.

3. The hanger I , pivoted to the crank or bail C , and provided with the bearing S , bolt W , and corrugations X , in combination with the oscillator J , provided with the hole T , slot V , and corrugations X , for the purpose specified.

4. The oscillator J , provided with a wedge-shaped hole and set-screws for the oblique adjustment of the plow-beam, and the hole T , slot V , and corrugations X for the lateral adjustment of the beam, in combination with the hanger I , pivoted to the bail C , and provided with integral bearing S , and corrugations X , the corrugations being held in place, when adjusted, by means of the bolt W , substantially as set forth.

5. The oscillator J , provided with a wedge-shaped hole and set-screws for the oblique adjustment of the plow-beam, and the hole T and slot V for the lateral adjustment, in combination with the hanger I , provided with the pivot S for the hole T , and bolt W , substantially as set forth.

6. The seat-arch B , cast in a single piece and provided with the bearings O P , slots P^1 , socketed bearings Z Z , and hollow bearing S^1 , substantially as set forth.

7. The seat-arch, cast in a single piece and provided with the bearings for the bail C , socketed bearings Z Z , bearing S^1 for the lever Y^1 , and the vertical bearing I^1 for the slide V^1 , to which the land-wheel axle is attached, substantially as set forth.

8. The seat-arch, cast in a single piece and provided with the vertical part R^1 , said vertical part being sloped or beveled and corrugated, for the purpose specified.

9. The seat-arch B , cast in a single piece and provided with socketed bearings Z Z , cast as integral parts of the arch, said bearings being provided with slots P^1 , substantially as set forth.

10. The seat-arch B , cast in a single piece and provided with socketed bearings Z Z , said bearings having the slots P^1 , bearings O P for the bail, hollow integral bearing S^1 for the lever, and the vertical part R^1 for the slide V^1 , substantially as set forth.

11. The seat-arch, cast in a single piece and provided with the integral bearing S^1 , in combination with the slide V^1 , carrying the cam-lever C^1 and the block D^1 , and connected with the bearing S^1 by means of lifting-bar X^1 and lever Y^1 , the whole provided to be cast ready for use without fitting, substantially as set forth.

12. In combination with the integral bearing S^1 of the seat-arch, slide V^1 , cam-lever C^1 , and block D^1 , the lever Y^1 and lifting-bar X^1 , pivoted together by means of a socket-joint and held together by means of the bolt Z^1 , substantially as set forth.

13. The seat-arch provided with the bearing S^1 , in combination with slide V^1 , the lifting-bar X^1 , and lever Y^1 , pivoted to the seat-arch by means of said bearing S^1 , and the bolt B^1 for securing said lever in place, substantially as set forth.

14. In combination with the sloping and corrugated part R^1 of the seat-arch and the slide V^1 , carrying the land-wheel spindle, the sloping corrugated block D^1 , lifting-bar X^1 , and lever Y^1 , for raising and lowering the wheel A^1 , substantially as set forth.

15. In combination with the slide V^1 , cam-lever C^1 , having a lug I^1 , and the corrugated block D^1 , provided with lug E^1 , whereby the cam-lever is adapted to lock and unlock the slide, substantially as set forth.

16. The corrugated part R^1 of the seat-arch and the corrugated part D^1 , made sloping or beveled, as seen in Fig. 5, in combination with the cam-lever, by means of which the slide V^1 is clamped firmly to the seat-arch, substantially as set forth.

17. In combination with the seat-arch, the

slide V^1 , placed adjustably on the part R^1 , and held in position, when adjusted, by means of the sloping or beveled corrugated block D^1 , substantially as set forth.

18. In combination with the sloping corrugated part R^1 of the seat-arch, slide V^1 , and sloping corrugated block D^1 , the lifting-bar X^1 and the lever Y^1 , for raising and lowering the wheel A^1 .

257,256. JAMES WARD, Handley, Tex. Sulky-Plow. May 2, 1882. Filed Jan. 21, 1882.

The object of the present invention is to obviate certain minor defects of the sulky-carriage for plows forming the subject-matter of Letters Patent No. 247,446, granted jointly to myself and Rufus Washburn on the 20th day of September, 1881. In the patent referred to a castor-wheel travels on the ground directly in rear of the landside portion of the plow, and serves to take the weight thereof. A castor-wheel so located has a tendency to throw too much weight on the necks of the draft animals, and where the ground is uneven, causing the tongue to be raised, the plow is raised in proportion, and when the point of the tongue is lowered the castor-wheel is thrown off the ground, in which event the weight on the plow will be too great. Furthermore, a wheel located as in the patent referred to cannot be used to advantage with plows possessing handles, because the wheel must be arranged so close to the landside-bar as to interfere with the handles and prevent the plowman from properly guiding the plow.

The combination of the pivoted and slotted arm or hanger E , carrying furrow-wheel C , and the bolt I passing through said slotted arm, and provided with an end nut, J , with the plow carriage or frame and the plow hanger or yoke hung on the bolt I , as and for the purpose set forth.

257,327. JOHN I. HOKE, South Bend, Ind. Sulky-Plow. May 2, 1882. Filed Feb. 14, 1882.

This invention relates to improvements on sulky-plows; and the nature of my invention consists, first, in combining with the short axle of the land-wheel, which is adjustable on one of the arms of the arched axle, a flanged cam having a hand-lever on it, an anti-friction roller, and a lip formed on the adjustable sleeve of the said short axle, as will be hereinafter explained, whereby the attendant can level the frame, whether the machine be plowing or on a level road; second, in a novel method of suspending the plow and the rear part of its beam from a vertically-adjustable bail, in combination with a suspension-stirrup, which is free to travel laterally and to vibrate on said bail, and a suspension-spring on which the rear part of the plow-beam is sustained, which spring is rigidly secured at one end on top of said beam, as will be hereinafter explained.

1. In a sulky-plow, the short land-side axle C , constructed with a sleeve, C^1 , a stud, a , and a lip, b , in combination with the arched axle B , anti-friction roller c , cam D , its lever D^1 , and a locking device therefor, substantially as and for the purposes described.

2. The combination of the sleeve C^1 , bearing the short axle C , and adjustably applied on the vertical limb of the arched axle, with a lever having a flanged cam on its end adapted to engage with sleeve C^1 , for leveling the machine, substantially as described.

3. The combination of the pivoted bail, its hand-lever and locking device, the arched axle, the plow-beam pivoted vertically and horizontally at its front end to the sulky-frame, the suspension-stirrup for this beam, adapted to ride on said bail, and the suspension-spring S , having a bearing, n , on the stirrup, substantially as described.

257,371. JOHN W. NELSON, Hutchinson, Kan. Wheel-Plow. May 2, 1882. Filed Jan. 27, 1882.

My invention relates to an improvement in wheel-plows; and it consists in making the axle out of two separate and independent parts, one of which has the adjustable wheel secured to it, while the other forms a support for the driver's seat and the tongue.

It further consists in attaching to one end of one part of the axle a rod or bar, which forms a support for the ratchet-frame, and to which the tongue is pivoted in any suitable manner, as will be more fully described hereinafter.

The object of my invention is to construct a wheel-cultivator in which the plow can be lowered into and raised above the ground with a single lever, and which will admit of the wheel which is to run in the furrow being raised and lowered at the will of the operator.

1. The combination of the axle A , arched at its inner end, the casting P , secured to one side of the arch and clamped against the inner end of the beam O , the rack-bar N , having its front end bent over the top of the tongue, so as to form a bearing or pivot for it, and the bar S , the rear end of the tongue being made to bear against the casting, substantially as shown.

2. The combination of the casting P , provided with the flange T , the clamping device P^1 , the tongue O , having a fastening device to catch under the flange, and suitable bearings for the tongue, substantially as described.

3. The combination, in a wheel-plow, of the part A of the axle, the grooved casting P , secured thereto, a suitable clamping device, P^1 , and the beam O , to which the ratchet-bar and the tongue are secured, substantially as set forth.

4. The combination of the arched axle A , the crank axle D , the grooved casting P , the spindle H , having an adjustable shank adapted to slide in the grooved casting, and the rigid lever G , substantially as specified.

257,502. IVEN LODGE, Russell, Iowa. Sulky-Plow. May 9, 1882. Filed Dec. 13, 1881.

My invention relates to that class of cultivators or sulky-plows in which means are provided for varying the width cultivated by the machine, for regulating its draft, and for raising and lowering the frame carrying the plow when turning or guiding; and it consists in the details of construction and general arrangement of parts, all as will be hereinafter fully described, and pointed out in the claim.

The combination, with the frame A A^1 B , of the sector-plate K , elbow-lever J , hooked and forked connecting rod I , beam-clamp or saddle G , having eyes c , and mow-bail F , substantially as shown and described.

257,603. JACOB NICEWOOD, Warsaw, Ind. Sulky-Plow. May 9, 1882. Filed Mar. 9, 1882.

This invention relates to sulky-plows; and it consists in certain improvements in the mechanism for adjusting the furrow-wheel or raising or lowering it, so as to cause the plow to run at an even depth in hilly or undulating land, as will be hereinafter more fully described, and particularly pointed out in the claim.

The combination of the axle A , the pivoted stub-axle C , provided near its inner end, which is flattened at E , with teeth or cogs F , the bracket G , having recess H and segmental series of teeth I , and the lever J , having spring head provided with teeth L , and engaging catch K , all arranged and operating substantially as set forth.

257,749. ALVAH P. OSBORN, Iron Mountain, N. Y., assignor to Urban Osborn, same place. Sulky-Plow. May 9, 1882. Filed Dec. 9, 1881.

This invention has relation to sulky-plows; and the novelty consists in pivoting the plow-beam to the frame so that it may have a free lateral movement on each side of a locked position which corresponds to the line of draft.

It further consists in pivoting the beam to the axis to admit of a vertical motion, combined with mechanism whereby the plow may be raised or lowered at will, and so arranged that the plow and its beam will ride over an obstruction without operating or affecting the raising and lowering mechanism, as will be hereinafter set forth.

1. The combination, in a sulky-plow, of a plow-beam vertically pivoted to the frame, and mechanism for automatically locking it in a position corresponding to the line of draft, substantially as and for the purpose set forth.

2. The combination, in a sulky-plow, of a plow-beam pivoted to the frame forward of the point of the plow, and mechanism for automatically locking it in a position corresponding to the line of draft and releasing it therefrom at the will of the operator, as set forth.

3. In a sulky-plow, a vertically-pivoted plow-beam provided with a locking-lever, combined with a frame having a catch to receive the locking-lever, whereby the beam may be automatically locked in position, substantially as and for the purpose set forth.

4. In a sulky-plow, the beam A , having the

locking foot-lever O, in combination with the shaft L, arch-axle I, clutch K, having deflex k, and yoke N, substantially as and for the purpose set forth.

5. In a sulky-plow, the beam A, secured to the clutch K, having the arm M, in combination with the crank K and hand-lever P, substantially as and for the purpose set forth.

257,763. MILES ROBINSON, Wichita, Kan. Combined Sulky-Plow and Drag. May 9, 1882. Filed Nov. 29, 1881.

The object of this invention is to provide a drag to be attached to sulky-plows, so that plowing and harrowing may be done at the same time, the drag being adapted to be raised or lowered to suit the depth of furrow turned by the plow, and also to be swung up out of contact with the ground, so as not to cramp or otherwise interfere with turning the plow or with marking out the land.

1. The frame A, provided with the braces b and the bent arm C, in combination with the hinged drag B, the frame being provided with the cross-bar E, having the attachment f, substantially as and for the purposes set forth.

2. The bent frame A, provided with the opposite holes, i and j, in combination with the chain y and drag B, hinged to the part a of the frame at g, substantially as described, and for the purpose set forth.

3. The combination, with the frame A, provided with the holes i j, braces b, cross-bar E, having the attachment f, and bent arm C, of the drag B, hinged at g to the frame A, and chains j h, substantially as described, and for the purpose set forth.

257,971. JACOB NIXON, Winfield, Kan. Sulky-Plow. May 16, 1882. Filed Mar. 2, 1882.

1. In a sulky-plow, the combination, with the tongue provided on one side with a hook or stop, of the plow provided with an extended standard, having on one side a loop-guide, through which the tongue passes, and on its opposite side a stud or projection adapted to engage with the stop on the tongue, substantially as set forth.

2. The combination, with the axle, plow-tongue, and extended standard, of the lever I, pivoted at one end to the axle, and at its opposite end to the upper end of the standard, a lifting-lever, and suitable connections for raising and retracting the plow, substantially as set forth.

3. The combination, with the axle, plow-tongue, and plow, the latter being provided with an extended standard, of the lever I, pivoted at one end to the upper extremity of the standard and at its opposite end to the axle, the lifting-lever, and a toggle connection provided with a stop, and pivoted at its rear end to the axle and at its forward end to the standard at a point above the mold-board of the plow, substantially as set forth.

4. In a sulky-plow, the combination, with the standard and its toggle connection J, of the draft frame, substantially as shown, pivoted to the standard at its rear end, while its forward end is suspended loosely from the tongue and adapted to receive the coupling for the team, substantially as set forth.

5. In a sulky-plow, the combination, with the plow tongue and vertically-moving standard, of the draft frame pivoted at its rear end to the standard above the mold-board, while its opposite end is supported between swinging arms depending from the tongue, and provided with means for lateral draft adjustments, substantially as set forth.

6. The combination, with the plow tongue, of a bracket adapted to be secured thereto, and provided with upwardly-projecting sides to receive the lifting-lever, the inner one of said sides being notched to form the holding-sector of the plow, substantially as set forth.

258,202. JOHN I. HOKE, South Bend, Ind. Sulky-Plow. May 16, 1882. Filed Feb. 26, 1881.

1. The combination of the clevis B, fixed to the plow-beam, the draft-clevis E and its extension B', pivoted to clevis B, the latch-arm I, the guide G, fixed to pivoted bracket G', and the open heart-shaped catch C, fixed to the pivoted tongue, substantially as and for the purposes described.

2. The combination of the pivoted heart-shaped catch C, having the draft-tongue rigidly secured to it, the guide G, the vibrating catch-arm I, and the pivoted clevis to which this arm is attached, substantially as described.

258,262. ORVILLE A. STONEMAN, Minneapolis, Minn. Sulky-Plow. May 23, 1882. Filed July 16, 1881.

1. The combination, with beam B and axle D', having bend D', of the curved plates P' P', secured at their lower ends to axle D' and at their upper ends within the bend D' by a transverse adjusting screw, g', substantially as set forth.

2. The combination, with beam B and axle D', of the curved plates P' P', having curved lower ends, h' h', and admitting of lateral adjustment at their upper ends by means of a screw, substantially as specified.

3. The combination of axle D', beam B, plates P' P', having curved lower ends, lateral adjusting-bolts h' h', screw g', and nuts g' g', substantially as specified.

4. The beam B, suspended in the crank portion D' of the axle D' between the plates P' P', in combination with the sulky-tongue IP, pivoted in the sleeve IP', having double inclined walls, and secured to the crank portion D' of the axle, by means whereof both beam and tongue may have a vibratory motion without communicating it to the axle, substantially as set forth.

5. The combination of axle D', beam B, and rods m' m', connecting the axle and beam, one of the rods being secured to the axle by a bolt passing through an elongated slot in the axle, by means whereof the axle and beam may be adjusted at right angle to each other, substantially as set forth.

258,987. WM. L. CASADAY, New Carlisle, Ind. Sulky-Plow. June 6, 1882. Filed Mar. 14, 1882.

1. In a sulky-plow, the combination, with a crank-axle, of a plow-beam consisting of two independent sections pivotally connected to the crank of the axle, substantially as set forth.

2. In a sulky-plow, the combination, with a crank-axle, of a plow-beam made in sections, one section being pivoted to the crank and the other section pivoted on a bolt extending through the crank, substantially as set forth.

3. In a sulky-plow, the combination, with a crank-axle, of a plow-beam having a rear section provided with arms which embrace the crank of the axle and are pivoted thereto, and a forward section adapted to be centrally pivoted to said crank, substantially as set forth.

4. In a sulky-plow, the combination, with a crank-axle, of a plow-beam consisting of a front and a rear section, said sections being pivotally connected with the crank of the axle, and suitable means for connecting and disconnecting the sections of the beam, substantially as set forth.

5. In a sulky-plow, the combination, with a crank-axle and a frame, of a plow-beam consisting of a rear section and a front section pivotally connected to the crank of the axle, and a depending notched bar or latch pivoted upon said frame and adapted to engage a catch on the rear section of the beam, substantially as set forth.

6. In a sulky-plow, the combination, with a crank-axle and a seat-supporting frame, of a plow-beam consisting of a rear section and a front section pivotally connected to the crank of the axle, a locking-brace pivoted to said rear section and adapted to engage a catch on the forward section, a depending notched bar or latch pivoted upon said frame and adapted to engage a catch projecting laterally from the adjacent side of said rear section, and a plunger pivoted to the rear end of said forward section, and having a stud arranged to project laterally through a slot in said rear section to automatically disengage the latch from its catch, substantially as set forth.

7. In a sulky-plow, the combination, with a crank-axle and a sectional plow-beam having the adjacent ends of the forward and rear sections pivoted to the crank of the axle, of a guide adapted to receive the forward end of the front section of the plow-beam and allow of a limited vertical movement thereof, substantially as set forth.

8. In a sulky-plow, the combination, with the tongue and forward end of the plow-beam, of a stud or foot-rest projecting laterally from said tongue and pivotally supporting slotted guide-links, within which are supported laterally-projecting studs of the plow-beam, substantially as set forth.

9. In a sulky-plow, the combination, with a crank-axle, of a plow-beam having its rear section pivotally connected to the crank of the axle and its forward section pivoted at one end to said crank, while its opposite end is

provided with laterally-projecting studs which receive slotted guide-links, the latter being pivoted to a projecting stud of the plow-beam, substantially as set forth.

10. In a sulky-plow, the combination, with an inclined spindle secured at one end to an oscillating plate connected with the axle, of a vertical shaft and a cam or eccentric for imparting an oscillating movement to said plate, and thereby adjusting the position of the wheel, substantially as set forth.

11. In a sulky-plow, the combination, with the furrow side of the axle and with the tongue, of a sleeve or box mounted on said axle and a plate secured to the under side of said sleeve and tongue, the frame of the furrow-wheel pivoted at one end to the outer end of said plate, while its opposite end is adapted to slide in a guide formed on the inner side of said plate, and is provided with an elongated slot, within which is arranged an operating-cam connected to a rotating shaft adapted to be operated by the driver, substantially as set forth.

12. In a sulky-plow, the combination, with the axle, of a seat-supporting frame secured thereto at one end, while its opposite end is secured upon a sleeve mounted on said axle, a plate or bracket secured to the under side of said sleeve and to the tongue, a furrow-wheel axle-frame pivotally connected to the outer end of said plate, while its inner end is adapted to a guide formed on the inner side of said plate, and is slotted to receive an operating-cam, the latter being connected to a rotating vertical shaft which extends through a perforated and indented plate secured to the adjacent side of the seat-frame, and is provided with a hand-lever or dog whereby the furrow-wheel may be adjusted, substantially as set forth.

259,715. JAMES R. POLLOCK, Mansfield, Ohio. Sulky-Plow. June 20, 1882. Filed Mar. 25, 1882.

1. In a sulky-plow, the combination, with the frame, of a plow-beam supported between vertical guides projecting above the frame, the forward end of said beam being connected to one arm of a bell-crank lever, while its rear end is secured to a chain which passes over a pulley mounted in one of said vertical guides, and is connected to a lifting-lever, substantially as set forth.

2. In a sulky-plow, the combination, with the plow-beam working in guides above the frame, of a swinging draft-bail depending from the toward end of the frame, and inclined draft-rods secured at their forward ends to said bail and at their rear ends to the plow-beam, substantially as set forth.

3. In a sulky-plow, the combination, with the plow-beam and frame-guides, of a swinging draft-bail depending from the forward end of the frame, and two or more draft-rods, having their forward ends secured on each side of said bail and their rear ends secured on either side of the plow-beam, substantially as set forth.

260,286. FREDERICK S. DAVENPORT, Jerseyville, Ills. Wheel-Plow. June 27, 1882. Filed Mar. 11, 1882.

1. In a wheel plow, the combination, with an axle and wheels loosely mounted thereon, of levers secured rigidly to said axle and supporting at their rear ends an oscillating table upon which the plow-beam rests, and secured at their forward ends to the seat-arch, a tongue arranged on one side of said arch, and a brace arranged at the opposite side of the arch, a foot rest secured upon said tongue and brace, and an anti-friction roller mounted in bearings on the under side of the foot-rest, substantially as set forth.

2. In a wheel plow, the combination, with the axle A, wheels B, levers C, arm N, table D, and beam E, of the arch F, seat Q, tongue G, lever I, catch g, rack M, and hook O, all of the above parts constructed and adapted to operate substantially as and for the purpose set forth.

3. In a wheel plow, the combination, with axle A, wheels B, levers C, arm N, table D, and beam E, of the arch F, seat Q, tongue G, lever I, foot-rest I, and roller J, all of the above parts being constructed and adapted to operate substantially as and for the purpose set forth.

260,482. THOS. E. JEFFERSON, Boston, Mass. Combined Plow, Harrow, Seeder, &c. July 4, 1882. Filed May 6, 1882.

1. In a sulky-plow having a furrow-wheel, a furrow side wheel, and a colter serving as a

bearing-wheel at the front, the hinged frame and plow beam or beams, combined with the plow situated between the furrow-wheel and colter-wheel, and bearing upon said wheels whether said plow is in or out of operation, as and for the purposes herein set forth.

2. In a sulky-plow, the combination of a wheel-frame hinged or pivoted to the rear end of plow-beam, the latter supported on a swiveling colter at its front end, and having means for elevating the frame and beam at the point of their hinged connection, and a balancing driver's seat, arranged in the rear of the axis of the rear bearing-wheels to aid the lever in lifting the plow, substantially as set forth.

3. In a sulky-plow, the plow proper and means for elevating the same in a horizontal plane, combined with the furrow-wheel, whereby the said wheel, riding up the incline formed by the partially-elevated plow, serves to further force the plow out of the ground, as specified.

4. In a sulky-plow, the main frame pivoted on the axes of the riding-wheels, the plow beam or beams hinged thereto and supported by the colter and the hinged pole, all constructed, arranged, and combined as and for the purposes set forth.

5. The plowshare C, having V-shaped recesses cast vertically parallel with each other upon either side thereof, combined with a reversible point, D, having V-shaped parallel jaws d, and securing means, substantially as shown and set forth.

6. The combination, with a sulky-plow or harrow, of a harrowing device consisting of the spring-arms M and the double teeth O', adapted to be used in connection with single teeth or disks to pulverize and level the soil, as shown and described.

7. In a plow, a mold-board the rear portion of which is separate or hinged and adapted to be adjusted vertically upon the fixed portion, as and for the purposes set forth.

8. In a plow, a hinged portion of the mold-board, adapted to be adjusted vertically upon the fixed mold-board, whereby the operator may plow at any desired depth within the capacity of the device, as set forth.

9. In a plow, a hinged mold-board susceptible of vertical adjustment upon the plow-body for the purpose described, combined with means, substantially as specified, for imparting to said mold-board any desired angle with relation to the line of travel, as set forth.

10. In a plow, a mold-board having teeth or fingers secured or cast upon the rear portion of its face immediately forward of the rear edge thereof, said teeth being inclined rearwardly approximately in a line traveled by the furrow-slices, as shown, and serving not only to relieve the rear end of the mold-board of friction and assisting to turn the furrow, but also serving to pulverize the soil as the furrow is being inverted, and utilizing the side pressure arising from plowing for that purpose, substantially as set forth.

11. A hinged mold-board, C', having fingers C' cast or secured upon its face forward of the rear edge thereof, said fingers being inclined rearwardly more or less as the hinged section may be adjusted to pulverize the soil as the furrow is being turned, as and for the purposes herein specified.

12. A hinged mold-board, C', having rearwardly-inclined teeth or knives C', combined with means, substantially as described, for imparting oscillatory adjustment to said mold-board C' in relation to the hinge c, as set forth.

13. The hinged mold-board C', having rearwardly-inclined teeth or knives C', combined with the threaded rod C', perforated arm C' upon the bracket C', and with the adjusting-nut C', as set forth and herein described.

14. The hinged mold-board C' and bracket C' upon the plow-body C, combined with the threaded rod C' and nut C', whereby the said mold-board may be raised or lowered at will to accommodate the depth of furrow, as and for the purposes specified.

15. The frame A', made of channel-iron, with open bottom, and adapted to receive and house working parts of the machine, in combination with rock-shaft K, arm K', and wheel L, substantially as shown and described.

16. The hand-lever F, rigid with the plow-beam, and the frame A', hinged to said beam, combined with means, substantially as described, for adjusting the pitch of the frame and beam and the consequent elevation of the plow by hand or foot lever at will, as specified.

17. The hand-lever F, rigid with the plow-beam, the segmental rack-bar P', pawl f', rod f', and spring f', combined with frame A

and the hand and pedal trips f', f', as and for the purposes herein set forth.

18. In a plow, and in combination with a jointed frame or beam, a loose link connecting the rear of the plow proper to the portion of the support in rear of the hinge or joint, and adapted to serve, with the plow-standard secured to the support forward of the said hinge or joint, to preserve the horizontal position of the plow whatever its vertical elevation, as set forth.

19. The combination of the hinged support, the standard B', hung from said support forward of the hinge, and the plow C' with the link E', connecting the rear of said plow to the support in rear of the hinge, as and for the purposes specified.

20. The link E' and standard B', combined with the plow, the main frame, the plow-beam, the hand-lever F, the segmental rack P', the spring f', and the double trips, as and for the purposes hereinbefore set forth.

21. The flanged furrow wheel G and axle G', combined with the lugs g, pivoted tilting bar g', and adjusting-bolts G', as and for the purposes set forth.

22. The feed mechanism and adjusting and registering devices, combined with the feed-shaft, the gear P, lever P', and the pinion H upon the tilting furrow-wheel shaft G', and the furrow-wheel G, the gear P', and pinion H being adapted to be thrown into mesh whatever the deflection of the wheel G and shaft G', as and for the purposes specified.

23. The perforated partitions f', the headed rod f', and spiral spring f', all housed in the frame A, combined with said frame A, formed of angle-iron, as shown, and with the segmental rack bar P', hand-lever F, and trip-connections, as and for the purposes set forth.

24. In a disk plow or harrow, independent springs or spring-arms secured to the cross bar or bars, combined with independent removable concave-convex disks, substantially as described and set forth.

25. The springs M, supporting the harrowing devices, secured to the cross-bar A', and describing approximately a portion of an ogee curve, each independently combined with adjustable, removable, and reversible harrowing devices, and adapted to allow a universal play thereto, in a manner as and for the purposes set forth.

26. The flat springs M, as shown, having threaded apertures m, combined with the harrowing-teeth or disk frames having curved slots n, and with set-screw n', allowing such teeth or frames to be adjusted at any desired angle in relation to the line of travel, or to be reversed at will, as and for the purposes set forth.

27. The combination of the independent flat springs M and adjustable removable reversible teeth or disks with the holding-bar P, threaded arms P', nut p, and frame A, as and for the purposes described and set forth.

28. The disk journal-boxes R, having conical or rounded bearings r and spacers r', combined with the disk spindle O', having annular flange o', substantially as set forth.

29. The combination of the journal-boxes R, having annular recesses r', internal chamber, r', and bearings r, and the disk-spindle O', having collars o, which rigidly embrace the disk, and having annular flanges o', combined with the disk frame N, having jaws n', the whole being adapted to serve as and for the purposes set forth.

30. An interchangeable sulky plow and harrow having a cross-bar A', of angle-iron, with harrowing devices, as shown, adapted to receive a similar cross-bar having similar harrowing devices, combined with means substantially as described, for throwing either or both sides in or out of operation at will, as set forth.

31. In a sulky-harrow, the combination of cross bar A', adapted to slide upon and be secured to a duplicate cross bar or section, S, with the box T', having ears t', the seat X, and pole Z, as set forth.

32. In a sulky-harrow, a side section composed of the cross-bar A', of channel-iron, the springs carrying independent disks or teeth, the rock-shaft K, with lever K', and provided with crank arm K' and wheel L, and adapted to receive a cross bar provided with duplicate devices, arranged to slide into and be secured to the bar A', as set forth.

33. The combination of a revolving colter, a right-angled standard, or the equivalent thereof, swivelled in the plow beam or frame, and a tongue properly secured to said standard, whereby the plow is enabled to turn in

either direction, and describe the arc of a small circle without taking the plow out of the soil or injuring the colter-blade, as specified.

34. In a sulky-plow, a revolving colter combined with and adapted to receive motion and direction from the draft-tongue, as and for the purposes hereinbefore set forth and described.

35. In a sulky-plow, a revolving colter which serves at all times as a bearing or riding wheel for the forward end of the plow-beam, combined with a pivoted pole, to which it is connected and from which it receives motion and direction, as and for the purposes set forth.

36. The colter W and standard V, combined with the arm V', the adjustable pole Z, and the plow beams B', substantially as set forth.

37. In combination with a sulky plow or harrow, the tongue Z, hinged to the frame thereof, and formed of band-iron cut diagonal, one piece being reversed to bring the narrow ends together, and both parts bent to form an approximate arc of a circle in transverse section and secured together, substantially as set forth.

260,534 WM. L. OASADAY, New Carthage, Ind. Sulky-Plow. July 4, 1882 Filed Feb. 18, 1882.

1. A plow-beam consisting of a forward section provided with vertical jaws adapted to slide upon a guide-bar of the plow-frame, and a rear section pivotally connected to said forward section and adapted to be adjusted vertically, substantially as described.

2. In a plow, the combination, with the frame, of a plow-beam consisting of a forward section provided with jaws adapted to slide on a guide-bar of the frame, and a rear section hinged to said forward section and adapted to be freely turned upward from its rear end, substantially as described.

3. In a plow provided with a jointed beam, the rear section of the plow-beam, provided with a bracket extending above the beam and adapted to receive a locking arm or brace which is pivoted thereto, and arranged to lock the two parts of the beam together, as and for the purposes set forth.

4. The combination, with a plow-beam consisting of two hinged sections, of a locking arm or brace pivoted at one end to a bracket on one of said sections, while its opposite end is adapted to engage with a notch on the other section, substantially as set forth.

5. The combination, with the rear section of the plow-beam, provided with an upwardly-projecting bracket, and the forward section provided with a notch or catch, of a locking-brace pivoted at its rear end to said bracket, while its opposite end is adapted to engage with said notch and provided with a spring-pressed lever, substantially as set forth.

6. The combination, with the plow-beam consisting of hinged sections, of a two-part locking-brace, one of said parts being pivoted to a bracket of one of the plow-beam sections, while the other part is secured to said pivoted part and adapted to engage with a notch on the other plow-beam section, substantially as set forth.

7. The combination, with the sections of the plow-beam, of a locking-brace consisting of two independent parts connected so that the brace may be lengthened or shortened to vary the pitch or section of the plow, substantially as set forth.

8. The combination, with the two sections of a hinged plow-beam, of a pivoted locking-brace provided at its free end with a spring-actuated catch-lever constructed to engage with the plow-beam when depressed and unlatch the main portion of the locking-brace, substantially as set forth.

9. The combination of two plow-beam sections, one of which is provided with two perforated ears or arms, while the other section is provided with a perforated end adapted to fit between said ears, and be held therein pivotally by a gudgeon, a bolt, and nut, which latter may be turned to compensate for friction and wear, as set forth.

10. The combination, with the frame of the plow and the plow-beam, of a rearwardly-projecting bracket rigidly secured to said frame, and supporting pivotally a depending notched bar or latch adapted to engage with a catch on the plow-beam, substantially as set forth.

11. The combination, with the frame of the plow and the plow-beam consisting of a forward section and a recessed and slotted rear section, of a rearwardly-projecting bracket secured to said frame and supporting pivotally a depending notched bar, a loop or catch formed

on one side of said rear section, and a plunger pivoted to the forward section of the plow beam and extending rearwardly within the recess of the rear section of the beam, and provided with a laterally-projecting stud adapted to move within the slot of said rear section and disengage said notched bar and catch, as and for the purpose set forth.

12. The combination, with the frame and two-part plow-beam, of the locking-brace for holding the sections of the plow-beam rigidly together, a bracket secured to the frame and supporting a depending notched bar, a catch formed on or secured to the side of the rear section of the plow-beam, and a plunger pivoted to the forward section of the plow-beam and working within a recess of the rear section, and provided with a laterally-projecting stud extending through an elongated slot in said rear section and adapted to disengage said notched bar and catch, substantially as set forth.

13. The combination, with the lifting-lever sector having inclined teeth cast solid therewith and provided with an elongated slot, of an auxiliary sector-piece provided with cog-teeth and adapted to be adjustably secured to the sector, substantially as set forth.

14. The combination, with the sleeve of the land-spindle and its coil-spring and lever, of a bracket secured to the axle-projection of the frame, and having outwardly projecting logs adapted to limit the movement of the spring, and thus protect the latter from undue strain, substantially as set forth.

261,176. AUGUSTUS SANBORN, Barre, assignor of one-half to Joel Nourse, Boston, Mass. Sulky-Plow. July 18, 1882. Filed Feb. 11, 1880.

Plows known as "swivel" or "reversible" plows have had serious obstacles to prevent them from being practically applied to sulky or riding plows. The reason is obvious—that it would be entirely impracticable for the operator while riding upon the carriage of a sulky-plow to undertake in any way to reverse the mold-board of an ordinary swivel-plow. Should the operator leave his seat to reverse the mold-board at the end of each furrow, it would put him to so much extra trouble that it would be considered impracticable. The common swivel-plow of ordinary construction is not capable of being used to advantage in a sulky-plow.

The object of my invention is to provide a sulky-plow having all the advantages and doing the work of an ordinary swivel-plow. My improved sulky-plow is constructed to turn a furrow to the right-hand side while being driven in one direction, and to turn a furrow to the left-hand side while being driven in the opposite direction, allowing the operator, while in the seat and riding upon the carriage of the sulky-plow, to reverse the plows from right to left, or vice versa; also, in so constructing the sulky-plow that the carriage-wheels can be both raised and lowered on each side of the main carriage-frame to correspond with the change of plows from right to left or left to right; also, in so constructing the details of my improved sulky-plow as to more especially adapt the machine for the work required as more fully set forth in the following specification and claims.

1. The combination of the two centrally-pivoted parallel bars C and D, connecting the axles *j*, raising one as the other is lowered, and holding the axles in their horizontal positions, substantially as described.

2. The combination of the hand-lever II with connections for operating or raising and lowering both the right and left hand plows and for operating both of the main supporting-wheels, by means of which one plow is raised while the other is lowered, one of the wheels by the same operation being automatically raised and the other lowered, and vice versa, substantially as described, and for the purpose specified.

3. The combination of the right and left hand plows with the primary hand-lever II, by means of which either plow can be raised from the furrow and the other plow inserted into the ground, and by means of which both right and left hand plows can be raised slightly from the ground, and the secondary hand-lever, Q, with its connecting-arms, by means of which both plows can be raised together still farther from the ground for transportation from place to place, substantially as and for the purpose described.

4. The combination of the lever II, segment G, chains *m*, vertically-adjustable axle-support B, and axle *j*, for raising and lowering the wheel W upon the main frame A, substantially as described.

5. The pivoted cutter T, hinged upon pivot *b*, in combination with connecting link *r* and levers M and P, for raising the cutter when both plows are raised by the lever Q, substantially as described, and for the purpose specified.

261,182. EDWARD TOPHAM, Milpitas, Cal. Gang Plow. July 18, 1882. Filed Mar. 23, 1881.

This invention relates to improvements in gang-plows, and more particularly to that class of gang-plows in which the plows are attached to a separate frame which connects by a hinge with a truck, so that by drawing the truck over the surface of the ground the plows are caused to set on the soil to any required depth; but it may be applied to any form of gang or sulky plow, and is especially adapted for use upon uneven ground and in plowing side-hill ground; and the object of my improvement is to provide a means whereby the points of the plows can be turned to or from the "land." This object I accomplish by means of the mechanism illustrated in the accompanying drawings, in which—

In a sulky-plow, the combination, with the axle and tongue pivoted together, of the bonnds J, the pivoted bars I, bent lever M, connecting-bar N, and ratchet-bar O, whereby the wheels and the plow-bars are turned to or from the land, substantially as shown and described.

261,365. LUPPE LUPPEN, Pekin, Ills. Sulky-Plow. July 18, 1882. Filed Feb. 27, 1882.

My invention relates to sulky-plows; and the objects of my improvements are, first, to provide a foot-lever for raising and lowering the plow; and, second, to provide such devices and combinations thereof as will enable the operator to cause the plow to be carried forward as it is raised up, by which means it is raised with the expenditure of a less amount of force than is ordinarily required. I attain these objects by means of the devices and combinations illustrated in the accompanying drawings, in which—

In a sulky-plow, the combination, with the plow-beam and the yoke having an upwardly-curved arm, of the hand-lever E and sector F, the foot-lever B, having curved slot B', the guide-pin *b*, and the flexible connection C, substantially as shown and described.

261,793. CHAS. H. WANKEE, Lewisville, Ind. Riding Attachment for Plows. July 23, 1882. Filed Nov. 28, 1881.

The invention relates to that class of riding attachments for plows that are provided with only one wheel, which runs upon the unplowed land, and has for its object to allow the driver's weight to be used for controlling the plow.

The invention consists in a riding attachment for plows, constructed with a frame and its brace, a vertically-adjustable wheel, and a sliding bar having pivoting-bars and carrying a driver's seat; and, also, in the combination, with the frame, of pivoting bars, a sliding bar carrying a driver's seat, and a connecting rod and lever, whereby the plow can be controlled and the machine balanced by adjusting the said sliding bar, as will be hereinafter fully described.

1. A riding attachment for plows, constructed substantially as herein shown and described, and consisting of the frame and its brace, the vertically-adjustable wheel, and the sliding bar having pivoting-bars and carrying a driver's seat, and the adjusting rod and lever, as set forth.

2. In a riding attachment for plows, the combination, with the frame H I J, of the pivoting-bars P, the sliding bar Q, carrying the driver's seat, and the connecting-rod U, and lever V, substantially as herein shown and described, whereby the plow can be controlled and the machine balanced by adjusting the said sliding bar, as set forth.

262,465. WM. B. PACKARD, Bloomington, Ills. Sulky-Plow, &c. Aug. 8, 1882. Filed April 24, 1882.

1. In a sulky plow or cultivator, the combination, with the plow-beam F and its eye G, having a clamp, I J, and set-screws H, of lever E, connected to an adjustable bolt, D, controlled by a hand-wheel screw, K, and the slotted upright bow or frame B, which receives the bolt D, substantially as shown and described, and for the purpose set forth.

2. In a sulky plow and cultivator, the combination, with the plow-beam F and its eye G,

having the clamp I J and screws H, and the pivoted bail E, of the bars L and T and levers S and U, substantially as shown and described, and for the purpose set forth.

262,547. FRANCIS F. SMITH, Sandusky, Ohio, and JOHN W. LOCKWOOD, Gypsum, Ohio. Power-Lift for Plows. Aug. 8, 1882. Filed April 25, 1882.

1. The combination, with a cogged gear, A, applied to the axle-supporting wheel, of a cogged rack, A', applied directly to the rigid crank-arm D' of the lifting bail or bar of a plow or other implement, and a stirrup for the rack, said gear and rack being normally out of gear, each combined and brought into gear with each other by the actuating-lever and rocking stirrup, whereby the revolution of the wheel causes the rigid crank-arm to be turned and the bail or bar and plow-beam to be raised to any desired height, substantially as described.

2. The combination of the treadle-lever G and rocking stirrup H, having a slotted connection, *e*, d, the swinging cogged rack A', cogged surface A, and the lifting bail or bar D, having a crank-arm, D', substantially as and for the purpose described.

3. The combination of the self-latching hook F with the plow-lifting bar D D' and the cogged gearing A A', substantially as and for the purpose described.

4. The lifting-bar D, to which the plow is attached, provided with a rigid crank-arm, D', and a toothed rack, A', pivoted directly to said arm, substantially as and for the purpose described.

5. The bracket J, provided with the sleeve or eye-bearing I for the axial portion of the rocking stirrup H to rest and roll in, substantially as described.

6. The combination, with the rack-bar A' and toothed surface A, of the rocking stirrup H for supporting the rack-bar out of gear and for lifting it in gear, substantially as described.

7. The rocking stirrup H, provided with a slotted crank-arm, *b*, substantially as and for the purpose described.

8. The combination, with the stirrup H, gearing A A', and the lifting-bar D D', of the treadle-lever G, provided with a fulcrum-support, L, forward of the arched bar K, substantially as and for the purpose described.

262,729. GEORGE S. BRIGGS, Rockford, Ills. Sulky-Plow. Aug. 15, 1882. Filed Dec. 12, 1881.

1. In a sulky-plow, the angle-lever *m*, formed with segmental end pieces, the clutch-pin *n*, engaging therewith and with the hub of the carrying-wheel, and the collar *f*, in combination with the plow-supporting bail, whereby the motion of the carrying-wheel is imparted to said bail to raise the plow, substantially as shown and described.

2. In a sulky-plow, the angle-lever *m*, formed with ends *m'* and provided with suitable upward-acting spring, the pin *n*, collar *f*, recessed hub H, and axle *a*, in combination with the bail F, provided with the adjustable cam *o*, whereby the clutch mechanism may be disengaged automatically at any predetermined point, substantially as shown and described.

3. The combination of a pivoted foot-lever, a supplemental lever pivoted thereto and independently fulcrumed, an upward-acting segment connected with said supplemental lever and working in a recess of a segmental ratchet, and a hand-lever provided with a detent engaging the teeth of the ratchet and connected to the plow-supporting bail, substantially as shown and described.

263,217. CALIN T. REED, Bloomington, Ills. Sulky Attachment for Plows. Aug. 22, 1882. Filed May 29, 1882.

In a sulky attachment for plows, the combination, with the wheel-supported frame C E, having tongue F and parallel bars *e* *e'*, of lever H, having the grooved pulley *h* and hook *f*, lever I, having the grooved pulley *g*, cord or chain *f'*, and hinged bail D, supporting the plow-beam, substantially as shown and specified.

263,577. EUGENE POWELL, Delaware, Ohio. Sulky-Plow. Aug. 29, 1882. Filed April 5, 1882.

1. An axle-supporting frame for sulky-plows, consisting of the curved bar G, the cross-bar I, the curved bar H, having its ends secured to the said cross-bar, and the depending bar F, substantially as herein shown and described.

2. In a sulky-plow, the combination, with

the side bar, E, and the axle A, having hooked head M, of the curved bars G H, the cross-bar I, the depending bar P, the pivoted bar K, and lever N, substantially as and for the purpose set forth.

263,669 NOAH SWICKARD, Clarinda, assignor of one-half to Henry F. Simmons, Osceola, Iowa. Sulky-Plow. Aug. 29, 1882. Filed May 3, 1882.

This invention has relation to coupling devices for connecting the beams of plows and cultivators to the draft-frames; and it consists in the construction and novel arrangement of a sectional yoke-plate, the laterally-moving center connected to the front part of the yoke, the double bearing-plates to which the beam is connected, and the parallel-moving link bars or connections pivoted to the yoke and center plates, all as hereinafter set forth.

The object of this invention is to provide a simple means for obviating the lateral strain on the wheels of the draft-frame, and to keep the beam direct in its movement, and to control the plow or shovel in such a manner as to prevent a rocking movement thereof.

1. In a coupling attachment for wheel plows and cultivators, the sectional yoke having a laterally-moving rear section bearing the center plate which carries the beam, substantially as specified.

2. In a coupling attachment for wheel plows and cultivators, the yoke-plates B and C, connected by parallel-moving link bars or connections D, and the broad center plate, E, carrying the beam and connected to the rear plate, C, of the yoke by a pivot-bolt, substantially as specified.

263,763. SAMUEL W. BARR, Mansfield, Ohio. Sulky-Plow. Sept. 5, 1882. Filed May 4, 1882.

My invention is designed to avoid much of the complication and expense of sulky-plows by running one wheel of the sulky in the furrow behind the plow, and in the construction of this machine a bar of iron three inches by three-fourths inch and about three feet long is bent upon one edge till the ends are at a right angle to each other.

In combination with the tongue i, the curved bar d, the wheel b, bracket j, wheel e, pivoted plow-beam g, and lever f, substantially as shown and described.

264,434. BENJAMIN S. BENSON, Baltimore, Md. Plow. Sept. 19, 1882. Filed May 6, 1882.

1. In a plow, a supporting-wheel mounted upon an axle susceptible of angular movement with reference to the line of draft, and adapted, in connection with a gage plate or landside, to automatically steer the plow, substantially as and for the purpose set forth.

2. In a plow, a supporting-wheel susceptible of angular movement with reference to the line of draft, in combination with a gage-plate or landside adapted to follow the contour of the previous furrow and actuate the wheel to steer the plow, as set forth.

3. In a plow, a gage-plate or landside connected with the axle of the supporting-wheel, and adapted in connection therewith to steer the plow, as set forth, in combination with means for lifting said plate to clear obstructions, substantially as described.

4. In a plow, and in combination with its curved mold-board, a reversely-inclined share, a', and a vertical plate, F, adapted to resist lateral thrust, as set forth.

5. In combination with the plow, the supporting-wheel D, susceptible of vertical adjustment and of angular movement with reference to the line of draft, in combination with the bar J, curved across the frame and carrying a gage-plate or landside, and means for lifting the same and adjusting it laterally, as set forth.

6. In combination with the plow and frame, a series of vertically-adjustable supporting wheels, one or more of which are susceptible of angular movement with reference to the line of draft, and means, substantially as described, for determining such movement automatically with reference to the contour of the previous furrow.

7. In combination with the plow and frame, having supporting wheels D, J, one of which is susceptible of an angular movement with reference to the line of draft, the gage-plate G and swiveling wheel N, vertically and laterally adjustable with reference to the frame, as set forth.

264,562. JAS. D. PATTERSON, Com-

petition, Mo. Wheel-Plow. Sept. 19, 1882. Filed April 1, 1882.

My invention relates to improvements in that class of wheel-plows in which the plow is alternately drawn forward by the track; and it consists in the peculiar construction and arrangement of parts, as hereinafter fully set forth.

1. The combination, with plows fitted to slide in ways of the truck frame, of the mutilated gear-wheels F, having their toothed faces set opposite to each other, the pinion G, the drums H, and the chains I, substantially as and for the purpose set forth.

2. The combination, with the slotted longitudinal bars J, the plows E, and plow-standards M, of the mutilated gear-wheels F, the pinions G, the drums H, and chains I, substantially as and for the purpose set forth.

3. The combination, with the slotted bars J, the plow-standards M, and means for moving the said standards forward, of the sliding gage-plates N, the bent lever P, and the rack T, located on said guide-plates, substantially as and for the purpose set forth.

4. The combination, with the plows E, the axle D, and the mutilated gear-wheels F, of the pinions G, the drums H, the chains I, the clutches J, and levers K, substantially as and for the purpose set forth.

264,610. AXEL F. BERGQVIST, Fairfield, Ohio. Sulky-Plow. Sept. 19, 1882. Filed Feb. 27, 1882.

This invention relates to certain improvements upon the plow covered by my Letters Patent No. 234,743, November 23, 1880; and it consists, first, in certain novel features in the construction of the axle; second, in the combination, with the lever for raising the plow out of the ground, of a spring adapted to assist the plowman when using the lever for this purpose; and, third, in the combination, with the frame and plow-beam, of a supporting-rod and spring, by means of which the beam is given a capacity to yield under pressure, as will be fully described hereinafter.

1. The combination, with the axle A and U shaped block a', of the crank-spindle B, lever b, arm b', spring C, and frame D, substantially as described, and for the purpose set forth.

2. In combination with the plow-beam and bail, the swinging plate f, the connecting rod g, and spring bolt g', as described.

264,692. THOS. T. HARRISON, Aubrey, Kan. Sulky-Plow. Sept. 19, 1882. Filed May 4, 1882.

This improvement in sulky-plows consists of a joint in the tongue a little in advance of the axle on which the wheels are mounted, and about where the evener is attached, for allowing the tongue to swing, so that the horses may get about half way around square corners before the plow turns, together with stops by which the movement of the tongue on said pivot is limited to the required amount, said stops being changeable for allowing the tongue to be shifted in like manner on said pivot, either to the right or left hand. By thus allowing the team to turn about half around the corner before starting the plow and then pulling directly ahead in the direction of the furrow the plow comes into position better than when the joint is behind the wheels, where it has commonly been located heretofore. The joint is also useful for wheel-cultivators; but in that case the stops are shifted so as to allow the tongue to vibrate both ways alike.

In a sulky-plow, a tongue composed of the two parts B C, pivoted together, and provided with the stops G H I J, adjustably secured to the stationary part B, substantially as and for the purpose set forth.

264,763. THOMAS L. RICHARDSON, Indianapolis, Ind. Sulky-Plow. Sept. 19, 1882. Filed May 29, 1882.

My invention relates to that class of plows in which the frame is mounted upon three wheels, one wheel having bearing on a horizontal spindle, and the other two wheel-spindles, in their normal position, being inclined at an angle to the horizontal. Of these two wheels, one in the rear of the plowshare runs in the "live" furrow and the one forward of the share runs in the furrow last plowed.

My invention particularly consists in the means of adjustment provided for the spindles of the inclined wheels and the plow upon the frame, and in the method of connecting the rear wheel-spindle to the frame, so as to allow the machine to turn more readily.

1. In a sulky-plow, the transverse bar 1, having at one end the casting 4, with guide-pier 5, carrying the vertical wheel 6, and suitable mechanism for the vertical adjustment of the frame, and at its other end the casting 12, with its two webs 12' 12'', the frame 16, attached to the plow-beam 17, and provided with the two flanges 16' 16'', and suitable mechanism for raising and lowering the plow, the forward longitudinal bar 2, supported by inclined wheel 27, and the rear longitudinal bar 3, supported by the inclined wheel 28, in combination with the transverse piece 13, uniting the castings 4 and 12, the rear oblique brace-bar 14, connected at its front end to the transverse piece 13 and at its rear end to the bar 3, and the front oblique brace-bar 14', connected at its rear end to the transverse piece 13 and at its front end to the bar 2, substantially as and for the purpose set forth.

2. In a sulky-plow, the transverse bar 1, having at one end the casting 4, with accessories for carrying the wheel 6 and for the vertical adjustment of the frame, and at the other end the casting 12, provided with two flanges, 16' 16'', the frame 16, provided with two webs, 12' 12'', and attached to the plow-beam 17, in combination with longitudinal bars 2, 3, transverse bar 13, oblique brace-bars 14 14', and bar 42, swiveled at its rear end to the casting 4 and attached at its forward end to the plow-beam 17, substantially as and for the purposes specified.

3. In a sulky-plow, the bar 3 and foot-bar 39, with downturned end 39', in combination with casting 32, formed with semicircular portion 36, having the shoulder 41 and perforations 38 40 and slots 33 34, the spindle 29, provided with slots 31 31', and bolts 35 35', substantially as and for the purpose herein set forth.

264,646. NATHANIEL S. BARGER, Hampton, Iowa, assignor of one-half to N. V. Taylor and W. D. Evans, both of same place. Sulky-Plow. Sept. 26, 1882. Filed Jan. 30, 1882.

This invention relates, first, to a plow beam which is flexible between its ends in an upward direction and rigid in a downward direction; second, to a combination of a lifting and lowering frame in connection with the jointed beam; third, to the combination, with the plow-beam of the oblique wheel-landside, the plow beam having a vertical joint and a rear extension, and an arm bolted to the mold-board, forming, with the plow-beam, extension-bearings for the wheel-landside; fourth, to a peculiar hub and axle for the wheel-landside; fifth, to a grooved block provided with a vertical pivot on which the plow-beam is pivoted, in connection with the bail upon which the block rocks, and may also be adjusted sideways; sixth, to a combination, with the truck-frame of the sulky plow provided with wheels, of a plow-beam having a joint between its ends, a wheel-landside, and a lifting frame; and, seventh, to a combination of the bail connected with the pole, a foot plate, an upright guide, the arched axle having a vertical leg attached to the plate, the sliding wheel-spindle, the connecting bars, and a lever, as hereinafter described and specifically claimed.

1. A plow-beam, H, provided with a joint between its ends, which is flexible in an upward direction and rigid in a downward direction, substantially as and for the purpose described.

2. The combination of the jointed beam and the lifting and lowering frame, substantially as and for the purpose described.

3. The combination, with the plow K, of the oblique wheel-landside A', the plow-beam H, having a vertical joint and a rear extension, d', and the arm k, bolted to the mold-board, and forming, with the plow-beam, extension-bearings for the wheel-landside, substantially as described.

4. The grooved block I, provided with the vertical pivot i, and plow-beam H, pivoted thereon, in combination with the bail E, upon which it rocks, and is also adjustable laterally, substantially as described.

5. The wheel-landside A', provided with a hollow metal hub, within which is fitted a wooden box having a concave and convex end, in combination with the axle l, provided with screw-threads, and the concave and convex washer, substantially as and for the purpose described.

6. The combination, with the truck-frame of a sulky-plow provided with wheels A A', of a plow-beam having a joint between its ends, a wheel-landside, A', and a lifting-frame, substantially as and for the purpose described.

7. The combination of the bail E, connected with the pole D, foot-plate b, upright guide F, arched axle C, having a vertical leg attached to the plate b, sliding wheel-spindle a, connecting bars c c, and lever G, substantially as described.

265,708. PAUL SINNHOLD, St. Louis, Mo., Seed Drill, Oct. 10, 1882. Filed Feb. 20, 1882.

I have heretofore (August 29, 1865, and July 26, 1881) patented improvements in cultivators and seed drills.

The present construction is partly an attachment to and partly an improvement upon the constructions referred to. It has relation to the means used in jointing the plow-beam to its bearing, to the device used in adjusting the plow-beam laterally, to the peculiar form of nut employed in the adjusting devices, to the means used in discharging the seed from the seed-boxes, and to the draft device.

1. The combination of the beam G, the bar B, and the boss h, substantially as described.

2. The combination of the beam G, the plate I, the screw J, the bar E, and the boss h, substantially as described.

3. The combination of the bolt K', the grooved nut K, and the holder K', substantially as described.

4. The combination of the pulley M, the crank N, the pin a, having the boss n', the pitman O, the upright P, having the boss p, and the slider Q, substantially as described.

5. The combination of the slotted bar Q, the seed-box R, and the pin r, substantially as described.

6. The combination of the beams G G' and the tie G', substantially as described.

7. The combination of the chains U U, the guides V V, the thills V', the bolts W W, and the beams G G, substantially as described.

267,581. EZRA PEAK, Westfield, Ohio, Wheel-Plow, Nov. 14, 1882. Filed April 15, 1882.

The combination, in a sulky plow, of an axle having a crank extending rearwardly, a yoke extending vertically over the axle, a plow-frame adjustably suspended from the axle, and the yoke and plow adjustably suspended from the frame, substantially as described, and for the purpose set forth.

267,602. DENNIS P. SHARP, Ithaca, N. Y., assignor to Charles M. Sharp and Clarence C. Post, same place. Plow-Sulky, Nov. 14, 1882. Filed Aug. 23, 1882.

This invention relates to the adjustment of the tongue of a sulky-plow for the purpose of guiding the plow so as to take more or less land, as may be desired, the invention consisting in an improved construction of the connection of the tongue with the sulky-frame, said improvement affording greater range of adjustment, and also admitting of a ready attachment and detachment of the tongue, all as hereinafter more fully described, and specifically set forth in the claim.

The combination of the sulky-frame A, provided at its central portion with two or more holes, h, and at its forward end with the recess r, the plate e over said recess, provided with the slot s, terminating with enlarged opening d, the pole P, pivoted in one of the holes h, the bolt a, connected to the pole and passing through the slot s, and having its head underneath the plate e, and the shifting lever l, connected with the pole by adjusting nuts n, and provided with a suitable clutch for adjustably holding it in position, substantially as shown and described.

267,630. WM. H. WITT, Richland Township, Fountain County, Ind. Plow Attachment, Nov. 14, 1882. Filed July 12, 1882.

This invention relates to certain improvements in sulky-plows, and it has for its objects to provide for the automatic adjustment of the plow-beam with respect to the frame of the sulky, either vertically or laterally, as more fully hereinafter specified.

The combination, in a plow-beam attachment, of a lower plate A, having apertures B, segmental slot N, a sleeve F, and lateral trunnions B, which lie in a lower plane than the plate proper, and an upper plate G, provided with a boss F, and an aperture L, the said slot, aperture L, and a bolt M, permitting of lateral adjustment of the upper plate, whereby the course of the plow is direct and maintained, and the lower plane of the trunnions permit-

ing of the vertical movement of the plow-beam, all substantially as shown and described.

267,648. PEDRO A. FOMINAYA, Havana, Cuba, assignor to Carlos Mares, Baltimore, Md. Plow, Nov. 14, 1882. Filed Aug. 31, 1882.

1. In a plow, the combination of the beam B, the front wheels and their axle, an upright bolt, H, attached to the axle passing loosely through the beam and having on top a horizontal guide-bar, T, a pivot-pulley, R, at the rear end of the plow, and a chain, S, passed around the pulley and having its ends attached at opposite ends of the guide-bar, as set forth.

2. In a plow, the combination of the front wheels, a bar, T, to guide the front wheels, a rear steering-wheel, E, having a tiller-post, a pivot-pulley on the tiller-post, and a chain passed around the pulley and having its ends attached at opposite ends of the guide-bar, as set forth.

3. In a plow, the combination, with the mold-board and landside, of a steering-wheel at the rear, a tiller-post directly connected to the steering-wheel, and guide-levers attached to the tiller-post, as set forth.

4. In a plow, the combination of the beam A, an upright post, I, secured to the rear end of the beam, horizontal arms N, rigidly attached to the upright post, a tiller-post having its bearings in the arms, and a steering-wheel adapted to be guided by the tiller-post, as set forth.

268,280. CHARLES W. POST, Springfield, Ills. Sulky-Plow, Nov. 28, 1882. Filed May 31, 1882.

My invention consists in a locking attachment for the beams of sulky and gang plows, having the object to prevent oscillation of the forward end of the beam, as hereinafter described and claimed.

1. In a sulky or gang plow, the combination, with the plow-beam and the seat support or spring, of the bracket or arm adapted to prevent the lateral and vertical oscillation of the plow-beam while in an elevated position by the pressure thereof either against the seat-support or the plow-beam, as described, and for the purpose set forth.

2. The plate or arm H, in combination with the plow-beam B and seat spring or support C, substantially as and for the purpose set forth.

268,737. JEREMIAH G. SHERMAN, McHenry, Ills., assignor of one-half to Samuel S. Sherman, same place. Sulky-Plow, Dec. 5, 1882. Filed June 19, 1882.

This invention relates to certain improvements in sulky-plows; and it has for its objects to provide for hanging the plow in the sulky-frame in such manner that it may move as freely as when directly employed—that is, when the horses or animals are hitched directly to the elevators—and also to provide improved means for regulating the position of the plow, as more fully hereinafter specified.

1. In combination with the frame and the plow, the forward windlass and the oblique bar, connected directly to the forward end of the plow-beam and having a rope passing around the windlass, and the stop for holding the windlass, substantially as and for the purposes specified.

2. In combination with the frame and the plow, the forward windlass and oblique bar, connected to the plow-beam and the rope and forward windlass, and the rear windlass and rope and stops for holding said windlasses, all arranged substantially as specified.

269,008. CHAS. D. CARTER, Grand Rapids, Mich., assignor of one-half to Milo B. Stewart, same place. Gang-Plow, Dec. 12, 1882. Filed June 10, 1882.

My invention relates to an improvement in gang plows; and it consists, first, in the combination of a rack-bar or standard, which is secured to the top of the axle, suitable straps, which extend from the plow-frame up over the top of the rack-bar, and a toothed quadrant, which meshes with the standard, and an operating lever or spring, whereby the plow-frame can be raised and lowered and held in any desired position; second, in the combination, with the plow-frame, of suitable guiding-rods which pass up through the axle, and suitable means for raising and lowering the plow-frame, all of which will be more fully described hereinafter.

1. In a gang-plow, the combination of the axle B, having the slotted castings C, secured

to each end, the castings E, having flanges or projections to catch in the slot, and a dust-band, F, upon its outer side, the castings E having the spindle F formed as a part of it, and being held in any desired position by means of the set-screw D, substantially as shown.

2. The combination of the plow-beam, provided with a guiding rod, I, upon each side, the axle, and suitable guiding-castings M, secured upon the axle, substantially as described.

3. The combination of the plow-frame, the metallic frame secured thereto, the toothed standard, the quadrant having a lever secured to it, a spring for closing the frame, and a catch to snap into the holes in the side of the standard, substantially as set forth.

4. The combination of the plow-frame, the frame Q, made in two parts, the spring for forcing the parts together, the perforated standard, and elevating lever, substantially as specified.

269,427. MICHAEL KITE, Prairie, Mo. Sulky-Plow, Dec. 19, 1882. Filed July 17, 1882.

The invention consists in a double-hinge coupling for sulky-plows, constructed with a clamp to hold the plow-beam, and connected by a bolt with a bracket and bent brace-bracket to the draw-hall, whereby the plow-beam will firmly control the sulky and prevent side draft, while having a free lateral and vertical movement, as will be hereinafter fully described.

1. A double-hinge coupling for sulky-plows, constructed substantially as herein shown and described, and consisting of the plow-beam clamp I, the bracket O L P, the bent brace-bar K, and the bolt J, as set forth.

2. In a double-hinge coupling for sulky-plows, the combination, with a draw-hall D, of the plow-beam clamp I, the bars O L, and the bolt J, of the bent base-bar R, substantially as herein shown and described, whereby the coupling is strengthened against lateral strain, as set forth.

3. In a double-hinge coupling for sulky-plows, the combination, with the draw-hall D, of the plow-beam clamp I, the brackets O L P, the bent brace-bar R, and the bolt J, the clamp turning horizontally on the bolt, and the bracket and brace-bar turning vertically on the bail, whereby the plow-beam will firmly control the sulky and prevent side draft, while having a free lateral and vertical movement, as set forth.

270,033. ENOCH O. EATON, McKeesville, Ills. Sulky-Plow, July 2, 1883. Filed Sept. 30, 1882.

1. The combination, with the curved bar M, pivoted to the front bar of frame D and connected with the plow-beam in front of the axle and extended back over the axle, of the link Q, the elbow-lever R, and the slotted standard S, whereby said bar may be guided and raised, as described.

2. In a sulky-plow, the combination, with the frame D and the plow-beam J, of the bioged stirrup Z and the adjustable foot lever W, substantially as herein shown and described.

272,092. FRANCIS F. SMITH, Sandusky, and JOHN W. LOCKWOOD, Gypsum, assignors to the Sandusky Plow Co., Sandusky, Ohio. Plow-Sulky, Feb. 13, 1883. Filed April 27, 1882.

This invention relates especially to the plow-sulky with plow and power lift attached for which we applied for a patent on the 26th day of April, 1882; and the nature of our present improvements will be clearly understood from the following description, claims, and accompanying drawings.

1. The combination of the hand-lever L, locking device g, toothed devices N and O, bar J, upon which the plow is hung, axle a, propelling-wheel B, and treadle-lever P, provided with means for simultaneously unlocking the device g and throwing the toothed device N into gear with the toothed device O, substantially as and for the purpose described.

2. The treadle-lever P, provided with means whereby it is enabled to release the locking device g, and simultaneously operates the rack of the power-lift, substantially as and for the purpose described.

3. The locking-bolt g, provided with a lug, g', in combination with the treadle-lever P, provided with an unlocking portion, p, and a rocking stirrup, M, for throwing the toothed device N into gear with the toothed gear O, substantially as and for the purpose described.

4. The locking-bolt provided with a lug, g', and the hand-lever L, provided with a slotted clasp-guide, L', and a suitable closed guide, L'', substantially as and for the purpose described.

5. The locking-bolt *g*, applied upon an upper rigidly-connected arm of the vibrating-bar *J* and the rocking stirrup *M*, in combination with the treadle *P* and the toothed-bar *N*, the latter applied upon a lower rigidly-connected arm of the said bar *J*, substantially as and for the purpose described.

6. The combination of a sector provided with the notches *ij*, and having a plain surface between the notches thereon, and the locking device *g*, hand-lever, treadle, and power-lift mechanism, substantially as and for the purpose described.

273,292. GEORGE LISSENDEN, Stockton, Cal. Gang-Plow. Mar. 6, 1883. Filed Nov. 6, 1882.

My invention relates to certain improvements in sulky or gang plows; and it consists of a novel mechanism by which the plow-frame is connected with and supported upon the wheel-axles, of a draft-pole and its connection with the plow-frame, and of a lever, connecting-arms, and standards, whereby the plows may be raised out of the ground or let down to the proper depth.

It also consists in means for connecting the pole with the frame of the plows, and an adjusting mechanism for its rear end, which is so connected as to travel forward and back with the pole with relation to the frame, together with the means for supporting the whole upon the wheels, by which the plows will hold their position in the land and make an equal cut in land of variable quality and hardness.

1. The plow-beams *A* and the wheel-axle *C*, with the arms *L*, extending backward, and the shaft *J*, connecting these arms with the beams, in combination with the standards *K*, shaft *M*, arms *N*, links *Q*, and lever *O*, substantially as herein described.

2. The plow-beams *A*, the axle *C*, with the arms *L* and shaft *J*, and the standards *K*, arms *N*, and lever *O*, in combination with the sliding pole *B*, having its rear end connected with the shaft *J*, and a mechanism by which it may be united to or detached from the beams, substantially as herein described.

3. The plow-beams *A*, connected with the axle *C* by the arms *L*, standards *K*, levers *N*, and links, as shown, and the independent sliding pole *B*, united at the rear end with the shaft *J*, in combination with the perforated plate *U*, connected with the front of the plow-frame *A*, and the pin *X*, lever *Y*, and spring *Z* upon the pole, substantially as herein described.

4. The beams *A*, connected with the axle *C* by the arms *L*, standards *K*, and levers *N*, as shown, and the longitudinally-sliding pole *B*, having its rear end connected with the shaft *J* by the open box *K*, in combination with the plates *S* and *T*, uniting the front ends of the beams, the plate *U*, and the vertical pins *V* with their anti-frictional sleeves upon each side of the pole, substantially as herein described.

5. The beams *A* and the longitudinally-sliding pole *B*, the rear end of which has a vertical movement independent of the beams by means of the open box or arch *R*, through which the shaft *J* passes, in combination with the transverse rocking plates *S* and *T* and the longitudinal supporting-plate *U*, fixed to the plate *T* so as to support the pole and conform to its movements, substantially as herein described.

6. The plow-frame *A*, supported from the axle *C* by the arms *L*, levers *N*, and standards *K*, the sliding pole *B*, and connecting mechanism whereby the plow-frame and plows may be elevated or depressed by the movement of the pole, in combination with the transverse adjusting-lever *b* and arc or rack *d*, attached to and moving forward and back with the rear end of the pole, and the shaft *J*, and arms *L*, substantially as herein described.

7. The plow-beams *A*, connected with the axle *C* by the backwardly-inclined arms *L*, and the standards *K*, arms *N*, and links *Q*, and the sliding pole *B*, having the open arch or box *R*, enclosing the shaft *J* at the rear, and the lever *Y*, with its connecting and disconnecting mechanism, in combination with the crank-arm *F*, carrying the wheel *E*, and projecting to the rear of the axle *C*, the lever *G*, and the rack *H*, substantially as herein described.

8. To a sulky-plow having the beams *A*, supported from the axle, the sliding pole *B*, with the lever *b*, attached to and moving with the pole, and the operating-levers *O*, *G*, and *Y*, as shown, the seat *m*, supported upon the rear ends of the plow-beams and above the plows, substantially as and for the purpose herein described.

9. In a sulky-plow, the plow-beams *A*, supported from the axle by the inclined arms *L*, and the arms *N* from the standards *K*, in combination with the sliding pole *B*, connected with the arms *L* so as to raise or lower the plows, and the adjustable stops *m* upon the standards *K* to support the beams, substantially as herein described.

273,608. STEPHEN H. GARST, Greenville, Ohio. Sulky-Plow. Mar. 6, 1883. Filed Sept. 14, 1882.

The object of my invention is to dispense with the use of a tongue on sulky plows; and to this end my invention consists principally in guiding and steadying the plow from the rear by means of a wheel attached in such manner that a tongue will not be needed, the wheel being at the same time adapted to carry a part of the weight of the plow.

My invention also consists of certain means whereby the wheel may be attached to plows now in use and the tongues thereof dispensed with, and also of means for regulating and means for adjusting the wheel, and finally of the special construction, arrangement, and combination of the parts of the wheel and its attachments, all as hereinafter described.

1. In a sulky-plow, the vertical shaft *C*, in combination with the axle *F*, wheel *D*, and the lever *J*, and rod *K*, substantially as and for the purpose set forth.

2. The attachment for sulky-plows, consisting of the plate *A*, casting *B*, vertical shaft *C*, axle *F*, and wheel *D*, combined and operated substantially as and for the purposes set forth.

3. The combination, with the shaft *C* and wheel *D*, of the adjustable axle *F*, substantially as and for the purposes set forth.

4. The combination, with the vertical shaft *C*, having the slotted arm *E*, of the clamp-plates *G* and axle *F*, the plates being adapted to be adjusted in the arm *E*, as for the purposes set forth.

5. The clamp-plates *G* and *G'*, adapted to be clamped to the arm *E*, and formed with the holes *b* and *b'*, in combination with the axle *F*, having the slot *j*, and annular boss *c*, the latter being adapted to enter the countersink *c*, the plate *G'* and axle *F* being formed with or without serrations, substantially as and for the purposes described.

6. The shaft *C*, having the axle *F* attached to it, in combination with the casting *B* and spring *Q*, for preventing sudden upward movement of the shaft and axle, substantially as and for the purposes described.

7. The vertical shaft *C*, having the axle *F* and wheel *D* attached to it, in combination with the collar *Q*, for raising or lowering the beam *H*, substantially as and for the purposes set forth.

8. The combination, with the casting *B* and shaft *C*, of the spring *O* and movable collar *P*, substantially as and for the purposes described.

9. The vertical shaft *C*, in combination with the arm *E*, axle *F*, wheel *D*, and brace or the rod *N*, substantially as and for the purposes set forth.

10. The combination, with the bar *A*, casting *B*, shaft *C*, arm *E*, plates *G* and *G'*, axle *F*, and wheel *D*, of the lever *J*, and *K*, sector *I*, and lever and pawl *M*, substantially as and for the purposes set forth.

273,698. WM. MARTIN, assignor to F. Dickson, Havana, N. Y. Sulky-Plow. Mar. 6, 1883. Filed Aug. 29, 1882.

This invention relates to certain improvements in sulky-plows, and has for its object to enable the plow to readily free itself without injury from obstructions, and to be leveled when required; and to these ends it consists in the employment of a swivel-jointed connection and a sliding coupling, substantially as hereinafter more fully set forth and claimed.

1. The combination of the axle *C*, sleeve *B*, formed as described, collar *D*, having set-screw *f*, sleeve *F*, and collar *P'*, having set-screw *i*, with guide-bar *A*, having adjustable clamp-plate *a*, brace-rod *E*, and plow-beam *G*, substantially as shown and specified.

2. The combination, with the axle *C*, of the sleeve *B*, having pin or projection *c*, entering a slot, *c'*, in the guide-bar *A*, said guide-bar embracing the said sleeve *B*, and pivoted to a block, *b*, having a groove, *d'*, which receives a tongue, *d*, on the sleeve, substantially as shown and specified.

273,971. CHAS. B. DOUGLAS, Troy, Ala. Sulky-Plow. Mar. 13, 1883. Filed Oct. 24, 1882.

1. In a wheel plow, the combination of the plow-beams, the laterally adjustable clevises, the bar *G*, rigidly connected to the frame *A*, the pivotal connections of the said beams to the clevises, the slotted connecting bars, the suspension-bar *H*, the sustaining-pin thereon, and means for raising and depressing the plow beams, all constructed and adapted to operate substantially in the manner and for the purposes described.

2. A plow-standard consisting of a tube or socket, *m*, having ratchet teeth on its lower end, the shoe *n*, the foun *n'*, having ratchet-teeth formed on it, and the screw-threaded rod *g*, constructed substantially as and for the purposes set forth.

274,444. GEORGE WELIVER, Cass County, Mo. Sulky-Plow Attachment. April 10, 1883. Filed Oct. 13, 1882.

My invention relates to sulky or wheel plows; and it consists in an improved construction and arrangement of the lifting and adjusting devices, whereby the plow and land-wheel are raised, lowered, adjusted, and carried while at work in better manner than hitherto done, as will be hereinafter more clearly shown, described, and claimed.

1. In a sulky or wheel plow, the combination, with the frame *C*, of the bail *C'*, supplemental bail *J*, fifth-wheel *N*, provided with clips *P*, compound lever *I*, and ratchet *K*, arranged and operating as herein described, and for the purpose set forth.

276,193. JOSEPH RICKEY, Kankakee, Ills. Sulky-Plow. April 24, 1883. Filed April 13, 1881.

1. In a sulky-plow, in combination with the roller-wheel *A* and plow, arranged and operating as described, a supplemental roller-wheel *L*, laterally adjacent to the first, and a cutter arranged to cut vertically in a line between the roller-wheels, substantially as set forth.

2. The combination, in a sulky-plow, of a frame, *F*, mounted on wheels and provided at its rear with a rigid cross-brace, *f*, two upright guides, *G* and *Q*, secured to said brace, the curved plow-beam provided at its forward end with a perforated clevis vertically adjustable in the forward part of the wheeled frame, a lever for lifting the plow-beam, and a device on one of the upright guides arranged to engage and disengage the rear portion of the plow-beam, substantially as and for the purpose described.

3. The combination, with the wheeled frame having at its rear a cross-brace, *f*, provided with upright guides *G* and *Q*, and with the vertically-movable plow-beam *B*, of the lever *E*, connecting-rod *c*, the locking-catch *O*, pivoted on the guide *Q*, and the hand lever *H*, for swinging the locking-catch between the guides to engage and disengage the plow-beam, substantially as described.

275,956. PHILIP K. STOCKTON, St Helena, Cal. Sulky-Plow. April 17, 1883. Filed Aug. 5, 1882.

My invention relates to a new and useful sulky-plow specially adapted for use in vineyards or for the plowing of all kinds of plants which are in rows, such as corn, hops, &c.

My invention consists in combining a right-hand and a left-hand turning-plow, or two or more of them, on a frame, so as to face toward each other or away from each other, the plows being movable on said frame, so that the furrows can be thrown, two or more at a time, toward the center or away from the center.

1. In a vineyard sulky-plow, the axle *A* and wheels *B* and the frame *C*, in combination with a right-hand plow, *E*, adapted to be secured or shifted to any of the longitudinal strips upon one side of the center of the frame, and a left-hand plow, *E'*, adapted to be secured or shifted to any of the longitudinal strips upon the other side of the center of the frame, substantially as herein described.

2. In a vineyard sulky-plow, the axle *A*, wheels *B*, and frame *C*, consisting of strips *a*, converging to the front and parallel behind the axle, strips *c*, diverging behind and beyond the wheels, and parallel at their ends, cross-strip *b*, short strips *d*, and zigzag inclined strip *e*, all arranged as shown, in combination with the right and left hand plows *E* and *E'*, and standards connecting them with the frame, substantially as herein described.

276,674. WM. H. DETTER, Keaton, Ohio. Convertible Plow. May 1, 1883. Filed Aug. 15, 1882.

My invention relates to certain improvements in convertible plows; and it consists in the combination, with the carrying-frame, of an auxiliary removable frame, whereby the main carrying-frame may be employed for use as a cultivator or as a subsoil-plow and as a sulky or walking plow, as hereinafter fully described, and shown in the accompanying drawings, in which—

1. The combination, with the main frame, adjustable vertically and horizontally upon its carrying-wheels, and constructed as described, the rock-shaft K, hangers J, and cross-girt O, of the subsoil-plow frame K, all constructed and arranged for co-operation substantially as and for the purposes specified.

2. The combination, with the main frame, adjustable vertically and horizontally upon its wheel-bearings, the rock-shaft K, hanger J, and cross-girt O, of the subsoil-plow frame K, the toothed sector *s*, and a subsoil plow carrying a hand-lever adapted to engage said sector, all arranged and constructed for co-operation substantially as and for the purposes specified.

3. The frame K, carrying one or more oscillating shafts, S, and one or more toothed sectors, *s*, and a subsoil plow or plows carrying hand-levers P, in combination with the main carrying-frame, all constructed and arranged for co-operation substantially as shown and described.

4. The combination of the main carrying-frame provided with a toothed sector, the rock-shaft K, carrying a hand-lever adapted to engage said toothed sector, and the auxiliary frame K, pivoted at its rear end to the said main frame and hung at its forward end to the rock-shaft, whereby said forward end may be adjusted vertically to regulate the depth of the plow to enter the soil and lock said frame into position when adjusted, substantially as described.

5. The combination, with the side pieces, F, of the main frame provided with bearings, whereby the rock-shaft R may be directly mounted thereon, and a toothed sector connected with one of said bearings, of the auxiliary frame K, all constructed and arranged for co-operation substantially as and for the purposes specified.

6. The combination, with the side pieces, F, of the main frame and the auxiliary frame K, of the detachable girt O, all constructed substantially as and for the purposes specified.

7. The combination, with the recessed side pieces, F, and the removable lever L, of the standards P, pivoted within the recess of the said side pieces, and the toothed sector T, all constructed and arranged for co-operation substantially as and for the purposes specified.

276,975. WM. H. KREMSEK, Omaha, Neb. Plow Attachment to Wagon Gear. May 1, 1883. Filed July 24, 1882.

The invention consists in a mechanism for attaching plows to wagon-gearings, constructed with two pairs of upright tongued bars secured to the axle and bolster of a wagon-gearing by a plate placed upon the forward side of the said axle and bolster, clamping-blocks placed upon the outer sides of the lower ends of the upright bars, and clamping-bolts placed above and below the said axle and bolster. Upon the upright bars slide blocks, to which is hinged the bail, connected with the plow-beam by clamping plates and bolts. The sliding blocks are connected by hinged bars with beot levers, which are provided with pawls and catch-bars, so that the plows can be readily adjusted and controlled, as will be hereinafter fully described.

1. A mechanism for attaching plows to wagon-gearings, constructed substantially as herein shown and described, and consisting of the two pairs of tongued bars B and their fastening-plate and clamping blocks and bolts G H F I, the sliding blocks L, connecting-bars M X, bent levers N, and the bail Q, as set forth.

2. In a mechanism for attaching plows to wagon-gearings, the combination with the axle and bars B and the sliding block L, of the bail Q, the hinged bars M X, the bent levers N, and rack-plates I, substantially as herein shown and described, whereby the plow can be readily adjusted and controlled, as set forth.

277,258. GEORGE H. POWLER, Tanghannock Falls, N. Y. Sulky-Plow. May 8, 1883. Filed Feb. 20, 1883.

My invention consists of certain devices for connecting the beam of the plow to the frame of the sulky in such a manner that movement of said frame independently of the plow-beam will be permitted.

1. The combination of the yoke of the sulky-frame, and the slotted segment J, secured thereto, with the plow-beam having a transverse bar, G, the ends of which are adapted to said slotted segment, and with stops for limiting the movement of the bar G therein, as set forth.

2. The combination of the plow-beam and its transverse bar G with the yoke F and the slotted segment J, having eyes *a*, adapted to said yoke, as set forth.

3. The combination of the yoke F and its slotted segment J with the plow-beam A, having a transverse bar, G, with pins *b*, as set forth.

4. The combination of the plow-beam A and its bar G, the yoke F and its slotted segment J, and the retaining bar *d*, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

277,749. JOHN LANE, Hyde Park, Ills. Sulky-Plow. May 15, 1883. Filed Dec. 4, 1882.

This invention relates to that class of sulky-plows having mechanism for locking to the wheel, wherein the plow may be raised by the team; and the novelty consists in the construction and combination of several parts, all as will now be set out and explained.

1. In a sulky-plow, the combination of the bail E, provided with a closed end, constructed arched over the beam, rod or bolt *k'*, seated in the arms or sides of the said bail, saddle K, suspended pivotally on said rod or bolt, and thimble *k''*, seated at the end of the said saddle, all substantially as and for the purpose shown.

2. In a sulky-plow, the arched axle constructed with perpendicular sides and horizontal arms, the lifting-lever provided with the short arm and pivoted on the horizontal arm of the axle, the bail pivoted to the perpendicular sides of the axle, and the link connecting the said short arm and bail, substantially as and for the purpose set forth.

3. In a sulky-plow, the arched axle constructed with perpendicular sides and horizontal arms, the lifting-lever provided with a short arm and pivoted on the horizontal arm of the axle, the bail pivoted on the perpendicular sides of the axle, and the link connecting the said short arm and bail, in combination with a pawl attached to the lifting-lever, and with the ratchet seated on the wheel, substantially as and for the purpose set forth.

4. In a sulky-plow, the wheel B, provided with the ratchet, the lifting-lever provided with the pawl, with suitable mechanism, substantially such as shown, for locking the pawl into the ratchet and elevating the plow, in combination with the disengaging-rod provided with the nut, pin, or stop, one end of the said rod attached to the said pawl, and the other end connected to the frame, substantially as and for the purpose set forth.

5. In a sulky-plow, the lifting-lever provided with the pawl attached thereto, with the disengaging-rod attached to the said pawl, in combination with the trip-lever P, rod P, and spring T, and with the thumb-lever *t* and stop-latch P'', all substantially as and for the purpose set forth.

277,987. JAMES BUCHANAN, Indianapolis, Ind. Plow. May 22, 1883. Filed Feb. 9, 1883.

My invention relates to improvements in plows; and the objects of my improvements are, first, to lighten the draft by increasing the size of cutting-disk and operating it on the axle to which the plow is attached; second, to break the soil to a greater depth than usual, and to enrich the land by exposing more of it to atmospheric action; third, to facilitate drainage by the attachment of an adjustable drain-cutter that will form a continuous channel below the plowed surface under each furrow; fourth, to produce a plow that will work equally well either single or in gangs of two or more.

1. The combination, in a plow, of wheels W, spindles F F, with bolts *f' f'*, flanges *f f*, with ratchet-surface, ratchet-plates D and D', with slots E E, axle *a*, and cutting-disk A, substantially as described, and for the purpose specified.

2. The combination, in a plow, of spindles F F, bolts *f' f'*, ratchet-flanges *f f*, ratchet-plates D and D', lever L, bolt *l*, slot I, stay-bar H, with holes *h h'*, frame B' B', braces B' B', draft-beams B B, with anti-friction rollers *r r*, cutting-disk A, and plates *t t*, as described and specified.

3. The combination, in a plow, of axle *a*, frame B' B', braces B' B', beams B B, colter C, with holes *h h'*, and plow P, substantially as described and shown.

278,089. ROBT. C. BUCKLEY, Peoria, Ills. Sulky-Plow. May 22, 1883. Filed Dec. 27, 1882.

This invention consists in the application, in a manner hereinafter specified, of a spring or springs to a sulky or wheel plow with the view of aiding the operator in elevating the plow-blade.

In a sulky-plow, the arched frame A, having axles *a* and wheels B, and the supplemental cranked arch or bail C, hung in bearings *b* at the base of the arched frame A, combined with the plow-beam D, supported by the bail C, hand-lever *e*, and springs connecting the bail C to the bar *d*, held by the bracket *d*, all arranged substantially as and for the purposes set forth.

278,519. DANIEL R. DODGE, Niles, Mich. Wheel-Plow. May 29, 1883. Filed Mar. 1, 1883.

1. The combination, with the front plow-beam, A, the projecting cross-bar C, and the rear plow-beam, of the adjustable sleeve I, connected with the front end of the rear plow-beam, substantially as described.

2. The combination, with the front plow-beam and rear plow-beam and cross-bar C, of the adjustable sliding sleeve I, connected with the front end of the rear plow-beam, and the adjustable hook *g*, embracing said rear plow-beam, substantially as described.

3. The combination, with the cross bar C and the adjustable sliding sleeve I, having rearwardly-projecting arms, of the double pulley mounted between said arms, the slotted plates secured to the front end of the rear plow-beam and embracing the pivot-pin of the pulley, the cords secured to said pulley, and the upper and lower ends, respectively, of the slotted plate, and suitable means for adjusting said pulley, substantially as described.

4. The combination, with the plow-beam, of the slotted hanger O, the sliding bar P, carrying a spindle projecting through the slot of said hanger, and having the plow-beam as mounted thereon, the double pulley mounted on said sliding bar P, the cords secured to said pulley and to the lower end of the hanger and to the rear end of the plow-beam, respectively, and suitable means for operating said pulley, substantially as described.

5. The combination, with the sliding bar P, having the segmental notch in its upper end, of the loosely-pivoted eccentric *a*, substantially as and for the purpose set forth.

278,643. GEORGE WIARD, assignor to the Wiard Plow Co., Batavia, N. Y. Sulky-Plow. May 29, 1883. Filed Jan. 25, 1882.

This invention relates to certain improvements in that class of sulky-plows in which the wheel adjacent to the plowbar is caused to run in the furrow, and has for its object to render the movement of the plow steady and uniform.

My invention consists in that end of the improved construction of the rim of the wheel which runs in the furrow, whereby the wheel is prevented from rising from the furrow upon the land, and whereby the wheel is better enabled to resist the lateral pressure of the plow; also, of a novel construction of the devices whereby the plow-beam is laterally adjusted on the sulky-frame to regulate its position with reference to the wheel which travels in the furrow; also, of an improved construction of the hub of the wheel, whereby the wear of the metallic parts is reduced and dirt excluded from the bearing, as will be hereinafter fully set forth, and pointed out in the claims.

1. In a sulky-plow, a wheel, E, constructed with a peripheral flange or tire, *e*, on which the wheel runs, and an annular flange, *f*, projecting inwardly from the flange *e*, and arranged on the inner or land side of the wheel, whereby the wheel is enabled to resist the lateral pressure of the plow, substantially as set forth.

2. In a sulky-plow, a wheel, E, constructed with a peripheral flange or tire, *e*, on which the wheel runs, and an annular flange, *f*, arranged on the inner or land side of the wheel in an inclined position, whereby the wheel receives a tendency to work away from the land and is prevented from mounting the land, substantially as set forth.

278,875. JOHN BACHELDER, Napa, Cal. Agricultural Machine. June 5, 1883. Filed Feb. 21, 1883.

1. A bracket adapted to be attached to the frame of an agricultural machine, said bracket having sleeves, and its sides connected by a web and flanges upon the sides, substantially as and for the purpose specified.

2. In an agricultural machine, a frame having removably connected thereto a series of transverse guide-rods, in combination with one or more brackets provided with means for attaching thereto the stem of the implement, either between or to the sides of the bracket, the guide-rods passing through sleeves at each end of the brackets, substantially as and for the purpose specified.

3. In an agricultural machine, an adjustable frame having removably transverse guide-rods connected thereto, in combination with one or more brackets for holding the stem of the tool or implement, said brackets having sleeves through which the rods pass, and webs and flanges, substantially as and for the purpose set forth.

278,725. PHILLIP MOORE, Portland, Oregon. Gang and Sulky-Plow. June 5, 1883. Filed June 22, 1882.

1. In a gang and sulky plow, the axle A, having the hollow sleeve A', made in one piece, in combination with elbow-axle B, adjusting screw b, working through the top of the sleeve, set screw b', and wheels C C', operating as shown, and for the purpose set forth.

2. The combination, in a gang and sulky plow, of the plow-beam I, the standard J, having the curved rack thereon, extending above and below the beam, and the plow secured to the standard, with suitable gearing for lifting and lowering the plows, substantially as hereinafter set forth.

279,768. W.M. KIMMEL, Milton, Ind. Gang-Plow. June 19, 1883. Filed Dec. 27, 1882.

1. An intermediate frame consisting of the longitudinal beams A, provided with eyes a, adapted to attach the same to a traveling mechanical motor, and the beam B, secured diagonally upon beams A and provided at each end with vertically-adjustable casters b, and with means, substantially as specified, for independently attaching each one of a gang of plows to said diagonal beam, as and for the purpose specified, whereby the diagonal plow-attaching beam is independently mounted to run upon its own wheels, and is provided with flexible connections to attach it to a traveling mechanical motor, substantially as specified.

2. The combination, with the intermediate frame described, of the brace-beams D secured thereon, the windlass E, journaled in said braces at right angles to the line of draft, the diagonal gang of plows C, and the ropes c, connecting each plow with the windlass, as shown and described, whereby the plows will be lifted from the ground in the order of their rack, and the gang of plows and its attachments are a complete implement dependent on an engine or other mechanical motor for propulsion only.

3. The casters posts F, each slotted to receive the clevis of a plow, and provided with two or more cross-pin holes and a pin for holding said clevis loosely, and the ball-connections d, substantially as and for the purpose specified.

4. The caster-posts E, provided with vertical slots and cross-pin holes for receiving the plow-beams and hauling-pins, in combination with the two ball-hitches d, secured to each post, as shown and described.

5. The diagonal beam B and means for securing the same to a motor, in combination with the caster-posts F, balls d, and links G, as shown and described.

6. The supporting-arms H and adjusting-screws h, in combination with the plows C, each provided with two horizontal connections with the motor, whereby one of said connections may be raised or lowered to cut the plow, as described.

280,015. EBENEZER B. DANIELS, East Point, Pa., and **EDWARD A. DEWITT,** Odessa, N. Y. Plow-Sulky. June 26, 1883. Filed Nov. 20, 1882.

1. In combination with the sulky-frame B, the axle A, having its main or central portion secured stationary in a diagonal position on the sulky, and formed with pendant arms A', A'', of different lengths, to receive carrying-wheels of equal diameters, substantially as described and shown, for the purpose set forth.

2. In combination with the cross-bar C and plow P, the sleeve e, loosely encompassing said

cross-bar, and provided with the perforated elongated lug d, the hanger e, suspended from said lug, the clamps f, swiveled on said hanger, and the lever L, connected with the foot of the hanger by a rod, g, all as shown and described, for the purpose set forth.

280,479. PIERRE PAUL JACOTOT, Orgeux, France. Moving Plow. July 3, 1883. Filed Jan. 13, 1883. Patented in France June 8, '82, 149,400; Belgium Oct. 21, '82; England Oct. 21, '82; Spain Oct. 22, '82; Germany Oct. 23, '82; Austria Oct. 27, '82; and in Italy Oct. 27, '82.

My invention relates to improvements in plows; and it consists in the peculiar construction and operation of mechanism whereby the plow point or share is automatically withdrawn from the soil when the power is applied on a line at an angle to the line of draft, whereby said plow point or share is again made to automatically engage with and penetrate the soil as soon as such power is applied in a direction with the line of draft, whereby the point or share may be held in a position to prevent its engaging with or penetrating the soil during the removal of the plow from place to place or field to field, and whereby the plow is adapted for operation without guiding or holding the same, as usually, and lastly, whereby such plow may be converted into the ordinary form of plow, all as hereinafter more fully described, and specifically pointed out in the claims, and as shown in the accompanying drawings, in which—

1. In a wheel-plow, the combination, with the drive-wheel axle, an inclined disk, and the plow-beam having two grooved tracks, of a sleeve adapted for engagement with one or the other of said tracks to tilt the plow-beam, or return it into its normal position when the direction of power or the direction of horizontal motion of the drive-wheel axle changes, as described, for the purpose specified.

2. In a wheel-plow, the combination, with the drive-wheel axle and plow-beam, of the disk D and sleeves S S', the former carrying two rollers, R R, as and for the purpose specified.

3. In a convertible wheel plow, the combination, with the drive-wheel axle and plow-beam, of the detachable disk D and detachable sleeves S S', substantially as and for the purpose specified.

4. The combination, with the plow-beam B, provided with two grooved tracks and a series of perforations, of the detachable sleeves S S', substantially as and for the purpose specified.

282,207. BENJAMIN F. McCORAY, assignor to self and Alex. Nitsche, Hamlin, Kan. Sulky-Plow. July 31, 1883. Filed Dec. 16, 1882.

The combination of levers a and k with the cranked bar f, having the plow attached to it, and said bar f being mounted in the vertically-slotted cranked axles b, substantially as described.

282,929. JACOB L. RUNK, assignor of four-fifths to A. Watts, C. Rose, W. S. Forman and J. A. Watts, Nashville, Ills. Sulky-Plow. Aug. 7, 1883. Filed May 7, 1883.

My invention consists, essentially, of a contrivance of the cranked axle and adjusting devices, whereby a single lever is enabled to shift the furrow-wheel up and the plow down, and the land-side wheel up when the plow is to be let down into the ground, and when said lever is to be raised out of the ground said lever will depress the furrow-wheel, and also the landside, and at the same time raise the plow, the plow being at all times maintained in a level condition transversely to the sulky; and my invention also consists of an improved contrivance of the plate by which the plow is connected to the crank shaft to serve for a reversible colter-holder, whereby it may be shifted to hold the colter for a right-hand or a left-hand plow, as desired, all as hereinafter fully described.

1. The land-side wheel connected to the crank-shaft by a curved arm, g, and the furrow-side wheel-axle pivoted to the frame and joined to the cranked axle which carries the plow, whereby a single lever shifts the wheels and the plow, whether for regulating the depth of the plow or for wholly raising or lowering it out of or into the ground, without varying the level of the plow, substantially as described.

2. The furrow-wheel axle b, attached to bar c, pivoted to the frame, and connected to lever arm k of the crank-shaft, and the land-side wheel-axle connected to the crank shaft j by

the crooked arm g, substantially as described.

3. The lever l, pivoted to the frame at m, and connected to lever-arm h of the crank-shaft by the link k, in combination with vibrating bar c, having the furrow-wheel axle connected to it, and being pivoted to the frame at d, and connected by link g with the said lever-arm h of the crank-axle, substantially as described.

4. The clamping-plate n, for connecting the cranked axle to the plow-beam, having the socket d' for the colter-socket e', and also having the groove for the crank-axle, and being separable between said socket and groove, and the socket part being reversible, substantially as described.

282,999. THOMAS I. LUDWIG, Fremont, Ohio. Plow. Aug. 14, 1883. Filed May 2, 1883.

My invention relates to sundry improvements in plows, hereinafter specifically designated by the claims, including devices for preventing clogging or choking, for turning under weeds, &c., for turning or "jointing" the edges of the furrow-slices, so that contiguous edges of adjacent slices shall not injuriously lap, for attaching a pole to the plow-beam, for connecting a riding attachment to the plow and providing for its adjustment, and for placing the plow thoroughly under the control of the attendant.

1. The cutter C, formed with the landside C' at its lower end and curved outwardly at its upper end, as and for the purpose hereinafter set forth.

2. The combination of the plow, the cutter fixed thereto at its lower end, curved outwardly at its upper end, and terminating beneath the level of the beam, the detachable clearer D, and the detachable jointer, substantially as and for the purpose hereinafter set forth.

3. The combination of the cutter, formed with the landside, the jointer, and the bolts by which the jointer is fastened to the cutter and rendered vertically adjustable, as and for the purpose hereinafter set forth.

4. The combination of the beam, the jointed axle, the hinged tongue, the jointed leveling-lever, and the clip fastening by which the axle, the tongue, and the lever have connection with the beam, substantially as and for the purpose hereinafter set forth.

5. The combination of the beam, the clip-fastening, the tongue, having hinged connection with the beam by way of the clip-fastening, the guideway in the clip-plate, the socket-slide adjustable in the guideway, the axle jointed to the slide, the leveling-lever, and the adjusting-bar having jointed connection with the standard of the axle and actuated by the leveling-lever, substantially as and for the purpose hereinafter set forth.

6. The combination of the beam, the clip-fastening, the leveling-lever jointed to the clip-fastening, the tongue, its heel-strap jointed to the clip-fastening, and the second heel-strap of the tongue connected with the leveling-lever, substantially as and for the purpose hereinafter set forth.

7. The combination of the beam, the leveling-lever, the axle, having jointed connection with the beam, the carrying-wheel, the adjusting-bar, having jointed connection with the axle, the hollow trunnioned rocking guideway supported by the leveling-lever, and the detent-lever, substantially as and for the purpose hereinafter set forth.

8. The combination of the beam, the clip fastening, the hinged tongue, the jointed axle connected with the tongue, the carrying-wheel, the leveling-lever, the adjusting-bar, the axle-standard, and the guideway and detent of the leveling-lever, substantially as and for the purpose hereinafter set forth.

9. The combination of the beam, the carrying-wheel, its axle, having jointed connection with the beam, the leveling-lever, the adjusting-bar, the axle-standard, with which the adjusting-bar has vertically-adjustable jointed connection, and the rocking guideway, and the detent of the leveling-lever, substantially as and for the purpose hereinafter set forth.

10. The combination of the beam, the leveling-lever, the jointed axle, the carrying-wheel, the adjusting-bar, its guideway and detent carried by the leveling-lever, the axle-standard, with which the adjusting-bar is adjustably connected, and the driver's seat adjustable on the adjusting-bar, substantially as and for the purpose hereinafter set forth.

11. The combination of the beam, the axle, having jointed connection therewith, the hinged tongue, its side arm, provided with

the swiveling eyebolt, the link rod jointed thereto, the axle having jointed connection with the link rod, the axle standard, and the adjustable brace-link rod jointed to the standard, and the tongue connected link rod, substantially as and for the purpose herebefore set forth.

12. The combination of the beam, the jointed axle, the axle-standard, the adjusting bar, the driver's seat, the tongue hinged to the beam, the link rod, having jointed connection with the tongue and axle, and the brace link-rod, substantially as and for the purpose herein before set forth.

283,102. CHARLES A. HAUGUE, assignor to Furst & Bradley Manufacturing Co., Chicago, Ills. Sulky-Plow. Aug. 14, 1883. Filed Oct. 10, 1882.

1. The spindle A and spindle-bar B, bracket or head C, attached to the spindle-bar, bracket or head D, attached to the frame, and the side or vertical piece, K, of the frame, in combination with the rack G, lever H, bolt J, link I, and bar J, substantially as and for the purposes specified.

2. The spindle-bar B and bracket or head C, in combination with the bracket or head D, strap or staple E, anti-friction rollers F, and side or vertical piece, K, of the frame, substantially as and for the purposes specified.

3. The anti-friction rollers F, in combination with a spindle-bar and a support for the rollers, for removing friction and preventing binding between the parts, substantially as and for the purposes specified.

283,364. FRANK A. HILL, Benicia, Cal. Plow and Cultivator Frame. Aug. 21 1883. Filed Mar. 30, 1883.

My invention relates to an improved manner of and means for adjusting the frame of a gang plow or cultivator vertically; and the object of the invention is to connect the frame-work by adjustable arms to a single operating lever, so that the front and rear ends of the frame may be simultaneously adjusted by one man at one operation.

The invention consists in combining with the frame-work and carrying-wheels an operating-lever and adjustable connections, in the manner now to be more fully described.

1. The combination, with the frame and the carrying-wheel 15, of the axle having double cranks, the arm connected to such axle, and the lever 6.

2. The combination of the frame, the lever 6, the cranked axle having the wheel 15 journaled thereon, the caster-wheel 17 and its sliding standard, and the wheel 16, connected to the lever 6 by the arm 7.

283,585. OSCAR N. FELTZ, Carrington, Mo. Gang-Plow. Aug. 21, 1883. Filed May 18, 1883.

1. The combination of the plows, constructed substantially as described, the castings bolted to the upper front ends of the same, and the flat spring beams seated in recesses in the said sockets and secured by vertical bolts and clamps, substantially as set forth.

2. As an improvement in gang-plows, the combination of the frame, the axle, a block or casting secured upon the same and having gradually-ascending steps, a lever pivoted upon the front end of the frame, and adapted to rest upon the said steps, a longitudinal slotted bar or brace, a diagonal pivoted bar having a stud working in the slot in said bar, a lever pivoted to the longitudinal brace, chains, or rods connecting said lever and that pivoted to the front bar of the frame with the diagonal pivoted bar, and the spring beam plows secured to the noder side of the latter, substantially as and for the purpose herein shown and specified.

283,877. AUGUSTUS FISHERBUCK, Marion, Ind. Sulky-Plow. Aug. 28, 1883. Filed April 20, 1883.

1. The combination of the crank axle carrying the arm B, the rod Z, pivoted to the said arm and working through an eye in the bottom of an operating-lever, and formed with the screw threaded portion, the nut D, working on this screw threaded portion, the spring C, arranged around the bar Z, between the end of the lever and the nut, and the operating-lever arranged to support the free end of the rod Z and working against the spring, as and for the purpose set forth.

2. The combination of the crank axle arranged to carry the plow, the governing-lever L, adapted to be fixed in position, and a con-

necting rod pivoted to the said lever and to the axle, this rod being arranged to pass through the lever at its bottom without altering its position when the plow strikes an obstruction, and a spring arranged on the rod to return it to its normal position, as set forth.

3. The combination of the lever J, carrying the journaled cross piece X at its lower end, said cross piece being provided with the perforation Y, the rod Z, passing through the perforation and pivoted at its other end on the crank-arm B, the spring C, arranged on the rod, the nut D to regulate the tension of the spring, the crank or arm B, fixed on the axle, and the crank axle adapted to carry the plow beam, as set forth.

4. The combination of the axle, the block F, provided with the eye G, by which it is arranged on the axle, and having the top projecting flanges, H, I, formed with the recesses P in their top edges, the bolts L, projecting up from the block and carrying the nuts M, and the plow beam having the wings or extensions K, through which the bolts L pass, as set forth.

284,036. JOHN H. McBRIDE, Des Moines, Iowa. Hiding Attachment for Plows. Aug. 28, 1883. Filed June 23, 1883.

1. The clevis a, having perforated ears a', a'', the rack b, and the frame c, formed integral with each other, substantially as shown and described, for the purposes specified.

2. The clevis a, the rack b, the frame c, the caster-wheel beaver d, the lever g, and the link g', arranged and combined relative to each other and a plow beam, substantially as shown and described, to operate in the manner set forth, for the purposes specified.

3. The wheel-beaver h, having a shoulder, h', and vertical projection h'', and the lever n, in combination with a plow beam, substantially as and for the purposes set forth.

4. The axle-frame r r', having a rack, r'', perforated ears s s', and flange s'', formed integral therewith, substantially as shown and described, for the purposes specified.

5. The axle-frame r r', r', s s', carrying a driver's seat, the rack r'', the wheel x, the wheel-beaver h h', h', carrying a wheel, m, and the lever a, arranged and combined relative to each other and a plow-beam and plow, substantially as shown and described, to operate in the manner set forth, for the purposes specified.

285,022. JAMES R. ERVIN, Marshall, Mo. Sulky-Plow. Sept. 18, 1883. Filed Jan. 26, 1883.

1. The combination, with the crank axle M, supporting wheel M, rack G, and lever I, secured to the end of axle M, of the furrow-wheel G, sliding standard H, sliding bar P, and connecting-bar K, substantially as set forth.

2. The combination, with the plow-beam, plow, skeleton frame, axle, large wheel, and furrow-wheel, the latter journaled on a vertically-movable slide, of the hand-lever rigidly secured to one end of the axle, the sliding bar J, and the bar K, all of the above parts combined and adapted to operate as described.

285,412. GEORGE W. EUNT, Muscatine, Iowa. Wheel-Plow. Sept. 25, 1883. Filed Dec. 14, 1882.

The invention consists in the plow beam having longitudinal slot, in combination with a standard attached to the forward part of a landside, which is hinged at its rear end to a fixed standard, to adapt the plow-point to be raised and lowered; and, also, in the combination, with the slotted plow beam and the movable forward standard, of two levers, their connecting rods, and a rack-bar and its catch plate, whereby the plow point can be readily raised and lowered and will be securely held, as will be hereinafter fully described.

In a wheel-plow, the combination, with the slotted plow-beam D and the movable forward standard, U, of the levers V or W, the connecting-rods V Z, the rack-bar X, and its catch plate Y, substantially as herein shown and described, whereby the plow point can be readily raised and lowered and will be securely held, as set forth.

285,749. ROZANDER S. HIGGINS, Benton Harbor, Mich. Sulky-Plow. Sept. 25, 1883. Filed Jan. 25, 1883.

My invention relates, generally, to that class of agricultural implements called "sulky-plows," and particularly to the arrangement of levers for controlling the movements of the plow itself, so that the depth of the furrow made by the plow may be easily regulated, and the employment of a caster-wheel,

as hereinafter described. Another advantage to be obtained by my implement is the avoidance of all unnecessary tipping of the plow.

1. In a sulky or other wheel plow, the combination of a lever for rocking the plow and moving the axle, provided on one side with a locking mechanism for engaging with a segment rack attached to the plow, and on the other with a segment-rack for engaging the locking device of a second lever, which lever is adapted to move the axle alone, as described.

2. The combination of the axle G, having the arm k and lever J rigidly attached to it, with lever K, carrying on it the rack j, the link k', the said arm and link being provided with means of adjustment, as described, the bail G, plate h, and plow-beam H, all substantially as and for the purpose set forth.

3. In combination with the spindle x of the axle C, the seat L, adjustable jointed seat-support I, spring T, and strengthening rod F, and beam A, all substantially as and for the purpose set forth.

285,885. JAMES M. FIX, Bird's Landing, Cal. Gang-Plow. Oct. 2, 1883. Filed Feb. 5, 1883.

1. In a gang-plow, the cranks D, having a bearing at each end adapted to receive the wheels forward or back, substantially as herein described.

2. The racks G, in combination with the spring-levers F, having bifurcated-spring ends e e, and the guards d for limiting the movement of said levers in disengaging themselves from the rack, and the means for locking said levers in the racks, consisting of the spring-levers P, engaging with racks p, the lower ends of said levers being adapted to enter between the guards d and racks G, or to withdraw therefrom, substantially as and for the purpose herein described.

3. In a gang-plow, the pivoted axle C, having the cranks D for the wheels, and a means for turning said axle obliquely with the line of travel, in combination with the levers F for operating cranks D, and their corresponding racks G bolted down directly upon the axle, substantially as and for the purpose herein described.

4. In a gang plow, the pivoted axle C and the racks G, bolted down directly thereon, said axle being made wide to form a secure and rigid bearing for said racks, in combination with the cranks D and the levers F, operating them and engaging with said racks, substantially as and for the purpose herein described.

286,433. WM. C. HENDERSON, Sulphur Springs, Texas. Sulky-Plow. Oct. 9, 1883. Filed June 29, 1883.

The invention consists in a sulky-plow constructed with the sliding block carrying the adjustable wheel locked in place by a sliding spring-pressed bolt and withdrawn by means of an elbow-lever. The sliding wheel carrying block is provided with rack-teeth engaging with the teeth of a double gear wheel placed loosely upon the journal of the plow-crank, and connected with the plow-crank lever by a pawl, whereby the machine can be leveled and the plow adjusted by means of the same lever, as will be hereinafter fully described.

1. A sulky-plow constructed, substantially as herein shown and described, with the sliding block carrying the adjustable wheel locked in place by a sliding bolt and operated by a loose gear-wheel connected by a pawl with the adjusting lever attached to the plow crank, as set forth.

2. In a sulky-plow, the combination, with the frame A and the sliding block N, carrying the wheel L, of the sliding bolt P, the spring R, and the elbow-lever S, substantially as herein shown and described, whereby the said block can be readily released, as set forth.

3. In a sulky-plow, the combination, with the sliding block N, carrying the wheel L, and provided with rack-teeth T, the plow-crank P, and the rigid lever V, provided with the pawl W, of the double gear wheel U, substantially as herein shown and described, whereby the machine can be leveled and the plow adjusted by means of the same lever, as set forth.

286,468. ROLLA L. MILLSPAUGH, Winkfield, Kan. Wheel for Sulky Plow. Oct. 9, 1883. Filed April 14, 1883.

My invention relates to wheels for sulky-plows, the object being to provide such wheels with a removable circular center adapted to serve as a stalk cutter.

Heretofore various forms of cutting flanges have been formed integral with colters and wheels of plows to cut sods and assist in guiding the plow. The principal objections to these constructions are that they render necessary the removal of the entire wheel in case of breakage or other damage to the cutting-flange, and they necessitate the constant use of the flange in plowing.

My improvement is designed to remedy these defects, and to provide a circular cutter adapted to be applied to any form of wheel, and removed when the work to be done does not require the cutter.

1. The combination, with a wheel, of a removable cutter consisting of a ring adapted to be secured thereto by clamping devices bent to engage the felly of the wheel and bolted to said cutter, substantially as set forth.

2. The combination, with a wheel, of a removable cutter consisting of a ring adapted to be secured centrally upon the periphery of the wheel by means of two-part clamps bent to engage the felly of the wheel, the outer ends of said clamps being bolted to the cutter, substantially as set forth.

286,517. HARRY WIARD and WM R. BULLOCK, Syracuse, N. Y. Sulky-Plow. Oct. 9, 1883. Filed April 28, 1883.

1. In a sulky-plow, the combination, with the sulky frame, of a crank-axle having its two arms pivoted on said frame at points directly opposite and in line with each other, one of said arms being extended rearward and below its pivot and formed with the furrow-wheel axle, and the land wheel axle attached to the sulky-frame separate and independent of the crank axle, substantially as shown.

2. In combination with a plow, a main frame supporting the driver's seat, and provided with a stationary axle for the land wheel, a crank axle pivoted on said frame, and having fixed to it the furrow-wheel axle eccentrically in relation to the land-wheel axle, and a lever fixed to the crank-axle and fulcrumed on the main frame in such relative position as to swing the furrow-wheel axle forward and backward underneath the fulcrum of the lever, substantially as set forth.

3. In combination with a plow, an arched main frame provided with a stationary land-wheel axle, the driver's seat supported on said frame, a crank axle pivoted at its arms on the main frame, and having one of said arms extended below its pivotal support and terminating with an axle for the furrow-wheel, and a lever fixed to the furrow-wheel axle and fulcrumed on the main frame above said axle, substantially as set forth.

4. In combination with the sulky-frame, the crank axle terminating at the end of one of the crank arms with a pivotal connection on the frame, and having the other crank-arm of greater length and inclined rearward, and terminating with the furrow-wheel axle, and supported by an arm pivoted on the main frame, and the land wheel axle attached to said frame separate and independent of the crank-axle, substantially as shown and set forth.

5. In combination with the main frame A, provided with the stationary axle *a*, the crank axle B, pivoted at the end of the arm *b*, and having the longer arm, *b'*, extended rearward and formed with the furrow-wheel axle *a'*, the arm *c*, connected to the arm *b'* and pivoted on the frame above the axle *a'*, the lever L, fixed to the furrow-wheel axle, and having the arm *d* hinged to the pivotal pin of the arm *c*, and provided with the dog *e*, and the ratchet *f*, fixed to the wheel-hub *g*, substantially as shown and set forth.

6. In combination with the frame A, supporting the driver's seat, and provided with the stationary axle *a*, the crank axle B, hinged on the frame A, and having the arm *b* inclined rearward and extended below its support on the frame, and provided at its extremity with the furrow-wheel axle *a'*, the lever L, fixed to the furrow-wheel axle, and having the arm *d* hinged on the pivotal pin of the arm *c*, and provided with the dog *e*, and the segmental rack R, secured concentric with said pivotal pin, substantially as described and shown.

7. In combination with the ratchet on the wheel-hub and the quadrant on the frame, the duplex dog, consisting of a single bar having its lower end adapted to engage the ratchet, and provided at the quadrant with a tooth adapted to engage therewith, substantially as described and shown.

8. In combination with the ratchet on the wheel-hub and the quadrant having teeth or notches on its under side, the lever provided with a longitudinal way, the rectilinear recip-

rocating duplex dog having its lower extremity adapted to engage the ratchet, and provided at the under side of the quadrant with a tooth or lug, and a spring arranged to normally sustain the dog in its elevated position, substantially in the manner set forth and shown.

9. In combination with the ratchet on the wheel-hub, the quadrant provided on its under side with a series of notches and on top of its forward end with an upward-projecting guard, the rectilinear reciprocating duplex dog, having its lower end adapted to engage the ratchet, and provided with lugs *h* and *i*, respectively, below and above the quadrant, substantially in the manner and for the purpose specified and shown.

10. In combination with the frame A, the crank axle B and lever L, fixed to said axle and fulcrumed on the frame, the quadrant R, pivoted on the fulcrum of the lever and provided with slots *l* *l'*, and the clamping bolts *m*, fastening the quadrant on the frame, substantially as described and shown.

11. In combination with the frame A, any integral with it the serrated collar *p*, the arm *r*, formed in one piece with the serrated collar *p*, clamped on the collar *p*, and provided at the opposite end with the sleeve *t*, and the axle *a*, passing through said sleeve and secured thereto, substantially as described and shown.

12. The collar M, composed of two parts, *u* and *u'*, one of said parts being provided with a lower extension, an upper projection, 5, and an eye, 6, in the latter, and the other part being formed with a lower extension and with an upward-projecting hook, 7, in combination with a bolt or clamp applied to the lower end of said parts, substantially as described and shown.

286,540. JOHN I. HOKE, South Bend, Ind. Sulky-Plow. Oct. 9, 1883. Filed April 14, 1883.

1. The combination of the plow, the suspension-loop, and the adjustable connecting-loop, with the vertically-adjustable bail, a hand-lever, and a leaf-spring, all constructed and adapted to operate substantially in the manner and for the purposes described.

2. The combination, in a sulky-plow, of the long loop *a'*, fixed to the plow-beam, the adjustable loop, through which loop *a'* passes freely, a pivot beam, a vertically-adjustable bail, and a lever fixed to one of the cranked arms of this bail, and a spring, T, all constructed and adapted to operate substantially in the manner and for the purposes described.

3. For the purpose of actuating the bail Z from which the rear portion of the plow is suspended the hand-lever Y, the spring T, and its loop *t*, applied to the said bail, substantially as described.

4. The combination of the extensions of the U-shaped frame back of the arched axle, the vertically-movable bail, the plow suspended from this bail, and laterally adjustable by means of a long loop and slide, a leaf-spring, and a hand-lever connected thereto loosely, all constructed and adapted to operate substantially in the manner and for the purposes described.

5. The combination of the bail Z, the frame C, the hand-lever Y, the spring fast on the furrow end of the said bail, and the loop *t*, and the notched segment and catch, all constructed and adapted to operate substantially in the manner and for the purposes described.

6. The combination of the jointed tongue, the plow-beam, a draft tongue, articulating vertically, a spring, J, an adjustable loop for this spring, and the beam K, all arranged and adapted to operate substantially in the manner and for the purposes described.

7. The combination of the spring J, the extension M, the tongue F, and the loop L, all constructed and adapted to operate substantially in the manner and for the purposes described.

8. The combination of the jointed tongue, hinged at H, the heart-shaped cam, the latch, the retaining parts of this latch, and the section F, all constructed and adapted to operate substantially in the manner and for the purposes described.

9. The combination, with the heart-shaped cam, its latch, the connecting-rod, the draw-bar, and the clevis, all constructed and adapted to operate substantially in the manner and for the purposes described.

10. The combination of the double or heart-shaped cam, the connecting-rod passed through

a hole in an offset shoulder, K, the collar *c'*, and the adjusting nut on said connecting-rod, all constructed and adapted to operate substantially in the manner and for the purposes described.

11. The combination, in a sulky plow, of a sectional pivoted tongue, having a joint which admits of lateral movement, a joint which admits of vertical movement, an automatic engaging and disengaging device, and a spring which passes through an adjustable loop, all constructed and adapted to operate substantially in the manner and for the purposes described.

287,034. PERIES LINCOLN, Coldwater Mich. Sulky-Plow, Seeder and Cultivator. Oct. 23, 1883. Filed April 27, 1883.

1. The combination of the bent axle B, carrying grooved wheels *d* and *d'*, the side bars, *b* and *b'*, and the notched cross bar *p*, with the levers *g* and *g'*, hinges *s*, the connecting-links *r* and *r'*, and the bent operating-rods *j* and *j'*, all arranged and operated as shown.

2. In a sulky-plow, the combination of the frame A, having projecting axle-arms *a'*, and loose clips, the bent axle B, carrying grooved wheels *a* and *a'*, and the wheel *h*, having projecting pins for the reception of lever *a*, and the seed-boxes E and E', with the foot-treadles *g'*, the bent operating-rods *j* and *j'*, and the levers *g* and *g'*, all arranged and operated substantially as shown.

287,336. GARLAND B. ST. JOHN, Cedar Rapids, Iowa. Rolling Landside-Culter. Oct. 23, 1883. Filed Nov. 10, 1882.

The nature of the invention consists in the vertically-adjustable revolving colter placed on the landward side of the plow, at a suitable distance therefrom, to cut the soil for a furrow in advance of the one being turned, all as will now be more fully set out and explained. The manner of connection to the plow is unimportant. It may be either connected to the trunk of a wheel-plow by suitable adjustments by raising and lowering the colter, or arranged to connect upon the plow-standard provided with adjusting devices. I deem the manner shown in the accompanying drawings as simple and effective, a brief description of which I will give by reference to the said drawings.

1. The vertically adjustable revolving colter placed on the landward side of the plow and opposite thereto and at a suitable distance therefrom, to cut the soil for a furrow in advance of the one being turned, substantially as described.

2. In combination with a plow having a roller-colter, as described, the arm C, extending at right angles from the beam, to the end of which the colter is attached, and whereby the colter is capable of horizontal and vertical adjustment, substantially as described.

287,622. JEREMIAH CALEY, Basil assignor of two-thirds to C. Schreppermer and G. W. Mathis, Clay County, Ind. Adjustable-Frame Sulky. Oct. 30, 1883. Filed June 23, 1883.

My invention relates to an improvement in adjustable frames for sulky-plows and other analogous purposes, all of which will be more fully hereinafter described, and pointed out in the claims.

1. The lever L, suitably fulcrumed to the fixed frame, the rod *c*, and lever *l*, fixed to the crank of the cross-rod *fl*, in combination with the sliding block S', having the arms S, T, substantially as described, and for the purpose set forth.

2. The standard F', having the wheels W journaled therein, in combination with the sliding block S', having arms S, T, the cross-rods *fl* *cr*, and the lever L, fulcrumed to the standard F', said lever being provided with the extension R and hanger Q, substantially as described, and for the purpose set forth.

287,851. THOS. B. NUTTING, assignor to himself and Thos. B. Nutting, Jr., Morristown, N. J. Gang and Sulky-Plow. Nov. 6, 1883. Filed Feb. 14, 1883.

The invention consists in a gang and sulky plow constructed with wheels and an axle, with which the plow is connected by levers, connecting-bars, and a three-armed lever, so that the plow will be held securely, and can be readily raised and lowered. The tongue is connected with the forward end of the beam carrying the plow by two connecting-plates, so that the said tongue can be adjusted to

teams of different heights, while the said beam remains level, as will be hereinafter fully described.

In a gang or sulky plow, the combination, with the horizontal plow beam H and the frame-beam D, of the link I, pivoted to the rear end of beam D and to the plow-beam, the approximately bell-crank-shaped levers J, pivoted at about their centers to near the forward end of beam D, and hand-lever N, connected to the beam D and to the lever J by means of the compound toggle connection K L M, whereby the plow is drawn through the ground without causing downward pressure on the bottom of the furrow, substantially as set forth.

288,341. CLEMENT A. KELLOGG, Columbus, Ohio. Sulky-Plow. Nov. 13, 1883. Filed June 29, 1883.

1. In a sulky plow, the combination, with the frame, of rods L, secured to and projecting downward therefrom, and provided with clips I, swinging yoke N, journaled in said clips I, and having a laterally adjustable plow-bearer moving thereon, as set forth.

2. In a sulky plow, the swinging yoke N, journaled in rods L, projecting downward from the frame, in combination with a segment rack bar, Q, lever Q', pivoted in a slot formed in the elbow-arm Q', and a link, Q'', encircling the yoke at its lower end, and provided with a bifurcated upper end, in which the elbow-arm is pivoted, as set forth.

3. In a sulky plow, the combination, with the frame C and its braces and beams, of a rod, O, passing beneath the beams and connecting the braces, rods L, projecting downward from the frame, a swinging yoke, N, journaled in said rods L, and carrying a laterally adjustable plow-bearer, and the plow having its beam inserted through a groove of the plow-bearer and secured thereto, the front end of said beam passing under and held loosely against the rod O, as set forth.

4. In a sulky plow, the combination of the frame C, having rods L, secured thereto and extending downward parallel with the lower portion of said frame, and rods M, connecting the lower ends of said rods L to the frame, with the yoke N, journaled in clips I of the rods L, and provided with a laterally adjustable plow-bearer, as set forth.

288,362. HENRY S. PALMER, Santa Ana, Cal. Gang-Plow. Nov. 13, 1883. Filed April 10, 1883.

These improvements consist in details of construction and in the means for leveling and regulating the depth of the plows, as will hereinafter fully appear.

The present construction of levers by which the cranks or crank-axes upon which the wheels are mounted or operated renders it often a matter of some difficulty to raise the plow out of the ground or regulate their depth. It is the object of my invention to render this operation easy, as I shall show.

The combination, in a gang plow, of the axle D, formed at one end with the fixed crank E and pinion K, and having a segment-lever, N, and rack L, with the loose sleeve G, having the crank E' and pinion J, the rack standard H, and the segment-lever J, these parts being adjustably secured to the axle, substantially as and for the purpose set forth.

288,873. SEYMOUR K SEELYE, Hudson, Mich. Sulky-Plow. Nov. 20, 1883. Filed July 20, 1883.

The object of this invention is to prevent the tongues of sulky plows from springing down, and thus to promote uniformity of depth in plowing, and increase the durability of the shares and other parts of the plows.

The combination of a jointed tongue and a jointed truss rod, J, the rod-joint being directly under the tongue-joint, as and for the purpose specified.

288,993. JOHN F. GEHRKE, Platteville, Ills. Sulky-Plow. Nov. 27, 1883. Filed April 19, 1883.

1. In the sulky plow described, the combination of the frame F, shaft a, having the crank ends c' and sliding socket joint B', plow beam B, levers a and g, and notched segment g', all adapted to operate as and for the purpose set forth.

2. The combination of the frame F, rack shaft a, having the cross-rack a' and ratchet R, pawl b, lever c, and plow beam B, attached to the shaft a by means of the ball and socket joint B', all adapted to operate as and for the purpose set forth.

3. In the sulky plow described, the mold-board P, having the shares P' and P'', in combination with the shoe H, all adapted to operate as and for the purpose set forth.

288,998. WM. H. HARROD, Sellersburg, Ind. Sulky-Plow. Nov. 27, 1883. Filed May 21, 1883.

This my invention relates to a certain new and useful improvement in sulky plows, consisting in the application of a third wheel, hinged to the rear end of the beam, for the purpose of supporting it to prevent the tongue from rising in backing the plow from under roots or other obstructions, without which it is almost impossible to extricate it. This last-named third wheel is not intended to travel upon the ground at all times, but is held up by means of a lever at the side of the beam while the plow is in operation; but in case of obstruction it is lowered and pressed firmly on the ground, and by the act of backing the plow the tongue will be slightly raised and bring the weight of the plow upon the wheel, and thereby render it easily extricated by backing.

The object of this my invention is to provide a new and useful device for the purpose of supporting the rear end of the beam of sulky plow, in order to prevent the tongue from rising in backing it from under roots or other obstructions while in operation, without which it is almost impossible to extricate it when obstructed.

In combination with the beam of a sulky plow, the hinged wheel H, and links I, I, by which it is hinged to the beam, with connecting-rod J, and lever K, by which the wheel is operated, substantially as herein described, and for the purpose set forth.

289,223. ROSWELL M. CLARK, McPherson, Kan. Wheel-Plow. Nov. 27, 1883. Filed April 23, 1883.

1. In a wheel plow, the rigid beam A, supported by a wheel at the rear of the beam, the plow, the jointed frame connected to the plow and to bearings on the main frame at the rear thereof, and the lever for operating the jointed frame independently of the beam, to elevate and depress the plow, substantially as and for the purpose set forth.

2. In a wheel plow, a jointed push frame, the plow, a friction roller for supporting the plow, and a supporting link connecting the push frame and beam, substantially as and for the purpose set forth.

3. In a wheel plow, the combination of the plow, the jointed push frame having a fulcrum between its ends, and connecting the plow and main frame, a lever for operating the push-frame to elevate and depress the plow-point, and a roller behind the plow, substantially as and for the purpose set forth.

4. The combination of a plow, side support carrying a revolving cutter, and adjusting devices, whereby the lateral and vertical positions of the cutter may be varied, substantially as set forth.

289,798. ALBERT BALL, Canton, Ohio. Sulky-Plow. Dec. 11, 1883. Filed Dec. 26, 1882.

1. The yoke P, having rigidly connected thereto the frame C, for supporting the axle D, and the axle G, in combination with the recessed bed-plate G', pivoted to the yoke, and the turn-table H, connected to the bed-plate by a central bolt or pivot, and having attached the plow-beam, substantially as and for the purpose set forth.

2. The frame C and axle D, having ratchet wheel E and the yoke P, rigidly connected to said frame, in combination with the pawl a, spring c, and lever K, pivoted thereto, and the lever J, rigidly secured to the frame, substantially as and for the purpose specified.

3. The combination, with lever J, rigidly connected to frame C, of the notched segment L and arm E, secured to the tongue O, the lever K, dog f, and pivoted trip lever b, constructed and arranged to operate substantially as and for the purpose specified.

4. The frame C, supporting the axle D, and the ratchet-wheel E, connected thereto, and the lever J, rigidly connected to the frame, in combination with the pawl a, spring c, lever K, having dog f, the trip lever b, notched segment L, and arm E, substantially as and for the purpose specified.

5. The pivoted bed-plate G' and yoke P, rigidly connected to the frame C, in combination with the axle D, notched wheel E, and levers J K, substantially as and for the purpose specified.

290,107. EUGENE POWELL, Delaware, Ohio. Sulky-Plow. Dec. 11, 1883. Filed Feb. 15, 1883.

This invention has relation to plow sulkers for right and left hand plows; and is designed as an improvement on the invention granted to me in Letters Patent No. 263,577, dated August 29, 1882; and it consists in the construction and novel arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the claims appended.

1. In a plow sulky, the frame-bars F F' and curved bars G G, in combination with the pivoted bars K K, having the ratchet-seats, the levers N N, and the caps Q Q, and fastenings, substantially as specified.

2. In a plow sulky, the combination, with the frame-bars F F' and curved bars G G, of the intermediate cross bars, I I, having angular ends I' I', extending outwardly, and the arched racks C O, substantially as specified.

3. In a plow sulky, the combination, with the vertical perforated arms H H, secured to the main frame, of the pivoted bolts T U, and their operating levers i c, substantially as specified.

291,359. JOHN A. KNEEDLER, Grant, Pa. Plow. Jan. 1, 1884. Filed Sept. 4, 1883.

1. The combination of a frame mounted on wheels and having a short rigid tongue at its forward end, a tongue hinged a distance from its rear end to the outer end of the rigid tongue, a plow supported from the frame and hinged with the forward end of its beam to the rear end of the hinged tongue, and means for raising and lowering the rear end of the hinged tongue, as and for the purpose shown and set forth.

2. The combination of a wheel supported frame having a rigid tongue at its forward end, a tongue hinged a distance from its rear end to the end of the rigid tongue, a plow supported adjustably from the frame and having the forward end of its beam hinged to the rear end of the hinged tongue, flat bars having longitudinal slots at their lower ends sliding upon bolts at the forward end of the plow-beam, and having perforations at their upper ends, a shaft rocking in bearings upon the rigid tongue forming cranks upon its ends pivoted in the said perforations, and having an arm at one end, a connecting-rod hinged to said arm, and a lever pivoted at one end upon the frame and having the connecting-rod hinged to it, as and for the purpose shown and set forth.

291,975. BENJAMIN S. BENSON, Baltimore, Md. Sulky-Plow. Jan. 15, 1884. Filed May 8, 1883.

1. The plow-beam having its front end bent first up and then down, in combination with the vertical shaft C, arranged in bearings on the beam, and having a horizontal draft-arm, C', and an arm, C'', at right angles to both the shaft C and its draft-arm, and provided with the wheel D, as and for the purpose described.

2. The combination of the plow-beam, the offsetting brackets E E, the vertical tubes F G, cross bar H, the screw-threaded wheel-standards F' and G', the adjusting screw-rods P' P', the said standards and screw-rods being contained in the tubes F and G, as and for the purpose described.

3. The combination, with the adjusting rod G' and of the crank G'', pivoted to the rod, of locking projection b', the hand hold b'', and spring b', as and for the purpose described.

4. The combination, with the rear crank-axes and the plow beam, of the drag bars L L, having a downwardly projecting arm, M, bearing a horizontal rotating wheel adapted to bear against the wall of the preceding furrow, and made vertically adjustable, substantially as shown and described.

5. The combination of the platform, the adjusting bar O, the lever N, the drag bars L L, and the arm and wheel M M, substantially as shown and described.

6. The combination, with the collar-wheel axle, of the lever Q, bearing wheel R, and the push bar S, adapted to be projected into the earth, to cause the draft of the team to throw the plow and collar out of the ground, substantially as described.

292,304. THOS. T. HARRISON, Ansbrey, Kan. Sulky-Plow. Jan. 22, 1884. Filed Oct. 22, 1883.

1. A sulky plow constructed with the movable part S of the tongue connected with the furrow-wheel by a lever, Z, adjustably se-

erred to a crank arm, Y, which is attached to or forms part of the swiveled rod X, in combination with the furrow-wheel V, directly operated by said rod X, substantially as set forth.

2. In a sulky plow, the combination, with the movable part S of the tongue, and the crank arm Y of the rod carrying the crank axle of the furrow-wheel, of the lever Z and the eyebolt *z*, substantially as herein shown and described, whereby the lateral movement of the said movable part of the tongue is made to turn the said furrow-wheel laterally, as set forth.

3. The movable portion S of the tongue, in combination with the stop-bars U, attached to the stationary part Q of the tongue, whereby lateral movement of the part S is prevented in one direction and limited in the opposite direction, substantially as set forth.

292,426. JESSE L. FURBY, assignor of one-half to John Y. Nelson, Nashville, Ills. Sulky-Plow. Jan. 22, 1884. Filed Nov. 2, 1883.

1. In combination with the plow-beam of a sulky-plow, frame 4, catch-bar A, seat standard B, lever-bar 5, link-levers 7 11 10 12 14, and crank-axle arm 13, substantially as set forth.

2. In a sulky plow, in combination with a lever fulcrumed to a catch-bar frame, link-levers 7 11 10 12 14, crank-axle arm 13, plow-beam 9, and pole-shank 16, whereby the crank-axle is shifted and the plow raised or lowered, substantially as set forth and described.

3. In a sulky-plow, the combination of frame 4, consisting of catch-bar A and seat-standard B, lever-bar 5, link-levers 7 11 10 12 14, crank axle arm 13, braces 15 18, tongue-socket 3, and pole-shank 16, arranged and combined substantially as and for the purposes set forth.

293,818. ROBERT A. THOMPSON, Montrose, Mo. Wheel-Plow. Feb. 19, 1884. Filed Dec. 14, 1882.

1. In a plow, the combination of the wheels, the arch having its top bar extended over the furrow-wheel in position to scrape the periphery thereof, and the scraper *a'*, pivoted on the extension *a'*, and working in a line at right angles to the plane of the wheel, and adapted to be turned down against the edge thereof, and provided with a handle above its pivotal center, whereby it may be operated by the driver, substantially as set forth.

2. The improved sulky for plows, consisting of the arch having the depending arm *a'*, constructed with a vertical mortise, *b'*, open at its lower end and outer side, and having its inner portion made larger than its open side, the arm *a'*, having lateral opening *a''*, the wheel *c'*, having its axle *b'* fitted to and sliding vertically in the mortises *b'*, and the furrow-wheel *c*, spindled on the axle *b*, the shank *b'* of which is placed and adjustable laterally in the opening *a''*, and the levers *f* and *d*, connected with and operating, respectively, the wheel *c'* and the wheel *c*, as set forth.

3. In a wheel-plow, the combination, substantially as described, of the frame G, having its rear end pivoted to the wheel-frame and extended forward therefrom, the plow-standard having its forward end pivoted to the forward end of the frame G, the rack *i*, mounted on the plow-standard, the bar *g'*, secured to the frame G, and adapted to engage the rack *i*, and the lever *j*, pivoted to the frame G, and connected with the plow-standard, as and for the purposes specified.

293,939. BYRON C. BRADLEY, Chicago, Ills. Bed-plate for Sulky-Plow Beams. Feb. 19, 1884. Filed Nov. 26, 1883.

The object of this invention is to construct a bed-plate or support for the attachment of a sulky-plow to its bail, either to leave the plow free to swing or turn laterally or be held firmly and in a locked position; and its nature consists in providing a bed-plate to be attached to the plow-beam, and a box or socket to be attached to the bail, combined with a fastening-bolt and a washer, having on one face projecting lugs to enter recesses in the box or socket, all as hereinafter more specifically described, and pointed out in the claim.

In a coupling for sulky-plow beams, the plate A and socket or box B *B'*, having an extension, E, in combination with the reversible plate C and bolt D, substantially as and for the purpose specified.

294,261. E. FRANK O'HAVER, Marysborough, Ills. Wheel-Plow. Feb. 26, 1884. Filed Dec. 18, 1883.

The object of my invention is to provide means whereby a plow may be operated from a running-gear adapted to pass entirely upon the landside, and provided with such controlling devices as will enable the operator to regulate at will the running-gear to level or inclined land, and to control the plow relative to the depth of furrow which it shall make. Other objects and advantages will appear in the following description, and the novel features of construction will be specifically set forth in the claims.

1. In a wheel-plow, a plow-supporting beam having at each end front and rear guide-blocks and rack-bars, the combination of a master-gear and pinion arranged parallel with the beam and meshing with each other and with said rack-bars, and a lever adapted to operate the master-gear, substantially as specified.

2. The combination of a plow-supporting beam having a front guide-block and rack-bar with a rear guide-block and rack-bar pivotally supported thereon, a master-gear and pinion meshing with each other and with said rack-bars, and means for operating at will either the master-gear or the pivotally-supported block and rack, substantially as specified.

3. The combination of the beam G, gear M, pinion L, arm P, rack bars *g' g''*, and levers O P, substantially as shown and described.

4. The combination of beam G, segmental catchet *p*, arm P, lever P', rack-bar *g'*, plow-beam K, and rack bar *g''*, substantially as shown and described.

5. The combination of the beam G, segmental racks *p o'*, levers P' O, the latter having pawls *o'*, catchet N, gear M, pinion L, rack-bars *g' g''*, and plow K, substantially as shown and described.

294,582. FRANK N. OLUTE, Lee's Summit, Mo. Sulky-Plow. Mar. 4, 1884. Filed Dec. 1, 1883.

1. As an improvement in sulky plows, the combination of the main frame C, having segmental rack H, arch E, having lever G, adapted to engage with the segmental rack H, bearings I, and segmental rack J, crank shaped stub-axle K, journaled in the bearings I, and provided with a segmental lever, L, adapted to engage with the segmental rack J, and wheels F E, all constructed and arranged to operate substantially in the manner and for the purpose shown and set forth.

2. The improved clip herein shown and described, consisting of the metallic strips N O, collar P, and end piece, S, connected to the arch E by means of a link, Q, as set forth.

3. In a sulky plow of substantially the described construction, the combination of the arch E, plow A, and clip M, constructed as described, to form a yielding connection.

295,175. FRANKLIN B. HUNT, assignor to the Richmond Sulky Plow Co., Richmond, Ind. Sulky-Plow. Mar. 18, 1884. Filed Jan. 26, 1884.

1. The land wheel B, placed obliquely to the furrow, in combination with the beam-bolter Y, provided with a wedge-shaped hole and set-screws for the oblique adjustment of the plow in relation to the wheel B, substantially as set forth.

2. The beam-holder Y, provided with a wedge-shaped hole and set-screws, and a pivot, T, for swiveling the plow-beam to the crank or bail, substantially as set forth.

3. The pivoting device X W, provided with the recess Y, in combination with the reversible cap V, whereby the plow may be loosely pivoted or made stationary laterally, as may be desired, substantially as set forth.

4. The beam-holder Y, provided with the integral pivot T, having the recess U, in combination with the cap V, provided with a projection to fit into the recess U, substantially as set forth.

5. The combination of the axle section C, having the vertical portion F' and the recessed plate *c*, with the axle-section C', having the projection J, spindle A', and pivot M, substantially as described.

6. The combination of the axle section C, having plates F and recessed plate *c*, with the axle-section C', having the projection J, and the rib I, the bar D, and the bolts H H, substantially as set forth.

7. The vertical arch-section F', having hollow stud *f* on one side and the hollow stud H' on its other side, the sector G', having a cir-

cular half-recess, the spindle slide L, loop K', and lever P, substantially as set forth.

8. In combination with axle A', having the extension M, hand-lever L, and bail N, the foot-lever K, centrally pivoted to the axle, and its rear end resting beneath the bail N, substantially as set forth.

295,613. SAMUEL W. BARR, Mansfield, Ohio. Sulky-Plow. Mar. 25, 1884. Filed Aug. 11, 1883.

My invention consists, mainly, in a combination of levers for raising the point of the plow by means of a vertical hinge at the front end of the plow-beam, and in a horizontal hinge at the end of the beam to allow the team to turn easily at corners and pull the plow around; also, in a combination draft-rod for gaging the depth of a plow.

1. The combination, in a sulky-plow, with the pivoted bar B, of the tongue D, the hinge-plate *c*, the hinged bars M N, staple O, and spring T, substantially as shown and described.

2. The plow-beam A, pivoted to the bar B, and the curved projection K, in combination with the spring draft rod H, roller *h*, and draft-clevis, substantially as set forth.

3. The combination, with the pivoted bar B, having pin *h*, of the lever F, having the curved slotted arm J, the rack E, plow-beam A, and wheel K, substantially as shown and described.

295,788. WM McNARY, Bryan, Ohio. Sulky-Plow. Mar. 25, 1884. Filed July 6, 1883.

My invention relates to certain improvements in sulky-plows, and has for its object the provision of a simple, durable, and easily-operated sulky-plow provided with means whereby the plow proper may be kept in a vertical plane and at a point equidistant from the sulky-wheels and adapted to be used upon either hill-side or level ground.

1. In a sulky-plow the two-part frame A, consisting of a upper arched or U shaped portion, A', and lower parts, A, the latter slotted or recessed to receive the ends of the former, in combination with the rods C, secured in bosses at their upper ends, and having their lower ends threaded to engage with threaded nuts or projections on the parts A', and means for operating said rods, as and for the purpose set forth.

2. In a sulky-plow, the combination of a two-part frame, A, constructed substantially as described, and provided with adjusting-rods C, with spur-wheels D, mounted upon the shaft F, and having hand-levers D', pinions E, mounted upon the crank-shaft E', having its bearings in the adjustable part of the frame, and plow-beam E'', substantially as described.

296,246. GARLAND B. ST. JOHN, Cedar Rapids, Iowa. Plow. April 1, 1884. Filed Oct. 23, 1883.

1. In a plow, the arch B and tongue-iron G, pivoted at *e*, in combination with lever F, bail C, and connections *b* and *c*, or their equivalents, substantially in the manner and for the purposes set forth.

2. In a wheel plow, the clamp-iron D, provided with an arm, D', and a groove, D'', adapted to the two uses of securing the plow-beam to the bail and furnishing a support for a colter, substantially as described.

3. The combination, with a plow, E, and bail C, of a clamp-iron, D, having a laterally extended arm, with a colter blade, which is rigidly but adjustably secured to the outer end of said arm, and adapted to operate substantially as described.

4. The combination, with wheel-plow, of a clamp-iron, D, provided with an arm, D', and a groove, of a colter rigidly secured to said arm, D', and means for securing the clamp iron to the plow-beam, substantially as described.

5. The combination of the plow E, the clamp-iron, and its extension D', pivotally secured to said bail and to the plow-beam, and a colter rigidly secured to the said extension and inclining downward and forward, substantially as described.

6. In a plow without a landside, the combination, with mold-board and share, of a strengthening-plate, *i*, secured under and along the front edge of the share and projecting upward under the mold-board, and adapted to form a seat and be bolted to said mold-board.

296,720. JOHN W. BARTLETT, assignor to the Moline Plow Co., Moline, Ills. Wheel-Plow. April 15, 1884. Filed Oct. 25, 1883.

1. A frame carrying a mold-board plow and provided with rear-sustaining-wheels, in combination with a swiveling leading-wheel arranged to travel in the preceding furrow, an independently swiveling draft device, and an adjustable connection, substantially as described, whereby the draft device and wheel may be maintained in fixed relations to each other while in action, but an angular adjustment of one with respect to the other permitted at will, whereby the leading wheel may be caused to travel constantly in one line or another with respect to the line of draft.

2. The draft-frame, the plate connected thereto by the king-bolt, the axle extending through the plate, the tongue-plate journaled on the axle, the draft devices connected to the king-bolt, and the connection between the draft devices and axle, said parts being combined substantially as described.

3. In combination with the draft frame, and the axle connected therewith by the king-bolt, the draft-arm mounted on the lower end of the king-bolt, and the adjustable bar or brace connecting the draft arm with the outer end of the axle.

4. In a draft mechanism for a wheeled plow, a swiveling axle, a tongue, connecting devices whereby the tongue is caused to turn the axle, draft devices adjustable laterally around the pivot of the axle, and adjustable connections between said draft devices and the axle, substantially as described, whereby the wheel is caused to follow the line of draft and the lateral adjustment of the draft devices permitted.

5. In a wheeled plow, the axle movable around a vertical pivot, combined with a draft arm movable independently around the same pivot, and intermediate devices for securing the lateral adjustment of the draft arm with respect to the axle, substantially as shown.

6. In combination with a plow-carrying frame having sustaining-wheels at the rear, a leading-wheel mounted on a swiveling axle and adapted to travel in the preceding furrow, a horizontally-swiveling draft device, an adjustable connection whereby the wheel and draft device may be adjusted and fixed in position with respect to each other, as described, and a pole or tongue fixed to the swiveled axle by devices substantially as described, and adapted to permit a horizontal angular adjustment of the tongue with respect to the wheel and draft devices, whereby the angular positions of the tongue, wheel, and draft devices may be varied independently of each other, or fixed while in action.

298,337. SAMUEL W. BARR, Mansfield, Ohio. Sulky-Plow. May 13, 1884. Filed Jan. 13, 1884.

My invention relates to sulky-plows; and it consists in the improved construction fully described hereinafter, whereby the elevation and lowering of the plow proper is readily effected by the driver from the seat, the vertical adjustment of the plow-supporting frame with respect to the carrying-frame easily secured, and the manipulation of the guide-wheel from the seat secured.

1. The combination, in a plow, of a rear wheel having a hollow axle or journal, and a spindle or bolt passing through the axle and secured at one end to the landside, and at the other end to a vertical arm depending from the standard, said spindle serving as a journal for the wheel, and a brace or spreader between the landside and standard, substantially as shown and described.

2. The combination, with the beam A and tongue B, of the curved bar C, forming one side of the vertical hinge between the beam and tongue, block Y, pivot-bolt W, and lever connection J M, substantially as shown and described.

3. The combination, with the tongue and plow-beam, of the block Y, socket Q, spring S, bolt R, and hinge plates, substantially as described, and for the purpose set forth.

299,020. CHARLES SCHWEER, Eldon, Iowa. Sulky-Plow. May 20, 1884. Filed Nov. 1, 1883.

1. The combination, in a sulky-plow, of the carriage having a main axle and carrying-wheels mounted on the ends thereof, a frame pivoted to the carrying-frame and supporting the plow proper, a pivoted pawl located at the lower portion of the plow-supporting frame devices located on the main frame for raising the plow-supporting frame, so as to permit said pivoted pawl to engage the main axle and suspend the plow-supporting frame, and a bell-crank lever pivoted on the main frame

and having one portion located on the joint of the main axle which the pivoted pawl engages, and connections on the main carriage connected to said bell-crank lever to move the same upon its pivot, substantially as and for the purpose set forth.

2. The combination, in a sulky-plow, of a carriage, of bars located at each side, keyed on the main axle, and extending forwardly, a plow-supporting frame pivotally secured to the forward ends of said bars, and provided with bars *n'*, spring dogs located on the said bars of the main carriage, and devices for depressing the plow-supporting frame to cause the bars thereof to engage the said spring-dogs, substantially as set forth.

3. The combination, in a sulky-plow, of a carriage, a plow-frame pivoted thereto, provided with arms *n'* and braces O P, as described, and carrying the plow, a lever fulcrumed on the carriage-frame for effecting by its movement the elevation or depression of the plow-frame, and spring dogs located on the carriage, and adapted to engage the arms *n'* for locking said plow-frame in its elevated position, substantially as set forth.

4. The combination, in a sulky-plow, of a carriage, a plow-supporting frame pivoted thereto, and provided with brace-rods O P, having curved or hooked ends *l*, adapted to be adjustably clamped in yoke-brackets *n*, secured to the side of bars *n'*, secured to the plow-frame, spring dogs located on the carriage, connections and devices for effecting the elevation of the carriage and the engagement of the spring-dogs with the rods *n'*, and devices for effecting a disengagement of the same, substantially as specified.

5. The combination, in a sulky-plow, of a main carriage, a plow-supporting frame pivoted to said main carriage, levers and connections mounted on said main carriage to effect the elevation and depression of the plow-supporting frame, a guide-wheel supported in a yoke turning in bearings at the front of the machine, and having connected therewith a horizontal bar, each end of which is connected by a cable with a centrally-pivoted vertical bar provided with a stirrup at its lower end, each to receive one of the feet of the operator, substantially as set forth.

299,022. ABRAHAM SHAFER, Cassopolis, Mich. Gang-Plow. May 20, 1884. Filed Aug. 1, 1883.

1. A gang-plow having a frame, as A, arranged obliquely to the line of travel, an adjustable land-wheel, E', and a series of plow-beams carrying plows arranged to correspond with the angle of said frame, in combination with lever-frame F, tongue-socket *a*, guide-bar G, and spring-latch H, as and for the purposes set forth.

2. In a gang-plow, and in combination with the frame A, stub-axes, and wheels, as described, the vertical rods B, the frame O, the beams K, having staples which embrace rods B, and having draft attachments M, and the frame F, having pole-socket *a*, as set forth.

3. In combination with the oblique frame A of a gang-plow, the plow-beams I K K and plows J L, said plow-beams having staples and attached to an equalizing draft-clevis, M, common to all, said clevis being adapted to engage with a hanger, P, for determining the elevation of the outer ends of the plow-beams and the pitch of the plows and the sliding brackets embracing said beams, substantially as and for the purposes described.

4. In combination with a gang-plow constructed substantially as herein described, the shaft R, lever S, bail V, and bar U and cam T, adapted to raise and lower the plows, substantially as set forth.

5. In combination with the frame A of a sulky-plow, constructed substantially as described, the bracket C, stub-shaft D, wheel E, and lever-frame F, carrying pole-socket *a*, for adjusting the line of travel of such wheel, the bar G, and spring foot-catch H, substantially as and for the purposes described.

299,462. NATHANIEL S. BARGER, assignor of one-half to T. B. Taylor and W. D. Evans, Hampton, Iowa. Sulky-Plow. May 27, 1884. Filed Dec. 31, 1883.

1. A plow-sulky having an arched support or axle-tree with a horizontal axle, *a'*, carrying vertical land-wheel X', an oblique axle, *a*, carrying an oblique wheel landside, A, and a ball and socket joint connection, whereby the axle *a* is adjustable to a horizontal position and the oblique wheel landside A to a vertical position, both of said wheels at all times serving as the sulky wheels and being in the rear of

the plow proper, substantially as and for the purpose described.

2. The combination, with a plow, of an oblique wheel-landside having a periphery which is in cross-section curved, and is formed of a tube, substantially as and for the purpose described.

3. The bail B', with its pivot P', and hinge and pivot connection D', in combination with the jointed beam and the arched support or frame, substantially as and for the purpose described.

4. The ball, in combination with the pivot *c* and hinge D, rods or bars *s s'*, and lever L, substantially as and for the purpose described.

5. A plow beam, H, provided with a joint between its ends, which is flexible in an upward direction and rigid in a downward direction, in combination with the arched support, wheels A A', and the bail B' and its lifting devices, substantially as and for the purpose described.

6. The combination, with the plow proper, M, of the oblique wheel landside A, the two-part plow-beam H H', having a vertical joint at B', and the arm K, with braces K', bolted to the mold-board and forming, with the rear part of plow-beam, bearing for the wheel-landside, substantially as and for the purpose described.

7. The three rollers *f' f' f'*, all attached to the movable axle or spindle *a'*, one being inside on the inner vertical leg, C', and two outside on the outer leg, C', of the arch-support, and the inside one being on a plane between the outer rollers, in combination with the arched support, its vertical legs C' C', plate G, movable axle arm or spindle *a'*, the connecting rods or bars h, and lever L, whereby either the upward or downward strains are caused to fall upon the rollers and binding avoided, substantially as described.

8. The combination, with a frame of a sulky-plow provided with wheels A' in the rear of the plow proper, of a plow-beam having a joint, B', between its ends, and the bail B', provided with pivot *c* and hinge D, the rods or bars *s s'*, and lever L, substantially as and for the purpose described.

9. The tongue-extension E', in combination with its strap X, brace *u*, and beam-strap O, latch *v*, and tongue-supports *q q'*, substantially as and for the purpose described.

10. The combination of the arched support, the two wheels, one having a ball and socket joint connection, the plow proper, the jointed beam, the ball having a pivot and hinge, and means for raising and lowering the plow proper, as well as adjusting the wheel-landside, substantially as and for the purpose described.

299,868. MARLON J. STAFFORD, Wrentham, Ind. Attachment for Plows. June 3, 1884. Filed Mar. 15, 1884.

As an improvement in attachments for plows, the combination of an auxiliary axle provided with a vertical bearing and having its outer extremity connected to the front portion of the attachment-frame by means of a suitable connecting brace or rod, a main hinged axle, upon the outer end of which the main wheel of the attachment is secured and adapted to be adjusted vertically in the vertical bearing of the auxiliary axle of the attachment, and a caster or roller of suitable size, the standard of which slides in a vertically-recessed bearing on the front end of the attachment-frame, and which is provided with a pivoted operating-lever having secured upon it, near its rear end, a lug or projection adapted to engage with the teeth of a suitable curved rack secured upon the side of the plow-beam, all constructed and arranged to operate substantially in the manner and for the purpose shown and described.

300,807. JACOB SICKLER, Ottumwa, Iowa. Sulky-Plow. June 24, 1884. Filed Oct. 3, 1883.

The objects of our invention are as follows: First, to provide a sulky which shall run smoothly in the furrows made by the plow, and obviate the digging and lifting of the plow (and the consequent heavy draft upon the team) caused by the sulky running over uneven ground; second, to so pivot the wheels of the sulky and guide them in turning that the team and plow may be turned at a corner of the field without taking the plow out of the ground and without cramping plow, sulky, or team.

1. The combination, with frame *a*, of pivoted tongue E, spring-latch *r*, rack *a'*, connecting bar *r*, caster-wheel *b*, crank-standard *l*, and connecting devices whereby the tongue is

allowed to turn and give positive motion to the turning of the rear wheel, substantially as shown and described.

2. The combination, with the plow-frame *a*, of the front caster-wheel *b*, and the rear caster wheel *m*, upon the swiveled standard *l*, adapted to be free or locked, and to carry the plow-frame without other support, substantially as shown and described.

3. The combination of frame *a*, adjustable caster-wheel *b*, caster wheel *m*, swiveled stand and *l*, *n*, carrying rack *q*, adjustable lever *c*, connecting bar *r*, and tongue *i*, substantially as shown and described.

299,343. WILLIAM L. CASSADAY, assignor of one-half to the South Bend Iron Works, South Bend, Ind. Sulky-Plow. May 27, 1884. Filed Feb. 12, 1884.

1. In a sulky-plow, the combination, with the supporting-wheels, of a crank having a jointed plow-beam journaled thereon, and devices for detachably locking the crank to one of the supporting-wheels for elevating the plow by the draft of the team, substantially as set forth.

2. In a sulky-plow, the combination, with the supporting-wheels and tongue, of a crank-axle, and a jointed plow-beam journaled at its jointed portion on the crank-axle, means for securing the forward section of the beam to any desired vertical adjustment, and devices for detachably locking the crank to one of the supporting-wheels, substantially as set forth.

3. In a sulky-plow, the combination, with the supporting-wheels, a crank-axle, one end of which is journaled in a sleeve, and a tongue secured to said sleeve, of a hinged plow-beam constructed to be locked to form a rigid beam, and devices for locking the crank-axle to one of the supporting-wheels for raising the plow, substantially as set forth.

4. In a sulky-plow, the combination, with a crank-axle, a plow-beam journaled on the crank-axle, and supporting-wheels, one of which is provided with an annular series of pockets or recesses, of a sliding dog supported in the hollow spindle of the crank-axle, and devices for moving the dog into and out of engagement with the pockets or recesses on the supporting-wheel, substantially as set forth.

5. The combination, with a cranked axle supported on wheels and a jointed plow-beam journaled on the axle, of devices for rigidly locking the two parts of the beam together, and devices for locking the axle to one of the wheels, substantially as set forth.

6. The combination, with a cranked axle, wheels supporting the axle, a jointed plow-beam journaled to the said axle, and devices for locking the axle to one of the wheels, of a device for locking the two parts of the jointed beam, and a lever for simultaneously unlocking the two parts of the beam and locking the axle to one of the ground-wheels.

7. The combination, with a cranked axle, a jointed plow-beam journaled on said axle, wheels supporting the axle, and devices for locking one of the wheels to the axle, of a sliding tongue for locking the two parts of the jointed beam, a spring-actuated dog indirectly connected to said tongue, and a lever for simultaneously moving the tongue and dog.

8. The combination, with a cranked axle having spindles formed on the opposite ends thereof, sleeves in which the said spindles rest, and wheel-spindles connected to the sleeves, of a sector secured to the axle-spindle on one side of the machine, and a hand-lever connected to the sleeve on the same side of the

machine, and provided with a dog for engaging the sector, and a hand-lever connected to the axle-spindle on the opposite side of the machine, and provided with a dog for engaging a sector secured to the sleeve on the same side of the machine.

9. The combination, with a cranked axle supported in sleeves and wheel-spindles connected to the sleeves and forming cranks, of a jointed plow-beam, tongue for locking the two parts of the beam, a sliding dog for locking the axle to one of the wheels, and mechanism connecting the tongue and dog, whereby they are operated simultaneously, substantially as set forth.

10. The combination, with the cranked axle provided with the spring-actuated dog, the wheels, one of which is provided with a recessed plate, and a jointed plow-beam journaled to the axle, of a tongue for locking the two parts of the jointed beam, and provided with a plate having a cam-slot formed therein, a bell-crank lever, one end of which is connected to the dog, while the opposite end rests within the cam-slot, and a lever for operating the tongue and dog simultaneously.

11. The combination, with the cranked axle and spring-actuated sliding dog seated within the axle, wheels, one of which is provided with a recessed ring or plate, and a jointed plow-beam journaled on the axle, of a spring-actuated sliding tongue for locking the two parts of the beam, and intermediate devices connecting the dog and tongue, whereby both are operated simultaneously.

12. The combination, with a cranked axle and supporting-wheels, of a jointed plow-beam made up in sections and embracing the axle at the joint, the said sections being provided with lips or projections for holding the two portions of the beam in the same plane.

13. The combination, with a cranked axle and supporting-wheels, of a jointed plow-beam consisting, essentially, of two rear sections secured together and embracing the axle, and two front sections secured together and embracing the rear section, one or more of the said sections being provided with projections for holding the parts of the beam in the same plane, substantially as set forth.

14. The combination, with a cranked axle and supporting wheels, of a jointed plow-beam consisting, essentially, of two rear sections secured together, each of which is provided with a semicircular bearing for embracing the axle, and a rearward extension and two front sections secured together and provided with bearings for embracing the bearings of the rear sections, one or more of the said sections being provided with lips for holding the two parts of the beam in the same plane, and a plow-standard secured between the rearward extensions of the rear sections, substantially as set forth.

15. The combination, with a crank-axle having spindles on opposite ends, a spring-actuated dog seated in one of the said spindles, devices for operating the dog, and a spindle-sleeve having a wheel-spindle formed integral therewith, of a sector secured to the axle-spindle, a hand-lever secured to the sleeve and provided with a spring-actuated dog, and a hand-wheel provided with a recessed ring, with which the spring-actuated dog engages.

16. The combination, with an axle having spindles formed on opposite ends thereof, of a sleeve rigidly secured to the draft-tongue, a wheel-spindle pivotally secured to the sleeve, and a lever for moving the spindle horizontally.

17. The combination, with an axle having a spindle on one end thereof, of a sleeve *C*, rigidly secured to the draft-tongue and provided with a sector, a lever *B*, loosely secured to the spindle, and provided with a dog for engaging the sector, and a plate *B'*, rigidly secured to the spindle and connected to the lever *B*.

18. The combination, with an axle having a spindle on one end thereof, of the sleeve *C*, rigidly secured to the draft-tongue and supporting said spindle, the levers *B* and *B'*, and the sector for engaging the dog on the lever *B*, all of the above parts constructed as described.

19. The combination, with the axle having spindles on opposite ends, of the sleeve *C*, rigidly secured to the draft-tongue and supporting one end of the axle, the pivoted block secured to the under side of the sleeve, devices for turning the block, and a wheel-spindle secured to the block, substantially as set forth.

20. The combination, with the sleeve *C*, supporting one end of the axle, and provided with a two-part sector, one part of which is adjustable on the other, of a hand-lever rigidly secured the axle, and provided with a dog for engaging the two-part sector.

21. The combination, with the sleeve *C*, supporting one end of the axle, and provided with a two-part sector, one part of which is provided with ordinary pinion-teeth and adjustably secured to the other, which is provided with ratchet-teeth, of the hand-lever rigidly secured to the axle, and provided with a dog for engaging the sector, substantially as set forth.

22. The combination, with a sulky-frame having a tongue, a laterally-projecting bracket secured to the tongue, and a plow-beam situated under the bracket, of a sleeve loosely journaled to the bracket, and provided with an extensible arm, the lower end of which is loosely secured to the front end of the beam, substantially as set forth.

23. The combination, with a plow-standard provided at its lower end with a transverse slot, of a plow provided on its rear face with a block *R*, the arm *R'*, bolt *r*, for clamping the standard between the arm and block, and a bolt for securing the lower end of the standard to the plow, substantially as set forth.

24. In a sulky plow, the combination, with the supporting-wheels, of a crank-axle journaled at its opposite ends in sleeves connected with short axles, on which the supporting-wheels are mounted, a jointed plow-beam journaled on said crank-axle, said jointed beam being adapted to be locked together and form a rigid beam, and devices for detachably locking the crank-axle to one of the supporting-wheels, substantially as set forth.

300,892. ROBT. A. RADFORD, Centuria, Mo. Sulky-Plow. June 24, 1884. Filed April 12, 1884.

1. In a sulky-plow, the combination, with the arched axle provided with the spindle *D* and the arc-rack *K*, of the crank-journal *B*, the lever *E*, connected thereto by the angle-arm *G* *H*, and fulcrumed on the spindle *D* between the sleeve *C* and the shoulder *I*, and the spring-pawl *L*, substantially as specified.

2. The combination, with the bail *M* and its operating-levers, of the pivoted perforated clovis-plate, the clovis, and plow-beam, substantially as specified.

6,516. DAVID DIEHL, Hanover, Pa.
Seed-Planter. June 12, 1849

1. The combination of the roller *I*, springs *K*, and lever *M* with the rock *N*, to which the cultivator-teeth *G* are affixed, for regulating the depth of furrowing in various kinds of hard or mellow soil without the necessity of altering the position of the transverse beams, to which the rear ends of the parallel longitudinal beams *H* are connected.

2. The manner of elevating the seed passing from the hopper through the channels of the planting cylinders when the cultivator-teeth are raised from the ground, or whenever it is desired to stop the planting operation, by means of the combination of the transverse rising and-falling bar *J*, cams *S*, bent rods *R*, sliding bar *Q*, valve-rods *P*, and springs *T* with the frame *A*, as described.

3. Placing the radial pins in the channels of the planting cylinders, in the manner and for the purpose above set forth.

9,940. JACOB MUMMA, Mount Joy, Pa.
Grain Drill. Aug. 16, 1853.

The combination of a tongue having motion vertically and laterally with the directing and supporting wheel, substantially as set forth.

12,895. LEWIS W. COLVER, Louisville, Ky.
Corn-Planter. May 22, 1855.

The nature of my invention relates, first, to the manner of hinging the supporting pieces and interposing springs between them, so that said pieces may work from the same centers and the springs tend to hold the wheels to the ground in such manner that any of the series may yield to any inequalities in the ground without affecting the others; also, in the arrangement of the sword or divider upon the tube, and projecting forward in close contact with the flange on the wheel, so that it may enter the ground with the flange and spread and hold open the furrow for the reception of the grain.

1. Hinging the pieces *A*, which support the wheels *A'*, at the point *B*, this being also the point of attachment of the arm *D*, and interposing between *A* and *D* a spring, *F*, so that said two pieces may radiate from nearly the same centers, said springs tending to hold the wheels into the ground, while each one of the series may yield to any inequalities in the ground without affecting the others, as set forth.

2. The arrangement of the sword or divider, such as described, upon the tube *I* and projecting it forward in close contact with the flange on the wheel so that it may enter the ground with said flange and spread and hold open the furrow for the reception of the seed, as described.

24,993. JAMES P. COONLEY, Farmington, Mich.
Corn-Planter. Aug. 9, 1859.

The arrangement of seeding-roller *H*, gear-wheels *d*, slide-plate *L*, lever *e*, adjustable-teeth *E*, covers *F*, and tracking-gage *M*, constructed and operated substantially as and for the purposes herein set forth.

26,559. JAMES BOUTON, Macon City, Mo.
Corn-Planter. Dec. 27, 1859.

1. The arrangement of the wheels *b*, *b'*, pipes *C* and *D*, covers *E*, springs *F* and *a*, and the yielding-beam *c*, in the manner described.

2. The arrangement of the valve *f* in the hopper *P*, in the manner described, for the purpose specified.

26,606. PETER MONAGHAN, Canak, Ga.
Cultivator. Dec. 27, 1859.

In combination with the hinged frame of a cotton-cultivator, the spring *H*, which is secured to the tongue of said cultivator for the purpose of automatically raising the rear end of the machine when the same is released by the operator, substantially in the manner here in described.

27,445. JOHN GUYER, Westport, Conn.
Hand-Plow. Mar. 13, 1860.

The arrangement of the levers *A*, springs *F*, guides *K*, bar *E*, handle *D*, axle *B*, and tubes *J*, as and for the purposes herein shown and described.

27,774. F. CHAMBERLAIN, Berlin, Wis.
Grain Drill. April 10, 1860.

1. The arrangement of the dragging seed-troughs *P*, *P'*, hinged and held in position by means of springs *S*, *S*, *S*, when the same are used in connection with the seed-spouts *a* and a seeding cylinder *G*, substantially as and for the purpose specified.

2. The combination of the seeding-cylinder *G*, provided with cups, as set forth, with the hopper *A* and box *B*, provided with seed-spouts, and with a hinged cover, *F*, for digging or seeding broadcast, substantially as herein specified.

30,212. J. B. DUANE, Schenectady, N.Y.
Grain Drill. Oct. 2, 1860.

1. The arrangement of the toothed bars *l* and perforated plates *k* *l* outside or in front of the hopper *G*, substantially as and for the purpose specified.

2. The adjustable board *N*, placed relatively with the shake board *M*, harrow *O*, and drags *Q*, to operate as and for the purpose set forth.

3. The arrangement of the lever frame *D*, roller *E*, bars *b*, *b*, shaft *B*, and castor-wheels *C*, *C*, substantially as shown and described, for the purpose set forth.

1. The combination of the vibrating board *M*, hopper *G*, with the reciprocating agitators *l*, the seed-box *S*, harrow *O*, drags *Q*, frame *D*, with roller *E*, attached and connected to the shaft *B*; by the rods *b*, all arranged for joint operation as set forth.

30,768. ARNTON SMITH, Grand, Ill.
Grain Drill. Nov. 27, 1860.

In combination with seed tubes *J*, *J* and plows *K*, *K*, the arrangement of the rolling cutters *P*, *P* and springs *O*, *O*, when used in connection with the sliding bar *M*, bolt-rods *U*, and elevator *R*, in the manner substantially as and for the purpose set forth.

31,381. CHARLES C. GARRETT, Spring Hill, Ala.
Seed-Planter. Feb. 12, 1861.

The arrangement of the shaft *J*, wheel *K*, cylinder *S*, gearing *H*, *I*, hoppers *K*, *L*, concave *N*, bottom *L*, spring *M*, slides *a*, lever frames *P*, screws *Q*, springs *T*, harrows *U*, and frame *A*, all in the manner and for the purposes here in shown and described.

31,700. JOHN COOLEY, Taffon, Wis.
Grain Drill. Mar. 19, 1861.

The cam-projections *M* and recesses *O* of the seed-distributing cylinder *B*, in combination with the crank-shaft *Z*, *U*, *P* of the seed-valves *V*, the rock shaft *G*, the hinged pressure-rollers *H*, and the levers *T*, *S*, operating the hinged shoes *K*, substantially as and for the purposes set forth.

31,819. HIRAM MOORE, Brandon, Wis.
Seeding Machine. Mar. 26, 1861.

1. The combination of a hinged drill-bar, a series of rigid-shank trailing drills, and a corresponding series of springs to connect the shanks and bar, so that by turning the latter the drills may be pressed with more or less force into the surface of the ground, (as the ground is harder or softer or a deeper or shallower furrow is required,) or may be lifted above the surface, substantially as described.

2. A series of trailing drills having rigid shanks connected to a hinged drill-bar by springs that will resist lateral flexure to maintain the relative distances of the drills apart, while free to flex upward and downward to enable the drills severally to conform to uneven surfaces, substantially as described.

3. Curves at the upper ends of the drill-shanks, as shown at *R*, in combination with the springs, substantially as and for the purposes set forth.

4. A lever, in combination with the hinged drill-bar and a series of trailing drills connected to the bar by springs, the arrangement of these parts being such that by turning the lever all the drills will be simultaneously forced into the earth or raised therefrom, and when forced into the earth the shank of each drill throughout its entire length will still be left free to play up and down to the extent which the elasticity of the spring will permit to allow the drill to pass over obstructions and to conform to inequalities of the surface, substantially as described.

5. Arranging the mouths of the conduits on the drill-shanks as nearly as may be in the line of the axis of motion of the hinged drill-bar, so that raising and lowering the drills will change as little as may be the positions of the mouths of the conduits on the drill-shanks relative to the positions of the lower ends of the hopper-spouts, substantially as described.

6. The combination of a removable driving-shaft with a series of seeding-cylinders having independent bearings, whereby said shaft can at pleasure be removed to allow any of said cylinders to be taken out for repairs without displacing the rest, substantially as described.

7. A series of helical gear having teeth of

varying number and pitch, in combination with a suifing pinion, for purposes substantially as described.

35,713. J. D. SMITH, Peoria, Ills.
Grain Drill. June 24, 1862.

The invention also consists in attaching the furrow share bar to the shaft by which it is raised and lowered, by means of a spring, substantially as hereinafter fully shown and described, whereby the furrow share, when adjusted to its work, is kept into the ground, and at the same time allowed to yield or rise in order that it may pass freely over obstructions that may be in its path, the spring permitting the furrow share to be raised when the necessary parts are operated for that purpose.

1. The gage-plate *G* and lever *U*, arranged with the shaft *I*, provided with the pin *h* and lever *M*, substantially as shown, to operate as and for the purpose set forth.

2. The set screw *K*, in connection with lever *U*, gage-plate *G*, and spring *J*, for the purpose of regulating the discharge of the seed, as specified.

3. Attaching the furrow-share bar *P* to the shaft *I* by means of the spring *O*, as and for the purpose set forth.

41,769. JACOB HAEGE, Stolo, Ills.
Wheel Cultivator. Mar. 1, 1864.

The plow-beams *I*, fitted in the stays *K* and upon the rods *J*, in combination with the springs *L* and curved plates *M*, all arranged as and for the purpose specified.

48,271. EDWARD S. GILLIES, Albany, Wis.
Wheel Cultivator. June 20, 1865.

The attaching of harrows and plows, either or both, to the frame of a cultivator by means of pendulous rods *E*, provided with springs *F*, and connecting the heads of the harrows and plows to springs *I*, attached to shafts *J* at the front part of frame *A*, in the manner substantially as and for the purpose set forth.

57,862. CYRUS C. CARTER, Exeter, Ills.
Grain Drill. Sept. 11, 1866.

1. The shaft *Q*, with the lever *R* attached, in combination with the springs *P* and runners or furrow-rollers *O*, all arranged to operate substantially as and for the purpose set forth.

2. The sliding or adjustable inclined board *K*, with the seed-conveying tubes *M* attached, and arranged in relation with the seed-box *E*, substantially as and for the purpose specified.

3. The pendants or agitators *J*, attached to the rock-shaft *I*, operated from one of the wheels *C*, as shown, in combination with the perforated bottom *a* of the seed-box *E* and the perforated slides *e*, *f*, substantially as and for the purpose set forth.

60,892. J. C. HOFFEDTZE, Mienersburg, Ia.
Cultivator. Jan. 1, 1867.

The arrangement shown and described, consisting of the adjustable and pivoted spring standards *C*, removable shares *I*, *J*, and adjustable handles *E*.

73,972. MARTIN HAYDEN, Detroit, Mich.
Seeding-Cultivator. Feb. 4, 1868.

1. The springs *L*, when arranged and operating substantially as and for the purposes set forth.

2. The arrangement of the treante or vibrating lever *W*, the arm *V*, and rod *X*, provided with the adjustable screws and nuts; the pins *Y*, and the ears *Z*, for the purpose described.

3. The covering-shovels *G*, provided with a proper spring, when operating substantially as and for the purpose specified.

82,026. CHAS. W. PATTON, Exeter, Ills.
Grain Drill. Sept. 8, 1868.

1. The combination of the lever *H*, shaft *I*, arms *U*, and the sliding plate *E* with projection *E'*, substantially as and for the purpose set forth.

2. The combination of the sliding plate *E*, key *G*, stop *E'*, and springs *L*, arranged to operate substantially as described.

3. In combination with the cutters *O* and drag-bars *K*, the springs on the rods *M*, segments *N*, shaft *X*, and lever *N'*, and cord *X'*, for raising the cutters and forcing them into the ground, substantially as set forth.

84,931. CLARK ALVORD, Westford, Wis.
Wheel Cultivator. Dec. 15, 1868.

1. Clamping the teeth to the side of the drag-bars by means of the independent plate *a*, and the two screw-bolts, when the several parts are constructed and arranged to operate in the manner described.

2. The arrangement of the slotted cross-bar *J*, and drag-bars *I*, headed bolts *b*, fixed to the drag-bars, and extending through the slots of beam *J*, and springs *i*, substantially as shown and described.

3. The employment of cleaning-bars *r*, arranged in relation to the teeth, substantially as described, an operating to clean the teeth when the latter are raised or when the bars are depressed, as herein set forth.

4. The combination of the cleaning-bars *r*, *r'*, beam *N*, spring *s*, and hinge *a*, when employed on a cultivator, for the purpose specified.

5. The combination of the frame *C*, rocking with the axle, as described, with the draught-pole *E* pivoted to the front beam of the frame, the plow-beams *I*, the cleaning-bars *r*, and the spring *s*, substantially as and for the purposes herein described.

6. In combination with the rock-beams *F* and *N*, cleaning-bars *r*, and drag-bars *I*, the hump *h* and staple *E*, arranged, as described, on the two beams, and operating in the manner and for the purposes herein described.

84,935. JOSEPH H. BRINTON, Thornburg, Pa. Wheel Cultivator. Dec. 15, 1868.

1. A transverse adjusting-bar, moving in inclined slots, or their equivalents, for the purpose shown.

2. A yielding pressure applied to the arms or levers *a*, together with a transverse bar, moving in wedges, whereby to regulate the depth the plow enters the soil, and to accommodate them to any unevenness of the ground.

89,247. PETER J. SCHMITT, assignor to Seigel, Schmitt & Co., Carlisle, Ills. Grain Drill. April 20, 1868.

1. The manner of holding the flukes in ground by elastic pressure upon the bar *E*, substantially as set forth.

2. Moving the flukes to a zigzag or right-line setting, by the shifting-bars *I*, substantially as set forth.

3. Moving the feed-tubes *K*, by slides *K'* to follow the flukes, substantially as set forth.

92,951. DANIEL D. FRANKLIN, assignor to self and J. S. Underwood, Florida. Corn Planter. July 27, 1869.

In combination with the driver's or planter's seat, supported by the furrowing-teeth, the spring *I*, interposed between the seat and the furrowing-teeth, substantially as described, for the purpose set forth.

95,437. H. N. DALTON, Pacheco, Cal. Gang Plow Spring. Oct. 5, 1869.

My invention has for its object to improve the construction of gang-plows, in such a way that the gang-plow may be raised while running to cut a light furrow, or to lift it entirely from the ground, at the will of the operator, and which shall at the same time be simple in construction and readily applied and operated; and

It consists in the application of a coiled or other spring to the axle and frame of the gang-plow, as hereinafter more fully described.

The combination of a coiled or other spring with the axle and frame of a gang-plow, substantially as herein shown and described, and for the purpose set forth.

99,536. JOSEPH B. OLEMANS, Kansas. Ills. Grain Drill. Feb. 8, 1870.

1. The combination and arrangement of the runner *B*, spring *F*, and seed tube *N*, substantially as shown, and for the purpose described.

2. The combination and arrangement of the runner *B*, seed-tube *G*, spring *F*, chains *P* and *J*, lifting cross-bar *O*, and lever *K*, substantially as shown and described.

100,033. MARTIN HAYDEN, Downington, Mich. Grain Drill. Feb. 12, 1870.

The combination and arrangement of a grain-drill, combining the above-named parts with the frame *A*, the wheels *B*, drive-wheels *s*, pinion *M*, hopper *D*, seed-box *D'*, vibrating bars *G* and *O*, curved lever *R*, post *T*, spout *u*, pipe *r*, lever *F*, pendent arms *P* and *II*, bar *W*, tongue *g*, suspension-rods *II*, springs *12* and *13*, and standards *C*, the sharp curved gears, marked *20* all constructed and operated substantially as set forth.

106,039. JEFFERSON ESHLEMAN, assignor to self and L. E. Miller, Canaan Centre, Ohio. Wheel Cultivator. Aug. 2, 1870.

The spring-metal link *F*, constructed of a bow shape and used in combination with the pivoted tooth-arm *H*, and bent lever *N* on the cultivator axle *A*, said link serving as a means both of raising the tooth *J* from the ground and of holding it down to its work under a spring-pressure, substantially as is herein set forth.

107,359. JOHN GIRE, Sipton, Ills. Grain Drill. Sept. 13, 1870.

1. The arrangement of the frame *A*, *B*, *C*, axes *G*, *d*, washers *a*, *a*, bolts *d*, *d*, and nuts *e*, *e*, all substantially as and for the purposes herein set forth.

2. The arrangement of the rod *J*, with wheel *J*, ring *B*, spring *d*, lever *K*, and hook *e*, all substantially as and for the purposes herein set forth.

3. The arrangement of the shoes *T*, *T*, arms *V*, *V*, straps *g*, *g*, springs *f*, *f*, shafts *W*, *X*, *Z*, rod *h*, and lever *Y*, all substantially as and for the purposes herein set forth.

115,510. LEANDER BECKER, Jackson, Pa. Corn Planter. Feb. 7, 1871.

The combination of the pivoted blocks or bars *II*, staples *II'*, and springs *h* *h* with the perforated connecting-bars *I* of the cultivator-standard drag-bars *K*, *K*, substantially as and for the purpose described.

117,215. JACOB W. SPANGLER, Jackson, Pa. Cultivator. July 18, 1871.

The arms *I* *I* having their lower extremities constructed with a double curve, as shown, in combination with the plow shanks *i* *i* constructed with slots and slotted elbows, as described, substantially as and for the purpose specified.

117,746. JOHN W. CORNELL, Lawn Ridge, Ills. Corn-Stalk Cutter. Aug. 8, 1871.

This invention consists in mounting the axle of the rotary cutter on a short lever at either end, which is pivoted to the upright frame attached to the axle of a wagon, the cutter being elevated or depressed to the proper point for the effective working of the blades by an auxiliary rod, spring, and screw, connecting the cutter suitably with the frame, the whole arranged as will be hereinafter more fully explained.

The upright frame *II*, constructed as described, with hinged levers *E* *E* for carrying the rotary cutter, screw *l* and spring *k*, connected by rods *F* *F* with the said levers, the said frame being attached to the axle of a wagon, substantially as set forth.

125,093. JACOB W. SPANGLER, York, Pa. Cultivator. Mar. 26, 1872.

1. The slotted sector-plates *E'* provided with right angled arms *E'*, in combination with wheels *E*, axle *A*, pivots *e*, bolts *e'*, foot-treadle *G*, rock-shaft *F*, and links *F'*, substantially as described.

2. The clips *h*, provided with shoulders, as described, in combination with the slotted rib *II'* and drag-bars *II*, substantially as set forth.

128,701. WM. P. BROWN, Malta, Ohio. Cultivator. July 9, 1872.

The object of this invention is to improve wheel-cultivators by suspending the rear ends of the shovel-carrying beams from the carriage by means of springs and chains in such manner that, while the plowman is relieved from the weight of said beams and their shovels, the horses are also relieved of the weight of the tongue and double-tree during the operation of the machine, as will be hereinafter explained.

Spring-arms and chains for sustaining the weight of shovel-beams, substantially as described.

131,509. ANDREW T. SHERWOOD, Amador, Cal. Cultivator. Oct. 1, 1872

My invention consists, first, in constructing the frame-work of a field cultivator or seed-sower of hollow metal tubes, for the purpose of obtaining durability and strength combined with the required degree of lightness; and secondly, in a novel arrangement by which the weight of the driver is employed for forcing the cultivator-teeth or plows into the ground.

The loosely-hinged cultivators *E* *E*, in combination with the seat *I*, timber *l*, and springs *m*, so arranged that the driver's weight can be applied to force the cultivators into the ground, substantially as described.

139,610. GEO. A. PURSLY, Pittsfield, Ills. Grain Drill. June 3, 1873. Filed Mar. 8, 1873.

My invention relates to a combination of springs and adjusting devices for graduating the force with which the flukes or seed tubes are pressed into the earth. The invention consists in the combination of the movable bar and its guide-rods and springs with the frame, draft rods, and flukes; and in the combination of the pivoted and slotted plates, the pivoted connecting-bar, and the lever, with the movable bar, the guide-rods and springs, the draft

rods, the flukes, and the frame, as hereinafter fully described.

The combination of the pivoted and slotted plates *I*, pivoted connecting-bar *J*, and lever *K*, with the bar *E*, guide-rods *D* and *F*, springs *II* and *G*, draft-rods *C*, flukes *B*, and frame *A*, substantially as herein shown and described

141,786. JONATNAN M. GUSTIN, Wilmington, Ohio. Cultivator. Aug. 12, 1873. Filed Jan. 28, 1873.

1. The yielding beam supporters, consisting of the bent plates *M*, swiveled to the beam *E*, and holding the adjustable screw-rods *N* and springs *O*, substantially as and for the purpose specified.

2. The yielding beam-supporter, consisting of the bent plate *M*, hinged to a swiveled horizontal shank, and holding the adjustable screw-rod *N* and spring *O*, substantially as and for the purpose specified.

3. The adjustable arched or bent brace *II*, constructed and arranged as shown and described, in combination with the axle *A*, axle-arms *C*, and clutch-plates *B*, *B'*, substantially as and for the purpose specified.

4. The adjustable and removable seat *G*, *G'*, loop *G''*, and rack *G'''* combined, substantially as and for the purpose set forth.

5. The axle *A* and axle-arms *C*, in combination with the clutch-plates *B*, *B'*, bolts *B''*, and the combined walking and riding cultivator herein described.

147,936. EUGENIO K. HAYES, La Fayette, Ills. Double-Row Stalk-Cutter. Feb. 24, 1874. Filed Oct. 4, 1873.

The vertical stalk straighteners *I*, adjustable set-screw blocks *r*, links *s*, guides *g*, eye-supports *h*, and cords *h*, in combination with the ratchet-levers *L*, crank-shafts *K*, connecting with rods *M*, provided with adjusting set-screw block, and spiral springs *e*, all constructed and arranged in the manner and for the purposes as herein set forth.

148,606. WM. WEUSTHOFF, assignor to Farmers' Friend Manufacturing Co., Dayton, Ohio. Grain Drill. Mar. 24, 1874. Filed Aug. 8, 1873.

This invention is intended to remedy the difficulty frequently experienced in drilling in hard ground, where the hoes fail to pass sufficiently into the ground when it is harder than usual. In such case the common practice has been to load the hoes by hanging weights on the drag-bars. My improvement consists in attaching springs to a roller or oscillating bar operated by a crank, or equivalent mechanism, the springs pressing against the upper face of the drag bar, and pressing them down with a force depending upon the tension of the springs. The springs bearing against the upper side of the drag bars do not interfere with the movement of the drag-bar forward and back necessary to arrange the hoes in one row or zigzag.

1. The combination, in a grain-drill, of the hoes and drag-bars, with the segmental springs *E* attached to the shaft *B*, and bearing against the drag-bars with a pressure regulated by turning said shaft on its axis, substantially as and for the purpose set forth.

2. In combination with the drag-bars, the segmental springs *E*, shaft *B*, lever *D*, and detent for holding the shaft when the pressure has been adjusted, substantially as set forth.

3. In combination with the hoes, adjustable in one or two rows, segmental springs *E* bearing against the smooth surface of the drag bars, so as to permit the latter to slide freely under the springs, substantially as set forth.

151,426. GIDEON J. OVERSHINER, Hollister, Cal. Gang Plow. May 28, 1874. Filed April 16, 1873.

My invention relates to the combination and application of spring and lever power to the gang-plow in such manner that the plows may be raised by the foot of the driver, and with the application of very little power.

In a gang-plow, the combination of the springs *I* and lever *G*, for lifting the frame *A* and plows *B*, constructed and operating substantially as set forth.

160,621. ALBERT D. SIMONS, Windsor, Conn. Combined Horse-Hoe and Plow. Mar. 9, 1875. Filed Jan. 25, 1875.

1. The arched beam *C*, having horizontal arms *B*, in combination with the guide-clamps *G*, plows *A*, and hoe-blades *D*, substantially herein described.

2. The arched beams *C*, with the plows and hoes attached as described, and the guide clamps *G*, in combination with the arched sup

port J, rods L, braces M, and studs N, substantially as shown and described.

3. The combination of cultivators A, D, arched beam C, lever O, and spring-catch P with the truck-frame and tongue, substantially as set forth.

180,271. WM. N. RIDDLE, Caddo Grove Texas. Wheel Cultivator. July 25, 1876. Filed April 25, 1876.

1. The combination with pin I, having loop V, of the spring U, arranged to hold the plows down to their work, but yielding sufficiently to allow them to move, as shown and described, for the purpose specified.

2. The combination of the boys H, the pins I, the arms J, P, and the lever L, with the plow-beams C, the tongue K, and the uprights M, attached to the axle B, substantially as herein shown and described.

3. The combination of the bent lever Q with the lever L, pivoted to the uprights M, and with the pin I of the rear bow H, substantially as herein shown and described.

181,200. JOSEPH M. PAYNE, Dallas, Texas. Sulky-Plow. Aug. 15, 1876. Filed May 27, 1876.

1. The combination of operating and suspending lever L, with stirrup K, spring O, and plow-beam G, substantially as set forth.

2. The combination of draft-rod P, plow beam G, guide loop K, and perforated link H, substantially as described, and for the purpose set forth.

184,268. J. M. SMITH and H. W. C. THOMAS, Springfield, Ohio. Grain Drill. Nov. 14, 1876. Filed Feb. 26, 1876.

1. The series of pivoted valves f^1 , arranged over the discharge-outlets to the seed-arms of the distributor shells or casings, and operating substantially as described.

2. The series of pivoted valves f^2 , arranged over the discharge-outlets of the distributor wheel casing, in combination with the rock-shaft g , with its series of crank-arms, and actuating lever g^1 , substantially as and for the purpose set forth.

3. The hollow stud axle a , in combination with the drive wheel B, central shaft b , distributor wheel shaft c , and clutch b^1 , arranged as described.

4. The shaft on which the distributing wheels are mounted, provided with the crank arm, in combination with the reversely-reciprocating grass-seed slides, and the connecting-rods, arranged and operating substantially as described.

186,407. JOHN C. BAKER, Mechanicsburg, Ohio. Grain Drill. Jan. 23, 1877. Filed Nov. 8, 1877.

1. The combination, with the main frame of a grain-drill, pivoted so as to be adjustable in a vertical plane, of spring pressed hoes, the latter operated by the rear bell-crank lever, intermediate connecting-link, and rear presser-bar, substantially as described.

2. In a grain-drill, the combination of drag-bars C and spring-bar E, provided with springs H and arm G, with the pitman L, bell crank lever K, and lifting-bar M, substantially as and for the purpose described.

189,679. JOHN C. BAKER, Mechanicsburg, Ohio. Seeding-Machine. April 17, 1877. Filed April 5, 1875.

1. In a seeding machine, the combination of a bent-wood frame, A, constructed with the straight front bar, as shown and described, and a series of drag-bars, F, having their forward ends attached to said front bar.

2. In combination with the hoes of a grain-drill, a series of clearers, G, suspended on a transverse shaft, and arranged to operate in the manner described.

3. In combination with the arms I, the bar or shaft H, pendulous arms G, lever arm J, and eccentric K, constructed and operating as shown and described.

4. In combination with the arms K', connected by the shaft L, having the links M mounted thereon, and connected to the drag-bars, the band-lever O, mounted on the main axle, and connected by the sleeve N to one of the arms K', as shown.

5. In combination with the arms K', connected with the drag-bars, and operated by the hand-lever O, the arm I, provided with the pin A, and having the clearer-arm shaft attached thereto, as shown, so that the movement of the lever to raise the hoes will also raise the clearer-arms.

6. In combination with the hand-lever O

for raising the hoes, provided with the locking-dog I, the pivoted rack-bar or arm P, carrying one of the feed-operating pinions, and having one end passed through the lever, as shown, so that the hoes and feeding devices may be thrown into and out of action simultaneously by the driver with one hand while on the machine.

7. In combination with the driving shaft Q, the feed roll bearing loosely at one end on the shaft, and supported at the opposite end by the surrounding case or cup, as shown.

8. In combination with the shaft and the journaled feed-roll mounted loosely thereon, the loose fastening pin K, secured in place by the cup or case encircling the journal, as shown and described.

9. In combination with the feed regulating slide T, having its end provided with the oblique slot I, the upright band-lever U, mounted on the end of the hopper, with its lower end in the slot I, as shown.

190,816. WM. P. BROWN, Zanesville, Ohio. Combing for Cultivator. May 15, 1877. Filed April 6, 1877.

1. The pipe-box provided with a projection adapted to co-operate with a spring, weight, or the draft, to rock the said pipe-box against or with the weight of the rear cultivators or plows, substantially as and for the purpose described.

2. The combination, with the crank axle and the gangs or plows, of the pipe-box, having arm M, the spring N, attached to the main frame, the lead I, and the stirrup G, or its equivalent, having brackets H and pivot bolt B, and fastened to the pipe-box, substantially as and for the purpose described.

3. The pipe-box E, having longitudinal ribs, combined with the stirrup G, having corresponding grooves and a clamping device, substantially as described.

191,054. JOHN L. HILL, Climax, Kans. Corn Planter and Grain Drill. May 22, 1877. Filed Feb. 26, 1877.

1. The combination of the recessed cylinders S, the gear-wheels T U, the rod V, the ratchet-wheel W, the push and the pull pawls X Y, the bar Z, and the lever A', as herein shown and described.

2. The combination of the seed-boxes M, the slides Q R, the brushes O, and the springs P, with the recessed hubs of the concave rotary cutters K, and with the beams I J, substantially as herein shown and described.

193,075. T. BRENNAN, J. TAYLOR and J. T. LYNAM, Louisville, Ky. Grain Drill. July 17, 1877. Filed Jan. 29, 1877.

Our invention consists in peculiarly constructed furrow openers, provided with straight flat springs, and having one adjustment incident to the springs and another independent of the springs, the former for the purpose of avoiding rocks, inequalities, &c., in the ground, and the latter for raising all of the openers out of the ground in going to or leaving a field, the construction being substantially as hereinafter specified.

1. The furrow-openers A, having the tubular extensions A', the V-shaped ends, and the sharp-edged colters a , constructed as shown, in combination with flat straight lifting or operating and supporting springs B, and tongues b , substantially as described.

2. The combination of the furrow openers A, straight flat springs B, hinged bar C, rod E, link F, lever H, and toothed rack J, all constructed and arranged substantially as described.

193,692. LOUIS B. CODDINGTON and WM. W. FRENCH, Westfield, N. J. Harrows. July 31, 1877. Filed May 28, 1877.

The bars A A' A'', hinged upon the rod B, the frame C, having the cross-bar b and uprights D, the springs d , rods e , springs f , hinged bar E, axle F, and wheels F', in combination, substantially as shown and described.

193,912. WALTER G. BARNES, Precourt, Ills. Corn-Cultivator. Aug. 7, 1877. Filed June 19, 1877.

My invention relates to walking cultivators; and it consists, first, in the construction of a spring loop or hook for lancing the beams on the ends of the tongue when the implement is not in use; and second, in the construction and arrangement of adjustable coupling or clamping plates to be used in combination with the beams and with the coupling-sleeve, substantially as hereinafter more fully described.

1. As an improvement in cultivators, the combination of the hinged beams D, having spring-loops G, axle B, and tongue or frame A, having hooks h , substantially as and for the purpose herein shown and described.

2. In combination with the beams D and axle B, the adjustable coupling-jaw herein described, consisting of the plates p p' , having segmental slots g , projecting lips r r' , and diagonal front caps or braces s s' , constructed and combined to operate substantially as and for the purpose herein shown and described.

195,742. U. BALDWIN, I. T. and W. K. SHUMARD, Stewardson, Ills. Seeder and Planter. Oct. 2, 1877. Filed June 18, 1877.

1. The roller H, connected with upper front end of plow C by springs G, in combination with rods E, pivoted below the springs to plows, and having hook ends that pass through rigid eyes e' , as and for the purpose specified.

2. The combination of the series of wheels T, made with V-shaped rims, and the wheels or rollers U, made with concave faces, with the shaft Y, the frame A, and the plows C, substantially as herein shown and described.

3. The wheel D', having pins E' of unequal length attached to its side, and the arm P', and the spring g' , attached to the dropping-slide G', in combination with the shaft of the swivelled feed-screw R, the hopper K, and the dropping slide G', substantially as herein shown and described.

4. The combination of the curved colters J with the plows C and the arms D attached to said plows, substantially as herein shown and described.

217,811. GILPIN MOORE, assignor to Deere & Co., Moline, Ills. Cultivator. July 22, 1879. Filed Feb. 4, 1879.

1. In a wheel cultivator, the combination of the axle, one or more plows hinged to the axle, and one or more springs, connected at their rear ends to the forward ends of the plow-beams, and at their forward ends to the wheel-frame in front of the axle, substantially as set forth.

2. In a cultivator coupling, the slotted sleeve E, in combination with boxes G H, adjustably secured to the sleeve by bolts and nuts, substantially as described, and for the purpose specified.

3. In combination with the sleeve E and adjustable boxing G H, the slotted sleeve I, spindle J, and plow-beams having brackets K, substantially as and for the purpose specified.

4. The vertically-adjustable slotted sleeve I, in combination with brackets K, plow-beams D, spindle J, with stud j, and boxes G H, which sustain the sleeve I and spindle J, substantially as and for the purpose specified.

5. In combination with the wheel-frame and plows, the spindle J or elongated journal for the plow-beam, and the spring M, connecting the elongated journal or spindle J and the wheel-frame, substantially as and for the purpose specified.

6. In combination with a cultivator wheel frame and plow, a spring connected at one end to the wheel-frame, and at its other end to the journal-bolt on which the plow-beam has lateral motion, so that the plow-sustaining force of the spring will not have a tendency to draw the plow to one side whenever it is deflected for any purpose, substantially as and for the purpose specified.

222,391. JAMES M. ELDER, Indianapolis, Ind. Cultivator. Dec. 9, 1879. Filed Aug. 30, 1879.

1. The adjustable bracket O, combined with the universal joint L L', spring K, cup J, rod I, and coupling G, as and for the purpose specified.

2. In combination with the arched axle of a cultivator, the bracket O, with arms g g , the universal joint L L', the spring K, the cup J, the rod I, the rod H, the serrated lugs G G', the coupling F, and plow beams W W', as and for the purpose specified.

3. In combination with the coupling F of a shovel-beam, the jointed rod H, I, spring K, universal joint L L', and bracket O, as and for the purpose specified.

222,767. EDGAR E. WRIGHT, Davenport, Iowa. Wheel Cultivator. Dec. 16, 1879. Filed Nov. 12, 1879.

1. In combination with a vertically-swinging beam or drag-bar, a spring, substantially as described and shown, arranged to urge the beam downward when in action and urge it upward when it is lifted above the operative position.

2. In combination with a vertically-swinging beam or drag-bar, a double-acting automatic spring, substantially as described, serving the double purpose of holding the beam down to its work and of assisting to lift it when it is thrown out of action.

3. In combination with a vertically-swinging beam or drag-bar, a spring, substantially as shown, adapted to exert an automatic spring action upward or downward upon the beam, according to the position of the latter.

4. In a cultivator, the combination of a frame, a vertically-swinging beam or drag-bar attached thereto, and an automatic spring, substantially as described, connected with one of said members, and arranged to urge the beam downward while the latter is in an operative position, but not when it is raised above said position.

5. In a cultivator, the combination of a frame, a vertically-moving beam or drag-bar connected thereto, the pulley or equivalent bearing connected to one of said members, and the spring-arm connected to the other member and provided with the portion *d*, bent as shown, and adapted to act against the pulley and hold the beam down in an operative position.

6. In a cultivator, the combination of a main frame, a vertically-moving beam or drag-bar connected therewith, and a spring, substantially as described, interposed between said parts and acting vertically upon the beam, said spring being constructed and arranged to pass a center or dead point as the beam moves vertically, and in passing said point cease or change the direction of its action or the beam.

7. The combination of the frame, the vertically-moving beam, and the vibrating spring having the portion as shown and described, adapted to urge the beam upward after the latter has risen above its operative position, but not urge it upward when it is in said operative position.

8. The combination of the frame, the vertically-moving beam or drag-bar, the roller or equivalent bearing connected to one of said members, and a vibrating spring, constructed substantially as described, adjustably secured to the other of said members, as shown, whereby the operative position of the beam and the action of the spring may be varied.

9. The combination of the frame, the vertically-moving beam, the vibrating spring, constructed substantially as shown, attached to one of said members, and the roller or bearing adjustably connected with the other member, as shown, whereby the action of the spring and position of the beam may be modified.

10. The combination of the main frame, the vertically-movable beam, and the automatic vibrating spring provided with shoulder *e*, said spring being located between the frame and beam in the manner shown and described, so that the shoulder serves to limit the descent of the beam, and thereby control the depth to which the plow or hoe enters the ground.

11. In a wheeled cultivator, the combination of an arched axle and an arm extending outwardly therefrom, and adapted to co-operate with and permit the lateral adjustment of a spring operating upon the beam, substantially as described.

12. In a cultivator, the combination of a frame, a vertically-swinging beam, a vibrating lifting-spring or spring-arm, and a roller or equivalent bearing riding on the spring, said parts arranged, substantially as described, so that the distance between the roller and the fixed end of the spring decreases as the beam rises.

9,085. ASA H. ALLISON, Millville, Ind., assignor to the Eagle Manufacturing Co., Davenport, Iowa. Cultivator. Original 61,649. Jan. 29, 1867. Re-issued Feb. 17, 1880. Filed Nov. 28, 1879.

1. The plow beams *D D*, suspended from the curved guide-rods *f f* and connected with the stirrups or levers *g g*, for obtaining lateral movement, in combination with the vertically-sliding cross-heads *F F*, levers *H H*, and springs *a a*, substantially as and for the purpose described.

2. The combination of a wheeled frame and vertically-swinging drag-bars jointed at their forward ends to the frame at a fixed height, and springs interposed between and having connection with both the frame and beams, and exerting an upward strain upon the latter when the machine is in action.

3. A cultivator wherein the attendant is mechanically assisted in raising the shovels

from the ground, the same embracing the combination of a wheeled frame, vertically-swinging beams, and lifting-springs adapted and arranged to lift the free ends of the beams without assistance above their operative position, substantially as described.

4. The combination, in a straddle-row cultivator, of a wheeled frame, two independent vertically and laterally swinging beams, and springs adapted and arranged to exert an upward strain on the beams and permit them to move both vertically and laterally while subject to the spring action, substantially as described.

5. In a wheeled cultivator, drag-bars capable of a vertical movement at the rear ends only, in combination with springs exerting a lifting strain on said ends, whereby the springs are caused to govern or assist in governing the position of the beams and shovels, substantially as described.

6. In a wheeled cultivator, the combination of vertically-moving beams, springs acting upward thereon, and means, substantially as described, for holding the beams down, so that the springs will automatically lift the beams and shovels out of action when released, as set forth.

7. In a cultivator, the combination of a wheeled frame, vertically-swinging beams jointed thereto, and springs arranged to receive the weight of and sustain the beams when the latter are elevated out of action, substantially as described.

8. In a wheeled cultivator, the combination of beams adapted to swing vertically at the rear ends, springs exerting an upward strain on said beams, and handles under the direct control of the attendant, operating upon and enabling him to control the beams, substantially as described.

225,545. SANDFORD WILLIAMS, Sedgewick, Kans. Wheel-Drill. Mar. 16, 1880. Filed Jan. 20, 1880.

The present invention has relation to seed and wheat drills; and it consists in a series of bifurcated cutters having distributors for the seed, said cutters being hinged to a pivoted cross-beam provided with a series of flat springs, in connection with a removable rod passing through the arms of the cutters, and having removable blocks supported by the rod and disposed between the arms of the cutters, upon which the springs bear, the tension of the springs thereon being regulated by a lever connected to the pivoted cross-beam.

In a wheat or grain drill, the bifurcated cutters *E* and distributors *F*, said cutters being hinged to a pivoted cross-beam, *a*, having a series of flat springs, *H*, in combination with the removable rod *d* and removable blocks or rollers *c*, said springs bearing upon said rollers or blocks, and their tension being regulated by the lever *I*, substantially as and for the purpose set forth.

226,833. BYRON C. BRADLEY, Chicago, Ills. Cultivator. April 27, 1880. Filed Aug. 4, 1879.

My improvements consist in a *C* spring, secured at one end to the axle, and having a chain attached to its upper end, which chain is connected at one end with the rear end of the plow beam, for the purpose of aiding in sustaining the weight of the plow beam; in a spring equalizer, constructed substantially as described, and to which the wheel-tire is attached for the purpose of relieving the strain in starting and when the plows come in contact with obstructions. The two equalizers also take the place of an evener, and permit either horse to advance a little, the same as when an evener is used, as hereinafter fully set forth.

1. The combination of the spring *C*, attached to the axle, as described, with the rocking head *g*, chain *D*, and beam *B*, whereby the attachment and operation of the spring is made independent of the frame or parts mounted on the elevated portion of the axle, substantially as specified.

2. The combination of the bent rod or bar *k k'*, brace *l*, arms *j j'*, and rocking head *g*, with the hooked rod *a*, plate *m*, and spring *e*, constructed and operating substantially as described.

229,534. JOHN W. HUDSON, Wellington, Ills. Wheel Cultivator. July 6, 1880. Filed Mar. 19, 1880.

1. The sleeve *D*, cut away for the passage of spring *G*, the latter attached to bar *d* and coiled around and secured to axle *A* and arm *F*, constructed and arranged as shown and described.

2. The combination of the yoke *J*, pronged and serrated plate *L*, adjustable plow beams *K*, rod *i*, and collar *M*, substantially as and for the purposes herein set forth.

3. In combination with two sets of plow-beams, the shares *B* and connecting spring *S*, as and for the purposes herein set forth.

231,749. DANIEL E. ASHER, Gosport, Ind. Grain Drill. Aug. 21, 1880. Filed April 24, 1880.

1. In a seeding-machine, the combination, with the seed-souts and furrow-plows, of furrow cleaners having their beel end branched to form an open space immediately in front of said plows, substantially as and for the purpose specified.

2. The combination of the seed-souts *G*, plows *H*, and the adjustable furrow cleaners *I* with the shaft *J*, slotted rod *E*, standards *F*, and set screws *C* and *P*, substantially as described, and for the purpose specified.

233,439. HENRY SANTROOK, Harvey Township, Kans. Grain Drill. Oct. 19, 1880. Filed Aug. 12, 1880.

1. The hopper *C*, having arches *E*, and feeder *D*, with screw threads *f g*, said hopper being suspended by the springs *c*, hinged at one end to the frame *A*, in combination with the shoes *M*, hose *i*, sleeves *k*, and tubes *h*, substantially as and for the purpose specified.

2. The shoes *M*, having brace-arms *N*, springs *R*, chains *s*, and roller *L*, in combination with the lever *K*, ratchet-plate *e*, and pin *t*, substantially as and for the purpose set forth.

234,615. WM. H. RYER, assignor to self and A. Harsbheimer, LaCrosse, Wis. Sulky-Plow. Nov. 16, 1880. Filed July 19, 1880.

The combination, with the arched cross-bar *A*, having the trunnions *m*, of the *U*-shaped cross-bar *a*, connecting with lever *r* and extending backward to support the plow, the plate *p*, and half tube *q*, the rod *s*, having spiral spring *u*, and the frame having lug *t*, substantially as and for the purpose specified.

234,845. JOHN C. BAKER, Mechanicsburg, Ohio. Combined Grain Drill and Cultivator. Nov. 30, 1880. Filed Feb. 16, 1880.

1. The combination, in a seeding-machine, of a rectangular frame composed of a front bar and two side bars, a transverse hopper sustained by the side bars of said frame, and a transverse brace having its ends threaded in reverse directions to adjust the side bars to and from each other as the length of the hopper may require.

2. A tubular grain-drill frame consisting of tubular front and side bars, elbows screwed thereto and forming corners, *T* thimbles mounted on the side bars, and a cross-brace having its two ends threaded in reverse directions and seated in the thimbles, as shown and described.

3. In combination with a frame having its front and side bars connected by elbows, a cross-bar extending between and connecting the elbows, substantially as shown.

4. In combination with a hopper having feet *i*, the blocks *D*, and caps *G*, recessed to receive the feet, and provided with set-screws, as shown.

5. The elbow herein described, provided with the flange in its angle, as and for the purpose set forth.

6. A reversible cultivator-tooth, *K*, pointed at one end and furnished with a lip, *p*, at its opposite end, as shown.

7. The combination of the head *J*, the laterally-swinging arms *n n'*, pivoted thereto, and two shovels attached to the pivoted arms.

235,175. FRANCIS F. SMITH, Aurora, Ills. Sulky-Plow. Dec. 7, 1880. Filed May 22, 1880.

1. The combination, with the supporting-bar *A* and crank-shaft *k'*, of sector *k*, having a bracket, *k'*, which binds against the side and edge or edges of the supporting-bar *A*, substantially as and for the purpose described.

2. The combination of the lever *M*, toggle-lever *m'*, sector *k*, having a bracket, *k'*, and the crank-shaft *k'*, and supporting-bar *A*, substantially as and for the purpose described.

3. The combination of the sectors *k k'*, having brackets *k' k'*, in combination with the slide *B*, having a bracket, *b'*, the axles *A' A'* of the sulky-carriage, set out of line with one another, and the crank-shaft *k'*, having its arms in line with each other, substantially as and for the purpose described.

4. The combination, with the supporting-bar *A* and crank-shaft *k'*, of sector *k* on the land-

side of the carriage, provided with a bracket, *E*, which serves both as a set-gage for the sector and as an extended support for one end of the crank-shaft, a lever, link, and a slide, *B*, the parts being arranged to limit the extreme up and down movements of the slide, substantially as described.

5. The spring check roller *J*, suspended upon a supporting frame provided with stops, in combination with the plow-beam *K*, whereby a spring-roller and a laterally-vibrating plow-beam are adapted for operating together in a sulky-plow, substantially as and for the purpose described.

236,536. ROBERT J. BOWMAN, Alexandria, La. Gang-Plow, Planter and Cultivator. Jan. 11, 1881. Filed July 9 1880.

1. In a combined gang-plow, planter, and cultivator, the combination, with the frame *A*, the plow-beams *K*, and the gear-wheels *V*, of the cross-beam *P*, the connecting-bars *J*, the pivoted equal armed levers *h*, and the curved rack-bars *g*, substantially as herein shown and described, whereby the rear ends of the plow beams will be raised at the same time and by the same movement as the forward ends, as set forth.

2. In a combined gang plow, planter, and cultivator, the combination, with the frame *A* and the shaft *W*, that carries the gear-wheel *V*, of the coiled spring *e*, the sleeve *d*, the pawl *c*, and the ratchet-wheel *f*, substantially as herein shown and described, whereby the weight of the beams and their attachments are balanced, and the plowman relieved from the said weight when adjusting the machine, as set forth.

3. In a combined gang plow, planter, and cultivator, the combination, with the plow-beams *K* and the forward cross-beam, *N*, of the right angled levers *l*, the two eyebolts *M*, and the grooved or flanged washers *o*, substantially as herein shown and described, whereby the plow-beams are adjustably and firmly connected with the forward cross-beam, as set forth.

4. In a combined gang-plow, planter, and cultivator, the combination, with the plow-beams *K* and the rear cross-beam, *P*, of the plates *Q*, having apertures, and the wedge-keys *R*, substantially as herein shown and described, whereby the plow-beams are connected with the rear cross-beam adjustably and firmly, as set forth.

5. In a combined gang-plow, planter, and cultivator, the combination, with the connecting-bars *j* and the rear cross-beam, *P*, of the clevis *l*, the eyebolt or plate *m*, the flanged or grooved plates or washers *n*, and the wedge-keys *o*, substantially as herein shown and described, whereby the cross-beam is held from longitudinal movement, as set forth.

236,734. JAMES TAYLOR, Louisville Ky. Rice-Drill. Jan. 18, 1881. Filed Sept. 29, 1880.

1. In a grain-drill, the combination, as set forth, of a bar to which the drill-pivot is attached, provided with an eye, *E*, a rod on which the eye may turn loosely, a casting, *G*, rigidly secured to the rod on each side of the eye, and the two castings connected by a pin, *h*, passed through the bar.

2. In a grain-drill, the combination, as set forth, of a bar to which the drill-pivot is attached, provided with an eye, *E*, a rod on which the eye may turn loosely, means, substantially as described, for permitting the eye to turn loosely or be secured rigidly to the rod, and a lever, *L*, in connection with the rod for operating the plows, whose bars are secured rigidly to the rod.

237,001. W. P. ELAM and W. F. BOGGS, Petersburg, Ills. Grain Drill. Jan. 25, 1881. Filed April 27, 1880.

1. The drag-bars *G*, hinged to the castings *g*, and bifurcated, as shown, in combination with colter *H*, fluke *F*, covering device, and stay-rods *m*, and with means *K* *R* *J* for elevating the gang, as specified.

2. The independent bifurcated drag-bars *G*, hinged at *g*, and carrying revolving colter *H*, flukes *F*, and presser-foot *l* *i*, combined with a rod, *J*, and with lifting-frame *K*, through which said rod operates loosely when said colter overrides obstructions, as herein specified.

3. The combination of the independent bifurcated drag bars *G*, carrying revolving colter *H*, flukes *F*, and presser-foot *l* *i*, the rods *J*, lifting-frame *K*, through which said rods *J* work loosely, and spiral spring *J'*, as and for the purposes specified.

4. The double spiral feed tubes *E*, in combination with grain-box *D*, flukes *F*, and the feed bar or roll, as specified.

237,057. HENRY B. SHERWOOD, Westport, Conn. Hand-Cultivator. Jan. 25, 1881. Filed Aug. 19, 1880.

1. In a hand cultivator, the combination of the wheel *A*, the forked and shotted beam *B*, the axle bolt *C*, the bent standard *D*, carrying line *G*, and having a secured forward and engaging the serrated holding block *E*, the handle holder *I*, the handle *J*, the arm *M*, and the spiral spring *O* *P*, as and for the purpose specified.

2. In a hand cultivator, the combination, with the beam *B* and the handle holder *I*, of the curved and channelled arm *M*, the fastening *N*, and the spiral spring, made in two parts, *O* *P*, the lower part, *O*, having its upper end bent inward to engage with the channelled arm *M*, and the upper part, *P*, having its upper end bent upward to engage with the cross-bar of the handle-holder *I*, whereby the handle can be adjusted at any desired inclination, as set forth.

3. The combination, with the bars *T*, carrying the fender-plates *S* and the beam *B*, of the connecting-rod *U*, having a *U* bend or loop in its middle part to receive the beam, substantially as herein shown and described, whereby a lateral movement of the fenders is prevented, as set forth.

237,739. C. O. GARDINER, assignor to P. P. Mast & Co., Springfield, Ohio. Cultivator. Feb. 15, 1881. Filed July 7, 1880.

1. In combination with the wheeled frame and the vertically-swinging beam or drag bar jointed thereto, the upright arm connected rigidly with the beam, the lever jointed at its lower end to the arm and bearing at its upper end loosely against a fixed roll or bearing on the frame, and a spring connection, substantially such as shown, uniting the arm and the lever with each other and tending to throw the beam upward.

2. In combination with the wheeled frame and the swinging beam jointed thereto, a rigid arm connected with the beam, a lever pivoted at one end to said arm and resting at its free end against a bearing on the frame, and a spring connection, substantially such as shown, uniting the arm and the lever, and adjustable to and from their point of connection, substantially as described.

3. The combination of the frame, the beam having the arm connected rigidly therewith, the lever jointed to the arm and having the shoulder or incline near one end, the spring connecting the arm and lever, and the roller or bearing on the frame.

4. In combination with the lever *G*, as described and shown, the arm *F*, provided with the series of notches, the spring, and the adjustable spring-bearing.

5. In combination with a wheeled frame and a beam or drag-bar connected thereto, a lifting-spring, and an arm provided with an incline or shoulder, and adapted to be actuated by the spring, and to sustain the beam in an elevated position by means of said shoulder, substantially as described and shown.

237,740. C. O. GARDINER and WM. C. DOWNEY, assignors to P. P. Mast & Co., Springfield, Ohio. Cultivator. Feb. 15, 1881. Filed June 28, 1880.

1. The cultivator-coupling having the rigid arm, with its upper end provided with the series of holes disposed in different vertical and horizontal planes, as described and shown.

2. The combination of the frame, the beam-coupling having the upright arm formed rigidly thereon, the spiral compression-spring, and the sliding and swinging rod, having one end seated loosely in the frame, and the other end pivoted to the upper end of the coupling-arm by an adjustable pivot, which permits the rod to be moved forward and backward in relation to the arm.

3. The combination of the frame, the coupling having the rigid upright arm thereon, the rod, and the spring, the spring being adjustable in tension, and the rod adjustable forward and backward at its point of connection with the arm, substantially as described.

4. In combination with the axle, the draft plate *F*, and the beam-operating rod, the flanged plate *F*, constructed as described and shown, with the lip or flange, whereby it is adapted to serve the double purpose of uniting the frame and axle and of holding the rod and its spring.

5. The combination of the parts *h* *e*, the connecting pivot, and the screw *i*, applied to hold the pivot, as shown.

238,683. STACY B. HART, Peoria, Ills. Grain-Drill. Mar. 8, 1881. Filed Oct. 4, 1880.

The invention consists, first, in a certain novel combination and arrangement, in relation to the drag-bars of a grain drill and their raising and lowering devices, of a series of springs which are automatically caused to either bear upon said bars when lowered or decrease their pressure upon the same when raised by the action of said raising and lowering devices, as hereinafter more particularly described;

1. The combination, with the rock shaft *H*, slotted arms *g*, and the lever for operating said shaft, of the springs *g'*, secured to the lugs *g''*, and arranged to bear upon the tops of the bars when the arms *g* are lowered, substantially as described.

2. In a grain drill, the combination, with the drill teeth and devices for raising and lowering the same, and the traveling wheel axle having the feed-wheels mounted thereon, of automatic mechanism connected with said raising and lowering devices and traveling wheel axle for clutching or engaging said axle with one of the traveling wheels simultaneously with the lowering of the drill-teeth, and unlatching or disengaging said axle and wheel as the drill teeth are raised, substantially as and for the purpose set forth.

3. The combination, with the rock shaft *H* drill teeth, and intermediate connections, of the cam *W*, lever *X*, traveling wheel *C*, axle *B*, carrying the feed-wheels, and a suitable clutch, operated by the said lever *X*, for connecting the traveling wheel to and disconnecting it from said axle, substantially as described.

4. The combination, with the two-part feed-wheels mounted upon the axle *B*, and composed of the fixed portions *P* and adjustable sleeves *r*, and the sliding bars, connecting said sleeves, of a suitable scale fixed to said axle and a pointer or index arranged upon said bar, substantially as and for the purpose set forth.

238,943. FRANK B. MANLY, Malta, Ohio. Wheel-Cultivator. Mar. 15, 1881. Filed Jan. 22, 1881.

1. Box *C* and plate *D*, in combination with plates *E* *E'*, held together as described, rod *F*, spring *H*, and bearing *G*, substantially as specified.

2. In a wheel-cultivator, the combination, with the box *C*, having arm *e*, of the plate *D*, having the curved slot *g'* and seats *n'* *p'*, the plates *E* *E'*, having space *t*, rivets *v* *v'*, and curved slot *e*, the bolts *Z* and *S*, rod *F*, spring *H*, and bearing *G*, substantially as and for the purposes set forth.

240,377. WM. P. BROWN, Zanesville, Ohio. Cultivator. April 19, 1881. Filed Feb. 12, 1881.

1. A plow-beam having in its front portion a resilient flexible joint, substantially as specified.

2. A plow-beam having its front portions flexibly jointed, and carrying an interacting spring between projections on the portions of the jointed plow-beam, substantially as specified.

3. The combination, with the coupling-sleeve and its draft sheave or projection, of the resilient flexible jointed plow beam, substantially as specified.

4. The combination, with a plow beam and its coupling sleeve, having a draft sheave or projection, and a forward arm, *C*, of the lifting-spring, toggle, and tie, substantially as specified.

5. The combination, with a flexible plow-beam, of a coupling-sleeve having a draft-projection at one end and spring lifting devices at the other end operating in antagonism to the draft, substantially as specified.

242,497. EDGAR E. WRIGHT, Davenport, Iowa. Cultivator. June 7, 1881. Filed May 23, 1879.

This invention relates to that class of machines, generally wheeled, which have vertically-swinging beams or drag-bars to carry the shovels or plow points; and the object of the invention is to render the operations of the machine easier and less laborious to the attendants by applying springs thereto in such manner that they will assist the operator in raising the beams and shovels attached thereto from their operative to their inoperative positions, and this without having the springs exert any objectionable lifting strain upon the

beams when the latter are in action.

To this end the invention consists in applying lifting springs in such manner that they exert upon the beams a maximum power or strain when the latter are above an operative position.

The spring, operating in accordance with my improved plan, may be made and applied in various forms, which will readily suggest themselves to the skilled mechanic without departing from the limits of my invention.

My springs may be arranged to sustain the whole or any desired portion of the weight of the beams when the latter are raised, and they may be arranged to exert a slight lifting strain when the beams are in action, or, if preferred, arranged to cease their lifting strain entirely at such time.

The essential feature of my invention consists in applying a lifting spring or springs in such manner that they do not increase their lifting strain as the beam is depressed, the construction preferred being such that the springs exert an increased lifting action as the beams rise from an operative to an inoperative position.

I am aware that springs have been applied in various ways to assist in lifting the beams in this class of machines; but in all cases their arrangement was such that they acted with an increased lifting strain as the beams were lowered, the consequence of which arrangement was, that the springs exerted their greatest upward strain when the shovels were in the ground, at a time when it was desirable that the shovels should not be lifted, and on the other hand exerted but little force when the beams were elevated, and when it was required that they should be sustained to relieve the operator. This old action, it will be seen, is the reverse of that which is desired, and the principal object of my invention is to reverse the old mode of action and have the springs act with little or no upward strain when the shovels are in the ground, but with a strong upward pressure when the beams are lifted.

1. In a cultivator, the combination of a vertically-swinging drag bar or beam and a lifting-spring which acts with increasing force or effect on the beam as the latter rises, and vice versa.

2. In a wheeled cultivator, the combination of a vertically-moving beam and a lifting-spring, substantially as described, whereby an increasing upward strain is communicated to the beam as the latter rises.

3. The combination of a wheeled frame, a vertically-moving beam or drag-bar attached thereto, and a lifting-spring, substantially as described, which exerts a greater strain or effect upon the beam when the latter is elevated than when it is depressed.

4. The combination of a vertically-moving beam, a lifting spring, and a shifting or changing bearing or fulcrum, whereby the lifting action or effect of the spring upon the beam is increased as the beam is elevated, substantially as described and shown.

5. A vertically-movable beam, in combination with a lifting spring, connected therewith by a changeable or shifting bearing, substantially as described, whereby the lifting force or effect of the spring upon the rising beam is maintained, notwithstanding the decreasing tension of the spring.

243,123. CHARLES A. HAGUE, assignor to First & Bradley Manufacturing Co., Chicago, Ills. Cultivator. June 21, 1881. Filed Nov. 25, 1879.

1. The arm or support A, having a pivotal connection at its lower portion with the framework of the cultivator, and arranged to rock or swing in a vertical plane, in combination with a cultivator-beam loosely suspended from said arm or support, and a spring loosely connected at one end with the upper portion of the latter, substantially as and for the purpose described.

2. The combination of a rocking arm or swinging support, A, a spring or spring-arm, B, and their connecting-link C, with the cultivator beam E, and the chain D, connecting the latter with the rocking-arm or swinging support, substantially as described.

246,224 GEORGE SHAVER, Florence Township, Ills. Cultivator. Aug. 23, 1881. Filed Feb. 13, 1880.

My invention has relation to that class of devices or attachments which are adapted to exercise a gradually-increasing pull upon a chain secured at one end thereof, and is therefore particularly adapted as an attachment to walking and riding cultivators, silky rakes

and similar agricultural implements which are provided with shovel or teeth carrying beams hinged upon a frame and adapted to be raised or lowered to bring the shovels or teeth, as the case may be, out of or into operation or contact with the soil. To raise the hinged beams of implements of this nature up from the ground requires the exertion of considerable power, the force or power required for this purpose increasing in the same ratio as the distance from the ground. Hence the object of my invention is to construct a simple and efficient device or attachment consisting, essentially, of a cam-sheave which is turned by the force of a spring and connected to one end of the chain, which, on being wound up by the sheave, raises the beams, so that very little power is required for this operation of raising the beam or beams, as the force of the spring is increased in exactly the same ratio as that of the resistance to be overcome, as will more fully appear by reference to the following description of my improvement as applied to and forming a part of a cultivator.

1. The combination of the stationary hub or spindle E, sleeve H, provided with the grooved or channelled eccentric cam-sheave I, chain M and spring K, substantially as set forth.

2. In combination, the stationary hub or spindle E, having perforated shoulder F, and arm G, sleeve H, provided with the eccentric grooved and perforated cam-sheave I, spring K, and chain M, substantially as and for the purpose herein shown and described.

248,991. GEORGE W. BROWN, Galesburg, Ills. Cultivator. Nov. 1, 1881. Filed June 15, 1880.

1. In combination with the vertically-swinging plow beams or gangs, and with the vertically-swinging spring L, the vertically-swinging links connected at their distal ends with the spring, so as to exert an upwardly acting force thereon, and connected to the plow-beams by a sliding connection, so as to permit of oscillating them in a vertical plane.

2. In combination with the vertically-swinging plow beams, vertically-swinging links J, and spring L, adapted to exert an upward force on the links J and plow-beams, a standard to which the front end of the spring is connected; and a hinged-adjustable vertically, substantially as and for the purpose specified.

3. In combination with the vertically and laterally-swinging plow beams and vertically-swinging links J and spring L, the bar H, hinged so as to swing laterally and permit the spring and links J to swing laterally also, substantially as and for the purpose specified.

4. In combination with the hinge or coupling plates D E, bolt C, plow-beams, and slotted plate G, the bolt h, the head of which is adapted to act as a keeper, substantially as and for the purpose specified.

5. In combination with the laterally-adjustable plow-beams, the slotted plate G, bolt h, and laterally-adjustable bar H, substantially as and for the purpose specified.

6. In combination with the vertically-swinging plow-beams and vertically-swinging links J and spring L, the grooved plates K, adapted to receive the studs or projections j' of the links J, substantially as and for the purpose specified.

7. In combination with the vertically-swinging plow beams, vertically-swinging links J, and springs L, the plates K, having grooves k, curved upwardly at their forward ends, whereby they will resist to a limited extent the descent of the plow-beams and sustain them to an elevated position, substantially as and for the purpose specified.

8. In combination with the vertically-swinging plow-beams, vertically-swinging links J, and spring L, the plates K, having grooves k, in which the studs j' slide, and against the ends of which grooves said studs strike to limit the extent to which the plows may be raised and lowered, substantially as and for the purpose specified.

9. In combination with a socket-plate, N, attached to the plow-beams, a hemispherical plate, P, attached to the plow-handle, and adapted to be adjusted in the socket n, for the purpose of adjusting the plow-handle laterally and vertically, substantially as and for the purpose specified.

10. In combination with the plate N, secured to the plow-beams, and having a socket, n, and slot n', and hemispherical shell P, secured to the plow-handle, and having a hole, p, the bolt n'', adapted to pass through the hole p and slot n', and secure the parts after adjustment, substantially as and for the purpose specified.

248,992. GEORGE W. BROWN, Galesburg, Ills. Cultivator. Nov. 1, 1881. Filed June 19, 1880.

1. The combination, with an axle or frame and plow-gang, of a spring arranged on substantially the same longitudinal plane as the plow beam, and connected at one end to the plow-gang and adapted to move therewith, and its other end fulcrumed or connected at or near the pivotal connection of the plow-gang, substantially as and for the purpose specified.

2. In combination with an axle and plow-gang, a spring adapted to exert an upwardly-lifting force on the gang when its rear end is elevated above a working position, and to strike a stop when lowered to a working position or below it, which stop will retain plow-beams and spring in same planes and prevent the spring from exerting either lifting or depressing force on the gang.

3. The combination, with the plow-gang, of the adjustable socket-plate R and sliding handle adjustably secured in said plate, whereby said handle is adapted to be adjusted laterally and higher or lower, substantially as and for the purpose specified.

4. The combination of the separate plates T T', connected to the lower end and opposite sides of the beam or standard, and extending below the same, the plate T', provided with longitudinal grooves v u, and the washer w'', with similar grooves, w''' w''', in which the lower side edges of said plates T T' fit, substantially as and for the purpose herein shown and described.

5. In combination with the shovel, plates T, plate U, and bolt r, the shovel-block V, slotted substantially as described and for the purpose specified.

6. The combination, with the shovel and standard, to which it is secured by a bolt, r, of a shovel-block, V, slotted as described, and the slot W', closed by a removable plate, W'', substantially as and for the purpose specified.

7. In a cultivator coupling, the plate I, forward of and hinged to the axle, and provided with notches i in its front side, in combination with the plate K, adjustably attached thereto, substantially as and for the purpose specified.

8. In combination with the plate I, forward of and hinged to the axle, and with the plate K, attached thereto, and provided with projecting bolts l, the brackets H, having segmental slots h' in their forward ends, substantially as and for the purpose specified.

9. The plates J, constructed as described, in combination with the journal a'', plate l, having extensions j', with holes for journal a'', and the set-screws j', substantially as and for the purpose specified.

248,993. GEORGE W. BROWN and SAMUEL G. HOLYOKE, Galesburg, Ills. Cultivator. Nov. 1, 1881. Filed Mar. 2, 1880.

Our invention relates to improvements in wheel cultivators of the straddle-row class; and the objects of our improvements are, first, to provide a two-way joint for connecting the plow-beams to the axle, which shall relieve the bolt which retains the parts of the joint from the strain of the draft of the plows, and which shall have its surfaces of contact on which lateral movement of the plows is obtained so constructed that they will retain a lubricant, and which are connected to the plow-beams in a manner to protect the beams; second, to provide a spring which shall exert a downward pressure on the plows when in operation, and an upward or lifting force when the plows are raised above a working position, and which springs are connected with the parts of the joint, and of the axle in close proximity to the joint, and not with the plow-beams and hence do not interfere with the movements of the plow-beams; third, to provide braces which do not require adjusting when the axle is adjusted to fix the distance between the plows; fourth, to provide practical and comparatively cheap means of securing a pivoted tongue to an axle; fifth, to provide means of preventing wear-draft of the tongue; sixth, to provide plow-handles which may be adjusted at different angles to the plow-beams, for the purpose of adjusting the rear ends of the handles transversely to the machine; seventh, to provide an attachment of the shovels to the standards, which provides means of removing the bolt by which the parts are attached to the standard without removing the shovel-block from the shovel, and which also provides for the use of a wooden "break-pin."

1. In a cultivator-coupling, the plate *J*, provided with lugs which rest on the sleeve or journal, and with an upper bearing surface, in combination with the bolt *J* and plate *K*, secured to the plow-beam and provided with an annular flange which extends downward around the plate *J*, so as to bear the draft of the plow, substantially as and for the purpose specified.

2. In a cultivator, the combination, with an axle or frame and plows hinged thereto, so as to have both vertical and lateral movement, of a spring, *N*, and arm *M*, adapted to move with the plow beams when moved vertically and to exert a lifting force on the plow, substantially as and for the purpose specified.

3. The spring *N*, attached to the journal, on which the plows have vertical motion at one end, and to an oscillating arm, *M*, at the other end, in combination with the plow-beam and the axle of a cultivator, substantially as and for the purpose specified.

4. The spring *N* and oscillating arm *M*, arranged substantially as described, in combination with the arm *J'*, extending rearward from the plate *J*, and with the plow and axle, substantially as and for the purpose specified.

5. In combination with the coupling of a cultivator, a spring, *N*, attached to an oscillating arm, *M*, which has a sliding connection with an arm, *J'*, projecting from one of the coupling-pieces, substantially as and for the purpose specified.

6. In combination with the axle adjustable by means of the sleeve and set-screws, as described, and with the bars *C* and tongue *C*, the braces *D*, having a joint, *d*, substantially as and for the purpose specified.

7. In combination with the axle having arms *A'''*, with series of adjusting-holes, and extending forward of the vertical parts of the axle, and provided with wheel-journals *A''''* at their forward ends, the draft-links *c*, connected at their front ends with the draft-rods, and at their rear ends in the series of holes *c'*, so that the draft of the team may be made to balance the parts and relieve neck-draft from the tongue, substantially as and for the purpose specified.

8. In combination with the plow-beam and handle, the plate *G*, secured to the plow-beam, and the plate *G'*, secured to the handle, and having convex and concave faces, respectively, and the stirrup *G''*, substantially as and for the purpose specified.

9. The shovel-block *B*, constructed in two parts, *B'* and *B''*, hinged to each other, in combination with the shovel and standard, the part *B''*, provided with a slot, *b''*, having an enlarged end for the reception of the bolt *f*, and the removal of the shovel-block without removing the bolt, substantially as and for the purpose specified.

249,509. GEORGE T. DRAKE, Indianapolis, Ind. Wheeled Plow. Nov. 15, 1881. Filed April 13, 1881.

My invention consists in applying a spring or springs in a peculiar manner to sulky, gang, wheel, or riding plows, for the purpose of assisting the operator in lifting the plow from the ground.

1. In a sulky-plow, the combination of an axle having a central crank, a plow mounted loosely upon said crank, and a spring acting upon the shaft to rotate its crank.

2. In a sulky-plow, the combination of a main axle provided with a central crank, and end cranks with ground-wheels attached, a plow sustained directly and loosely upon the central crank, and a spring connected with and tending to rotate said shaft.

3. In a sulky-plow, the combination of a draft-frame, a supporting-axle provided with a central crank, and with end cranks having wheels thereon, a spring tending to rotate the axle, and a hand lever and locking device, substantially as shown, for rotating and securing the axle.

4. In a sulky-plow, a rolling axle provided with a crank, a plow mounted directly and loosely upon said crank, and a spring connected directly with the crank and tending to raise the plow, substantially as shown.

5. The combination of the frame, the axle provided with cranks at the middle and the end, the ground-wheels, the plow attached to the crank of the axle, and the extension-spring extending from the plow-supporting crank to the frame.

6. In a sulky-plow, a rolling axle provided at one end with a fixed crank with ground-wheel, at the middle with a plow-supporting crank, and at the opposite end with an adjustable wheel-

carrying crank, in combination with a spring tending to rotate the axle, and two independent levers and locking devices, one attached to the main axle and the other to the adjustable crank.

250,361. JOHN W. HUDSON, Welling-ton, Ills. Cultivator. Dec. 6, 1881. Filed July 27, 1881.

This invention has reference to that class of cultivators termed "wheel-cultivators," having relation to improvements upon my patent, dated July 6, 1880, No. 229,531, which contemplate the universal adjustment of the plow-beams and the more effective working of the plants, and the desired adjustment of the shovels which perform the latter operation; and it consists in the employment of certain mechanism and the form of the corn or plant shovels and their manner of adjustment, substantially as hereinafter more fully set forth.

1. In a cultivator, the combination, with the beams, of the universally jointed yoke *A*, having springs connecting it to the said joints, substantially as and for the purpose set forth.

2. In a cultivator, the combination, with the beams, of the yoke *A*, composed of the frame *a*, having the springs or straps, substantially as and for the purpose set forth.

3. In a cultivator, the combination, with the beams, of the yoke *A*, composed of the frame *a*, provided with the perforated lateral extended portions *a'*, having the adjusting-pin *b'*, and the straps or springs *c*, substantially as and for the purpose set forth.

4. In a cultivator, the combination, with the beams having the swiveled clips *d* and fixed clips *e*, of the yoke *A*, having the springs or straps *c*, substantially as and for the purpose set forth.

5. In a cultivator, the combination, with the foot-bar *B*, of the shovels *B'*, of the shape shown and described, each turned upward at its front end and curved rearward, with one side presented obliquely to the ground and pivoted at one corner to the bar, and provided at its other corner with a slot and adjusting-screw, substantially as and for the purpose set forth.

251,301. JOSEPH C. SEBRING, Bismarck, Kans. Combined Planter and Cultivator. Dec. 20, 1881. Filed Jan. 8, 1881.

1. The combination of the pendant *V* and brace-rods *V'*, extending from pendant to staples on the heels of the spindles, and a marker *V*, as set forth.

2. The combination of the rigid frames *V*, bifurcated pendants *V'*, sheave blocks *V''*, single draft-chain *V'''*, sheaves *v''*, frame-sheaves *r''*, whiffletrees *V''''*, and supporting rod or chain *V''''*, as set forth.

3. The seed-hopper *H* and seed-slide *G*, having hole *h*, adapted to be adjusted for replanting, as set forth.

4. In combination with the replanting-hopper *H*, seed-slide *G*, having hole *h*, the spring *I*, tube *K*, boot *L*, shoe *M*, elevating-spring *N*, and stirrup *T*.

251,724. ROBERT C. MORRIS, Olney, Ills. Grain-Drill. Jan. 3, 1882. Filed April 13, 1881.

My invention relates to improvements in grain-drills; and the objects of my improvements are, first, to provide a machine for drilling wheat and other kinds of grain, the weight of which shall rest mainly upon the shovels which form the furrows into which the grain is deposited, or upon an attachment thereto, whereby the operator is enabled to control the depth of the furrow, and consequently the distance below the general surface of the ground at which the seeds shall be deposited, whether such ground be soft or hard; second, to provide a series of rollers which shall follow the shovels and compact the earth upon the grain after it has been deposited in the furrow, and at the same time leave a groove in the ground to be filled with earth after the machine has passed it, by the action of the elements; third, to provide a suitable form of cutter to be placed in advance of the shovels and seed-conducting tubes, that shall cut away weeds, grass, corn-stalks, and other similar substances, and thus prevent the shovels from being lifted out of the ground or out of their proper position thereby, and at the same time cause the shovels to be raised when coming in contact with roots of trees, stones, or other substances that would injure the machine if the shovels were not raised; fourth, to provide coiled springs for holding the shovels in the earth when there are no obstructions in their path, and permitting them to rise when such obstructions pre-

vent themselves; and, fifth, to provide the necessary construction and combination of parts to make the machine operative, and to provide for stopping the flow of grain from the seed-box at the ends of the route and when the machine is being moved from place to place.

1. A grain-drill combining in its construction a frame for supporting the operating parts a series of hoes or furrow-openers carried up on jointed rods and having a vertically adjustable movement, a series of rotating seed covers arranged in the rear of the furrow-openers, a seed-box, and a series of feeding-wheels and suitable mechanism for driving them, the construction and arrangement of the parts being substantially such as are herein described, whereby the carrying-wheels usually employed for carrying grain-drills are dispensed with and the weight of the machine is made to rest mainly upon the furrow-openers, as described.

2. In a grain-drill the weight of which rests upon the shovels or furrow-openers, a series of jointed vertically moving drag-bars and a series of compacting-rollers having their journals placed in bearings formed in the drag-bars, they being arranged substantially as set forth, whereby they are made to follow in the path of the hoes or furrow-openers and to leave a channel in the earth below its general level, as set forth, and for the purpose specified.

3. In a grain-drill the weight of which rests mainly upon the shovels which form the furrows for the reception of the grain, a series of curved cutters the lower ends of which are secured to the points of the shovels, or to the standards which carry them, and their upper ends to swinging beams, substantially as and for the purpose set forth.

4. In a grain-drill the weight of which rests mainly upon the shovels which form the furrows for the reception of the grain, a series of springs arranged substantially as shown and described, whereby they are made to communicate or transfer the weight of the frame of the machine, substantially as set forth.

5. In a grain-drill the weight of which rests mainly upon the shovels which form the furrows for the reception of the grain, the combination of the frame *A* and *A'*, the bars *B*, beams *E*, and rollers *E'*, the parts being constructed and arranged for joint operation substantially as set forth.

6. The combination of the frame *A* and *A'*, the bars *B*, attached to the frame, the beams *E*, rollers *E'*, shovels *E''*, cutters *E'''*, rolls *F*, springs *F'*, slotted beam *F''*, lever *C*, tumbling-beam *C*, and chain *G*, the parts being arranged for regulating the depth of the furrows and for throwing the weight of the machine upon the rollers, substantially as set forth.

252,163. FRANCOIS O. WILLIAMS, North Cohocton, N. Y. Cultivator. Jan. 10, 1882. Filed Aug. 26, 1881.

1. The combination, with the frame *A* and tongue *B*, of the wheel-standards swiveled to said frame, and provided with rigid arms *E*, the connecting-rods *F*, the foot-lever *G*, the rod *J*, and the hand-lever *X*, as and for the purpose described.

2. The combination, with the shaft *O*, having arms *Q* and *V*, the lever *X*, and the connecting-rod *W*, of the coil-spring *P* on said shaft, the standards *S*, connected with the frame by adjustable chains *V*, and the rods *R*, as and for the purpose specified.

253,807. JAMES K. WORTHINGTON, Kirkwood, Mo. Sulky-Plow. Feb. 14, 1882. Filed June 7, 1881.

1. A riding or sulky plow having all the wheels which support the sulky when upright in the rear of the plow, and arranged to travel in the furrow being turned.

2. The combination, in a sulky plow having a seat, of the plow *B*, and sulky-wheels *D* and *D'*, used in supporting the sulky in an upright position, and constituting the entire support when in that position, all of said wheels being arranged to travel in the furrow being turned.

3. The combination of the axle *E*, the wheels *D* and *D'*, the grooved collar *G'*, the chain *K*, the beam *C*, bearings *k*, lever *J'*, link *J*, beam *B'* and plow *B*, substantially as described.

4. The combination, in a plow, of the chain *k* and the pulley *G'*, said chain at its forward end being connected directly or indirectly with the plow *B*, and to enable it, when tightened upon the pulley *G'*, to draw and lift the plow *B*.

5. The combination, in a sulky-plow, of the axle *E*, the bearing *G'*, the chain *k*, the bearings *k*, and the beam *C*, substantially as described.

6. The combination, in a sulky plow, of the axle E, bearing G', cham K, beam C, lever P, link J, and plow-beam B, substantially as described.

7. The combination, in a plowing device, of the beam C, the plow B, the beam B', the spring L, the handle M, and the spring E, substantially as described.

8. The combination, in a plowing device, of the plow B, handle M, beam C, and spring L, substantially as described.

9. In a sulky plow, the combination of the plow B, the carriage beam C, the arm I, the link P, the lever P' in the form of a spring, and the bearing F', substantially as described.

10. A sulky plow having the side wheel, O, and the fender P, neither said wheel nor fender touching the ground saying when the sulky is tilted, substantially as described.

11. The combination of the plow A, wheel O, brace G', and step G', substantially as described.

12. The combination of the axle E, loop H, arm I, and plow B, serving to guide said arm as the plow is lifted at the heel, and also allowing the plow to be canted by means of the handle M, substantially as described.

254,418. WM. H. WILDE, Du-Quoin Ills Wheel-Plow. Feb. 28, 1882. Filed Sept. 29, 1881.

The nature of my invention relates to improvements in wheel-plows; and the invention consists in the use of a spring connected with the plow-gang and lifting-lever in such manner that the spring may be utilized to aid in raising the plow from the ground; may be locked by the lifting-lever, so as to exert no force on the plow when in operation, and to permit the plow to rise and fall freely independently of the lifting-lever and spring; and which may be locked so as to exert no force on the plow, while the lifting-lever is locked to hold the plow firmly in the ground.

1. In a wheel plow, in combination with the axle or frame, bail, and plow, a spring connected with the axle or frame or a projection therefrom at one end, and with the bail at its other end by a slotted connection, whereby it may be placed in position to exert no force on the plow when in operation, and permit it to rise and fall freely and independently of the spring, substantially as and for the purpose specified.

2. In a wheel plow, in combination with the axle, plow, swinging bail, and lifting lever connected with the plow by a slotted connection, a spring connected with the axle or a projection therefrom at one end and at its other end with the lifting-lever, whereby the lifting-lever may be locked in position and the entire force of the spring will be exerted thereon, and none of its force exerted on the plow, substantially as and for the purpose specified.

3. In combination with the axle, swinging bail having a slotted standard, G, and the lifting-lever having its arm C' pivoted in said slotted standard, a spring, H, connected at one end with the axle or a projection therefrom and at its other end with the distal end of the arm C', substantially as and for the purpose specified.

4. In combination with the axle, swinging bail, plow, and lifting-lever loosely connected with the bail by a slotted connection, a spring adapted to be locked from action on the plow by the lifting-lever in one position, and permitted to act in raising the plow with the lifting-lever in other positions, substantially as and for the purpose specified.

5. In combination with the axle, plow, swinging bail, and lifting-lever having an arm, C', connected with the plow, a spring adapted to act on the arm C', and thereby on the plow, substantially as and for the purpose specified.

254,557. WM. A. KNOWLTON, Rockford, Ills. Cultivator. Mar. 7, 1882. Filed Dec. 17, 1881.

My invention relates to that class of cultivators known as "straddle-row walking-cultivators," employed mainly in the cultivation of hilled or rowed crops; and the object of my invention is to support a suitable portion of the weight of the shovel-beams and their attachment on the main frame mounted on the carrying-wheels, to enable the operator to handle the plows with greater ease and more certainty, to support the plows in an elevated position independently in a manner to be readily lowered by means of the handles, and to securely fix the plows in an elevated position for the purpose of transportation, all of which and the means to accomplish these results will be hereinafter more fully described.

1. The combination, with the mounted frame of a cultivator and the shovel-beams having a suitable connection therewith, of the volute spring provided with the cap I and radial arm K, and link connection O, substantially as and for the purpose described.

2. The combination, with the volute spring mounted upon the supporting frame of a cultivator and a supporting link - connection with the shovel-beams, of the uprising ears or other equivalent, to receive the supporting-link when the shovel-beams are elevated, substantially as and for the purpose hereinbefore set forth.

3. The combination, substantially as herein described, of the axle, the tongue-beams, and the herein described spring-support with spring mounted therein, a radial arm, and link connection with the shovel-beams, substantially as and for the purpose hereinbefore set forth.

4. The combination, substantially as hereinbefore set forth, with the cultivator - frame, drag-bar, and connecting-rod, of the drum-like portion of the spring - case, a removable cap with radial arms attached, and a volute spring, the said parts being constructed and arranged substantially as described.

5. The herein-described spring-case, consisting of the drum-like portion fitted to engage the outer end portion of the spring, and provided with an axial shaft, a cap provided with an axial tubular shaft to receive the axial shaft of the drum-like portion of the case, and fitted to engage the inner end of the spring, substantially as and for the purpose hereinbefore set forth.

254,776. GABRIEL MARTIN, Monroe Township, Logan County, Ohio. Cultivator. Mar. 7, 1882. Filed July 16, 1881.

My invention particularly relates to those cultivators adapted for straddling a row of corn; and it consists in providing such a cultivator with supplemental and independent shovels for stirring the ground between the rows, said supplemental shovels working outside of the central straddling shovels, and being held down by a spring mechanism, which adapts them to yield to immovable obstructions, the pressure of the springs being varied by adjusting levers so as to regulate the depth of penetration of the supplemental shovels.

In a cultivator adapted for straddling the row of corn, the combination of supplemental cultivators O, S, hinged near their centers to the axle, springs P' at the forward end of the beams of said cultivators, handles or levers Q, extending from said springs to the rear of the cultivator, and racks R, all arranged substantially as and for the purposes set forth.

255,557. WM. B. YOUNG, Alton, Ills., assignor to the Hapgood Plow Co., same place. Sulky-Plow. Mar. 28, 1882. Filed Dec. 28, 1880.

1. In a sulky-plow, a central bail having pivotal connection with the axle, and an arm extending connecting by a link with the operating-lever, a plow mounted loosely upon said bail, and a spring acting upon the said bail in rear of the axle to elevate the plow, substantially as shown.

2. In a sulky plow, the combination of an axle elevated in the center, with perpendicular sides and horizontal arms, one arm extending and having the wheel rotating thereon, a central bail having pivotal connection with the axle, and an arm extending connecting by a link with the operating lever, a plow mounted loosely upon said bail, a spring having one end connected to the bail in rear of the axle and the other end connected above to the frame or tongue, and the spring acting upon the bail to elevate the plow, substantially as and for the purpose set forth.

255,877. LUPPE LUPPEN, Pekin, Ills. Cultivator. April 4, 1882. Filed Oct. 18, 1881.

1. In a straddle row cultivator, the combination of an angled axle, a sliding frame, to which the forward ends of the beams are connected, and a draw bar connected to the forward end of said frame, which is capable of lateral play at the shaft end, substantially as and for the purpose set forth.

2. The sliding frame composed of rod or bar C', one end of which is provided with a spring, substantially as shown, the cross-bars C' and C'', and flat grooved guide-bar C; the parts being constructed and arranged to operate substantially as and for the purpose set forth.

3. The combination, with the axle B, of the sliding frame, the draw-bars E E', the forward ends of which vibrate laterally, and the pivoted clevis E', substantially as and for the purpose set forth.

256,012. JOHN M. LONG, Hamilton, Ohio. Cultivator Spring. April 4, 1882. Filed Jan. 27, 1882.

This invention relates to springs for rendering the plow-beams of cultivators easy to handle by balancing the weight of the beam and its attachments. Such springs are well known and in general use; but many of them are inefficient on account of the changing strength of the spring as it becomes more or less strained. In my device a toggle system compensates for the varying stiffness of the spring, and thus gives a practically constant effect.

In a cultivator, the combination, with the axle and frame, of pivoted beam B, arm or housing E, toggle system H, fixed pivot N, moving pivot F, and spring O, substantially as and for the purpose set forth.

256,044. CHARLES W. POST, Spring Field, Ills. Cultivator. April 4, 1882. Filed Nov. 16, 1881.

The object of my invention is to cause cultivator-beams, not affected by the hitch, to automatically adjust themselves with reference to the shovels when plowing mixed soil - i. e., hard and soft soil - so that the shovels will resist the tendency of the hard soil to throw them out, and thereby an even depth of furrow be maintained. I attain these objects by devices illustrated in the accompanying drawings, in which -

1. In a cultivator, the combination of the drag-bar with the axle or frame by means of a yielding or movable coupling adapted to permit the front end of the drag-bar to fall or rise as the shovels or teeth encounter a greater or less resistance from the soil, thereby causing the shovels to stand more or less vertical to the ground, substantially as described.

2. In a cultivator, the combination, with the drag-bars, of yielding or movable couplings connecting the drag-bars with the axle, and adapted to permit the forward ends of said drag-bars to fall and the shovels to automatically adjust themselves toward a vertical position as the resistance of the soil increases independently of the hitch of the team, substantially as described.

3. The combination, in a wheel-cultivator, of the beam or drag-bar and a movable coupling at its front end, the bearing of which reciprocates at an angle of approximately forty-five degrees, substantially as described.

4. The combination, with the axle of a cultivator and the oblique guide-bracket, of the shovel-beam and the shaft to sustain the same in said bracket, substantially as described.

5. The combination, with the shaft supporting the beam and with the oblique guide-bracket, of a spring-seated reciprocating block forming a bearing for said shaft, substantially as described.

6. The shaft supporting the beam and the slotted oblique guide-bracket, in combination with the reciprocating bearing block, the guide-rod, and the coiled expansion spring, substantially as described.

256,764. HANSON P. TENANT, assignor to Gaar, Scott & Co., Richmond, Ind. Grain Drill. April 18, 1882. Filed Feb. 15, 1882.

1. A scatterer for the seed-tube of a grain-drill, consisting of two independent sections, both adapted to be secured to the seed-tube, and to be adjusted thereon independently of each other, one of said sections being provided with a scattering-plate for the seed to fall upon and the other being provided with a shield adapted to overhang the said scattering-plate, substantially as described.

2. In a two-part scatterer for the seed-tube of a grain-drill, the upper section, II, of the scatterer, formed with a shield and adjustably secured to the seed-tube, whereby the shield can be raised or lowered with relation to the scattering-plate upon which the grain falls, substantially as described.

3. The combination, with the seed-tube provided at its lower end with teeth and perforated ends, of the two-part scatterer consisting of two sections, G and H, each formed of a semi-cylindrical slotted stem having teeth adapted to mesh with the teeth of the seed-tube, and having a projecting plate at the lower end of the stem, said stem being adapted to be applied to the seed-tube, and said plates being respectively adapted to serve as a shield and as a scattering-plate, substantially as described.

4. The combination, in a grain-drill, of the swinging bar I, carrying a suitable number of harrow teeth, the castings K, secured to said bar and pivoted to the side bars of the main

frame, the lifting-lever secured to a rock-shaft, P, and provided with a locking-latch, the segment-rack, the rock-shaft provided with a rearwardly-projecting arm, the staple secured to the bar carrying the teeth and receiving the arm of the rock-shaft, and the spring arranged around said staple and interposed between the arm of the rock-shaft and the said bar 1, substantially as described.

257,228. EDWARD P. LYNCH, Davenport, Iowa. Cultivator. May 2, 1882. Filed Feb. 24, 1882.

1. In a wheeled cultivator, the combination of the axle, the vertically and laterally swinging beam journaled to the axle, the lifting-arm journaled upon the axle independently of the beam-coupling, the vertically-sliding rod jointed to the lifting-arm, the spring depressing said rod, and the connection extending from the lifting-arm to the beam, substantially as shown and described.

2. The combination of the axle, the coupling-box mounted upon the axle, the beam jointed to the coupling-box, the lifting-arm mounted upon the axle independently of the coupling-box, the vertical rod jointed at one end to the lifting-arm, the spring, and the connection from the beam to the lifting device, substantially as shown.

3. In combination with the laterally and vertically swinging beam, the lifting-arm arranged to swing about a horizontal axis, and a jointed connection between the lifting arm and the beam, and a spring, applied substantially as described, to urge the upper end of the lifting-arm downward.

4. In combination with the beam, the axle, and the coupling-box connected to said parts, the lifting-arm arranged to straddle the coupling-box and connected by intermediate devices, substantially as shown, with the beams.

5. The combination of the axle, the coupling-box, the beam, the lifting arm independent of the coupling-box, the connection between the lifting device and the beam, the vertical rod with forward extension at its foot, and the two springs, applied substantially as described and shown.

257,229. EDWARD P. LYNCH, Davenport, Iowa. Cultivator. May 2, 1882. Filed Feb. 8, 1882.

The primary objects of the invention are to suspend the shovels with a spring action at the exact depth desired in practice, and to relieve the axle and coupling-box from the friction upon the axle incident to the downward pressure of the spring under the ordinary arrangement.

With these ends in view the invention consists in introducing between the arm of the beam and the spring-actuated rod an intermediate arm sustained upon the axle, and in connecting the two arms by a spring, as well as in various minor details.

1. The combination of the beam and the arm connected therewith, the secondary arm having a limited play in relation to the first arm, the rod, pivoted to the second arm, and the two springs, applied substantially as described and shown.

2. The combination of the beam and the arm connected therewith, the second arm mounted loosely on the axle, and the lifting spring and the suspending-spring, substantially as described and shown.

3. In combination with a beam and a rigid arm connected therewith, a second arm, actuated by a beam-lifting spring, and a suspension-spring between the two arms, substantially as shown.

4. The combination of the beam and its arm, the independent arm, the suspension spring, and the spring-adjusting device.

5. The combination of the beam, the upright arm connected therewith, the independent arm, the intermediate spring, the rod united to the independent arm, the knuckle-joint, and the spring mounted upon the rod, as shown.

6. In combination with the vertically-swinging cultivator beam, a spring tending to elevate the same, and a second and stouter spring located intermediate between the arm and the first spring, in the manner and for the purpose substantially as described and shown.

257,257. ALANSON P. WEBBER, Saratoga, Ills. Cultivator. May 2, 1882. Filed Mar. 19, 1880.

It has become common to use springs in cultivators for the purpose of partially supporting the plow-beams when in use, the tendency of such springs being to elevate the beams; hence, if the operator wishes to press

the beams downward to plow deeper, he has to overcome the tension of the springs.

The object of my invention is to provide cultivators with springs connected with the beams, which springs will be free to act at all times, but which, when the shovels are in the ground, will not operate so as to have a tendency to elevate the rear ends of the beams, but when the rear ends of the beams are raised a little will come into action and will raise and hold or assist in raising and holding the shovels out of the ground. A further object is to so arrange the springs that if desired they can also be used for the purpose of aiding in holding the shovels in the ground. These objects I accomplish by means of coil-springs—one for each beam—the upper end of each spring being secured to the main frame, and the lower end being provided with a pulley which travels longitudinally under and along a rod or track connected at the ends to the beam, as hereinafter more fully set forth.

The combination, in a cultivator, of the axle with the swinging shovel-beams B, the springs secured at their upper ends to the axle and at their lower ends provided with pulleys or rollers, and the rods c, secured to the shovel-beams and passing over the said rollers, said members being constructed and adapted for operation substantially as described.

257,730. EDWARD P. LYNCH, Davenport, Iowa. Wheel-Cultivator. May 9, 1882. Filed Feb. 8, 1882.

1. In combination with a vertically-swinging plow-beam, a lifting-spring and a suspending-spring, arranged to operate substantially as described and shown.

2. In combination with a vertically-swinging beam, a spring to raise the same out of action and a spring to suspend the same in an operative position, the two arranged to operate alternately.

3. In combination with the plow-beam and the upright arm connected thereto, the rod pivoted to said arm and provided with the finger, the guide for the rod, and the two springs applied substantially as shown.

4. The combination of the beam and its rigid arm, the movable rod pivoted to the arm, and the compression-spring located between the rod and arm forward of their connecting-pivot, to suspend the beam in an operative position, substantially as described.

5. In combination with the vertically-swinging beam and the arm D, connected therewith, the rod J, jointed to said arm, the spring F, to limit the descent of the beam, located directly between the arm and rod, forward of their connecting joint, and the adjustable spring sustaining spindle L, as described and shown.

6. The combination of the beam, the upright arm connected rigidly therewith, the movable rod pivoted to said arm, the suspending spring F, located between the arm and rod, to sustain the beam in an operative position, and the adjustable spindle L, mounted and arranged to support the spring.

7. The coupling-box for a cultivator, provided with the upright arm D, and a spindle, L, adapted to support a spiral spring, as described and shown.

8. In combination with a vertically-moving beam, two springs, substantially as described, one tending to raise and the other to depress the beam when the latter is in an operative position.

9. In combination with the vertically-swinging beam, the spring attachment constructed, substantially as shown, with two springs, which tend one to raise and the other to depress the beam when it is in an operative position, whereby the beam is held by spring-pressure from either rising or falling, as set forth.

258,202. JOHN I. HOKE, South Bend, Ind. Sulky-Plow. May 16, 1882. Filed Feb. 26, 1881.

1. The combination of the clevis B, fixed to the plow-beam, the draft-clevis E and its extension F, pivoted to clevis B, the latch-arm J, the guide G, fixed to pivoted bracket G', and the open heart-shaped catch C, fixed to the pivoted tongue, substantially as and for the purposes described.

2. The combination of the pivoted heart-shaped catch C, having the draft-tongue rigidly secured to it, the guide G, the vibrating catch-arm I, and the pivoted clevis to which this arm is attached, substantially as described.

258,324. J. W. THOMAS and A. R. LUDLOW, assignors to Thomas, Ludlow & Rodgers, Springfield, Ohio. Seeding

Machine and Cultivator. May 30, 1882. Filed Jan. 9, 1882.

1. The combination, with a hoe or tooth and a lifting roller or shaft for raising and lowering the same, of a jointed pressure-rod hinged to said shaft and provided with a shouldered or locking joint, substantially as and for purpose described.

2. The combination of the hoe or tooth, the rock-shaft for raising and lowering the same, a jointed pressure-rod interposed between said tooth and rock-shaft, and having a shouldered or locking joint, and a spring arranged to exert its tension to straighten said jointed rod.

3. The combination of the hoers or teeth, the lifting roller or shaft for raising and lowering the same, the jointed rods connecting said teeth and shaft hinged to the latter, and having shouldered or locking joints, and means for locking said shaft, whereby the hoers or teeth may be held locked in working position, while at the same time any one tooth is adapted to rise without disturbing the others or the lifting roller or shaft.

4. The combination of the hoers or teeth, the lifting roller or shaft for raising and lowering the same, the jointed pressure-rods connecting said teeth and shaft and having a hinged or pivotal connection with the latter, and a lever geared to said shaft for actuating it.

5. The combination of the hoers or teeth, a lifting roller or shaft connected therewith by jointed pressure-rods and provided with a toothed wheel, a lever geared thereto for actuating it, and means for holding said lever at any desired adjustment.

6. A jointed pressure-rod for connecting the hoers or teeth and the rock-shaft, adapted to be hinged to the latter, and provided with the shouldered or locking joints, in combination with the distending springs, substantially as described.

7. The jointed pressure-rods connecting the hoers or teeth and the rock-shaft, hinged to the latter, and provided with shouldered or locking joints, distending springs, and slots permitting the hoers or teeth to fall and rise within certain limits each independently of the others, substantially as described.

8. The jointed and folding pressure-rods connecting the hoers or teeth and the lifting roller or shaft, and having a pivotal connection with the latter, said jointed rods having slots permitting the independent movement of the teeth, perforations and set-screws or bolts adapting them to hold the teeth at any desired adjustment, and self-locking or shouldered joints, in combination with springs applied and operating substantially as described.

9. The jointed and folding pressure-rods connecting the hoers or teeth with the lifting-roller, provided with shouldered or self-locking joints, in combination with distending springs, and means for holding said joints flexed, substantially as described.

10. The combination, with the hoers or teeth and adjustable drag-bars for churning said teeth from a straight line or single row to a zigzag position, and vice versa, of a lifting-roller hinged to the latter, and provided with shouldered or self-locking joints, substantially as and for the purpose described.

259,626. EDGAR A. WRIGHT, Moline, Ills. Cultivator. June 13, 1882. Filed April 6, 1882.

The invention relates to an improved manner of constructing the frame and applying the springs for the purpose of raising or assisting the operator to raise the beams or drag bars, the springs having in some cases the additional function of holding the shovels to their proper places in the ground.

The improvement consists mainly in providing the frame with axles capable of rotating independently of the wheels, coupling the wheels directly to said axles, and providing the axles with arms arranged to cooperate with a spring, a weight, or with draft devices to which the team is attached, as hereinafter more fully explained.

As regards the combination of the loosely-revolving axles with the beams and lifting springs or other equivalents, the invention is designed more particularly as an improvement upon those machines in which the axle is stationary and the beams and springs combined with sleeves or coupling-boxes arranged to rotate upon the axles.

One of the primary objects of the invention is to avoid the use of the rotating sleeves or boxes mounted upon the axle, which, for various reasons unnecessary to detail, are open to serious objection.

1. In a cultivator, the combination of the frame, the wheels, the two axles rotating independently of the frame and wheels, the plow beams coupled to the axles, substantially as described, and the arms applied to the axle and adapted to co-operate with springs, weights, or draft devices, substantially as described.

2. The combination of the arched frame, the wheels, the independently-rotating axles, each provided with an arm, the spring attachments co-operating with the arms, substantially as described, and the beams connected with the axles, substantially as shown, to swing vertically therewith.

3. In a cultivator, the combination of a draft frame, an axle revolving freely in said frame a ground-wheel revolving freely on the axle a plow-beam vertically pivoted to the axle, and an arm or projection, substantially as described, secured to the axle, and a spring connection interposed between the frame and arm, substantially as described, for the purpose of acting through the arm and axle upon the beam.

4. The combination of the arched frame *c* and standards *e*, provided with the axle-bearing *g*, the two independent loose axles, the two loose wheels, the two beams connected with the axles by vertical axes, the arms rigidly secured to the beams, the rods pivoted at one end to the arms and sliding at the opposite ends in guides, and the springs mounted on the rods, as shown.

5. In combination with the rotating axle and the beam having a forked head, the coupling consisting of the tube, the bearing block between the tube and axle, the clamping device, and the vertical pivot.

6. The combination of the draft-frame, the ground-wheels, the rotating axle, the beam connected with the axle by a vertical axis, and the arm secured rigidly to the axle and extending downward therefrom.

260,447. DANIEL BERLEW and MARTIN L. KISSELL, Springfield, Ohio, assignors to P. P. Mast & Co., same place. Cultivator. July 4, 1882. Filed April 14, 1882.

1. The combination of the plow-beam, the rotary draft device to which it is connected, the arm attached to said device, the pitman jointed to the arm, the sliding rod mounted in a guide and jointed at one end to the pitman, and the spring upon said rod tending to depress the same, as described and shown.

2. In a cultivator, the combination of the axle, the coupling head or sleeve, journalled loosely upon the axle and provided with an upright arm, a vertically-sliding rod mounted in a guide upon the main frame and connected by a pitman with the upright arm, and the spiral spring applied to urge the sliding rod downward, substantially as described and shown.

3. In a cultivator, the combination of the rotary coupling or draft head, having the upright arm Q adjustably attached thereto, the pitman R, the vertically-sliding rod S, the cylindrical case surrounding the rod and secured rigidly to the frame, and the spiral spring mounted within the case and acting to depress the rod, as described and shown.

4. In a spring attachment for cultivators, the combination of the axle, the draft-bar X, and the spring-sustaining guide T with the stirrup U, applied, as shown, to unite both the guide and the axle with the draft-bar.

5. In a cultivator, the combination, with the rotary coupling head C and the plow beam, of the draft link pivoted vertically to the coupling-sleeve and to the beam, and means, substantially as shown, for securing the link against lateral play upon the sleeve.

6. The coupling-sleeve provided with the curved flange *o*, in combination with the draft-link, pivoted vertically at one end of the sleeve and arranged to swing laterally in relation thereto, the plow-beam pivoted vertically to the rear end of the link, and the fastening-pin P, connecting the link and coupling, as shown, whereby the beam may be adjusted laterally and fixed in position without being disconnected from the coupling.

7. In a cultivator, the laterally-adjustable draft-link, pivoted vertically at its forward end to the draft device and adjustable laterally by a swinging motion, as described, in combination with the vertical rod K, mounted in the rear end of the link, and the plow beam adjustable vertically on said rod, as described.

8. In combination with the beam, its arm, and the connecting-rod, the spring, and the spring-sustaining case, adjustable vertically, substantially in the manner described and shown.

9. In a wheeled cultivator, the beam-lifting spring, arranged to operate substantially as described, in combination with the supporting-case T, provided with notches, and a stirrup, U, serving to secure the case in position and admit of its being adjusted vertically to vary the force of the spring.

261,863. LUPPE LUPPEN, Pekin, Ills. Cultivator. Aug. 1, 1882. Filed Mar. 29, 1882.

My invention relates to improvements in cultivators of that class in which plow-beams are hinged to an axle, so as to permit swinging the plow-beams both laterally and vertically, whereby said plows or gauges may be used to cultivate both sides of a row of plants at the same time; and the invention consists in constructions and combinations hereinafter described, and set forth in the claims hereto annexed.

1. In a cultivator coupling-joint, in combination with the axle, plow-beam, and sleeve C a joint-piece, D, having rearwardly-projecting arms, by which it is secured to the plow-beam, and forwardly projecting arms *d*, by which it is secured to a clevis, E, having means of securing the draft-hooks thereto in higher and lower planes, substantially as and for the purpose specified.

2. In a cultivator coupling-joint, in combination with the axle, plow-beams, clevis E, and sleeve C, mounted on the axle, substantially as described, a joint-piece, D, which partially surrounds the sleeve C and is intermediate between the plow-beam and clevis, and connected to both by joints, which, while they permit lateral flexure, hold the parts rigid as regards vertical flexure, substantially as and for the purpose specified.

3. In combination with the axle, plow beams sleeve C, and joint-pieces D, having rearwardly-projecting arms, by which it is secured to the plow-beam, and forwardly projecting arms *d*, by which it is secured to a clevis, E, constructed substantially as described, a spring connected at one end to the axle and at its other end to the plow beam, and adapted to coact with the draft-clevis, substantially as and for the purpose specified.

262,943. J. P. FULGHAM, assignor of one-half to the Wayne Agricultural Co., Richmond, Ind. Grain Drill. Aug. 22, 1882. Filed April 14, 1882.

The invention consists, first, in a novel construction whereby I am enabled to use inflexible conducting tubes for conveying the grain from the discharge-orifices of the hopper to the ground without interfering with the free backward deflection of the boes or teeth upon striking an immovable obstruction, thereby rendering it feasible to dispense with the unreliable, perishable, and expensive rubber tubes now in general use.

It further consists in hinging the series of drag-bars to a rocking drag-rail and applying a series of pressure-springs to said rail, so that the drag-bars may be left to play freely up and down, or held down by yielding pressure at pleasure.

1. The combination of the open-back drill hoe, the hopper of a grain-drill, and the conducting-tube formed of inflexible telescopic sections, the upper one of which is connected to the hopper and the lower one to the open-back drill-hoe, substantially as described.

2. The combination, with the hopper of a grain drill, of an open-back drill-hoe, the drag-bar to which said hoe is attached, and an inflexible telescopic conducting-tube, substantially as described.

3. The combination, in a grain-drill, of an oscillating drag-rail and an inflexible longitudinally-adjustable drag-bar, substantially as described, for the purpose specified.

4. The combination, with the drag-bar made in two parts, of the block fastened to the rear portion of the forward section of the bar and projecting down into a slot in the rear section, the friction-clamps, and the bolt whereby the clamps are adapted to clamp the rear section of the bar to the block by frictional contact, so as to secure the sections at any point of adjustment, substantially as described.

5. The combination, with the oscillating drag-rail, of the drag-bars connected thereto, the pressure-springs mounted on the drag-rail and projecting over the drag-bars, and means for oscillating the drag-rail, whereby the oscillating of the drag-rail will lower the drag-bars and apply through the springs the requisite pressure on the said drag-bars, substantially as described, for the purpose specified.

263,064. EDGAR and ALBERT SHANNON, Catawissa, Mo. Corn Planter. Aug. 22, 1882. Filed Mar. 13, 1882.

1. The combination of the hoppers O, the seed-slides X, having pins S, the cut-off plates P, having slots Q, and the springs R, arranged to force the said cut-off plates in a forward direction, as described, for the purpose set forth.

2. In a corn-planter, the combination, with the seed-boxes, of cut-offs forced in a forward direction by springs which will give or yield when subjected to pressure by the seed-slides, substantially as set forth.

3. The combination of the hoppers, the curved delivery-tubes V, and the seed-wheels W, having flanged rims or gatters X, substantially as set forth.

4. The seed-wheels W, having flanged rims or gatters X, radiating arms or seed-tubes Y, and curved connecting-tubes B', substantially as set forth.

5. The seed-wheels W, having flanged rims or gatters X, radiating flanged arms or seed-tubes Y, provided with hinged lids A' and springs G', and the curved connecting-tubes B', substantially as set forth.

6. The flanged arms or seeding-tubes Y, having hinged lids A', provided with pins G', springs C', slots D', and pivoted cut-off plates E', operated by the pins G', in combination with the supply-tubes B' and mechanism for operating the hinged lids, substantially as set forth.

7. The combination of the hoppers, the delivery-tubes V, the revolving seed-wheels W, having flanged rims X, radiating flanged arms Y, provided with hinged lids A', springs C' and cut-offs E', and connecting-tubes B', and the brackets L', having loosely-journalled disks H', substantially as set forth.

8. The combination of the driving-wheel D, having sliding clutch-collar G, the axle C, having seed-wheel W, provided with clutch J, the frame K', having arms L', and rods M', provided with slots O', the longitudinally-sliding bar P', having diagonally-beat ends working in slots O', and an operating-lever, all constructed and operating substantially as set forth.

263,187. EDWARD P. LYNCH, Davenport, Iowa. Cultivator. Aug. 22, 1882. Filed June 13, 1882.

This invention relates to that class of cultivators in which the shovels are attached to beams jointed in their forward ends to a wheeled draft-frame in such a manner that they may be moved horizontally to follow the rows of corn and vertically to throw them into and out of action, and particularly to an improved spring attachment designed to raise or assist the operator in raising the beams above an operative position without interfering with their lateral motion when in action. The arrangement is designed so that when the beams are in an operative position they will be subjected to little or no lifting strain.

The invention consists essentially in mounting on the frame of the machine, in any suitable position, a pair of arms or levers acting on the principle of the familiar knee-lever or toggle-joint, and combining therewith an actuating spring or springs and a pendulous rod or chain connected to the plow-beam or its adjuncts, as set forth.

1. In combination with the vertically-acting beam, the suspending rod or chain, the sleeve provided with the horizontal arm to which the suspending device is attached, and also with the depending arm, the movable rod jointed to said depending arm, and the spring arranged to urge the rod upward, as described and shown.

2. In combination with the beam and the arched axle, the arm or journal F, secured to the axle, the sleeve provided with the two arms and mounted upon the journal, the suspending device extending from one of said arms to the beam, and the spring-actuated device operating upon the other of said arms, substantially as described and shown.

3. In combination with the beam, the elevated rotary sleeve or bearing provided with two arms, the connecting device extending from one of said arms to the beam, provided with the spiral spring J, and the rod II, mounted at one end in the guide I, and having its opposite end pivoted to the arm of the sleeve and provided with the linger *e*, co-operating with a corresponding finger *e'* of the sleeve, substantially as and for the purpose described.

264,610. AXEL F. BEKQVIST, Fairfield, Ohio. Sulky-Plow. Sept. 19, 1882. Filed Feb. 27, 1882.

This invention relates to certain improvements upon the plow covered by my Letters Patent No. 234,743, November 23, 1880; and it consists, first, in certain novel features in the construction of the axle; second, in the combination, with the lever for raising the plow out of the ground, of a spring adapted to assist the plowman when using the lever for this purpose; and, third, in the combination, with the frame and plow beam, of a supporting-rod and spring, by means of which the beam is given a capacity to yield under pressure, as will be fully described hereinafter.

1. In a combination, with the axle A and U-shaped block *a'* of the crank spindle B, lever *b*, arm *b'*, spring C, and frame D, substantially as described, and for the purpose set forth.

2. In combination with the plow beam and bail, the swinging plate *f*, the connecting-rod *g*, and spring-bolt *g'*, as described.

266,066. JOHN Q. ADAMS, Marseilles, Ills. Cultivator. Oct. 17, 1882. Filed Nov. 16, 1881.

1. In a cultivator, the axle provided with a longitudinal groove, a forked beam-coupler mounted loosely on the axle, a bracket also mounted loosely on the axle between the forks of the coupler, and provided with an interior chamber, a spline-block set loosely in the chamber over the axle-groove, and a setting device for forcing the spline down into the groove and firmly holding it in place, substantially as and for the purposes set forth.

2. In a cultivator, the shovel-beam connected to the axle by a double-jointed coupling, permitting both vertical and lateral movement of the beam, in combination with a vertical pivot secured to the axle at or near the pivotal coupling of the shovel-beam, and a spring secured at one end to said vertical pivot extending upward and backward and connected at its other end to the shovel beam, substantially as and for the purposes set forth.

3. The shovel-beam connected to the axle by a double-jointed coupling, in combination with the bracket attached to the axle substantially in line with the vertical pivot of the beam-coupling, a vertical pivot-bolt mounted on the bracket, and the spring attached at one end to the pivot-bolt so as to turn with it and at the other end connected to the beam back of its coupling, substantially as and for the purposes set forth.

4. The bracket B, provided with projections *b*, the pivot-bolt *c*, mounted on the bracket, with its bearings in the projections, and the beam-lifting spring C, having the head *c'* at its extremity, which receives the projecting lower end of the pivot-bolt, and fastened rigidly to said bolt at a point above the lower bearing thereof, substantially as and for the purposes set forth.

5. The axle A, in combination with the beam *b*, connected to the axle by a double-jointed coupling, the bracket B, the spring C, pivoted to the bracket substantially in line with the vertical beam-pivot and extended back over the beam, and the rod D, connecting the rear end of the spring to the beam, substantially as and for the purposes set forth.

6. The vertical pivot-pin *f* of the beam-coupling, in combination with the spindle F, sleeved thereon and provided with a wedge-shaped enlargement of rib on one side, and the sleeve *e'* of the coupling-link, the opening in which conforms to the wedging shape of the spindle that is received therein, substantially as and for the purposes set forth.

7. The coupling-sleeve *e'*, the opening of which is V-shaped on one side, in combination with the spindle F, having a wedge-shaped rib on one side formed to fit the V-shaped opening of the sleeve, the pivot-pin *f*, the set-screw *f'*, and the beam-elevis G, substantially as described.

8. The axle A, in combination with the sheaves I, mounted and turning on the axle, the block H, inclosing the sheaves, and provided with openings in front and rear for the draft-chains, and the draft-chains K, substantially as described.

266,068. WM. P. BROWN, Zanesville, Ohio. Wheeled Cultivator. Oct. 17, 1882. Filed May 12, 1882.

My invention relates to certain improvements in wheeled cultivators of that class of which my Patent No. 190,810, granted May 15, 1877 is a type—that is to say, in which an ele-

vated tongue is connected to the upper part of a crank-axle whose lower ends are mounted upon wheels, between which wheels and the vertical section of the crank-axle is located a coupling attachment for the plows or cultivators, which coupling attachment is provided with a spring which co-operates with the lift of the plowman in hanging up the cultivator on the rear hooks of the tongue, while a draft attachment is provided for straining the coupling one way or the other to make the plows run deeper or shallower, as may be desired.

The object of my present invention is principally to so construct the coupling for the cultivator-plows as not only to lift or depress the plows, but also to control the plows against any tendency to sway sidewise, and make them travel more directly in line with the point of attachment with the axle or truck, and also to prevent the springs (when applied to the plow coupling or head) from pulling the plows around to one side whenever they are thrown out of line of draft in the rear, as will be more fully described hereinafter.

1. The plow-head G, having a forward projection, in combination with a spring connected to the said projection of the plow-head at a point over or in front of the vertical pivot-bolt to assist in lifting the plows in the rear and prevent side swing, as described.

2. The combination, with the pipe-box and its bracket H, the pivot-bolt, the plows, and the spring F, of the head G, having a projection extending over and to the front of the pivot-bolt and there connected to the spring, as and for the purpose described.

3. The combination, with the pivot-bolt I, of the bracket H, having flanges with a series of vertical bolt-holes, and the head G, having flanges with a series of vertical bolt-holes, and a neck or arm, *h*, extending over and to the front of the pivot for connection with the spring, whereby the tension of the latter is made to hold the plows straight or give them a lateral drift, as described.

4. The combination, with the pipe-coupling and the spring F, of the plow-head having projection *b*, with vertical sockets *f* at its end, and a pin, *g*, and a loose sliding connection with the spring, as and for the purpose described.

5. The draft ring P and perforated loop Q, the latter surrounding the pivot-bolt below the pipe-coupling and combined with the same, the plow-head G and bracket H, as shown and described.

6. The clamp composed of the three parts R S H, fastened together by bolts *o*, the parts S and H having clutch-faces and a slotted connection that permit of the adjustment of H over S to secure a rotary adjustment of the plows about their longitudinal axis.

266,123. WM. EVANS, Moline, Ills., assignor to the Moline Plow Co., same place. Cultivator. Oct. 17, 1882. Filed June 29, 1882.

1. The combination of the axle A, rock-shaft B, the draft-head or coupling D, and the lifting-spring, arranged substantially as described, to rotate the rock-shaft.

2. In combination with the axle A, bearings *a* and *b*, the horizontal rock-shaft B, having the arm E thereon, the rod F, guide G, and spring H.

3. In combination with the main axle and the rock-shaft B, having the spring applied, as shown, to give the same a forward rotation, the draft-head D, connected to the rock-shaft by means of the tube *f*, pivot *j*, plates *e* and *g*, and bolt *i*.

4. In a cultivator, the horizontal main axle, in combination with the horizontal rock-shaft B, sustained therefrom, substantially as specified, the forked draft-head D, and the vertical axis *j*, connecting the draft-head and rock-shaft, and adjustable both vertically and laterally upon the latter by means of the clamping device, substantially as shown.

5. In a cultivator, the combination of the main axle, the independent rock-shaft mounted upon, and in advance of said axle, the draft-head passing loosely around the axle and joined to the rock-shaft, and the spring attachment, substantially as shown, connected with the rock-shaft for the purpose of turning the same forward.

6. In combination with the main axle and the supplemental rock-shaft B, the draft-head joined to said rock-shaft, substantially as shown, and the depending arm J, connected rigidly to said rock-shaft.

7. In combination with the angular horizontal rock-shaft B, the beam connection or coupling consist *e* of the forked draft-head D, flanged plates *e* and *g*, tube *f*, bolt *i*, and

pivot *j*.

8. In a cultivator, the combination, with the axle or arch A, of the supplemental rock-shaft B, sustained substantially as described, and provided with one or more projections adapted to operate, as described, with a spring, weight, or draft device.

266,499. ENOS A. MORPHEW and H. WITHEROW, assignors to J. A. Bralun, J. M. Robbins and A. W. Stoker, Peterburg, Ills. Grain Drill. Oct. 21, 1882. Filed July 24, 1882.

1. In a seed-planter, the shoes D, supported upon springs E, in combination with a shaft, F, and lever G, adapted to be secured adjustably in desired positions at will, substantially as and for the purpose set forth.

2. The combination of the shoes D and the spring-coverers J, each adapted, substantially as shown and described, to be yieldingly depressed and adjustably held in said depressed condition, substantially as and for the purpose set forth.

266,656. E. F. STODDARD and W. H. NAUMAN, Dayton, Ohio. Seeding Machine. Oct. 31, 1882. Filed Feb. 29, 1882.

1. In a seeding-machine, the combination, with the hopper, the hoes, and drag bars and connecting mechanism, of an oscillating axle, whereby upon oscillating the axle the hoes are raised or lowered simultaneously.

2. In a seeding-machine, the combination, with the hopper, the hoes, and drag bars, of an oscillating axle upon which the supporting-wheels revolve, and connecting mechanism, whereby upon oscillating the axle the hoes are simultaneously raised or lowered, and whereby any low can be raised independently of the others.

3. In a seeding-machine, the combination, with the hopper, the hoes, and drag-bars, and an oscillating axle connected to the drag-bars by lifting-arms and links, of means whereby said axle may be oscillated to raise or lower the hoes.

4. In a seeding-machine provided with the hopper and an oscillating axle upon which the supporting-wheels revolve, and by the oscillation of which axle the hoes are raised and lowered, the combination, with said axle, of a lever and connecting-links, whereby said axle is oscillated for the purpose described.

5. In a seeding-machine provided with an oscillating lifting axle, the lifting-arms I and links J, or their equivalents, substantially as described.

6. The construction of the lifting-arm I¹ with hinged and clamped sleeve, one portion of which is slotted to receive the end of a pin projecting from the axle, substantially as described.

267,670. HOWARD H. BUTLER, Zanesville, Ohio, assignor of one-half to Thos. Jenkins, Moline, Ills. Cultivator. Nov. 21, 1882. Filed May 27, 1882.

My invention relates to an improved form of coupling for fastening and adjusting the forward end of the beam or plows to the axle and a spring and draft-lever.

I do not claim the application of a spring to sustain the weight of a plow-beam.

In my improvements I aim to overcome some objectionable results from springs now used in wheeled cultivators. That I may be more readily understood I will refer to the springs in general use and the results. First, a spring so constructed and adjusted as to exert an upward or raising force upon the plow-beam, also to exert a downward or depressing force upon the plow-beam, depends for this result upon the plow-beam passing above or below a given point. It is apparent, therefore, if the ground be uneven the spring will exert a force when least needed, or a force in the opposite direction of that required. If a portion of the ground be hard, as compared with other portions, or very soft, it will be seen that springs of this class may work improperly.

Another class of springs in general use are those which exert a continuous upward or raising force upon the plow-beam, and in this class, unless the plows are firmly held in the ground by the operator, the tendency is for the plows to rise out of the ground, or partially so, in striking hard soil. The springs now in common use are constructed with other parts so as to frequently get out of repair, and they also take up much of the space between the wheel and arch.

Another objection existing in wheeled cultivators now in use is the inability to use an arch of sufficient width to avoid injuring the

stalks of corn when at an advanced stage of growth, and yet permit the cultivation of the corn in an early stage of its growth efficiently near to the plants without the operator using considerable power to hold the plow beams as to bring the plows near to the plants.

It can be readily seen that whenever the plows follow in a direct line from where the beam is attached to the axle it is easier for the operator; but if the operator is required to hold the beam in such position that the plows will be in the ground at the right or left of such direct line it requires the exertion of more or less strength by the operator, and is necessarily very fatiguing.

1. The combination, with the angled axle and the plow-beams, of the coiled spring E placed around the axle and secured one end to the axle, the other end forming a projecting arm, G, secured by links to the plow-beam coupling, substantially as shown and described.

2. The yoke or frame J, having perforated arms or brackets I and lever-arm K, in combination with the yoke-head M, having perforated extension and set-screw, the plow-beam C, bolt G, and staple A, substantially as shown and described.

3. The combination of the draft lever P, having projection Q and perforations above and below the axle, with the spring E, the yoke J, yoke-head M, plow-beam C, and draft attachment S, substantially as shown and described.

268,361. W. P. ELAM and W. F. BOGGS, assignors to one-third to E. L. Galt, Peabody, Ills. Grain Drill. Nov. 28, 1882. Filed June 1, 1881.

1. The drag-bars C and shoes D, the pivoted rod G, spring G, and elevating means, combined with the covering wheels O, pivoted to the rear ends of the drag-bars, and means for throwing them in and out of operation at will, as specified.

2. The drag-bars C and shoes D, the pivoted rod G, spring G, and elevating means, combined with the covering wheels O, pivoted to the rear ends of the drag-bars, the pivoted rod and spring N Q, and means for throwing them in and out of operation at will, as specified.

3. The axle B, segment P, lever P', and independently-protected drilling and planting mechanism, combined with means, H I A, for automatically throwing the operating-gear out of mesh as the planting device are forced out of operation, as and for the purpose set forth.

4. The combination of the pedal lever G, drag-bars C, axle B, segment P, lever P', and drilling devices, with the lag and bar H, shaft I, the pivoted spring covering device O P Q, link J, adjusting arm J, and feeding mechanism, as and for the purposes set forth.

268,887. JAMES T. HAMILTON, Council Bluffs, Iowa, assignor to himself and Wm. K. Hoagland, Peoa, Ills. Lifting device for Cultivator Beams. Dec. 12, 1882. Filed Feb. 20, 1882.

The lifting or raising of the beams and shovels of a cultivator or ordinarily constructed is attained in some instances with considerable trouble and delay, and to obviate this objection a variety of devices have been applied to cultivators for the purpose of assisting the operator in raising or lifting the beams and shovels and rendering the operation more easy and less laborious. Such devices have been made in various forms and have been applied by various ways; and the object of this invention is to construct a raising or lifting device for the plow beams and shovels which can be easily applied, and which will do the required work in a simple and efficient manner without interfering with the operation of the plows when in the ground. Its nature consists in providing a curved bar, forming a spring, adjustably attached at one end to the frame or arch of the cultivator and at the other end connected with the collar located on the wheel-spindles, and carrying the beams and shovels; in providing the collar carrying the beams and shovels with an arm or extension to receive the end of the curved bar or spring, and furnish a means for rearing or turning the sleeve to raise or lift the beams and shovels; in providing a support for the upper end of the curved or spring bar by means of which such end can be adjusted to produce a greater or less resistance in the action of the bar or spring, and in the several parts and combinations of parts hereinafter set forth as here.

1. In a cultivator, the curved bar or spring O, connected at their lower ends with an arm or extension located on the sleeve or collar which carries the plow beams and shovels, and

having their upper ends adjustably connected with the frame or arch of the cultivator for adjusting the bars or springs to resist the varying strains incident to working light and heavy soil, substantially as described.

2. The combination, with a cultivator-frame and plow beams or drag bars, of a spring or curved bar, O, and adjusting bar N, pipe box or sleeve C, having an arm, P, and the coupling E, F, substantially as described.

3. In a cultivator, the curved bar or spring O, in combination with the adjusting or tension bar N and arm or extension P, having a fulcrum, G, and attached to the beam sleeve or collar, substantially as and for the purposes specified.

270,414. CHARLES A. GEIGER, Springfield, Ohio. Seeding Machine, Cultivator and Harrow. Jan. 9, 1883. Filed Sept. 23, 1882.

1. In a seeding-machine or cultivator, a hoe or tooth pivoted to its draw-bar, and provided with a forwardly-projecting arm connected by a rod, link, or chain with the lifting-roller.

2. In a seeding-machine or cultivator, a hoe or tooth pivoted to a draw-bar, and provided with a forwardly-projecting arm connected by a rod, link, or chain with the lifting-roller, in combination with a spring the tension of which is exerted to hold said hoe or tooth in working position.

3. In a seeding-machine or cultivator, a hoe or tooth pivoted to its draw-bar and connected by a rod, link, or chain with the lifting-roller, in combination with a jointed pressure rod for holding said hoe or tooth down to its work.

4. A hoe or tooth pivoted to a draw-bar and connected by a rod, link, or chain with the lifting-roller, in combination with a jointed pressure rod connecting the draw-bar with the lifting-roller, said pressure rod being provided with a locking joint and a spring which exerts its tension to hold said joint locked.

5. In a seeding-machine or cultivator, a spring arranged to exert its tension to hold the draw-bar down to its work, and at the same time to hold the hoe or tooth in working relation to said draw-bar.

6. In a seeding-machine or cultivator, the combination of a draw-bar a hoe or tooth pivoted to said draw-bar, a lifting-roller, a lever for controlling said roller, a jointed pressure bar, and a rod, link, or chain interposed between the lifting-roller and the draw-bar and hoe, and a spring arranged to exert its tension to hold the draw-bar down to its work and at the same time to hold the hoe or tooth in working relation to said draw-bar.

270,626. BYRON C. BRADLEY, assignor to the First & Berkeley Manufacturing Co., Chicago, Ills. Cultivator. Jan. 16, 1883. Filed Feb. 20, 1882.

This invention relates to devices or means for assisting the operator in raising the beams, whereby such raising will be more quickly and easily performed without necessitating the exertion of any considerable amount of lifting force on the part of the operator, and has for its objects to give the operator the required assistance by devices or means which are simple in construction and easily applied, and which will do the required work in an efficient and reliable manner, and without interfering with the vertical and horizontal movements of the beams required by the plows to do their work and its nature consists in providing a vibrating or swinging arm or armlet attached to the arch or frame of the cultivator above the axle or spindle, and connected by a flexible connection with a spring or spring-arm, and also connected by a flexible connection with the coupling by which the beam is connected with the axle or spindle, and in the several parts and combinations of parts hereinafter specifically set forth, and pointed out as new in the claims.

1. The combination, with the coupling which connects the beam with the axle, of the vibrating lifting or raising arm, G, having one end joined to the end of the spring, A, by a flexible connection, B, and the flexible connector attached at one end to the coupling which connects the beam to the axle, and at its other end attached to the end of the vibrating or raising arm, substantially as described.

2. The coupling which connects the beam to the axle, provided with the hook L, in combination with the flexible connection J and K attached at one end to the hook on the coupling and at the other with a vibrating or raising arm, G, hung on the arch or frame, and which connects by a flexible connector, B, with the spring A, substantially as described.

3. The combination, with the arch or frame,

of the horizontal bracket or support, A, attached to the said arch or frame, of the spring Z, the flexible connection B, and the interposed vibrating arm G, hung on the bracket or support A, substantially as described.

271,445. CHARLES O. GARDNER, assignor to P. P. Mast & Co., Springfield, Ohio. Grain Drill. Jan. 20, 1883. Filed May 6, 1882.

My invention relates to that common class of grain-drills or seeding machines in which a wheeled frame is provided with drag-bars carrying at their rear ends tubular hoes, by which the furrows are opened, and through which the seed is deposited into feeding devices located on the under side of a hopper seated upon the frame.

The invention consists in numerous details of construction, which will be hereinafter explained at length, but relates more particularly to the peculiar construction and arrangement of the lifting devices, the wheels being mounted loosely upon the axle, and the devices for operating the lifting mechanism secured firmly to the axle.

The invention also consists in connecting the elastic drag-bars with the rock shaft, by which they are controlled through the medium of a joint, which allows a limited amount of play to the bars or hoes independently of the rock-shaft; also, in the peculiar construction of the coupling devices employed, the construction of the surveyor or indicator, and in other details.

1. The combination of the main frame, the rocking axle, the ground wheels mounted loosely on the axle, the swinging lifting-bar G, provided with the drag-bars and gear-wheels, the cooperating gears secured rigidly to the axle, and the hand-lever, also secured to the axle.

2. The rocking bar having the drag-bars and gear wheels attached, in combination with the transverse shaft provided with the gear wheel and hand-lever, whereby the drag-bars may be raised and lowered with a positive action.

3. In a grain drill or seeder, the combination of a wheeled frame, a rocking lifting bar and means for operating the same, and the drag-bars connected with the lifting-bar through the medium of joints or couplings, constructed substantially as described, to allow a limited rising and falling motion of the drag-bars independently of the lifting bar.

4. In a grain-drill or seeder, a wheeled main frame, a rocking lifting-bar, and means for controlling the same attached thereto, in combination with a series of drag-bars or beams and coupling-joints, substantially as shown, connecting the forward ends of said drag-bars to the lifting-bar and permitting a limited vertical play between the two.

5. In a grain-drill or seeder, a wheeled main frame provided with the rocking or rolling lifting-bar and means for locking the same, a drag-bar provided with a hoe or shovel, a flaring socket connecting the end of the drag-bar to the rocking bar, and a bolt passed through the socket and drag-bar, substantially as shown, whereby a limited vertical play of the drag-bar is permitted.

6. In combination with the flexible and in flexible portions of the drag-bars, the couplings consisting of the two side plates, Q, embracing the two parts, and the transverse connecting-bolts, whereby the plates are drawn toward each other.

7. The combination of the drag-bar sections, the plates Q, having the rear portion of the bar movably vertically between them, and the transverse bolt serving both as a means of holding the plates together and as a pivot for the rear section of the bar.

8. In combination with the feed-shaft X and the registering or surveying mechanism, the worm-wheel G, provided with the tubular neck extended around the shaft and through the shaft-bearing, and the pin passing through both the neck and shaft, as shown.

9. The surveying or indicating mechanism, attached rigidly to the machine and provided with the readily-detachable plate having a portion of the gear-train mounted thereon.

10. In combination with the feed-shaft and the hopper end, provided with the dial-faces, the worm on the shaft, the wheels K, R, P, and P', and their shafts, as shown.

11. In a grain-drill, a plate, substantially as shown, constructed to serve as the end of the seed-hopper, and having formed upon its outer surface a graduated dial indicating the amount of grain distributed, whereby said plate is caused to serve a twofold purpose.

273,673. THEODORE M. FLENNIKEN, Rockford, Ills. (Wm. McGregor adminis-

trator of said Flenniken, deceased), said Flenniken assignor to N. C. Thompson Cultivator. Mar. 8, 1883. Filed Feb. 27, 1882.

The object of this invention is to produce a cultivator capable of being handled with greater ease and certainty, to enable the operator to produce better results; and it consists in mechanism capable of adjustment to cause the cultivator-teeth to engage the ground with greater or less force; in mechanism to assist in elevating the shovel-beams; in mechanism to hold the shovel-beams elevated in turning and get them into position to employ the cultivator, and from which position they may be lowered to their working position by a downward pull on the handles, and in mechanism to suspend the shovel-beams for the purposes of transportation.

1. The combination, with the sleeve to which the shovel-beams are pivoted, provided at its inner end with an uprising lateral arm, of a lever pivoted to the main frame or axle and adapted to engage the uprising lateral arm, but disconnected therefrom, substantially as and for the purpose set forth.

2. The sleeve to which the shovel-beams are pivoted, provided with an uprising arm and a depending arm, and a pivoted lever, one end of which is adapted to engage the lateral arm, but disconnected therefrom, in combination with the spring connected to the free end of the pivoted lever and with the depending arm of the sleeve, substantially as and for the purpose set forth.

3. A spring, substantially as herein described, having an adjustable connection with the depending arm of the sleeve to which the shovel-beams are pivoted, and a suitable connection with the free arm of the lever which engages the lateral uprising arm of the sleeve, for the purpose of varying its action on the shovel-beams, substantially as hereinbefore set forth.

4. A spring, substantially as herein described, having a suitable connection with the depending arm of the sleeve to which the shovel-beams are pivoted, and an adjustable connection with the free arm of the lever which engages the lateral uprising arm of the sleeve for the purpose of varying its spring force, substantially as and for the purpose hereinbefore set forth.

5. The combination, with the pivoted lever having a depending arm for engaging the uprising lateral arm of the sleeve to which the shovel-beams are connected, of a guideway, *v*, for engaging the free arm of said lever for directing the vibratory movement of the same, substantially as and for the purpose hereinbefore set forth.

6. The pivoted lever having a depending arm for engaging the uprising lateral arm of the sleeve, in combination with a stop for limiting the throw of said lever, substantially as and for the purpose set forth.

7. The combination, with the pivoted lever for automatically controlling the movements of the shovel-beams, of a guide bar or way to direct the movements of said lever, and a stop to limit its rearward movement, substantially as described.

8. The combination, with the sleeve to which the shovel-beams are pivoted, provided with an uprising lateral arm, of a pivoted lever, one end of which is adapted to engage the lateral arm of the sleeve, and having a free hooked end to engage the shovel-beams, substantially as and for the purpose set forth.

275,502. JOHN LANE, Hyde Park, assignor to the Peru City Plow Co., Peru City, Ills. Cultivator. April 10, 1883. Filed Nov. 2, 1882.

The invention consists in mounting on the frame of the cultivator, above the horizontal ends of the axle, a spring having a connection with an arm depending from the sleeve, and in certain combinations of parts, which will first be described, and afterward pointed out in the claims, as follows:

1. In a cultivator, the combination of the vertically-swinging beam, the sleeve provided with the depending arm, the spring having one of its ends connected to the outer end part of the said arm below the center of motion of the sleeve, the other end of the spring attached to the axle above the sleeve, and the spring arranged to urge upward on the depending arm, whereby when the beam is in a horizontal position the center of motion of the sleeve will be as in a dead-lock between the two ends of the spring, and the lifting force of the spring spent against the axle, all con-

structed and arranged to operate substantially as shown.

2. In a cultivator, the arched axle, the beam connected to the axle by a coupling permitting both vertical and lateral movement of the beam, in combination with the sleeve rotatory on the axle, the arm depending from the sleeve extending downwardly at about right angle with the beam, the spring *S*, the link *g*, and the bracket *T*, all constructed and arranged to operate substantially as shown.

276,100 JOHN W. COLLINS, St. Louis, Mo. Cultivator. April 24, 1883. Filed Oct. 18, 1882.

1. In combination with the carriage *C*, the yoke *G*, as described, beams *F F' P' P'*, connected therewith as set forth, and the arched yoke *H*, substantially as described.

2. The combination of the carriage *C*, the sets *B B'* of plows or shovels, the handles *B' B'*, and the posts *J J'*, each provided with springs *K*, substantially as described.

3. The combination of the carriage *C*, the shovels *B B' P' P'*, the beams *F F' P' P'*, the yokes *G* and *H*, the bearings *L L'*, and the handles *B' B'*, substantially as described, and for the purpose set forth.

4. The combination of the carriage *C*, having the tongues *T*, arranged as described, the sets *B B'* of plows or shovels, the yokes *G* and *H*, the bearings *L L'*, and the handles *B' B'*, substantially as described.

278,089. ROBT. C. BUCKLEY, Peoria, Ills. Sulky-Plow. May 22, 1883. Filed Dec. 27, 1882.

In a sulky plow, the arched frame *A*, having axles *a* and wheels *b*, and the supplemental cranked arch or bail *c*, hung in bearings *b* at the base of the arched frame *A*, combined with the plow beam *D*, supported by the bail *C*, handle-lev *g*, and springs connecting the bail *C* to the axle, held by the bracket *d*, all arranged substantially as and for the purposes set forth.

278,497. GEO. W. BROWN, Galveston, Ills. Corn Planter. May 20, 1883. Filed Sept. 16, 1880.

1. In a corn-planter, the combination, with a forward frame mounted on runners, and a rear frame hinged thereto and mounted on wheels, and a lever hinged directly or indirectly to the wheel-frame and adapted to raise and lower the forward frame, of a spring connected at one end to the wheel-frame and at the other end to said lever, and adapted to exert a downward force on the forward end of the lever, and thereby a similar force on the runner-frame.

2. In combination with the forward and rear frames of a planter, hinged to each other, and with the lever hinged to the rear frame and adapted to raise and lower the forward frame, a spring *L*, connected at one end to the rear frame and at its other end to said lever, and adapted to exert a downward force on the lever and forward frame, substantially as and for the purpose specified.

3. In combination with the forward and rear frames of a planter, hinged to each other, and with the lever hinged to the rear frame and adapted to raise and lower the forward frame, a spring *L*, connected at its rear end to the rear frame or a projection therefrom at a point about in same horizontal plane as the forward end of the lever, to which the forward end of the spring is attached, is when elevated, whereby the spring may exert an increasing downwardly-acting force on the forward frame as said frame is lowered, and vice versa, substantially as and for the purpose specified.

4. In combination with the swinging lever *H* and frames *A B* of a corn-planter, the spring *L*, connected with the rear frame and with the lever *H*, so as to swing vertically by the movement of the lever, but on a different fulcrum from said lever, whereby the angle between the spring and lever may be increased as the forward frame is lowered, and thereby an increased force be exerted by the spring on the forward frame as it descends, and vice versa, substantially as and for the purpose specified.

5. In a corn-planter, the combination, with a vertically-swinging frame carrying the runners, a vertically-swinging lever by which said frame is raised and lowered, and a frame to which the runner-frame is hinged, of a spring which oscillates with said lever and is adapted to exert an increased downward force on the runners as they are lowered, and vice versa.

6. In combination with the forward runner frame and rear wheel-frame hinged to each other, and with the raising and lowering lever *H*, having cam-lugs *L'*, the elbow-lever *N*,

having one end provided with catches *n'* and its other end extended rearward to form a handle, *s*, such, by its gravity, may engage the catches *n'* and lugs *L'*, and may be used to release them, substantially as and for the purpose specified.

278,498. GEO. W. BROWN, Galveston, Ills. Corn Planter. May 20, 1883. Filed Sept. 16, 1880.

This invention relates to corn planters of that class in which a frame provided with seeding devices and furrow openers at its front end is journaled on wheels at or near its rear end, where it is also hinged to the tongue, so that its front end may be raised and lowered to raise and lower the runners, and the depth to which the runners enter the soil is adjusted by means of devices interposed between the forward end of the swinging frame and the tongue; and my invention consists in a spring interposed between the tongue and swinging frame, and adapted to exert a downward force on said frame to force the runners into the ground, and which will yield to allow the forward end of the frame to rise and the runners to pass over obstacles which they cannot cut through.

The invention further consists in a spring connected with the tongue and forward part of the swinging frame in such manner that it will not offer increased resistance as the forward end of said frame is elevated, and will, instead thereof, offer diminishing resistance as it is raised, and vice versa.

1. In a corn-planter, the combination of the frame provided with seeding devices and furrow openers at its front end, and journaled on wheels at or near its rear end, where it is also hinged to the tongue, and a lever by which the swinging frame may be raised or lowered, with a spring adapted to force the runners in the ground when said lever is free to permit it, substantially as and for the purpose specified.

2. In a corn-planter of the class herein described, in combination with the tongue and swinging frame, a spring connected with and arranged in an oblique position relatively to the swinging frame and tongue, whereby it may press downward on the swinging runner frame and offer diminished resistance to the elevation of said runner-frame, as it is more elevated.

278,672 DANIEL UNTHANK, assignor to the Unthank Plow Co., Indianapolis, Ind. Cultivator. May 20, 1883. Filed Dec. 4, 1882.

1. In a cultivator, an axle formed of two parts overlapping to form the central portion of the axle, and provided with eggs, as shown and described, combined with a cog-wheel embraced between said overlapping parts, a slotted adjustable draft-pole, and a bolt serving as a shaft for said cog wheel and a fastening for said draft-pole, substantially as and for the purpose herein shown and described.

2. In a cultivator, the combination, with an extensible axle, of a draft-pole slotted and connected thereto, substantially as shown and described, braces *e* and *f*, pivoted in lugs *h h* and *i*, and cross-bar *g*, for the purpose set forth.

3. The combination of frame *F*, provided with radially-projecting studs *m*, plow-standards *k* and *l*, provided with corresponding interlocking recesses, and bolt *a*, for the purpose set forth.

4. In a cultivator, plate *L*, socket *K*, jar *N*, arms *y y*, friction-wheels *O P*, collar *R*, spring *S*, and nut *T*, combined with each other and with the plow beam, substantially as shown and described, and for the purpose set forth.

5. In a cultivator, the combination, with an extensible axle, of a draft-pole having a vertical slot through its rear end and adjustably connected thereto, whereby it is adapted to have the necessary play in adjusting the axle, substantially as shown and described.

6. In a cultivator, the combination, with the plow-beam, of a spring connected thereto, arranged substantially parallel therewith and above the same, and an inclined or tapering support, substantially as shown and described, to which the inner end of the spring is connected, and adapted to have free vertical play thereon, for contracting and expanding it in accordance with the vertical movements of the plow beam, substantially as and for the purpose set forth.

279,980. CHARLES W. POST, Springfield, Ills. Cultivator. June 26, 1883. Filed Nov. 20, 1882.

1. The combination, with the axle-sleeve *E* and with the combin. *B*, of the double-yoke

d and blocks *e, f*, embracing the coupling and sleeve, substantially as described.

2. The combination, with the sleeve provided with a longitudinal rib and with the coupling, of a yoke embracing the coupling and notched to fit the rib of the sleeve, and longitudinally adjustable upon the sleeve, substantially as described.

3. The combination of the sleeve, the coupling, the plate, and the yoke provided with a bolt projecting therefrom, and a nut working upon said bolt and bearing against the plate to lock the several parts together after adjustment, substantially as described.

4. The combination, with the sleeve, of a coupling pivoted to the beams and partially surrounding and closely embracing the sleeve, and mechanism, substantially as described, adapting said coupling to be both laterally and perpendicularly adjusted, as set forth.

5. The combination, with the sleeve, the yoke, and the coupling having its inner face embracing the sleeve and its outer face serrated, of a correspondingly serrated plate, and means for locking said plate to the coupling, substantially as described.

6. In a cultivator, the combination, with the sleeve, of a bent arm rigidly secured thereto and extending toward the beam, and a lifting spring arranged forward of the sleeve and connected with the bent arm, substantially as described.

7. In a cultivator, the combination, with a lifting-spring, the axle-sheave, and the beam, of an arm attached directly to the sleeve and to the spring, the arrangement of said arm being such that as the tension of the spring decreases when lifting the beam, the leverage of the arm will increase, substantially as and for the purpose described.

8. The combination, with the beam, the sleeve, and the bent arm cast therewith and projecting toward and substantially parallel with the beam, of the lifting spring and the bifurcated hook arm pivotally connecting the bent arm and spring, substantially as described.

280,387. DANIEL E. McSHERRY and A. G. MYERS, said Myers assignor to E. Breckenham, Dayton, Ohio. Seeding Machine. July 3, 1883. Filed Mar. 13, 1883

1. In combination with a seeder frame, a drag-bar or runner, a rock shaft provided with a spring, and a link connecting one end of the spring and the drag-bar or its seed tube, substantially as shown and described.

2. In combination with runner or drag bar D, rock-shaft E, spring F, link *g*, and means, substantially such as described, for rocking or turning the shaft.

3. In a seeding-machine, the combination of drag bar or runner D, rock shaft E, provided with arm *d*, and spring F, link *g*, and hand lever H, and intermediate pitman, L, connecting the hand lever and arm *d*.

4. In combination with a seeder-frame, a pivoted runner or drag bar, and a rock-shaft provided with a spring and with a lifting-arm extending beneath the spring, said lifting-arm being connected with the runner or drag bar, substantially as shown and described.

5. In combination with frame A, drag bars or runners D, rock shaft E, springs F, attached to the rock shaft and connected with the drag bars or their seed tubes, and lifting arm *c*, all arranged and operating substantially as explained.

6. In a seeding machine, the combination, with a drag bar or runner, of a rock shaft, a spring connected with the drag bar or runner, and a combined clamp and lifting arm, substantially as shown and described, adapted to clamp the spring to the rock shaft and to the drag bar or runner.

7. In combination with rock shaft E and spring F, the clamp M, provided with arm *c*, having stud or projection *f*, as and for the purpose set forth.

8. In combination with seed tube *a* and spring F, intermediate link, *g*, having tail or extension *h*, and serving to connect the spring and tube, substantially as and for the purpose set forth.

282,847. ALBERT C. CONNER, assignor to the Hoosier Drill Co., Richmond, Ind. Grain Drill. Aug. 7, 1883. Filed May 9, 1883.

1. In a grain-drill, the combination of the rock bar E with the hinge-plate F, arms H, link L, and drag bars D, for regulating the hoos C, substantially as herein set forth.

2. The combination of the rock bar E, the auxiliary arms H, the springs K, arranged on the arms, the drag bars D, connected with said

arms, the plate S at one end of the rock-bar, having the concentric and eccentric slots *j* and *z*, the crank T, having a pin working in the slotted plate, the gear wheels for driving the seeding devices, connecting devices between the said crank and one of the movable gear wheels, and a lever for moving the rocking bar to simultaneously lift the drag-bars and throw the gear-wheels out of mesh, substantially as described.

3. The combination of the rock-bar E, the auxiliary arms H, the springs K, arranged on the said arms, the drag-bars D, connected with the arms, the slotted plate S, secured to one end of the rock bar, the crank T, having a pin working in the slotted plate, the lever-arm S', journaled on a shaft, *u*, and carrying a power-transmitting gear-wheel, 2, a link, T', connecting the lever arm with the crank, and a lock lever, O, for moving and holding the rock-bar, substantially as described.

4. The combination of the rock-bar E, the auxiliary arms H, connected therewith, and having sleeves *k*, the spring K, coiled on said sleeve, and having its ends acting, respectively, on the rock-bar and the arm, the drag-bars D, connected with the auxiliary arms, and a lever for rocking the bar for holding the hoos in the ground by a yielding pressure and simultaneously lifting them from the ground, substantially as described.

5. In a grain drill having the rock-bar E, the hinge-plate F and lever-arm H, in combination with the coiled spring K, for connecting said parts together, substantially as herein set forth.

6. The combination of the rock-bar E, the plate F, secured thereto, and having a stop flange, *b*, the auxiliary arm H, hinged at one end to said plate, and having a stop, *m*, the drag-bar D, connected with the auxiliary arm, and the spring K, arranged on a sleeve of the arm and adapted to be compressed by the rising movement of the said arm, substantially as described.

7. In combination with the drag-bars of a grain-drill, the rock-bar E, having the auxiliary arms H hinged thereto, and connected to the drag bar by means of a link, with a spring connection of the arm to the rock bar, for controlling the operation of the hoos by the rock bar, substantially as herein set forth.

282,885 ASA HALL, assignor to N. C. Thompson, Rockford, Ills. Cultivator Aug. 7, 1883. Filed April 23, 1883.

1. The combination of a sleeve having its opposite sides provided with cylindrical bearings, joint-plates provided with the stud-journals to enter the cylindrical bearing in the sleeve, a tubular bar placed between the rear end portions of the joint-plates, and an axial bolt to fix the joint-plates to the tubular bar, substantially as and for the purpose set forth.

2. The combination, with the bar connecting the rear ends of the joint-plates, of shovel-beams having their forward end portions bent or kinked to engage the bar connecting the joint-plates, substantially as and for the purpose set forth.

3. The combination, with the tubular bar connecting the rear ends of the joint-plates, said bar having a rectangular outline in section, of shovel-beams having their forward end portions bent or kinked to engage the opposite angles of the connecting-bar, said shovel-beams held in position and made vertically adjustable on the connecting-bar by means of clamping-bolts, substantially as and for the purpose set forth.

4. The combination, with an arm having a pivotal connection with the vertical arm of the axle-tree, and with the angle arm arising from the inner end of the joint-sleeve, of a spring supporting bar having a pivotal connection with the pivoted arm, and a free connection with the pivoted arm, to permit of an endwise sliding movement of the bar in its connection with the pivoted arm, substantially in the manner set forth.

5. The combination, with the spring supporting bar having a pivotal connection with the uprising angle-arm, and a free connection with the pivoted arm, of a spring surrounding the supporting bar between its connections with the uprising angle-arm and the pivoted arm, substantially as and for the purpose set forth.

6. The combination, with the spring supporting bar, and with the spring wound thereon, of a pivoted arm having a free connection with the spring supporting bar, and a pivotal connection with the vertical arm of the axle-tree, and made vertically adjustable thereon, substantially as and for the purpose set forth

283,775. LEROY GRAY, Sycamore, Ills. Cultivator. Aug. 28, 1883. Filed Nov. 6, 1882.

The object of this invention is to improve the construction, action, and operation of straddle row or double cultivators; and its nature consists in an improved construction and application of the parts for connecting the even-ter with the frame for attaching the draft of the team; in an improved construction and operation of the beam-couplings; in an improved construction and operation of springs for aiding the movements of the beam, and in the several combination of parts, as hereinafter set forth and claimed as new.

1. The chain N, or chain and rod, in combination with the sheave P O and coupling-plate *r*, and the even-ter bar E, substantially as described.

2. The combination of the chain N, or chain and rods, coupling-plate *r*, even-ter bar E, and sheave P O with the adjusting bracket or hanger R, substantially as set forth.

3. The combination of the chain N, or chain and rods, even-ter E, and sheave P O with the adjusting hanger R and the adjusting-plate *r* of the coupling, substantially as specified.

4. The combination of the hub *g* with the swinging arm *k*, spring *m*, and adjusting-cap *h*, substantially as set forth.

5. The combination of the cap *h*, spring *m*, and arm *k*, supported on the hub *g*, with the coupling-plate *r*, having the arm *p*, substantially as specified.

6. The coupling-plate *r*, in combination with the half box *q* and the adjustable half-box *z*, substantially as described.

7. The coupling-plate *r*, in combination with the half box *q*, the adjustable half box *z*, and the draft-adjusting plate *c*, substantially as and for the purposes specified.

8. The combination of the plate *o*, half-boxes *q* and *z*, plate *r*, and arm *p*, with the swinging spring-arm *k*, all constructed and operating substantially as specified.

9. The clip *e*, having the hub *g*, serrated at its end, and bolt *h'*, with the serrated cap *h*, having the pin *i* for adjusting the tension of the spring, substantially as described.

284,060. SILAS G. RANDALL, assignor to A. A. Randall, Green, N. Y. Seeding Machine. Aug. 28, 1883. Filed July 14, 1883.

1. In a seeding machine, the combination, substantially as set forth, of a series of seed-wheels which press the seed into the earth, and first meet the earth or any obstructions in the traverse of the machine over the field, with seed distributing or discharging devices which deliver the seed under the tread of the wheel.

2. The combination of a pivoted or vertically-vibrating grain-wheel-supporting arm, a grain-wheel mounted in bearings therein, and a conductor or conveyor attached thereto to discharge the seed for the tread of the wheel to press it into the soil, substantially as set forth.

3. The combination, with a flanged or grooved grain-wheel, of a seed-conveyer which discharges the seed within the grooved or flanged face of the wheel and under the front lower quarter thereof.

4. The combination, substantially as set forth, of a seed conduit or conveyer with a seed-wheel which forms a portion of the conveyer and presses the seed into the earth.

5. The combination, substantially as set forth, of a seed-tube, a grain-wheel to press the seed into the earth, and a guide or conveyer, of which the seed-wheel forms a side or wall, which conveyer delivers the seed under the tread of the wheel.

6. The combination, substantially as set forth, of the flanged or grooved grain-wheel, the grain-tube, and the guideway which delivers the grain under the wheel.

7. The combination, substantially as set forth, of the flanged or grooved grain-wheel, the grain tube, the guide which extends within the groove of the wheel, as described, and delivers the grain under the wheel, and the scraper for keeping the groove clear.

8. The combination, substantially as set forth, of the seed-box, the series of tubes *d*, the series of frames or castings carrying or guiding grain-tubes and grain-wheels, the guides for directing the grain under the wheels, and seed feeding devices.

9. The combination, substantially as set forth, of forcing mechanism and a yielding check device acting on the feed, for the purpose set forth.

10. The combination, substantially as set

forth, of the seed-box, the rock-shaft and plungers, the seed-discharging tubes, and the check springs which close the discharge ends of the tubes.

11. The combination, substantially as set forth, of the seed-box, the rock-shaft therein, the plungers carried by the rock-shaft, the open-faced grain-discharging tubes in which the plungers work, and means for vibrating the rock-shaft.

12. The combination, substantially as set forth, of the seed-box, the rock-shaft, the plungers carried by the rock-shaft, the grain-discharging tubes in which the plungers work, the upright rod M on the rock-shaft, the pitman N, and the adjustable coupling N, between the upright rod and pitman, for the purpose set forth.

13. The independent grain-wheel frame herein described, having a grain-tube or seed-conveyor, in combination with a grain-wheel mounted in bearings in the frame, the tube terminating opposite the periphery of the wheel.

14. The combination, substantially as set forth, of a seed-feeding tube in or on a seed box or receptacle, a seed-conveying tube, which delivers the seed to the earth, rocking or rising and falling on a hinge connection or pivot, and a flexible connection or joint between the two tubes.

15. The combination, substantially as set forth, of the seed-box, a series of seed tubes therein, a series of seed-conveying tubes rocking on bearings, flexing joints between said series of tubes, and a seed-wheel for each seed-conveying tube moving therewith.

16. The combination, substantially as set forth, of a frame, seed-feeding devices, a series of grain-wheels which press the seed into the earth, and mechanism for varying the weight thrown upon said wheels, for the purpose set forth.

17. The combination, substantially as set forth, of the main frame, a series of frames carrying grain-wheels pivoted on the frame, a series of bearing springs which tend to force the grain-wheels into the earth, and a lever for throwing more or less weight upon said wheels.

18. The combination, substantially as set forth, of the main frame, a series of frames carrying grain-wheels pivoted on the frame, and a series of bearing springs which tend to force the grain-wheels into the earth.

19. The combination, substantially as set forth, of the seat-supporting beam, the seat having rollers which run on the beam, the foot-rest pivoted in lugs depending from the seat, and the clamping or locking end of the foot-rest.

284,378. CYRUS C. CARTER, Neelyville, Ills. Wheat-Sowing Machine. Sept. 4, 1883. Filed April 20, 1883.

1. The combination, in a wheat-sowing machine, of a series of runners pivoted or hinged to the frame, a notched heel-piece in which the free ends of the runners rest, a hand-lever pivoted to a shaft journaled in the frame, and a series of horizontal plate-springs projecting from said shaft and connecting with the free ends of the runners, substantially as set forth.

2. A shaft journaled in the frame, and a hand lever pivoted thereto and adapted to be moved transversely on its pivot of the frame, and having a catch-plate, combined with a notched segment, substantially as set forth.

3. A runner having its rear end curved concentrically with its pivot and provided with an opening for the seed-tube, combined with a notched heel-piece, and a horizontal plate-spring connecting the free end of the runner with a transverse rotative shaft, substantially as set forth.

4. The combination, with the seed box, of the sliding board, provided with the inclined plane *f*, and having flexible seed-tubes connected therewith, substantially as set forth.

284,378. JOSHUA C. CENTER, Haynesville, assignor of one-half to L. Mayo Leavenworth, Kans. Seed Drill. Sept. 4, 1883. Filed Feb. 13, 1883.

1. In a seed-drill, the feed shafts E e, each made in two parts, placed in line with each other, and independently connected with a driving mechanism, substantially as herein shown and described, whereby side draft will be prevented, and both sides of the drill will be made to work at the same depth in the soil, as set forth.

2. In a seed drill, the hinges, made substantially as herein shown and described, with bearing-boxes F upon the inner straps, C, and angular lugs G upon the projecting ends of the

outer straps, D, whereby a wide bearing is formed for the hinging shaft or pivot, and the movements of the hinges are limited, as set forth.

3. In a seed drill, the combination, with the frames A B, of the hinges C D E, provided with the angular lugs G, substantially as herein shown and described, whereby the forward frame is allowed to play within fixed limits, as set forth.

4. In a seed drill, the combination, with the angular lugs of the hinges C D E, of the set screws H, substantially as herein shown and described, whereby the movements of the said hinges can be regulated, as set forth.

5. The cutters I, inclined at an obtuse angle to form the mold-board L, fitting a correspondingly-shaped side of the standards K, as shown and described.

6. In a seed-drill, the combination, with the runners I J K and the frame A, of the pairs of straps M, having their forward ends bent outward and provided with pivot-holes, and the plates O, provided with pairs of lugs N, substantially as herein shown and described, whereby the said runners will have a free vertical movement on pivots at the front, as set forth.

7. In a seed-drill, the combination, with the hinged runners I J K and the frame A, of the keepers Q and the springs P, having their free ends movable in said keepers, substantially as herein shown and described, whereby the said runners are held down to their work, as set forth.

8. In a seed drill, the combination, with the sleeve 6 and the loose press wheels 9, of the ratchet-wheels 11 and the pawls 10, substantially as herein shown and described, whereby the said wheels are made to act independently upon the said sleeve, as set forth.

284,379. JOHN B. CHRISTIAN, Hamburg, Iowa. Cultivator. Sept. 4, 1883. Filed Aug. 1, 1882.

1. The combination, with the axle frame, bent as described, of the split sleeve loosely mounted on the wheel spindle, and having a projecting arm connected with a bent lever fulcrumed to an arm attached to the frame, the bifurcated bent link pivoted to the bent lever, and the spiral spring connecting the link and arm, substantially as specified.

2. In combination with the split sleeve mounted on the spindle of the bent frame, the movable clamp, its pins and clamping-screw, and the drag-beam and its extensions, in which the pins have bearings, substantially as and for the purposes set forth.

3. In combination with the lower bifurcated extension of the drag-beam and the lower pin of the clamp, the loose collar mounted on the lower pin of the clamp, and the set-screw adapted to bind the collar to the pin, substantially as specified.

285,363. A. and M. RUNSTETLER, assignor to the Farmers' Friend Manufacturing Co., Dayton, Ohio. Grain Drill. Sept. 18, 1883. Filed May 26, 1883.

1. In a grain-drill, the combination, with the shifting bar or bars, of a rod connecting said bar or bars with a crank pin upon a pinion, said pinion being mounted upon a lever, by which it is held out of engagement with the axle-gear, and having a peripheral flange provided with notches which engage with a locking detent upon a rigid support for said pinion, substantially as described.

2. The combination, with a gear rigid upon the axle, of a lever carrying a pinion having a notched flange and a rigid support beneath said flange, provided with a locking-detent, upon which the notched flange rides when meshed with the axle-gear, and with which it automatically engages when the notch reaches the detent, thereby unmeshing the pinion and gear, substantially as described.

3. The combination, with a series of hoes attached to drag bars, of a corresponding series of drop-links or their equivalents pivoted to a rock-shaft journaled in the frame, a rod connecting an arm upon said shaft with a crank-pin upon a pinion mounted upon a lever, by which it is held out of engagement with the axle-gear, and a rigid support beneath said pinion, having a locking detent which engages with an oppositely-notched flange on said pinion, substantially as described.

4. The combination, with the pinion mounted upon a lever, and having a peripheral flange with opposite notches formed therein, of a rigid support mounted upon the drill-frame, said support being provided with a detent, sub-

stantially as described.

5. The combination, with two independent axle-gears, of two pinions, each mounted upon a pivoted lever and normally held out of mesh with said axle-gears, one of said pinions actuating the bar or bars to shift the hoes, and the other a rock-shaft to raise and lower them, said mechanisms being wholly separate and capable of independent or of simultaneous operation, substantially as described.

6. The combination, with the rock-bars geared together and journaled in the drill-frame, of drag-bars pivoted alternately to each of said hoes, a rod connecting an arm upon one of said bars with a pinion, and a lever carrying said pinion and holding it normally out of mesh with the axle-gear, substantially as described.

7. A locking pinion for shifting or raising the hoes of a grain-drill, said pinion being provided with a flange having notches at suitable intervals adapted to engage with a locking-detent mounted on the drill-frame, substantially as described.

8. The combination, in a grain-drill, with the drag-bars and the rock shaft or shafts by which they are carried, of mechanism, substantially as described, intermediate between said rock shaft and the revolving axle, whereby the hoes are shifted by the power of the team, and automatic locking mechanism engaging at intervals with the shifting devices and holding the hoes in or out of rank, substantially as described.

9. In a grain-drill, the combination, with the hoes and their drag-bars, of drop-links pivoted to a rock-shaft, mechanism, substantially as described, connecting the rock-shaft with the revolving axle, and automatic locking devices engaging at intervals with said mechanism, whereby the hoes are raised by the power of the team and automatically locked in position, substantially as described.

10. The combination, in a grain-drill, with the drag-bars and the shifting bar or bars by which they are carried, of mechanism for shifting the hoes into double or single rank or for reciprocating them continuously by the power of the team, and of mechanism for automatically locking them in or out of rank, substantially as described.

11. In a grain-drill, the combination of the hoes and their drag-bars connected by chains or links to a rock-shaft, and mechanism connecting the rock-shaft with the revolving axle, whereby the hoes are raised by the power of the team and automatically locked in position, substantially as described.

12. The combination, with the bar carrying the seat, and having laterally-extending plates in rear and in front, which engage with the parallel seat supports, of a central vertical bolt projecting between said supports, a perforated plate engaging with said bolt, and a thumb-nut engaging with the threaded end of the latter, substantially as described.

13. A seat having adjustment between horizontal parallel supports, in combination with a locking-plate provided with lateral extensions adapted to serve as foot-rests for the driver, substantially as described.

14. The combination, with the drop-bearings for the pivoted levers, of angle-plates partly embracing a cross-beam of the drill-frame, and a rigid support having an angular attaching portion occupying the angle between one of the drop-bearings and its attaching-plate, registering perforations being formed in each to receive the lever-pivot and attaching screw, substantially as described.

15. The combination, with the parallel central supporting-beams, of a seat carried by an inclined bar having supporting transverse plates attached to its lower end and resting upon the parallel beams, and adjustable thereon, with a clamping-bolt and nut carried by one of said transverse plates, substantially as described.

285,797. LEBEUS C. CHAPIN, Kalamazoo, Mich. Wheel-Cultivator. Oct. 2, 1883. Filed June 2, 1883.

1. The combination, with independently-hinged tooth-bars, a spring on each of said bars, a cross-bar connecting said springs, and a connecting lifting-lever, of a spring-metal pressure bar having the rearwardly-extending free end provided with the sliding hook, substantially as set forth.

2. The combination of vertically-hinged hinged tooth-bars, the tooth-beam springs, a lifting lever, and means connecting it with said springs, the spring-metal pressure-bar having the S shaped slotted end, a curved seat therefor, and means for connecting the

free end of the pressure bar with the lifting lever, all substantially as described.

3. In a wheel cultivator, a lifting-lever having a spring-actuated pawl provided with an operating dog, fitted into said lever, and connected with the pawl by a rod pivoted to the dog at a point radially removed from said fulcrum, substantially as specified and shown.

4. In a wheel cultivator, the combination of a lifting-lever and vertically-acting tooth beams with the S-shaped spring pressure bar having the free end provided with the sliding hook, substantially as set forth.

5. The combination of vertically-acting tooth bars and springs, a lifting-lever and connecting means, the spring pressure bar, and an operating pawl dog adapted for raising the pawl from the ratchet and holding it raised, substantially as described and shown.

6. The combination of the ratchet casting, having the curved seat, the lifting lever, and the spring pressure bar having the slotted S-shaped end for adjustable location in said curved seat, and the rear free arm provided with the hook, all substantially as set forth.

286,730. JOSIAH J. and EDWARD R. PIATT, LaPort, Ind. Plov., Oct. 16, 1883. Filed July 28, 1881.

1. The combination, with the plow-beams and the vertical portion of the arched axle, perforated as shown, of the boxes D, composed of two plates or half-boxes, each having hinging slots *d* and bolt holes *d'*, with bosses or hubs to protect the coupling-bolt, substantially as shown and described.

2. The combination, with the axle and plow-beams, of the box D, the vertical bars G, the swiveling yoke or bars G', the spring E, and roller or fulcrum F, all arranged to swing laterally together, substantially as shown and described.

287,703. JOSEPH B. NEFF, assignor to the Burlington Plow Co., Burlington, Iowa. Cultivator Spring. Oct. 30, 1883. Filed June 26, 1882.

1. In a cultivator-coupling, the spring-bar J, made L-shape, with a long and short arm, and pivoted in the long arm above the angle, and adapted to receive springs upon both arms, substantially as shown and described.

2. The angular spring-bar J, pivoted above and distant from the angle, in combination with the springs L, M, clamp socket K, and sleeve F, having rigid arms I, substantially as shown and described.

3. The combination of the angular spring bar J, pivoted above the angle in the long arm, the sleeve F, having arms I, the springs L, M, and the clevis H, substantially as shown and described.

4. The combination, with the arched axle of a cultivator, of the right-angled spring bar J, with a long and short arm, and pivoted in the long arm above the angle, the adjustable springs L, M, clamp socket K, sleeve F, with arms I, and clevis H, and the beam coupling E, G, all substantially as shown and described.

287,779. A. and M. RUNSTETLER, assignors to the Farmers' Friend Manufacturing Co., Dayton, Ohio. Gram Drill. Oct. 30, 1883. Filed June 18, 1883.

1. In a grain-drill, a lifting-lever oscillating upon a driving axle, in combination with link and crank devices connecting said lever to the oscillating bar journaled upon the main frame, to which the drag-bars are connected in such manner that the hoers may be raised or lowered by the oscillation of the lifting-lever, substantially as herein set forth.

2. In a grain-drill having a lifting-lever oscillating upon a driving axle, and adapted to raise and lower the hoers by link and crank connection to the oscillating bar journaled on the main frame, in combination with the ratchet and pawl devices for locking the lifting-lever to the axle, substantially as herein set forth.

3. In combination with a lifting-lever, L, oscillating upon a driving axle, and the means for locking it thereto, an automatic trip arranged upon the main frame and adapted to automatically disengage the locking devices as the lever is moving forward with the axle, substantially as herein set forth.

4. In combination with the lifting-lever L, oscillating upon the main axle, and having locking devices for connecting the lever to the axle, a bolt-hat, attached to the free end of the lifting-lever, whereby it may be locked in any desired fixed position for holding the hoers in or out of the ground, substantially as herein set forth.

5. In combination with the lifting-lever L,

pivoted upon the driving axle, and lock devices R, Q, the secondary lock-lever N, adapted to hold the lock-rod in engagement with the segment P, substantially as herein set forth.

6. In a grain-drill, the combination of the automatic shifting devices operated by the power of the team by a driving gear keyed to the driving axle, a lifting-lever journaled upon said axle, with clutch devices for locking, and lever to said axle, whereby the power of the team may be employed to shift and raise the hoers, substantially as herein set forth.

7. In a grain-drill, a lifting-lever oscillating upon the driving axle, with locking devices for connecting the movements of the lever with the movements of the axle, a lock to said lever and under control of the operator, whereby the hoers may be raised, either by draft of the team or by the operator himself moving said lever, disconnected from the movements of the axle, substantially as herein set forth.

8. In combination with standard J, the socket G, provided with the forked end *g'*, adapted to engage over the pin of the drag-bars, so as to hold it in proper relative position thereon, substantially as herein set forth.

288,003. WM. P. BROWN, Zanesville, Ohio. Wheel-Cultivator. Nov. 6, 1883. Filed June 13, 1882.

My invention relates to wheeled cultivators of that class in which the two wheels run upon opposite sides of the row of plants and sustain above the same a track, or frame work having a draft attachment for the team in front and plows behind, which are attached to and drawn by the track, which may or may not have a tongue.

My improvements consist, principally, in the construction, arrangement and adjustment of the plow beams and their couplings, whereby the plows next to the row of plants may be set in a higher horizontal plane, to adapt them to the elevation of the row or ridge upon which the plants are, and whereby the plows may be adapted to a minimum width of track and still preserve the proper lateral movement of the inner plows without throwing the outer ones against the wheels, and whereby, also, the lateral movement of the inner plows is made to have the least effect upon the outer plows consistent with their connection thereto, all as more fully described hereinafter.

1. Plow-beams combined with and attached to a wheeled cultivator, and adapted to operate in pairs, which approach when moved outwardly from the plants and separate or move apart when moved inwardly to the plants, as and for the purpose described.

2. Plow-beams combined with a wheeled cultivator and attached to the same and to each other, substantially as described, whereby the inner beams are adapted to have a lateral throw greater than the outer ones, as set forth.

3. Plow beams combined with a wheeled cultivator by a swiveled or hinged connection in front, and hinged or coupled together in the rear of this by a connection which causes the beams to approach when moved away from the plants and to separate when moved toward the plants, as described.

4. A wheeled cultivator having on each side of the row of plants two or more beams, one of which is set to work in a higher plane at its draft-connection than the other, the said beams being coupled by oblique connections for a variable lateral throw, as described.

5. The combination, with the axle of a wheeled cultivator and two or more plow-beams disposed to run upon each side of the row of plants, of two or more brackets attached to the axle on each side of the space for the row of plants, and connections for fastening the plow-beams independently at different vertical heights to said axle on the same side of the row of plants, as set forth.

6. The bracket P, having a perforation in one arm and a slot in the other, in combination with the bolt *b*, inclosing tube *c*, and plow beam coupling Q, substantially as shown and described.

7. The combination, with two plow-beams hung about vertical centers at their draft ends, of a cross-coupling bar jointed to both beams, and having one end closer to the center of oscillation of the beam to which it is attached than the other end is to the center of oscillation of the other beam, as and for the purpose described.

8. The bracket S, having a bolt *g*, surrounded by a tube *h*, in combination with the inner plow beam and the diagonal cross-

bar T, having clevis coupling J, as and for the purpose described.

9. The combination, with the two plow-beams, of the diagonal cross-bar T and coupling at the end thereof, having a longitudinal adjustment of the plow beams, as shown and described.

289,296. EDWIN D. MEAD, Shortsville, N. Y. Seeding Machine. Nov. 27, 1883. Filed S. pt. 9, 1883.

1. In an implement, substantially such as herein described, the combination of a wheeled frame provided with a stationary beam and with a swinging beam, teeth or hoers alternately attached to the respective beams, and a hand lever consisting of two parts jointed one to the other connected with the swinging beam and provided with a locking device, substantially as shown and described, whereby the teeth or hoers may be thrown into alignment or out of alignment to different degrees and held at any desired adjustment.

2. In combination with frame A, fixed beam D, and swinging beam F, teeth or hoers L, G, connected with the respective beam, hand lever H, consisting of the parts *b, c*, the former connected with the beam F, and the latter pivoted to the beam *f*, and the locking-dog I, applied to the lever, substantially in the manner shown.

3. In combination with frame A, fixed beam D, and swinging beam F, hand-lever H, locking-dog I, and suspending bolt or casting *e*, provided with shoulder *f*, substantially as and for the purpose set forth.

4. In combination with the swinging beam F, of a shafting-rank implement, hand-lever H, pivoted to the main frame and connected with the swinging beam, dog I, provided with shoulders or notches *h*, pivoted to the hand-lever, hand-piece *k*, and connecting-rod J, extending from the hand-piece to the locking-dog, substantially as shown.

5. The combination, substantially as herein described, of frame A, fixed beam D, swinging beam F, hoers or teeth attached to the respective beams, hand-lever H, consisting of the parts *b* and *c*, connected by bolt *g*, dog I, pivoted upon the bolt *g*, and provided with shoulders *h*, hand-piece *k*, and connecting-rod J, all combined and operating substantially as set forth.

6. In combination with the adjusting-lever H, of a shafting-rank implement, substantially as shown, a locking-dog I, applied to said lever and provided with spring *l*, as and for the purpose set forth.

289,893. MATTHEW F. CONNETT, Petersburg, Ills. Gram Drill. Dec. 11, 1883. Filed Jan. 15, 1883.

1. The combination of the runners H, spring H', having eyes for staples X Y, frame *a'*, covering shoes K', spring K', frame *a*, and spring L, clipped to frame-bar *a'* and drag-bar J', substantially as shown, and for the purpose described.

2. The combination of the runners H, springs H', secured to frame *a'*, covering shoes K', spring K', spring L, clipped to frame-bar *a'*, plate or bar *m*, loop or clip M, and drag-bar J', substantially as shown, and for the purpose described.

290,366. SIMON P. SNYDER, SAMUEL S'OUGH and TOMEY D. ULRIK, Walton, Ind. Cultivator. Dec. 18, 1883. Filed July 19, 1883.

In a cultivator, the standard S, bifurcated at its lower end and provided with a bail, *s'*, as shown, and at its upper end with a spring, *l*, in combination with the pivoted shovel-carriage standard *s*, provided with a loop, *r*, the parts being organized and constructed so that the standard *a* may pass through the slot in the main standard S, substantially as shown and for the purpose set forth.

297,627. HANS H. SATER, Dubuque, Iowa. Cultivator. April 29, 1884. Filed Aug. 31, 1883.

The invention consists in combining with the axle and coupling of the cultivator a joining connection-rod and a spring secured to the arch of the axle; further, in combination with such connecting rod, spring, and rod, a roller working on the track secured to the arch of the axle; and, further, in various details of construction, all fully hereinafter explained, and illustrated in the accompanying drawings, in which—

1. The combination, with the shovel bars, of the pivoted standards K, the lever G, the spring secured to the said lever and connected to the frame of the cultivator, and the roller I

and its curved track.

2. Combined with the arch of the cultivator, axes, semi-tubular sleeve A, curved track, H', in combination with the spring B, secured to said sleeve, the bar G, having a roller, and a pivoted standard, K, connected to the shoes of bars.

3. The combination, with the coupling T and the bars attached thereto, of the standard K, locked to such coupling, the bar G, having forked ends, and the spring B, connected to the semi-tubular sleeve A.

298,655 JAMES W. ATKINSON and BYRON PHELPS, assignors to Deere & Co., Moline, Ills. Corn-Stalk Cutter. May 13, 1884. Filed Jan. 12, 1883.

1. In a stalk cutter, in combination with a frame, E, adapted to be dragged by one end, and a cylinder of cutters journaled in said frame and adapted to slide back and forth with reference to said frame, springs adapted to operate substantially as and for the purpose specified.

2. In a stalk cutter, in combination with the wheel frame and a swinging frame hinged thereto, a cylinder of cutters journaled to the swinging frame in bearings which permit it to slide back and forth in said swinging frame,

substantially as and for the purpose specified.

3. In a stalk cutter, in combination with the wheel frame, a swinging frame hinged thereto, and a cylinder of cutters journaled to the swinging frame in bearings which permit it to slide back and forth with reference to said swinging frame, springs adapted to act on the cylinder of cutters, substantially as and for the purpose specified.

4. In combination with the frame E, having slots c' , the cylinder of cutters I, journaled in blocks K, which slide back and forth in the slots c' , and the springs L, located in the slots c' , and adapted to act on the cylinder of cutters, substantially as and for the purpose specified.

5. In combination with the frame A and the swinging frame E, hinged thereto, and having slots c' , the cylinder of cutters I, journaled in blocks K, which slide back and forth in the slots c' , and the springs L, located in the slots c' in rear of the blocks K, and adapted to act on the cylinder of cutters, substantially as and for the purpose specified.

6. In combination with the frame A, swinging frame E, having slots c' , cylinder of cutters journaled in blocks which slide in the slots c' , and springs L, the crank-shaft F, connected with the frame E, by a rod, g , and

spring I, substantially as and for the purpose specified.

7. In a stalk cutter, in combination with the frame, rod N, and drag hooks hinged to the frame, the spring P, adapted to hold the drag-hooks in contact with the ground with a yielding force, substantially as and for the purpose specified.

8. In a stalk cutter, in combination with the frame and drag hooks hinged thereto, and rod N, adapted to raise the drags off the ground, a spring, P, adapted to hold the drag-hooks in contact with the ground and to yield to permit said hooks to rise independently of the rod N, substantially as and for the purpose specified.

9. In combination with the wheel frame and swinging frame, shaft F, and rods g and N, adapted to raise the swinging frame and drag-hooks simultaneously, the spring P, adapted to operate substantially as and for the purpose specified.



