



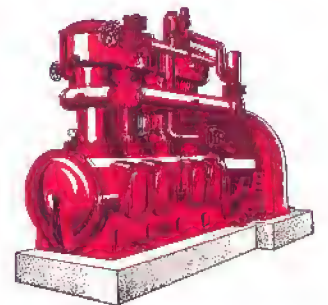
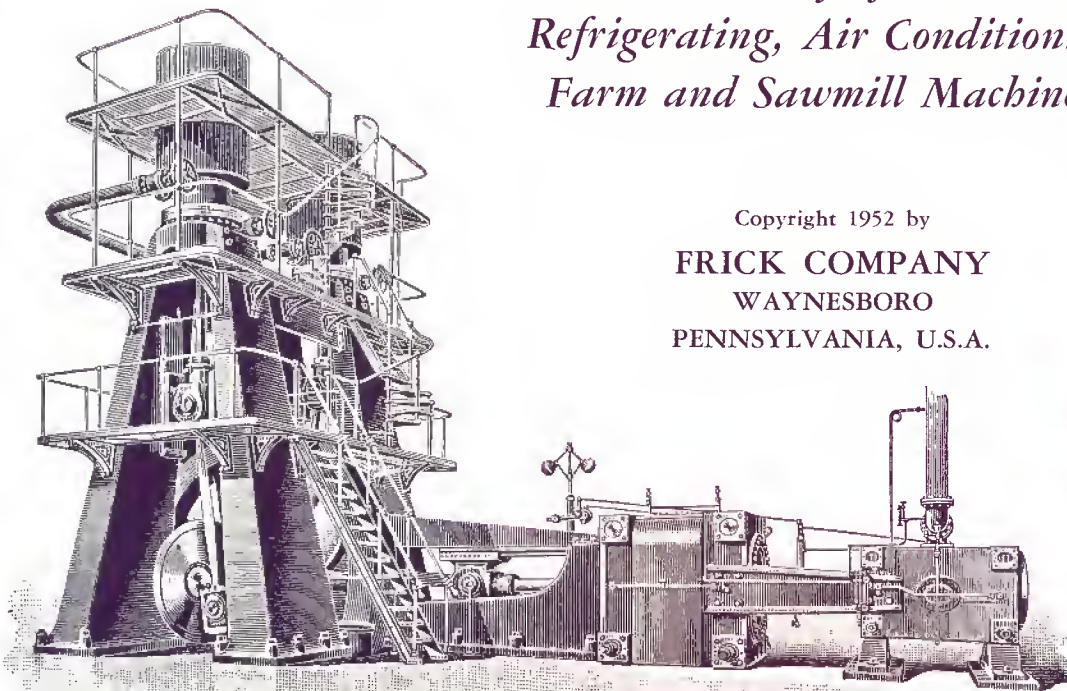
**A HISTORY OF
FRICK COMPANY
WAYNESBORO, PENNSYLVANIA**



CELEBRATING A CENTURY OF ENGINEERING SERVICE

*The Story of Frick
Refrigerating, Air Conditioning,
Farm and Sawmill Machinery*

Copyright 1952 by
FRICK COMPANY
WAYNESBORO
PENNSYLVANIA, U.S.A.



The largest Frick refrigerating machine ever built, compared with a compressor of similar capacity as made today. For a description of the giant machine, see page 19.

The Cumberland, once known as The Great Valley, is the connecting link between the Shenandoah Valley of Virginia and the Lebanon Valley of Pennsylvania. All told, this chain presents one of the largest, most fertile, and most beautiful valleys in the world. Settled originally by thrifty people, the area now maintains an unusually excellent balance between agriculture and industry.

The view opposite, except for extensive forests long since converted to man's use, is much the same as that which greeted the boy George Frick in 1835, when his family came over the Blue Ridge to occupy their new home, four miles north of Waynesboro.

The Waynesboro area had been settled in the 1740's by John Wallace: the stone kitchen of his home still stands. The town was laid out in 1797 by his son.



Fort Stover is the only one in Pennsylvania surviving from the French and Indian Wars of 1754-63. Descendants of the Stovers are with Frick Company.



John Bourns, first cousin of the famous Robert Burns, built this log schoolhouse at Wallacetown before the Revolution. In good repair today.

Snow Hill Church and Cloisters, founded by Peter Lehman in 1800, outlived the parent group at Ephrata, Penna. Services are now held monthly, on Saturdays.



"This little book is given you with our compliments and best wishes. You will find it both interesting and instructive and well worth carrying to your home, where you can examine its pages at your leisure.

"It will cause you inconvenience if you mislay it, because sooner or later you will want to refer to its illustrations to see just what you require in the way of machinery, to lighten and cheapen the labor of your productions.

"And when you find what you want, send to us or any one of our Branch Houses for prices, or further information and it will be promptly furnished.

Yours very truly,
FRICK & CO."

—Quoted from a Frick catalogue of 1884. Some of the early bulletins, dating back into the 1870's, are of special interest. They were illustrated with handmade wood cuts, a number of which are here reproduced. The catalog of 1885 included useful information similar to that in an almanac, as well as 24 sheets of blank paper!



The farm equipment used in the 1820's, as represented by the cradle and the flail, had progressed but little in thousands of years.

The Introductory Period 1826 to 1852

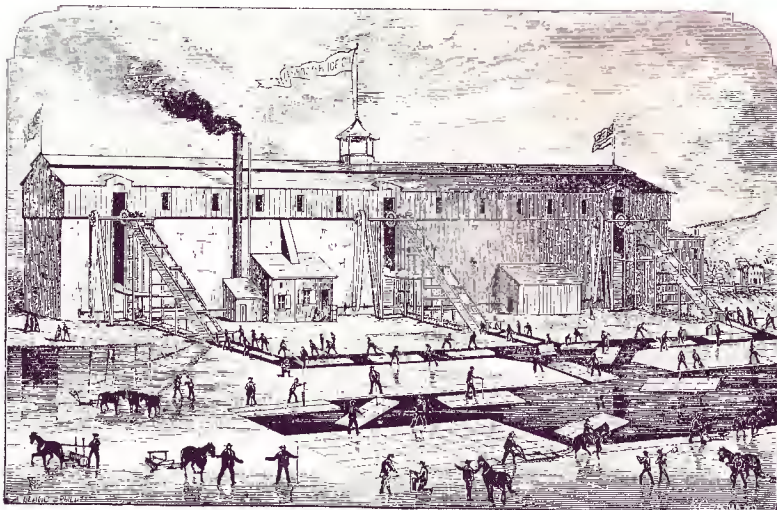
When George Frick was born, in 1826, wheat was still cut with cradles and threshed with flails, stage-coaches had no competition from railroads, and a thousand dollars would buy a healthy slave.

Swinging a cradle, and sustained with country ham and whiskey, a man could cut about two acres of wheat a day. With a flail he could knock out eight bushels of grain in ten hours. The average farm had available one or two horses per man.

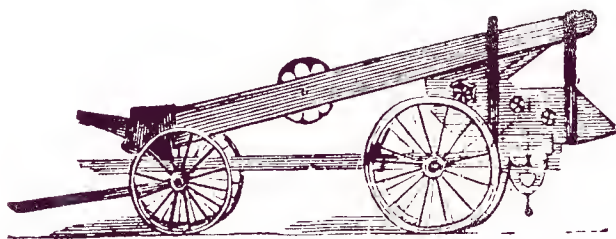
An engineering genius, George Frick undertook to ease the labor of men and animals with power machinery. He became a pioneer builder of four essential kinds of equipment: steam engines, grain threshers, sawmills, and refrigerating systems.

His portable and traction engines were among the first in this country, and were followed by Corliss steam engines in sizes up to 3000 horsepower. Beginning with the hand-cranked "fanning mills" of the 1840's, he started successive improvements which led to the wonderful steel threshing machines and peanut pickers of today. Frick sawmills, introduced in 1875, are now built in quantities up to a thousand or more a year. Frick refrigerating, air conditioning, ice making and quick-freezing systems have set the standard of dependability since 1882.

Natural ice—the first refrigerating medium—was cut extensively throughout the last century. The mild winter of 1890 stimulated artificial ice making.



The Town of Frick, in the Valley of that name in Switzerland, was founded in Roman times. Henry Frick, eighth-generation ancestor of George Frick, was born in 1621. His grandson Jacob came to America in 1720.



The early threshing machines combined a "groundhog" toothed cylinder with a sifting belt and a fan for winnowing the grain, all mounted on a wagon frame.

NEW
Machine Shop & Iron Foundry.

G. & J. D. FRICK

WOULD inform their friends and the public generally that they have opened a new Machine shop, about one fourth of a mile west of Ridgville, Washington county, Md, and are prepared to manufacture Steam Engines from two up to twenty Horsepowers, with Boilers furnished on reasonable terms, forcing and tightening pumps of the most approved patterns; turning laths, slide rests, vertical drills, and other machinery made to order. All kinds of Repairing done, such as repairing old steam engines, boilers and other machinery at the shortest notice. All kinds of turning and boring done, such as mill spindles, shaxting and all kinds of fitting up done on favorable terms. Casting of every description made to order at their Foundry. Cook Stoves, ten-plate stoves, Stonecoal Stoves, and also patterns for all kinds of castings made at the shortest notice.

All orders to be sent to Waynesboro', Franklin county, Pa., or to Ringgold, Washington county, Md. October 7-1y.

Hagerstown 'News,' Ch'g. "Whig" and "Valley Spirit" please copy 1y. and send accounts to this office.

This advertisement appeared in the Waynesboro "Village Record" in 1852. Other newspaper advertisements were inserted by George Frick as early as 1849.

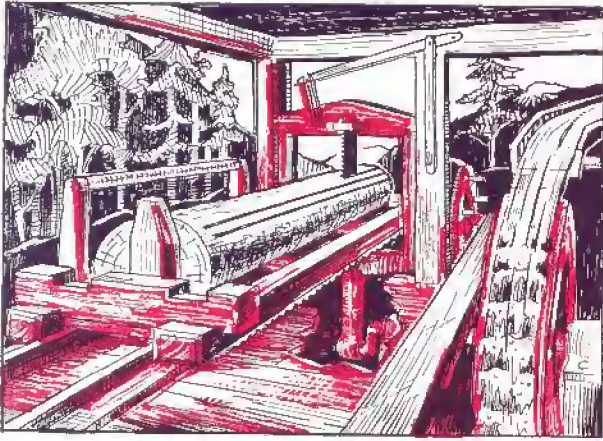
Thus George Frick's work has had a direct influence on the betterment of farming, manufacturing, and lumbering, his products are essential to the great food industries, nearly every other phase of civilized life has been benefited to some extent. He could hardly have chosen four fields of endeavor with more far-reaching usefulness.

George Frick heard the guns at the battles of Antietam and Gettysburg, saw the pony express superseded by the trans-continental railroad, supplied machines which helped open the Great West, and ushered in the era of refrigeration. When he died in 1892, Frick equipment was in use from Coast to Coast. The history of the Company he founded thus parallels the story of America.

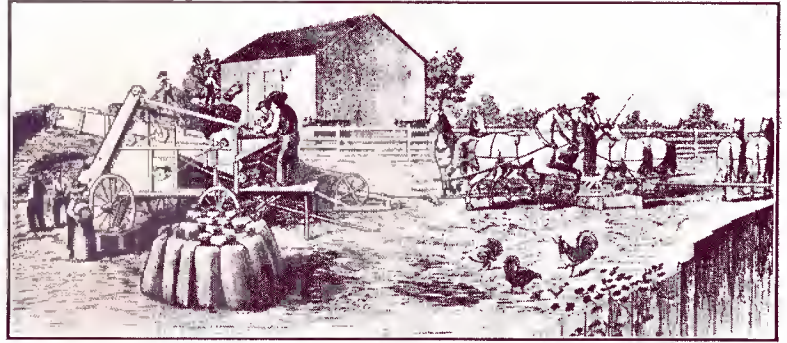
George was born in Lancaster County, Pennsylvania, on the 500-acre farm purchased in 1733 by his great-great-grandfather from the Penns. George's grandfather, Abraham Frick, was a Captain in the Revolution.



The Frick homestead at Quincy, Penna., was later occupied by ancestors of the leading executives of three other important industries: the Landis Tool Co., Landis Machine Co., and the Good Lumber Co.



A sawmill of this "up-and-down" type, driven by water power, was operated by Abraham Frick about 115 years ago. Boards cut by this method were split off the log near the end; they can still be identified in some old barns.

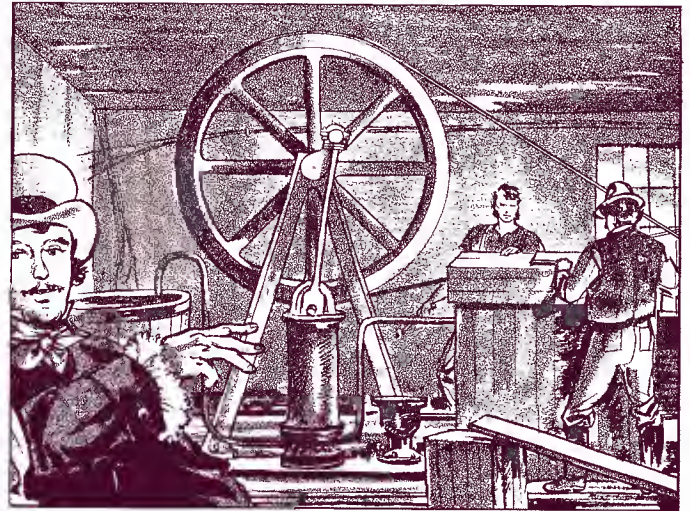


Invoices of the 1840's show that "horsepowers," with sweeps and gears, were among the first machines made by George Frick. These continued to be sold until the 1890's. The largest used 12 horses.

When George was nine years old his own father, also named Abraham, left the home of his Swiss ancestors in Lancaster County and moved to the Cumberland Valley. Near his new homestead at Quincy, Penna., Abraham had a sawmill, of the old up-and-down type, driven by a water wheel. This George helped to operate. Another wheel pumped water from a well to the house and barn—an innovation in those days.

At seventeen George was apprenticed to Martin Kendig, a millwright living at Ringgold, Md., a few miles south of Waynesboro. In 1848 George himself began manufacturing grain cleaners and horsepowers in a weaving mill at Quincy. There, two years later, he constructed his first steam engine; this was mounted on a wooden frame and delivered two horsepower.

In December of 1849 George had married Frederica Oppenlander. That same year he started the advertising program which is still continued. In 1851 or '52 he built a shop on a farm near Ringgold, and in 1853 established Frick Company. The development of the Company is described by decades in the pages which follow.



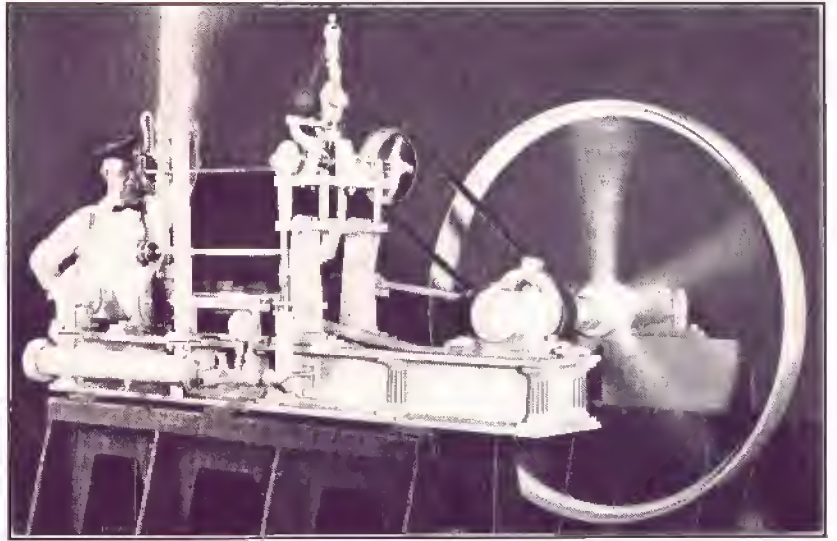
This was the era of the clipper ship, the Mexican War, and the California gold rush. In 1831 Michael Faraday discovered the principle of the electric generator, and the next year Samuel F. B. Morse perfected the telegraph. In 1834 a patent for a reaper was granted to Cyrus H. McCormick, and Jacob Perkins patented the compression refrigerating system illustrated above. In the later '30's Samuel Colt invented the revolver, John Deere introduced the steel plow, and Charles Goodyear vulcanized rubber.

*Quincy April 5th 1850 Mr Geo. Frick
 please pay Mrs B. Naby Eight Dollars and charge
 it to me
 Jacob A. Clem*

Before there were any banks in the area, and even before his Company had been started, George Frick was cashing "checks" of this kind for his customers. Many of his early business papers have been preserved.



George Frick's shop and home near Ringgold, Md. His parents and a brother continued to live here after George moved to Waynesboro. The residence and shop still stand.



This old steam engine was built by George Frick about 1856. With a cylinder of 6-in. bore and 13-in. stroke, it was rated at 10 horsepower, and ran at speeds of 75 to 90 r.p.m. The engine was first used in Mr. Frick's shop at Ringgold, being later moved to Quincy, where it was operated until 1886 by a Mr. Metcalf; he stated that it outlasted two boilers. It is now in the Ford Museum at Dearborn, Mich.

Ringgold, Md.

Mr George Frick June 5th 1859

Part of Hester's order

3 short Bosons	25	57	1 1/2
9 yds Maslin	12 1/2		1 1/2
1 1/2 Doz Buttons	12 1/2		18 1/4
1 Spool			5
for Wm Nolan			<hr/> 2.79

This store bill indicates the use of the old Spanish coin (legal until 1858) called a "bit," two of which made a quarter. A 6 1/4 cent piece was locally known as a "fippenny bit"; farther south as a "picayune." Another invoice shows a total of \$2.53 1/2.

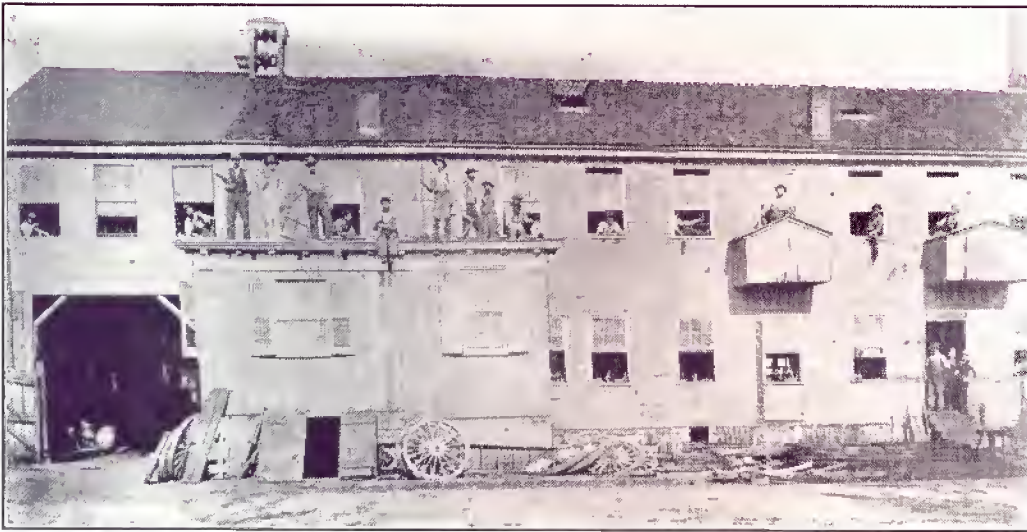


This decade witnessed the debates between Lincoln and Douglas, John Brown's raid, the opening of the Civil War, and the Battle of Antietam, near Waynesboro.

Scientific developments of the '50's included the publication of Darwin's "Theory of Evolution," the opening of Drake's oil well at Titusville, Penna., the introduction of the Bessemer steel process, and the first rifled gun barrels.



To relieve fever patients in Florida, Dr. John Gorrie in 1850 developed a cold-air ice-making machine. Later in the 50's Prof. A. C. Twining of Connecticut and John Harrison of Australia patented machines using sulphuric ether as the refrigerant. Ice boxes now began to appear in homes, natural ice being generally available.



The original Frick shop in Waynesboro stood on Broad Street between Main and Second, and was first occupied in 1861. It was sold to the Geiser Company in 1879 and three years later burned down.



Long before the Engineering Department was established, George Frick drew designs on the floor, or on a bench, to guide his men.

1853 to 1862

A hundred years ago, small industries were often centered along the streams, where water power was available. In the Cumberland Valley these industries included flour and grist mills, tanneries, distilleries, woolen and paper mills, furnaces, forges, marble yards, and sawmills. But as the forests were cut down, the water ran off more rapidly and its power became less dependable.

To meet these conditions George Frick built steam engines. Among his early customers were Welty's mill (still standing near Waynesboro), and the tanneries at Quincy and Thurmont.

Among the Frick apprentices trained at Ringgold were John S. Spangler, George W. Eyler, Jacob Stouffer, and Frank Ledy. All of them later held responsible positions with the Company. Some lived at George Frick's home, and helped run his farm.

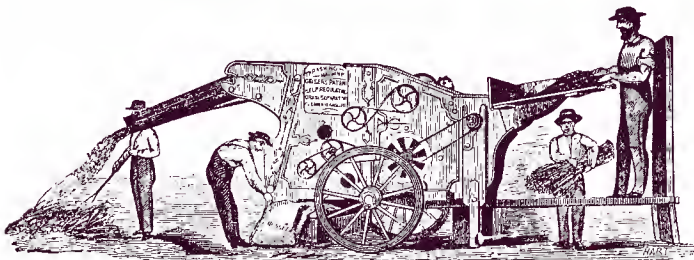
After adding threshers to his line, George Frick rented a larger shop along the main road, about a mile

north of Ringgold. Outgrowing this, he built a two-story shop measuring 100 by 50 feet, at Waynesboro. He moved into this before the outbreak of the Civil War. At the corner of Broad and Second Streets, adjoining his shop, he built a large house in which his family and apprentices lived.

Wm Geo Frick
 Wm Geo Frick
 Dec 22nd / 860
 Dear Sir I am
 under the necessity to send you
 two Warrisburg Bills back that
 I received of you last Saturday
 I had paid them out and they came
 back pronouncing to be counterfeit
 for my part I think they are
 good but we cant do anything
 with that money here I thout it
 wold be best to send it back
 as soon as they came back, perhaps
 you can return them to the
 party that you received them they
 are very dautful bills you will
 find the Two five dollars bill
 inclosed for with you will
 please send me ten dollars
 of Marland money please send
 it by return mail and
 my sodony you will oblige
 yours truly
 Geo. Frick

FARMERS!

HERE IS WHAT YOU NEED TO THRESH YOUR GRAIN.



Geisers' Patent Self-Regulating Grain Separator, Cleaner & Bagger.
 For full particulars and Circulars of Machine, address
GEORGE FRICK, Manufacturer,
 Waynesboro, Franklin County, Pa.

From 1857 to 1865 George Frick built threshers on the patents of Peter Geiser. This model used eight men and eight horses to thresh 35 bushels per hour.

A remarkable letter, referring to the paper money issued by state banks. The man at Williamsport, Maryland, influenced by the War scare, was afraid of Pennsylvania bills.

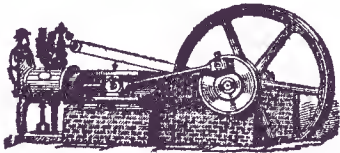
This photograph, among the earliest ever taken of Frick machinery, shows a portable "farm engine" of the first model, belted to a small thresher. The rig was exhibited in the Waynesboro Center Square in the 1860's.



FRICK & CO., PROPS. GEO. FRICK, SUPT.

WAYNESBORO
STEAM-ENGINE AND ROILER WORKS

ESTABLISHED 1853.



STATIONARY AND PORTABLE
STEAM-ENGINES, BOILERS,
Portable Saw Mills,
and all other Machinery made to order.

—:—

The above cut represents our Horizontal Engine with *Improved Side Bed*. This design makes it strong, neat and durable and upon which we have made some valuable improvements, especially upon the *working parts* making them durable and economical.

We build *Horizontal Engines* with box beds of different sizes and designs and upon the most improved plan.

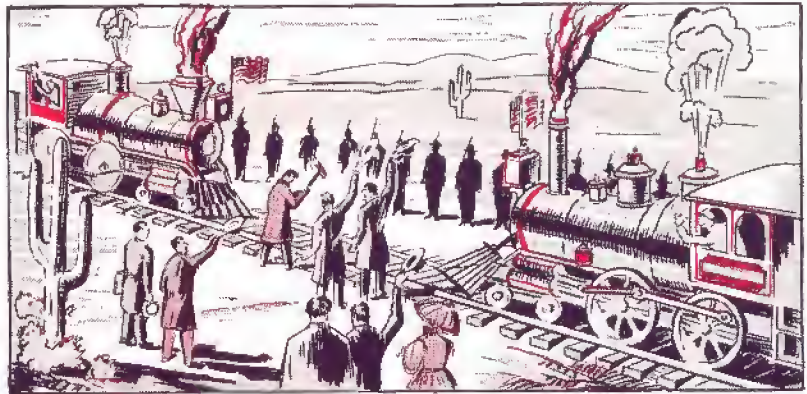
We also make *Upright Engines* of different sizes and styles, and where economy of space is an object, they have some advantage over the *Horizontal*, also in the wear of the *Cylinder*, which is always equal in an *Upright Engine*.

A special point of advantage in these Engines is our (A. O. Frick's) recently invented and patent self-adjusting **BALANCED SLIDE VALVE**, suited to all Steam Engines and Locomotives. It leaves the Engines as simple in operation as those of the ordinary plain slide valve class. We direct special attention to this superior valve, and invite correspondence.

We give special attention to *Portable Engines* and *Saw Mills*; also *Agricultural Engines* for threshing grain and for farm purposes generally. Also

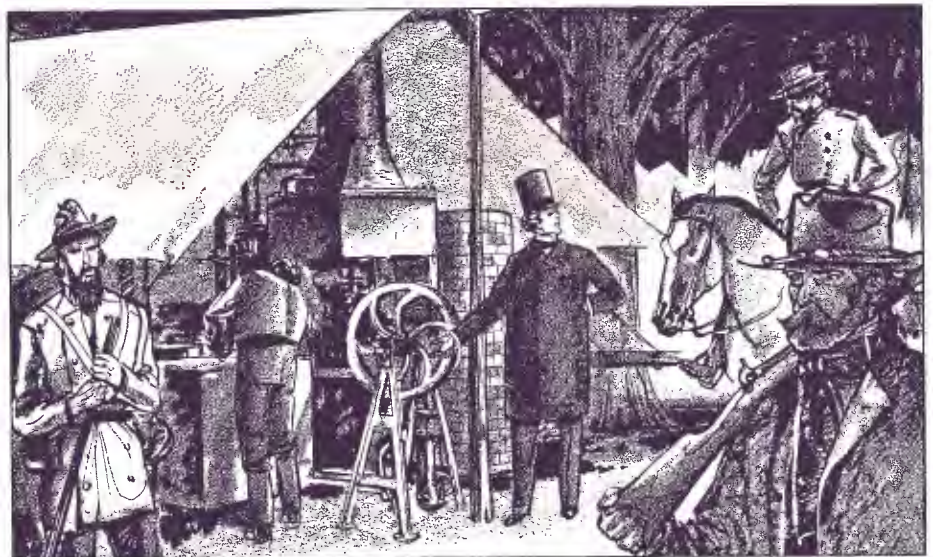
STEAM BOILERS,
of all sizes. Further information may be obtained from the manufacturers,
FRICK & COMPANY,
Waynesboro', Franklin Co., Pa.
may 8-11

An advertisement of Frick steam engines which appeared in the Waynesboro newspaper in the early 'Seventies.



The Battle of Gettysburg was fought in 1863; within two years, the names of Lincoln and of Lee had become immortal.

The trans-Atlantic cable was laid in 1866. In '69 the Westinghouse air brake was introduced, the trans-continental railroad was completed, and the Suez Canal was opened. Over-expansion of the railroads contributed to the Panic of 1873.



In 1863 four Carré ammonia-absorption refrigerating machines, made in France, were smuggled past the Union blockade and installed in the South. Using distilled water, clear ice was made with these machines for the first time.

WAYNESBORO' FOUNDRY AND MACHINE SHOP.

GEORGE FRICK,
Waynesboro', Franklin Co. Penn'a.
Manufacturer of
Stationary and Portable
STEAM ENGINES,
Mill Gearing, &c., of all descriptions.
Shafting Pulleys, &c.
Geiser's Patent Self-regulating
GRAIN SEPARATOR,
With the latest improvements and Triple Gear Horse-Powers.
All kinds of Machinery made to order.

Waynesboro', Pa. *Mar 20* 1869

Mr. J. H. Keller

**Bought of GEORGE FRICK,
IRON AND BRASS FOUNDER.**

This bill-head shows the machinery offered by George Frick in the 1860's. Note the various old-style type faces used by the printer.

1863 to 1872

The plant had hardly been moved across the Mason-Dixon Line when the Civil War broke out. Waynesboro lay midway between the crucial battles of Antietam and Gettysburg: the area was subjected to many raids. A letter to George Frick dated 1862 says a Confederate column of cavalry ten miles long was at Fayetteville, Penna., less than a dozen miles away.

During the Gettysburg campaign the Confederates occupied Waynesboro and took all the leather belting from the Frick shop, which was closed for a month.

After the War a new plant was erected across the street, under which a long power shaft extended. Mr. Frick's daughter Elizabeth was killed when accidentally caught by this shaft.

The Geiser Mfg. Co. occupied the previous Frick shops in 1869, and grew into one of Waynesboro's largest industries. From it sprang the Landis Tool Co. and the Landis Machine Co., these now enjoy an international trade in precision grinding and threading tools.

In 1870 Mr. Frick formed a partnership with his second cousin, Christian Frick Bowman, but the latter died of typhoid fever in '72. That year and the next marked the lowest ebb in the Frick fortunes: the entire family contracted the disease and the eldest son, Frank, also died of it.



The "Brick Shops" were built across the street from the first Frick plant in Waynesboro, and were occupied from 1869 to 1881. They included a foundry, boiler shop, smith shop, forge shop, pattern dept., machine shop, etc.

Form No. 64.

This Receipt, properly filled up by the Shipper, must accompany the Freight.

PENNSYLVANIA RAIL ROAD COMPANY'S

FREIGHT  **STATION.**

Corner of Thirteenth and Market Streets.

NOTICE. Persons desiring information respecting Goods shipped by this Company, to be forwarded to points beyond Pittsburg, will please address the Consignee at Pittsburg, instead of Shippers at Philadelphia.

When goods for more than one mark are comprised in one Dray-load, separate receipts must be sent for each.

Goods intended to go through by Rail Road, beyond Pittsburg, must be clearly and plainly marked on the packages, "Through by Rail Road."
Through and Local Freight will not be received after 6 o'clock P. M.
Local Freight must have the name of the Station at which it is to be delivered plainly marked on the packages, and on this receipt.

DRAY ENTRANCES.

Through Freight, 13th & Market Sts.
Local Freight, 15th & Market Sts.

RECEIVED, Philadelphia, *Nov 16* 1867

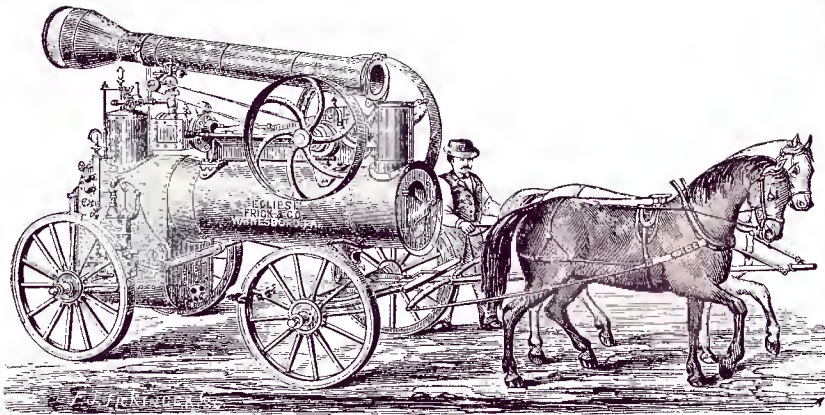
of *Mr. J. Potts*
the following articles, contents and condition unknown, to be carried and delivered upon the terms and according to the agreement as specified on the back of this receipt.

MARKED

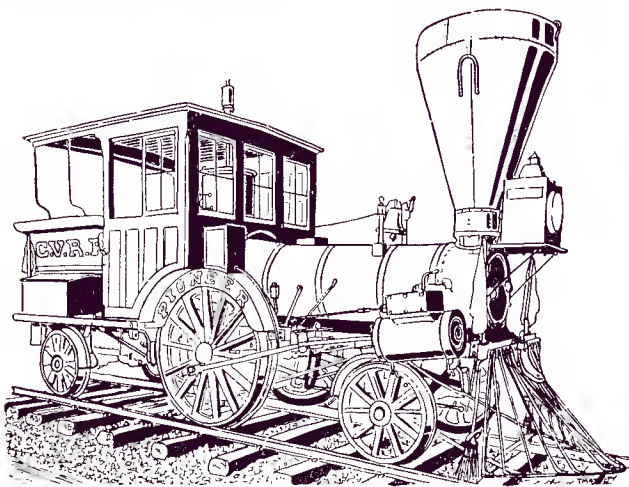
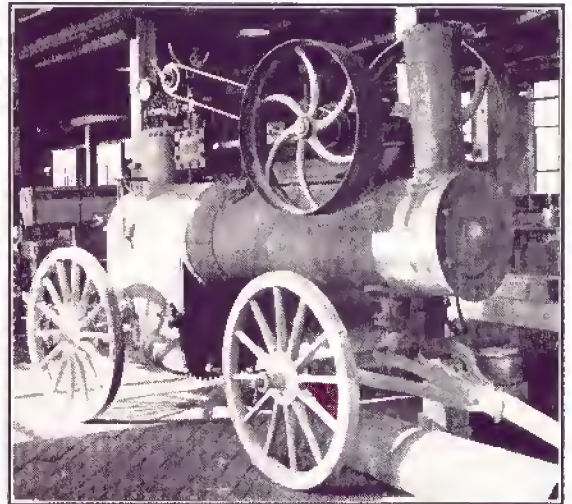
GF

*To George Frick
Waynesboro
via Greencastle, Pa*

Old bills of lading show that, even after the railroads spanned the continent, goods moving west were unloaded at Pittsburgh and placed on steamboats unless clearly marked "Through by Rail Road."



This portable engine, No. 325, was shipped in 1877 to Madison County, Va., where it drove a sawmill in the open until 1903; J. C. Clore and Son then placed it in their chair factory at Madison Courthouse. Here it served until 1949. After 72 years of use, the boiler and engine are still in running condition, and have been returned to Waynesboro: see photo above. This was the first type of engine to carry the "Eclipse" trade mark.



The Cumberland Valley Rail Road reached Waynesboro in 1878. The trains were hauled by the "Pioneer" locomotive, built at Boston in 1851 and now in the Franklin Institute, Philadelphia.



The Bell telephone was demonstrated at the Centennial Exposition in Philadelphia. In 1876 Otto also designed the gas engine; the next year Edison invented the phonograph, and shortly afterward perfected the incandescent lamp.

In the 1870's numerous European designs of refrigerating machinery were transplanted to America, including the Linde ammonia compressor from Germany, the Pictet sulphur dioxide machine from Switzerland, cold-air machines from England, and absorption machines from France.

ECLIPSE LOOKOUT ENGINE

FOR THE ROAD LOCOMOTIVE:
THE ECLIPSE TRACTION ENGINE IS FURNISHED WITH LINK MOTION AND STEERING APPARATUS. WHEN HORSES ARE NOT DESIRED, CAN BE RUN FORWARD OR BACKWARD AND STOPPED INSTANTLY. PERFECTLY EASILY MANAGED.

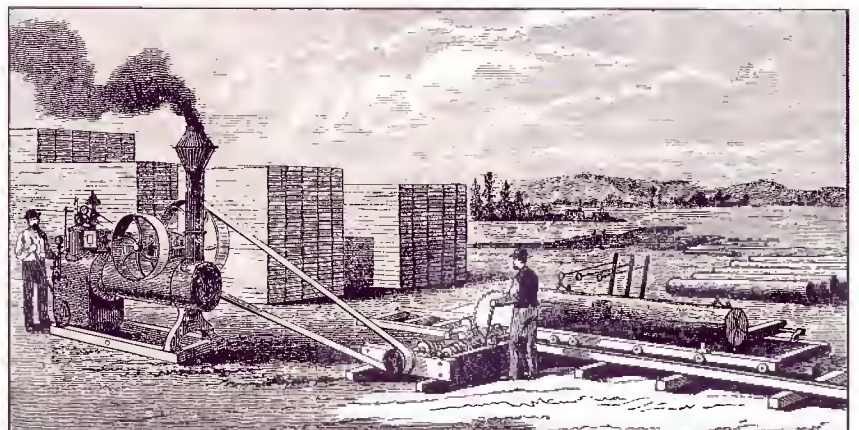
THE TRACTION ATTACHMENTS FOR PUSHING SEPARATORS, ARE SIMPLE, TURNING STEAM ON AND OFF AND ATTENDING THE BRAKES IS ALL THE SKILL REQUIRED.

THIS ENGINE IS THE ONLY ONE SHOWING THE TRACTION ENGINE ON THE ROAD & WHEN PUSHING SEPARATORS GUIDED BY TWO HORSES PASSING TEAMS DO NOT SCARE.

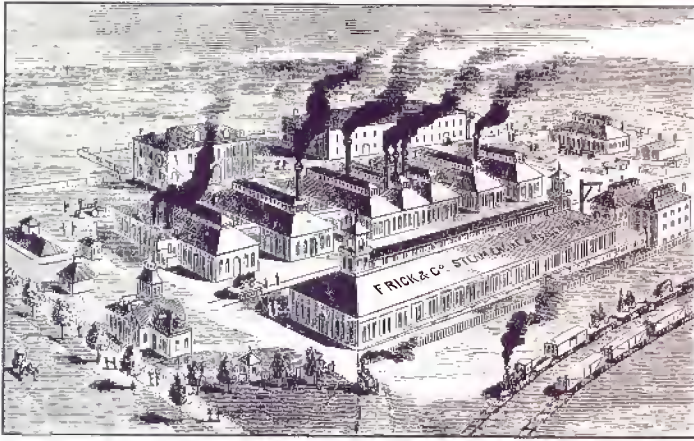
FIRST CLASS SAFETY BRAKES. A COMPLETE SUCCESS ON ALL ROADS. ECLIPSE IS PATENTED.

ADDRESS: FRICK & CO. WAYNESBORO, PA. ON M.A.R.R. & W.M.R.R. FRANKLIN COUNTY, PA. TAKE THE PREMIER OF BALTIMORE 70 MILES WEST.

The first Frick traction engine, as shown by this old woodcut, had a chain drive but was steered by horses. It was built in the late 1870's.

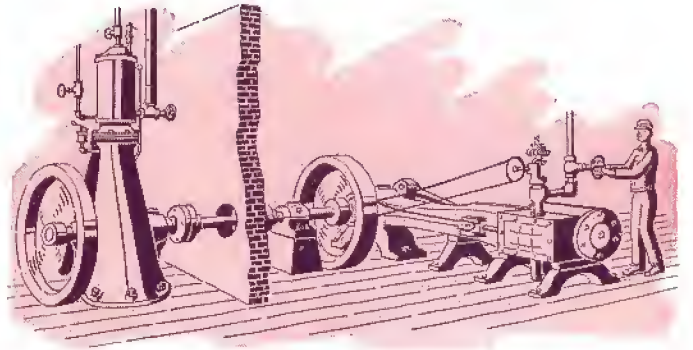


Frick and Company began making their own sawmills in the middle 1870's. Early mills had a cast-iron "husk," or frame for the main mechanism, then also called a "cab." A rack ran the carriage back and forth. Picture from the "Scientific American."



The new Frick Shops, on West Main Street in Waynesboro, as they appeared in 1881. A reservoir was on the top of the hill at left, a stable was next, then the office.

In 1882 Frick and Company entered the refrigerating machinery field by building an ammonia compressor cylinder which was mounted on the frame of a vertical steam engine in Baltimore, and was driven with a horizontal engine.



1873 to 1882

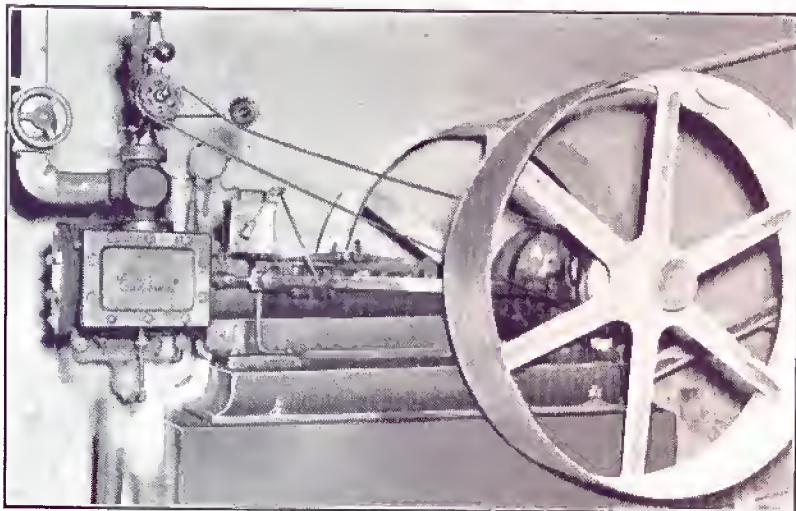
This was a period of momentous changes. A partnership of thirteen men, including A. O. Frick, raised \$34,000 to see the enterprise through the panic of 1873 and keep the industry in Waynesboro. By 1879 the capitalization of Frick and Company had increased to \$125,000 and by 1884 to \$900,000, which was a big sum in those days.

In the mid-Seventies the Company began building its own portable sawmills. The Centennial Exposition in Philadelphia, the engineering event of 1876, gave the highest award in its class to a Frick farm engine, which carried the "Eclipse" trademark for the first time. In 1880 a Frick engine triumphed over 25 others from America, England, and Europe at the great exhibition in Melbourne, Australia. Meanwhile, the Frick steam traction engine was being developed.

In 1879 a house magazine called the "Eclipse Era" was introduced. Its successor, "The Frick System", will soon celebrate its Silver Anniversary.

The railroads having finally reached Waynesboro, the Frick works were moved in 1881 to a fine new plant adjoining the tracks. This was so ahead of its time and so extensive, that the "Scientific American" soon printed a feature article about it.

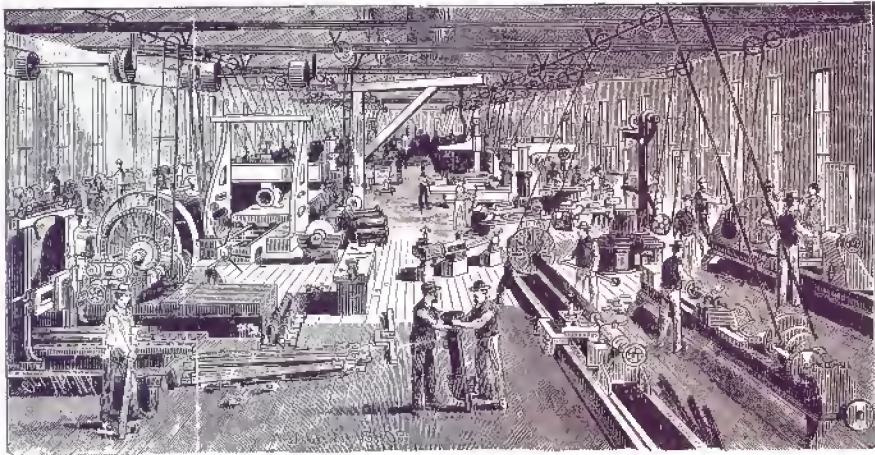
But still more far-reaching was the beginning, made in 1882, of the Company's work with refrigerating machinery.



This veteran engine, with a bore of 11-in. and stroke of 16-in., was originally mounted on a portable boiler. Bought by the Toms Brook (Va.) Lime and Stone Co. in 1881, it survived a fire in 1942 and was in use 70 years. A Frick 10 by 12 engine built in 1897 operated a stone pulverizer and conveyors at the same quarry until 1951.



Thomas Camp (right) at the wheel of a Frick traction engine near Covington, Georgia, in 1881. The following year 43 Frick engines were shipped in one day to Mr. Camp. He was still selling Frick machinery in the South in the late 1920's.



In 1883 the "Scientific American" published this drawing of Frick and Company's main machine shop, along with a complete article describing the new plant, which was the marvel of its time.



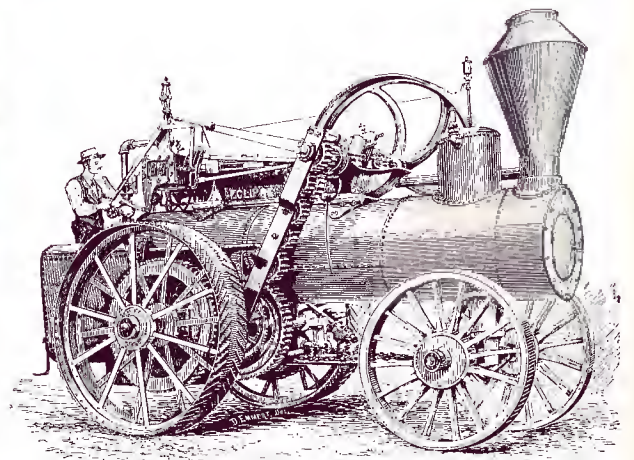
In 1885 the first electric street cars in America were used in Baltimore; motor cars were introduced in Europe; and the first submarines were built.

Smokeless powder was developed in France in 1886. In '87 Daimler built a successful automobile, in '89 Edison invented motion pictures. Meanwhile, Louis Pasteur was proving that germs cause disease.

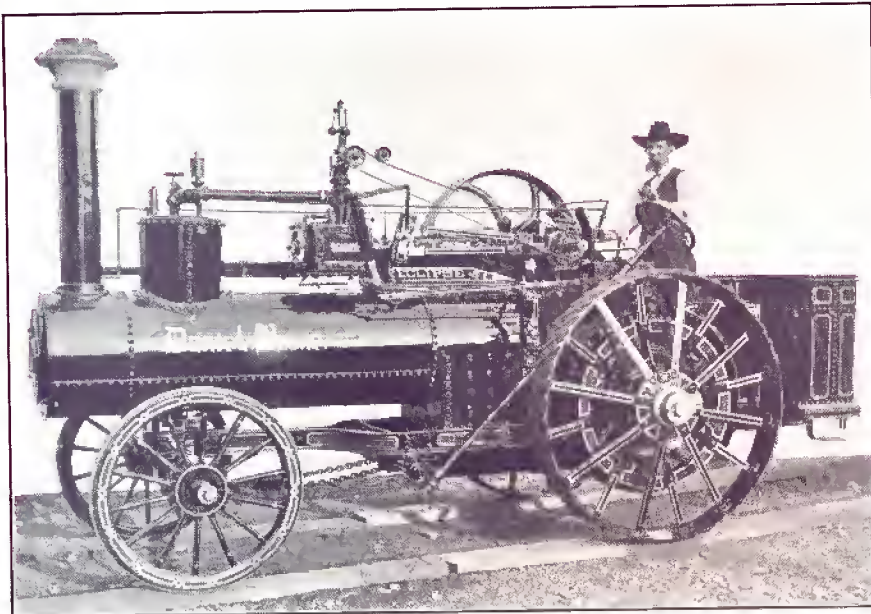


Part of the Office Force in 1888

SEATED, left to right--S. H. Brown, shipping clerk; Ezra Frick, secretary; S. B. Rinehart, president; D. B. Mentzer, accounting department; T. J. Kennedy, collection department; William Middlekauff, purchasing agent; Edgar Penny, superintendent. STANDING--J. H. Deardorff, sales manager, farm machinery; Fred A. Phelps, draftsman, S. R. Frantz, salesman; D. L. Grove, collection department; J. H. Raby, attorney of collection department; M. Cunningham, clerk, W. Harbaugh, draftsman; J. B. Lowry, bookkeeper; John Emmert, salesman; G. Waynait, clerk.



In the third model of the traction engine a train of gears replaced the chain drive. The engine was later turned around, placing the shaft above the driving wheels.



"This is the identical engine, the 'Daniel Boone'—competitors will never forget the name—that was shown throughout the circuit of state and principal county fairs, and took thirty-nine first premiums in one year (1885). "The reason it did not take more is because it could not be shown in more than one place at the same time. Such a stir and shaking of dry bones all along the line in the Traction Engine business was never seen before or since."

—From the Frick Catalog of 1888.



An early traction engine hauling seven portable engines and a thresher of the old "separator" type through Waynesboro's Center Square. Total load was 15 tons; the power of the engine amazed teamsters. Note the town pump, at which Gen. Robert E. Lee is said to have watered his horse in 1863; this photograph was made 20 years later.

1883 to 1892

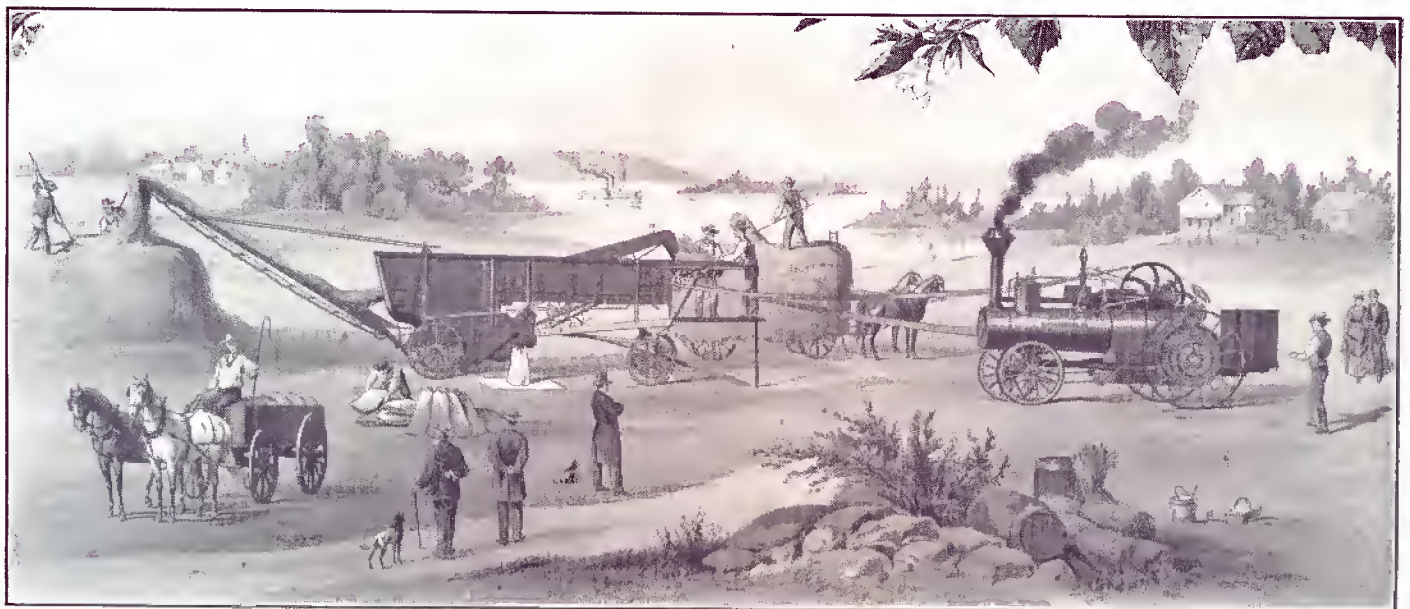
This decade saw the steam traction engine open a great new era in power farming, despite the depression which began in 1884. The "vibrating" thresher was being offered as well as the older "separator" type: the engine could now both haul the thresher and operate it.

In 1885 the partnership was dissolved and Frick Company was chartered as a corporation. Three years later George Frick retired; for 43 years he had been active, building the foundations of the industrial greatness both of his firm and of Waynesboro. His life's work is exemplified by his motto: "Be sure you are right, then do it quickly!"

Edgar Penney had come to Waynesboro in 1883

to design a line of Corliss steam engines which would supplement the Frick stationary, portable, and traction engines. Frick Corliss engines were built in sizes up to 3000 horsepower. High-speed automatic engines were also developed. Frick equipment began to be used in many industries, including electric power plants, paper mills, steel mills, etc., in addition to its work on farms and in the forests.

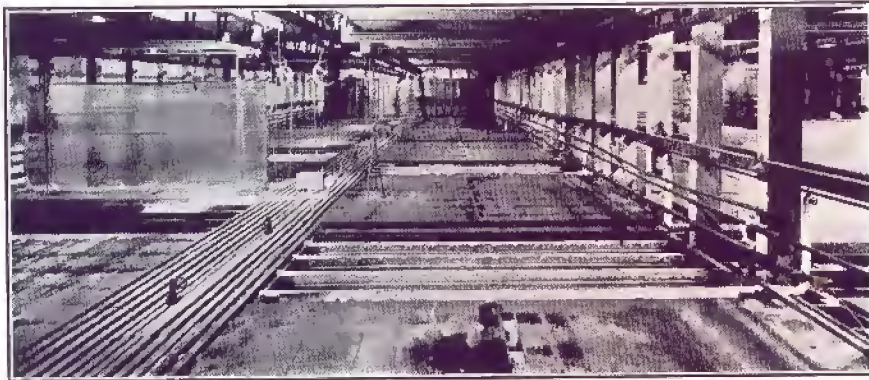
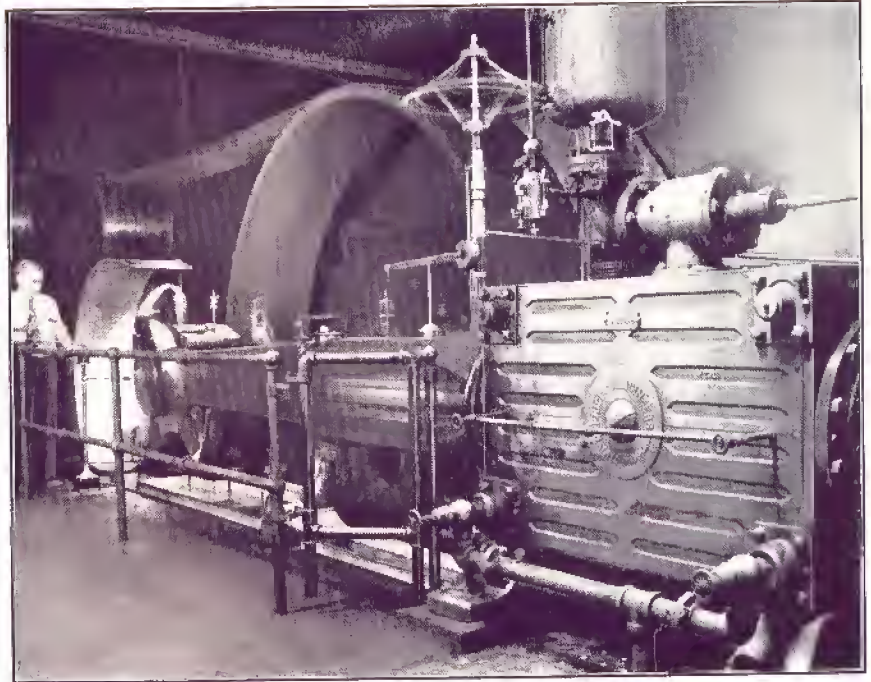
Hundreds of thousands of posters, lithographed in full colors and picturing Frick sawmills, cotton gins, portable engines and other products, were distributed in the '80's and '90's. This scene, showing the vibrating type thresher with traction engine, has the lyrical qualities of a print by Currier and Ives.



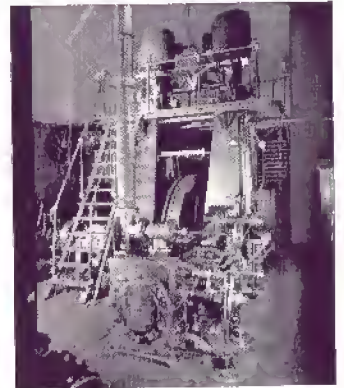


Showing methods of filling and harvesting cans in an ice plant of the 1880's.

Right: This Frick Corliss engine, with a bore of 22 inches and a 4-foot stroke, was built in 1891 and is still in daily operation at the Penn-Rillton Co., Irwin, Penna. Speed is 74 to 80 r.p.m. The belt wheel is 16 ft. in diameter: engine delivers 450 horsepower. A Frick Corliss engine built in 1888 is still in use at Weldon, N. C.



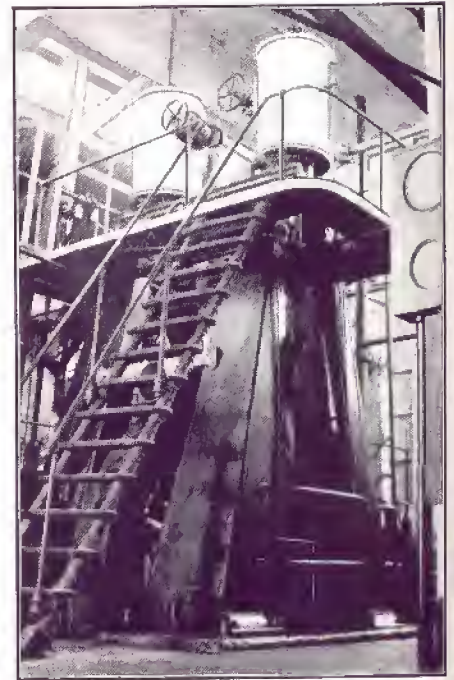
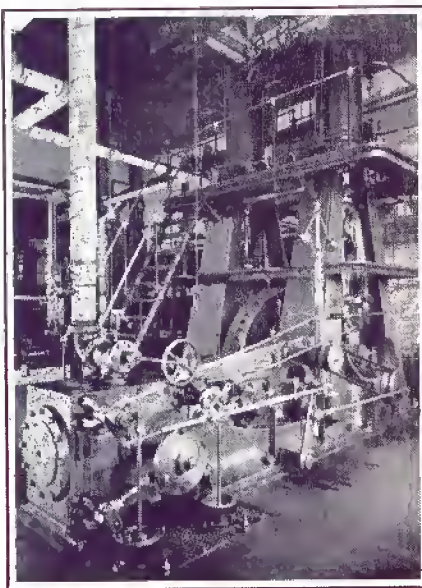
The plate plants were the first to use raw water, under air agitation, to produce clear ice successfully: view shows 100-ton Frick plant in New Orleans in 1888, the first of its size in America.

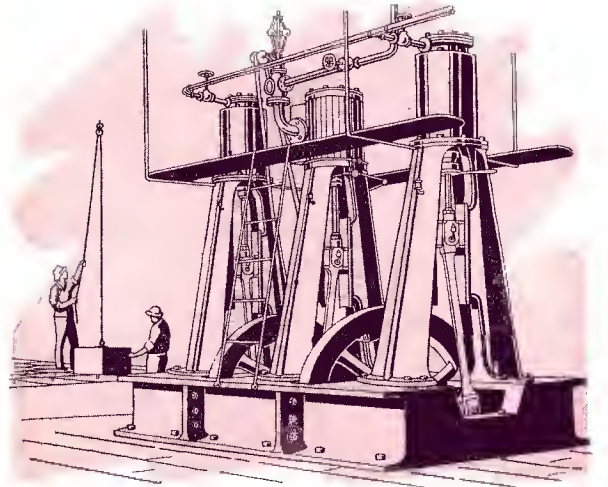
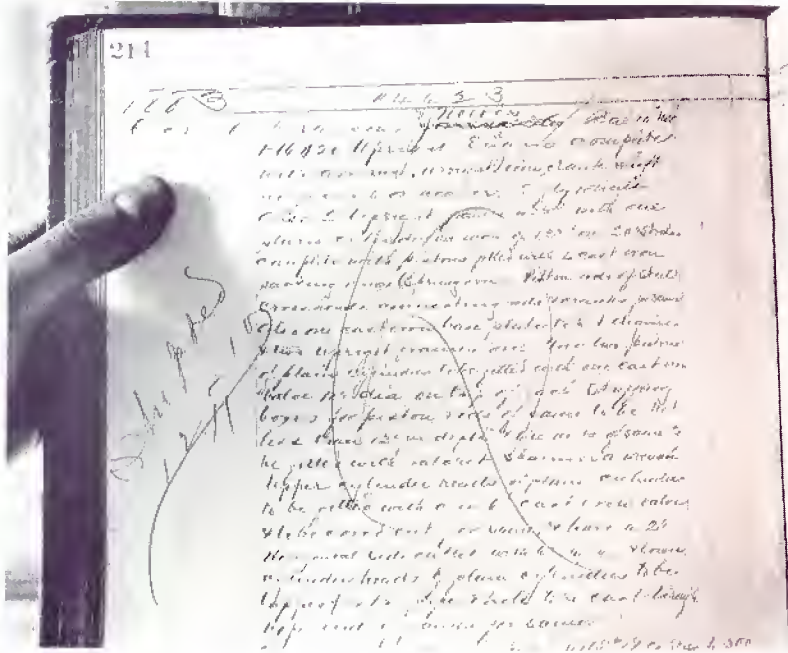


Upper right: This machine, built in 1887, survived a fire, and had operated 43 years when a second fire destroyed the Hagerstown (Md.) Ice Co. The Insurance company paid 40 per cent of machine's original value.

Left: 12½" by 19" by 28" compressor built in 1886 and in service at Gipps Brewery, Peoria, Ill., until 1946—three-score years.

Right: 13½" by 28" compressor, driven by 20" Corliss engine, installed in 1891 for the Rock Island (later Harrold) Ice Co. at Fort Worth, Texas. In operation 60 years.





The first complete Frick refrigerating machine, built in 1883, had two ammonia cylinders of 12-in. dia. by 18-in. stroke, with a steam cylinder between them. It ran at 50 to 55 r.p.m., and developed 25 tons of refrigeration. As shown at left, the order can still be seen on Frick Company's books.

1883 to 1892

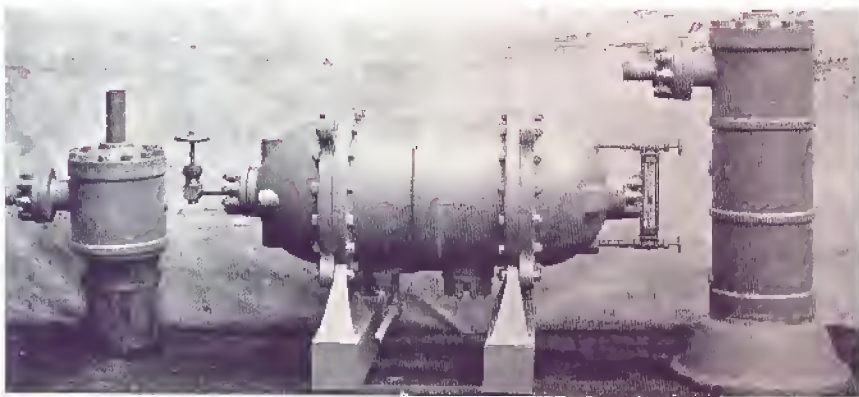
The success of the first two ammonia compressors having stimulated a demand, Edgar Penney and A. O. Frick in the mid-Eighties developed a line of large refrigerating machines. These were driven by the new Frick Corliss engines, which combined remarkable dependability with steam economy and flexibility to meet changing loads. The design included such basic features as twin vertical cylinders, giving balanced operation; single-acting pistons, for efficiency of compression; safety cylinder heads, held down by springs instead of bolts, eliminating wasteful clearance; accessibility; and perfection of details.

By 1886 four of the machines were running; eight more were shipped the next year, including a 20-in. by 36-in. compressor delivering 150 tons of refrigeration. These early Frick machines not only set the standard for the entire refrigeration industry for the next 30 years, but most of their design features are in use today.

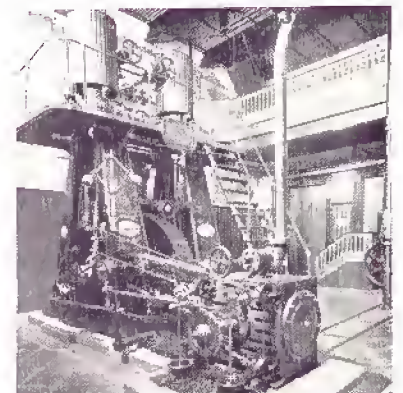
Many of the compressors built in the Eighties and Nineties were in operation 40 years; others served 50 years; some 60!

Breweries and packing houses vied with ice-making plants in adapting the pioneer machines to their needs. Today, large cities would starve without the protection given to food supplies by refrigeration.

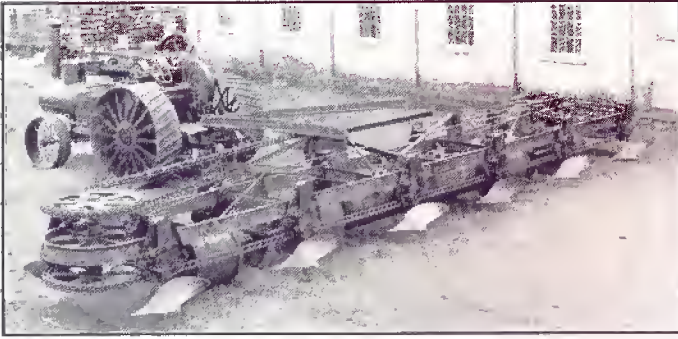
Abram S. Kauffman started with Frick & Company in 1884, and was employed as a machinist 50 years. His son was also a machinist here from 1892 to 1925. His grandson, Harry G. Kauffman, Jr., started in 1929 and is today a product designer. Many other families have worked at the Company for several generations.



Ammonia suction trap, liquid receiver, and oil separator as produced in the early days, before acetylene or electric welding became available.



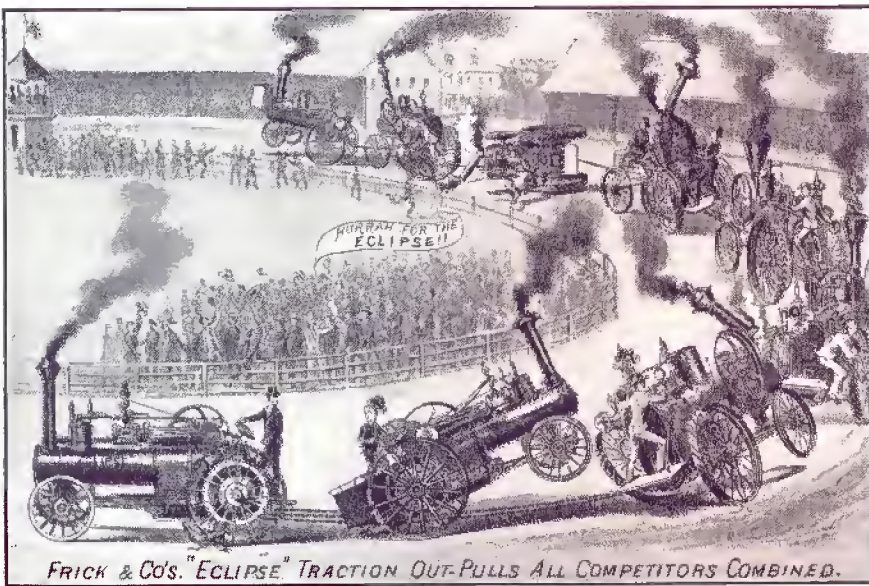
20-ton machine with Frick Corliss engine at work in an ice plant in Mexico City, about 1891.



This experimental plow, with one of the first "power take-offs," was supposed to move the shares in a loop while the tractor pulled the rig forward. Abe Lincoln is said to have proposed a similar plow.



This sawmill team included plenty of men, five oxen, a conveyor with wooden rollers, and a traction engine.



Frick engines were certainly effective, though not always as strong as indicated here.



In 1895 Diesel perfected his engine, and Marconi invented the wireless. R.F.D. mail service was begun the next year. Dirigible balloons were first flown by Santos Dumont and Zeppelin in 1898, the year of the Spanish-American War. In 1901 Queen Victoria died, and Walter Reed discovered how to stop yellow fever his work made it possible for the Panama Canal to be built, a few years later, under Theodore Roosevelt



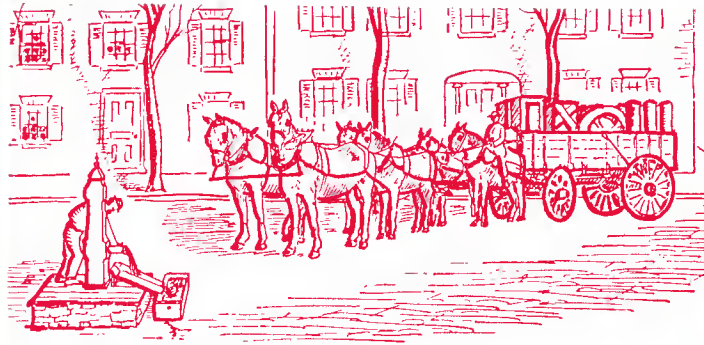
Frick equipment won first awards at hundreds of fairs, expositions, and field trials, including many of international importance, and is still widely exhibited.



The Frick Works at the turn of the Century. The stable was still in use.



A. O. FRICK
1852-1934



As young men A. O. Frick and Ezra Frick, sons of the Founder, took turns in rising at 3:30 a.m. to feed the horses, fire the boilers, and have the teams hitched by 6 o'clock for the daily trip to the railroad. Both men served long apprenticeships in the shop and office. A. O. Frick served as president of the Company from 1904 to 1924; his brother from 1924 to 1942.



EZRA FRICK
1856-1942

1893 to 1902

The opening of the Great West began in the 1780's, when the first settlers' wagons crossed the Alleghenies. Thanks to the invention of the steel plow and Colt's revolver, the waves of newcomers lived to raise more grain than they could consume.

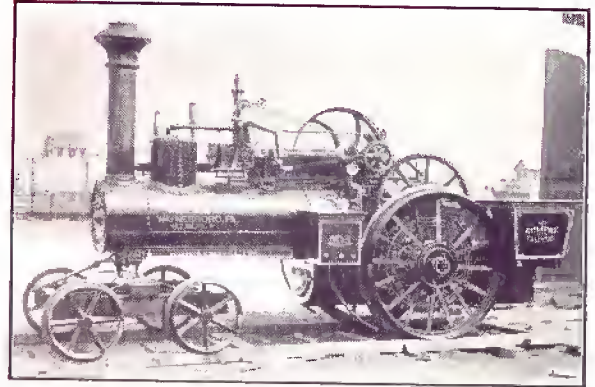
The reaper stimulated the demand for threshers, and they in turn for engines. To meet this need, some three dozen manufacturers, of whom Frick Company was a pioneer, built thousands of portable and traction engines.

Another big step was the advent of the "steam plow." Huge traction engines, the largest ever built, equipped with double cylinders and oversized wheels, dragged gangs of plows over the prairies - one outfit might turn twenty acres per day.

Threshers and sawmills were likewise enlarged and improved, and accessories, such as self-feeders, windstackers, and top rigs, were developed to make them more efficient.

Geo Frick

The signature of the Founder
of the Company.



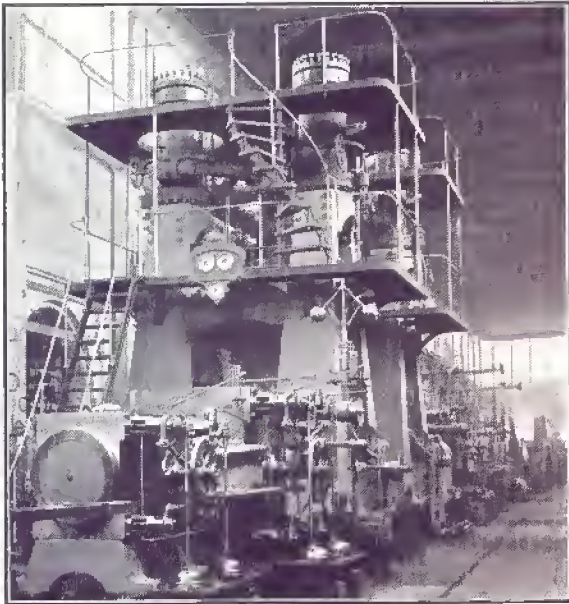
Engine arranged with flanged wheels for a logging railway, using wooden tracks.



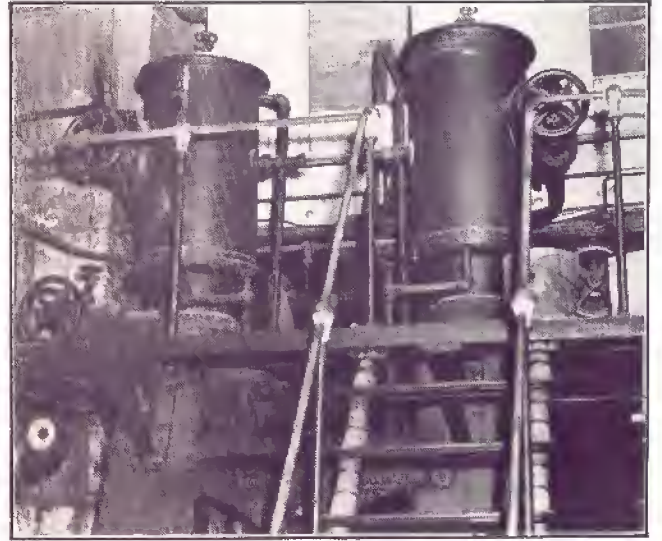
Threshing wheat with a Frick rig in 1895. Note the number of people assembled for the event.



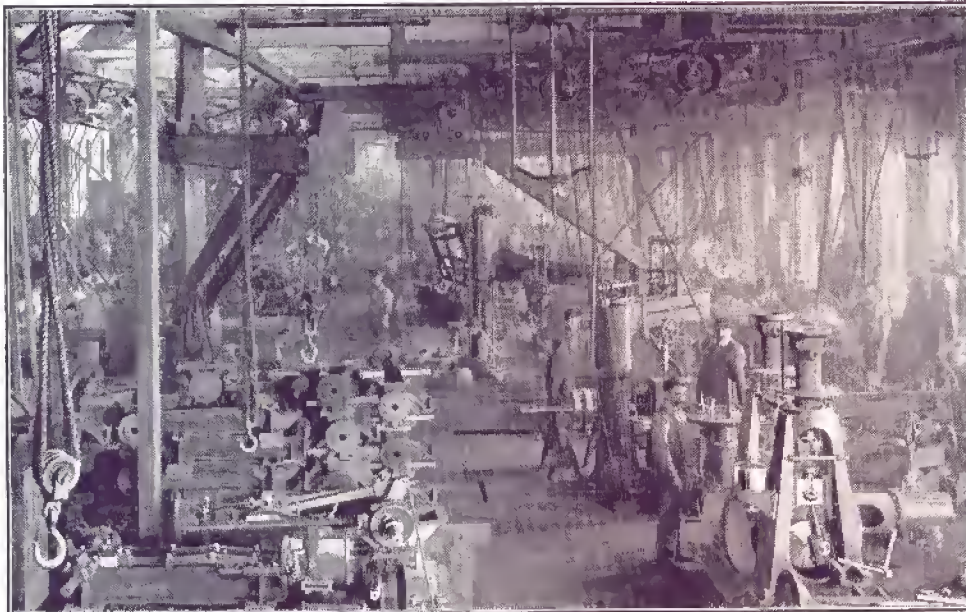
Heavy traction engine demonstrating its plowing ability in "new-ground." These big rigs were usually worked by two men.



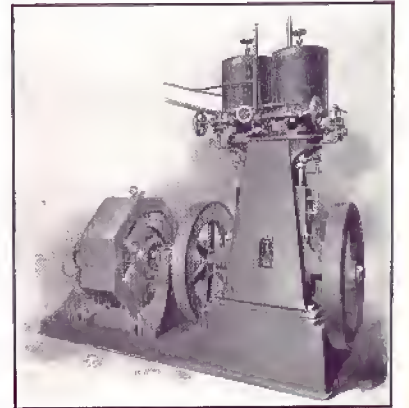
Two large compressors, with Corliss engines, assembled in the "high shop" at Waynesboro in the mid-Nineties.



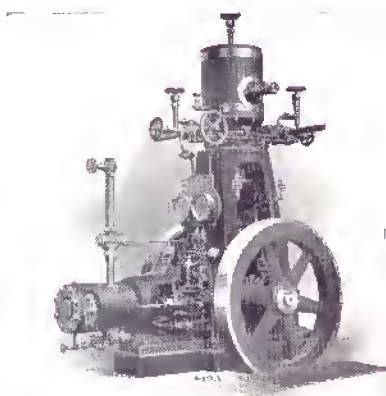
This ammonia compressor ran at the Marshall (Missouri) Ice Co. from 1896 to 1949 (53 years), then was replaced by two 7" by 7" Frick enclosed machines.



View in the main Frick machine shop, about 1895. This was before the development of individual electric drive for machine tools.



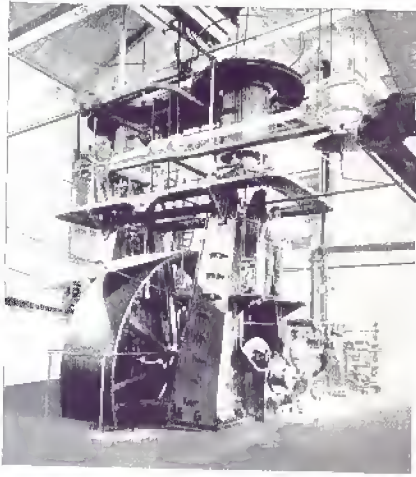
First Frick machine with direct-connected electric motor. Built in the early 1900's, this was a forerunner of the synchronous-motor-driven compressor of today. The motor shown used direct current.



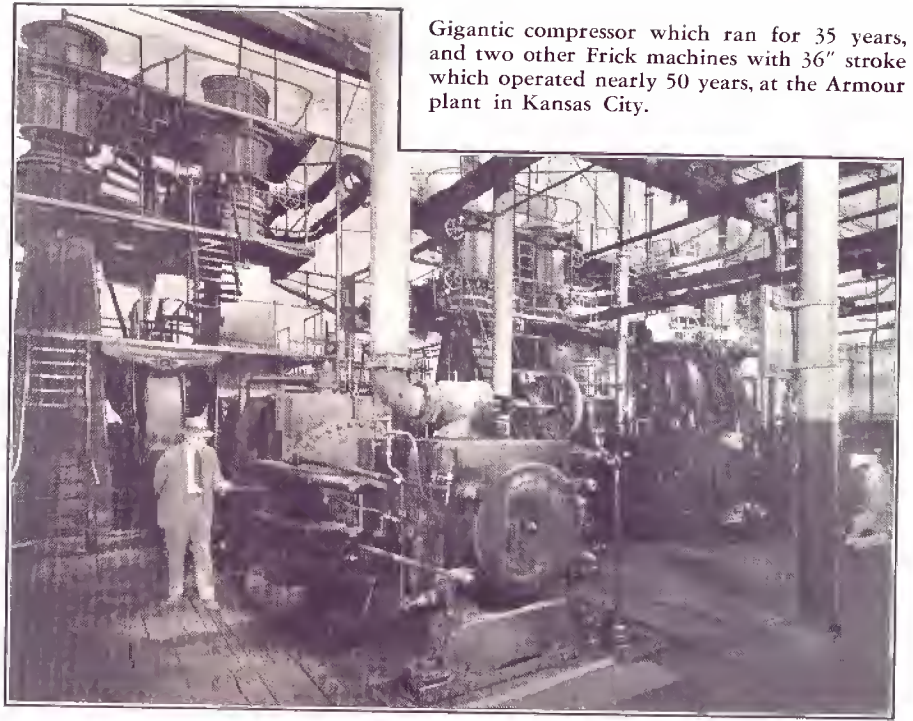
A two-ton machine of the open type, seven feet high and weighing 4300 pounds, as built about 1900.



Probably the first group lift plant in America, installed at St. Louis in 1897. Thirteen cans were handled at a time; crane was electrically operated.



This 17" by 36" machine, placed in La Tropical Brewery in Havana in 1892, was one of three driven by powerful water wheels, with steam engines in reserve. That belt was five feet wide. Beer from the establishment refreshed American soldiers in the War of 1898.



Gigantic compressor which ran for 35 years, and two other Frick machines with 36" stroke which operated nearly 50 years, at the Armour plant in Kansas City.

1893 to 1902

In 1894 the East St. Louis Ice and Cold Storage plant, the largest of its kind, installed a 125-ton Frick plate ice making system and two compressors of 36-in. stroke, driven by compound-condensing engines. A third engine of the same type drove the auxiliaries through a big jackshaft.

Two years later Frick Company built for Armour and Co. the largest refrigerating machine in the world. This 30-foot giant had a bore of 27 inches and a stroke of 48, and with its tandem-compound engine measured 50 feet long.

Its high-pressure steam cylinder had a diameter of 26 inches; its low-pressure cylinder, 50; the stroke of the engine was also four feet.

The big unit was operated day and night, continuously, for 35 years, and was in reserve service another 5 years. Its rated capacity at 60 r.p.m. was 350 tons. (One ton of refrigeration is the cooling effect obtained by melting a ton of ice every 24 hours.) The speed could be increased to 70.

In developing new lines of machines, the tendency is

to begin with large units having slow-moving parts. History shows this to have been the case with tractors, combines, Diesel engines, ammonia compressors, and other equipment.

After the heavy models have shown what can be done, a demand arises for smaller sizes, with lighter parts running at higher speeds.

Frick Company in this decade anticipated the needs of hotels, restaurants, hospitals, and various industrial plants, for refrigerating systems of moderate capacity.

As steam power was not always available, other types of drive were introduced. These adaptable machines paved the way for the wide acceptance enjoyed by mechanical refrigeration a generation later.



350-ton compressor shown in service above.



This entire train of 15 cars (not counting the caboose) was required for shipping the world's largest refrigerating machine to Kansas City, in 1896. The special train made the trip in 60 hours.



Moving a 30-ton house half a mile with a Frick traction engine. These machines crushed stone, built roads, pumped water, operated mills, and did many other kinds of belt and drawbar work.

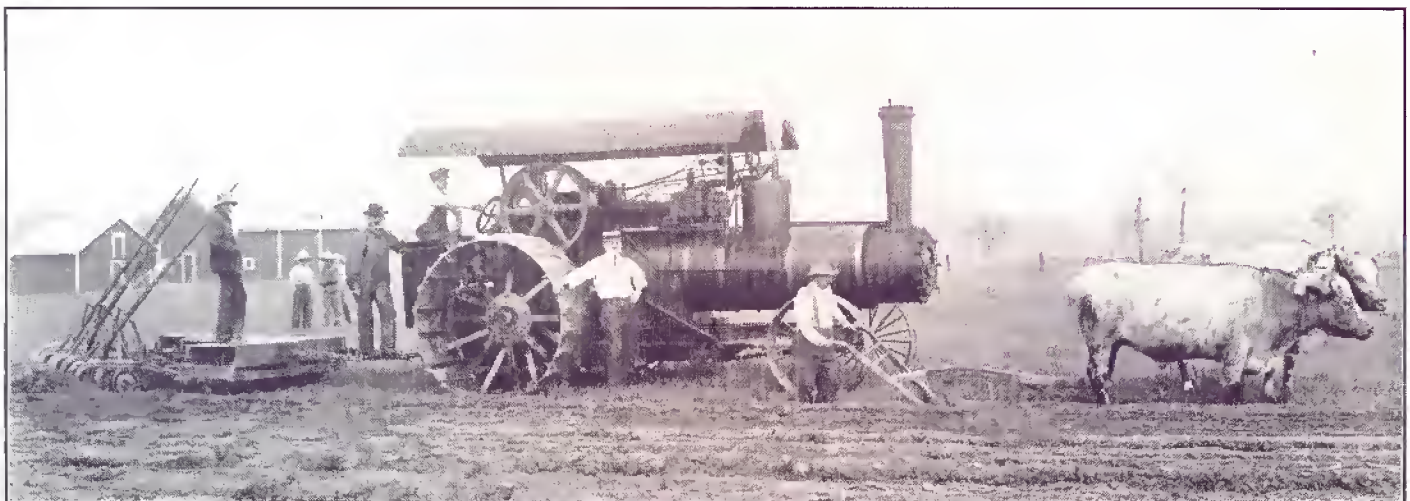


A threshing outfit posing for its picture on a road in Maryland. Horses hauled water for the engine from streams along the way.



The great news of this decade was the development of the airplane, first flown by the Wrights in 1903. In 1905 Albert Einstein published his Special Theory of Relativity. By 1906 battleships of the dreadnought type had appeared in England; in '07 De Forest invented the vacuum tube; in '09 Peary discovered the North Pole, and Henry Ford standardized the Model T! The "Titanic" was lost in 1912.

Four-horsepower engine built about 40 years ago for driving the smallest size of Frick thresher. Shipped to Tennessee; now owned by W. W. Willock of Syosset, N. Y.



A Frick traction engine, at work on the prairies, compared with an ox team and plow as used in the mid-1800's. Oxen did well to turn half an acre in a day.



Advertisement in the "Southern Lumberman" magazine in 1907.



Traction engine (one of two) used for heavy hauling in Honduras, early in the century. While these engines are now becoming collectors' items, some are still in service.

1903 to 1912

Frick Company's advertisements, having been started in the newspapers throughout the Cumberland Valley in the late 1840's, have now been appearing more than a century.

The Scientific American carried a Frick advertisement as early as 1872, the American Agriculturist in 1875, the Brewers Journal in 1890, Ice and Refrigeration in 1891, Southern Power and Industry in 1906, Southern Lumberman in 1907, Refrigeration, and the Southern Lumber Journal, in 1908, the American Exporter in 1913, Refrigerating Engineering in 1914, La Hacienda in 1917, and the Pennsylvania Farmer in 1918.

The Frick trademark is still to be seen in nearly all these publications, as well as in half a hundred other

trade journals, and in national weeklies such as Time, Newsweek, and Business Week. In addition, Frick equipment is kept before the public by means of exhibits, calendars, radio, direct mail, catalogs, engineering articles, and various forms of educational work.

The cumulative effect of this long-continued advertising, decade after decade, is an important factor in the recognition now enjoyed by Frick equipment throughout the world.



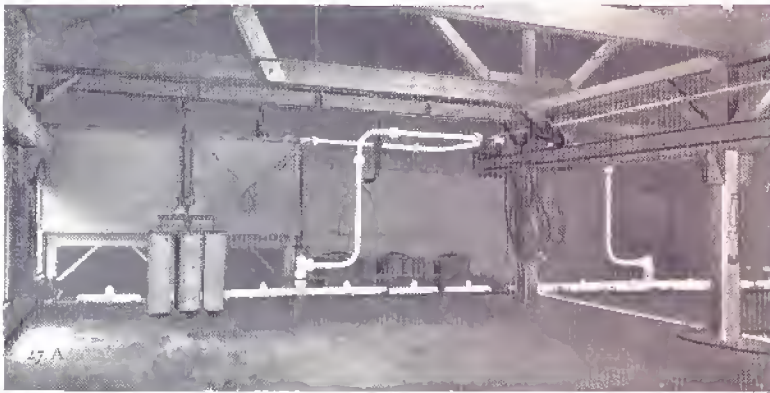
Frick sawmills early earned a reputation for fast, accurate cutting and long life, plus the ability to show consistent profits. That rear teamster is putting on a show of his own. Note sleds for hauling logs, and spark arrestor on the stack of the engine.



Sheet of clear ice made by the plate system. Single pieces measured up to 16 feet long and a foot thick; they might weigh 7½ tons. Two such sheets were frozen on opposite sides of a compartment of the tank. In the early days they were cut into blocks by steam-driven saws.



Ice tank with accumulator and set of dehydrators for drying air in the medium-pressure system.



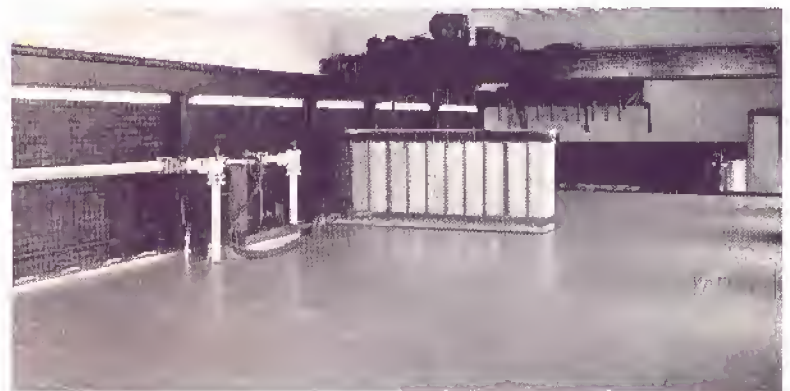
Typical large distilled-water system installed for the Pittsburgh (Pa.) Ice Co. Note air hoist, water forecooler, and filters.



Ice made with the medium-pressure air system, using a tube in the corner of the can.



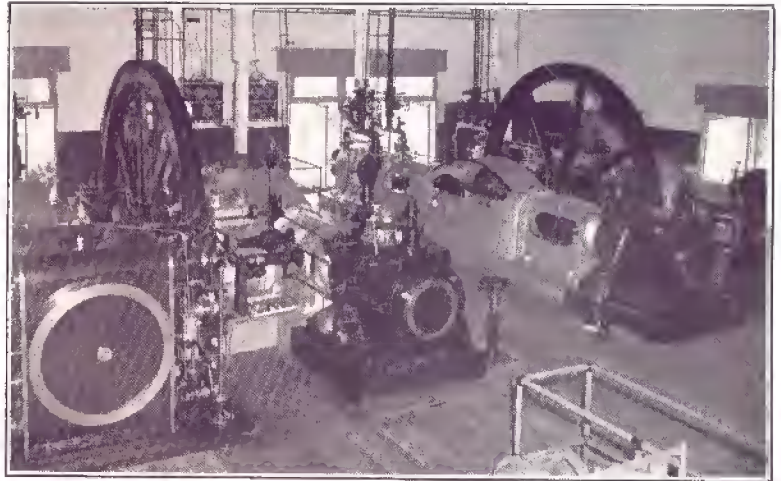
Prehistoric mammoths are still edible after being frozen in the ice of glaciers and swamps in Siberia for tens of thousands of years.



Average-sized ice tank, using the patented F-P system and Frick group lift. Electric Ice Manufacturing Co., Richmond, Va.



One of the first Frick air conditioning systems was installed in 1910 in this plant making caramel candy in Lancaster, Penna., where it served satisfactorily over 25 years.



Frick horizontal long-stroke compressors were introduced in 1911. These 15" by 30" duplex machines, complete with Frick steam engines, were installed at the Southern Ice Co., Charleston, S. C., in 1917 and 1920, and are still in operation.

1903 to 1912

The "plate" plants made ice in huge sheets, weighing several tons, which required about a week to freeze. Air was bubbled through the water to agitate it and make the ice clear—the sheets were frozen from only one side.

In the distilled-water system, the steam exhausted by the engine driving the compressor was condensed and purified, then frozen in the ice cans. No agitation was needed to make distilled water into clear ice.

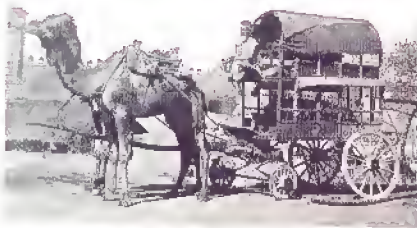
When electric power superseded steam, ice plants turned again to air agitation. The early raw-water

systems used low pressure air, introduced through drop pipes in the center of the can. Cooling and drying apparatus was used to dehydrate the air and prevent its freezing in the tubes.

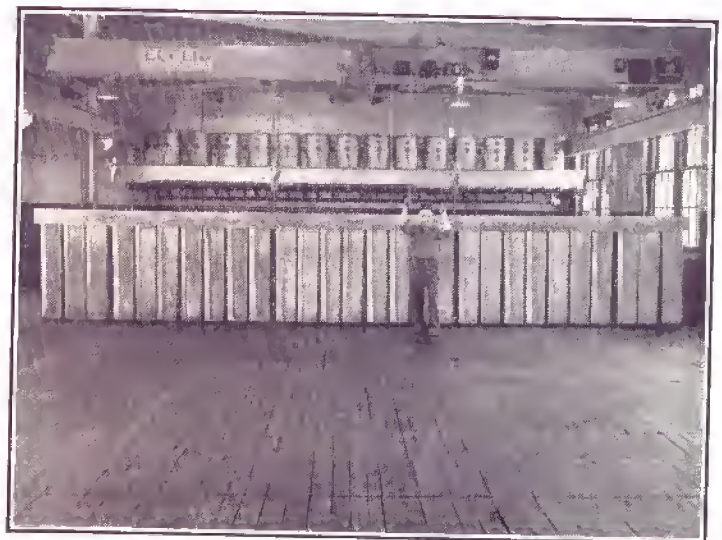
The next step was to place the tube in the corner of the can and to raise the air pressure enough to force a passage through the ice as it froze. This developed into the medium-pressure air system, which was widely used until 1923, when the Frick-Pendulum (F-P) air system came into the field.

This made the clearest ice from city water, using low-pressure air without dehydrators. Within a few years a thousand installations of the F-P system had been made.

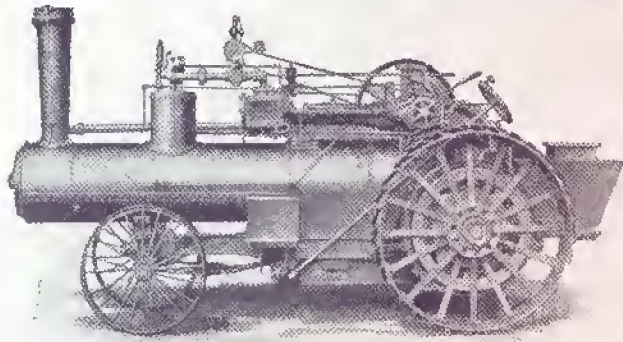
Two-camel-power, two-stage truck delivering ice (packed in straw) in India.



Ice made from city water by the F-P low-pressure air system is the last word in quality. Frick-Pendulum tubes, brought out in 1923, revolutionized the ice industry.



This one man, working one shift, made 42 tons of ice every day for four years at the "Merchants" plant of the Polar Ice and Fuel Co., Indianapolis. The semi-automatic system, introduced in 1945, results in remarkable economies.



Tractor de Vapor Frick

Fuerza motriz segura para todas las aplicaciones

Trilladura, arado, corte de piéso, molienda arrastre aplana dura de caminos, desmante, transporte de edificios, etc

Motor de manubrio central. Caldera independiente, correas montadas, Impulsión delantera y trasera

Muchos puntos fuertes de ventas que habrán de llamar la atención de los vendedores prácticos

LOS TRACTORES FRICK PRODUCEN GRANDES UTILIDADES EN LA VENTA

Máquinas de Vapor de Tracción, Portátiles y Fijas, Calderas Trilladoras, Aserraderos

Se necesitan agentes de responsabilidad.

FRICK CO., Waynesboro, Pa., E. U. A.

Dirección Telegráfica--FRICK Waynesboro, Pa. Claves en Uso, A B C 4a. y 5a. ediciones, Lieber y W. U.

Establecida 1853

This advertisement appeared in the Spanish edition of the "American Exporter" magazine in 1913.



All farm machinery was pushed hard to provide food for our Armed Forces and Allies, during the First World War. Frick equipment did its part to win victory.



The First World War stopped the progress of mankind in its tracks in this decade, although dramatic improvements were made in airplanes. In 1919 Alcock and Brown flew the Atlantic.

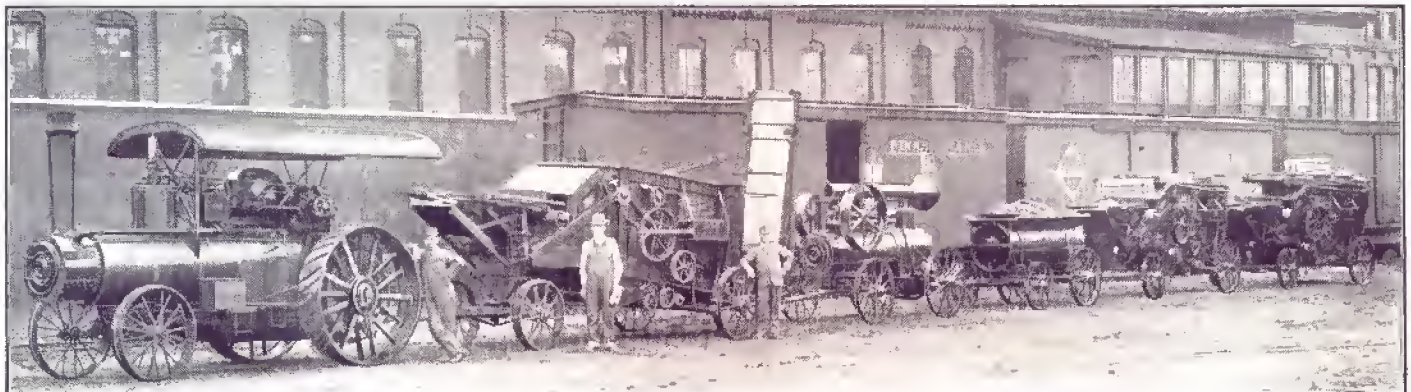
The War took sixty-nine Frick men to the Colors. Machine guns replaced cavalry—and chivalry—in battles.

This was the era of Woodrow Wilson. As a boy he shook hands with Robert E. Lee; as a man he tried to put Lee's high principles of honor into international relations.



Below: Preparing to ship a traction engine and a string of threshers, with a portable engine and a water wagon, from the Frick Factory about 1915.

Left: The "Rough and Tumble Engineers" overcame every difficulty in getting their machines from place to place. This accident at a bridge in Kentucky in 1906 did not injure the engine or its operator. Everybody in the neighborhood got into the photograph.





Trainload of Frick gas tractors, bound for Nebraska, in the early 1920's.

1913 to 1922

The steam traction engine reached the peak of its perfection and usefulness about 1915. Burning either wood, coal, or straw, and rugged enough to travel over country roads, these engines were depended upon for all kinds of work. They laid the foundations upon which gas tractors later achieved their wide acceptance.

Portable steam boilers and engines continued to be built for sawmill and industrial work into the 1930's, and are still in occasional demand for export. The Cornish type boiler, with a firebox in which long slabs could be burned, became a favorite.

Heavy portable gas engines and a few gas tractors had made their appearance at the turn of the century. Within twenty years, the gas tractor became thoroughly practical

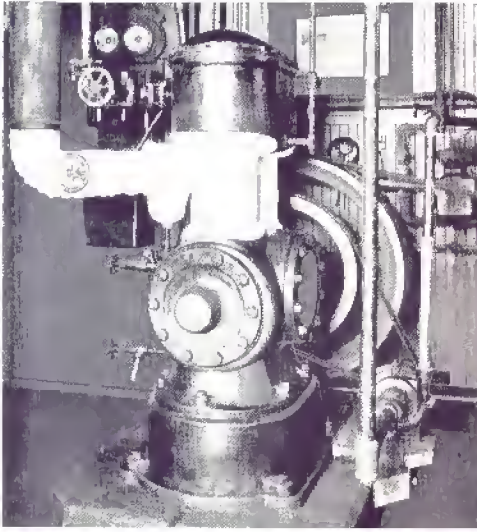
Right after World War I, Frick Company developed a gas tractor that was as good or better than others of its time. Some of these machines were still running in the 1940's.



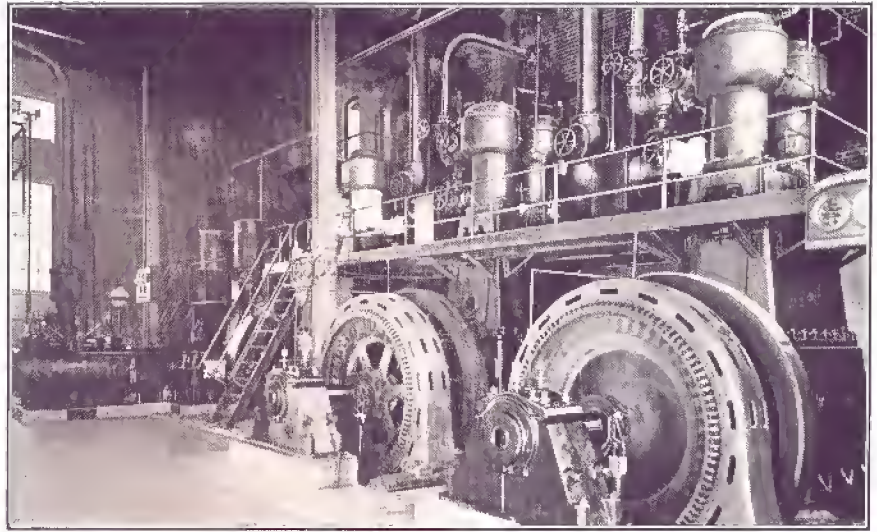
Above: a big sawmill installation on the shore of a lake in France, during World War I.



Left: Traction engine furnishing both power and steam to an Army Laundry Unit, somewhere in France, 1917-1918.



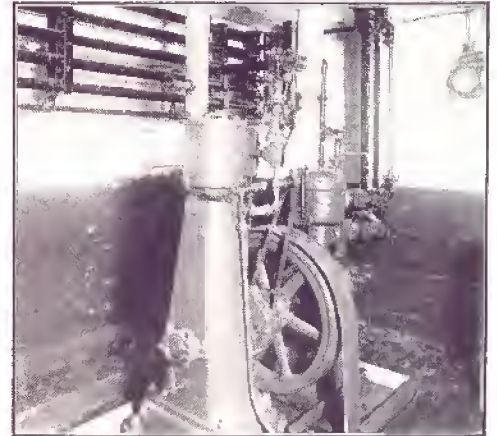
Enclosed ammonia compressor of size 5" by 5", built in 1915; in service at Spath's market, Portland, Ore., over 25 years.



Three of the five Frick vertical medium-speed compressors at the world's largest ice cream plant—Breyer's, in Philadelphia. These machines were a transition between the open type and the fully enclosed designs. Installed 1922-1925, and still in operation.



Left: Electric butt welding eliminated many screwed and flanged joints in cooling coils. End pressure, applied to the white-hot metal, thickens the walls at the joint, making the weld stronger than the pipe itself.

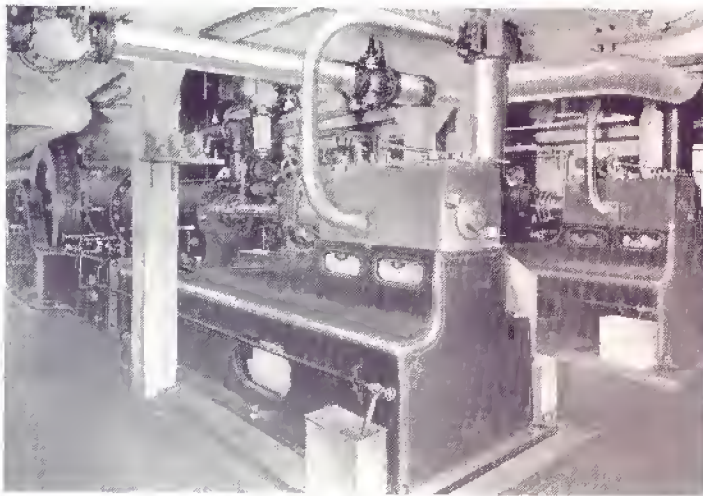


Right: Hundreds of these small enclosed compressors, driven by Frick steam engines, furnished dependable refrigeration aboard ships in World War I.



This group of Foremen, Leading Men and Department Heads was photographed at a picnic in July, 1920.

FRONT ROW—Lee Wolfinger, Bill Arnold, Andy Grush, Robert Hess, George Arnold, George Pilkington, Leshe Eberly, Jim Hamilton, Wilson Pilkington, J. A. Martin, Wayne Kriner, Wm. C. Zinkand, Paul Devor, A. A. Detwiler, M. E. Gordon. SECOND ROW—Tony Marmaza, Jim Leedy, Richard Betts, N. O. T. Krown, Wm. Bardenhour, Fred Shisler, Arthur Foreman, John W. Brewer, Gardy Miller, Bill Diehl, Grayson Snurr, Cleveland Johnson, Luther Kemper, Alred Gillis, John Heckman, J. L. McCleary, Pete Noll. THIRD ROW—John Emmert, Tom Cook, Edward Finney, Roy Goree, R. L. Morganthal, E. H. Oderman, R. G. Breidenthal, Merle Schultz, Danl. F. Good, Dave Keagy, Will Harbaugh, D. N. Benedict, Clyde Strite, Mart Ovelman, H. H. Esbenshade, S. F. Workman, Alfred McCarty. FOURTH ROW—J. C. McCleary, Kearney Bohn, Merle Brown, N. M. Small, Al. Lonacre, Ezra Frick, Jake Sertz, George Kolb, Jim Baer, George Duffield, Amos Garver, John Lacump, Sam Yaukey, John Rossman, Harry Peiffer, Elmer Perviance, John Wallace, W. A. Shetron, F. H. Fritsch, Chauncey Blubaugh, Earl Frick. LAST ROW—Harvey Thompson, John McCleary, Kenneth Werdebaugh, Andy Hess, Merle McFerren, W. R. Snively, Harry Geeseman, Harry Fisher, Roy Kauffman, Ray Florence, S. S. Suively, John Rowe, Alfred Davis, Victor Good. AT SIGN—Billy Hawman, Harry Funk.



Carbon-dioxide compressors (note square cylinder blocks) with tandem-compound steam engines, installed aboard ship in World War I. Such vessels had large refrigerated holds, cooled by extensive piping systems.



When Frick Company introduced frozen fish in the Orient, in 1919, Sales-engineer L. H. Jenks had to eat the first thawed sample in the raw state, to prove that it was wholesome. Jenks selected a small specimen. Within a few years, plants freezing a hundred tons daily were in operation.

1913 to 1922

As the open-type ammonia compressor was made in smaller and smaller sizes, the A-frames which supported the cylinders were finally combined into one piece. From this arrangement the enclosed compressor was later developed.

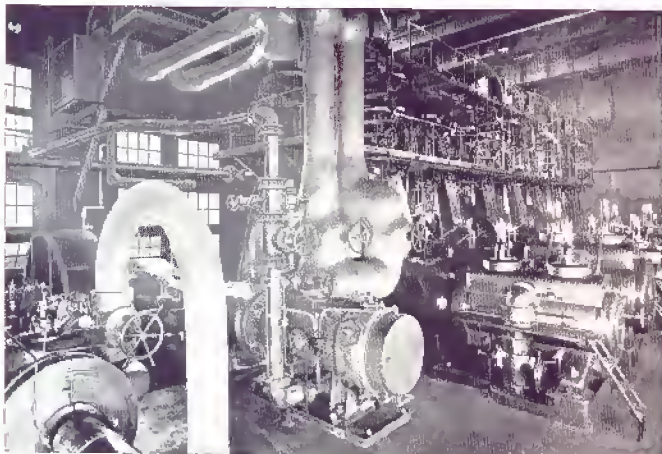
First built in 1915, the new machines were available in a range of sizes in time to serve the pressing demands of camps, food and powder plants, hospitals and ships in World War I.

The enclosed design retained the safety cylinder heads, the one-way gas travel, and the balanced vertical operation that were features of the large slow-speed

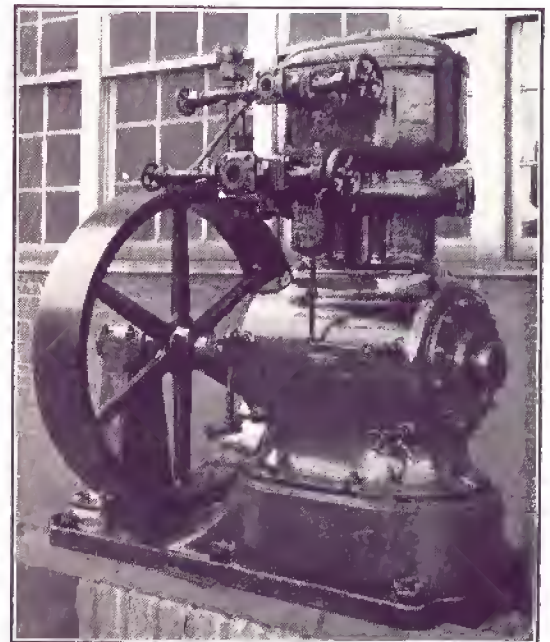
machines. The enclosed-type machine, with its automatic lubrication, operated safely without constant watching. Its perfection opened the way for the systems with automatic control, which appeared in 1922-23. These made possible, in turn, the household electric refrigerator.

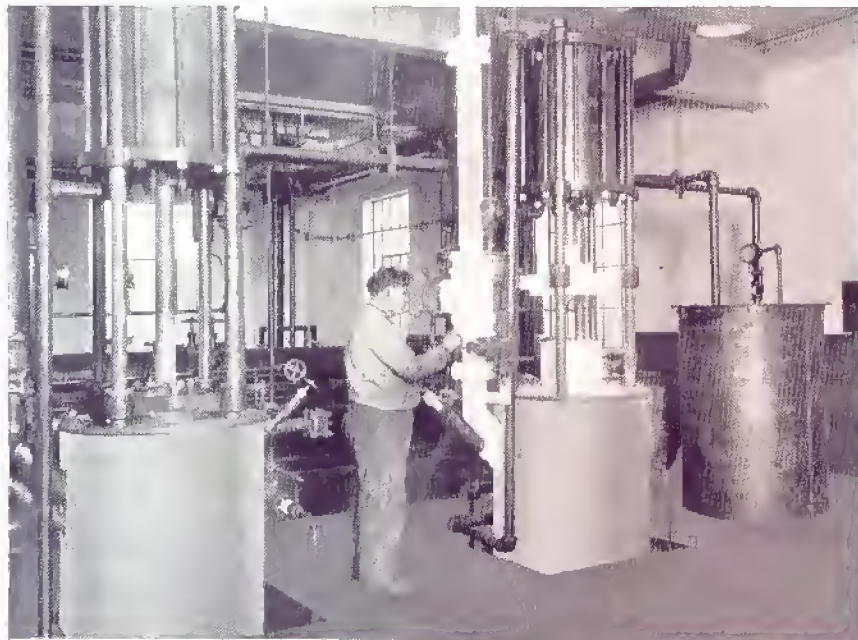
Meanwhile, great improvements were being made in cooling coils, which were kept flooded with liquid ammonia to increase the heat transfer. Ammonia is a highly efficient refrigerant: it delivers the greatest cooling effect per dollar invested, and is still preferred on industrial work and many commercial installations.

A battery of four big steam-driven compressors was installed at the Boston Fish Pier in 1915, and is still in service, along with three machines of later types. Frick equipment also refrigerates various fish freezers at Gloucester, Portland, Rockland, New Bedford, and on Cape Cod, as well as many in the Gulf States and on the Pacific Coast.

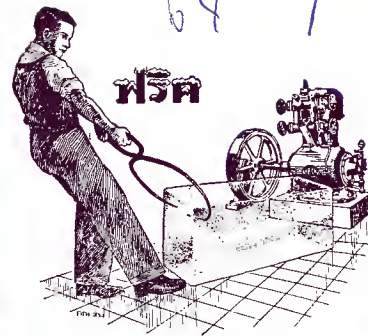


This 7" by 7" enclosed machine, installed in a dairy in Wilmington, Delaware, in 1916, was rebuilt 32 years later and started on another long period of service.





Compressing 10" blocks of dry ice with the "snow machines" developed by Frick Company in 1929. The solid carbon dioxide is at a temperature nearly 110 degrees below zero F.



他能夠永遠維持他的特殊利益
造就優良的冰霜
 但是他的需費却比別人減少

弗立克 (FRICK)

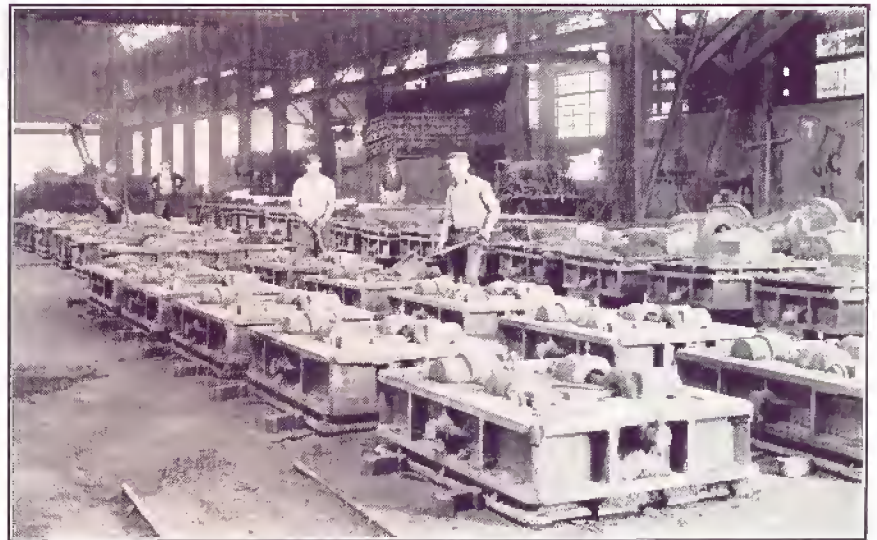
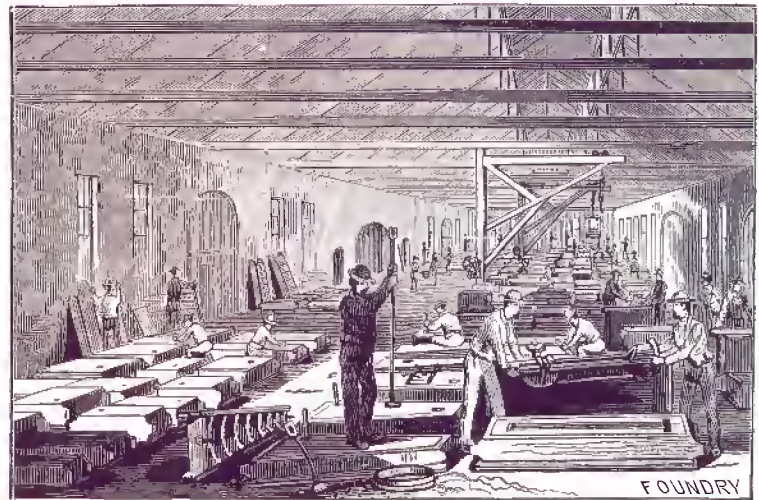
「弗立克」是美國著名的製造冰霜機公司，牌號最老，出品最良，鞏固耐用，保證造霜能如所定數量，且需費極少，機件設備極為精緻，有大小多種，價格相宜，惠顧諸君，請至本公司機器部詢問，自當竭誠招待，詳告一切。

暹京味金洋行獨家經理

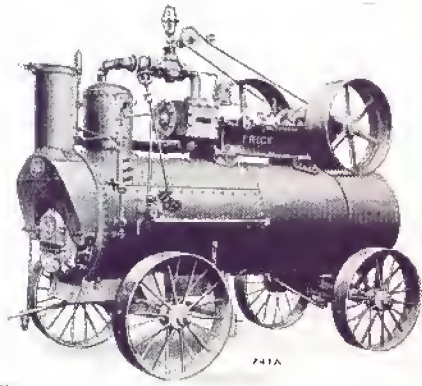
This advertisement featuring Frick ice-making equipment was published in local newspapers by the Distributor at Bangkok, Siam.



This period started with prosperity under President Coolidge and ended with the depression. Talking movies were brought out in 1926, in 1927 Lindbergh flew alone from New York to Paris. Trans-Atlantic telephone service was begun at the same time; five years later the Graf Zeppelin circumnavigated the globe. In 1931 Picard penetrated the stratosphere in a balloon.



Right: The old Frick foundry, as it appeared in 1882, and the new. Visitors from Europe are often amazed to find the Company making all its own patterns and castings.



Above: "Cornish" type boilers had a long fire-box inside; doors at both ends permitted burning full-length slabs.

Right: The steel thresher became really practical when welding replaced bolts; this Frick machine, photographed in the 20's, would now have pneumatic tires.



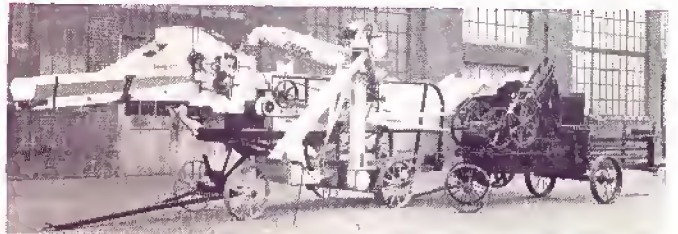
1923 to 1932

The line of Frick farm machinery was extended during this decade to include many new items, among the first being tractors, combines, spreaders, balers, and implements. Silo fillers, pick-up cutters, and forage harvesters were added next, along with feed mills and land rollers.

Later such machines as husker-shredders, dehydrators, light tractors, special plows, and cornbines put in their appearance. The Frick portable baler was introduced; automatic balers and self-propelled combines have since been made available to an active market.

These and later additions, including peanut pickers, have provided Frick customers with one of the best rounded lines of power farming and sawmill machinery ever offered.

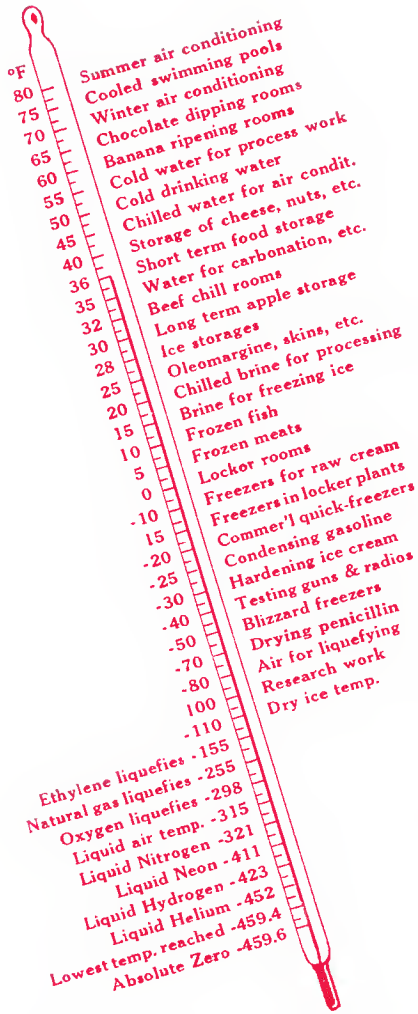
In the 1920's Frick Company erected a great new foundry, together with new pattern and wood shops of the most modern type, and set up departments for tool making, automatic lathe work, crank-shafts, connecting-rods, etc.



Thresher with baler having automatic feeder for handling the straw.

Frick sawmill, with 30-hp. portable gas engine, cutting pine logs near Zeigler, Georgia.

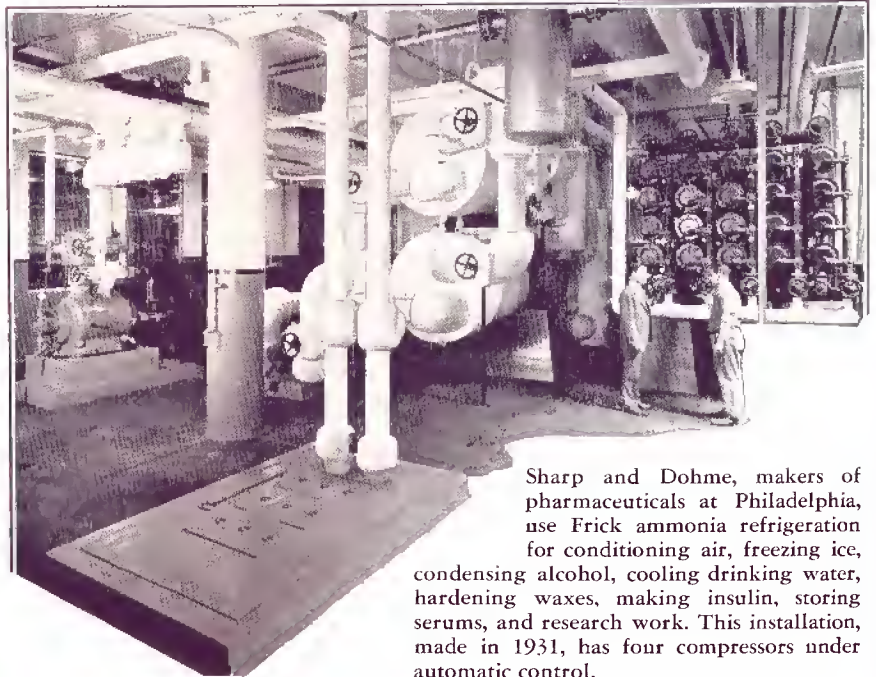




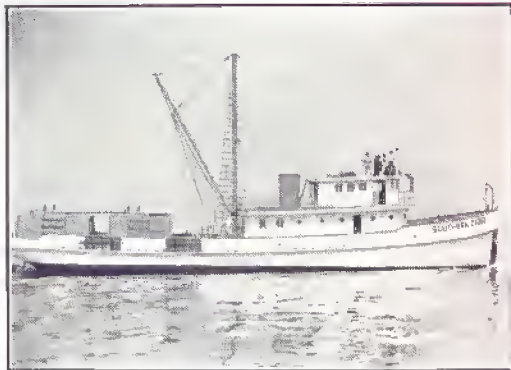
When this decade opened, the usual range of refrigerating temperatures was between zero and 45 deg. F. Air conditioning and low-temperature work soon widened this range tremendously, as indicated by this "thermometer."



Air conditioned printing-press room of Edward Stern and Co., Philadelphia, equipped in 1932. Chas. S. Leopold, consulting engineer.



Sharp and Dohme, makers of pharmaceuticals at Philadelphia, use Frick ammonia refrigeration for conditioning air, freezing ice, condensing alcohol, cooling drinking water, hardening waxes, making insulin, storing serums, and research work. This installation, made in 1931, has four compressors under automatic control.



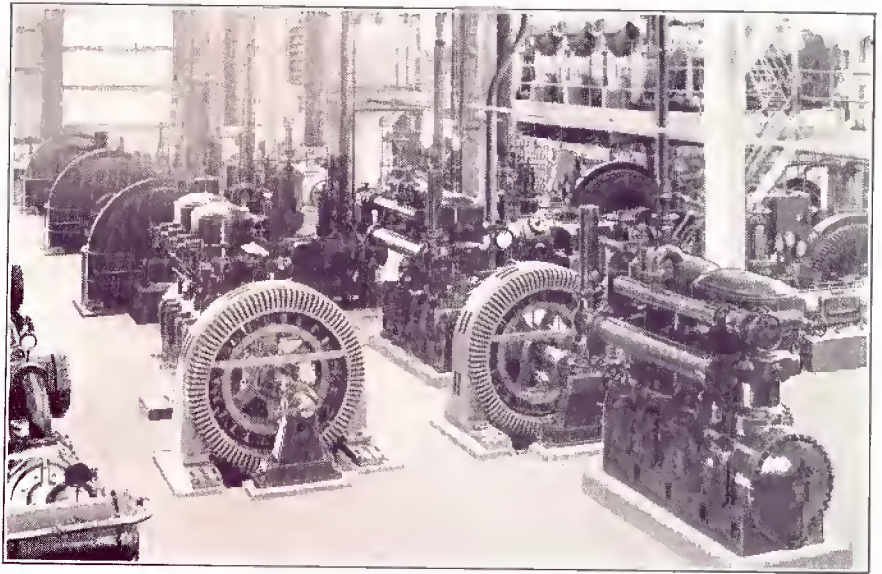
The 118-ft. tuna fisher "Southern Cross," though reported lost with all hands, survived a terrific hurricane and landed a \$13,000 cargo after a 2000-mile trip, thanks to the Frick system which preserved the ice in her holds.

People in the Picture on Opposite Page.

FRONT ROW, *Left to Right*—W. H. Aubrey, T. L. Parish, R. T. Snively, J. A. Martin, L. I. Stemm, C. O. Voigt, M. W. Garland, R. Van Sisk, A. H. Baer. SECOND ROW—J. G. Miller, S. F. Workman, C. V. Grant, F. L. Sadler, H. E. Moore, A. O. Frick, D. B. Snively, D. N. Benedict, Ezra Frick, A. H. Hutchison, O. C. Arens, R. H. Tait, Sr., G. A. Wagner. FIRST ROW, *Standing*—Jesse Barker, P. A. Smith, L. H. Jenks, Jr., J. A. Mikesell, J. T. Murphy, W. O. Kline, M. B. Weinberg, F. H. Fritsch, Henry J. Mollenberg, A. D. Elsberry, L. Z. Wolfinger, A. N. Chandler, L. H. Maxwell. SECOND ROW, *Standing*—Terry Mitchell, J. S. Small, W. F. Losch, James Henderson, H. B. Pennington, Theo. Heutteman, G. H. Palmer, C. C. Smith, Jules Bernd, A. T. Feaster. LAST ROW, *Standing*—J. V. Turner, A. S. Workman, F. J. Easton, C. L. Whitaker, Tom Carroway, T. C. McKee, W. W. Morgan, W. R. Snively, H. B. Drillott, R. Hendy, D. M. Wertz, L. N. Udell, A. E. Edwards, N. M. Small. REAR ROW, *In Archway*—R. H. Tait, Jr., R. H. Oller, J. L. McCleary, A. B. Hoppe, W. B. Campbell.



Seventeen tons of air conditioning for the Coffee Shops were included in the complete Frick refrigerating system installed in the Thomas Jefferson Hotel at Birmingham in 1929.



The Celanese Corp. of America uses over 10,000 tons of refrigeration in its great plant near Cumberland, Md. The Frick horizontal Type J compressors in the background, driven by 500-hp. motors, have been in service nearly 25 years. Each pair of vertical 4-cylinder machines has a motor of 1250 hp. (One new compressor not shown.) Air conditioning load of 4000 tons is carried in summer with as little as 0.70 hp. per ton!

1923 to 1932

When this decade opened, zero degrees Fahrenheit was called a "freezer" temperature, and represented the lower limit of general refrigeration practice; 45 degrees marked about the upper limit.

Quick-freezing systems and low-temperature industrial processes now began to extend the refrigeration range downward, while air conditioning and special work pushed it upward. About the same time automatic controls became practical.

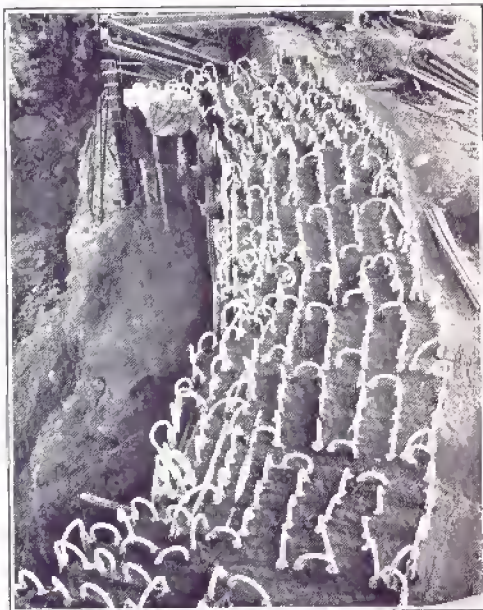
As a result, the usefulness of refrigerating equipment increased enormously. Charles F. Kettering of General Motors predicted that the progress of civilization, having previously depended on the use of heat, would in

the future be measured by the intelligent application of cold.

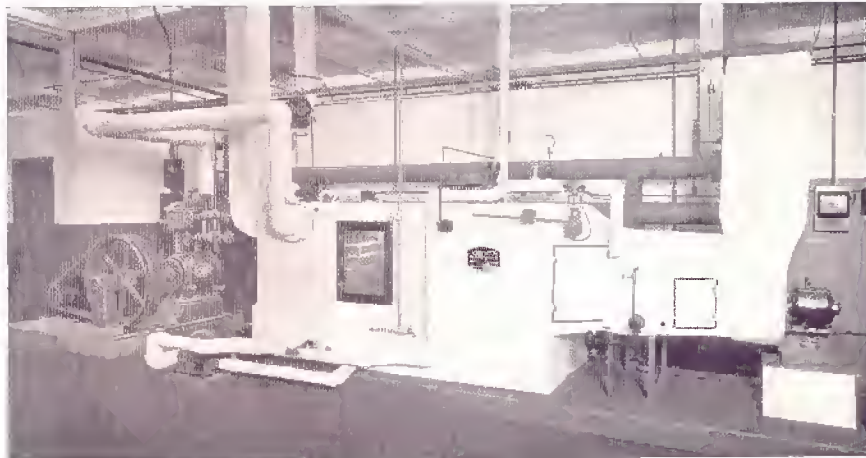
Frick Company built some of the first successful large-scale machinery in America for making dry ice; installed low-temperature test equipment at the Bureau of Standards in Washington; perfected the float-valve control system; and continued its pioneering work in air conditioning. The heavy slow-speed horizontal compressors were superseded by the Type J machines, which were adapted to direct synchronous-motor drive. Vertical enclosed-type carbon-dioxide machines were developed, but after a few years were replaced by the new Freon-12 compressors.



Home Office Executives, Branch Managers, and Distributors handling Frick refrigerating equipment appear in this photograph taken at Waynesboro in July, 1924. (See names on page 30.)



Cold brine in these pipes froze a silt wall 170 ft. long and 43 ft. deep, to stop a dangerous mud slide when Grand Coulee Dam was built.



This typical air conditioning system for industrial purposes, built in the early 1930's, used Frick ammonia refrigeration with excellent results.



The Royal Hawaiian, at Waikiki Beach, known to thousands of travelers and Service men as "the world's most beautiful hotel," uses Frick refrigeration for food service, making ice, air conditioning, etc.

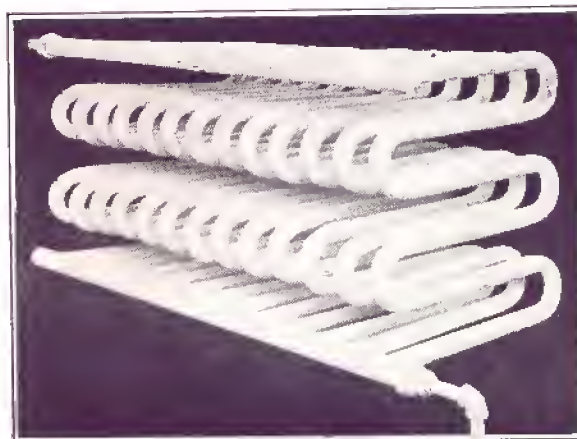


This decade witnessed the National Recovery Act (NRA), the Japanese invasion of Manchuria, Mussolini's attack on Ethiopia, the rise of Hitler in Germany, and the outbreak of World War II. On Dec. 7, 1941, the Japs attacked Pearl Harbor and the U.S. entered the fight.

"Heavy hydrogen" was isolated at Columbia University in 1933, and sulfanilamide was introduced in '35. In 1940 the possibility of splitting the atom was demonstrated.



Model of a dual-pressure ice plant, in which the water and liquid ammonia are precooled at high suction pressure, with about 10 per cent extra efficiency.



These improved cooling coils, called type VW from their shape, are welded into standard sizes: they offer many advantages, including short gas travel, ample air circulation, automatic defrosting when desired, prompt shipment from stock, etc.



Frick steel peanut pickers, introduced in 1938, are still going strong. Cleaner, faster, and more durable, they enjoy a natural preference.



"No name in American agricultural implements stands higher or has survived longer than that of Frick."

F. Hal Higgins in the
Pennsylvania Farmer, Jan. 13, 1940

Printed by permission

One of the finest tributes ever paid to Frick Company is this statement by a well known historical writer, published in the *Pennsylvania Farmer* magazine in words that would do justice to Winston Churchill.

1933 to 1942

The first peanut picker was invented years ago by a colored man; he stretched chicken wire over the open end of a barrel, lowered the nuts through the meshes, and jerked away the vines. The same principal has been used ever since.

Frick Engineers now undertook to build a welded steel peanut picker that would be an improvement over the current wooden machines. The new design included a powerful dust exhaust fan; a large slow-moving cylinder with spring teeth, permanently sealed bearings of roller, ball or rubber construction; an adjustable air cleaner; and rubber tires. Combined with high capacity

and long life, these advantages soon made Frick pickers the favorite.

Frick threshers were meanwhile being applied very successfully in the rice fields. They have enjoyed a world-wide market for rice threshing, as well as for handling wheat, oats, barley, clover, lespedeza, and other seeds, to this day.

Auxiliaries such as wedge-sawing machines and steel trimmers now further increased the profits to be made with Frick sawmills.

By this time pneumatic tires had been applied to many kinds of farm machinery, greatly increasing both efficiency and durability.



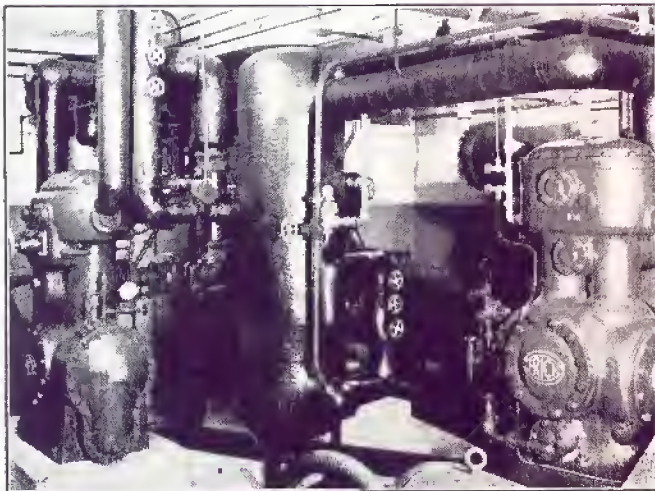
In the 1930's Frick steel threshers were adapted to handling rice, and are now used for this purpose throughout the globe. This machine is at work in the flat Louisiana rice fields: note large sacks of grain.



Of the Frick unit air conditioners introduced in 1938, practically all are still in operation. Now built in several sizes.



Quick-freezing tunnel, 120 ft. long, hardening 180 pint packages of ice cream a minute; temperature, 50 to 55 deg. F. below zero. Hershey Creamery Co., Harrisburg, Penna.



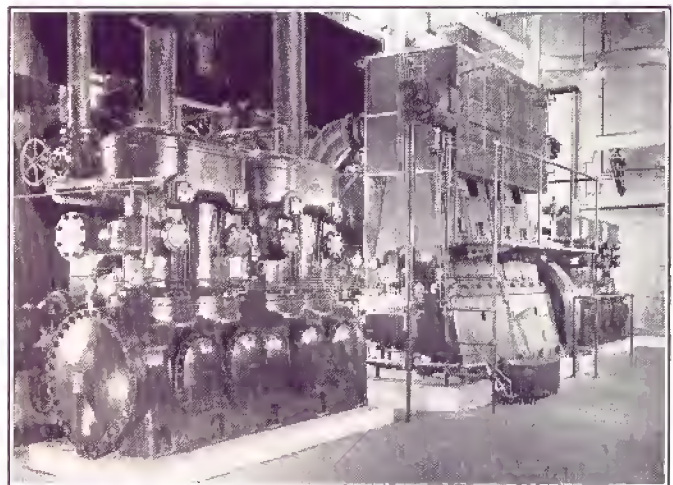
Booster compressor, intercooler, and second-stage machine for producing low temperatures with economy. This system was developed by Frick engineers against bitter opposition, but is now universally accepted.



Approximately half the artificial ice skating rinks on the Continent, including this one at Hershey, Penna., have Frick equipment. We furnish rinks with or without cement floors.



The Philtower and Philcade Buildings in Tulsa were air conditioned with 1000 tons of Frick ammonia refrigeration in 1939. Operating costs are extremely low.



Two of the eight Frick ammonia compressors producing 4900 tons of refrigeration for air conditioning a Midwest war plant. The compressors are driven in pairs by steam engines of 1200 hp.



Six-story cold storage building, refrigerating machine room with ice-making system, and poultry packing plant near Broadway, Va. This big COMMUNITY REFRIGERATION CENTER, which includes a quick-freezing tunnel, lockers, fruit storages, etc., is typical of many throughout the country supplying similar varied services. Frick Company fostered the development of these CENTERS and is proud of their rapid growth and usefulness.

1933 to 1942

After beer came back, many breweries were modernized, and the trend to improve their facilities spread to various other industries, including the ice business. The remarkable savings thus made continue to serve as proof of what modern engineering can accomplish. A large ice and cold storage plant in Nashville reduced its costs by \$20,000 a year.

The first 1-man, 1-shift ice plant was built at Newport, Penna., in 1934. The line of Frick Freon-12 compressors and accessory equipment was now developed, as was the booster system for maintaining low temperatures with economy. This last was a boon to the quick-frozen foods industry, as were the new Freon machines to air conditioning. Frick low-pressure refrigerating units and heavier machines have since been purchased by the tens of thousands. Frick unit air conditioners, introduced in 1938, continue to be favorites wherever dependability is a factor.

During this era the ice-skating rinks also came into their own. Half of all those erected on this Continent included Frick equipment. They made possible the big ice shows, which are said to have eclipsed all the regular stage theatres in tickets sold annually.

During the first year of World War II, heavy refrigerating machines and sawmills were considered unnecessary to the defense effort, and the Frick Shops were filled with work on other military and naval equipment. The succeeding years witnessed a race to make up for the time lost!



Automatic refrigerating systems operate most dependably when equipped with Frick electric control valves.



Pratt and Whitney, famous builders of aircraft engines and precision tools, use Frick air conditioning for holding temperatures within one degree F., the year 'round, in two test rooms at West Hartford, Conn.—said to be the most accurately controlled spaces of their size in existence. Cooled with Frick ammonia refrigeration.



The "outstanding building of the decade" was that of the Bankers Life Co. at Des Moines. Costing \$1,500,000, it included advanced methods of traffic control, space saving, communication, fire protection, and air conditioning. Three large Frick compressors, handling Freon-12, furnished 630 tons of refrigeration—and are of course still doing it.



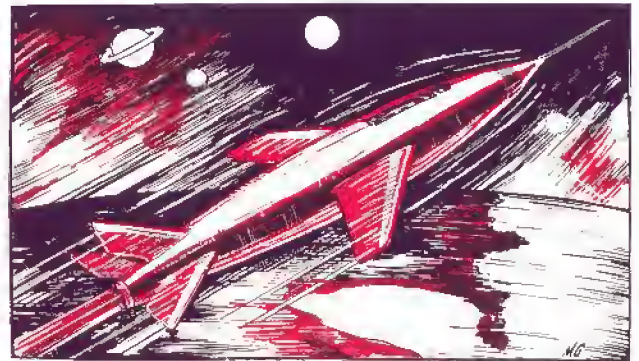
Jack Dempsey's Restaurant, opposite Madison Square Garden in New York City, was air conditioned with Frick equipment in 1935. Frick refrigeration was installed for food service and for cooling a display window.



The water in the swimming pool at Tarboro, N. C., scene of many championship meets, is held at correct temperatures with a Frick ammonia system.



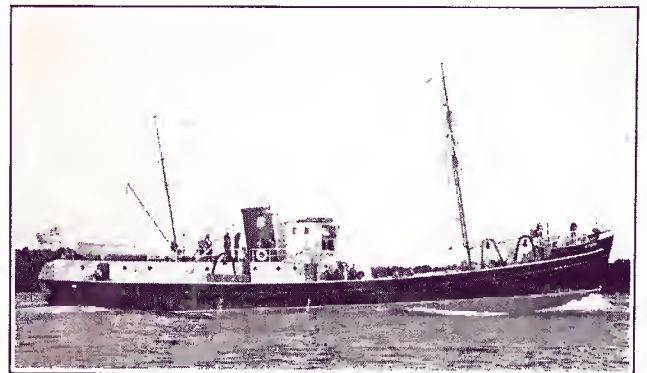
One of the first homes to be equipped with "reversed refrigeration," for heating in winter and cooling in summer, was this country place near Alexandria, Va. (1935). Heat-pump systems are now widely used for industrial process work as well as for air conditioning.



World War II dominated the first half of this period, which also saw radar, penicillin, television, atom bombs, supersonic flight, and 250-mile rockets introduced. Frick equipment played an even more essential part in winning this global conflict than it had in World War I.



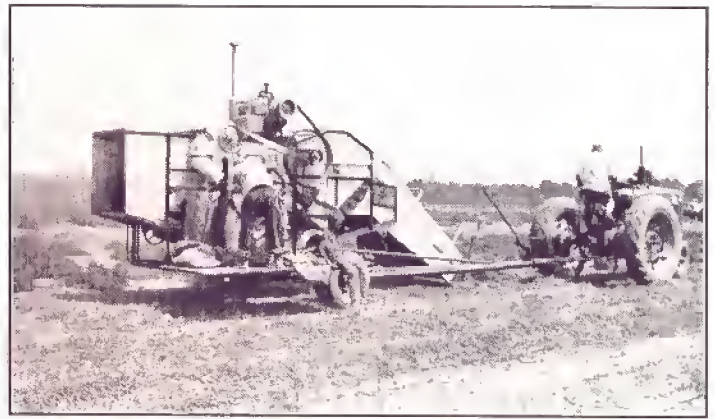
The great air conditioned storage of the California Walnut Growers' Assoc., at Vernon, measures 600 by 175 by 22 ft. high. The immense space is held between 36 and 40 deg. F. by two Frick 9 by 9 ammonia compressors, installed in 1936. A relative humidity of 65 per cent is maintained.



Several trawlers of the "Forty-Fathom" Fleet carry $\frac{1}{3}$ more fish and $\frac{1}{4}$ less ice because equipped with Frick refrigeration. Huge quantities of ice are used in the fishing industry: the Commonwealth Ice and Cold Storage Co., at Boston, produces over 500 tons daily with Frick machinery.



This sawmill, kept humming by a pair of engines, cut as much lumber as two mills, operated by separate crews, had formerly done.



The peanut combine, introduced in recent years, saves labor in areas where the nuts can be harvested in windrows.

1943 to 1952

During the manpower shortage of the Second World War, it was discovered that portable sawmills could practically double their output if driven by engines of twice the power formerly used. The demand for Frick sawmills increased so rapidly that a large new shop, devoted entirely to making this equipment, was built at Waynesboro soon after the War ended. This turns out more than a thousand Frick portable sawmills in a typical year.

More and more engines were meanwhile being applied to farm machinery in general, making the equipment more independent of the tractor. While this trend continued, the usefulness of tractors was being extended through the application of hydraulic power, electric starting and lighting equipment, more durable construction, and greater comfort for the driver.

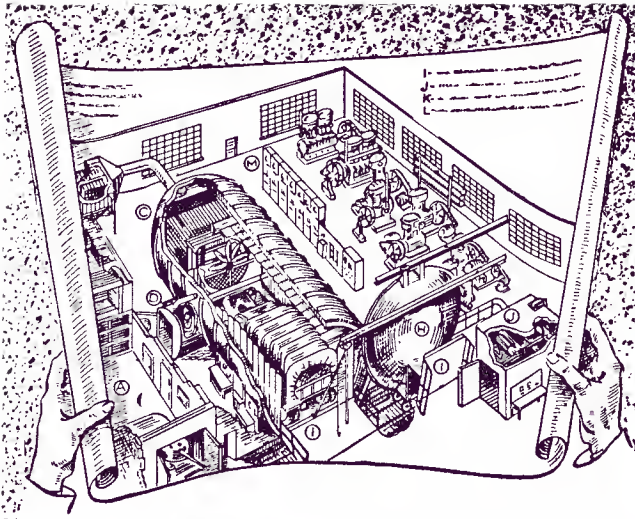
The Frick peanut combine, into which was built 15 years' experience with peanut pickers, was tested in 1951 and placed in production in 1952. The No. 1 sawmill, largest in the Frick line, was improved to permit handling the heaviest logs with ease. Another development was a better machine for sawing wooden wedges.

Names of the Men in the Picture Below:

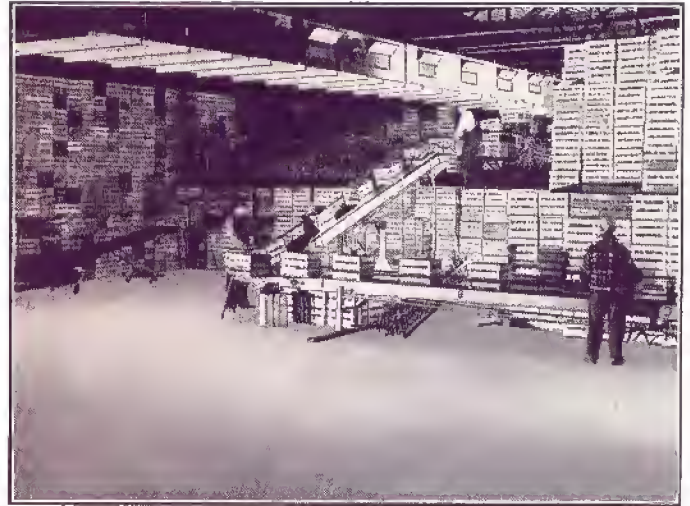
FRONT ROW, *Left to Right*—Norman Hawbaker, Luther Hawbaker, W. C. Browning, G. J. Rupert, G. J. Longerbeam, D. N. Benedict, F. O. Rebok, S. M. Oberholtzer, R. F. Mack, H. C. J. Bechtold, J. H. Stoner, C. E. Lokey, Harold Armstrong, R. S. Murphy, R. H. Fitz, H. B. MacDonald, S. V. Anderson, James North, F. H. Fredenburg. SECOND ROW—L. Stottliemyer, E. Stottliemyer, John Parmer, R. S. Kauffman, T. J. Dunn, Jr., O. D. Good, F. B. Arnold, Hamilton Linthicum, Max Brandt, C. H. Bowden, L. P. Bash, W. R. Mowry, E. S. Warfield, W. S. Hartzell, S. M. Staller, R. H. Stimple, W. R. Armstrong, G. N. Round, G. J. Toth, R. E. Day, Jr., W. W. Burpee, W. R. Nixon, E. R. Kauffman. THIRD ROW—W. R. Roth, R. C. Woodcock, K. H. Nyberg, E. A. Price, F. D. Markley, Walter Hunt, C. E. Newhard, Harry Moat, A. J. Funk, A. E. Roschli, W. G. Weagly, W. L. Fibben, W. H. Aubrey, A. R. Wolfe, M. G. Toms, A. S. Gonder, G. E. Hess, R. M. Rinehart, W. L. Brown, W. T. Young, G. F. Musgrove, D. Ruckman, W. P. Berkey, R. McCarty, H. B. MacDonald, J. H. Kehrler, A. Strausbaugh.



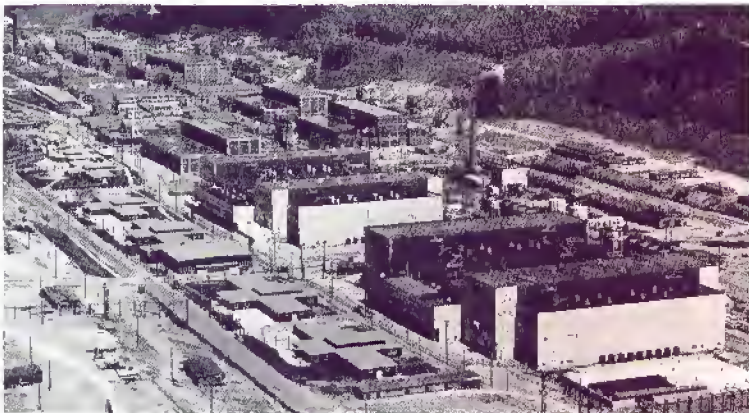
Frick Executives, Branch Managers, Salesmen, Suppliers, and Dealers at the Pennsylvania Farm Show, Harrisburg, in January, 1952.



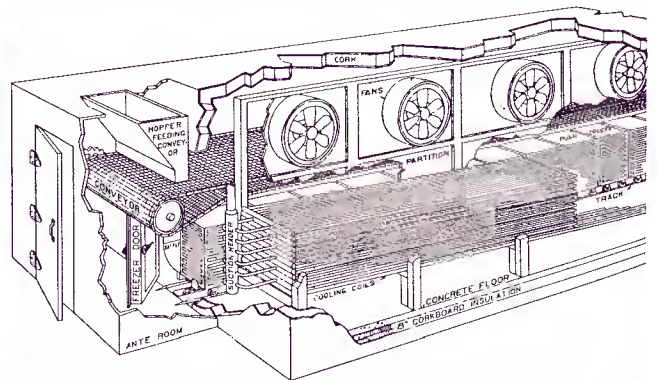
The All-weather Laboratory of the U.S. Army at Fort Belvoir, Va., was the first of many large test chambers furnished to Bendix Radio, Lycoming Motors, RCA Victor, the U.S. Air Force, and others.



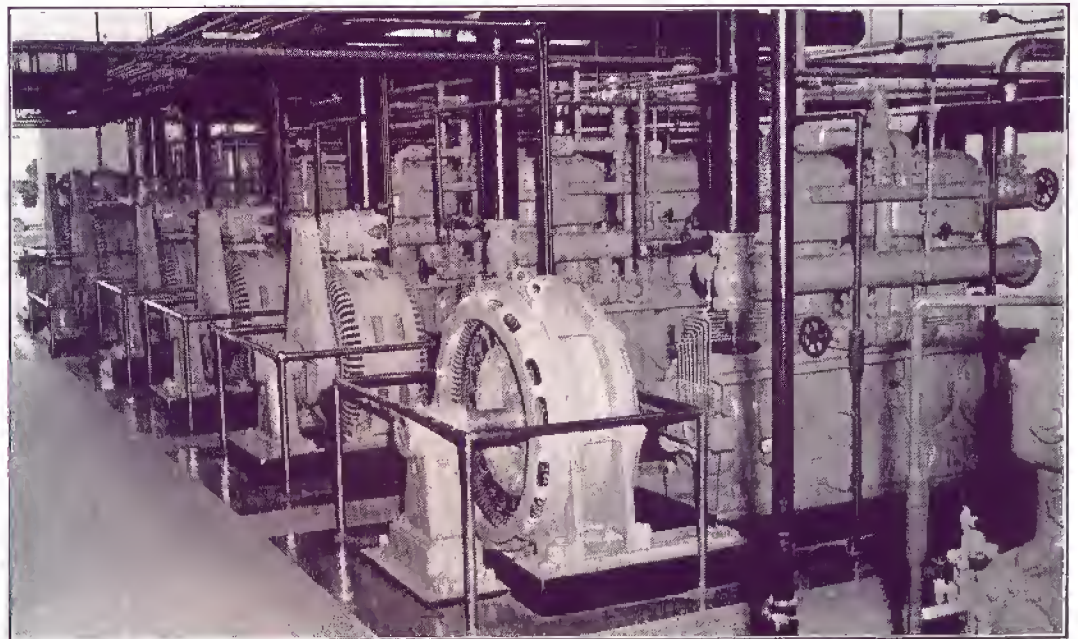
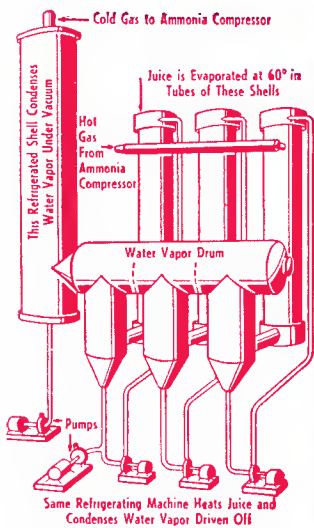
Cold storages can now preserve the full weight and freshness of foods by maintaining high humidity, even with temperatures of 32 degrees, thanks to a patented Frick system.



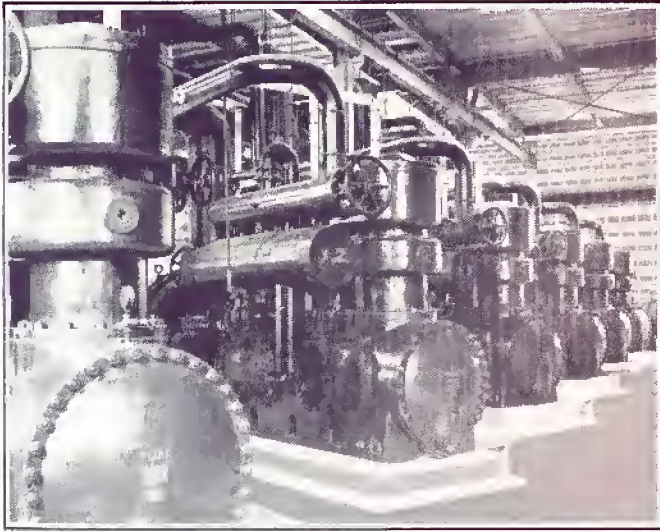
Large amounts of Frick refrigeration are used for various purposes at the Oak Ridge, Tenn., plant of the Atomic Energy Commission.



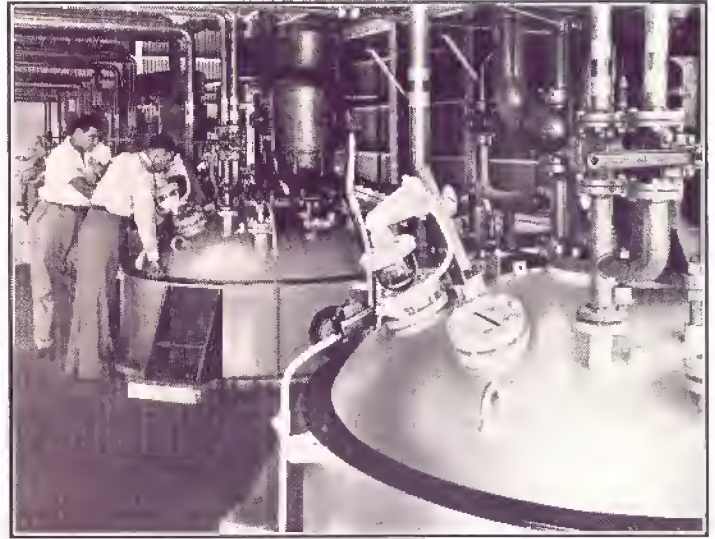
Frick-freezing tunnels handle ANY and ALL foods with dependability and dispatch. They can be arranged with conveyors or push trucks, or both, as shown in this cut-away drawing.



Thirteen Frick compressors, totaling 3180 horsepower, evaporate orange juice with hot ammonia gas, condense the moisture, then quick-freeze and store the product at the Lake Wales plant of the Florida Citrus Canners Cooperative. Diagram at left shows heat-pump cycle used. Several other large plants for concentrating citrus juices are similarly Frick-equipped.



Six of eight Frick 17¾" by 12" booster compressors, each with four cylinders, at Seabrook Farms, Bridgeton, N. J.—world's largest quick-freezing plant.



The time required for forming "cold" synthetic rubber in the 3750-gallon reactors has been cut in half by a cooling system recently perfected by Frick Engineers.

1943 to 1952

The activities of the Company in the last ten years have been stupendous. More than 430 complete ice plants were furnished to the Army, and several thousand refrigerating systems were supplied to the Navy, during the War. Pioneer work of tremendous importance was done on test laboratories, which were supplied with push-button controls to maintain any temperature, humidity, air motion and air pressure desired.

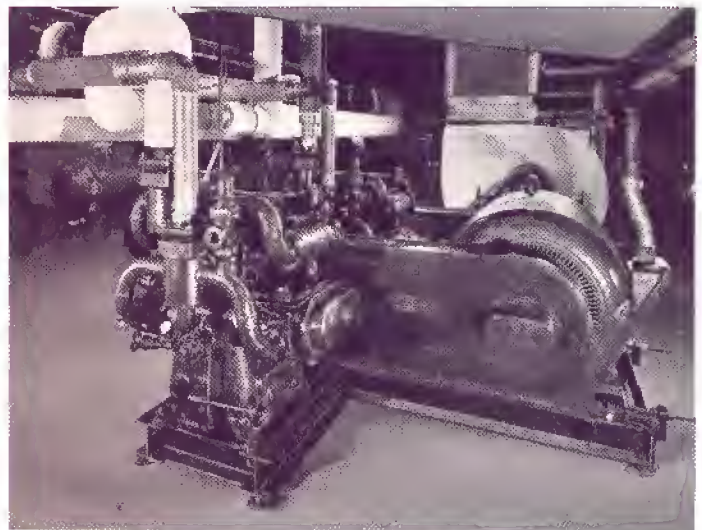
In succeeding years the Company played a leading part throughout the nation in building quick-freezing systems for the frozen food industry; developed the high-humidity type of cold storage, which prevents de-

structive drying-out of fruits and vegetables, improved the one-man ice plant to include capacities of 100 tons a day; made some gigantic installations of refrigerating machines as heat pumps; extended the line of Frick "ECLIPSE" compressors to include a 9-cylinder machine, also adapting these multi-cylinder compressors to booster service; and continued serving an ever-widening list of overseas customers.

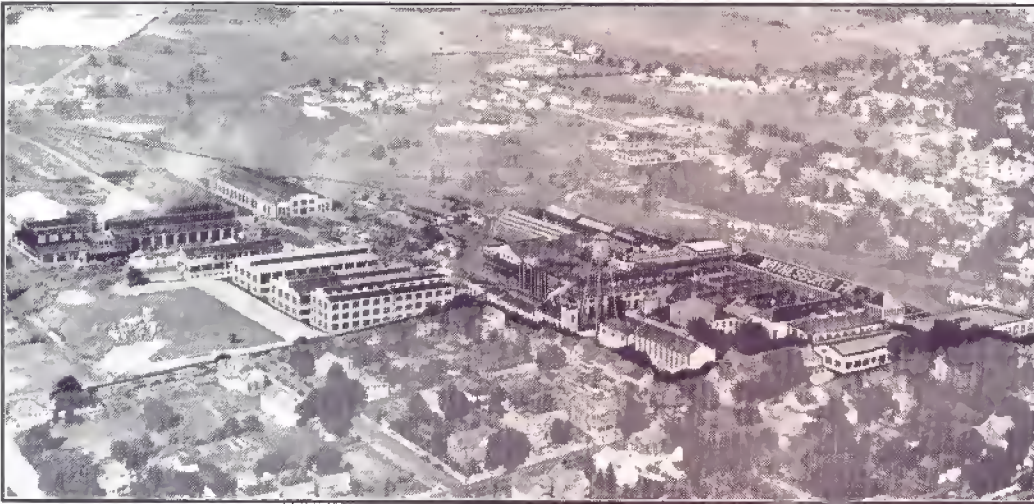
Improvements of the greatest value to the country have recently been made in cooling the reactors in which "cold" synthetic rubber is formed; the capacity of these reactors has been doubled!



The Brisbane plant of the Queensland (Australia) Meat Industry Board, handling over 1,000,000 animals a year, increased its freezer output 26 per cent with three large booster compressors—typical of the important work being done overseas with Frick equipment.



Two 9-cylinder "ECLIPSE" compressors form one of six systems which air condition a big industrial plant in Cincinnati.



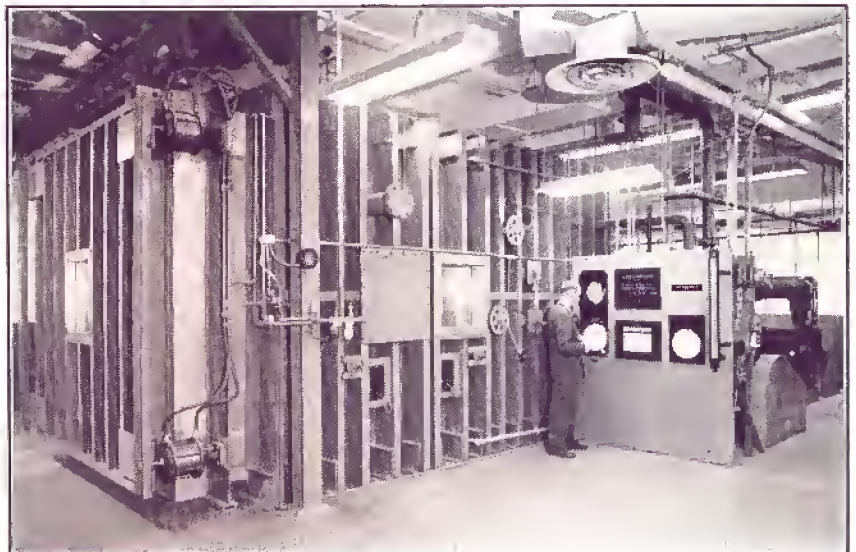
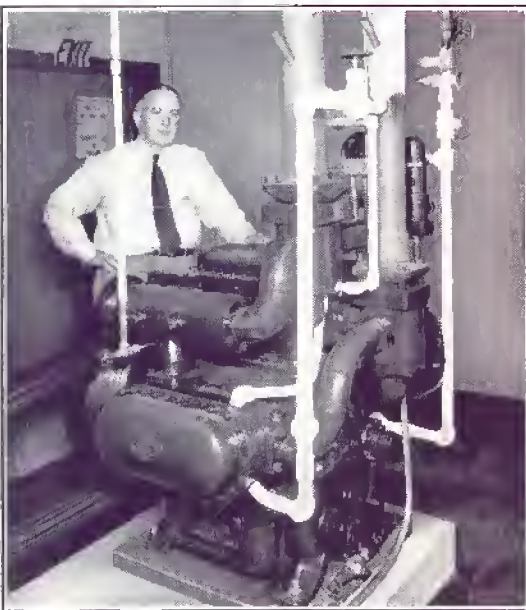
Visitors are always welcome at the Frick Plant, which covers 30 acres in Waynesboro, Penna.



The 125 apartments in Washington's Lencshire House are air conditioned with Frick "ECLIPSE" compressors.



Frick equipment serves the \$21,000,000 Shamrock at Houston, among other prominent hotels throughout the world.



Temperatures down to 100 degrees below zero are held in this test room of Goodyear Aircraft, at Akron, Ohio. Booster compressors used in the 3-stage system are of the 9-cyl. "ECLIPSE" type shown at left—photographed in an ice cream plant in Detroit.



The American Stores, Penn Fruit, Ralph's, Weingartens, Bettendorf's, and many other leading markets use Frick refrigeration and air conditioning.

Below: This high-humidity storage keeps fruits and vegetables in the freshest condition, without loss of weight, by a patented Frick System.



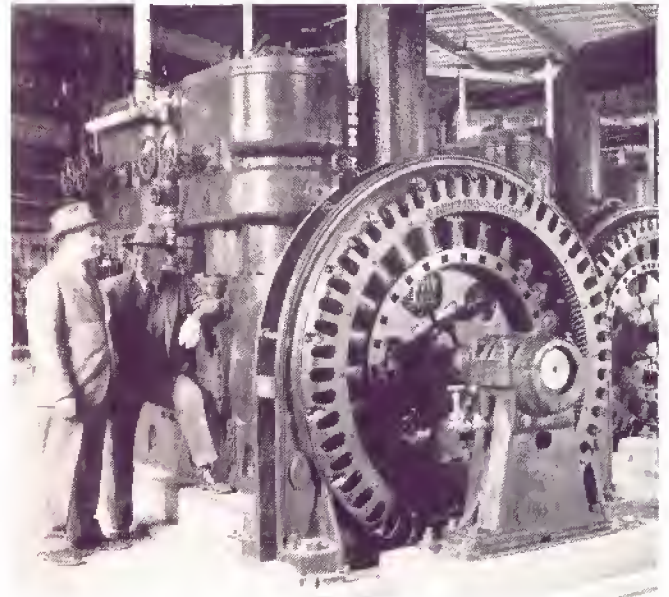
Frick Company Today

In surveying the firm's present position, and looking toward its future, based on the hundred years of progress just reviewed, certain fundamental factors invite attention:

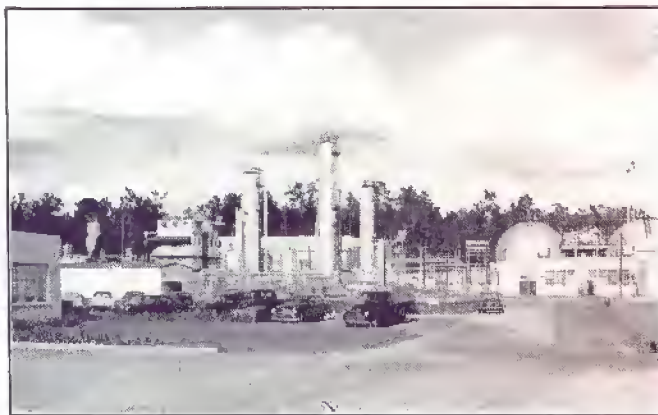
The major work of Frick Company is still concerned with the great food industries, including farming, processing, storing, transporting, and retailing. As the population increases (it has doubled in the last half century) this market is always expanding.

At the same time the Company has far-reaching activities in air conditioning, chemical work, general manufacturing, lumbering, export, and many other fields. In fact, there is hardly a business today which is not affected, directly or indirectly, by the use of Frick equipment!

The Company offers a combination of services—engineering, sales, manufacturing, and installation—of the highest order. Its world-wide organization has weathered all manner of wars and depressions; its unequalled experience saves customers from costly experiments, and is available in solving your particular problems.

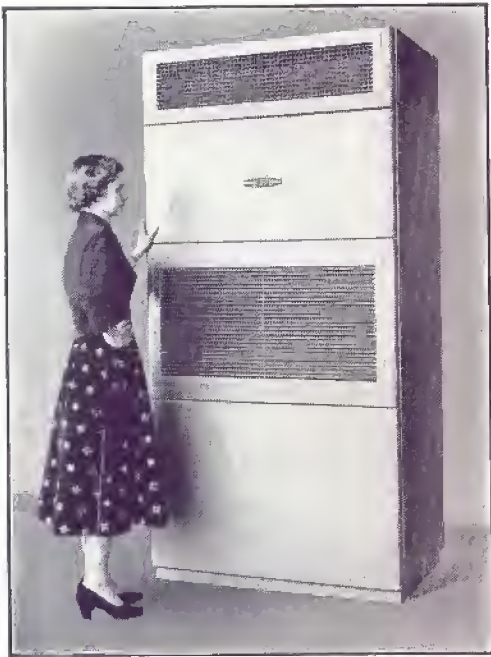


Frick engineering services, from layouts to test runs, are complete. Below is Detroit Dam, in Oregon, where the water, cement, sand, and even the rock used in making concrete are all pre-cooled to below 50 deg. F.



Chemical plants make innumerable products with the aid of Frick equipment. The Mississippi Chemical Co., at Yazoo City, produces ammonia for agricultural purposes.





Unit air conditioners meet the needs of restaurants, clubs, hotels, stores, offices, factories, etc.



Plants making candy, chewing gum, paper, medicines, machinery, rayon, and hundreds of other products find Frick refrigeration and air conditioning vital aids.

The dairy industries use vast amounts of refrigeration, often at low temperatures.

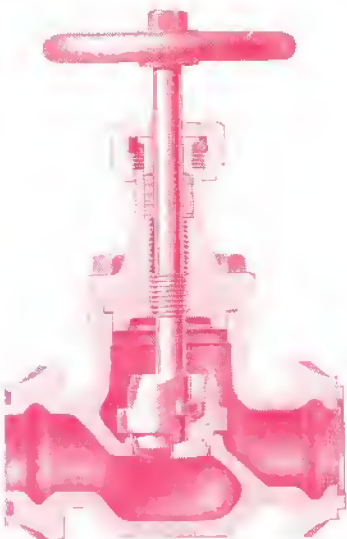


Millions of tons of ice are used annually in refrigerators, display cases, railroad cars, trucks, fishing boats, etc.

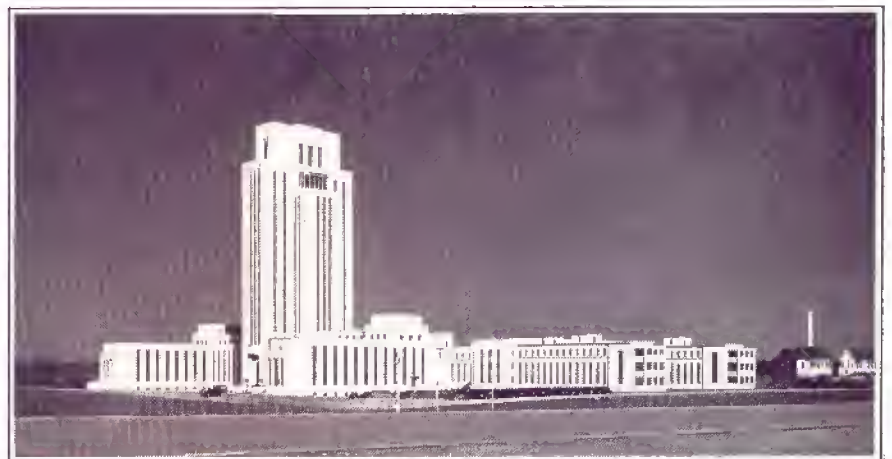
Right: A cylinder liner, shrunk with dry ice, is fitted into a high-pressure cylinder in the Frick shops.

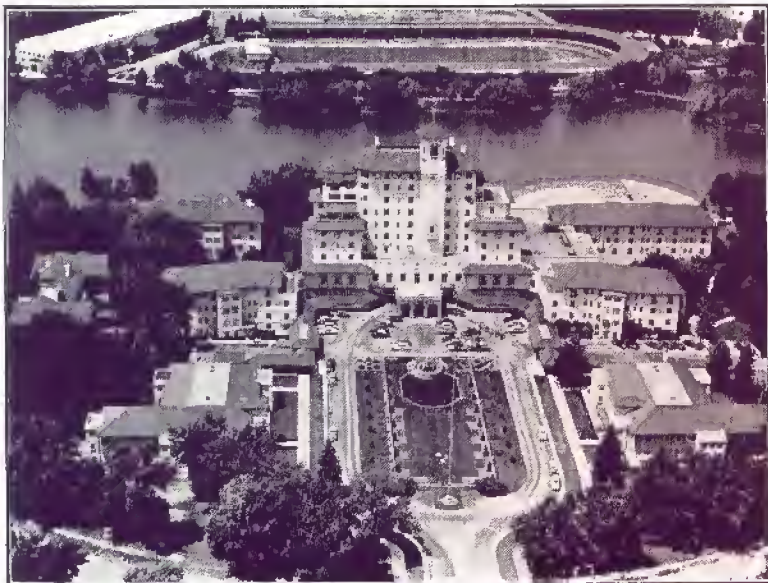


Hospitals use Frick equipment for air conditioning, food service, making ice, holding serums, quick freezing, cooling drinking water, etc. Below is the U.S. Naval Hospital at Bethesda, Md.



Frick valves have high-angle seats, among other advantages, and handle many high-pressure liquids and gases.





The fabulous Broadmoor Hotel, at Colorado Springs, has used Frick equipment for 35 years—for cooling refrigerators, making ice, quick-freezing foods, and operating a year 'round ice skating rink, in the building at upper left.

Frick Company's customers include hundreds of thousands of the most successful farmers and business concerns in existence. Its products are indispensable to these owners in earning steady profits. The slogan that "The users of Frick equipment make money," gives the key to the firm's continued growth.

These factors, added up, mean that Frick Company meets a tremendous variety of needs. As was proved in the World Wars, the Company manufactures or can furnish practically anything required in the way of refrigerating, air conditioning, ice making, and quick-freezing equipment, as well as power farming and saw-mill machinery.

Its many friendships, its reputation for dependability, and its excellent facilities thus combine to make the Company's opportunities for usefulness, today and tomorrow, almost unlimited. Your inquiry will be welcomed, and will be given careful attention.

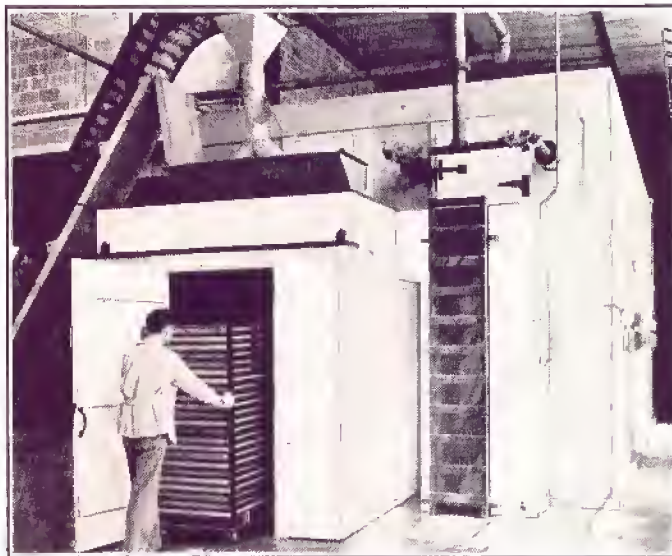


The "President" liners are among the many classes of ships—battle-wagons, destroyers, yachts, tugs, tankers, freighters, fishermen, submarines, and dredges—that like the dependability of Frick equipment.



The Baxter Laboratories, at Morton Grove, Ill., make essential blood transfusion sets and intravenous solutions with the aid of Frick air conditioning.

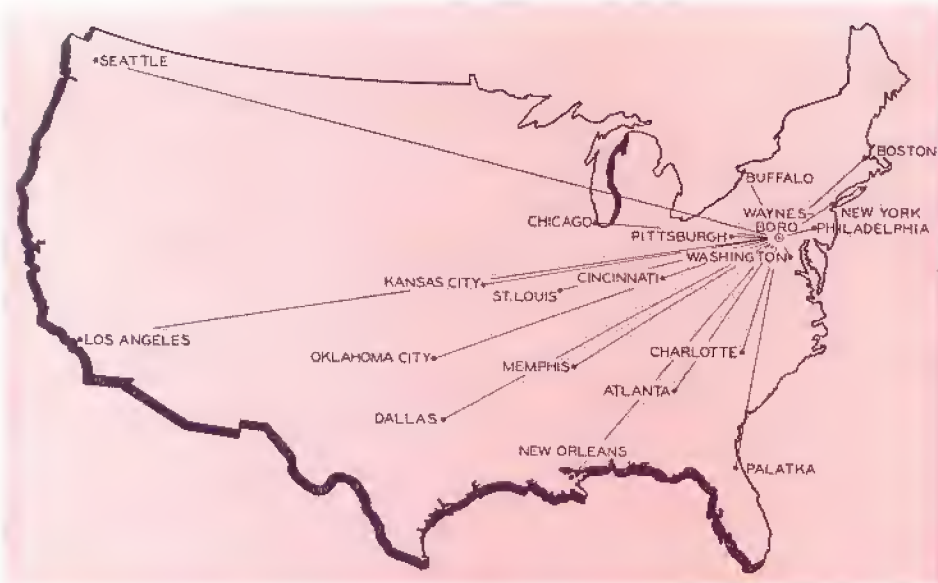
This 6-ft. Frick-freezing tunnel at Lancaster, Penna., has both a conveyor belt and rows of push trucks, handles ANY and ALL foods.



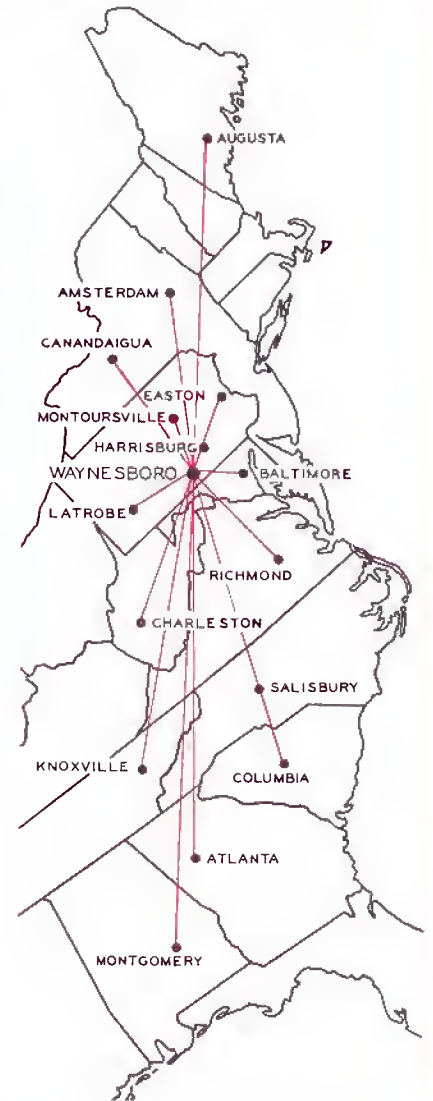
Adequate refrigeration and air conditioning are as necessary in first-class restaurants as linen and silver. Frick Freon and ammonia systems meet all requirements.



Waynesboro has excellent highway and airline connections; transcontinental busses serve the town; main-line trains stop at Harrisburg and Martinsburg.



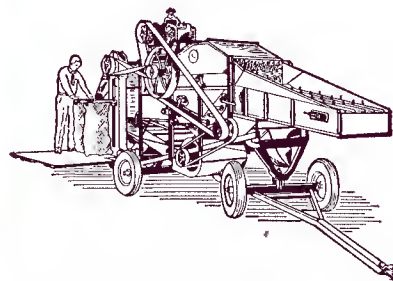
Branch Offices and Sales Representatives handling Frick refrigerating and air conditioning machinery are in principal cities throughout the country. Distributors for medium-sized and smaller equipment are in scores of surrounding centers.



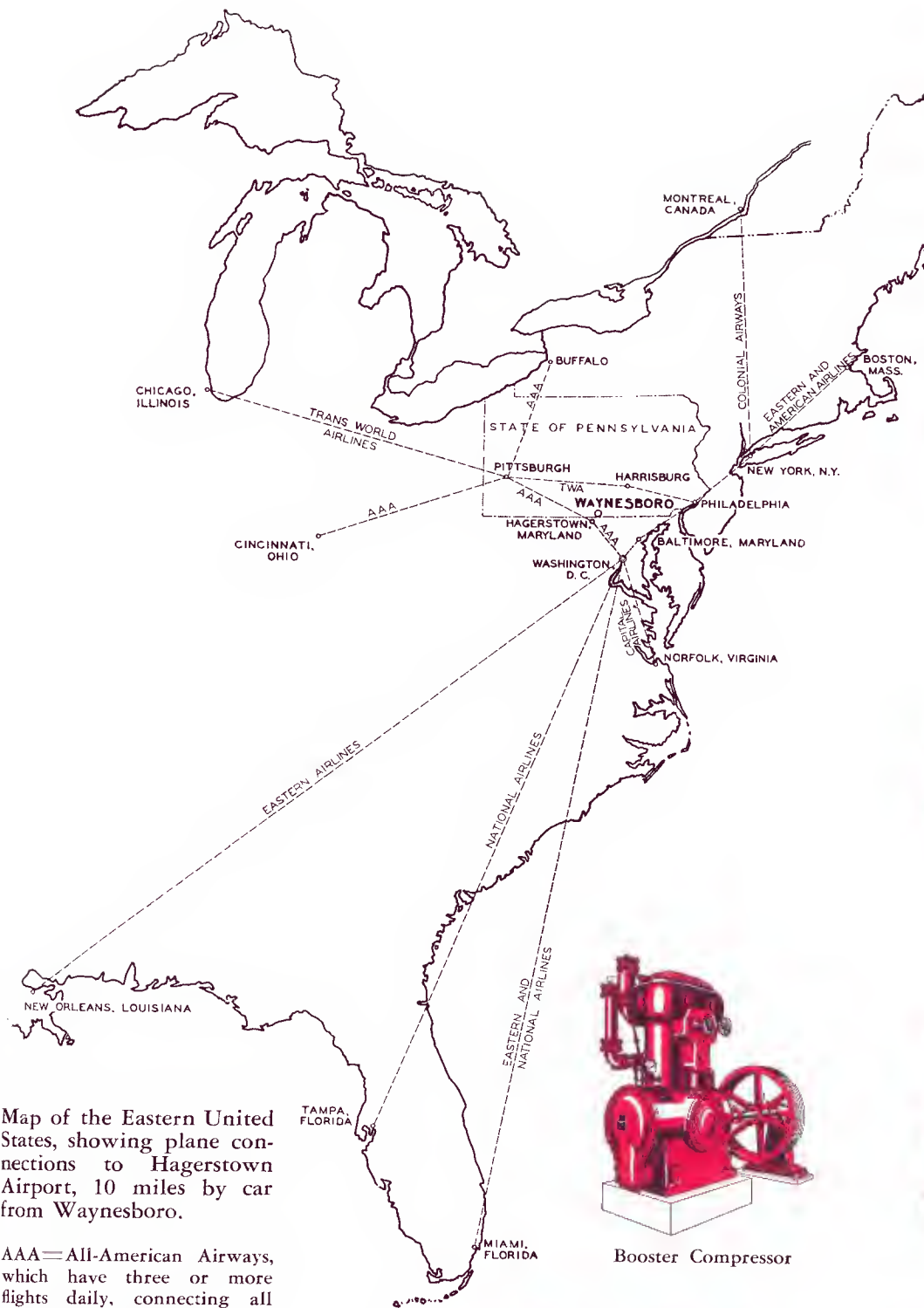
Frick Farm Machinery Branches provide warehouse and service facilities at the points shown on this map. They are assisted by numerous dealers.



Frick Sawmill at work.



Frick Steel Peanut Picker



Map of the Eastern United States, showing plane connections to Hagerstown Airport, 10 miles by car from Waynesboro.

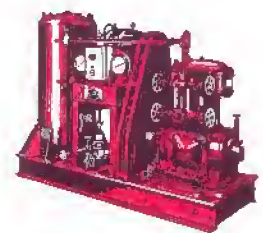
AAA=All-American Airways, which have three or more flights daily, connecting all points with Hagerstown.

Flying time to Hagerstown, Md.

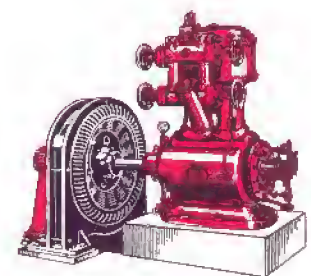
From	Hours	Minutes
Montreal	4	25
Buffalo	3	25
Boston	3	35
New York	2	25
Philadelphia	1	50
Washington		35
Norfolk	2	25
Miami	4	25
Tampa	4	10
New Orleans	5	20



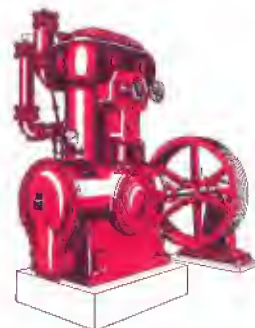
"ECLIPSE" Compressor



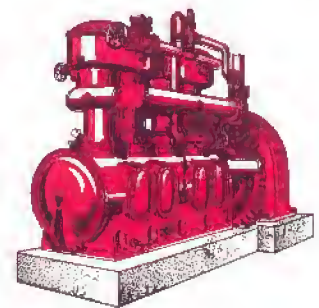
Combined Ammonia Unit



Two-Cylinder Ammonia Compressor



Booster Compressor



Large 4-Cylinder Compressor



Standard Freon Unit



Accessible-Hermetic Unit

ACKNOWLEDGMENTS

Thanks are extended to the many friends who have assisted in preparing this history. Generous cooperation was given by Elmer Ritzman, Enola, Penna., and G. A. Frick, editor of the Frick Magazine, as well as by the publishers of other journals in various fields. Reference was made frequently to the historical writings of J. H. Stoner. Valuable pictures of early farm scenes were supplied by Bert S. Gittins of Milwaukee, acting for the Farm Equipment Institute of Chicago. Drawings of early refrigerating systems were furnished by the National Association of Ice Industries, at Washington. The photograph of the Cumberland Valley was supplied by Geo. F. Johnson, Pennsylvania Agricultural Extension Service, State College, Penna. Other illustrations were made available by the U.S. Navy, The American Ice Co., the Weber Showcase and Fixture Co., and by many Frick distributors, suppliers, and customers.