

# Photographs



cta

# 7000-7019

Chicago Transit Authority  
General Operations Division  
Engineering Department  
Equipment Engineering  
June 1980





## CHICAGO TRANSIT AUTHORITY

## BUS SERIES 7000 - 7019

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CHICAGO TRANSIT AUTHORITY  
GENERAL OPERATIONS DIVISION  
ENGINEERING DEPARTMENT  
EQUIPMENT ENGINEERING

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7000

-7019



CHICAGO TRANSIT AUTHORITY

BUS SERIES 7000 - 7019

CTA SPECIFICATION ABC - 1

INFORMATION PERTAINING TO AIR-CONDITIONED ARTICULATED COACHES

Bus Manufacturer	AM General Corporation Machinen Fabrik Augsburg Nurnberg (MAN)
Model Number	SG 220-10255
Seating Capacity	64 Passengers
Number of Coaches	20
Date Received	March 1979
Bid Price	\$171,648.55 Per Coach
Height	124-1/8"
Width	102"
Length over Bumpers	660-5/8"
Horizontal Hinge Angle	31°
Vertical Hinge Angle	11°
Body Turning Radius	41.41
Weight	36,400 lbs.
Wheel Base	
Front Axle to Drive Axle	222-7/16"
Drive Axle to Trailer Axle	255-1/2"
Body Overhang Including Bumper	
Front	105"
Rear	77-3/8"
Wheelhousings	Stainless Steel
Stepwells	Stainless Steel



INFORMATION PERTAINING TO AIR-CONDITIONED ARTICULATED COACHES - Continued

Rear Axle (Trailer)

Manufacturer MAN A.G. West Germany

Model V7-70

Drive Axle Final Ratio 5.22.16

Engine (Coach)

Manufacturer MAN A.G. West Germany  
Horizontal Six Cylinder  
in Line Turbo Charged

Model D 2566 MTUM/US

Horsepower Net 280 at 2200 RPM

Diesel Fuel Capacity 100 Gal.

Alternator Delco Remy Series 50 DN

Type 600, 28V/270Amp

Air Compressors

Manufacturer MAN

Type (18.3 cu. in.) One Cylinder  
Water-Cooled, 2 Compressors  
Total CFM 26.8 at 2000 RPM

Power Steering

Manufacturer ZF 8065

Type Gear

Relief Pressure 1425 psi

Transmission with Two Stage Retarder

Manufacturer Renk

Model 874

Auxiliary Heater

Manufacturer Webasto



INFORMATION PERTAINING TO AIR-CONDITIONED ARTICULATED COACHES - Continued

Tires

Manufacturer	Goodyear
Type	Tube, Bias Ply
Size	Hi-Miler 12.0x22.0 G 8 Series, 55 MPH Rating

Air-Condition Drive Engine

Manufacturer	Perkins
Type	Diesel 4 Cylinder in Line 4.1254
Horsepower	SAE Net 62 3000 RPM
Constant Speed	2200 RPM

A/C Compressor

Manufacturer	Trane, Inc.
Model	GB

Refrigerant

Freon 22

Coach Capacity

37 lbs.

A/C Alternator

Manufacturer	Niehoff
Type	N 1302-1

Batteries (Main)

Coach	Mfg. Gould 12 Volt
Model	Solid Cover

Batteries A/c

Manufacturer	Delco
Type	Maintenance Free 12 Volt

Lighting Interior

Fluorescent

Manufacturer	Luminator
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Ballast	Triad-Utrad
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Lens Material	Polycarbonate
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ARTICULATED PHOTOS - SERIES 7000 - 7019

COMPONENT INDEX

EXTERIOR PHOTOS AND VARIOUS COMPONENTS AS VIEWED WITH ACCESS DOORS OPEN

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- 1 Front view of coach with driver's heater access door closed
- 2 Front view with heater access door open
  - 1) Alcohol evaporator
  - 2) Driver's heater coolant return line
  - 3) Driver's heater coolant supply line
  - 4) Heater core air bleed valve
  - 5) Transmission kickdown switch assembly
  - 6) Accelerator linkage bell crank
  - 7) Service brake application valve with micro switches to actuate transmission retarder
  - 8) Power steering gear assembly
- 3 Left front corner headlight door open
  - 9) A/C hour meter
  - 10) A/C ambient temperature thermostat switch
- 4 Left headlight with resistor
  - 11) Resistor to reduce voltage from 24 volts to 12 volts
- 5 Enlarged view left side driver's heater door open Accelerator interlock cylinder (not shown) installed behind and bottom of bell crank #6
- 6 Enlarged view rightside driver's heater door open
- 7 Rear view of coach A/C access door closed
- 8 Rear view A/C door open
- 9 Left side oblique view
- 10 Left side view entire coach
- 11 Left side view entire coach in left turn condition
- 12 Side view left front main electrical junction box door closed





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13 Side view left front main electrical junction box door open

14 Enlarged view main electrical junction box

- 13) Transmission printed circuit control box
- 14) Turn indicator unit
- 15) Engine hot coolant warning switch
- 16) Drivers air tube from blower in heat duct  
to console with adjustable air outlet

Relay Identification Left to Right

- a) Turn signal
- b) Turn signal
- c) Alternator discharge warning light
- d) 12-volt radio circuit
- e) Horn
- f) Reverse lamps
- g) Turn signal indicator
- h) Interior lighting
- i) Interior lighting
- j) Coolant heater (auxiliary)
- k) Spring brake interlock
- l) Spring brake interlock
- m) Engine fast idle
- n) Passenger signal

Left Bottom Corner

- o) Fare Box
- p) Driver's blower
- q) Entrance Door
- r) Public address
- s) Radio

15 Left side view of battery, voltage regulator and auxiliary coolant heater compartment access doors closed

16 Left side view engine oil dip stick and filler pipe access door open

- 17) Oil filler pipe
- 18) Engine dip stick

17 Enlarged view of engine oil filler pipe and dip stick

18 Voltage regulator compartment enlargement

- 19) Battery equalizer
- 20) Voltage regulator
- 21) Webasto auxiliary coolant heater control relays  
and bi-metal switches



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- 18 Voltage regulator compartment enlargement - cont'd.
- 22) Engine starting motor relay
  - 23) Heater box blower motor 160 amp master circuit breaker
    - aa) 12 volt radio circuit breaker
    - bb) Coach main circuit breaker
- Relays Left to Right
- 1) Front pump
  - 2) Rear pump
  - 3) A/C
  - 4) Start internal
  - 5) Engine Stop
  - 6) Stop light
- Circuit Breakers Beneath Relays Left to right
- 1) Front pump
  - 2) Rear pump
  - 3) Engine cold start
  - 4) Engine compartment lights
  - 5) Fare box
- 19 Side view battery, voltage regulator and auxiliary heater compartment doors open
- 24) Webasto heater controls
  - 25) Combustion Chamber with water jacket
  - 26) Fuel oil filter
- 20 Enlarged view auxiliary heater
- 21 Left side bellows coach straight position
- 22 Left rear A/C unit air inlet
- 23 Right side entire view of coach
- 24 Right side oblique view
- 25 Right side bellow coach straight ahead
- 26 Right side of coach in left turn position
- 27 Left side bellows coach in right turn position
- 28 Left side coach in right turn position



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- 29 Right side bellows coach in right turn position
- 30 Right side bellows coach in right turn position
- 31 Entrance doors closed
- 32 Entrance doors open
- 33 Stepwell entrance doors open
- 34 Right side view of surge tank and engine compartment doors closed
- 35 Engine compartment door open
- 36 Enlarged photo engine compartment door open
  - 27) Power Steering oil lines from reservoir
  - 28) Engine emergency shut down fuel solenoid
  - 29) Manual fuel pump
  - 30) Engine fuel filters
  - 31) Engine air intake to filters
  - 32) Engine air filters
  - 33) Engine air filter restriction indicator
- 37 Surge tank door open
- 38 Enlarged view surge tank door open
  - 34) Power steering oil reservoir
  - 35) Engine coolant filler pipe
  - 36) Engine coolant automatic pressure relief valve
- 39 Exit doors closed
- 40 Exit doors open
- 41 Exit door stepwell doors open
- 42 Right rear A/C engine air intake and A/C compressor access door closed
- 43 A/C compressor access door open
- 44 Enlarged view of A/C compressor door open right side
  - 37) Location of engine air cleaner
  - 38) A/C compressor
  - 39) A/C engine final fuel filter
  - 40) A/C compressor high head pressure switch
  - 41) Batteries for A/C



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45 Enlarged view fuel tank filler pipe right side of trailer

STRUCTURE PHOTOS

- 46 Front suspension assembly
- 47 Chassis structure (partial)
- 48 Completed chassis structure prior to collector installation
- 49 Top view structure farebox and stepwell area
- 50 Entrance door stepwell structure
- 51 Farebox and stepwell
- 52 Side structure prior to collector installation
- 53 Roof structure
- 54 All component structures in collector for welding
- 55 Left front wheelhousing structure
- 42) Front axle brake reservoir
- 43) Front axle brake reservoir
- 44) Drive axle brake reservoir
- 56 Right rear tractor chassis structure
- 45) Leveling valve
- 57 Left rear tractor chassis structure
- 46) Leveling valve
- 58 Drive axle wheelhousing structure
- 59 Tractor body structure completed welding
- 47) Heater return line from trailer
- 48) Heater supply line to trailer
- 60 Left side structure view welded completely





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A/C ASSEMBLY BEFORE AND AFTER INSTALLATION

- 61 Bulkhead side before installation
- 49) A/C alternator
  - 50) A/C alternator voltage regulator
  - 51) A/C engine fuel pump
  - 52) A/C refrigerant hot gas by pass valve
  - 53) Primary fuel filter
  - 54) A/C engine air filter restriction indicator
- 62 Enlarged view of Items 51-52-53
- 63 Enlarged view of Items 49-50-54 A/C engine
- 64 Enlarged view A/C alternator voltage regulator
- 65 Enlarged view of A/C compressor
- 66 A/C engine coolant and refrigerant condenser cores
- 55) Condenser core
  - 56) Coolant core
- 67 Coolant and condenser core
- 68 Air inlet side of coolant and condenser cores
- 69 A/C control electrical box
- 57) Low water engine shut down switch
  - 58) Speed sensor
  - 59) 60 second time delay
  - 60) CR2 solenoid switch
  - 61) CR3 solenoid switch
  - 62) PR2 solenoid switch
  - 63) ARL relay
  - 64) CRL relay
  - 65) CR4 relay
  - 66) CR5 relay
  - 67) CR6 relay
  - 68) Ten second time delay
- 70 A/C unit assembly installed and access door open
- 71 A/C unit coolant temperature, and engine oil pressure gauge
- 69) Coolant automatic pressure relief valve
  - 70) Coolant reservoir fill cap



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DRIVE AXLE AND SUSPENSION

- 72 Axle installed in suspension frame
- 73 Axle with brake chambers
- 71) Air line to service brake chamber  
72) Park brake release air line  
73) Air line to service brake with air psi check
- 74 Front view drive axle
- 75 Drive axle with air valves
- 74) Pressure protection valve  
75) Drive shaft U joint  
76) Service brake stoplight switch
- 76 Drive axle brake chambers
- 77) Service brake chamber  
78) Spring applied park brake chamber
- 77 Enlarged view brake chambers and air lines
- 78 Drive axle suspension frame air spring beam
- 79) Left side leveling valve link  
80) Right side leveling valve link
- 79 Right side suspension air spring, shock absorber, leveling valve and link
- 81) Shock absorber
- 80 Left side suspension air spring, shock absorber, and leveling valve link
- 82) Shock absorber

STEERING AXLES TRACTOR FRONT AND TRAILER

- 81 Installation lower control arms
- 82 Tractor left side front view of suspension
- 83) Steering drag link
- 83 Tractor left side rear view of suspension
- 84 Trailer left side rear view of suspension



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STEERING AXLES TRACTOR FRONT AND TRAILER - Cont'd.

- 85 Trailer left side front view of suspension
- 86 Left side trailer air suspension reservoir
- 84) Air reservoir
- 87 Trailer right side front view of suspension
- 88 Trailer right side rear view of suspension
- 85) Leveling valve
- 86) Leveling valve link
- 89 Trailer right side air suspension reservoir
- 87) Air reservoir
- 90 Tractor right side rear view of suspension
- 88) Leveling valve
- 89) Leveling valve link
- 91 Tractor right side front view of suspension
- 92 Enlarged view upper and lower control arms right side rear view of tractor
- 93 Enlarged view power steering unit chassis mounted
- 90) Power steering unit
- 91) Quick change coupling power steering pressure check point
- 92) Park brake warning light switch
- 93) Front air pressure warning indicator light switch
- 94) Rear air pressure warning indicator light switch

INTERIOR OF COACH BEING MANUFACTURED

- 94 Top view of horizontal hinge angle warning switch
- 95) Switch with ramps
- 95 Interior ceiling driver's area
- 96) Driver's light
- 96 Interior of coach before roof insulation



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INTERIOR OF COACH BEING MANUFACTURED - Cont'd.

- 97 Tractor ceiling before insulation
- 98 Trailer roof with insulation and melamine ceiling panels installed
- 99 Interior of coach with ceiling panels, floor covering and seat rails installed both floor and wall
- 100 Left side tractor shock bracket, and access holes for removing air suspension nuts
- 97) Shock bracket  
98) Access holes
- 101 Right side drive axle shock bracket
- 102 Right side tractor shock bracket, and access holes for removing air suspension nuts
- 103 Left side drive axle shock bracket
- 104 Trailer heater box left side with inlet and outlet openings
- 101) Fresh and recirculated air inlet
- 105 Access door to fuel tank fittings and valves
- 102) Fuel tank access
- 106 Location of driver's air blower behind console
- 103) Exact location with wire

TOP VIEW OF ENGINE, TRANSMISSION, HEATER BOXES AND FUEL TANK BEFORE PLYWOOD FLOOR INSTALLATION

- 107 Enlarged view front of engine and fan shroud
- 104) Belt driven air compressor  
105) Belt tension adjusting idler pulley  
106) Engine coolant fan  
107) Radiator and fan shroud
- 108 Top view of air compressors and piping
- 108) Gear driven air compressor  
00) Power steering pump





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TOP VIEW OF ENGINE, TRANSMISSION, HEATER BOXES AND  
FUEL TANK BEFORE FLOOR COVERING - Cont'd.

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- 109 Top rear view of engine
- 109) Engine crankcase breather
  - 110) Engine oil pressure, coolant temperature gauge and compartment light switch
  - 111) Engine shutdown cylinder
  - 112) Final engine fuel filter
  - 113) Engine fuel injection pump
  - 114) Fuel lines to engine cold start plugs
- 110 A/C refrigerant flex line routing over turbo charger both pressure and suction, to tractor evaporators
- 115) Lines pressure and suction
- 111 Front to rear view of engine assembly
- 112 Rear to front view of transmission and engine assembly
- 116) Transmission breather and fill cap
  - 117) Transmission oil dip stick to check level
- 113 Top view transmission
- 118) Transmission oil filter
- 114 Heater box installation left side trailer
- 115 Top and side view heater box with electrical connections for blower motor
- 116 Fuel tank
- 117 Fuel lines at trailer bulkhead for A/C engine
- 119) Fuel supply line shut off valve
  - 120) Fuel return line shut off valve
- 118 Muffler location
- 121) Muffler heat baffle
- 119 Heater lines and radiator fan shroud
- 120 Top view engine coolant auxiliary heater
- 121 Heater box right side trailer



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TOP VIEW OF ENGINE, TRANSMISSION, HEATER BOXES AND  
FUEL TANK - Cont'd.

- 122 Refrigerant lines and trailer steering axle drag link
- 122) Drag link (trailer)
  - 123) A/C suction line
  - 124) A/C pressure line
  - 125) Cover trailer modulating valve
- 123 Refrigerant suction and pressure line routing in tractor just before engine compartment
- 124 Air lines in tractor and rear axle suspension frame wishbone
- 125 Air reservoirs left side tractor and driver's heater lines
- 126 Air reservoirs right side of tractor and valves
- 126) Tractor front axle brake load proportioning valve
  - 127) Pressure protection valve
  - 128) Automatic moisture ejecting valve
  - 129) Four circuit protection valve
  - 130) Check valve one way
  - 131) Supply air reservoir 143 psi
  - 132) Accessory reservoir
  - 133) Drive axle brakes

UNDER CARRIAGE VIEW OF AIR RESERVOIRS AND VALVES

- 127 Drive axle suspension frame wishbone and tractor jacking pads
- 134) Hinge angle brake switch
  - 135) Pressure limiting valve
  - 136) Wishbone
- 128 Tractor water modulating valve
- 137) Modulating valve
- 129 Blower motor speed control regulator
- 138) Pressure regulator
- 130 Heater box cage fan



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UNDER CARRIAGE VIEW OF AIR RESERVOIRS AND VALVES - Cont'd.

- 131 Trailer air reservoir
- 139) Trailer axle brake load proportioning valve
  - 140) Brake air reservoir
  - 141) Trailer suspension air reservoir
  - 142) Accessory air reservoir
- 132 Trailer heater box and marine pump
- 143) Marine pump motor
  - 144) Bottom of heater box
  - 145) Heater box blower motor
- 133 Trailer water modulating valve
- 146) Modulating valve
  - 147) Fuel tank
- 134 Trailer steering axle reversing lever
- 148) Reversing lever
- 135 Heater box with all lines connected
- 149) Heater lines supply and return
  - 150) A/C refrigerant lines suction and pressure
- 136 Turntable area
- 151) Cable with turn buckle for securing bellows to coach and trailer
- 137 Supply air reservoir
- 152) Manual drain valve
- 138 Structure in fuel tank area
- 139 Air compressor unloader valve
- 153) Muffler location
  - 154) Unloader valve, 143 psi
- 140 Enlarged view hinge angle brake switch incorporating stoplight switch
- 155) Stoplight switch



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UNDER CARRIAGE VIEW OF AIR RESERVOIRS & VALVES - Cont'd.

- 141 Brake valves at rear axle
- 156) Quick release relay valve right side
  - 157) Quick release relay valve left side
  - 158) Trailer brake control valve
  - 159) Drive axle brake load proportioning valve

- 142 Tractor right side air reservoir front view
- 160) Reusable air filter in housing
  - 161) Pressure charging valve (adjustable)

- 143 Tractor right side air reservoirs rear view

TURNTABLE AREA

- 144 Attaching table to trailer
- 145 Horizontal hinge angle switches installed
- 146 Attaching table to tractor
- 147 Top view with linkage
- 162) Rod assembly locating
  - 163) Arm locating
- 148 Turntable top view hinge angle switches installed
- 164) Warning and brake application ramps
  - 165) Warning switch
  - 166) Brake application switch
  - 167) Ball joint assembly carrier
- 149 Turntable top view trailer to tractor
- 150 Electrical junction box for electrical connections
- 168) Junction box
- 151 Left side view of engine
- 169) Battery box
  - 170) Voltage regulator compartment
- 152 Radiator with air baffles attached to shroud





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UNDER CARRIAGE VIEW ENGINE, EXHAUST SYSTEM AND  
TRANSMISSION

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- 153      Enlarged view left front engine
- 171) Alternator
  - 172) 105° temperature switch
- 154      Rear view transmission bottom
- 173) Right angle speedometer cable drive
  - 174) Transmission oil heat exchanger
  - 175) Transmission
- 155      Enlarged view bottom right side of engine
- 176) Oil pressure gauge switch
  - 177) Starter protection oil switch
  - 178) Engine turbo charger
  - 179) Engine oil heater exchanger
  - 180) Engine starting motor
- 156      Engine exhaust muffler
- 181) Muffler
  - 182) Tailpipe
- 157      Left side view transmission
- 183) Air compressor unloader valve muffler
- 158      Flex exhaust pipe right side of engine
- 184) Service brake stoplight switch
- 159      Engine turbo charger rear view
- 185) Engine cold start plugs
- 160      Enlarged view engine oil heat exchanger, starter, oil protection  
          switch and oil pressure gauge switch
- 161      Switches in coolant pipe right front side of engine
- 186) Coolant temperature gauge switch
  - 187) Radiator coolant fan control switch
  - 188) Coolant overheat warning switch
  - 189) Engine thermostat
  - 190) Engine compartment light
  - 191) Engine oil filter



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UNDER CARRIAGE VIEW ENGINE, EXHAUST SYSTEM  
AND TRANSMISSION - Cont'd.

- 162 Left front and side view of engine  
163 Articulation bellows laced

INTERIOR VIEWS COMPLETED COACH

- 164 Recirculated air inlet right side trailer  
192) Grad-u-stat
- 165 Turntable front to rear  
166 Turntable rear to front  
167 Ceiling P.A. speakers  
168 Seating rear to front  
169 Rear route sign in trailer  
193) Sign curtain control motor  
194) Switch for sign motor
- 170 Seating front to rear  
171 Settee seat trailer  
172 Settee seat raised for A/C unit access  
173 Enlarged view emergency escape hatch in roof  
174 Emergency escape hatch open  
175 Five position roof ventilating hatch closed  
176 Ventilating hatch in one of open positions  
177 Shock cover and air suspension nut removal in heat duct  
195) Suspension nut under cover  
196) Shock bracket cover
- 178 Left rear suspension nut access cover in heat duct installed



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INTERIOR VIEWS COMPLETED COACH - Cont'd.

- 179 Right rear suspension nut access cover installed
- 180 Seat installation in turntable area
- 181 Cross seat pedestals left side front to rear
- 182 Seat mounting on wheelhousing
- 183 Enlarged view seat mounting on wall track
- 184 Number one cross seat tractor right side rear view
- 185 Number one cross seat tractor right side front view
- 186 Seat mounted on water box which covers surge tank and power steering oil reservoir
- 187 Right front of coach interior with rear view mirror front stepwell convex mirror and mirror to view exit door stepwell mirror
- 188 Drivers rear view mirror, front destination sign door closed, with stop request sign, and air vents open
- 189 Front destination sign door open
- 197) Curtain sign motor
- 190 Left side view front destination sign door open
- 198) Voice page speaker
- 191 Right side front destination sign door open
- 199) Door master switch
- 192 Side destination sign
- 200) Passenger chime signal switch
- 193 Right side entrance door operating equipment compartment
- 194 Entrance compartment door open
- 201) Stepwell and curb light
- 202) Mag door control valve
- 203) Stepwell and curb lights
- 204) Door operating cylinder
- 205) Emergency door opening air release valve



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INTERIOR VIEWS COMPLETED COACH - Cont'd.

- 195 Exit door stepwell mirror  
206) Passenger chime
- 196 Exit door cam switch one for each door leaf  
207) Cam switch
- 197 Exit door operating equipment compartment door closed  
208) Passenger signal light indicating doors unlocked
- 198 Exit door switch identification  
209) Forward door operating cylinder  
210) Sensitive edge pressure switch  
211) Sensitive edge switch  
212) Stepwell and curb light switch  
213) Mag valve  
214) Stepwell and curb light switch  
215) Aft door operating cylinder  
216) By-pass relay  
217) Door opening hold relay  
218) Touch bar relay  
219) Sensitive edge alarm relay  
220) Alarm cut-out relay  
221) Sensitive edge relay  
222) Door fully open relay  
223) Door fully open relay  
224) Emergency door opening release valve
- 199 Rear stepwell
- 200 Exit door forward barrier
- 201 Entrance door stepwell
- 202 Entrance door stepwell and farebox mounting area
- 203 Entrance door stepwell, driver's heater control and route number sign assembly
- 204 Enlarged view of route number sign assembly
- 205 Enlarged view route number sign in position to set
- 206 Driver's ceiling area with driver's light
- 207 Enlarged view driver's heater control levers





INTERIOR VIEWS COMPLETED COACH - Cont'd.

- 208 Enlarged view of brake and accelerator pedals  
225) Park brake emergency release valve
- 209 Enlarged view of driver's console  
226) Silent alarm switch  
227) Entrance door dump air valve  
228) Fire extinguisher bracket  
229) Exit door sensitive edge alarm buzzer  
230) Turn indicator switch
- 210 Fire extinguisher installed
- 211 Top view of driver's console  
231) Engine emergency shutdown switch  
232) A/C engine start switch  
233) Driver's ceiling light switch  
234) Interior light switch  
235) Passenger stop signal switch  
236) Engine fast idle switch  
237) Exit door open by-pass switch  
238) Entrance and exit door leaf control switch  
239) Auxiliary heater indicator light  
240) Warning buzzer for engine oil pressure, low  
air pressure, engine overheat and hinge angle  
241) Park brake release valve  
242) Driver's adjustable air flow ball  
243) Entrance and exit door control valve
- 212 Partial view instrument panel
- 213 Full view driver's area including headlight dimmer switch and  
speedometer cable  
244) Adjustable air flow heat duct  
245) Head lamp dimmer switch  
246) Speedometer cable
- 214 Enlarged view instrument panel
- 215 Top view park brake emergency release valve location
- 216 Radio box closed
- 217 Radio box open with radio equipment installed
- 218 Radio head behind and above driver left side



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INTERIOR VIEWS COMPLETED COACH - Cont'd.

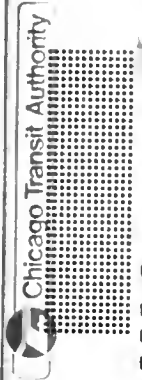
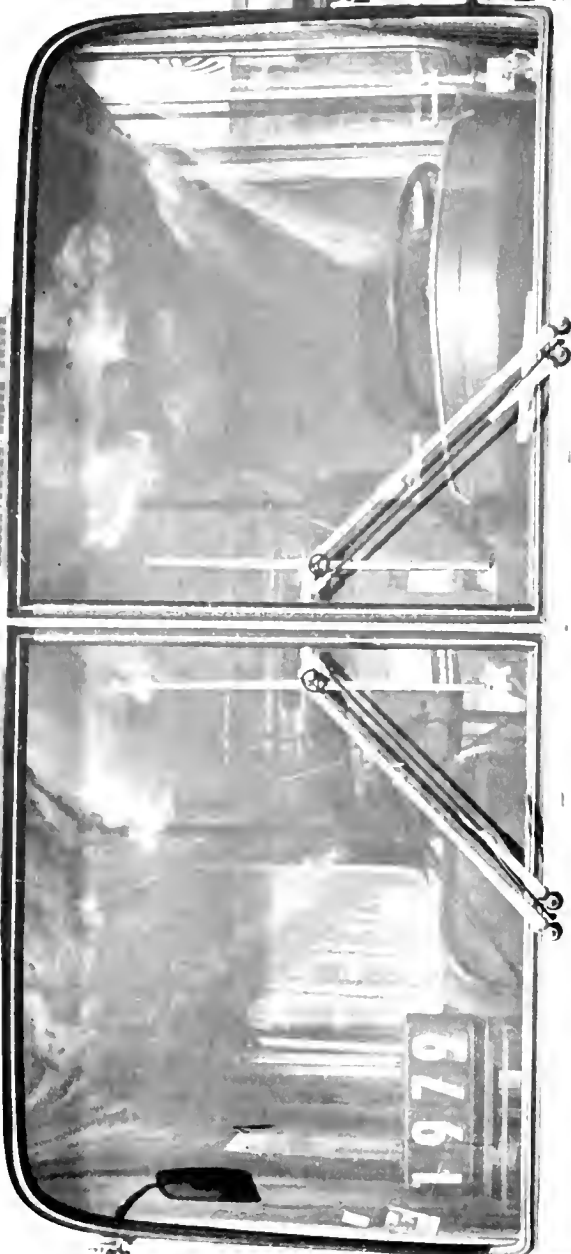
- 219 Trailer left side recirculated air inlet
- 220 Louvered HVAC air outlet left side trailer
- 221 Turntable seat left side with coach in left turn condition
- 222 Bellows top and side views right side of coach in left turn condition
- 223 Back of driver's barrier
- 224 Emergency opening instructions for side sash
- 225 Emergency opening lock handle in open position
- 226 Driver's air blower installation location behind driver's barrier in heat duct
- 227 Driver's air blower assembly location with duct in place



South Terminal

1979-1981

1982-1984

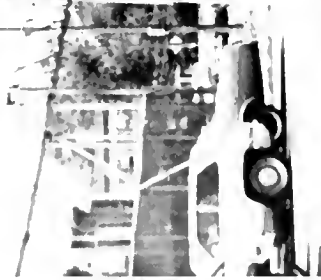


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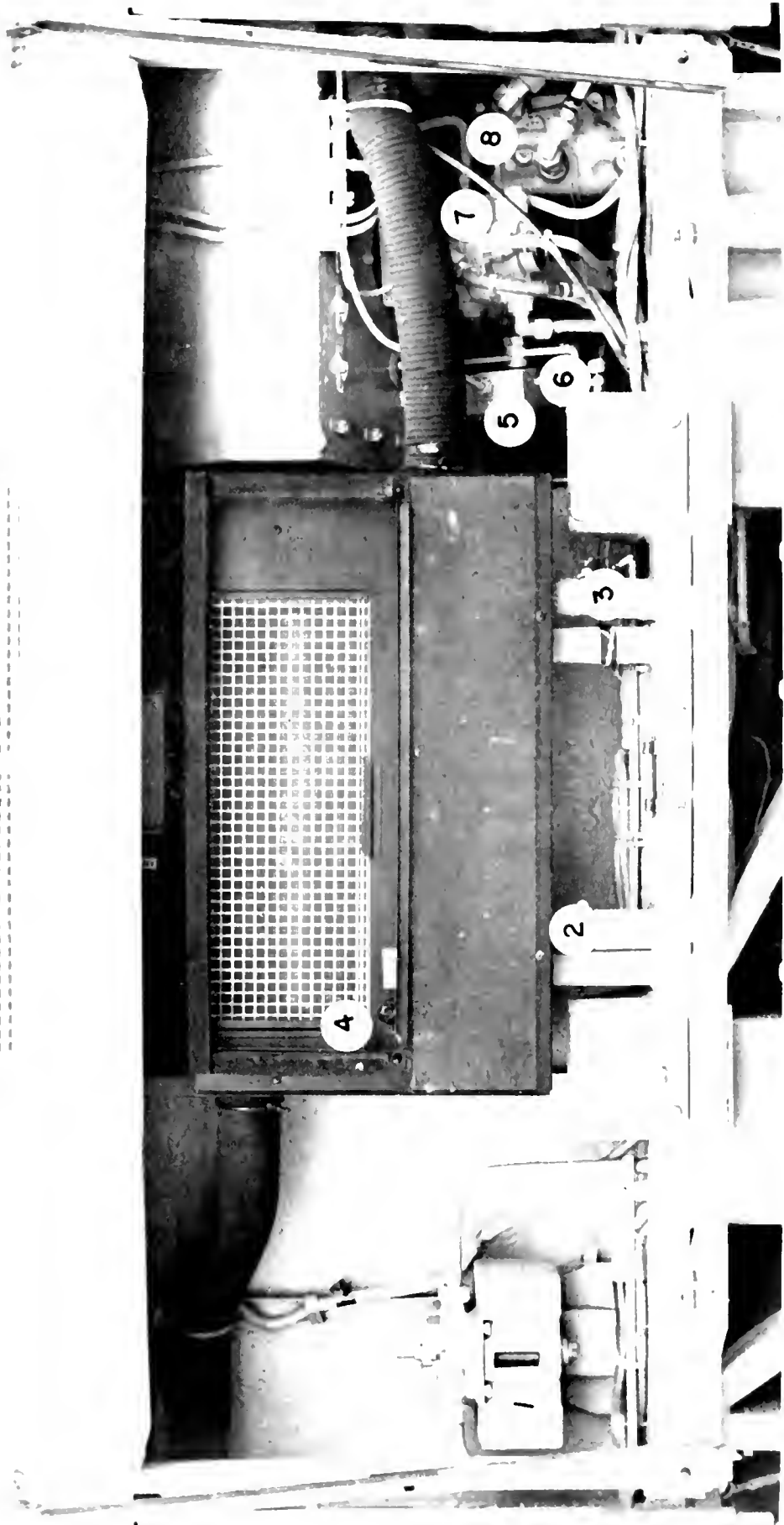
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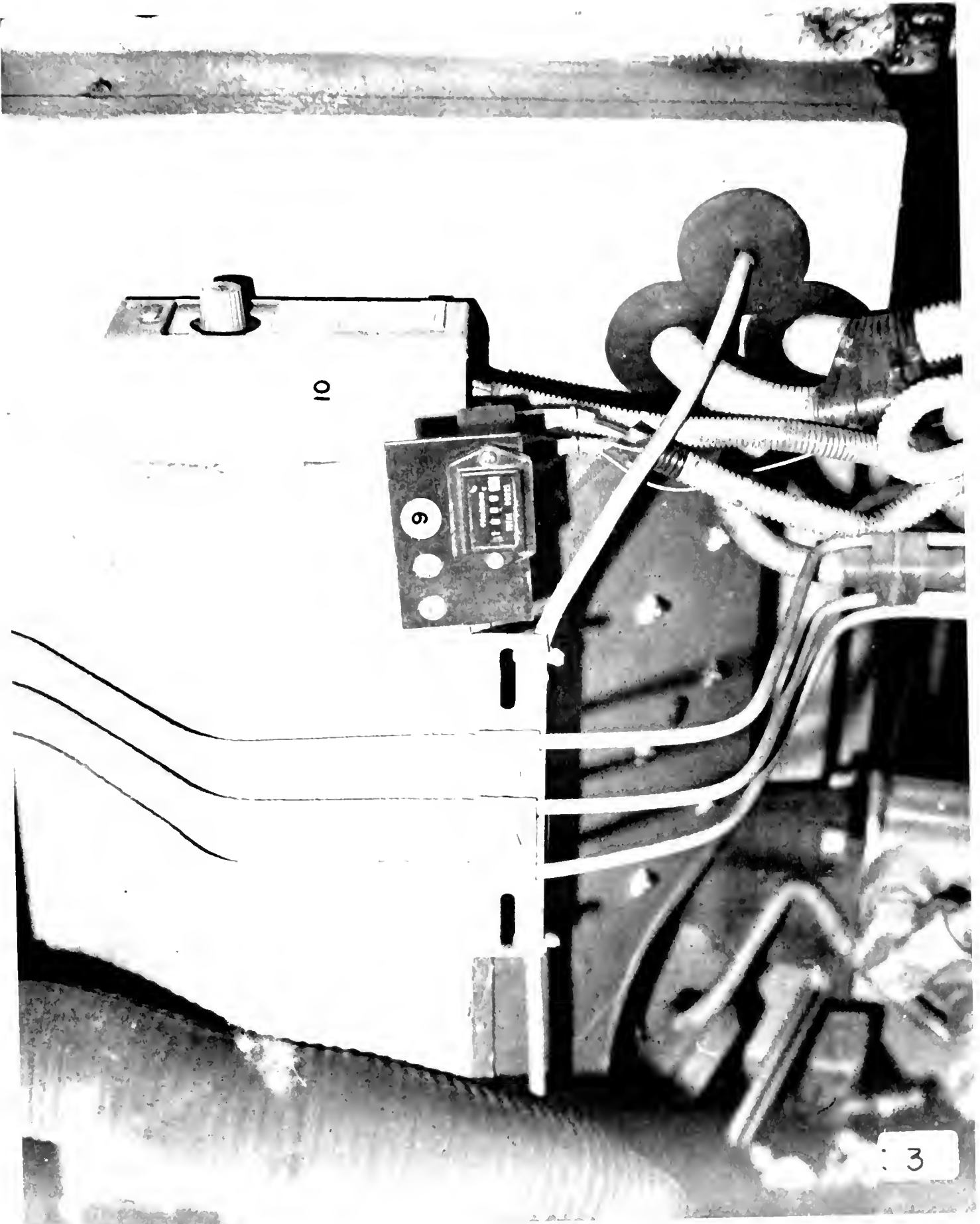












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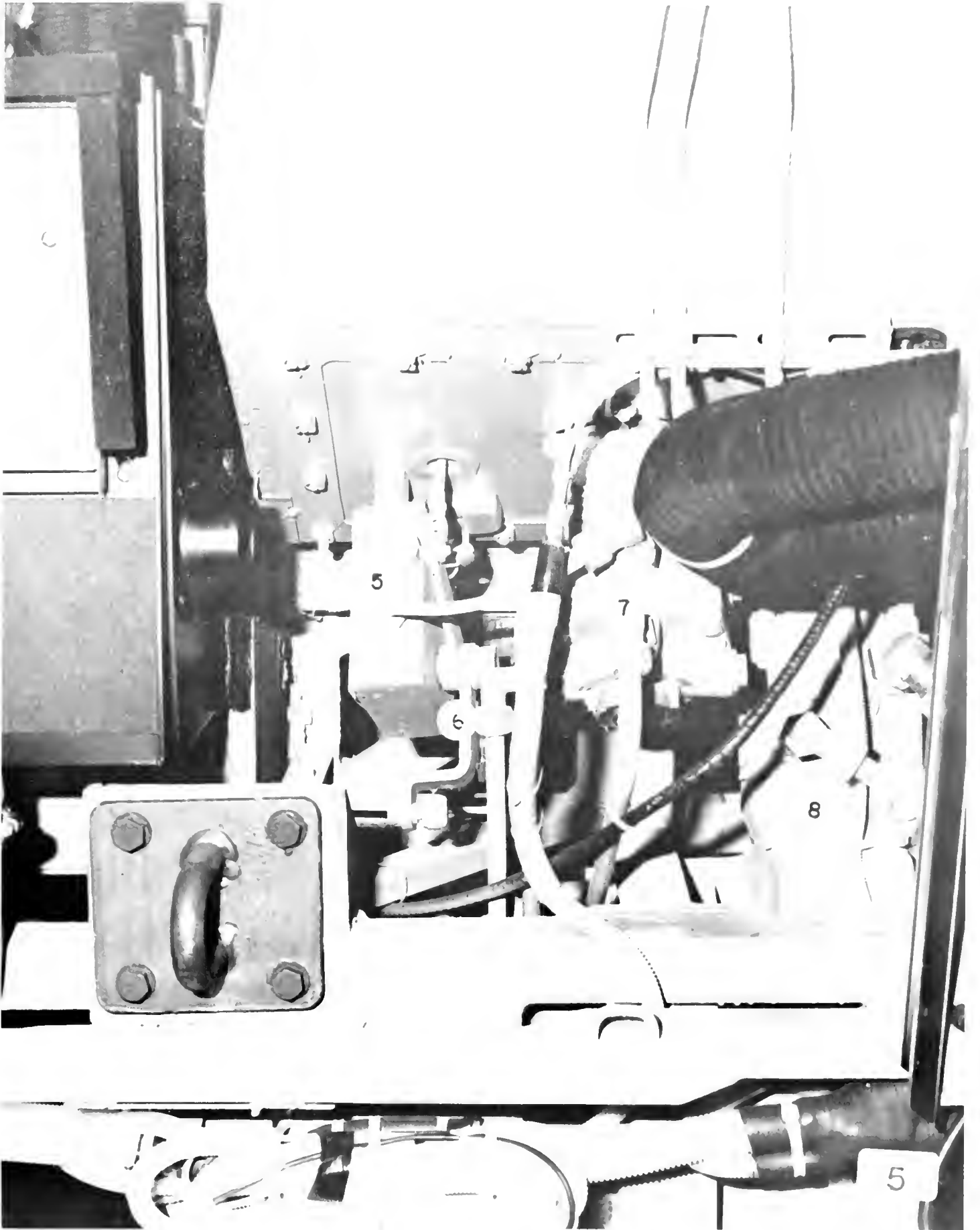
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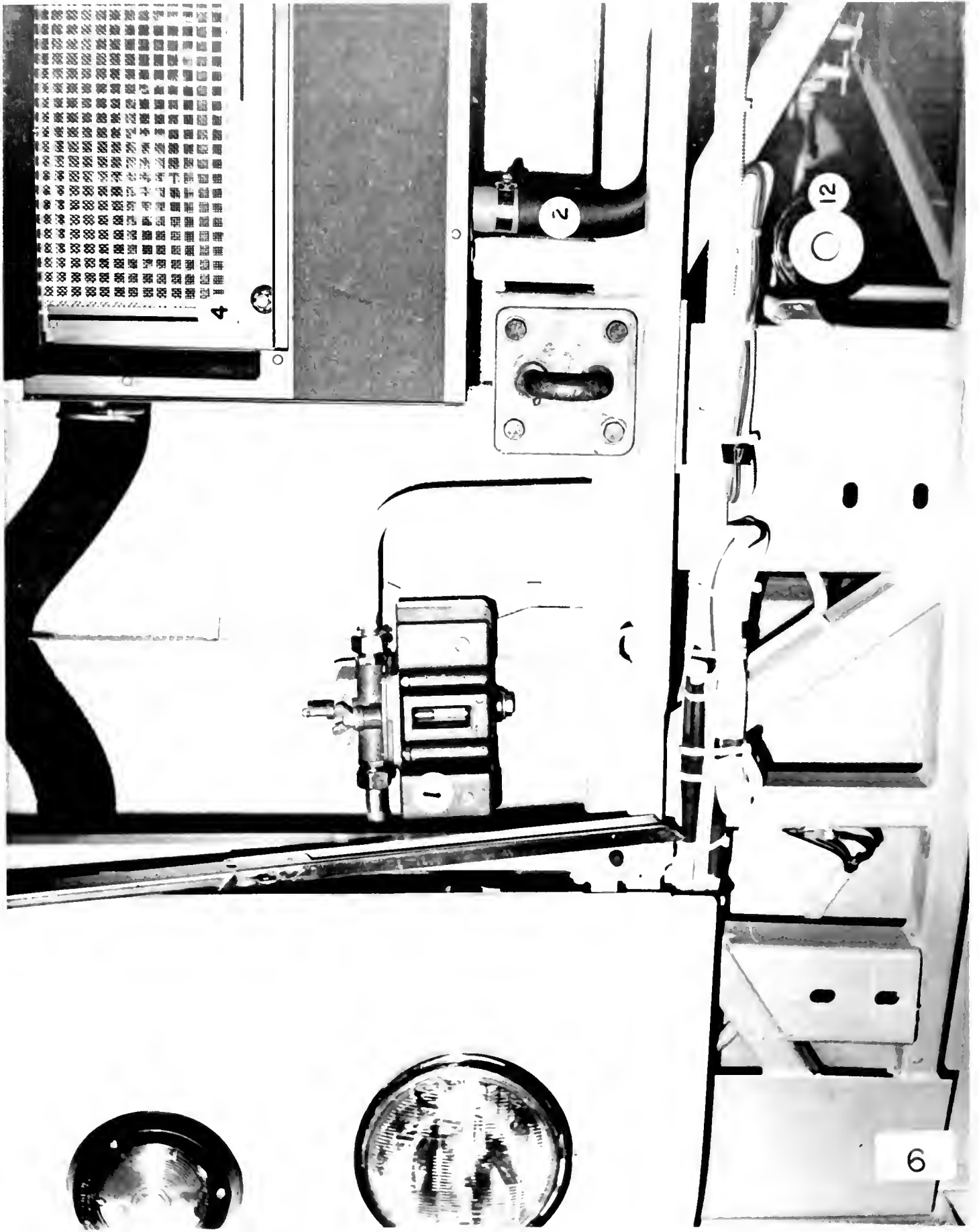












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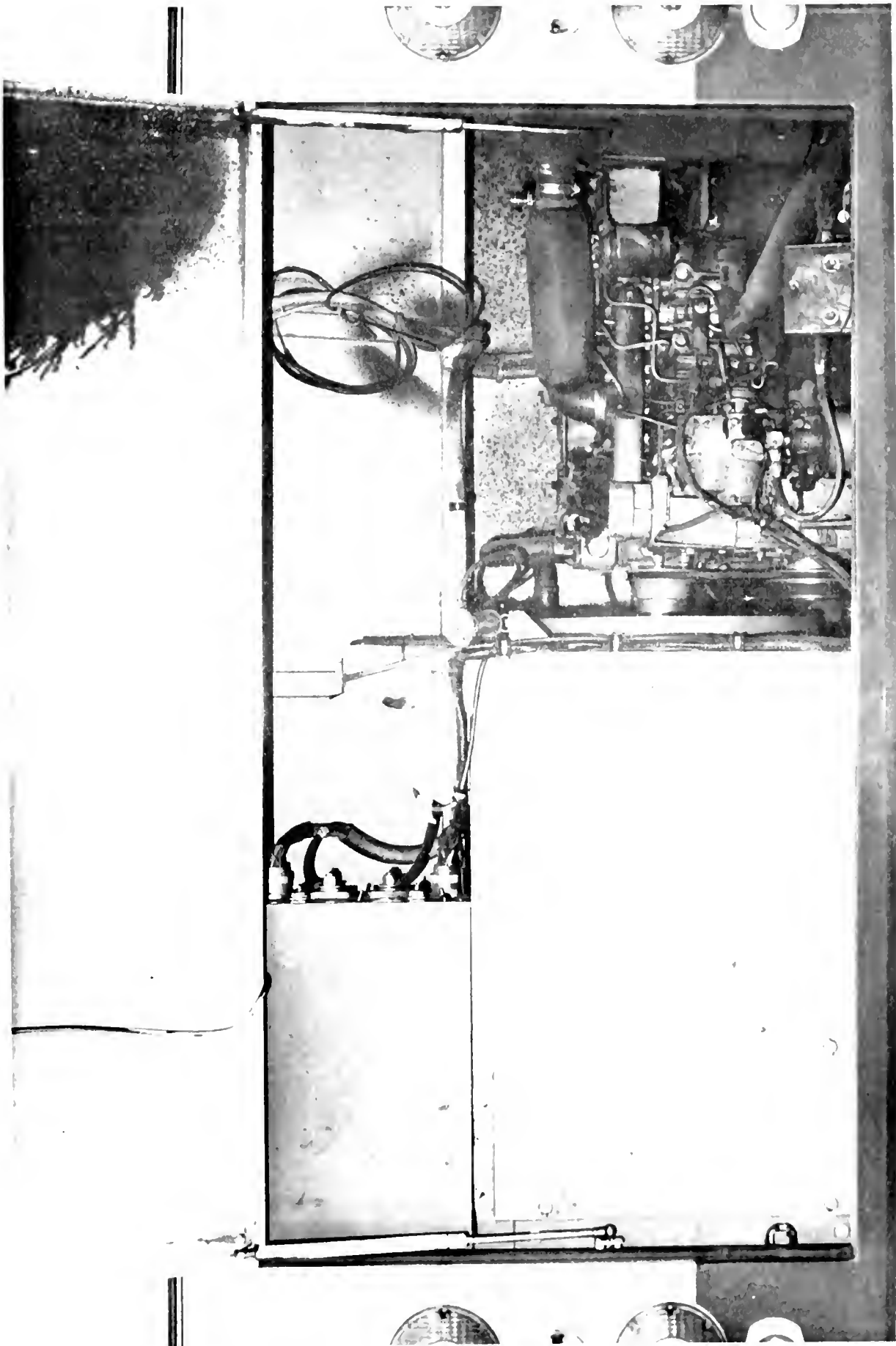


Chicago Transit Authority

Every Sunday and Holiday  
RTA/CTA **Culture buses**  
Three routes from Art Institute

M 15 478







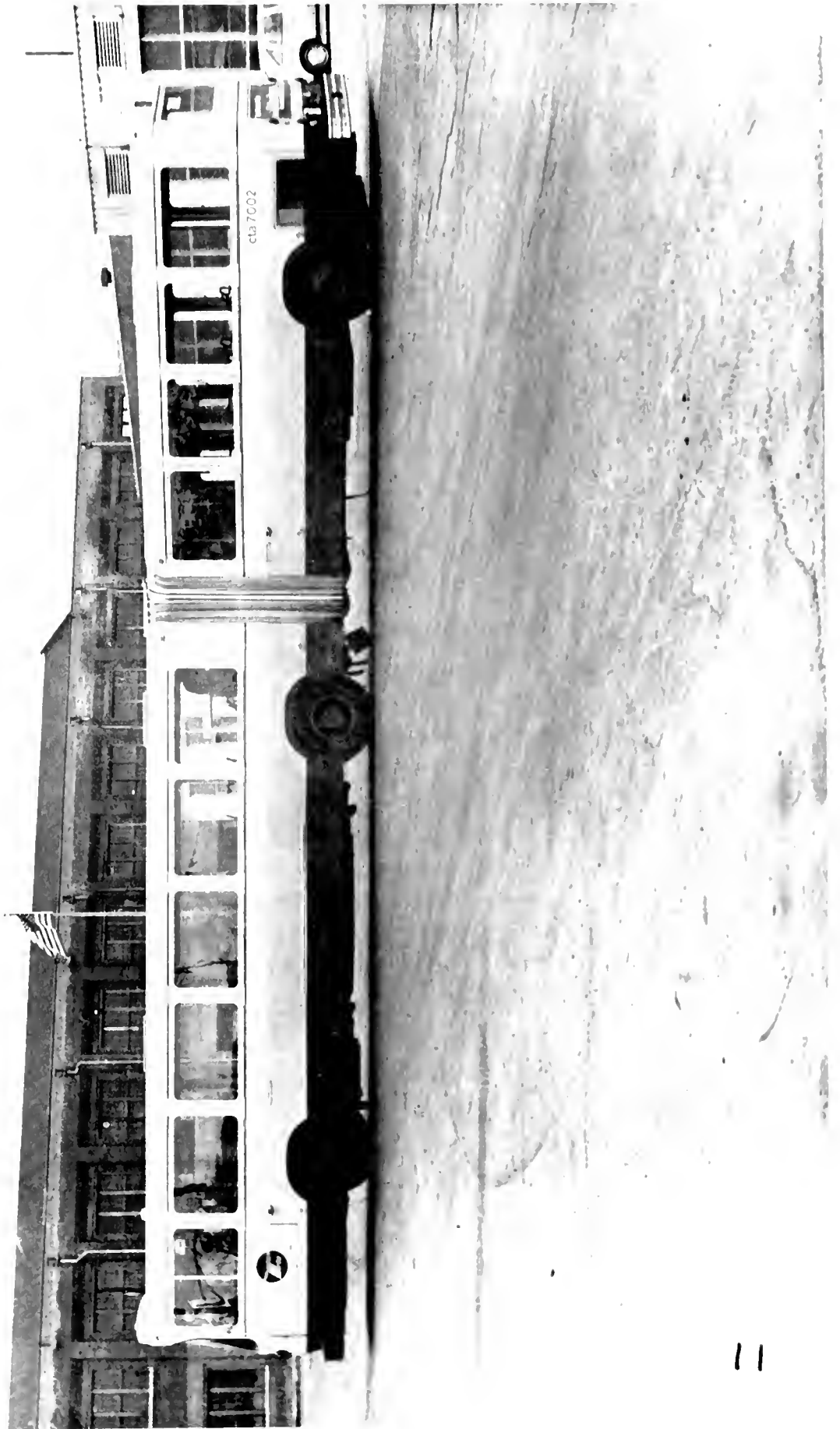




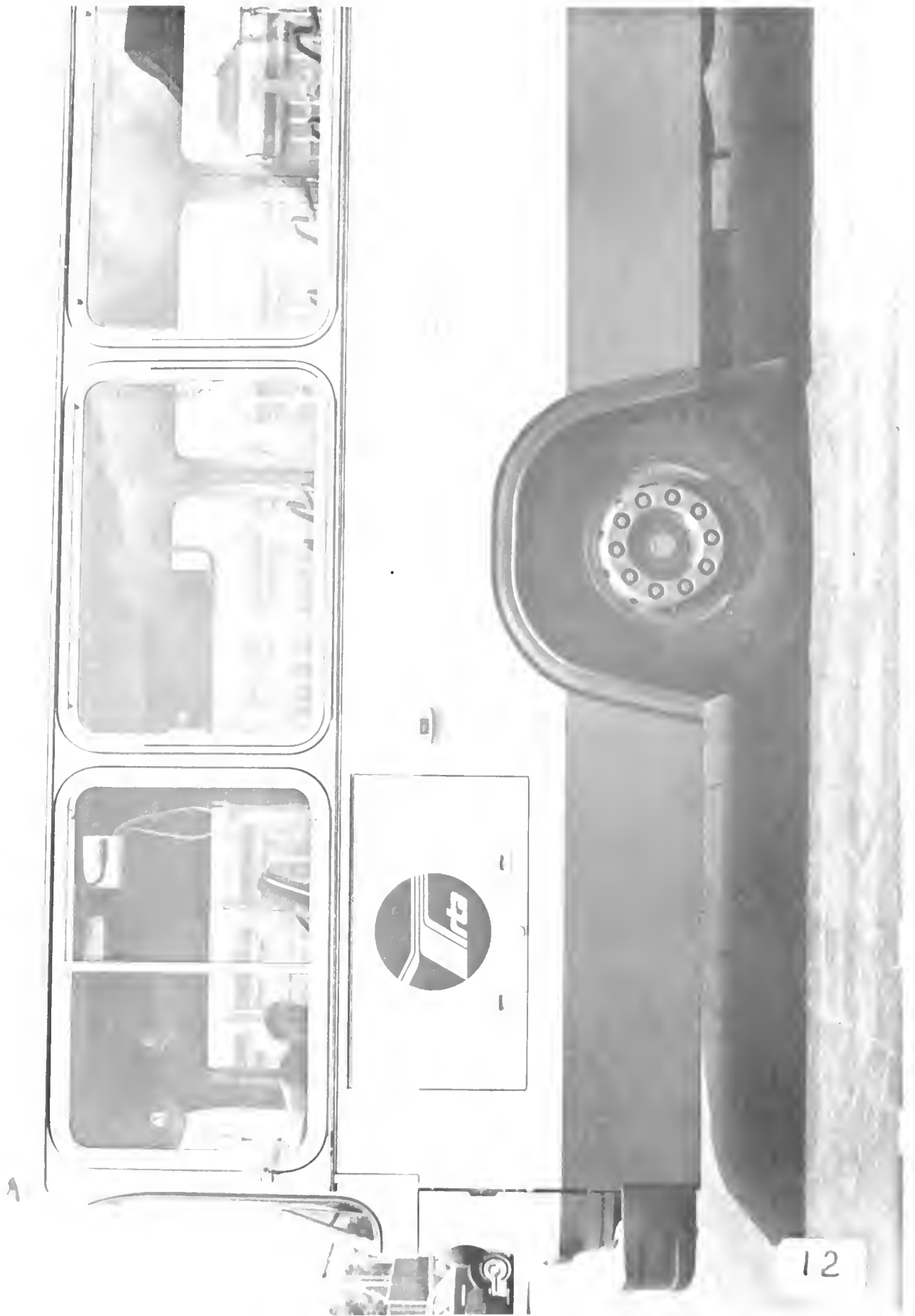


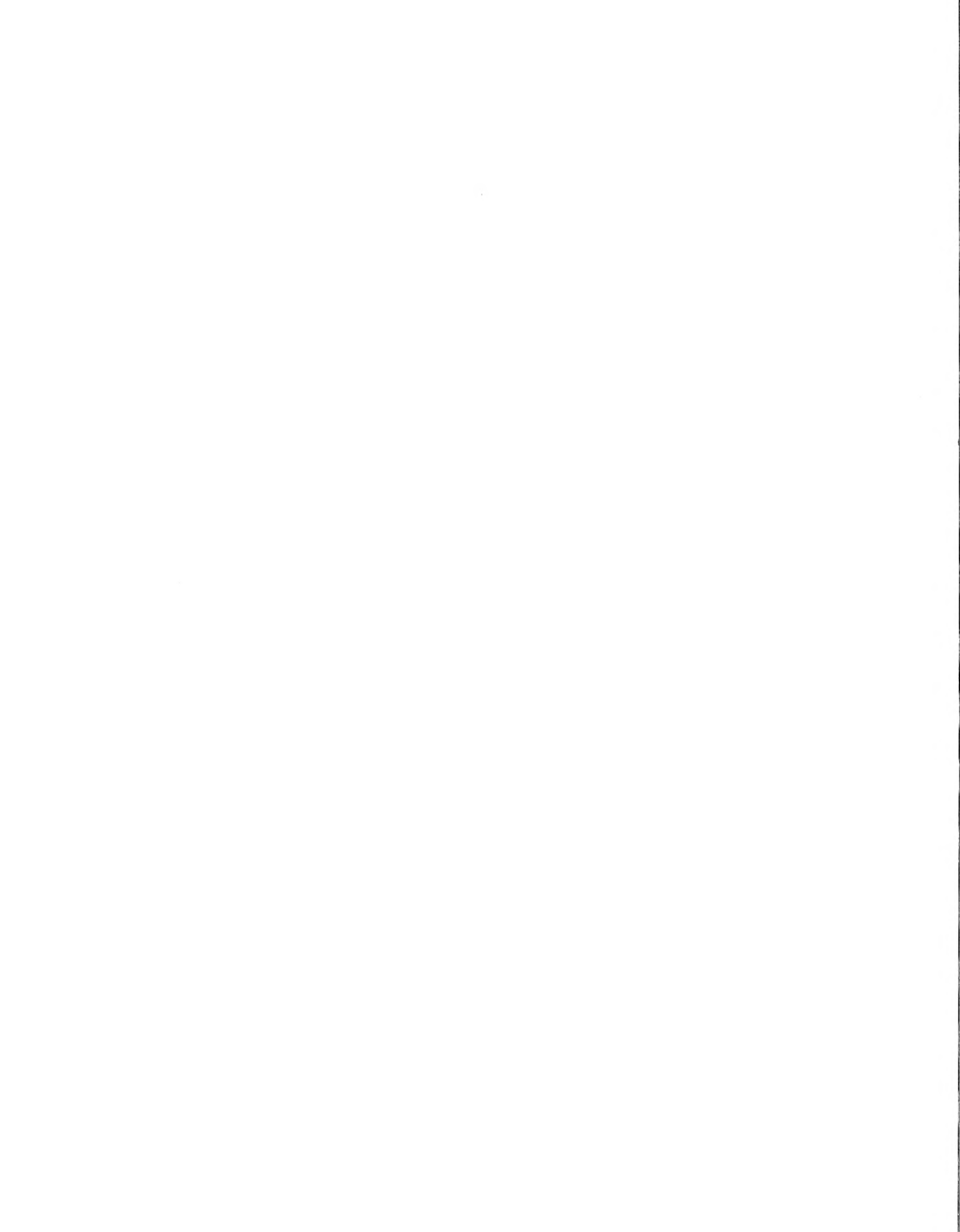


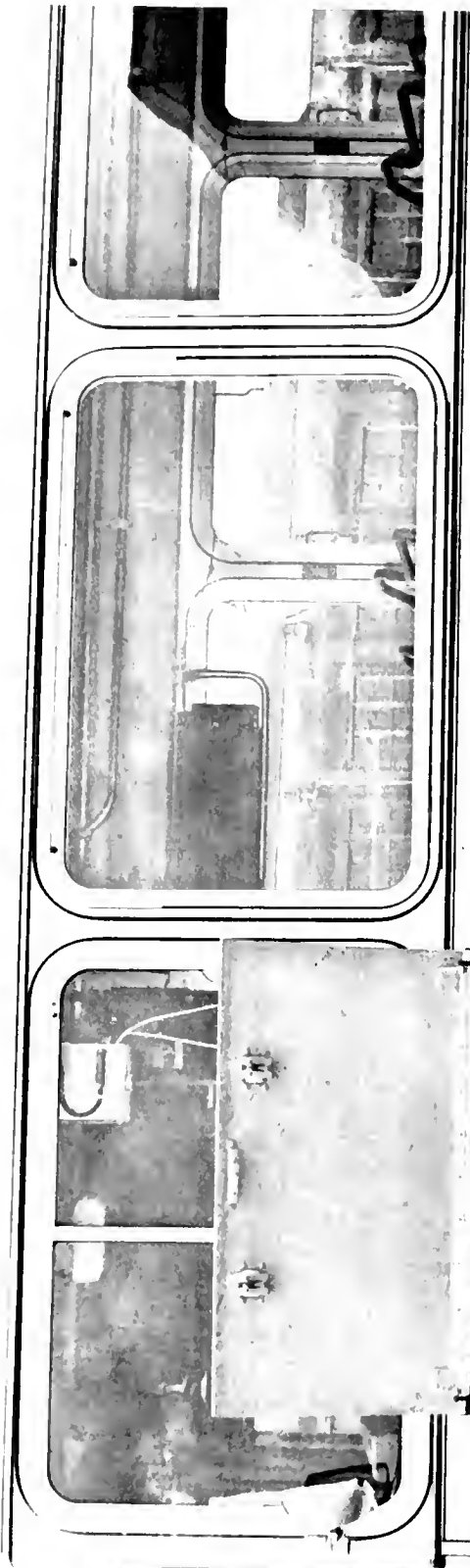




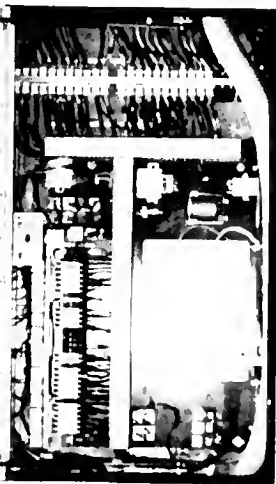






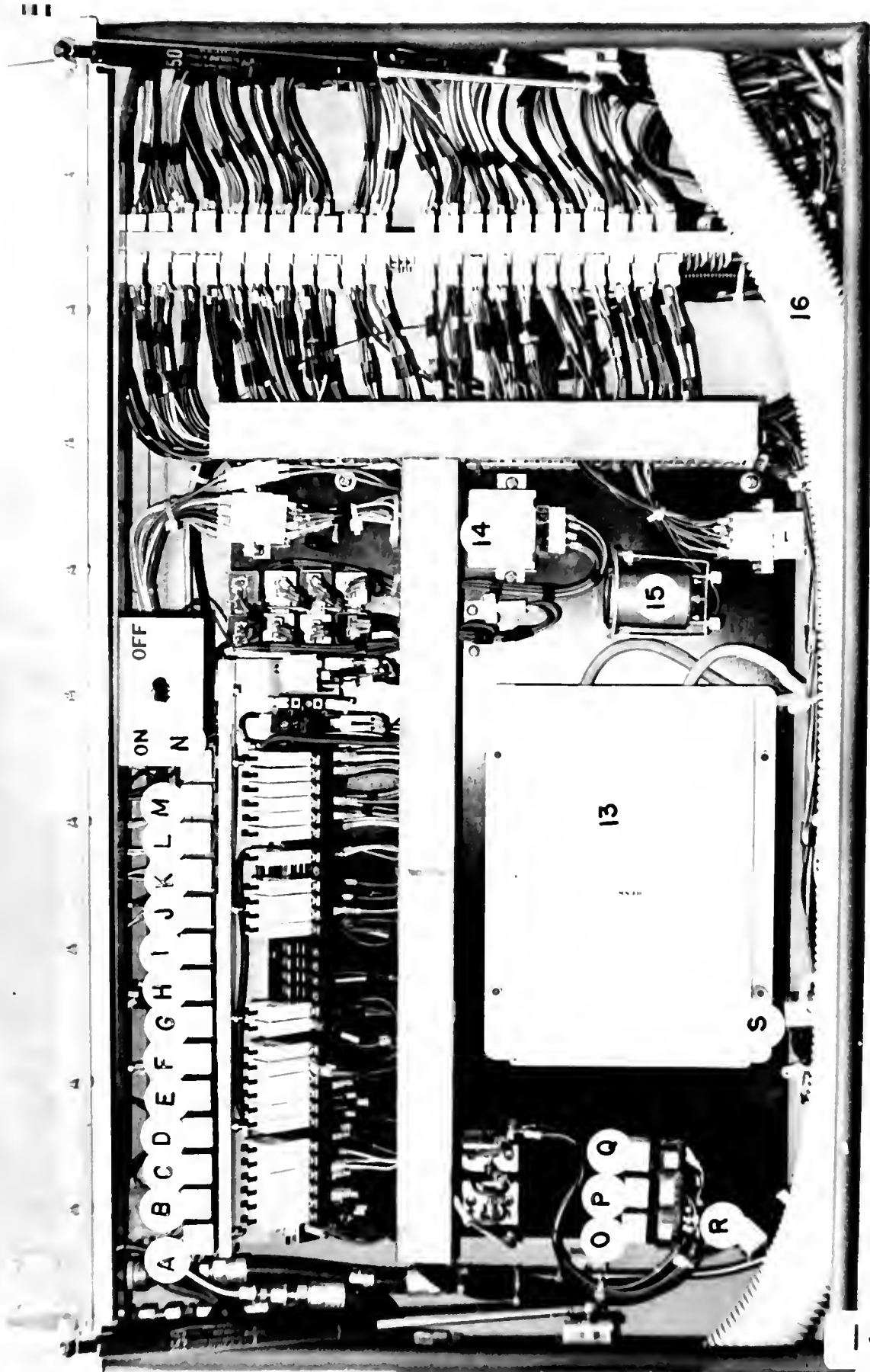


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13





OFF  
ON  
N

A B C D E F G H I J K L M

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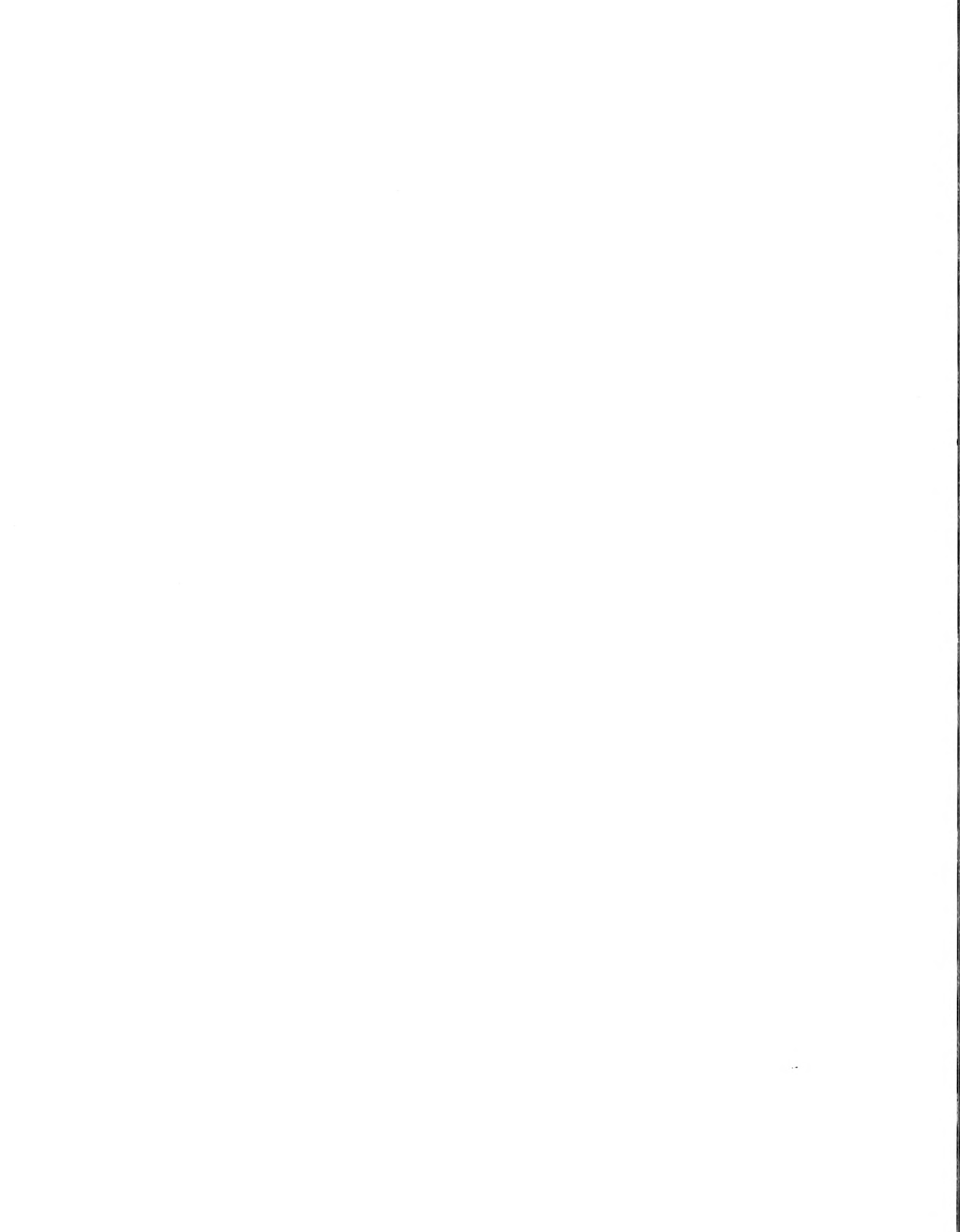
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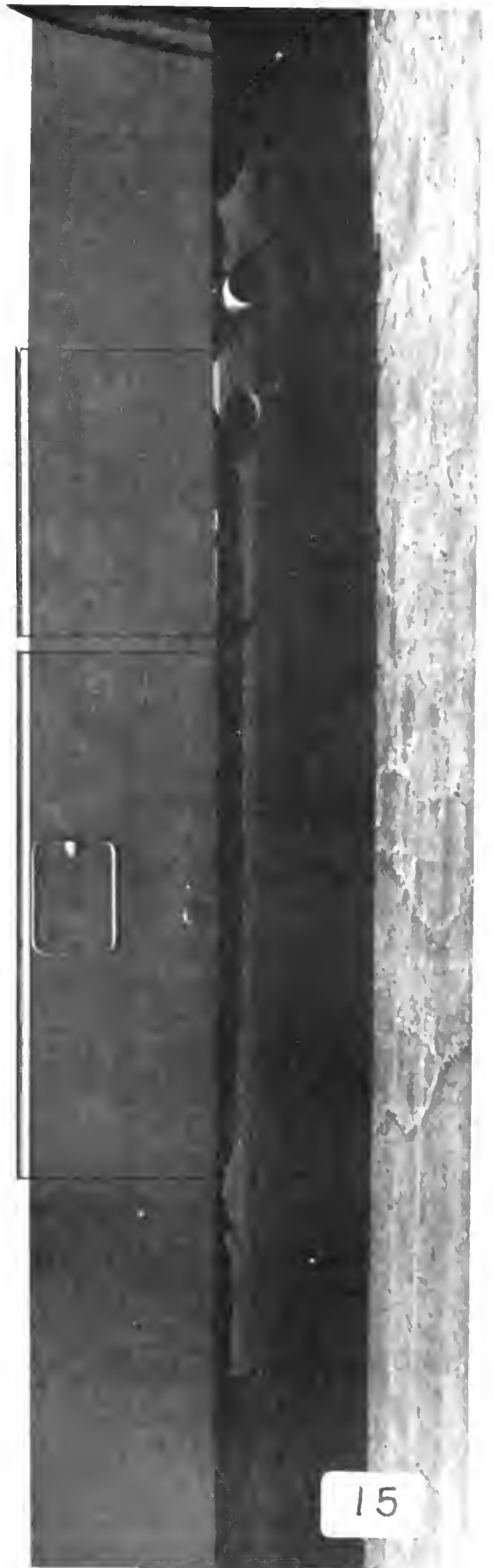
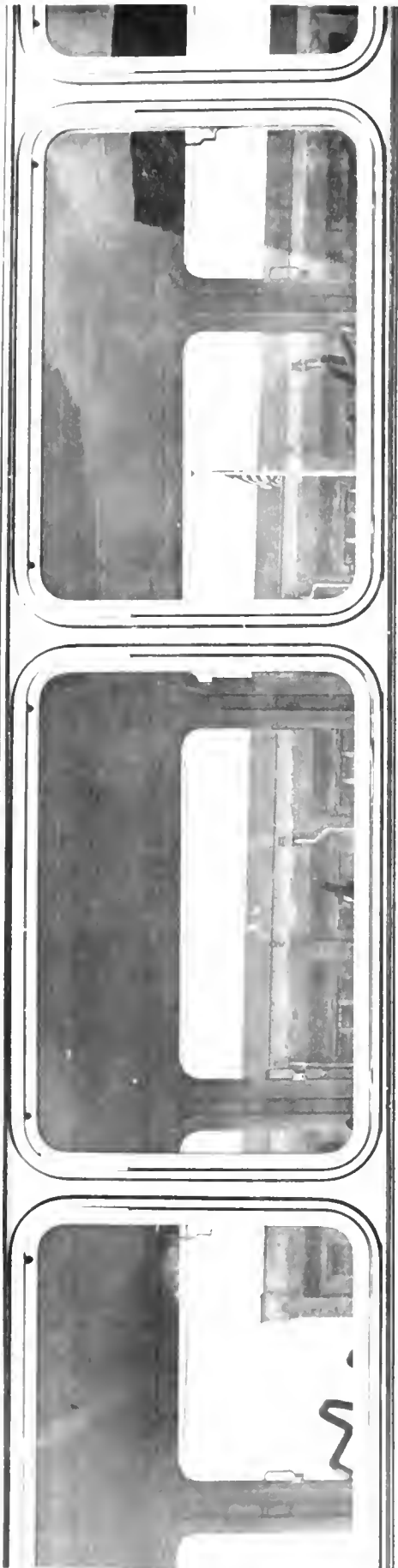
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14











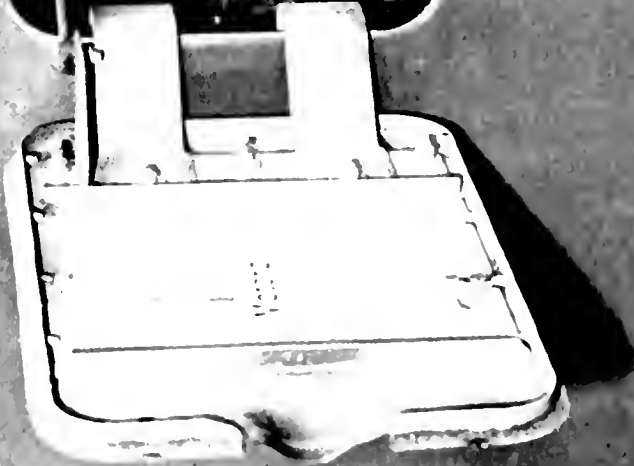
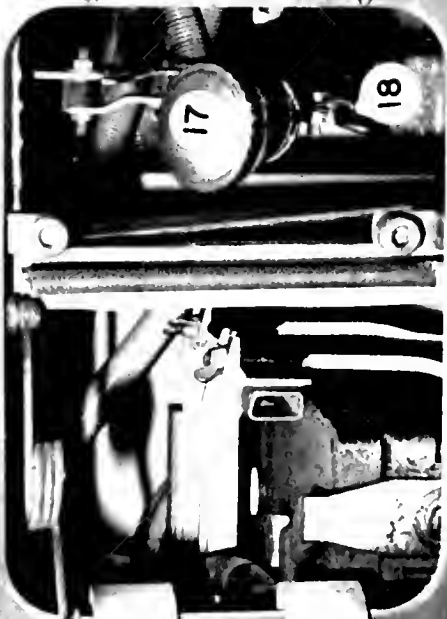
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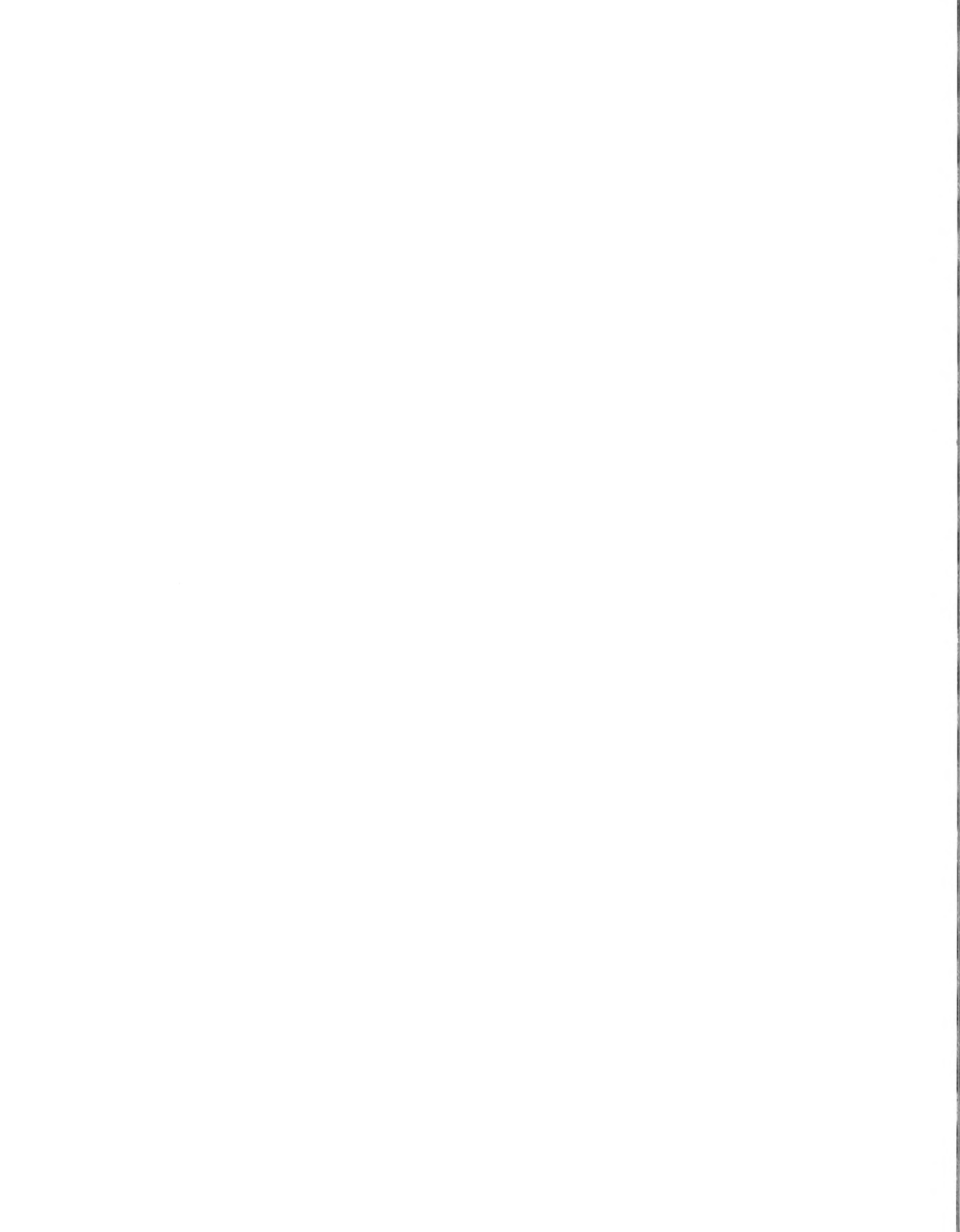
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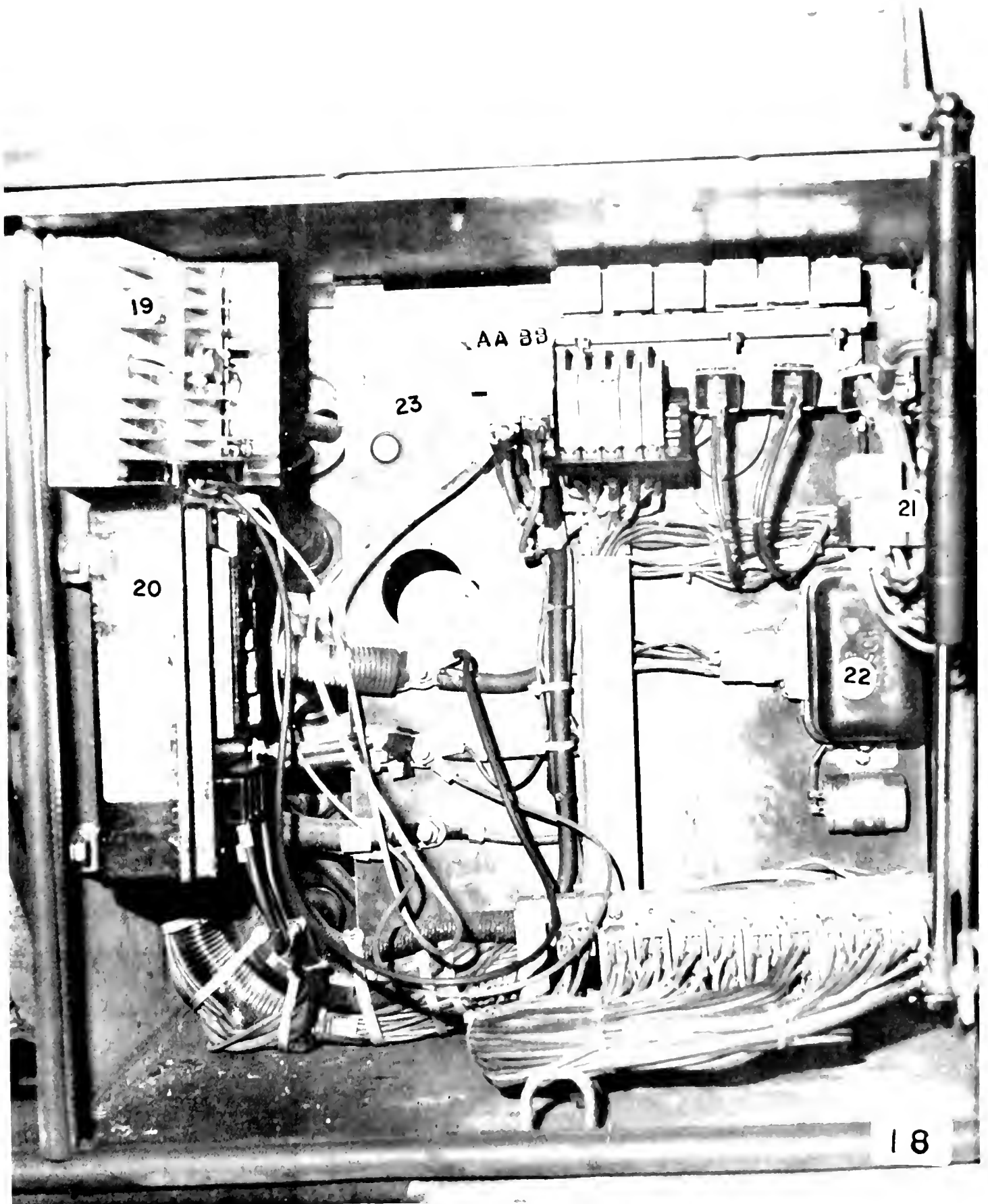






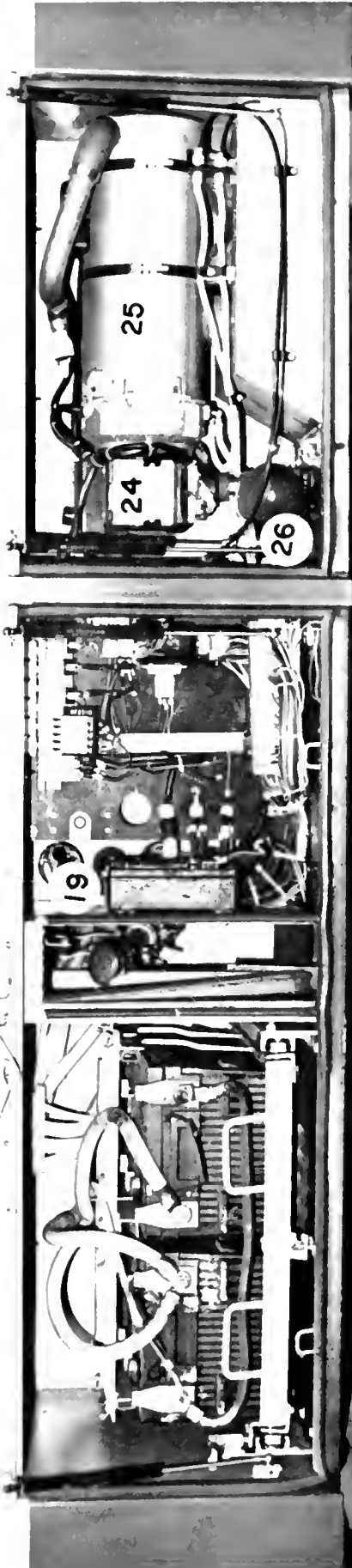
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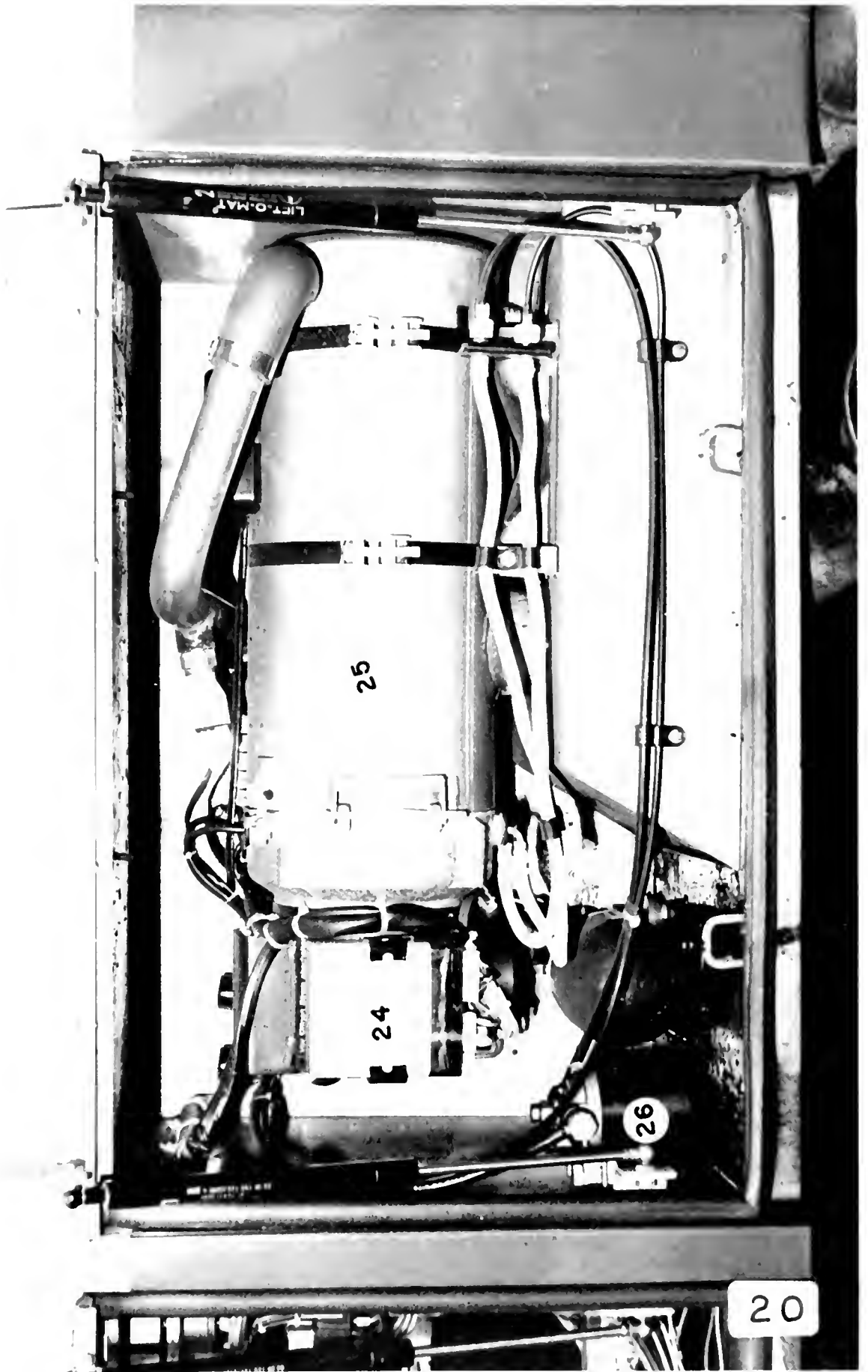
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LIFT-O-MAT

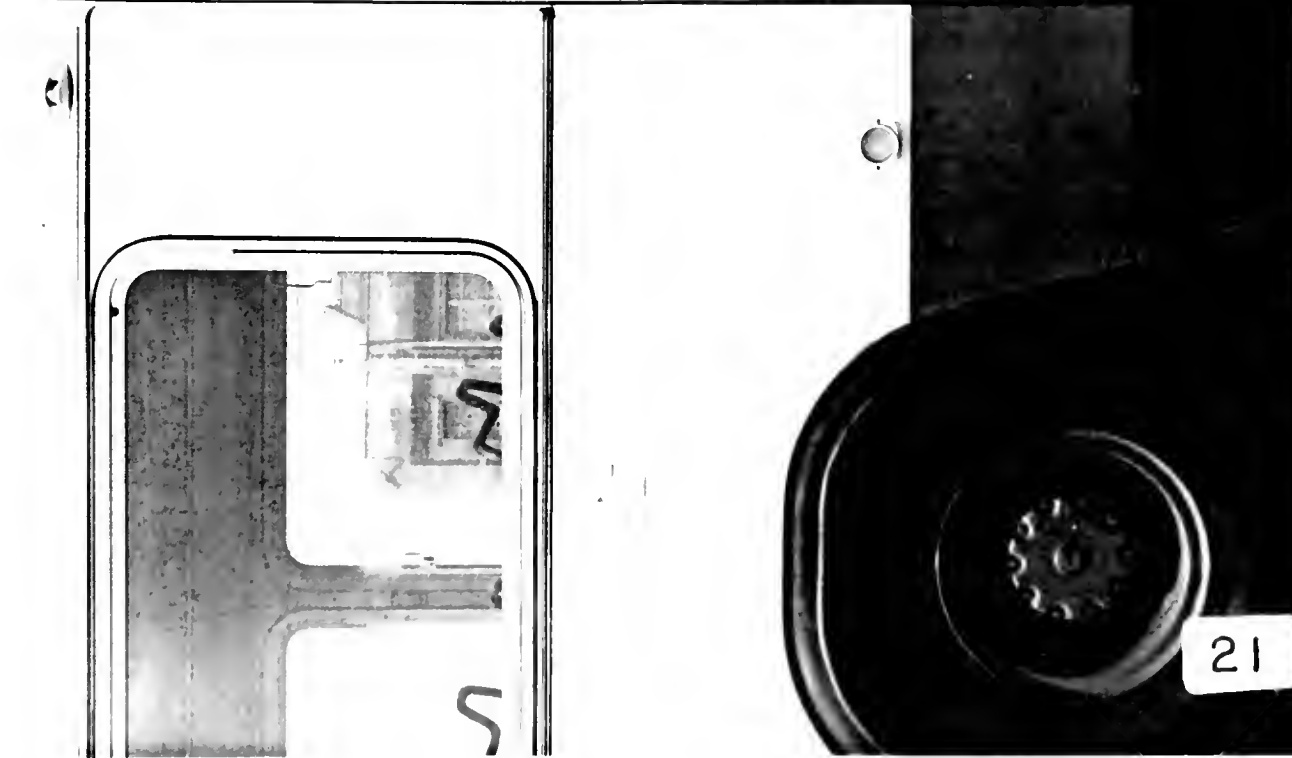
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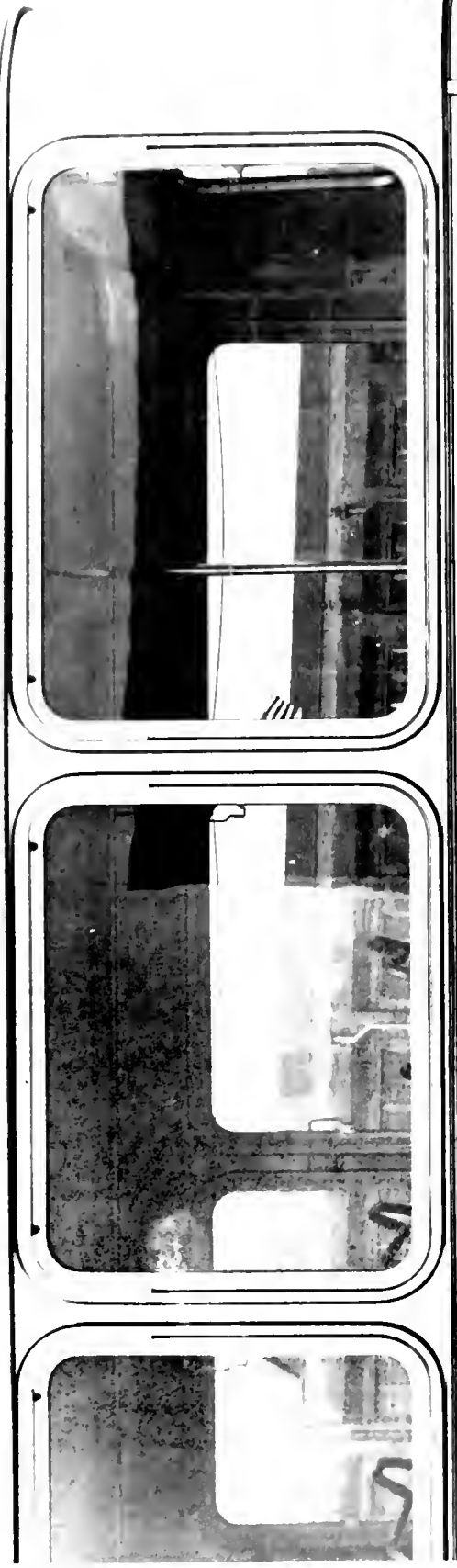
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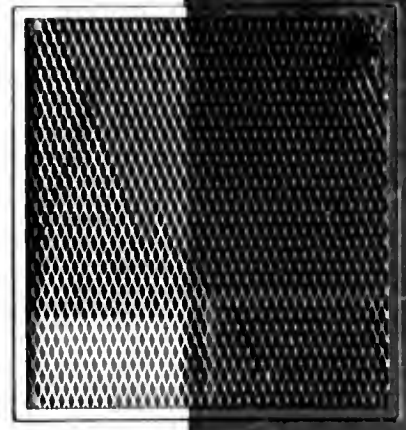


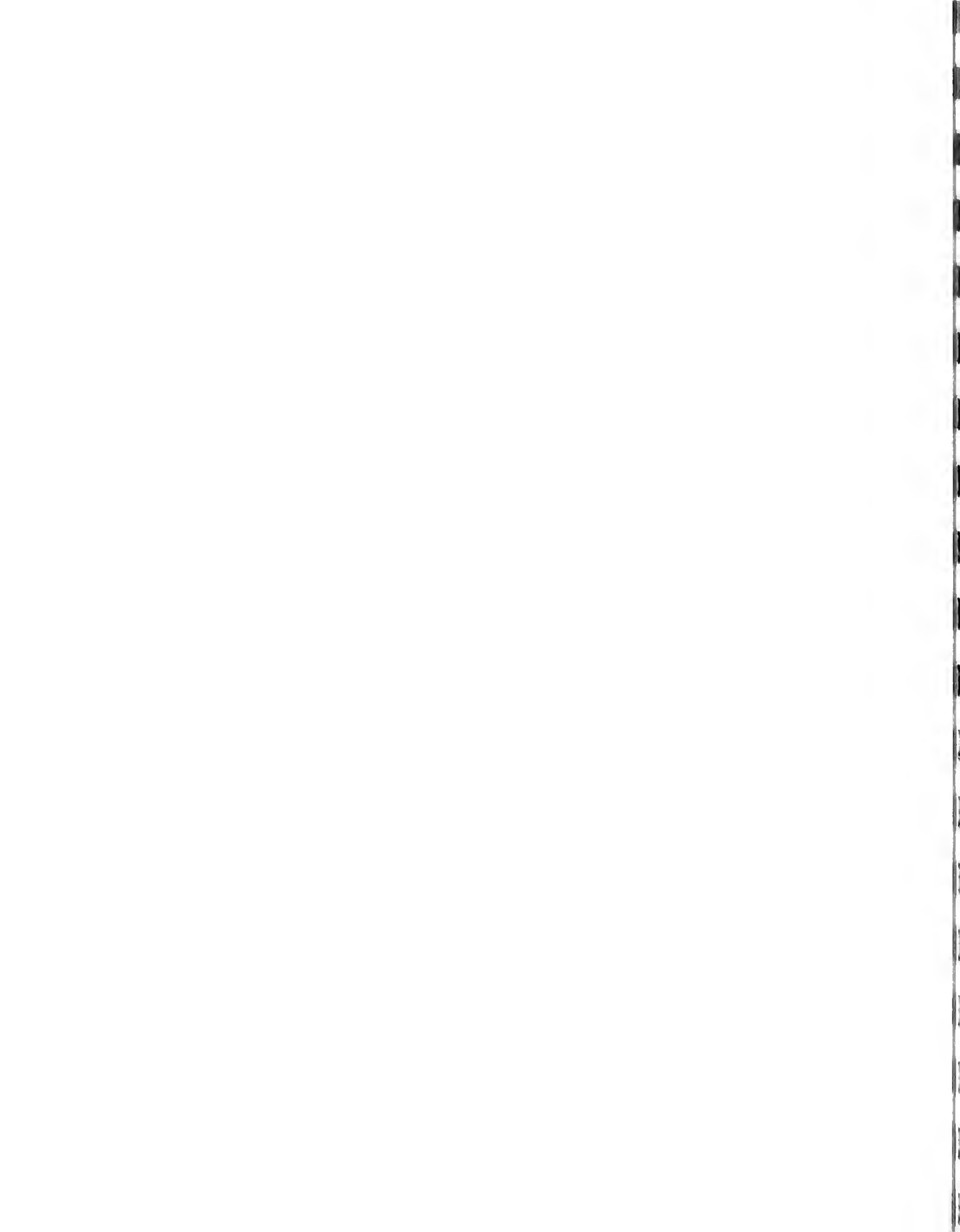
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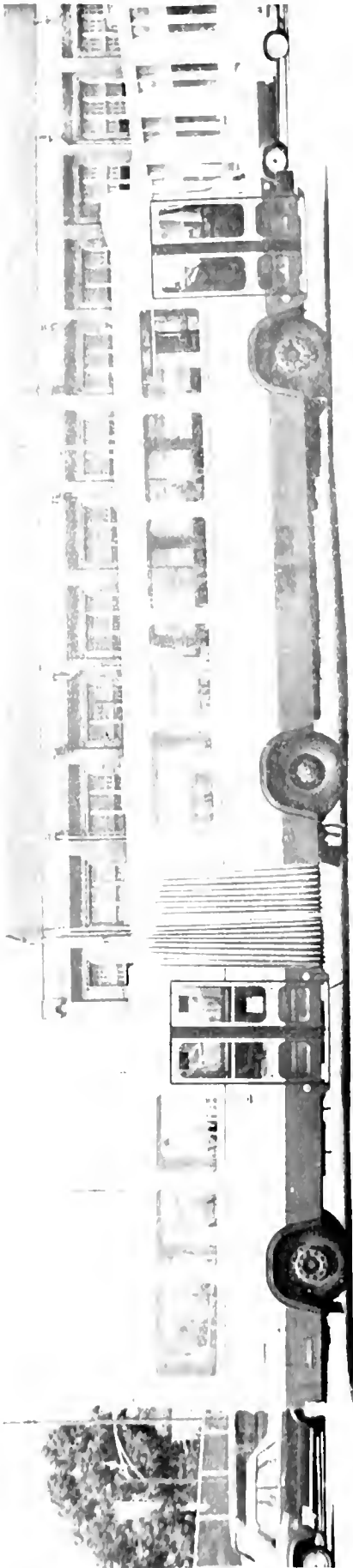


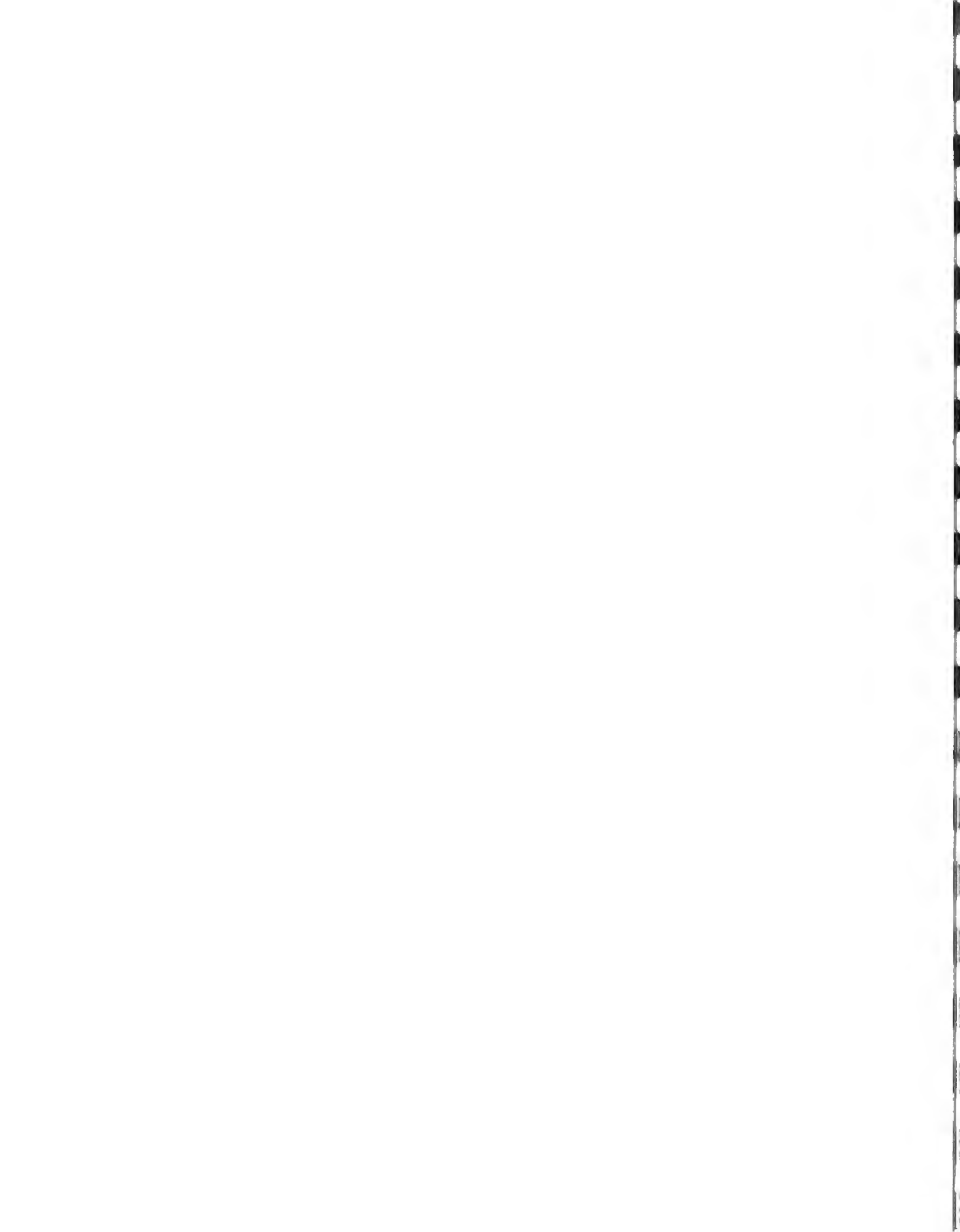
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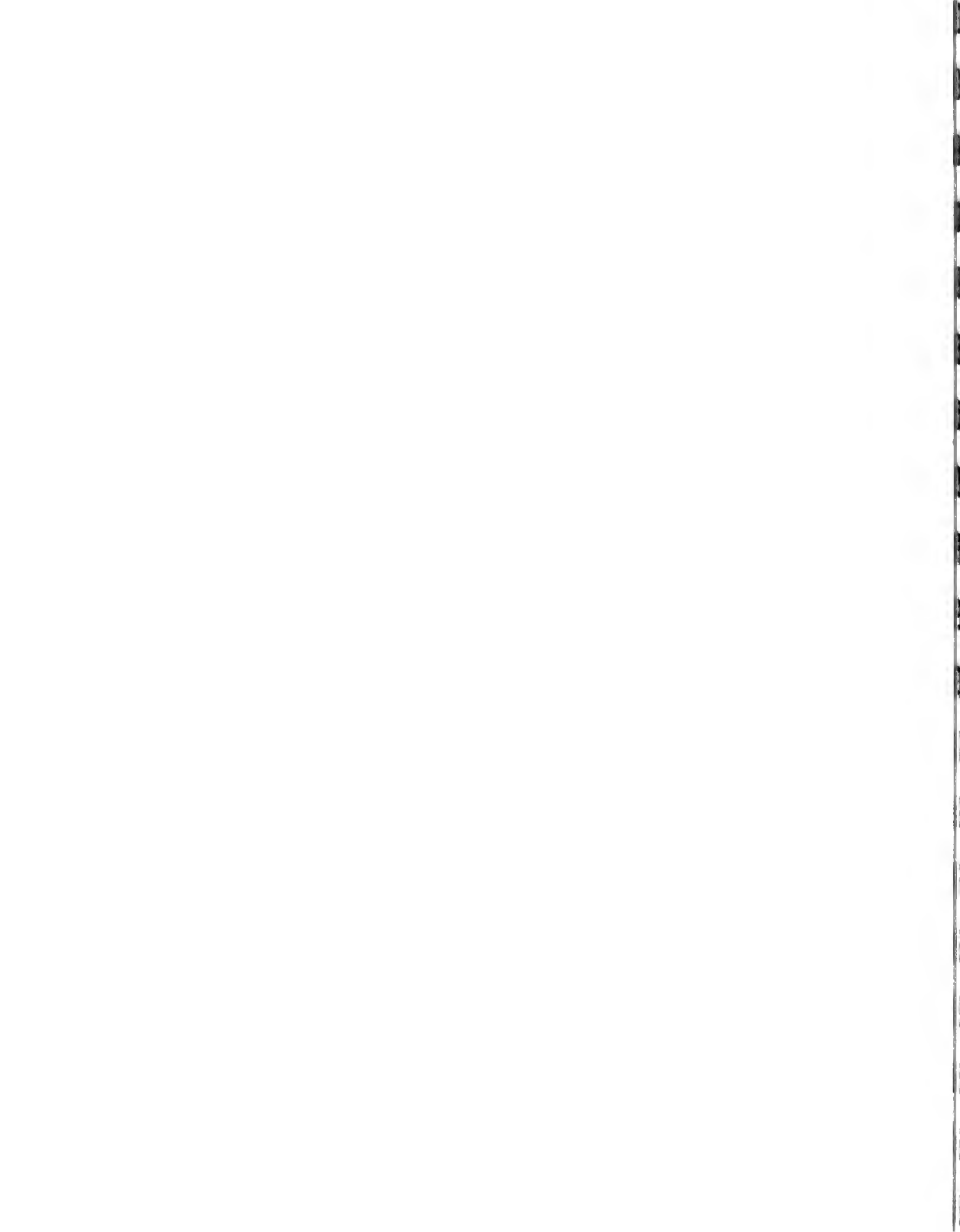


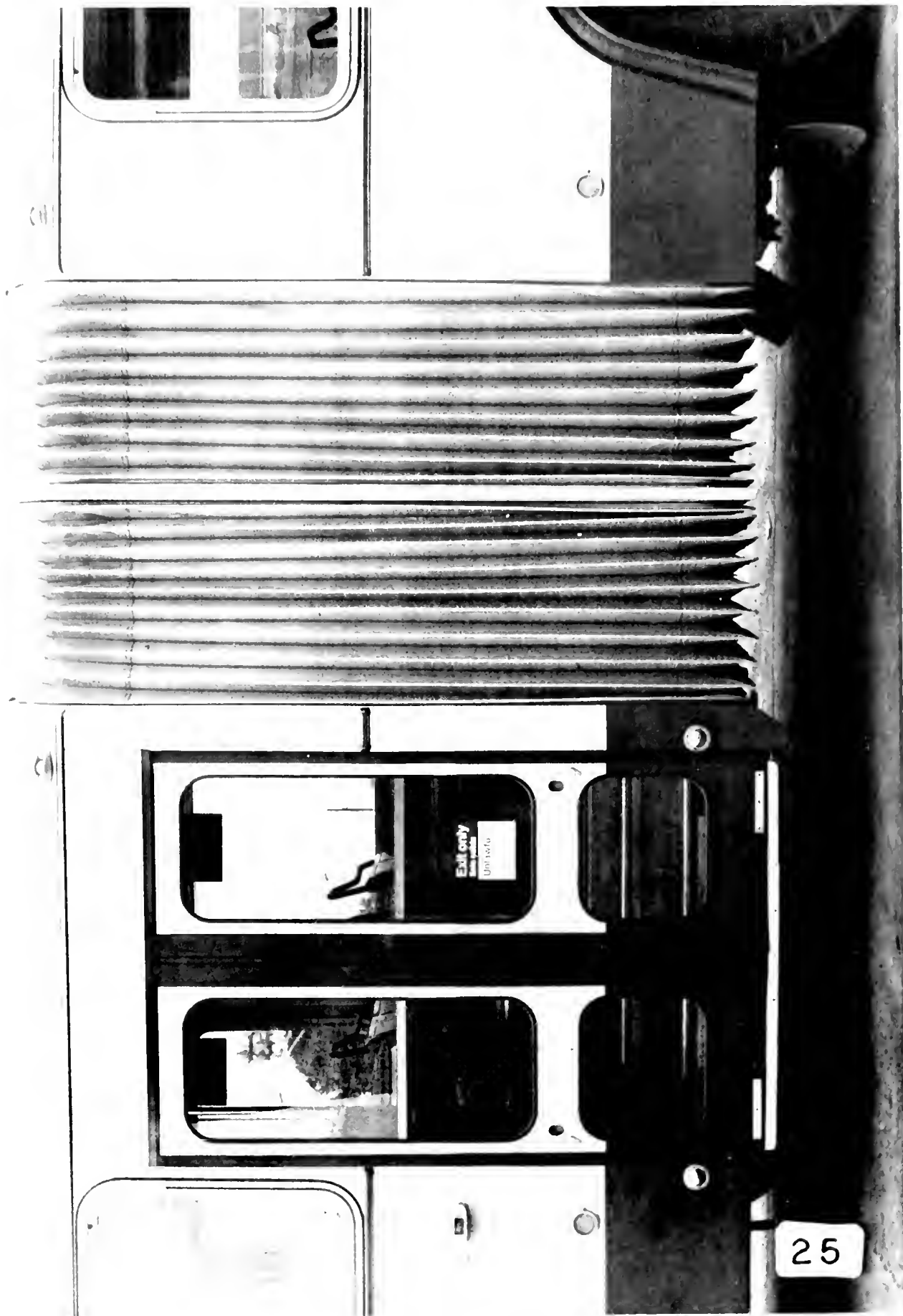




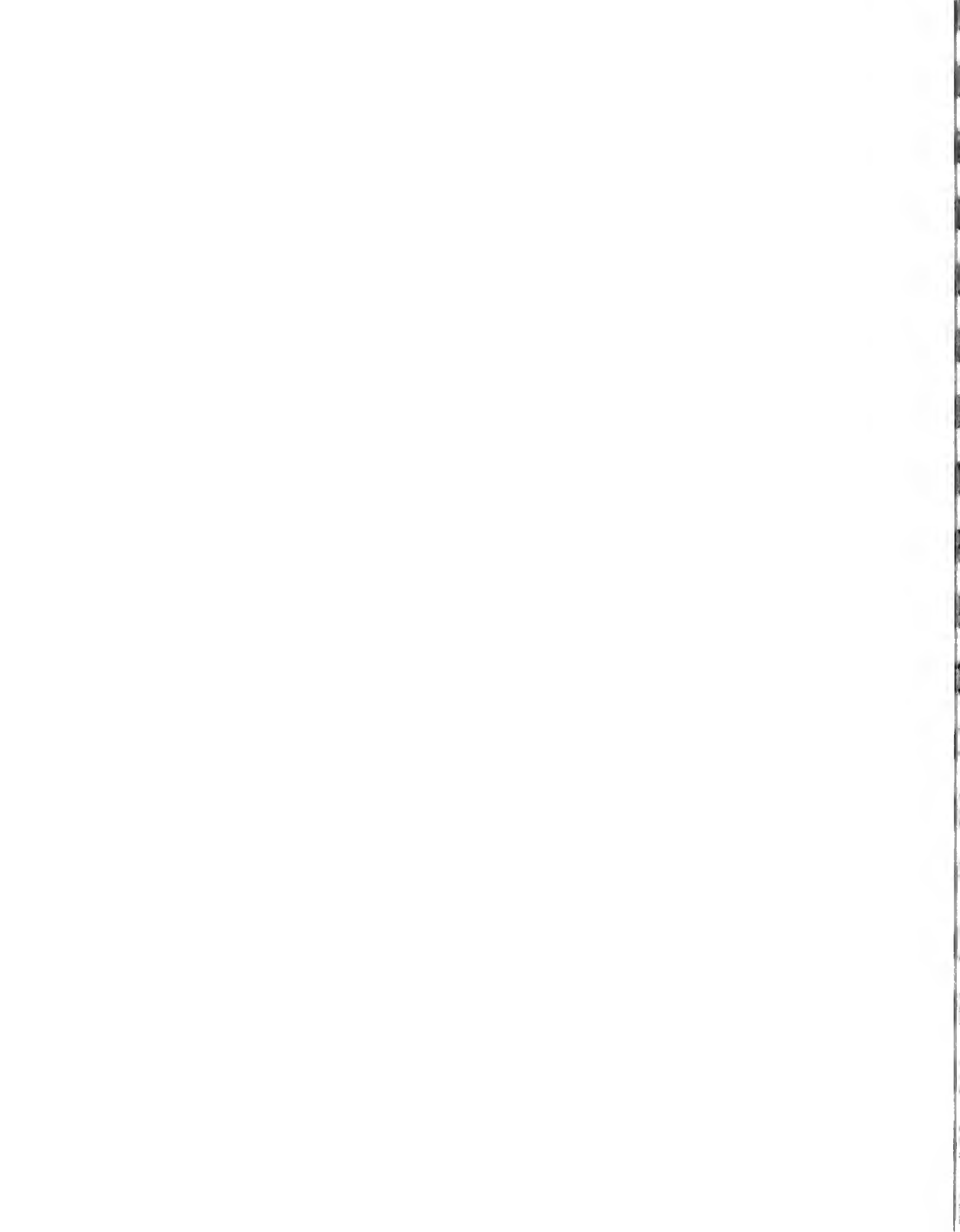




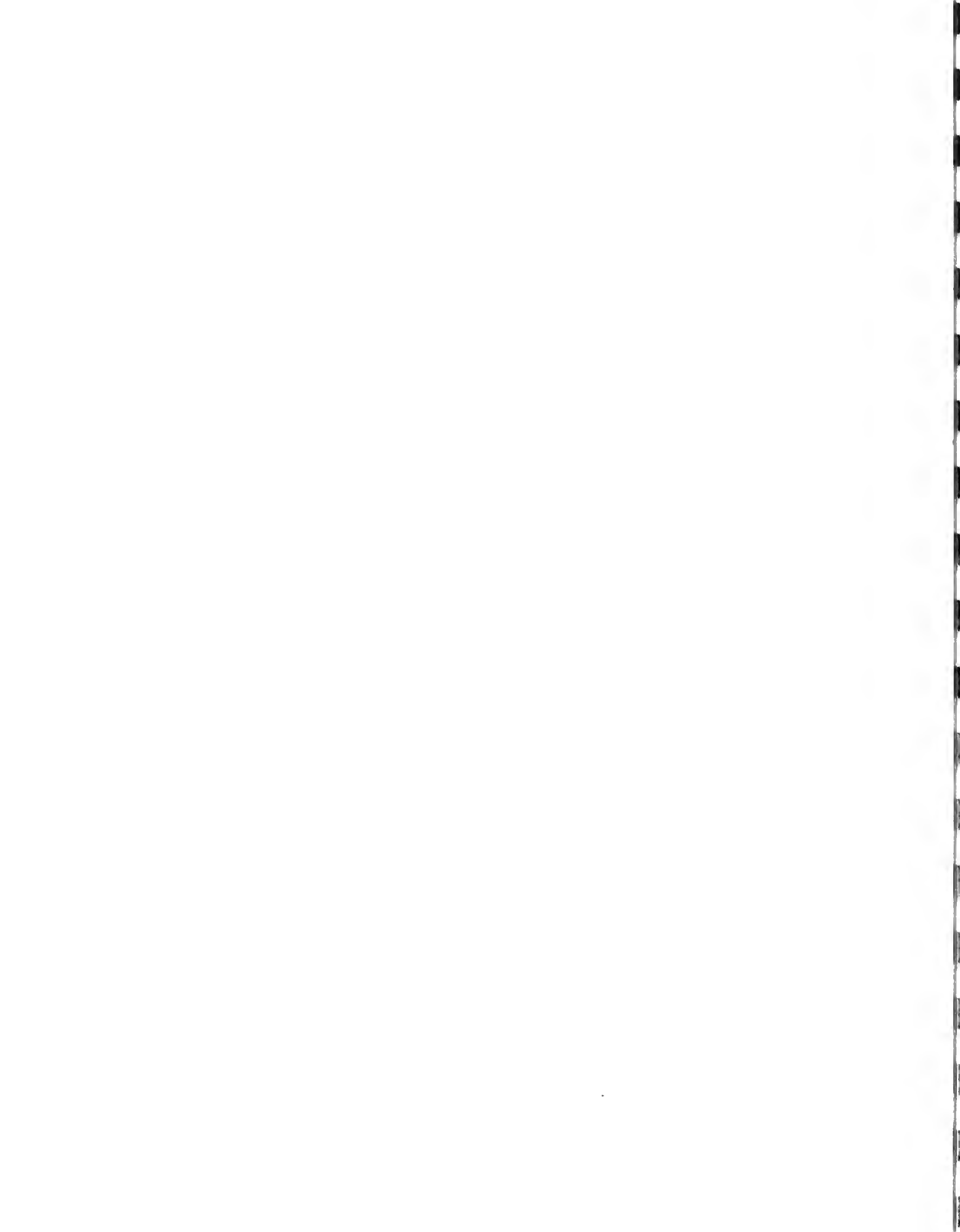




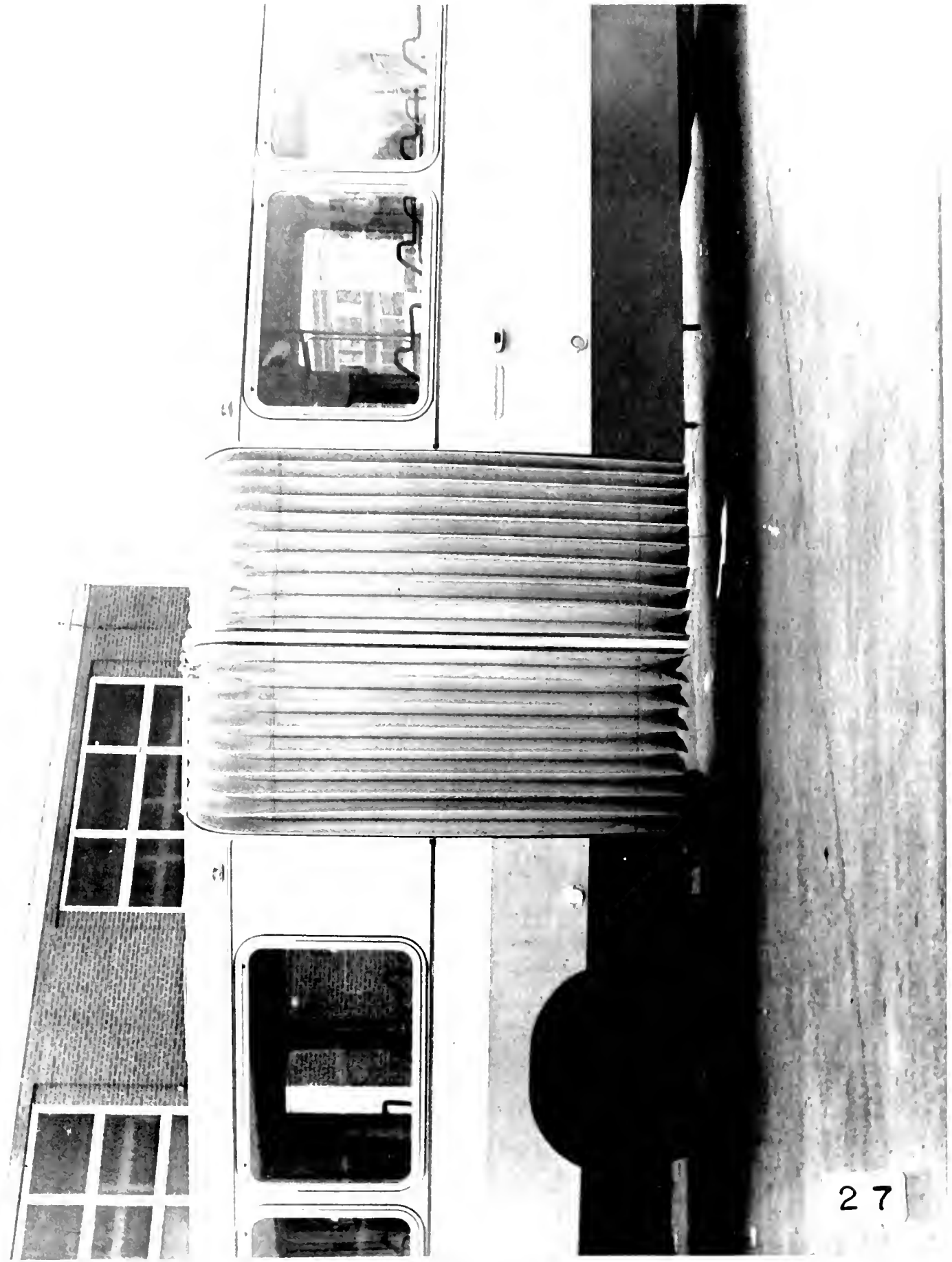
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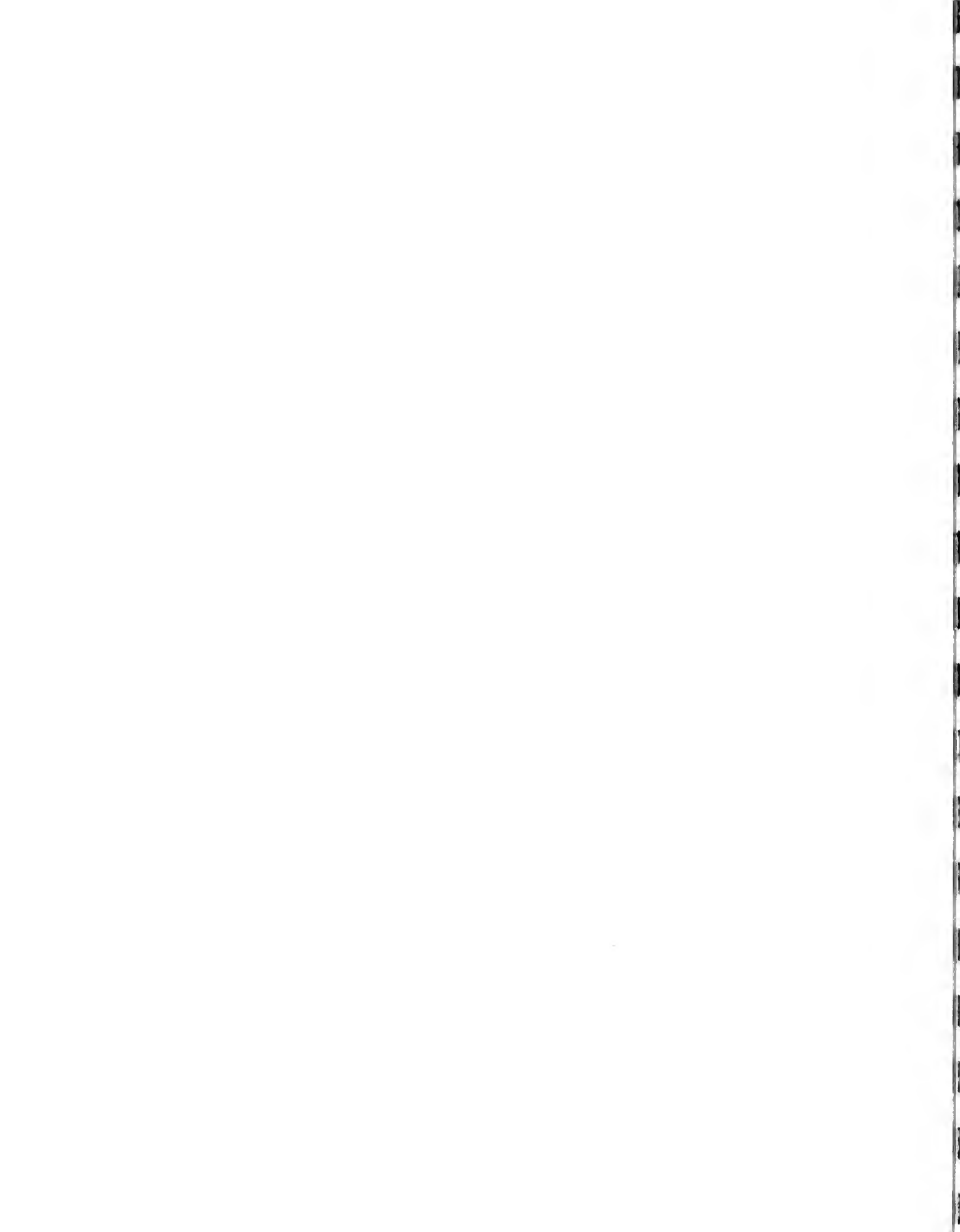


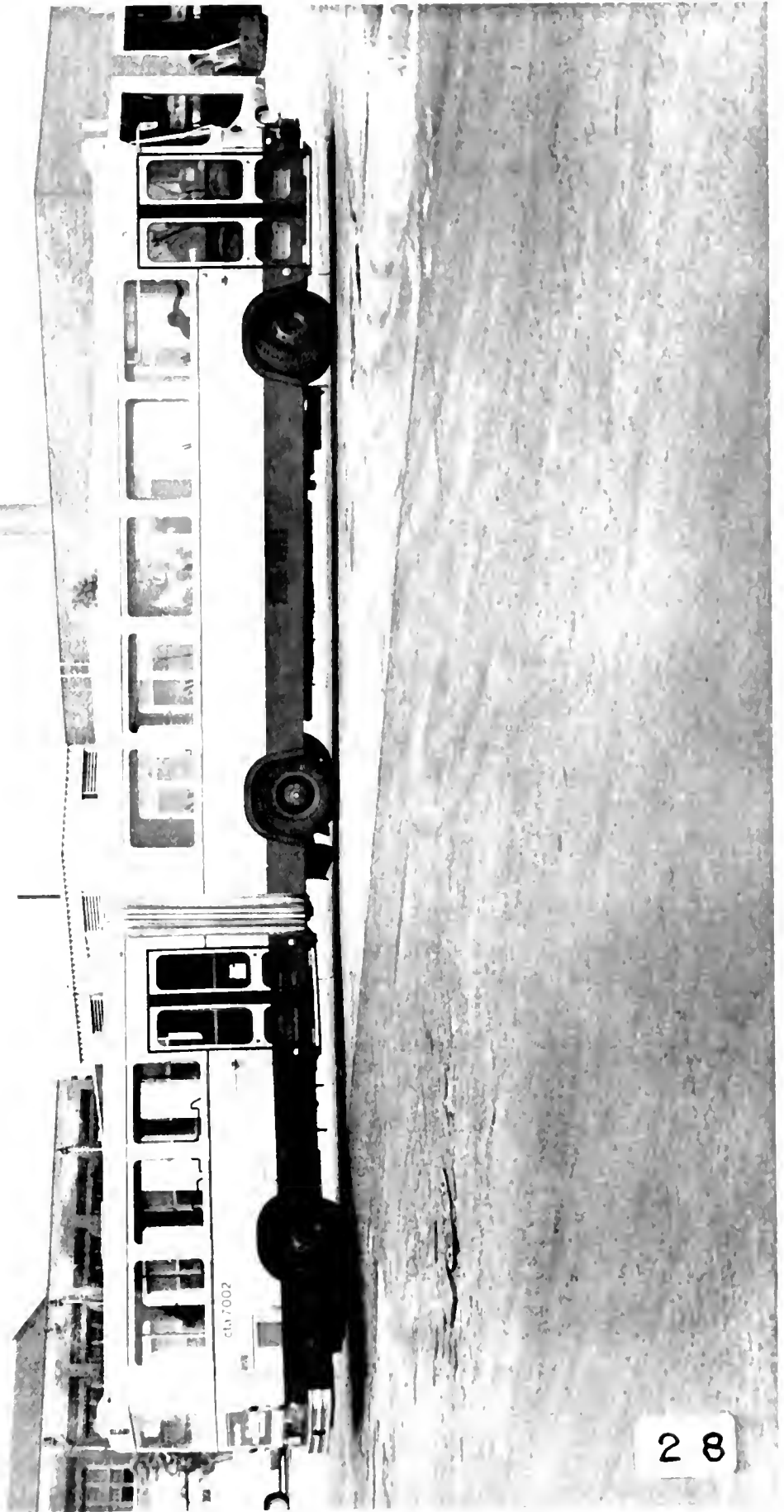




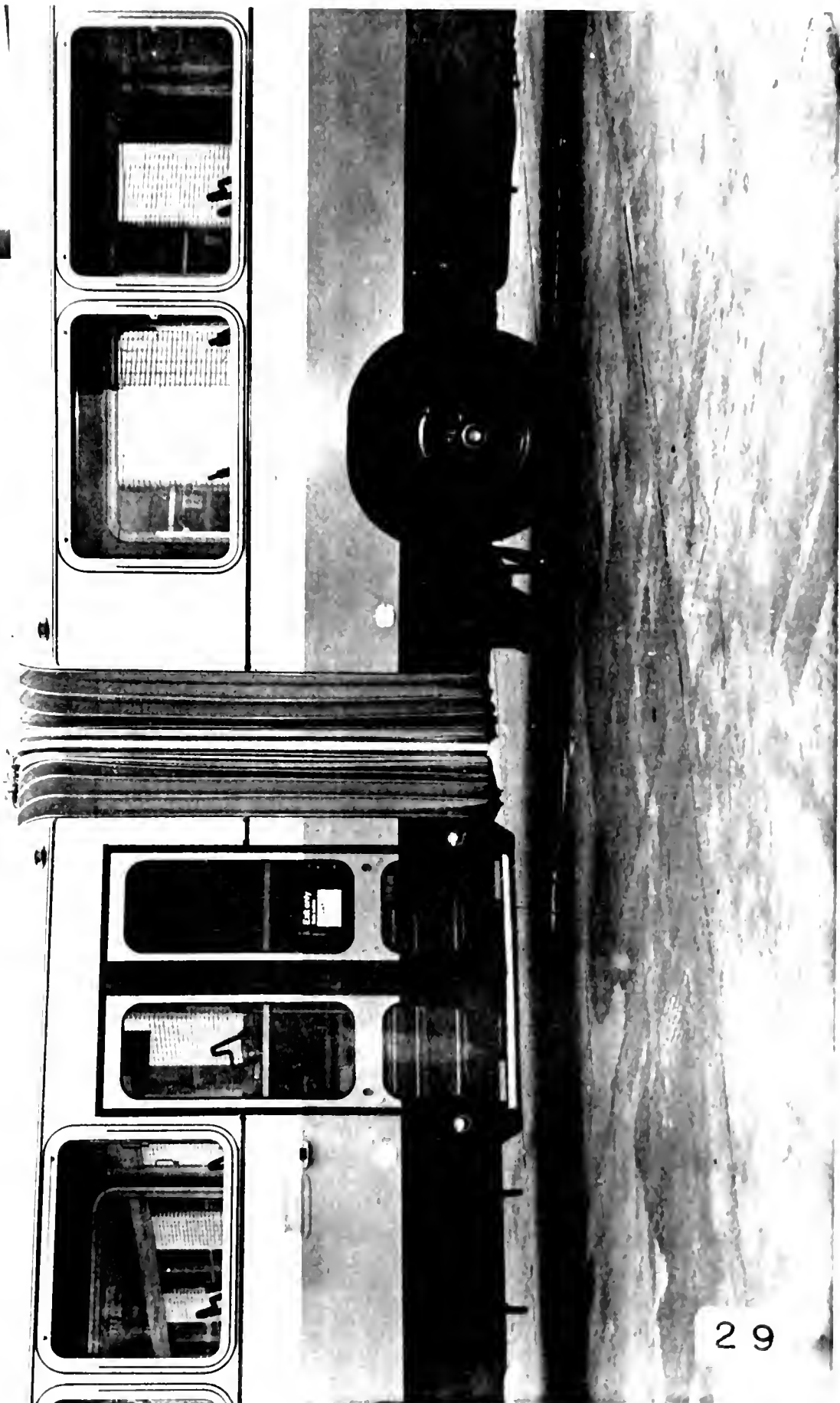


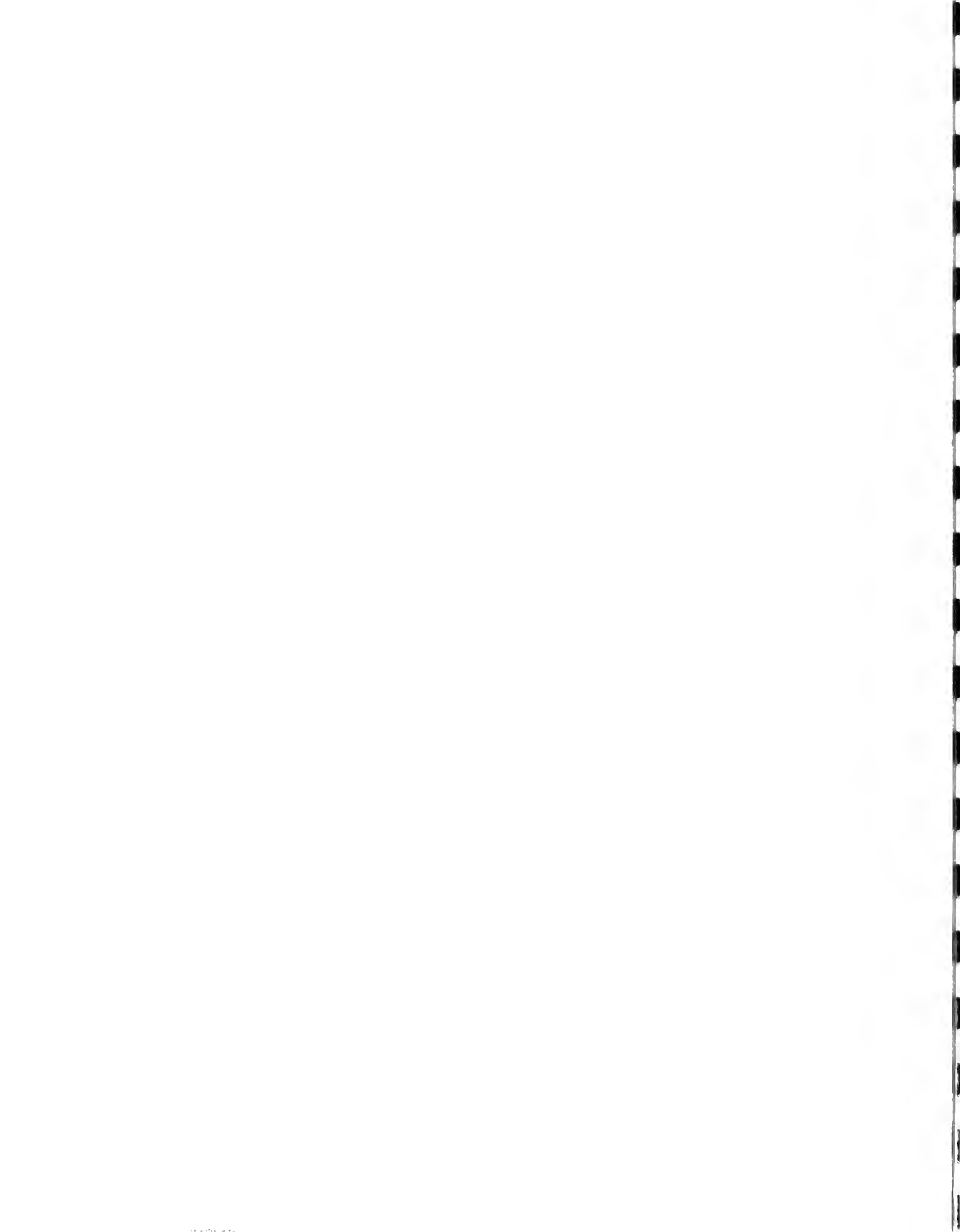


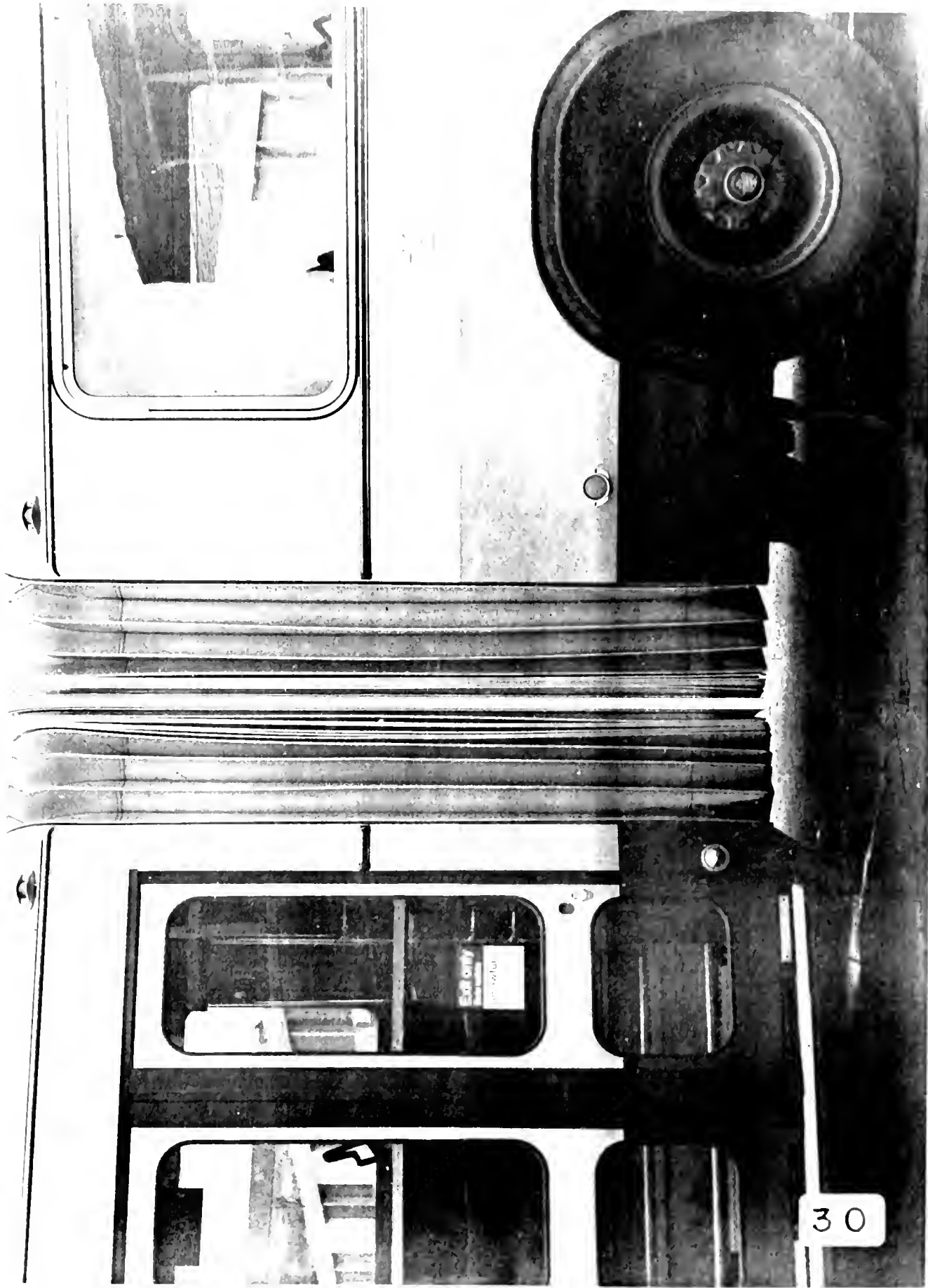




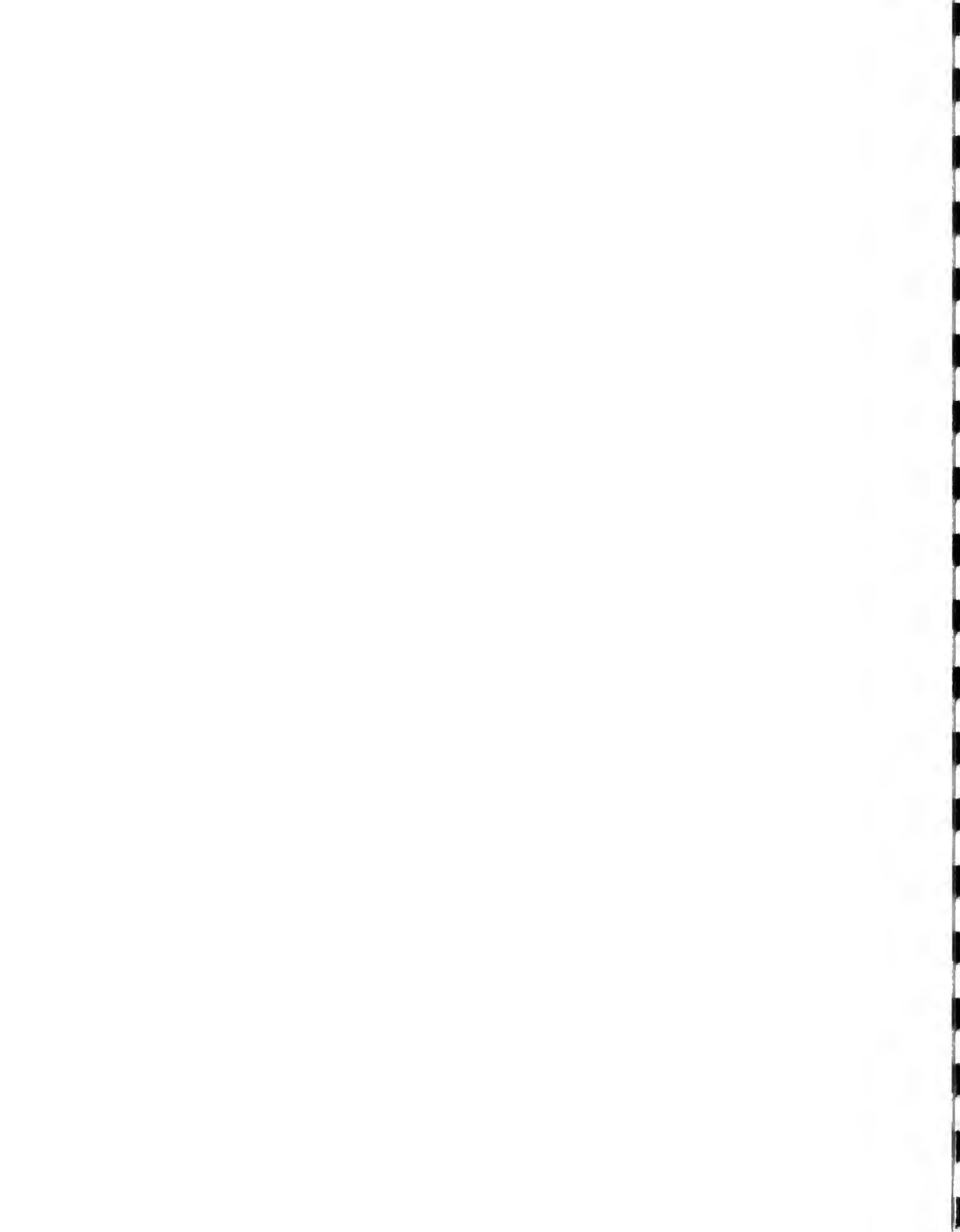








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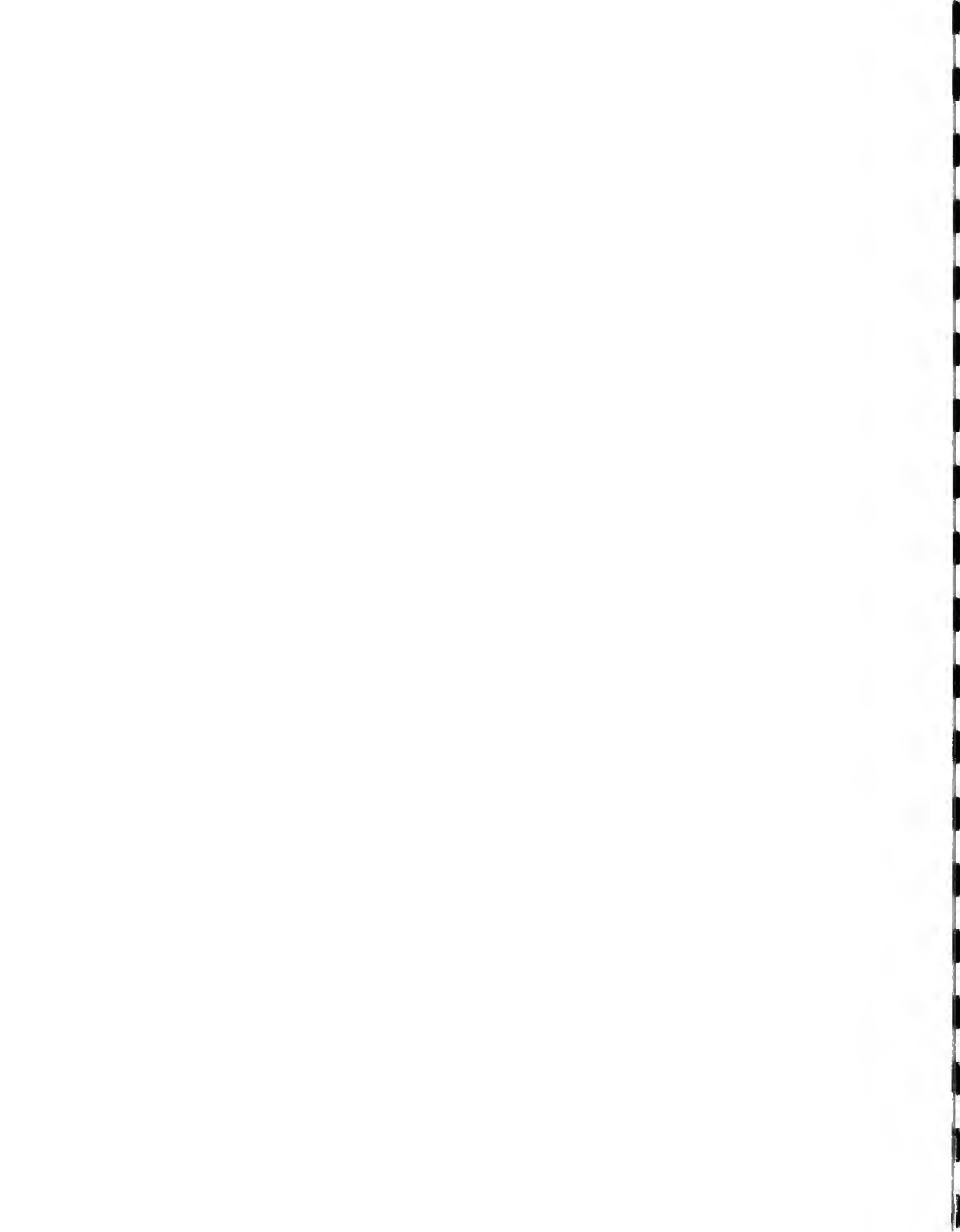




 Chicago Transit Authority

**Exact fare  
required**  
Driver has  
NO change

Exact fare required  
Driver has NO change

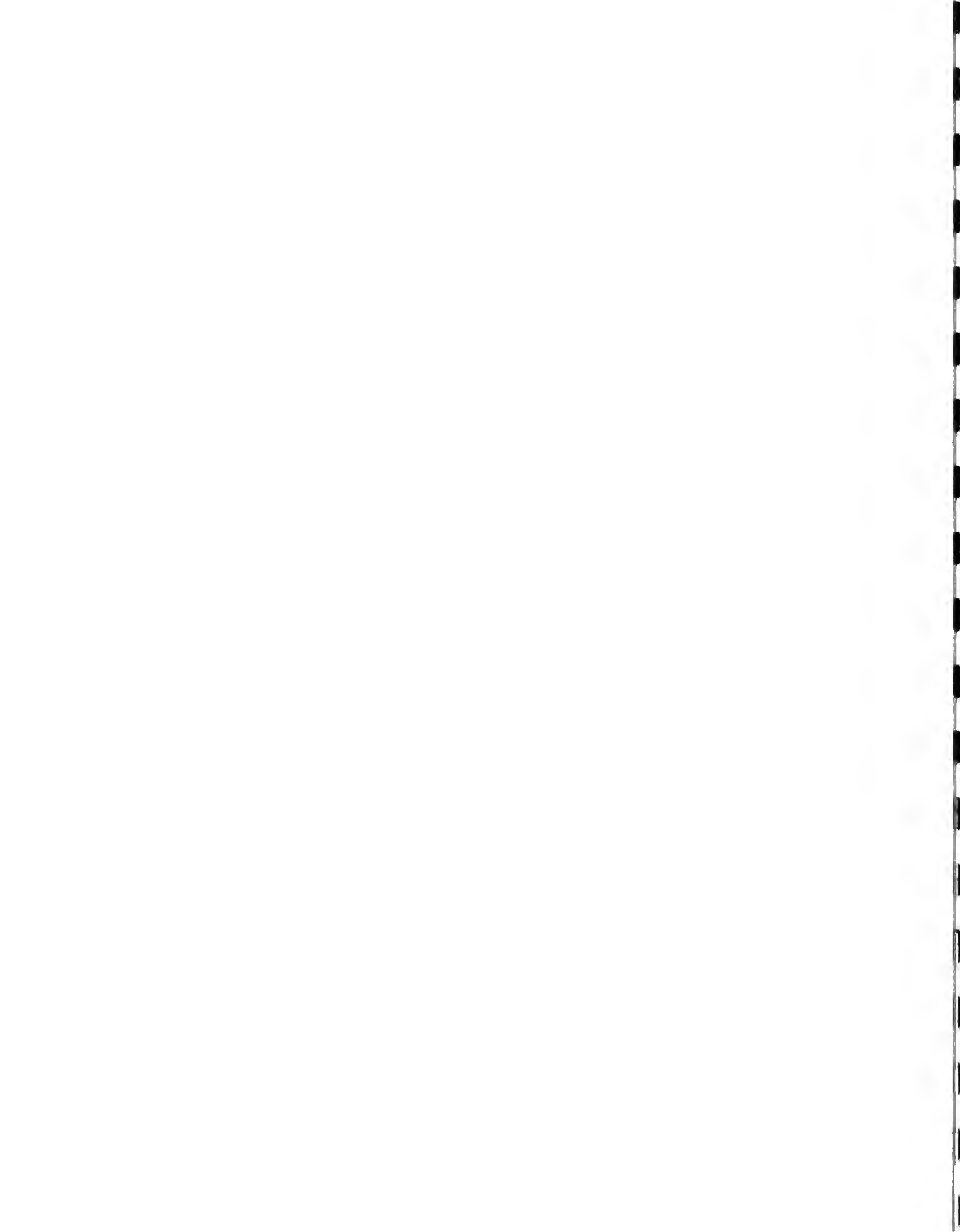


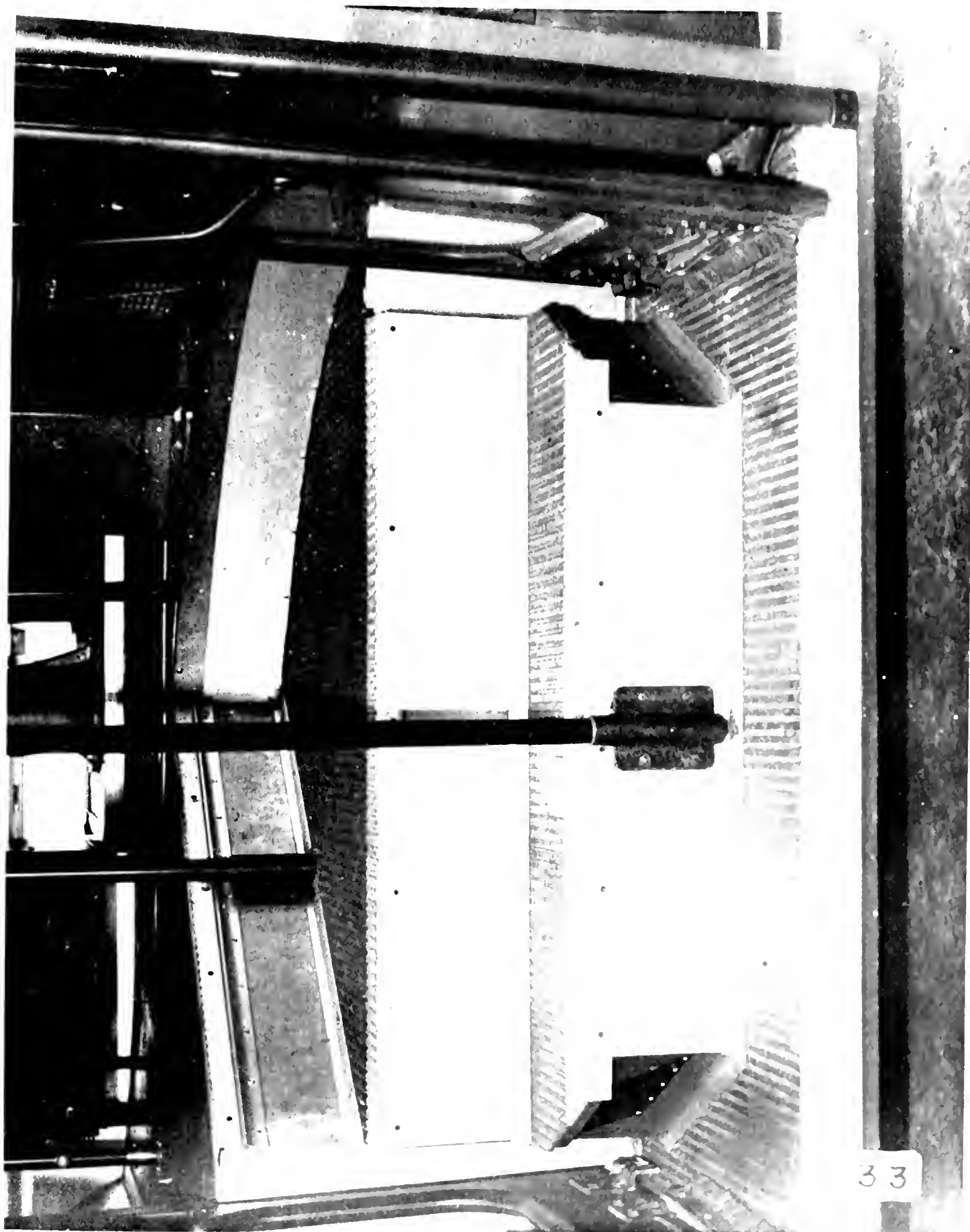


 Chicago Transit Authority

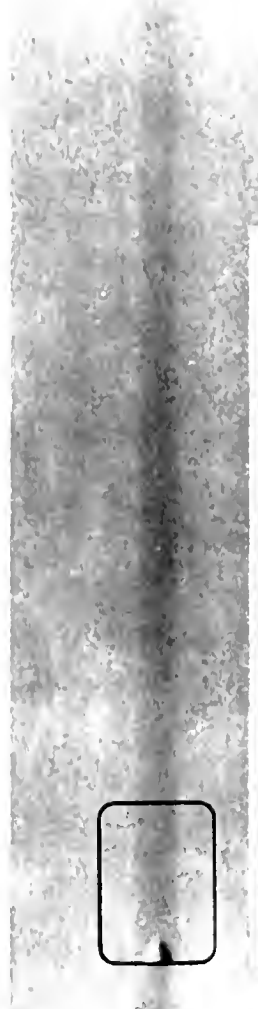
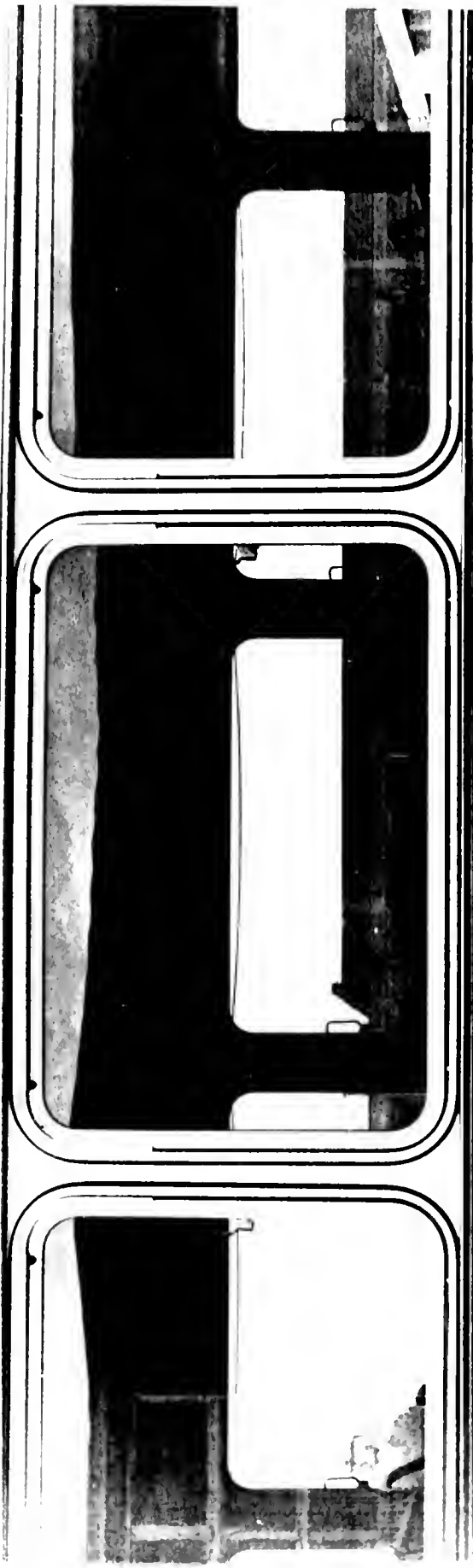
Chicago

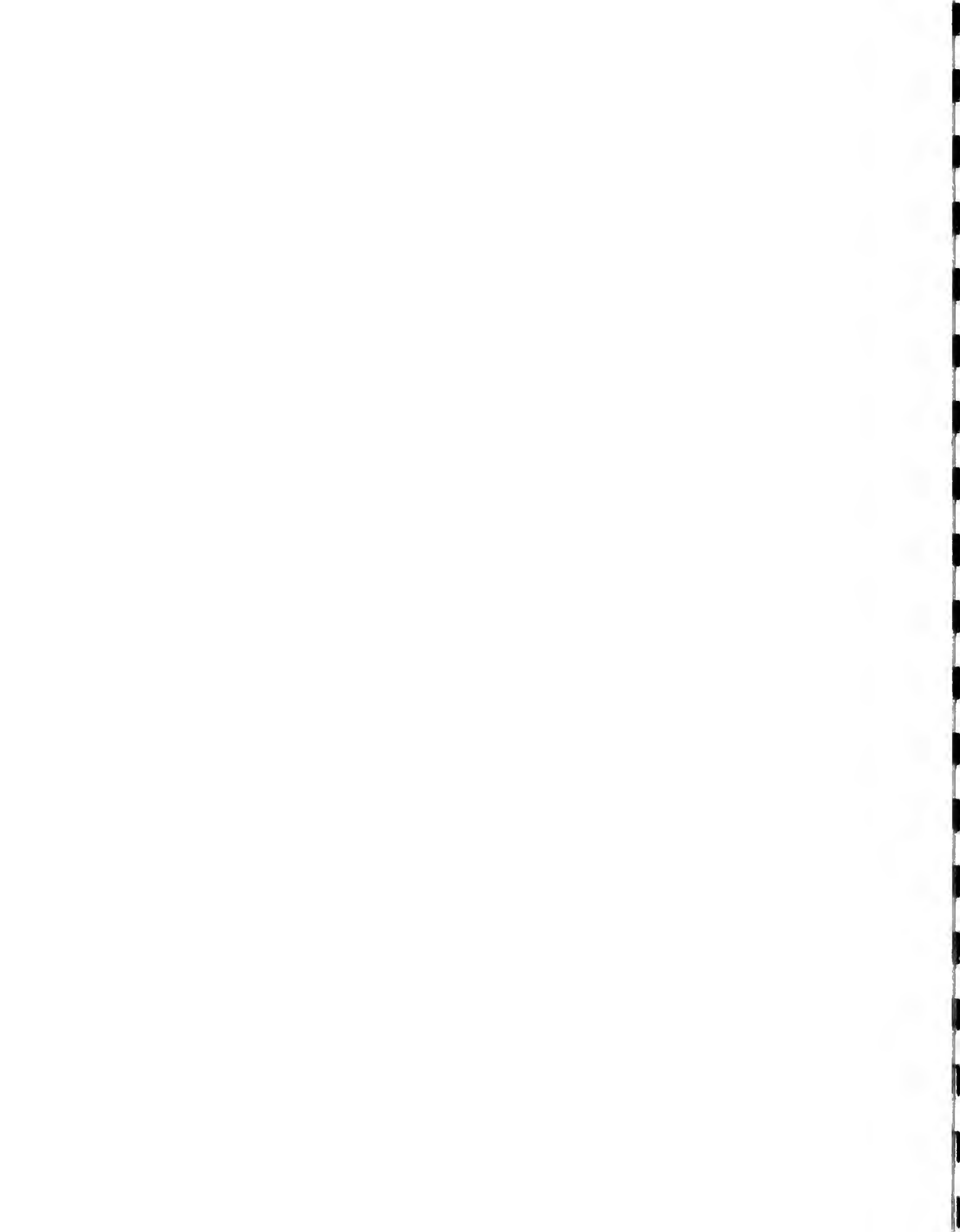
Exact fare  
required  
Driver has  
NO change



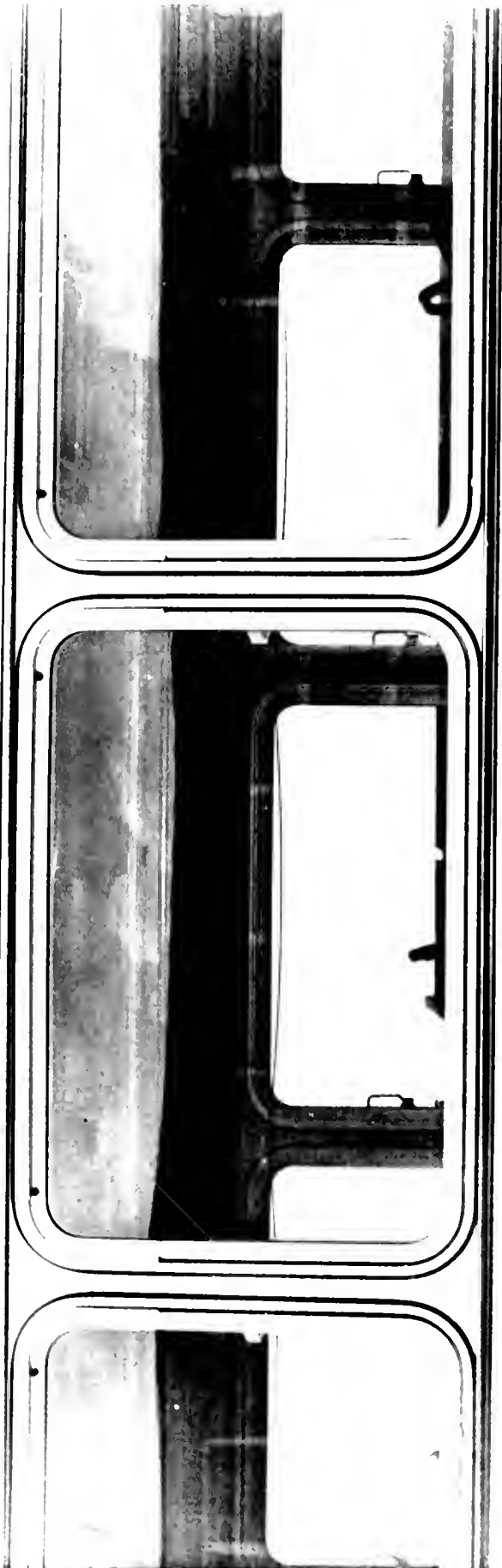




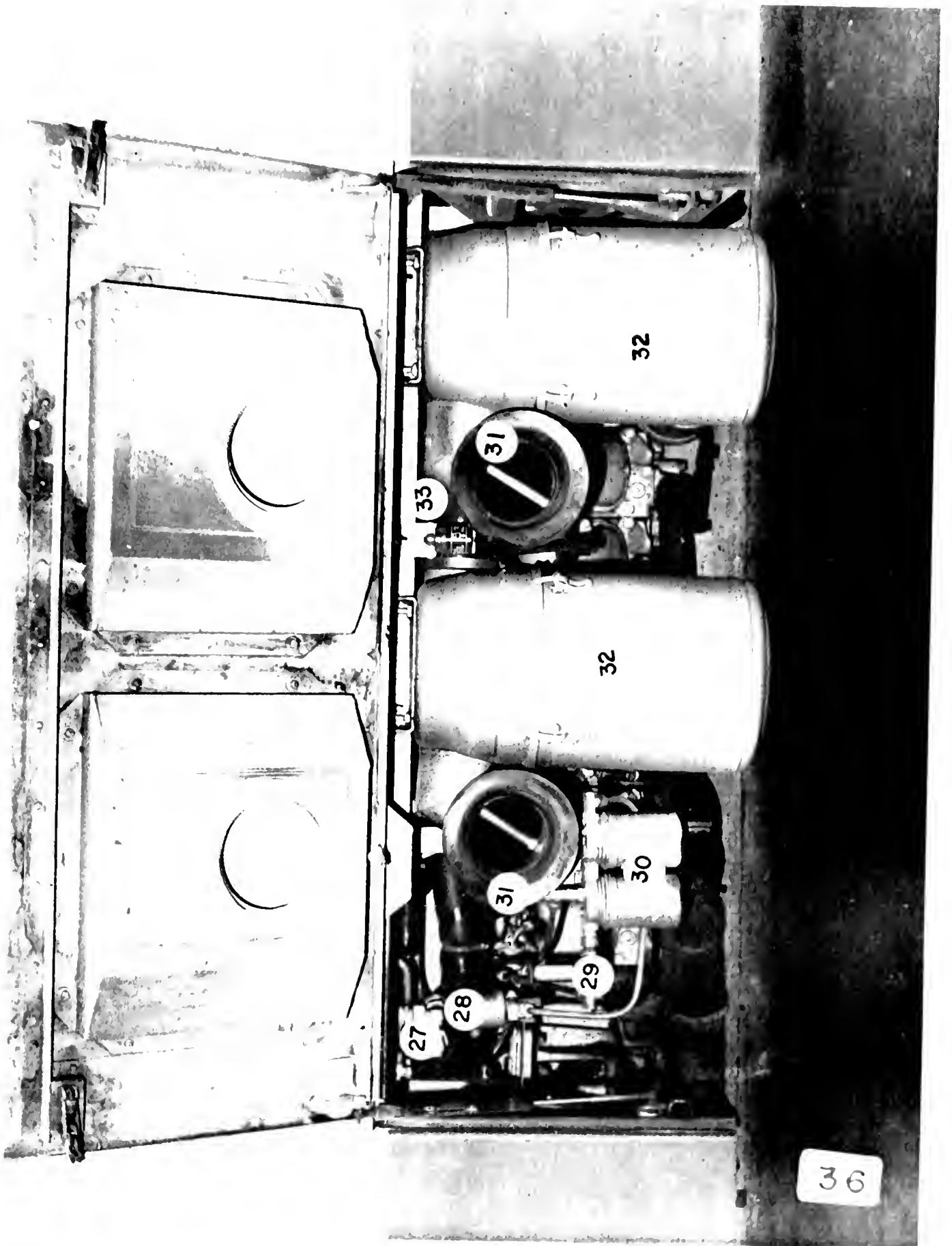




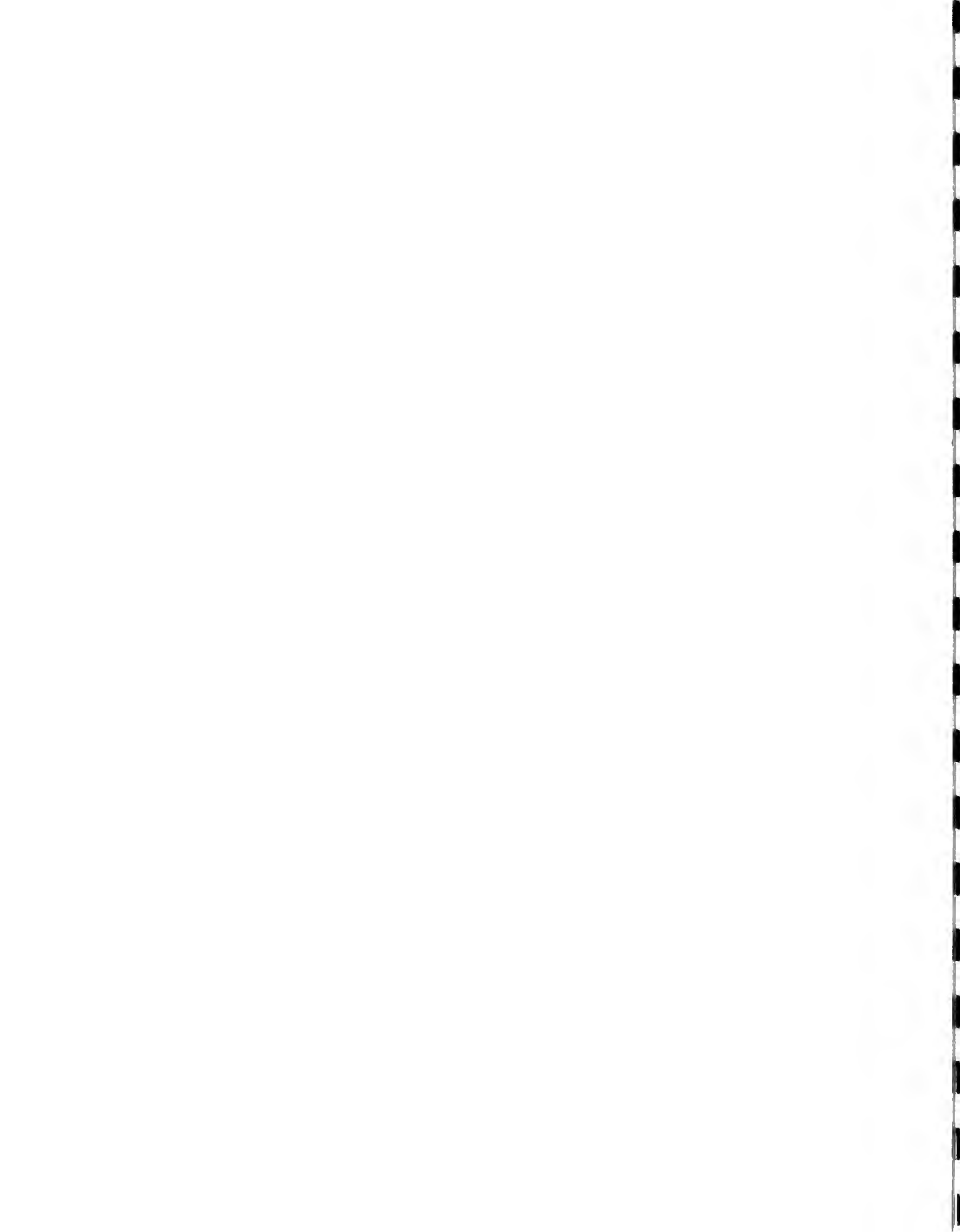


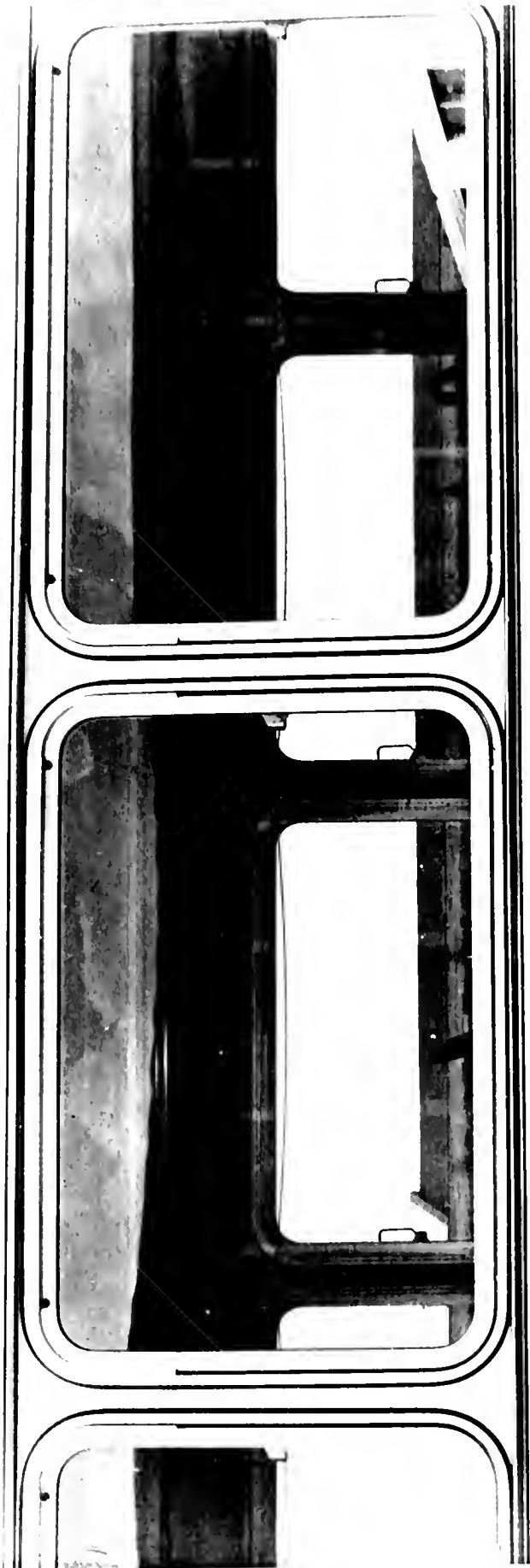




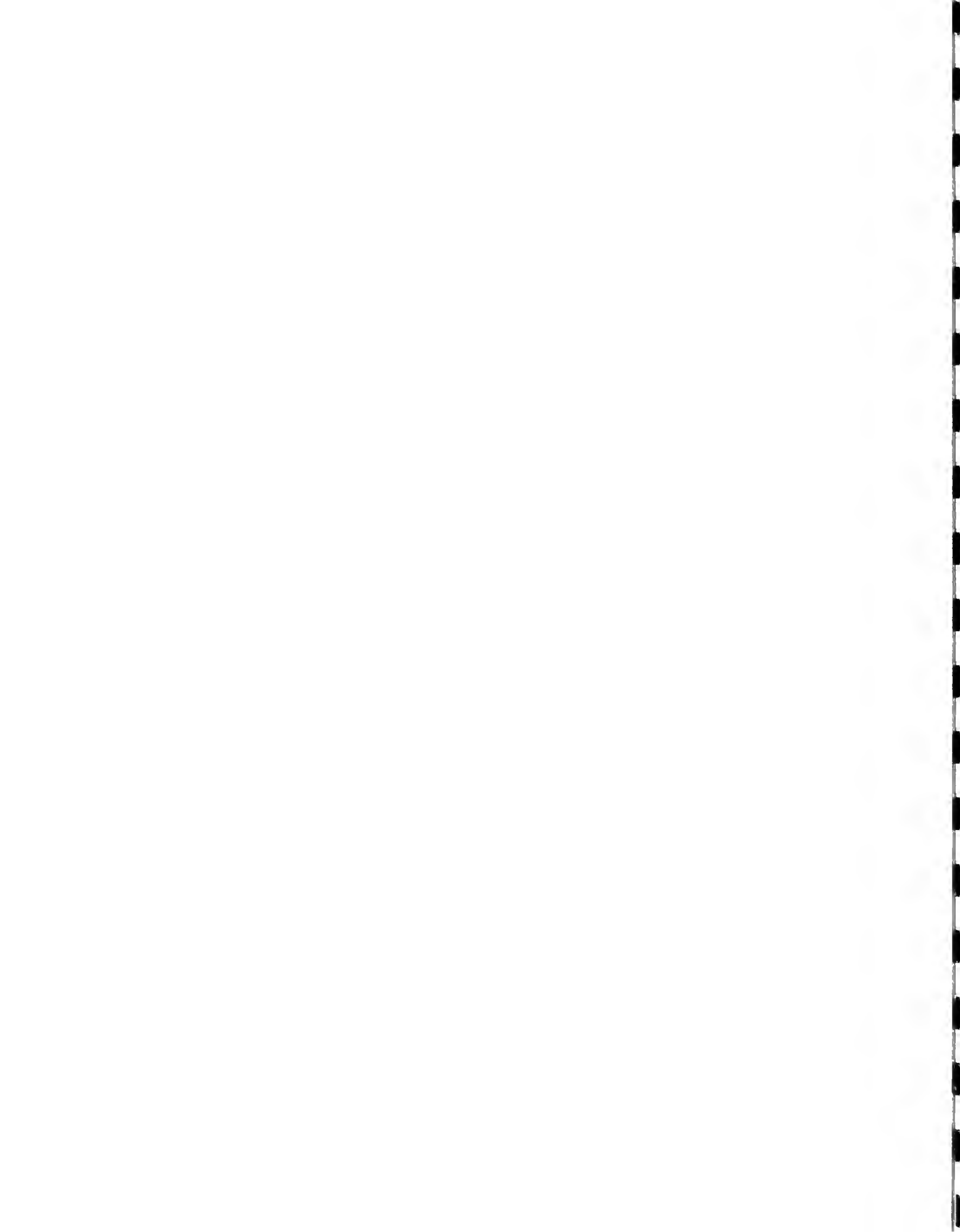


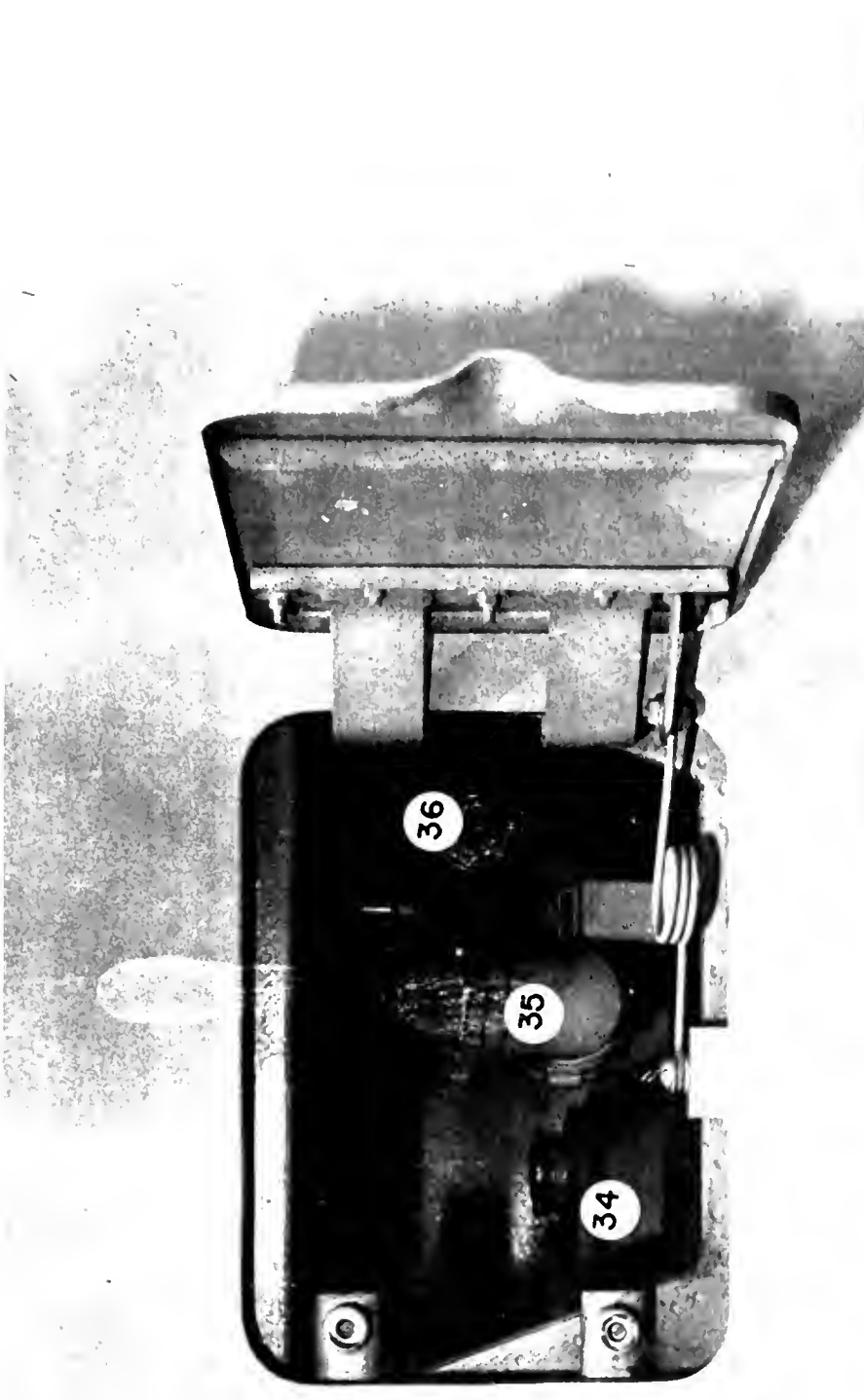
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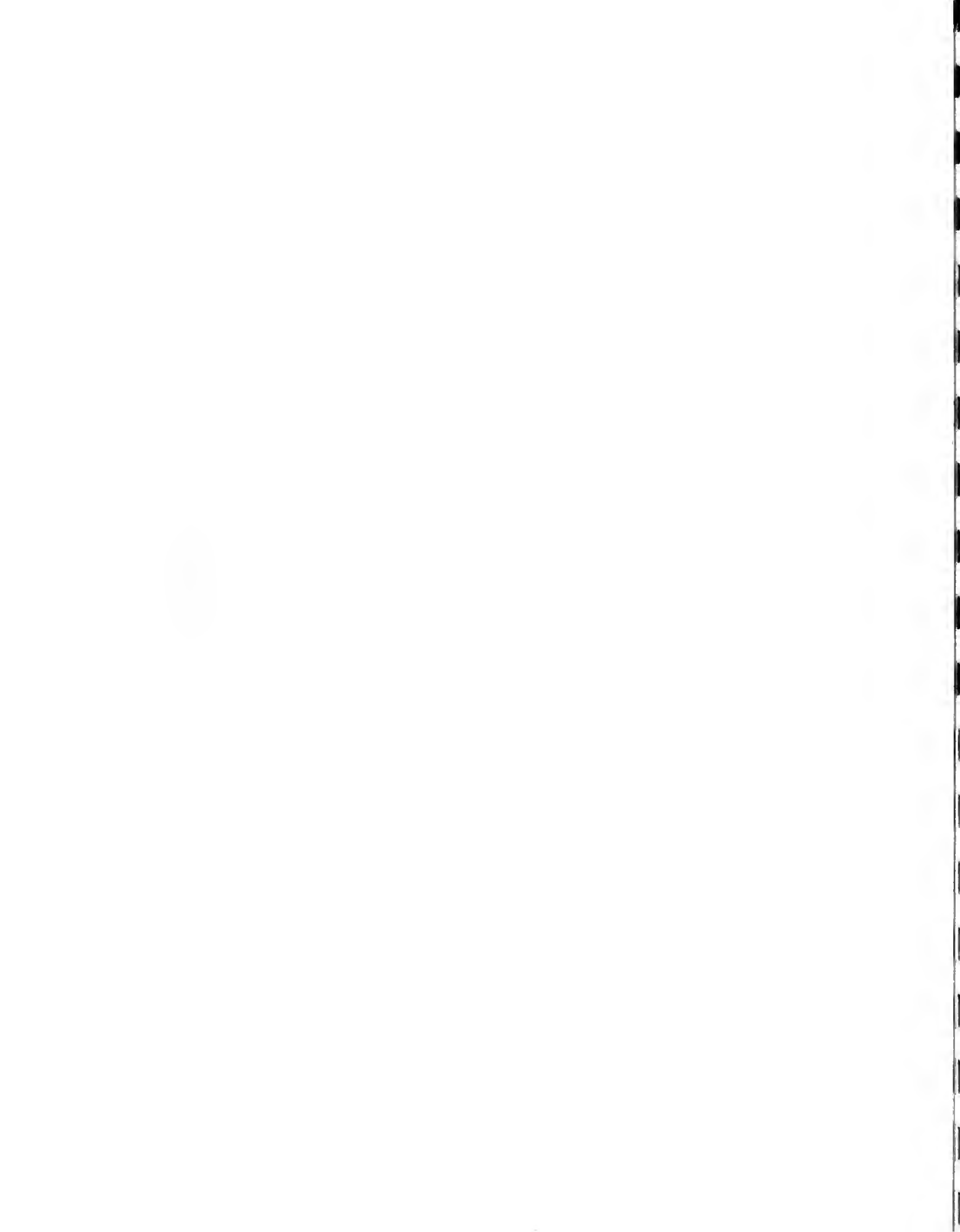




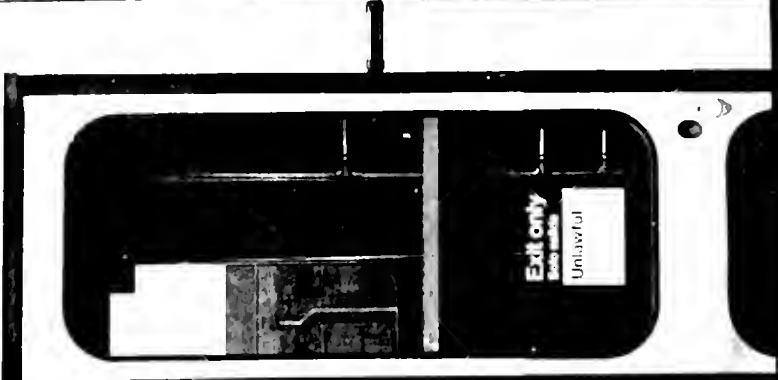
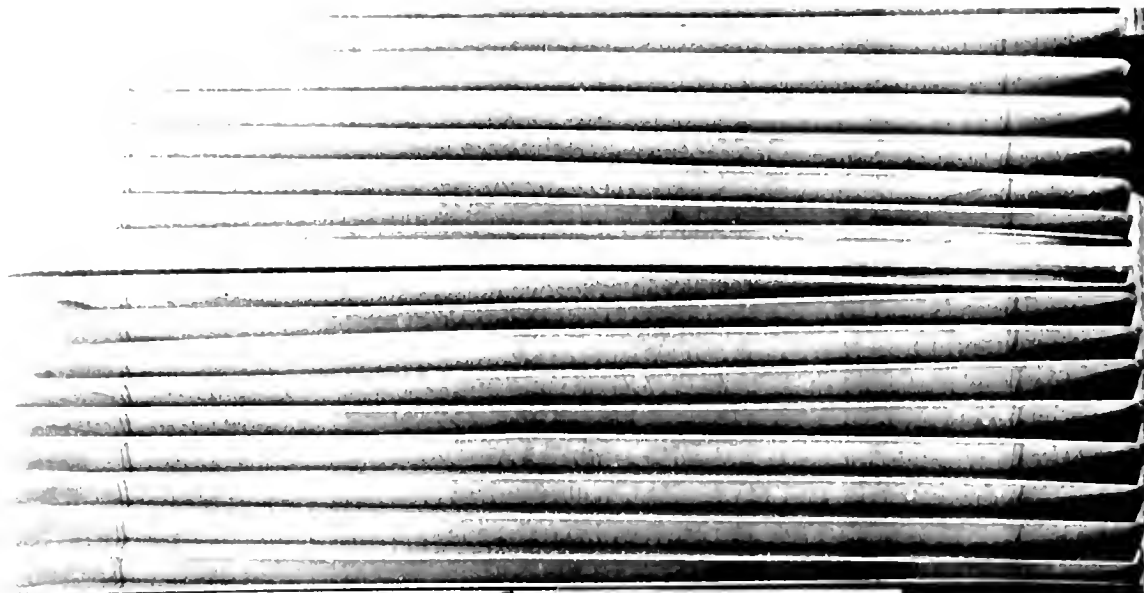
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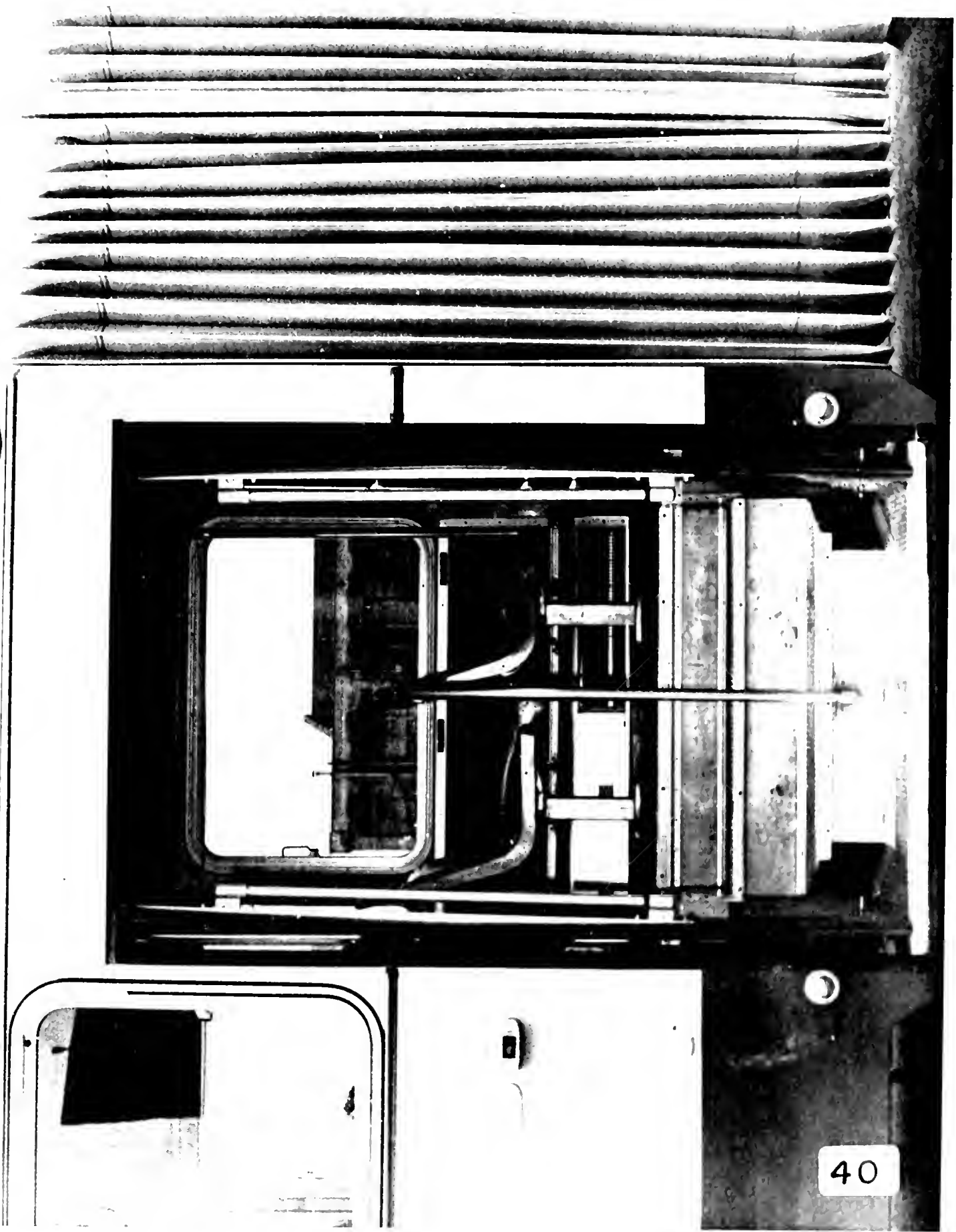


Exit only  
Unlawful

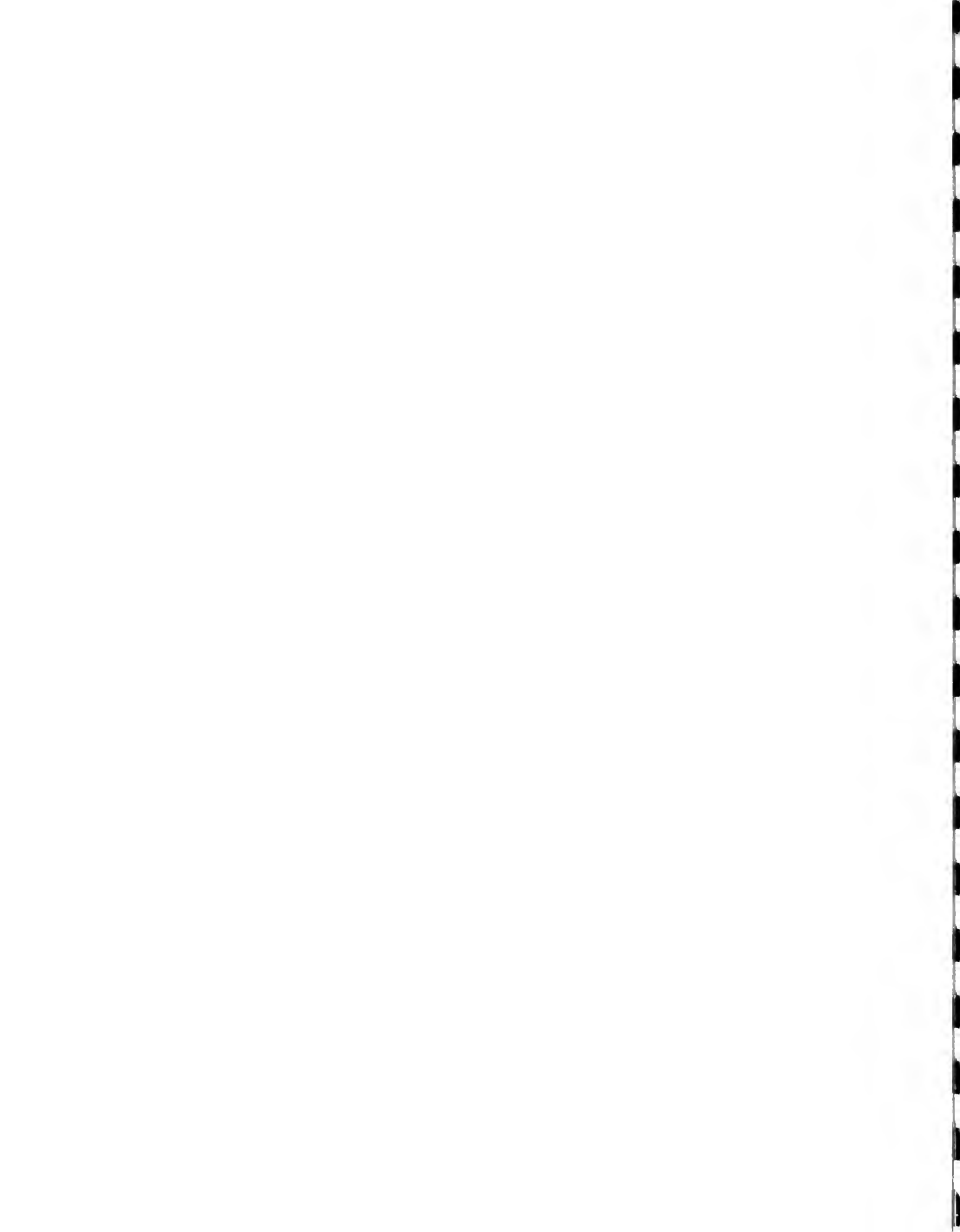


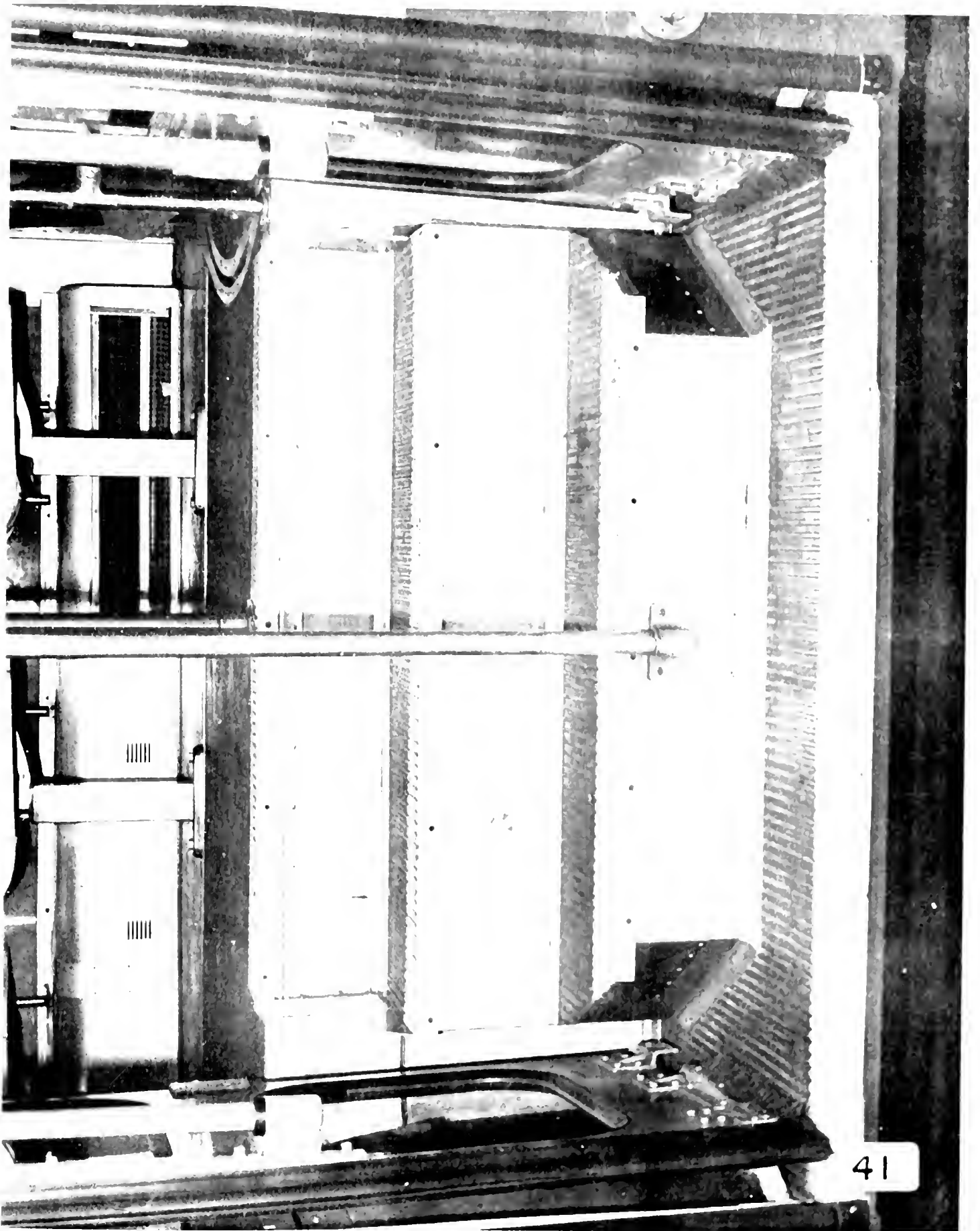
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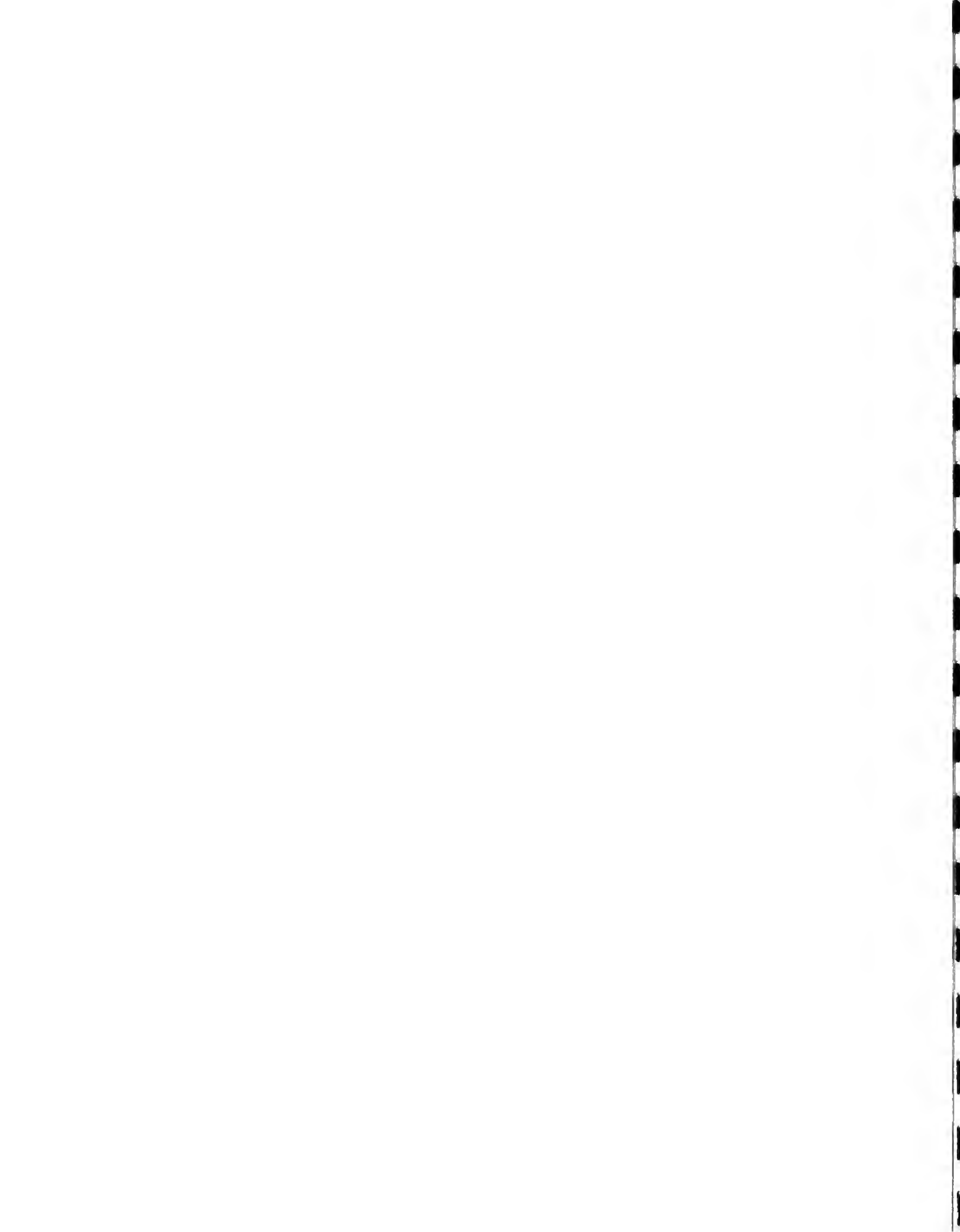


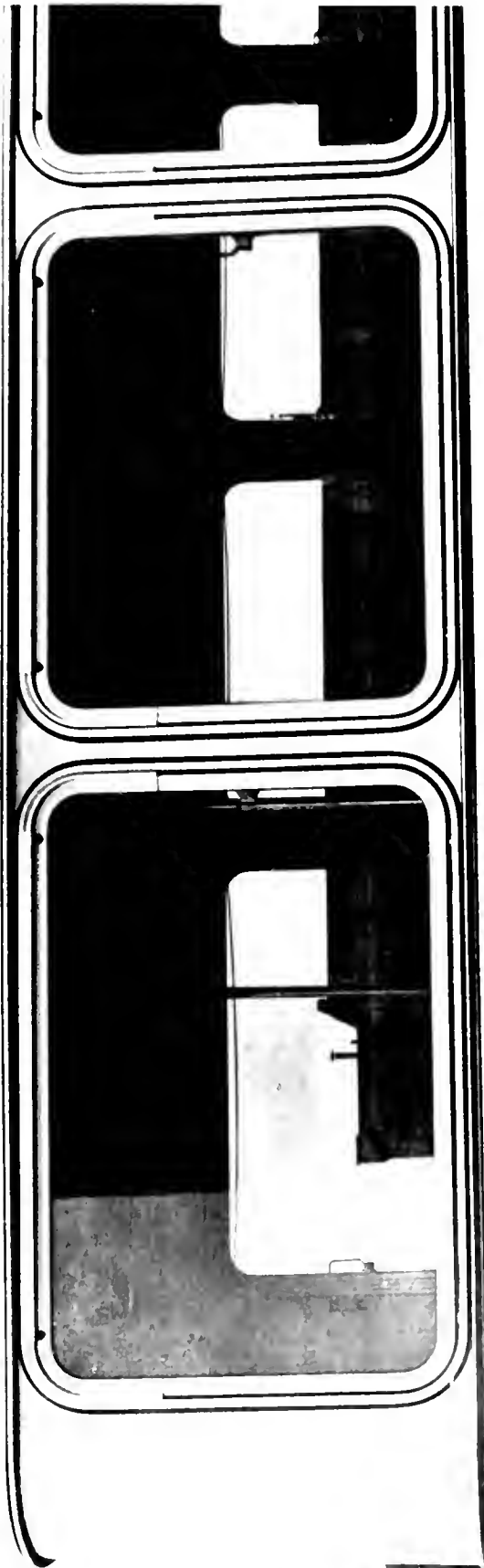


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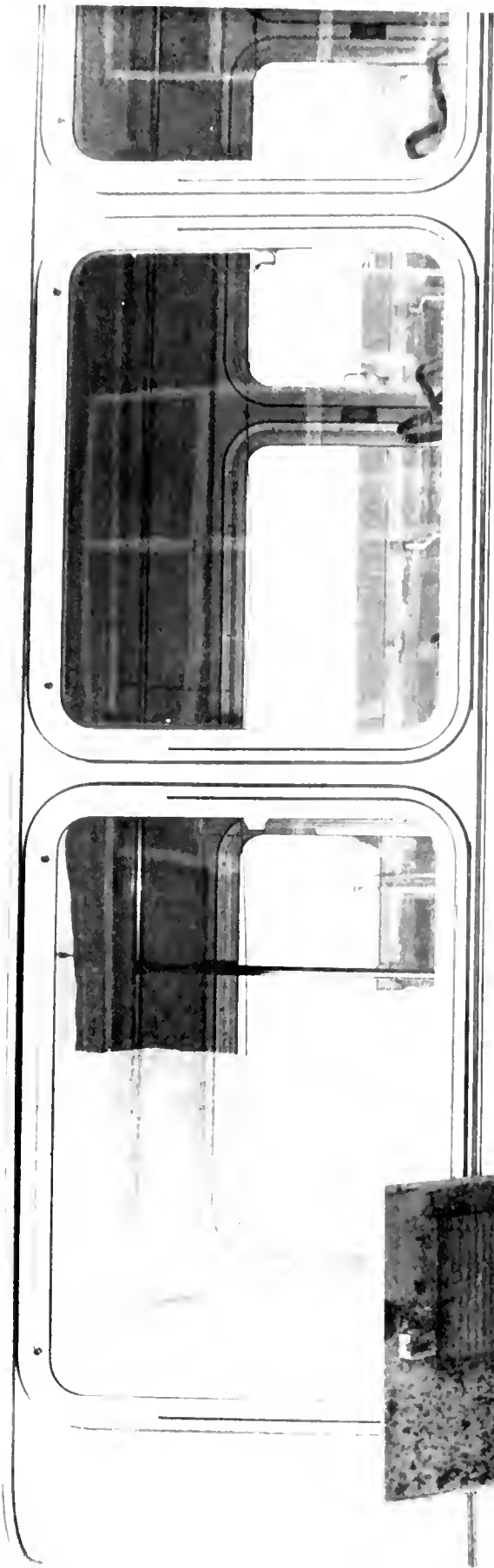


cta 7002

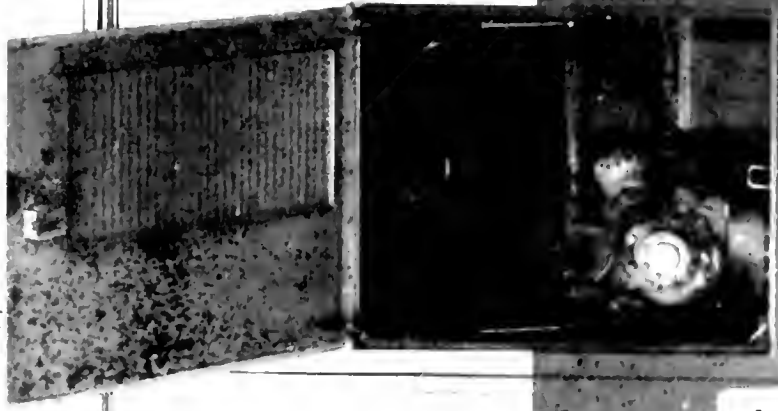




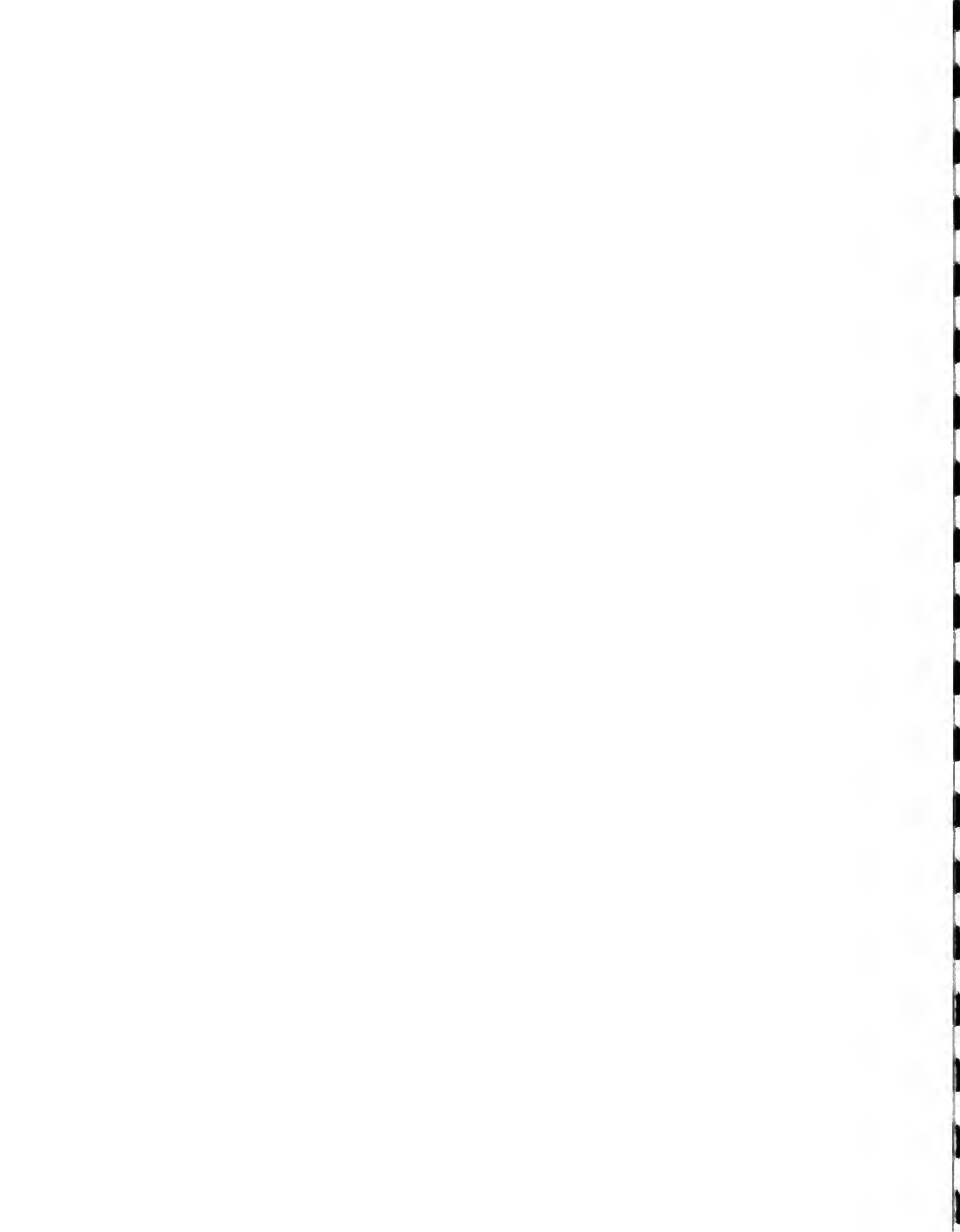




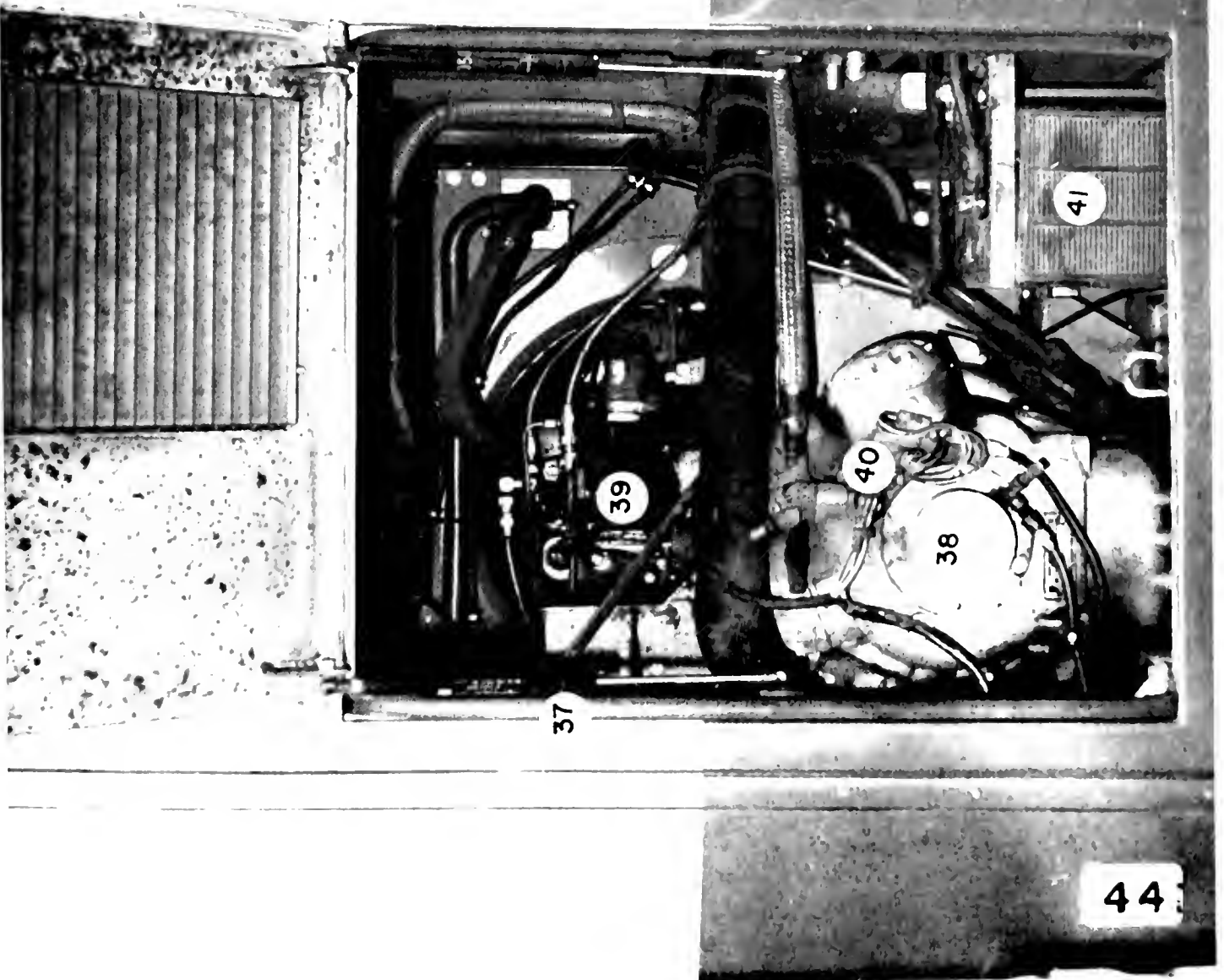
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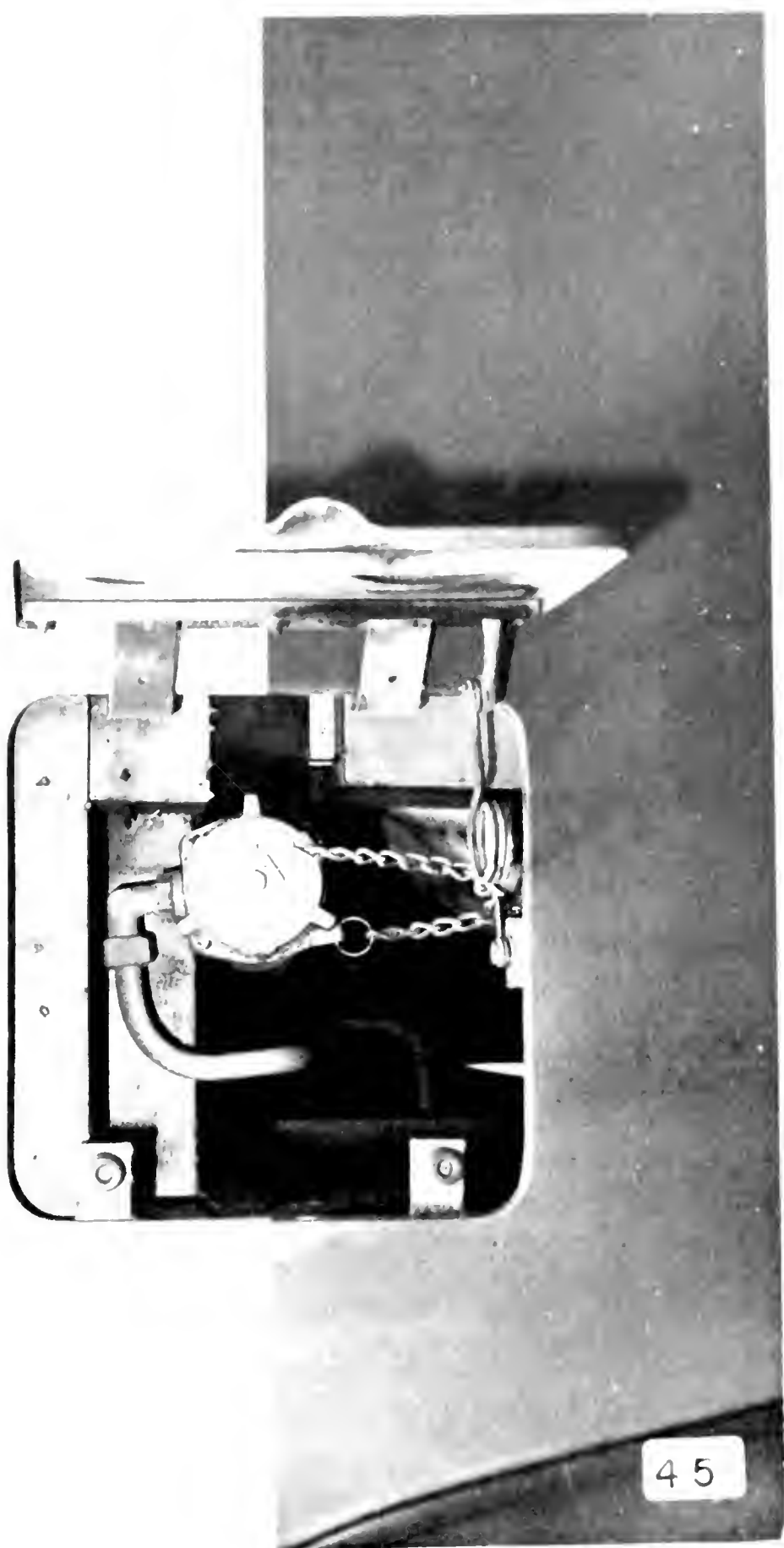
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1002

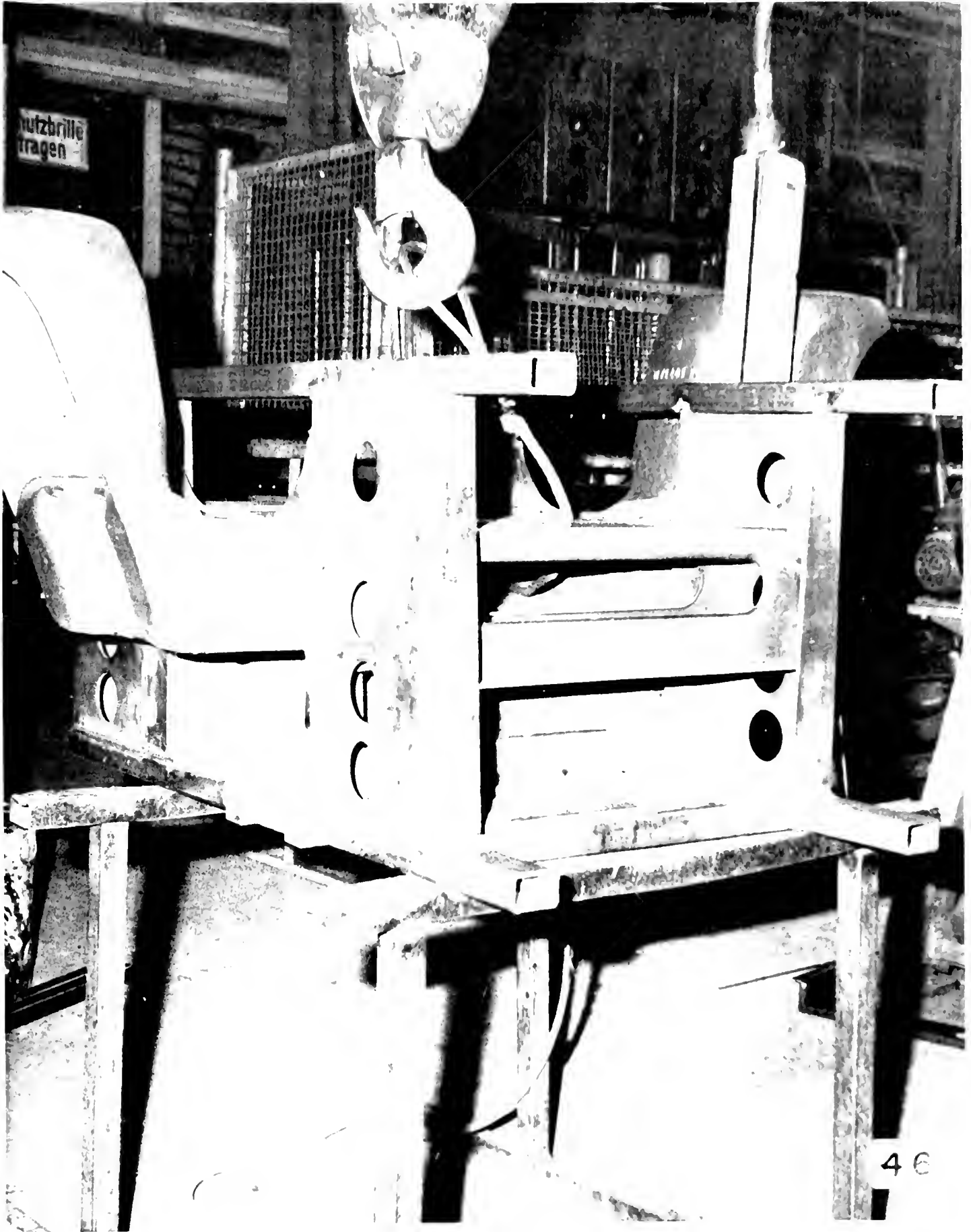






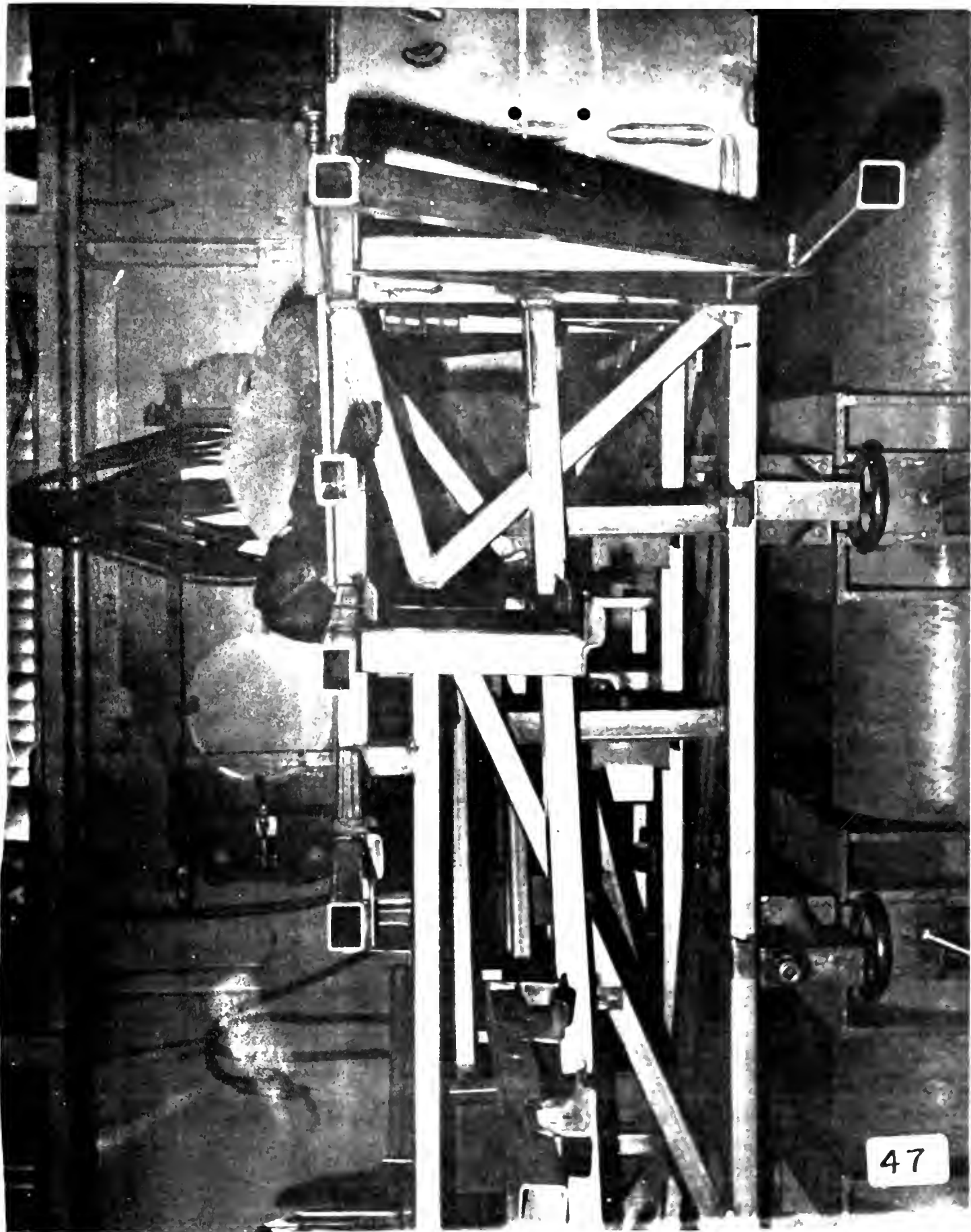
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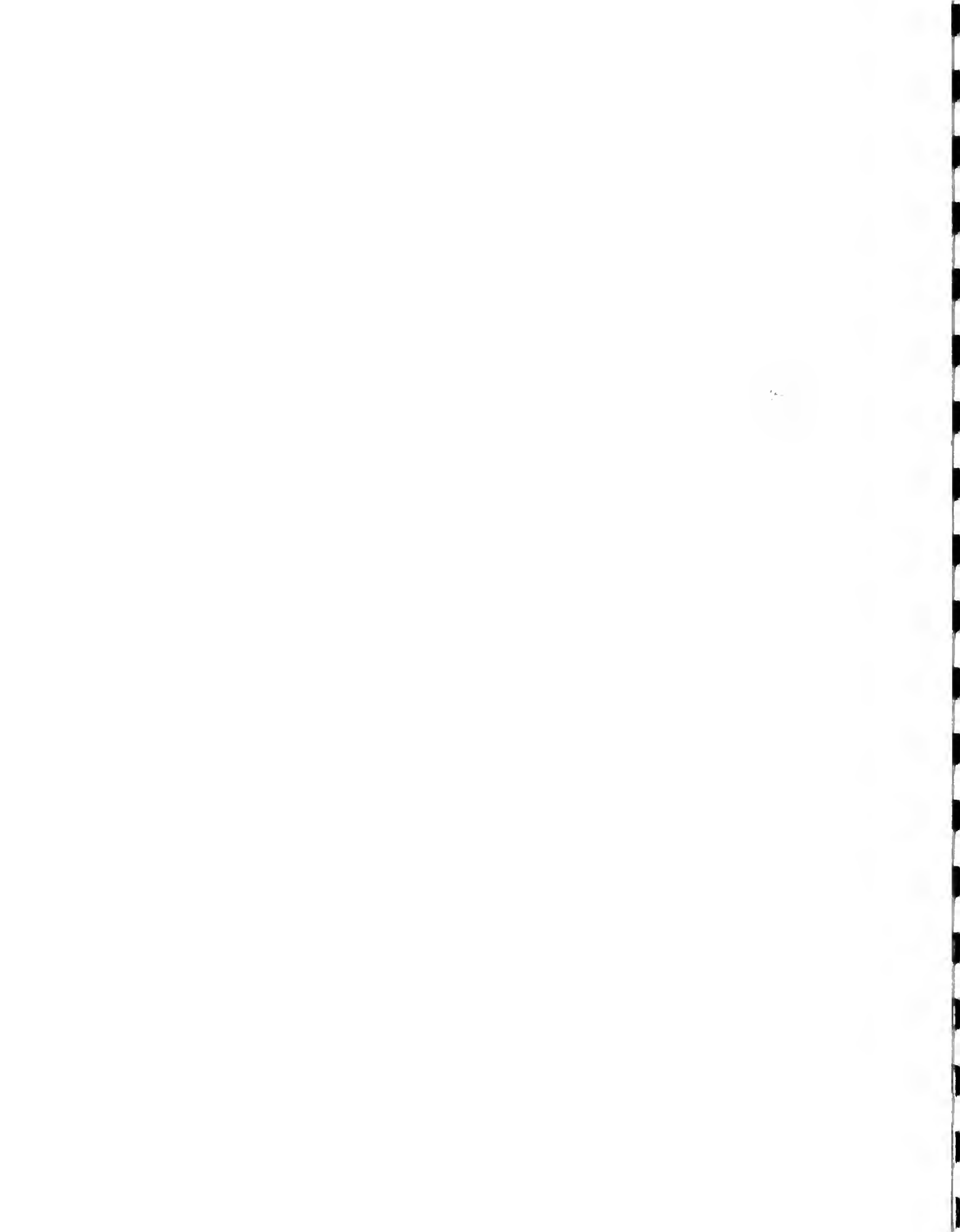






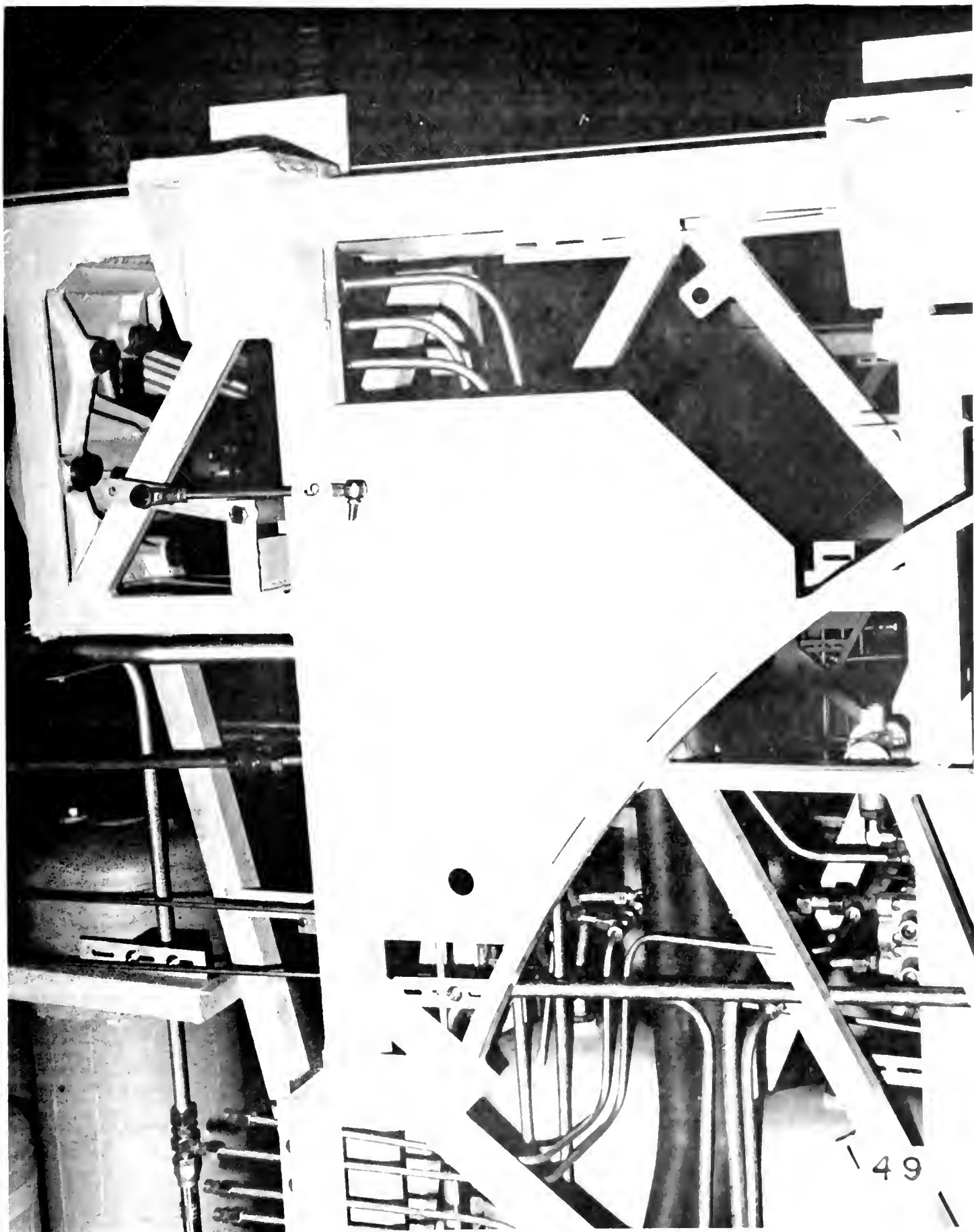


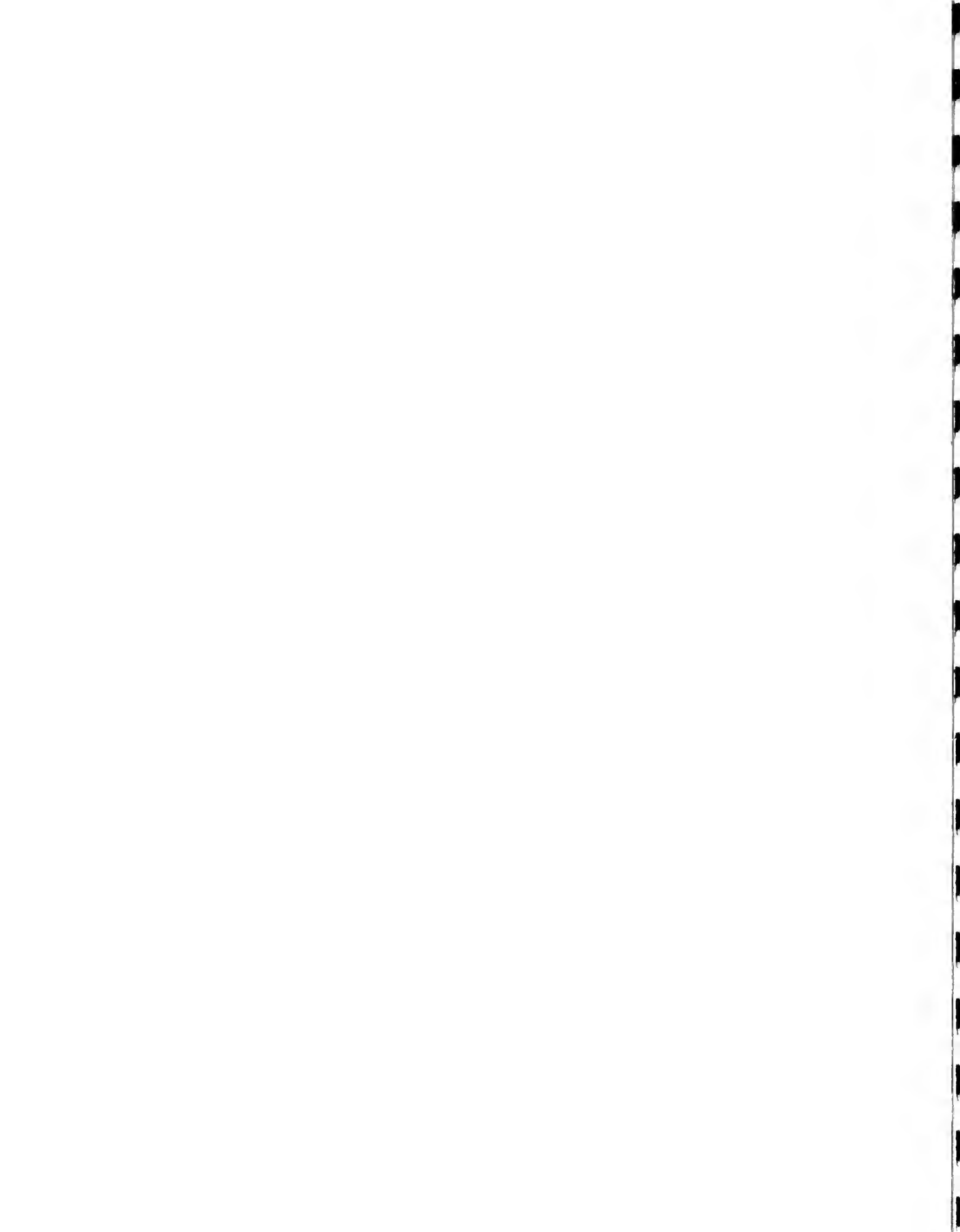
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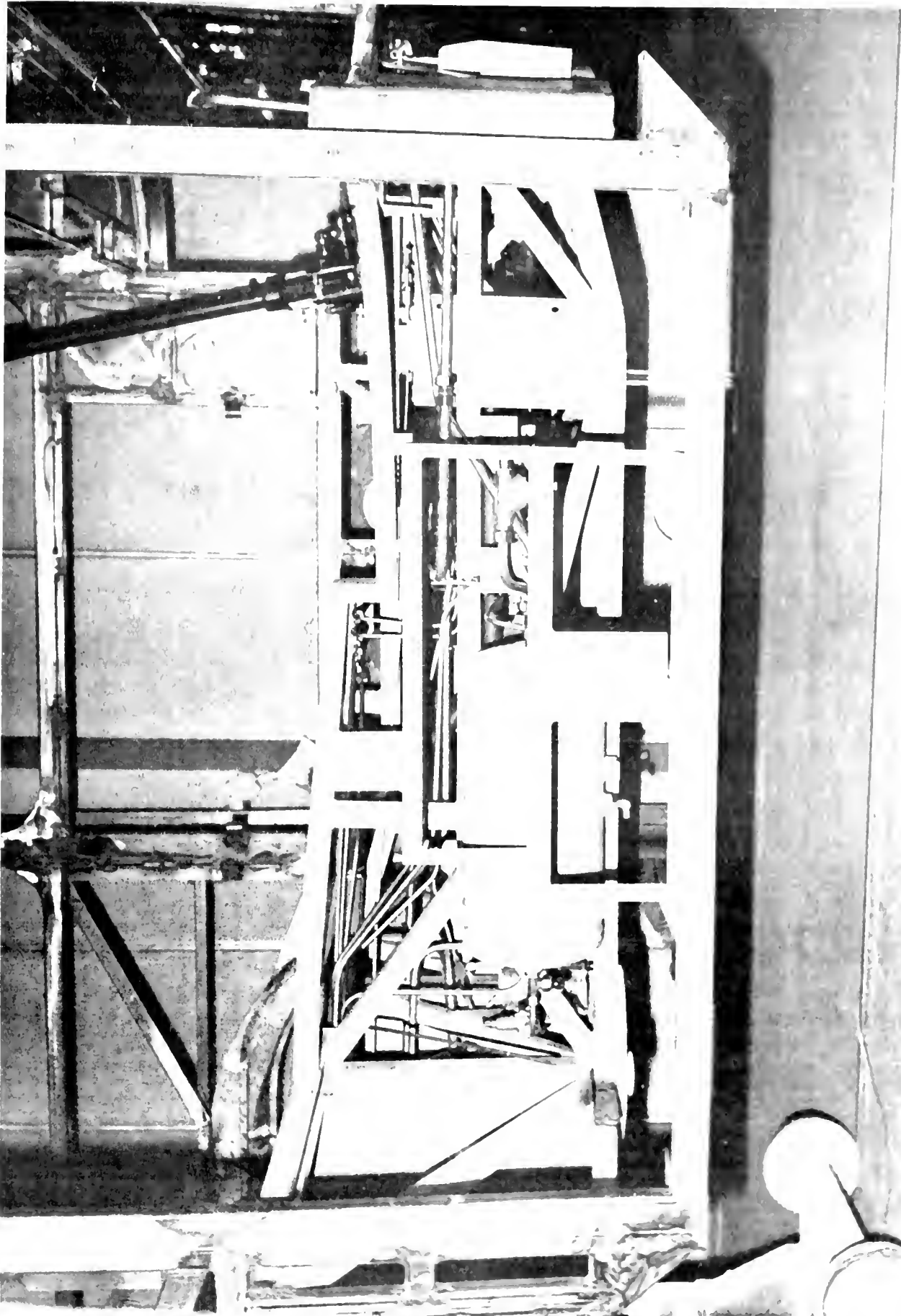




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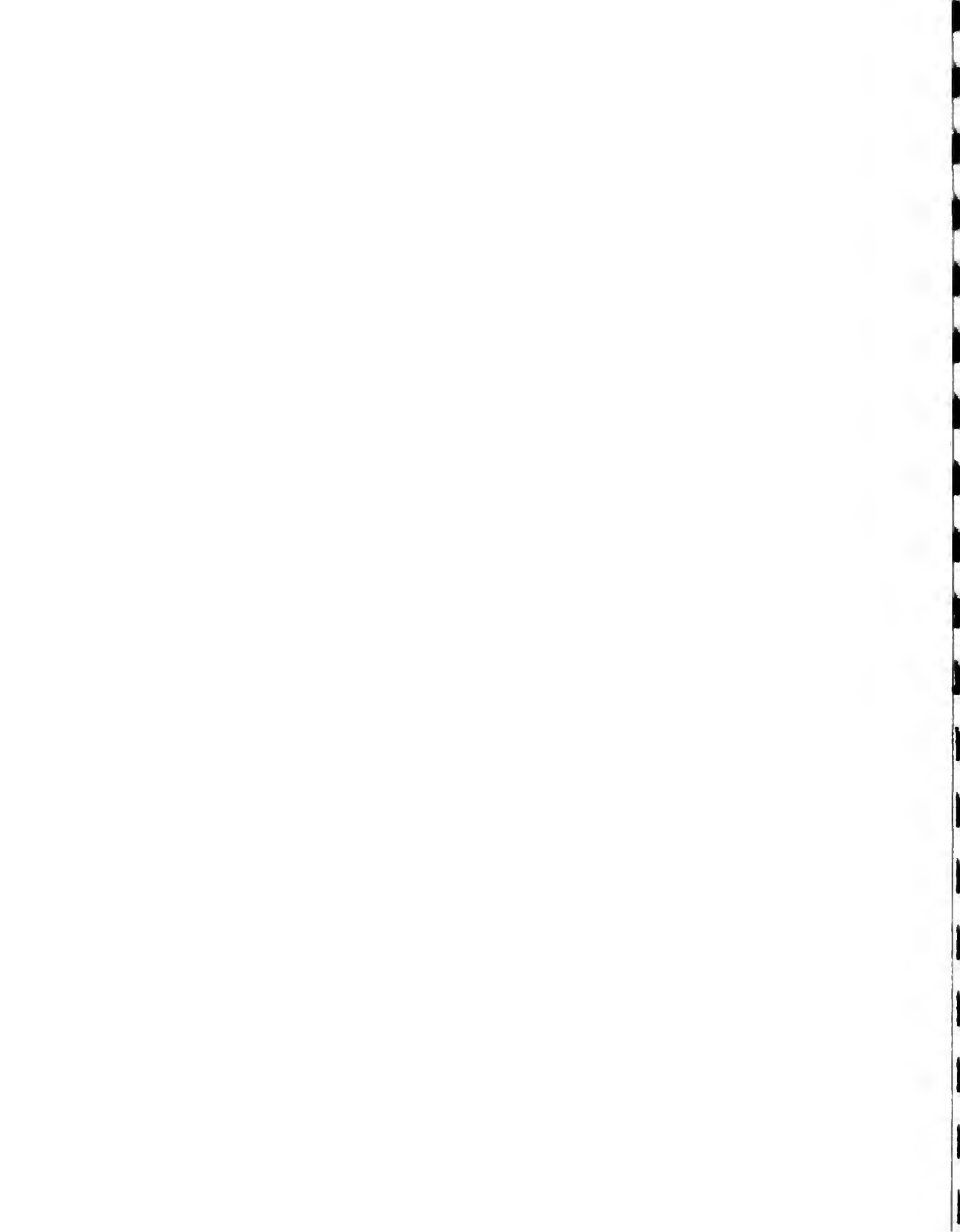






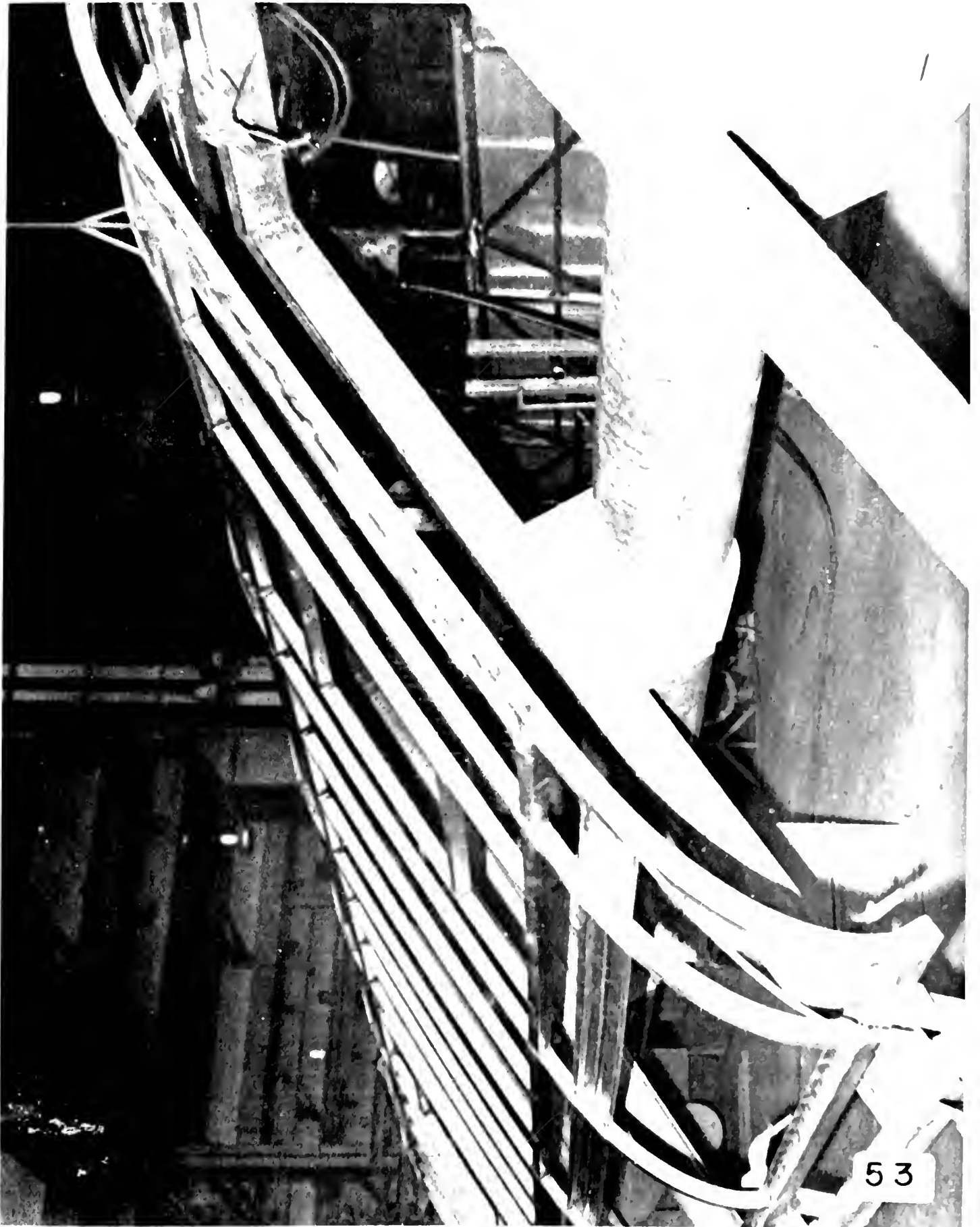






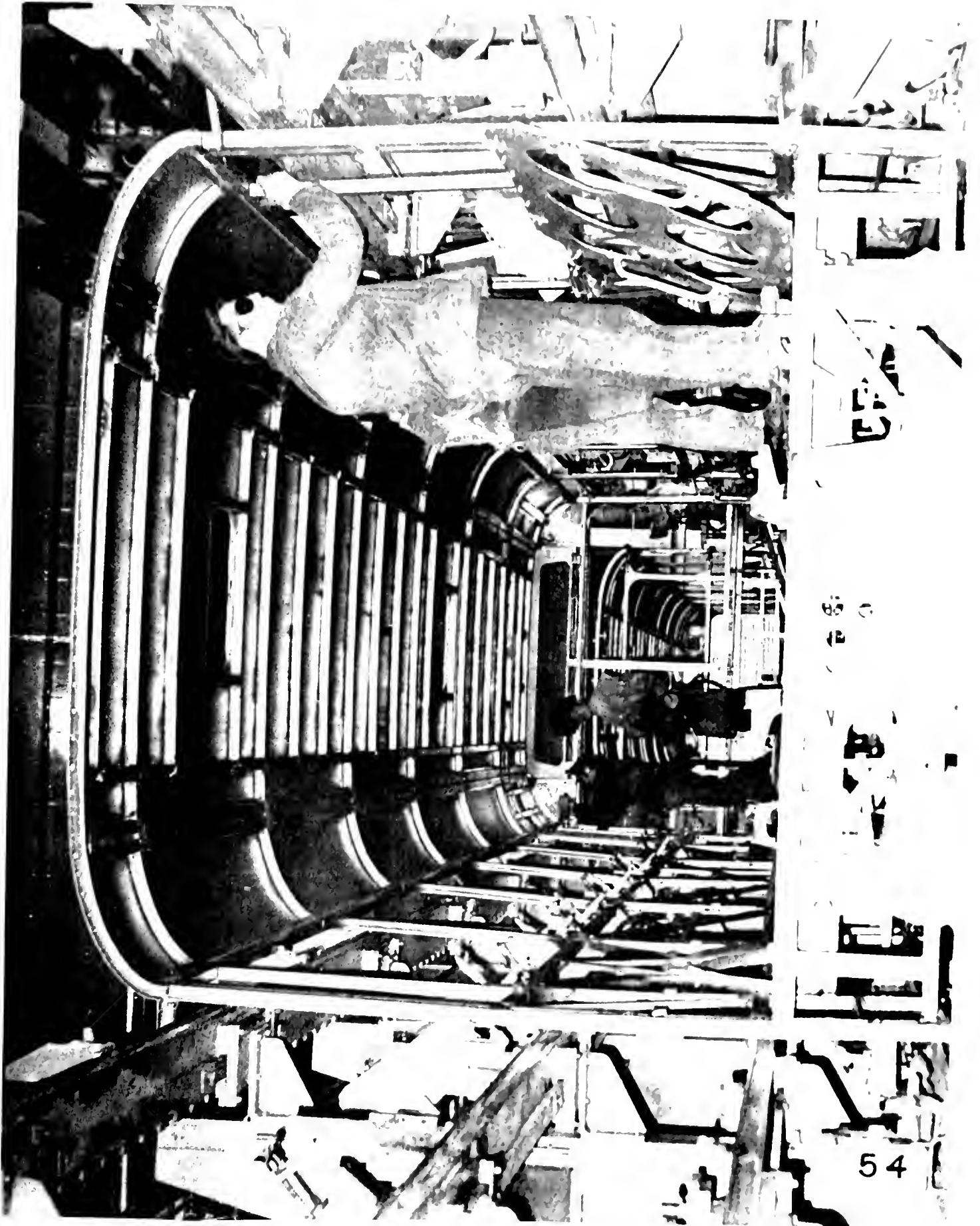






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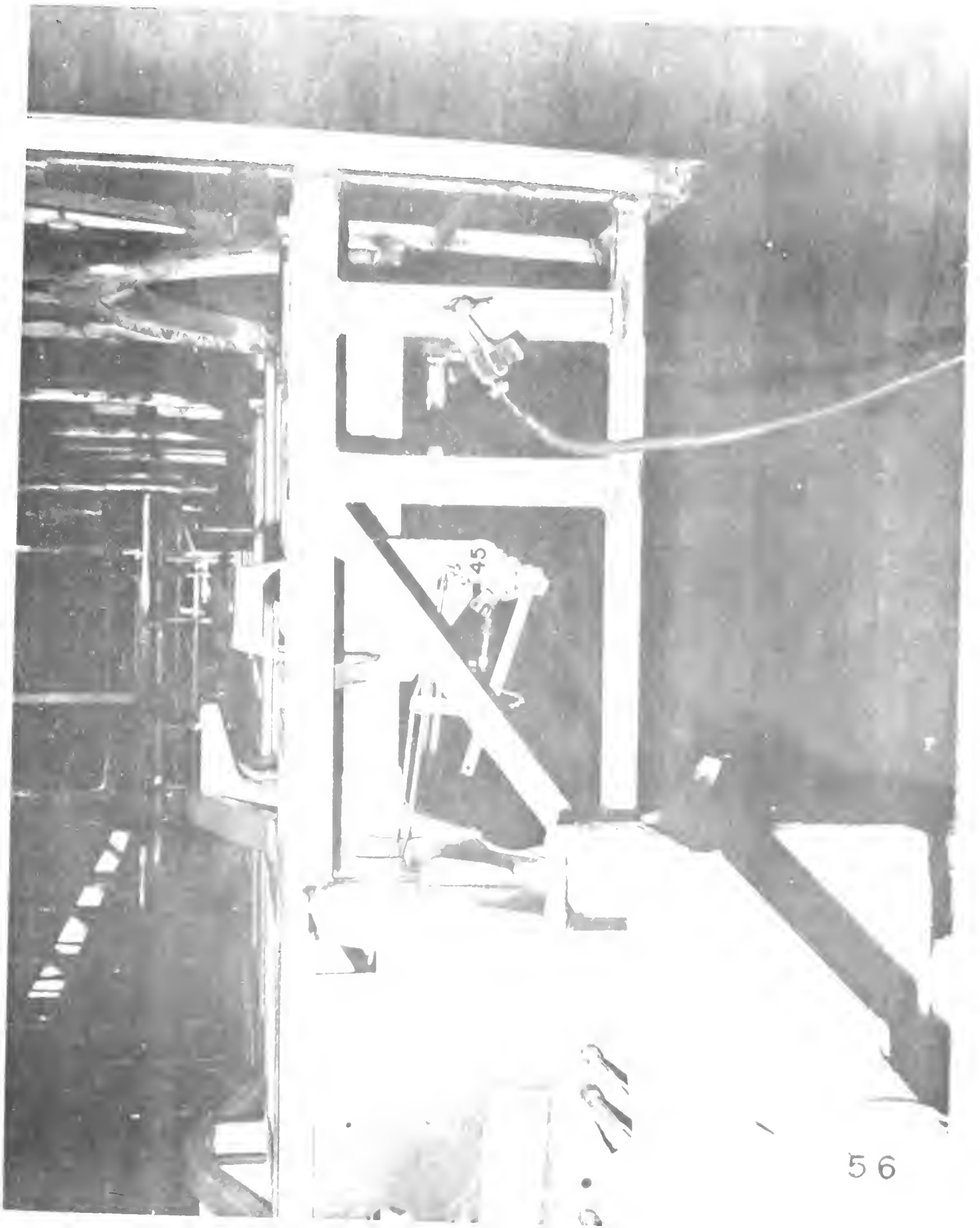




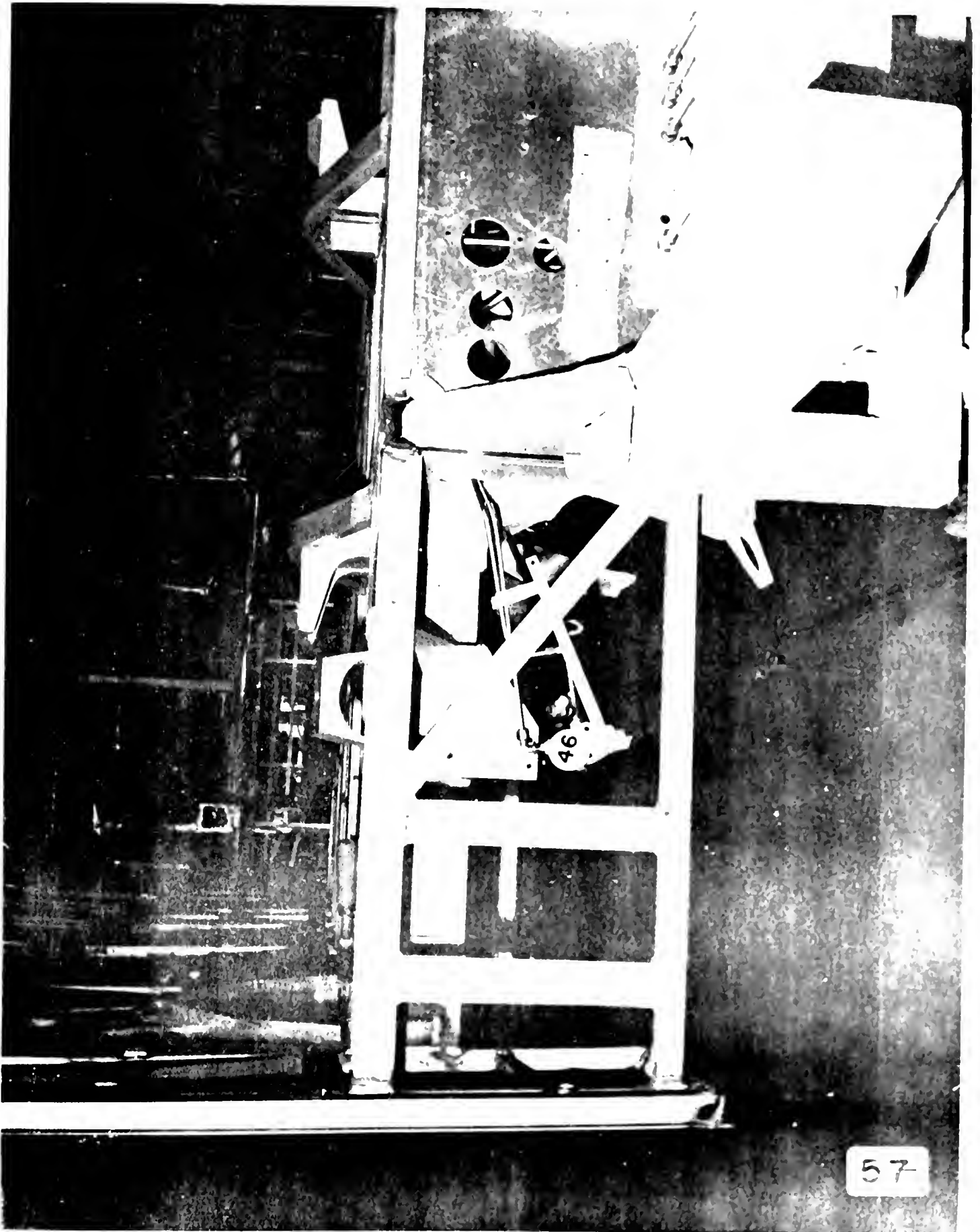


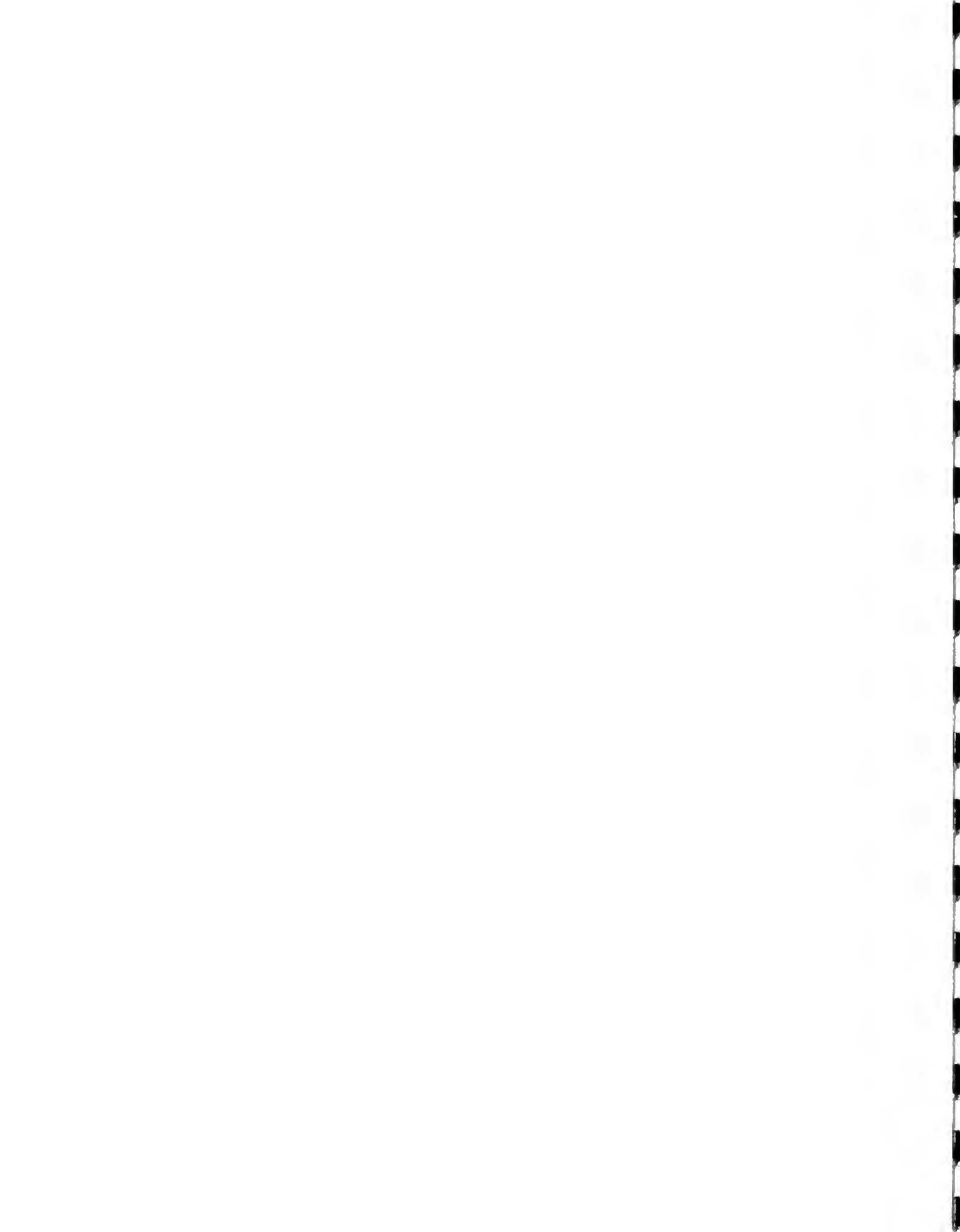
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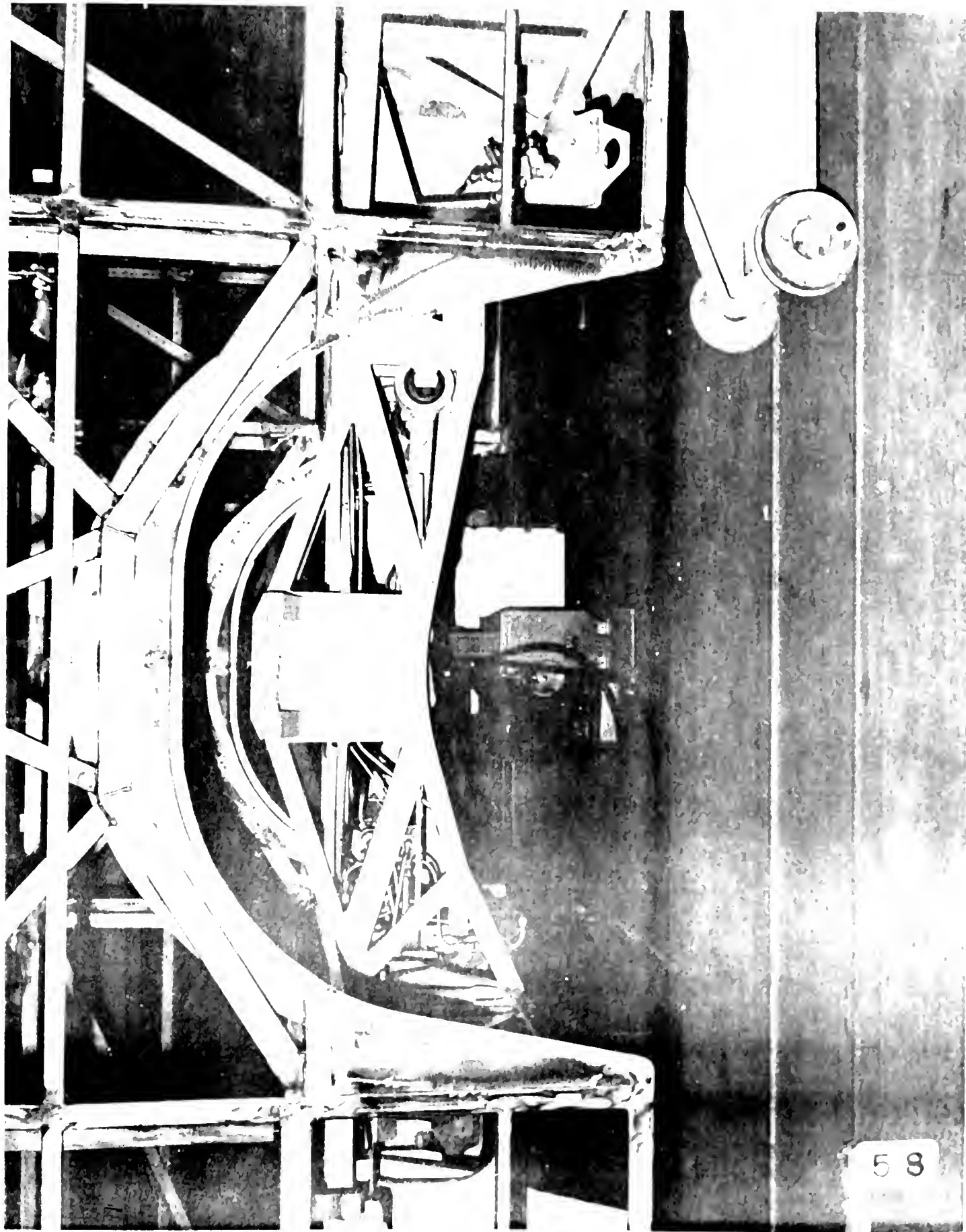




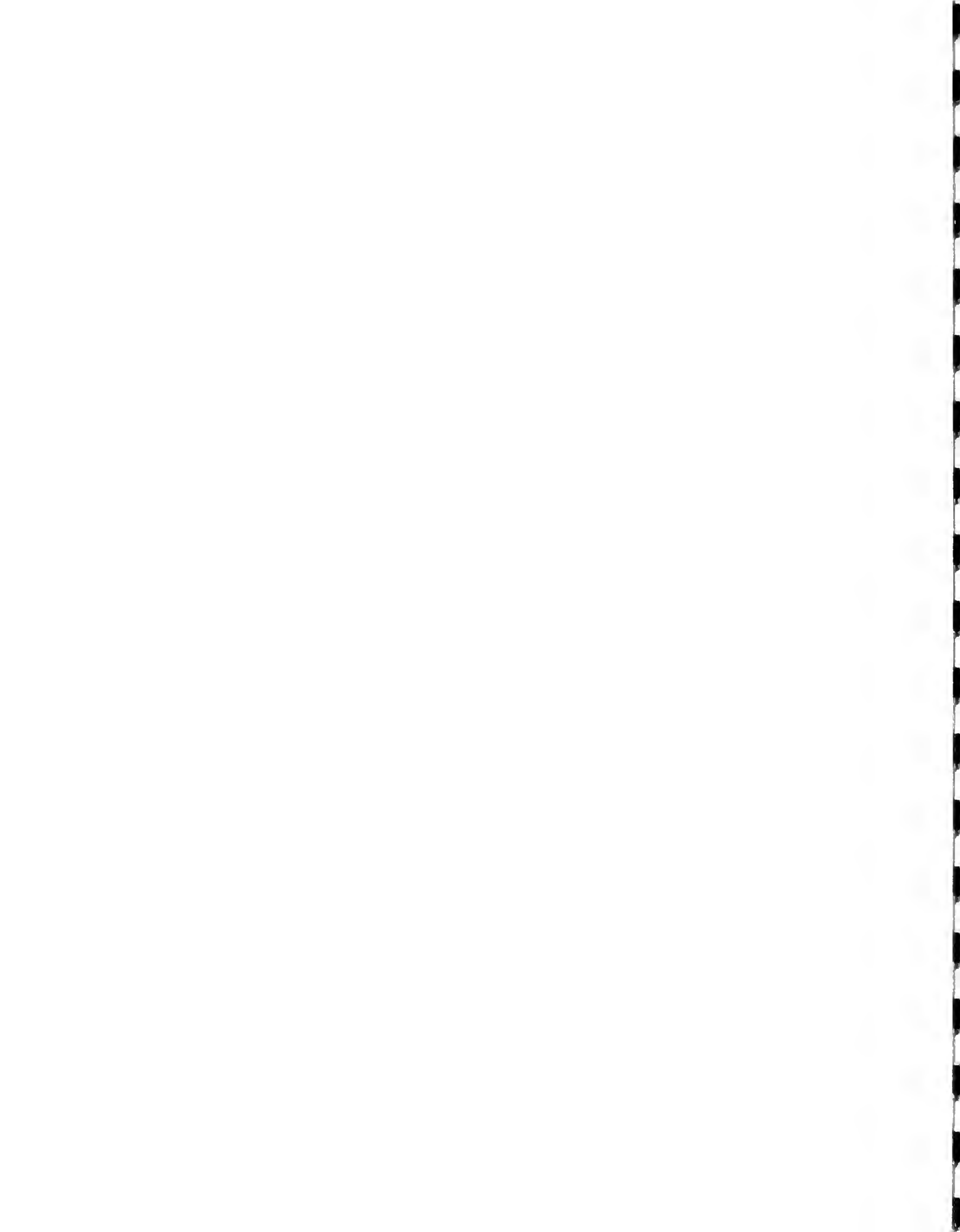




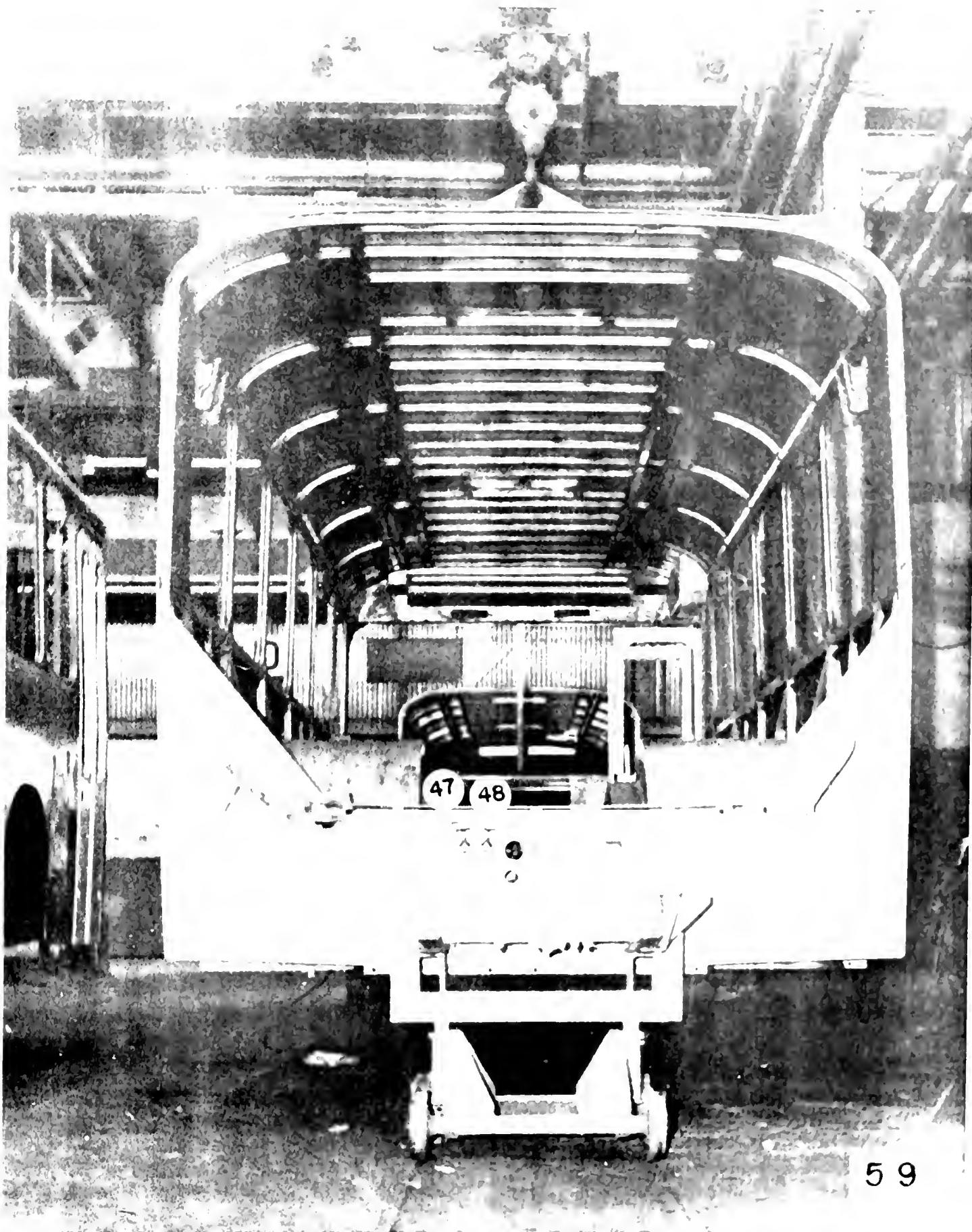


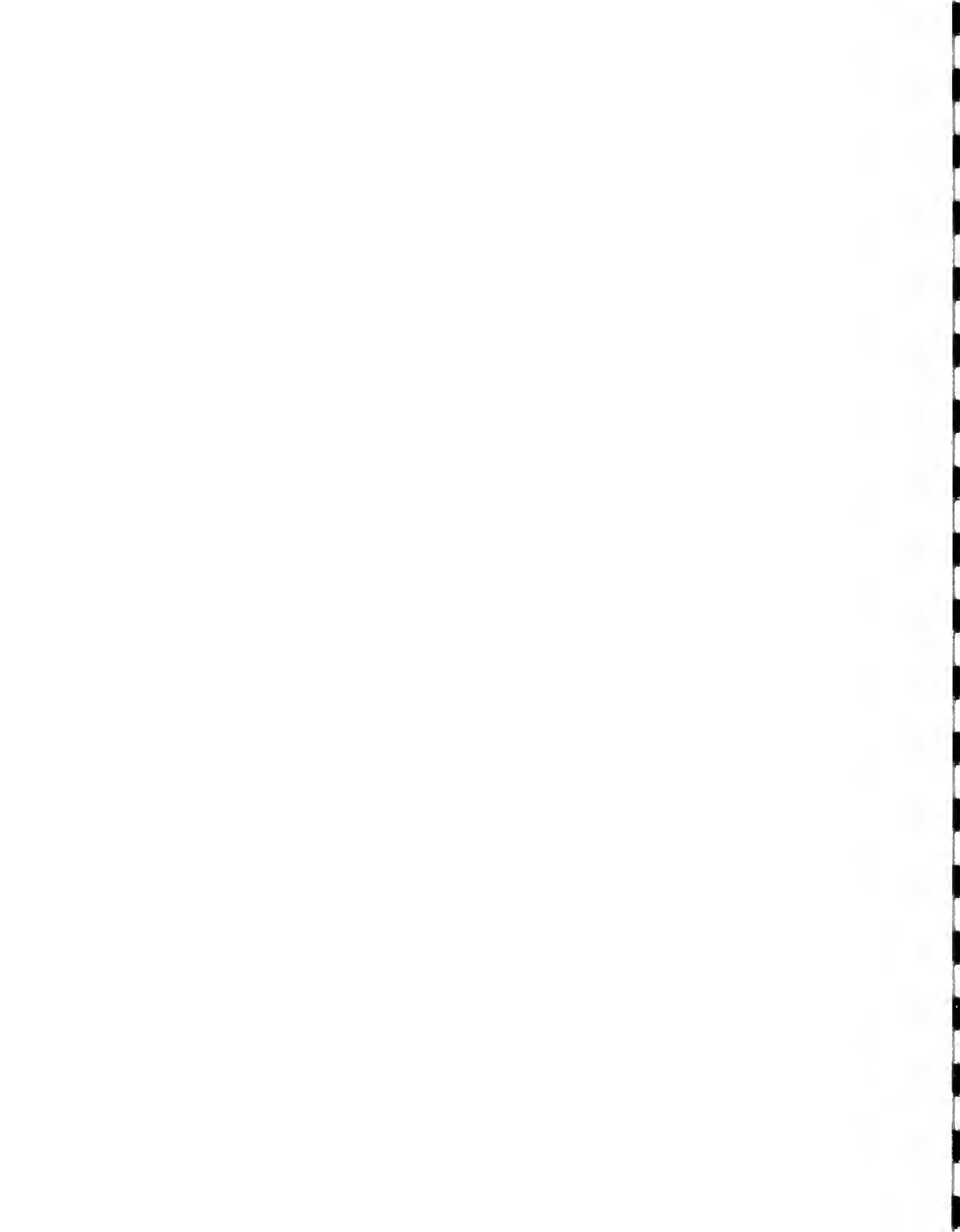


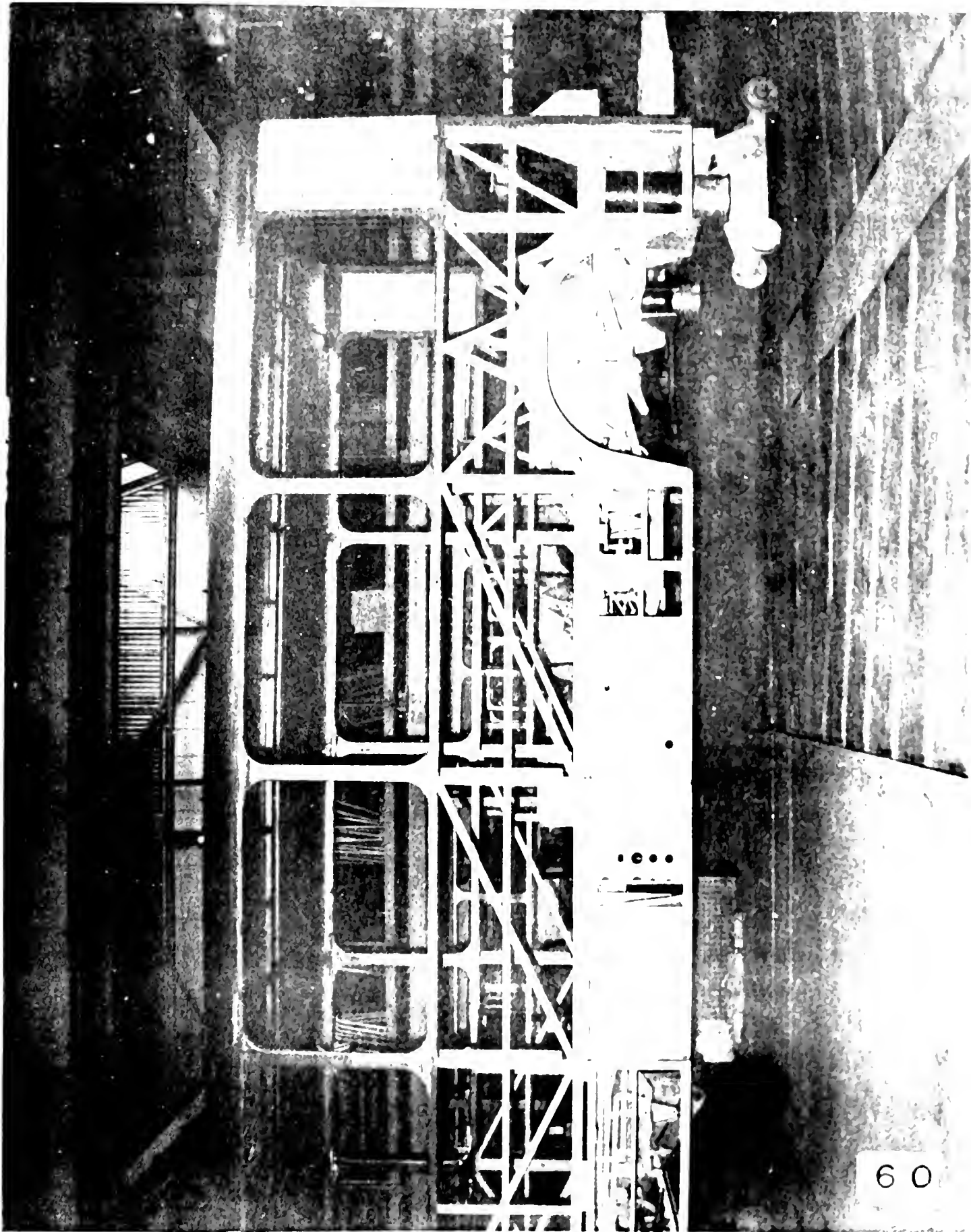
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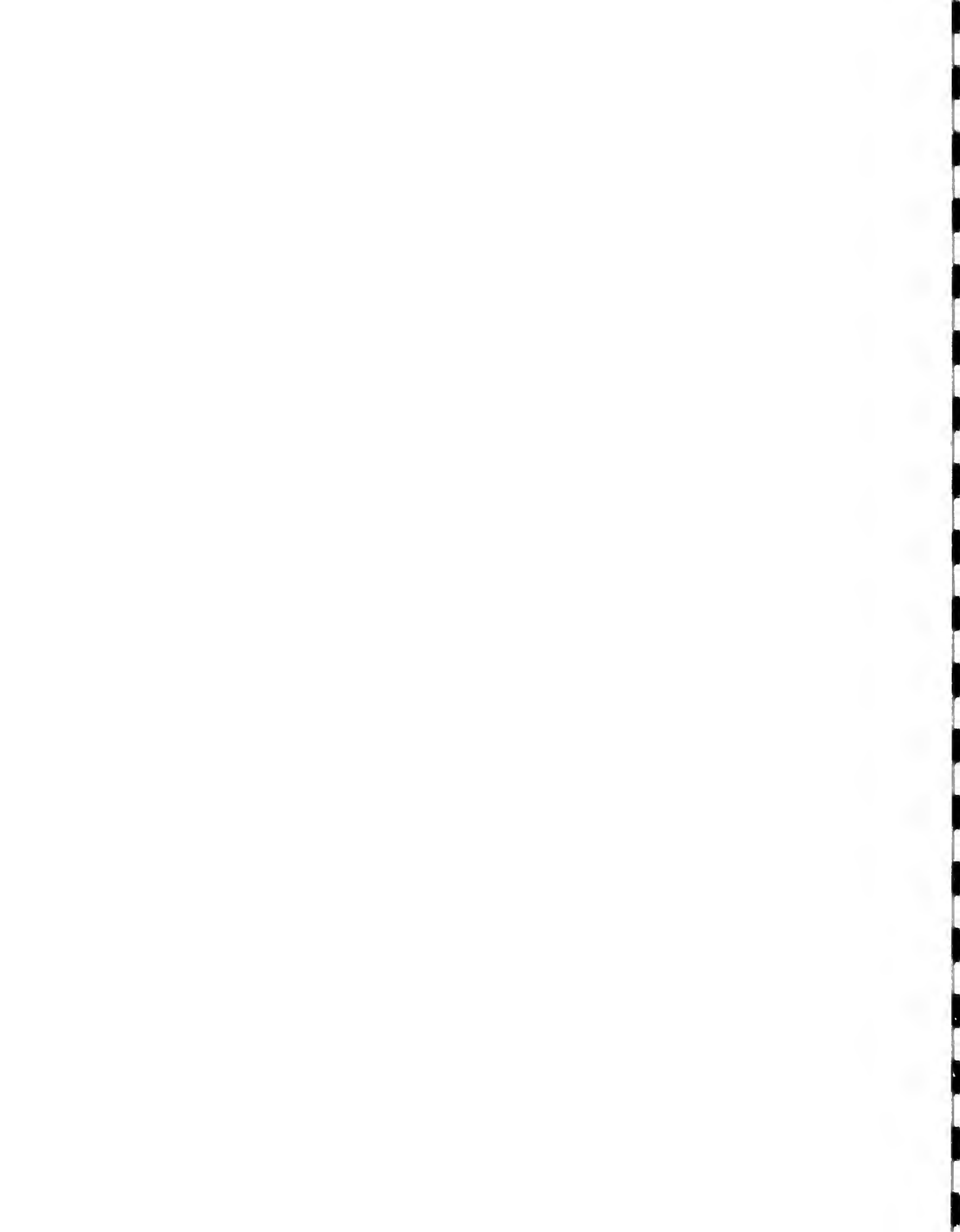


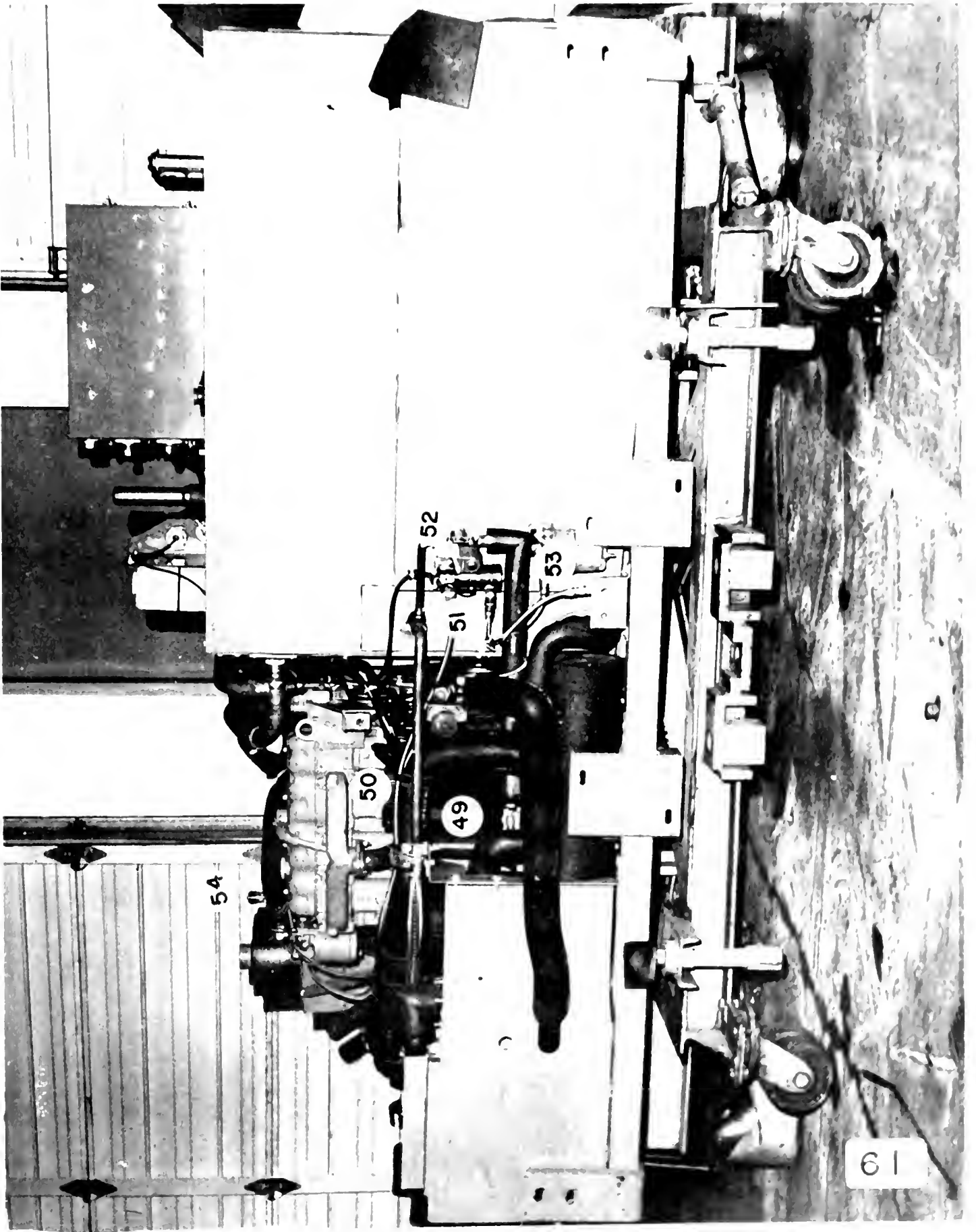






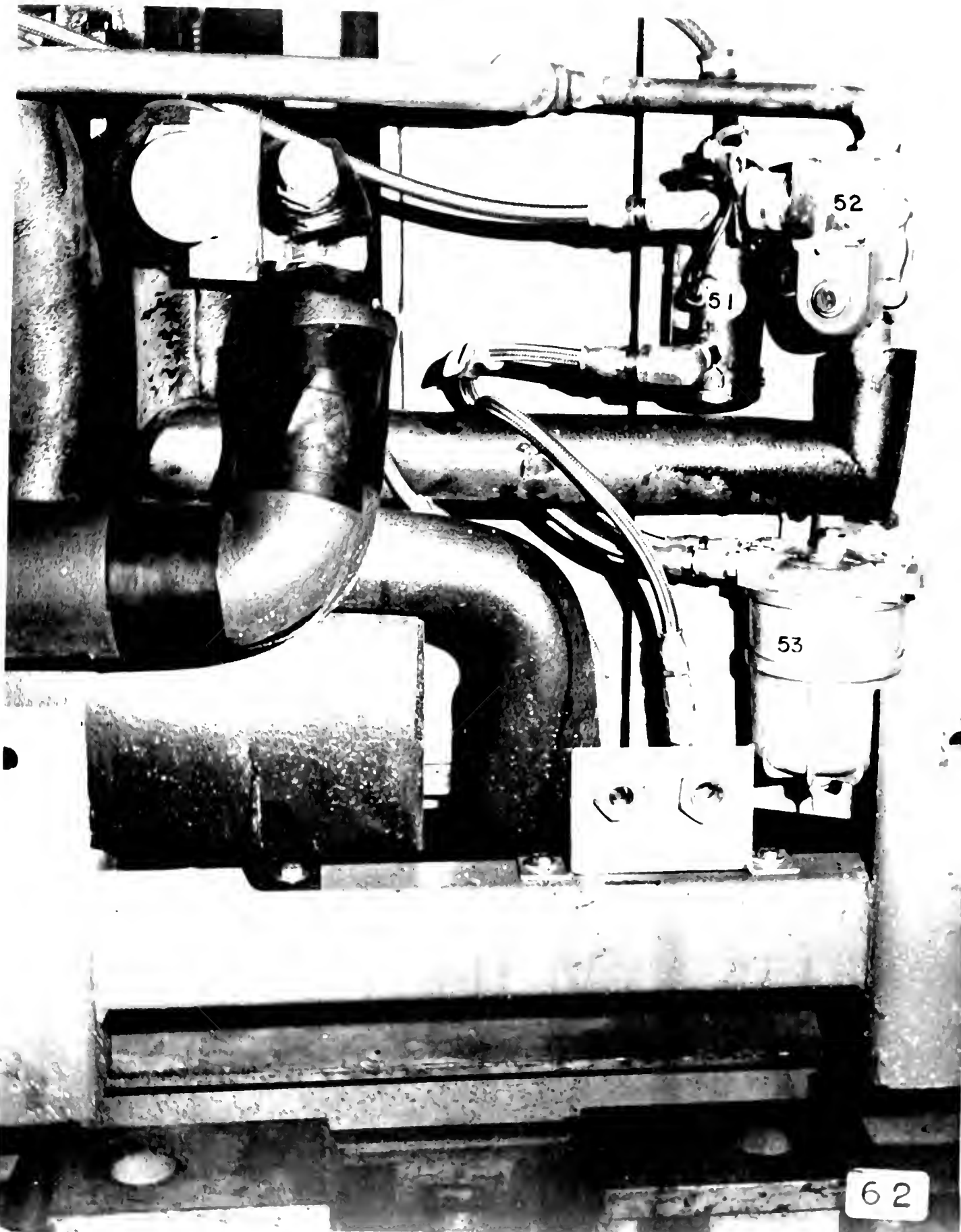






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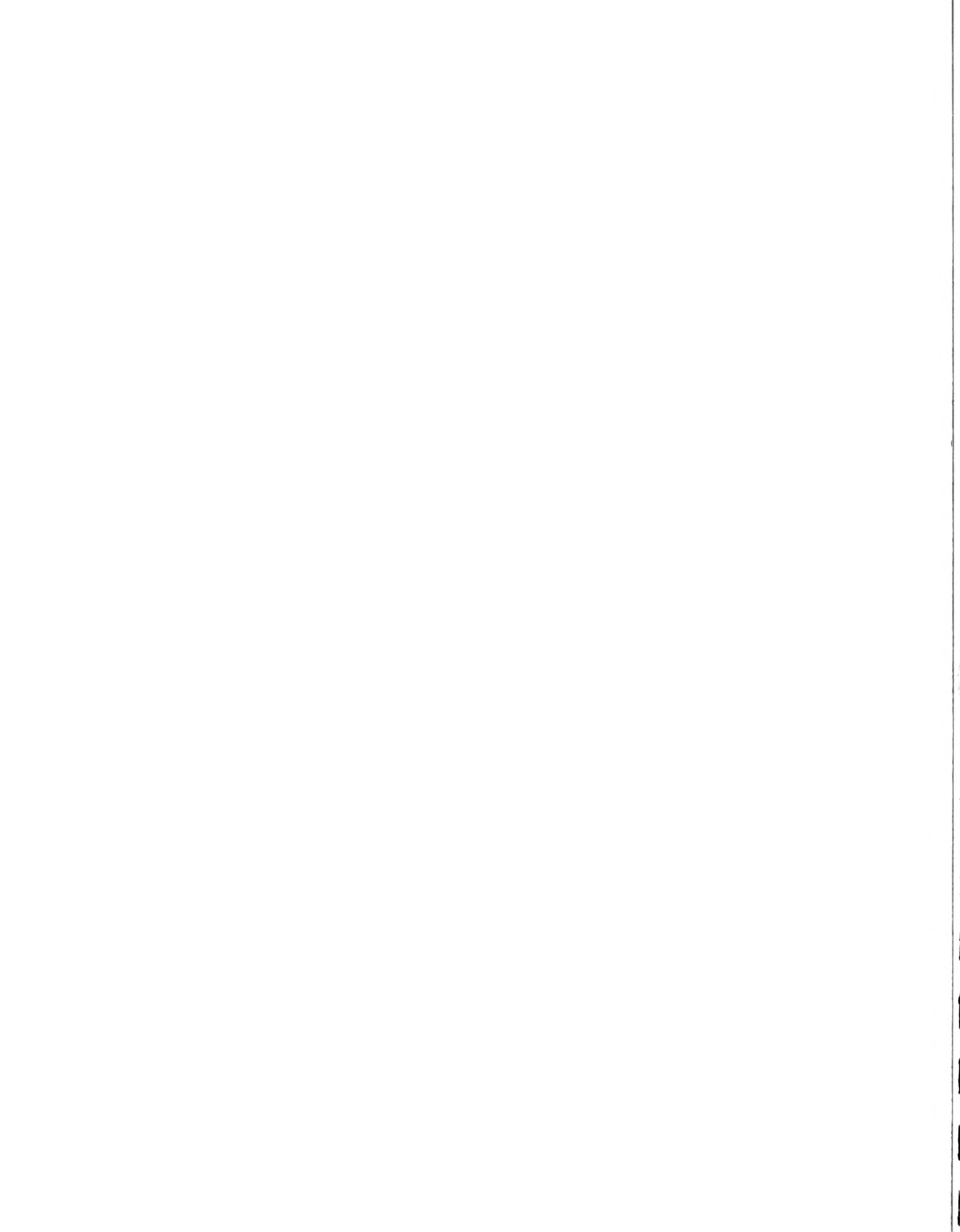


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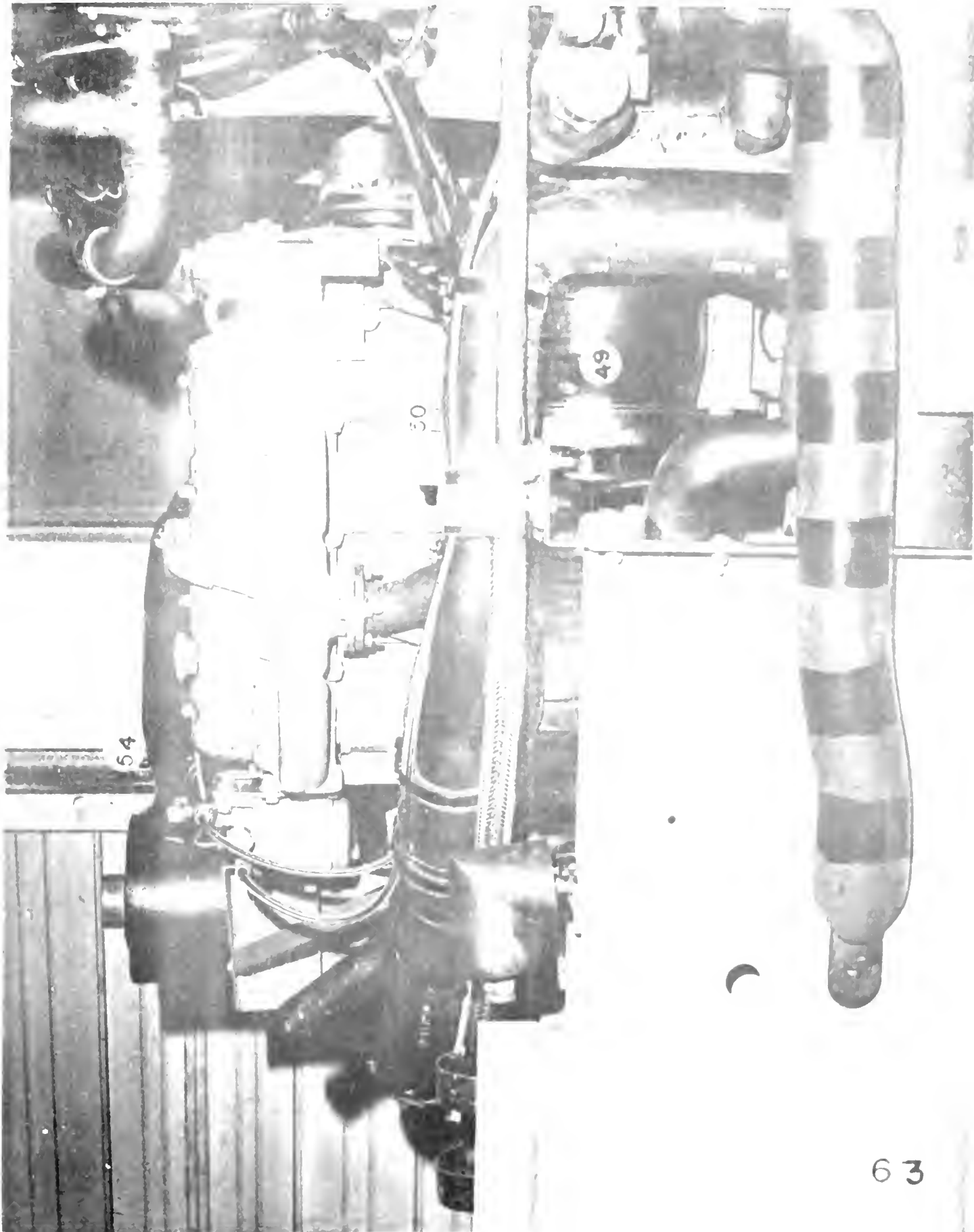
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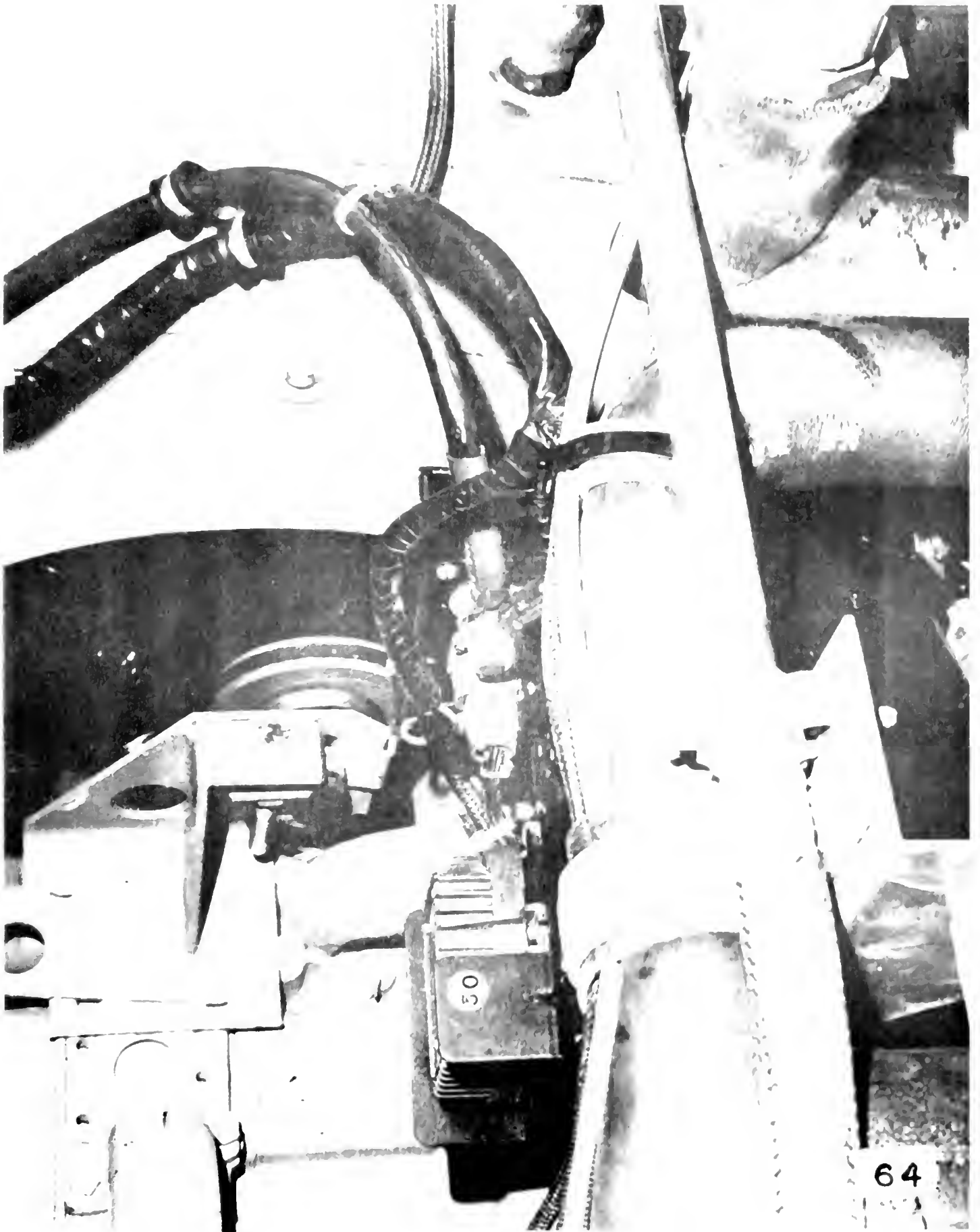
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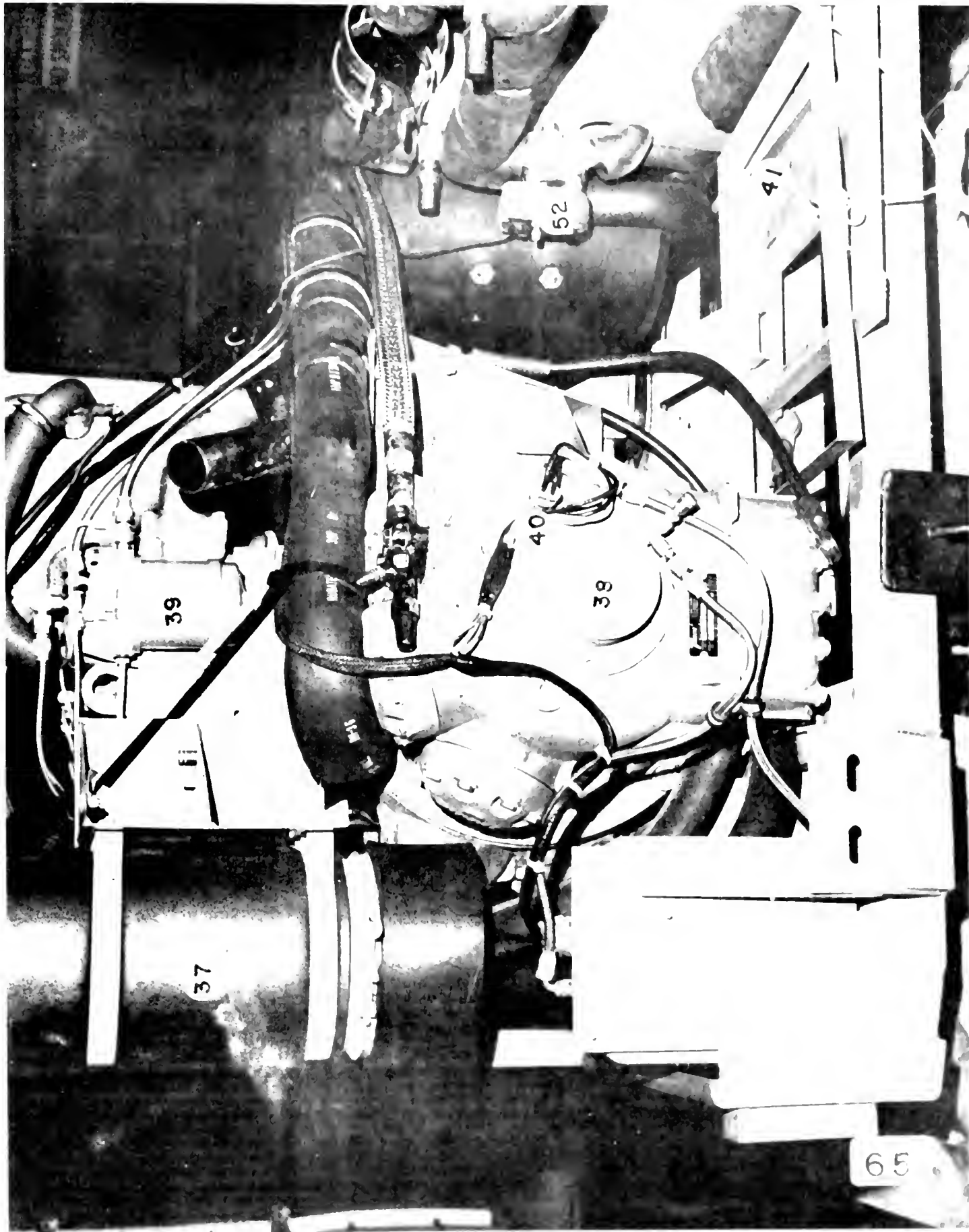


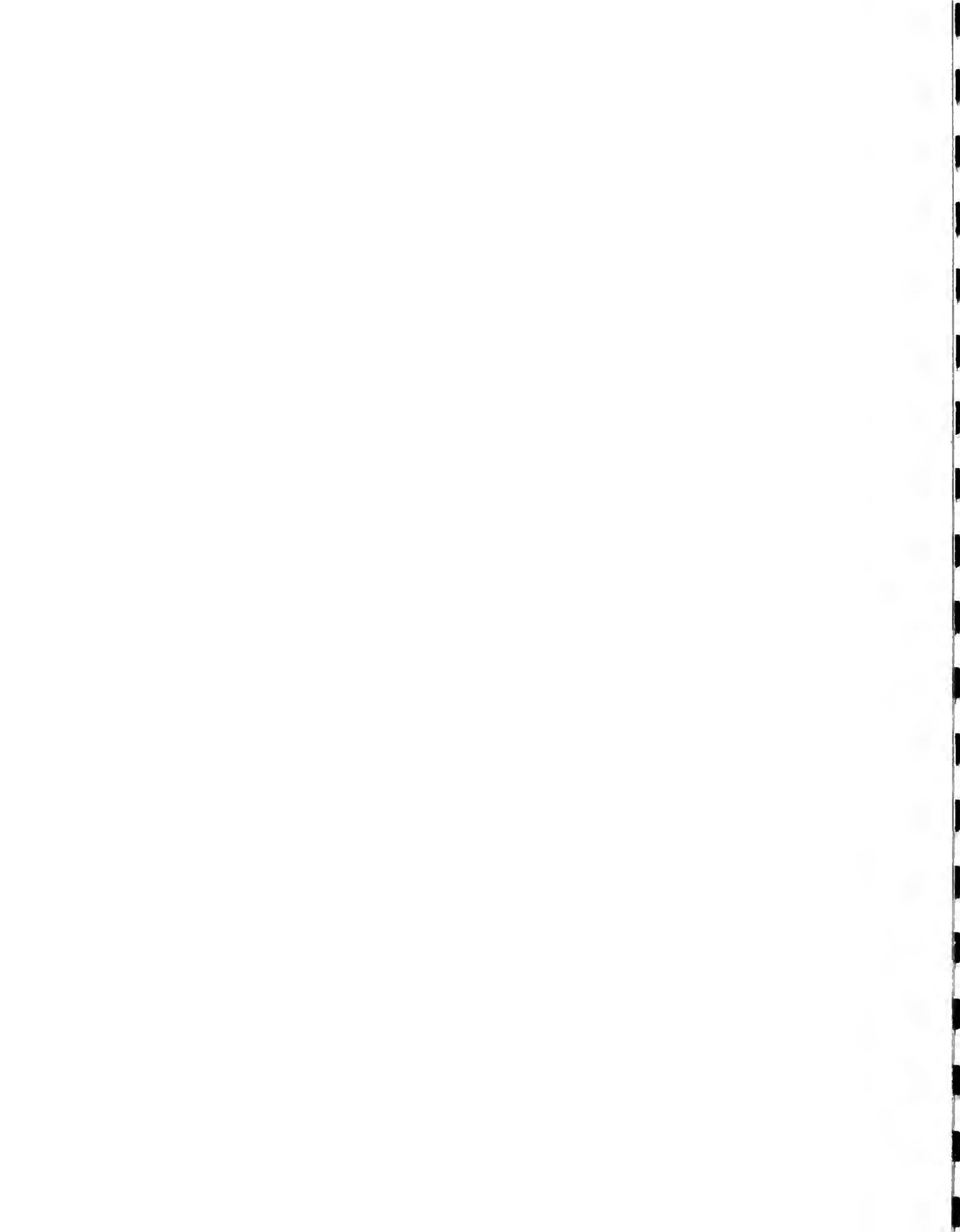


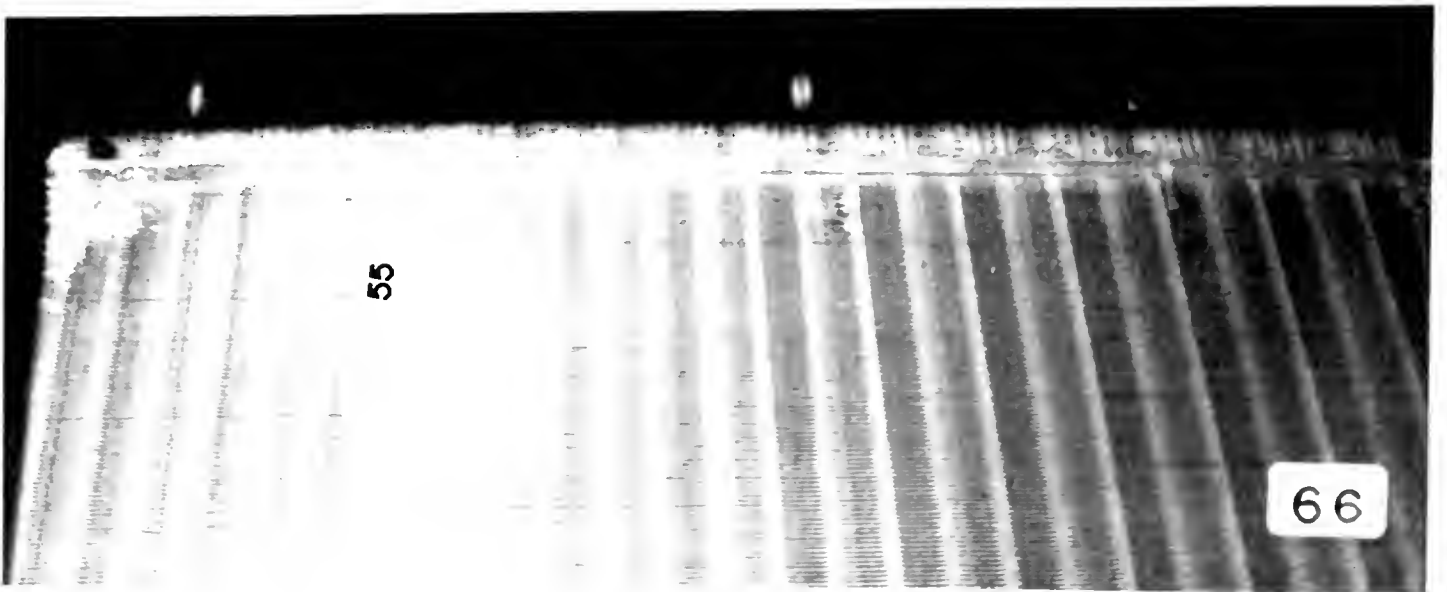
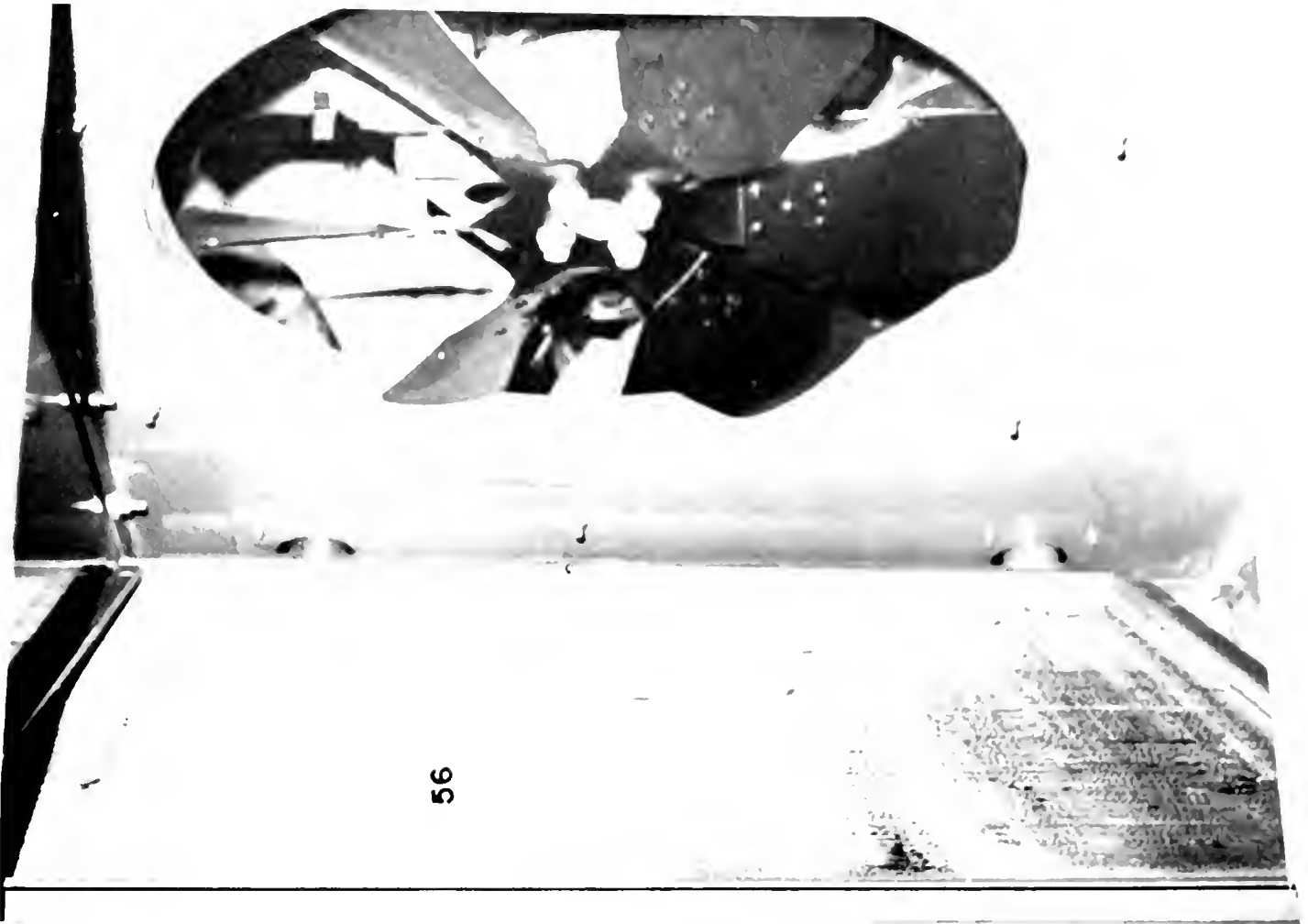






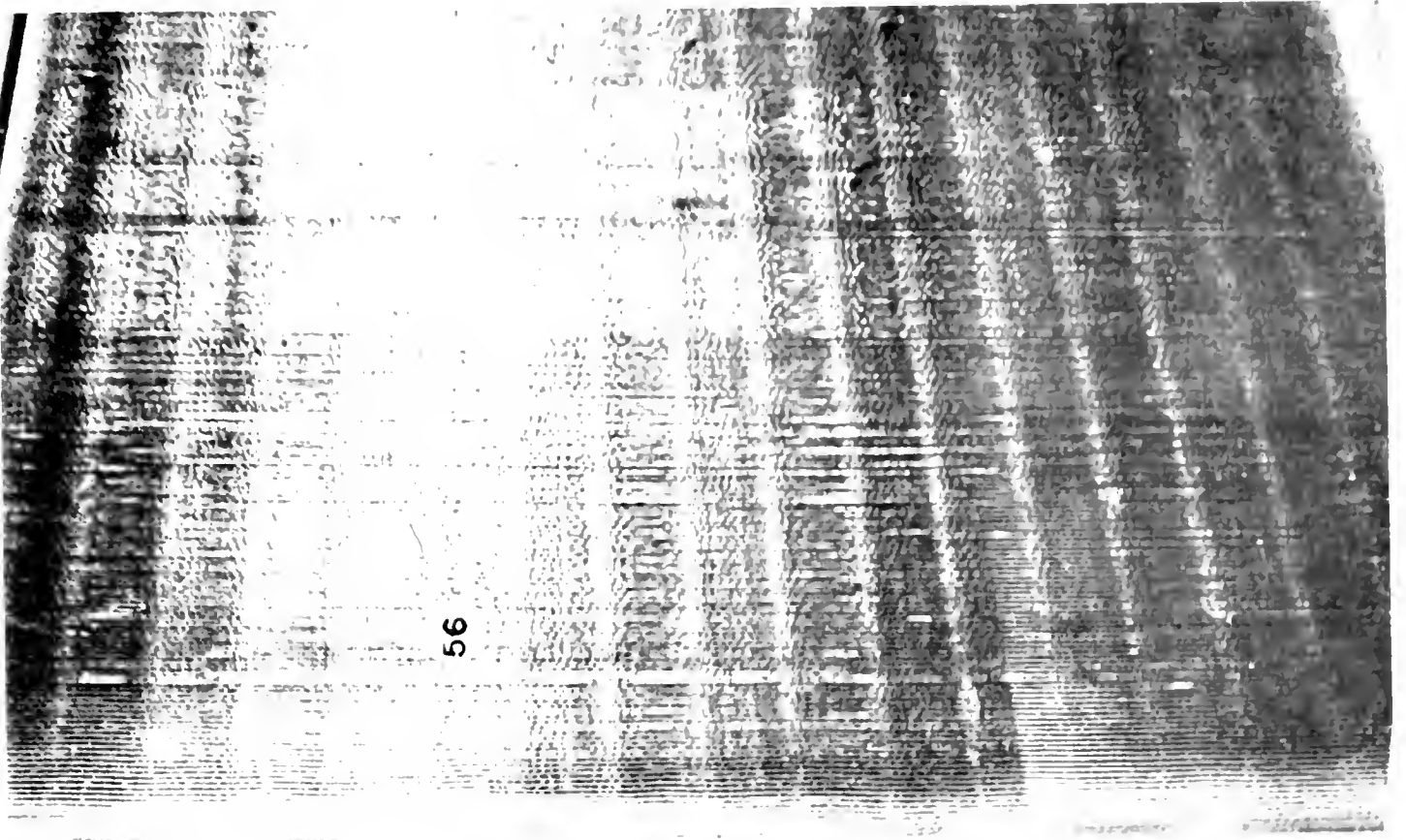




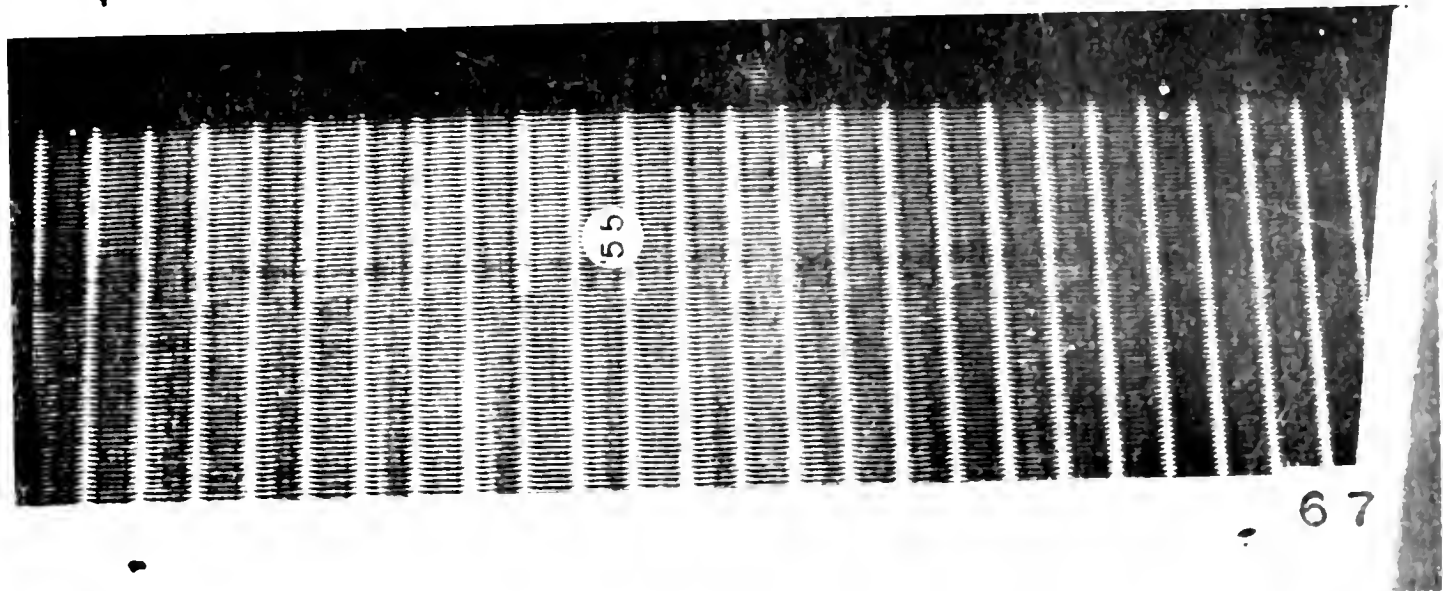








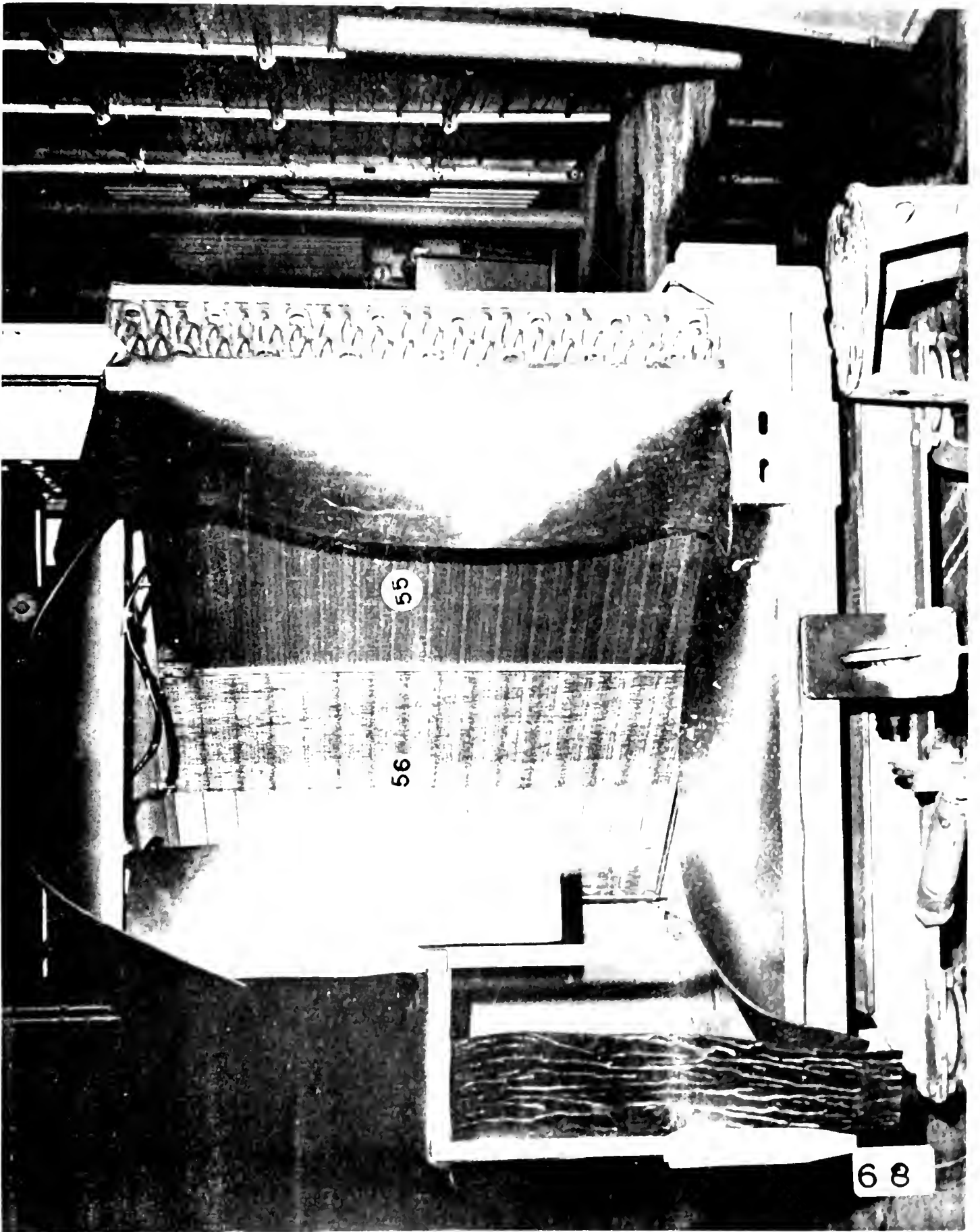
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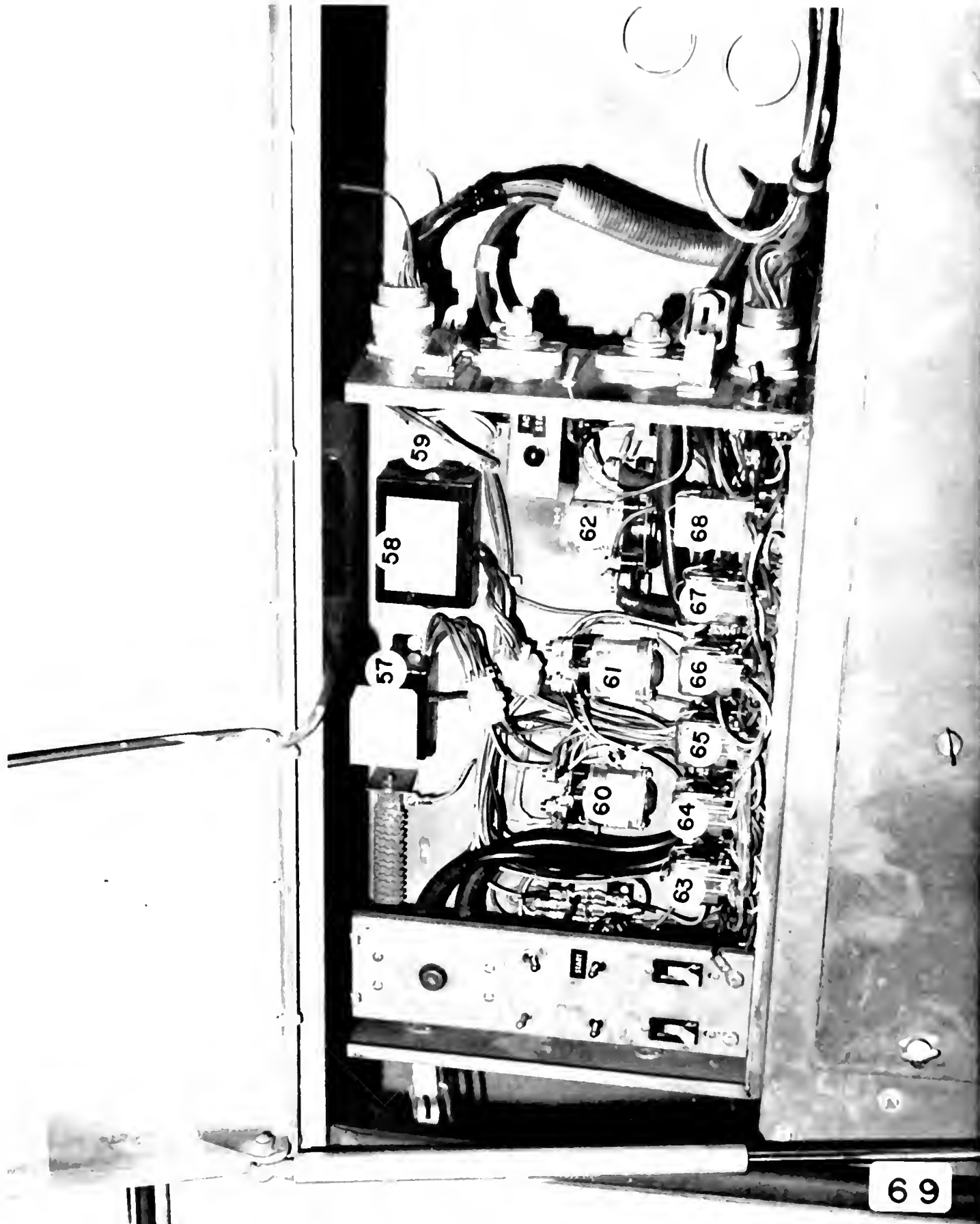
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67

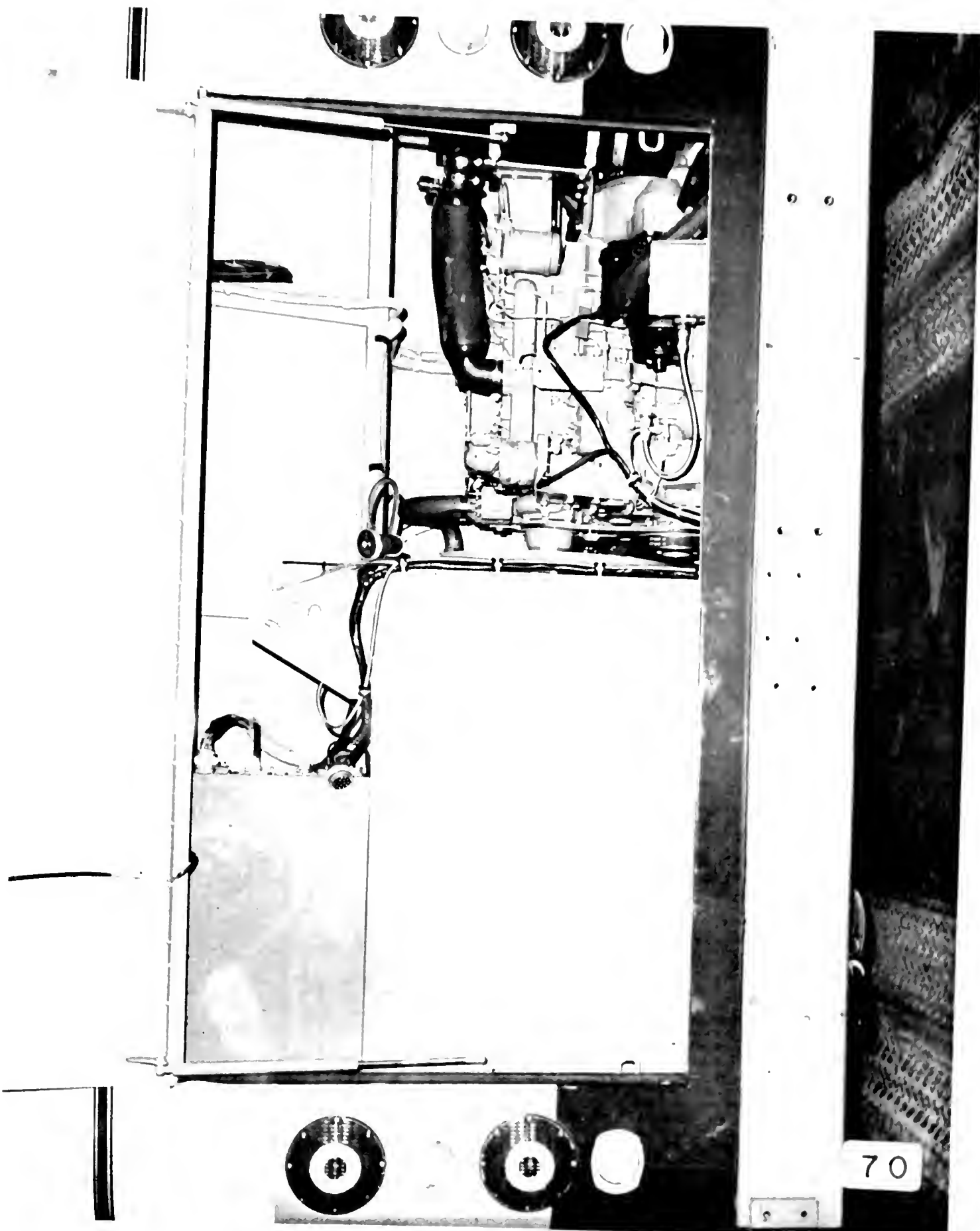








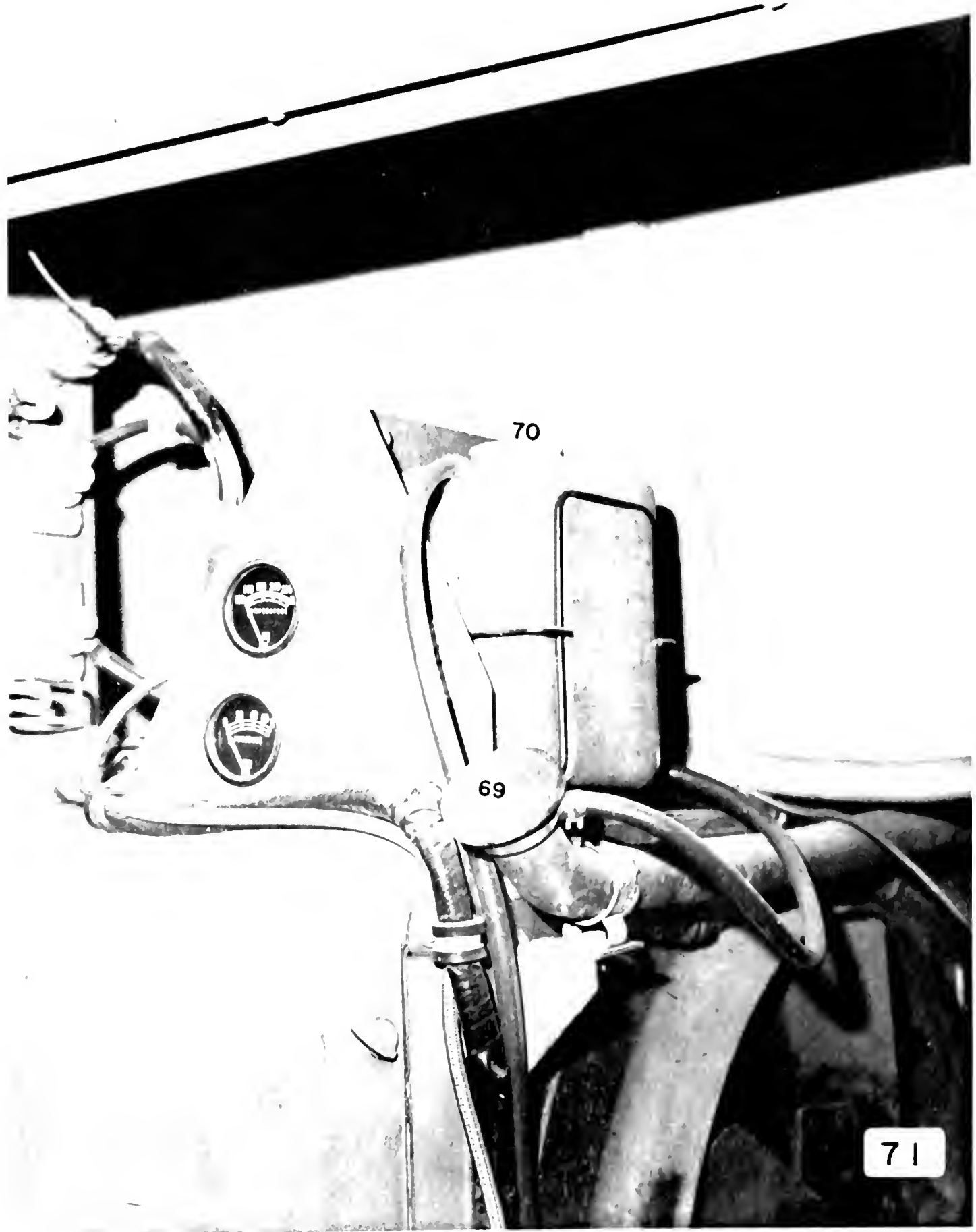




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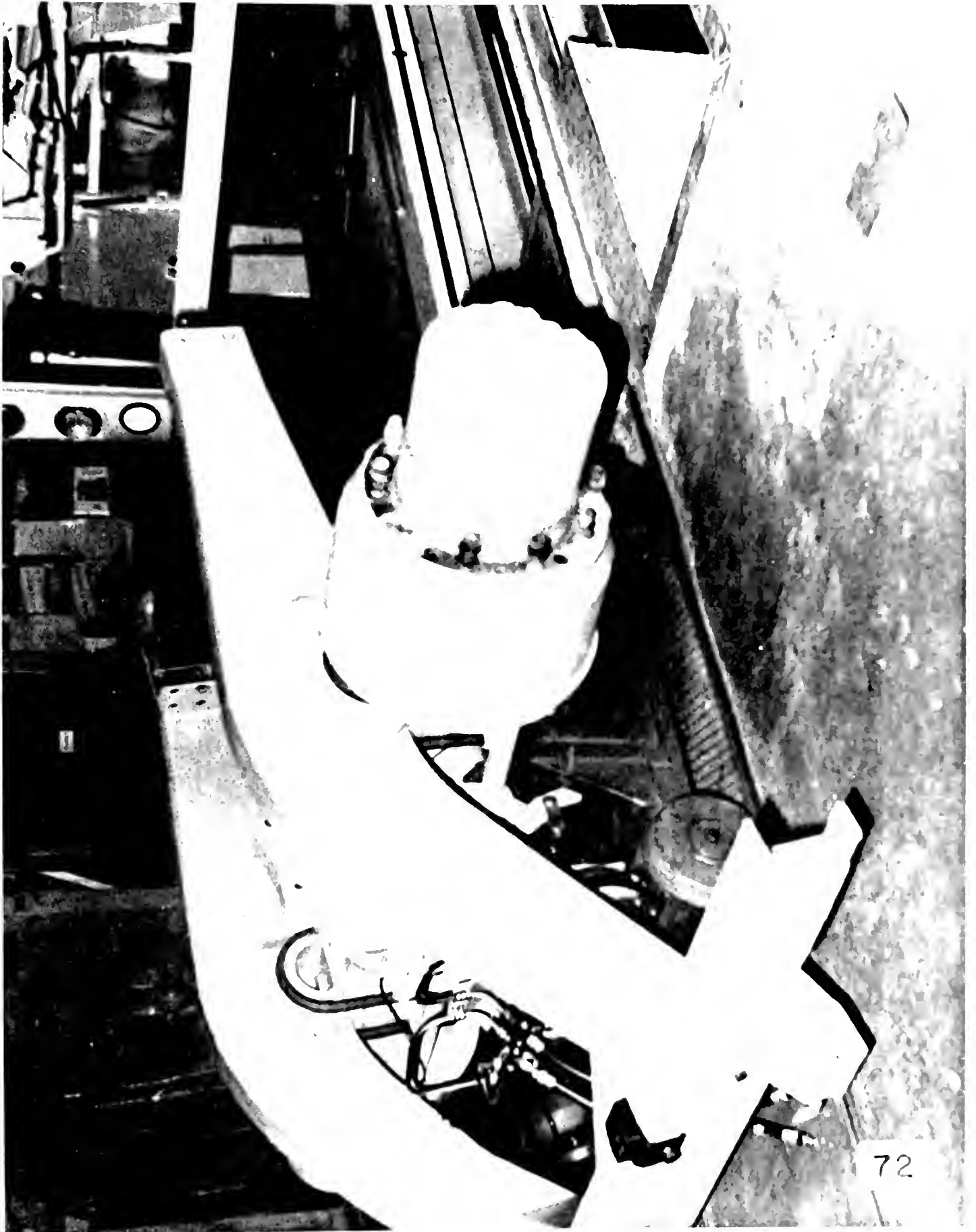


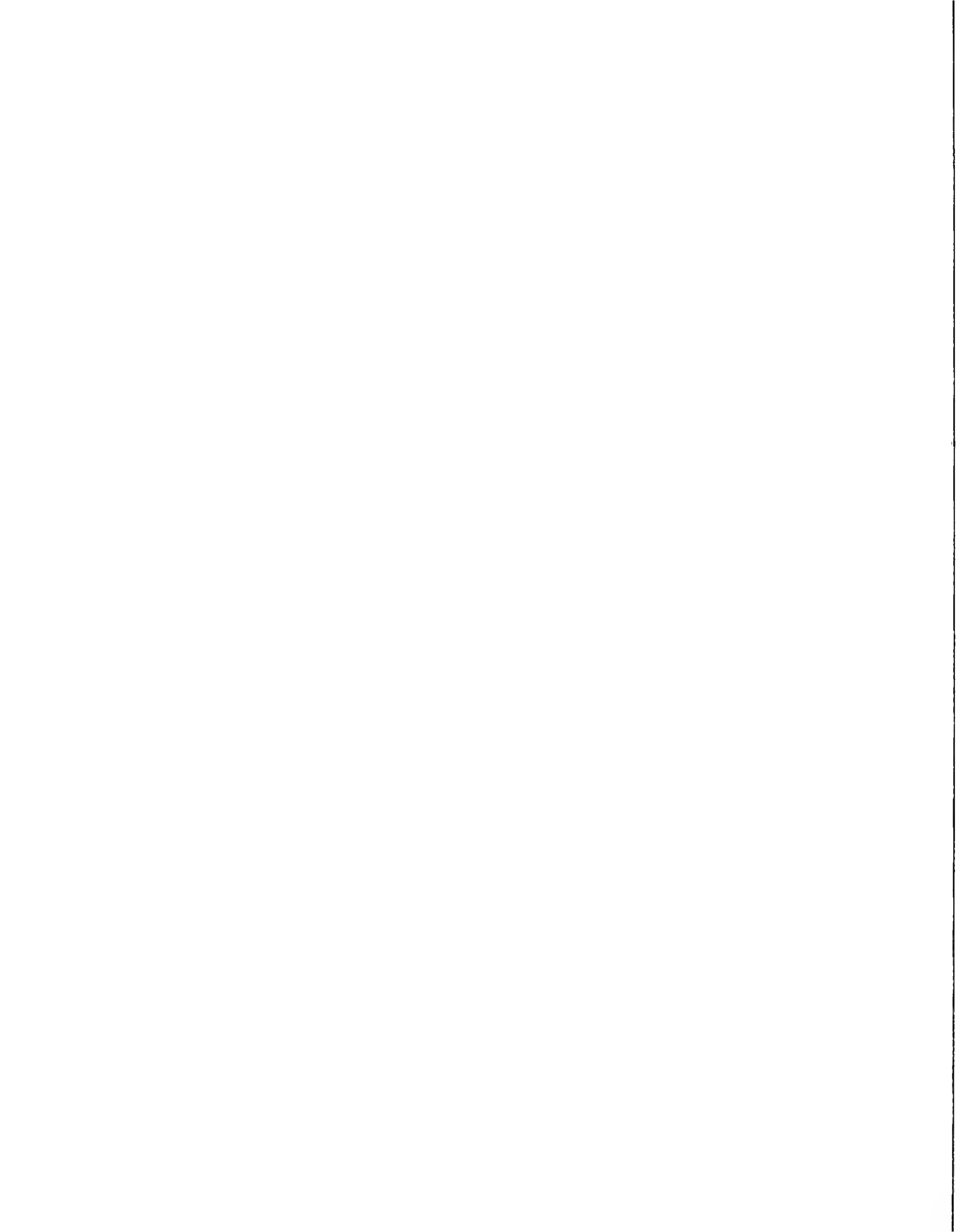
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71

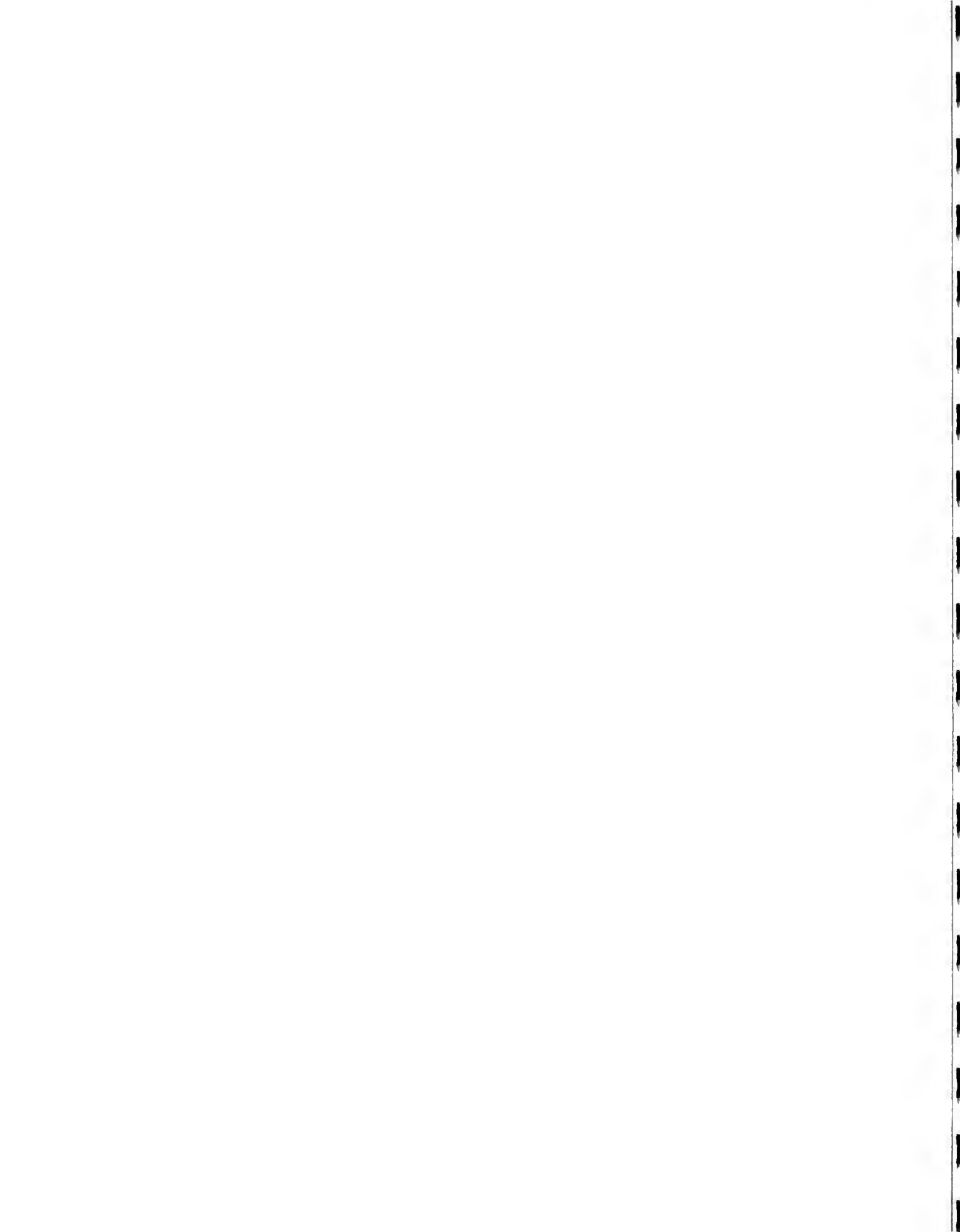


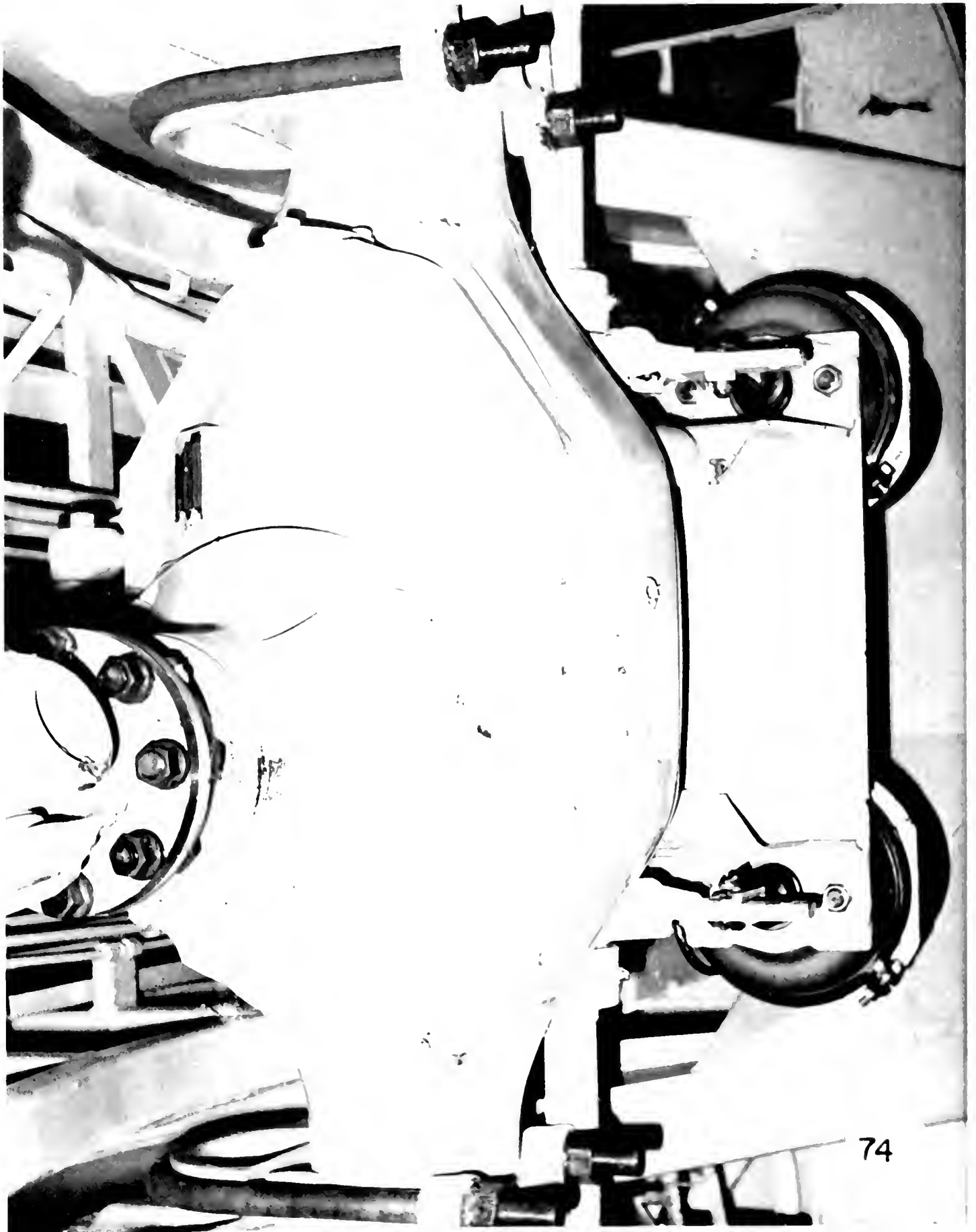


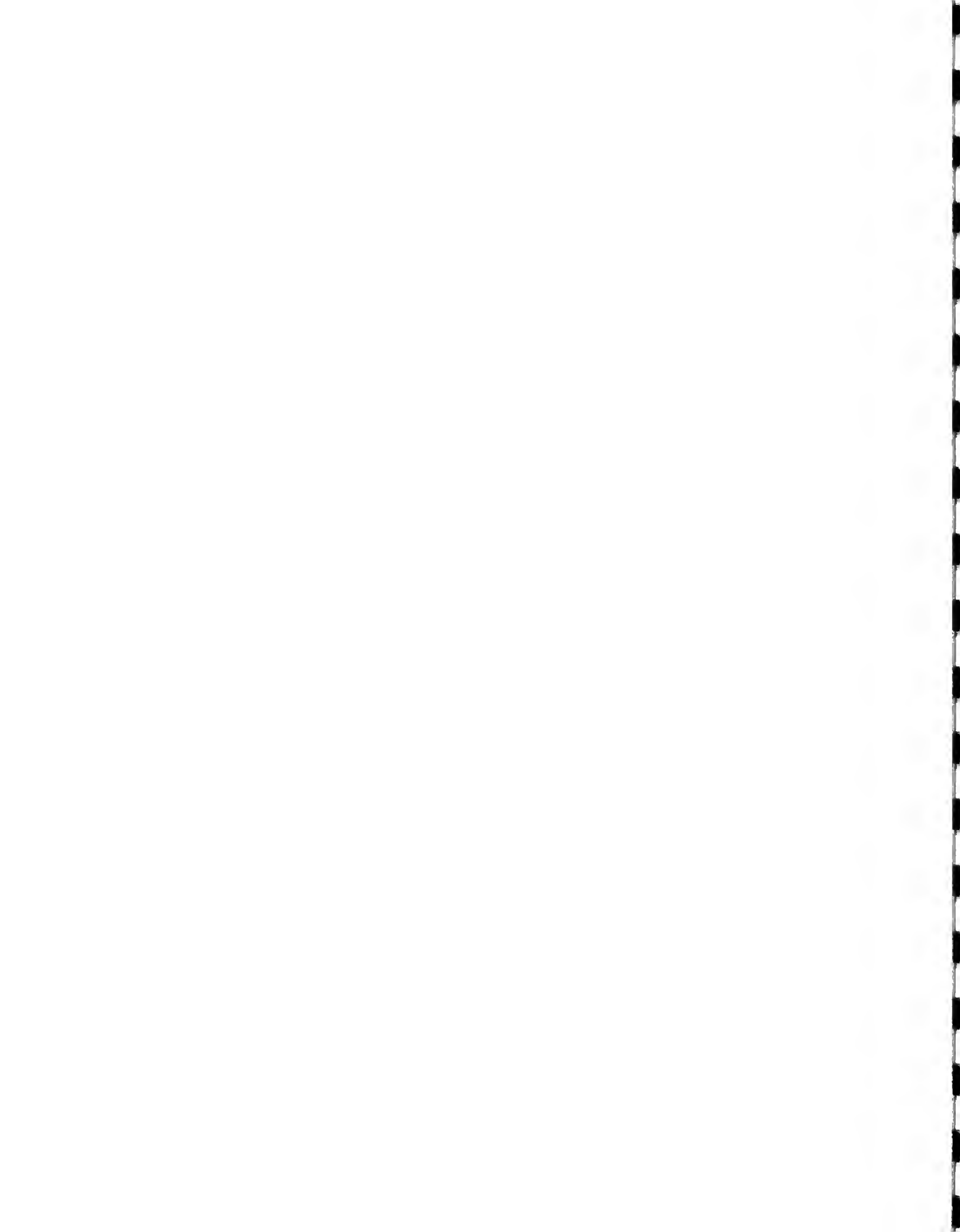




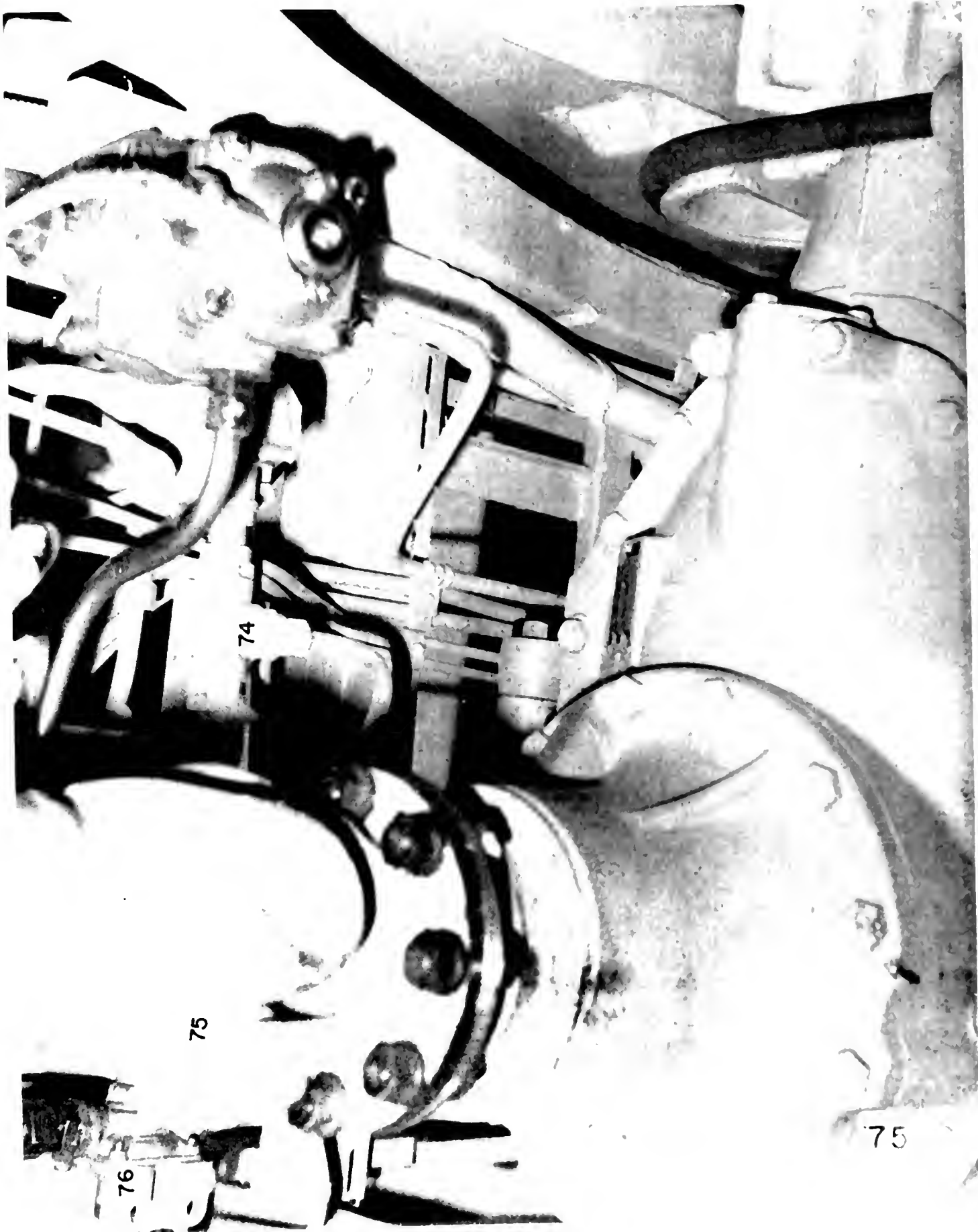
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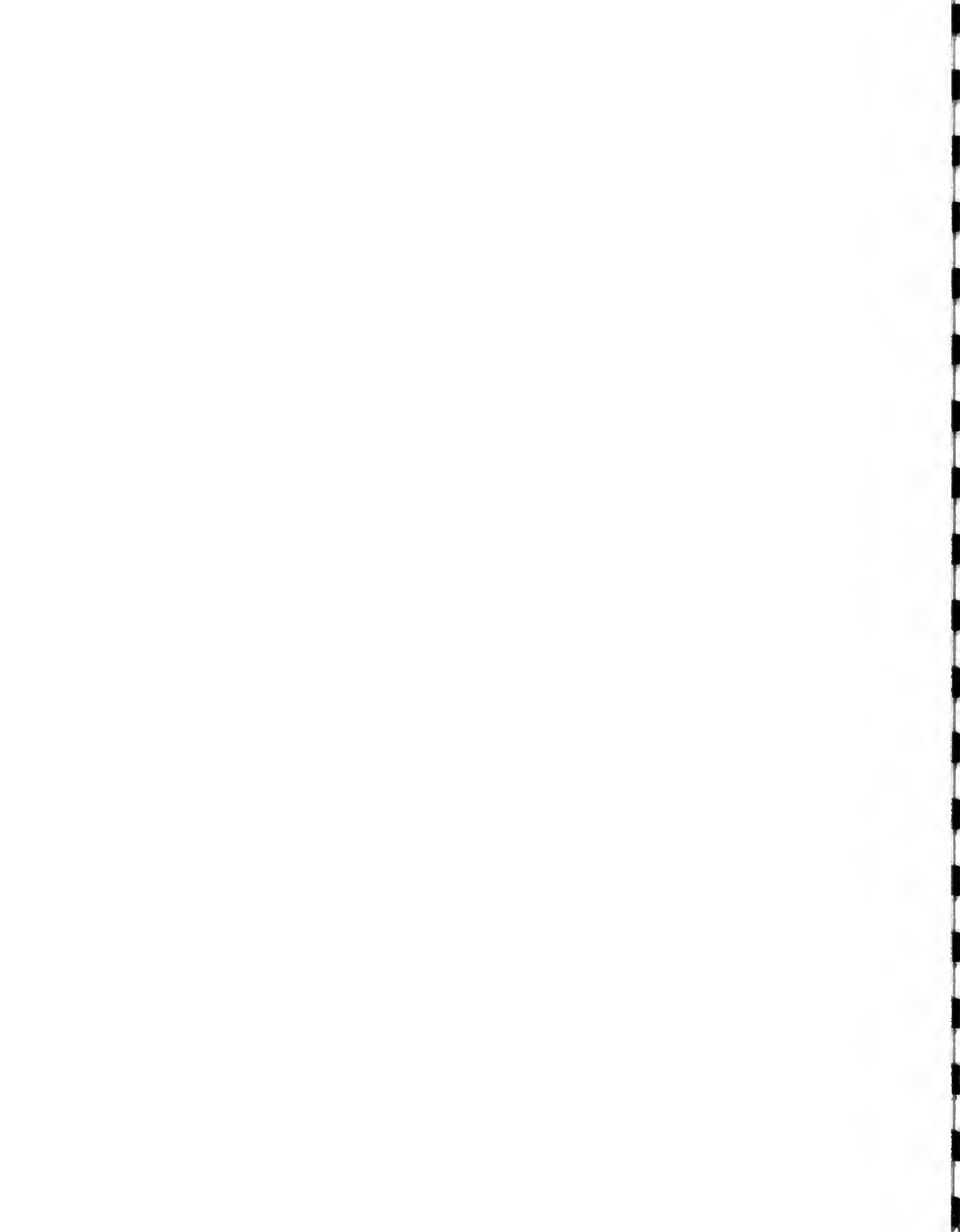


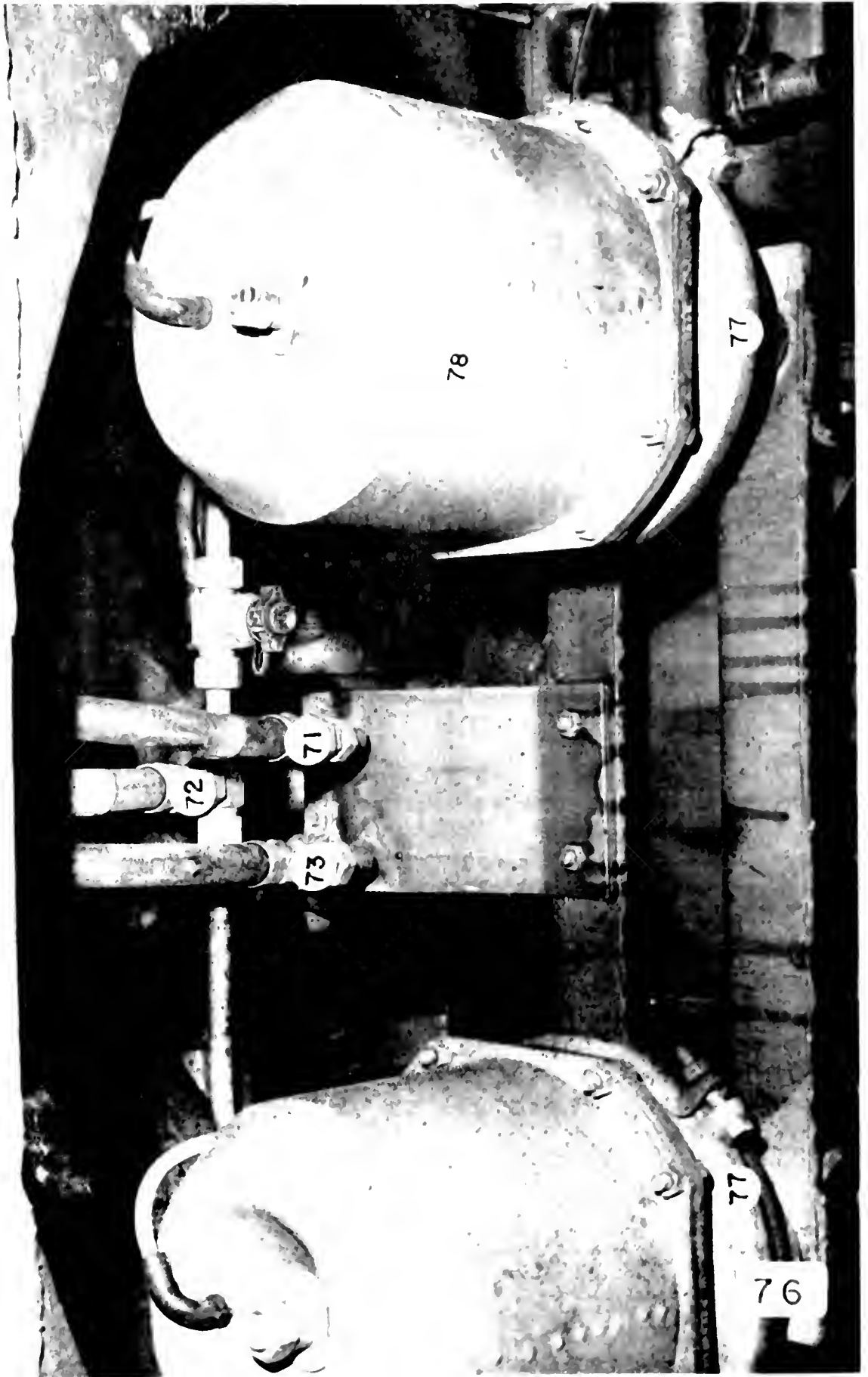
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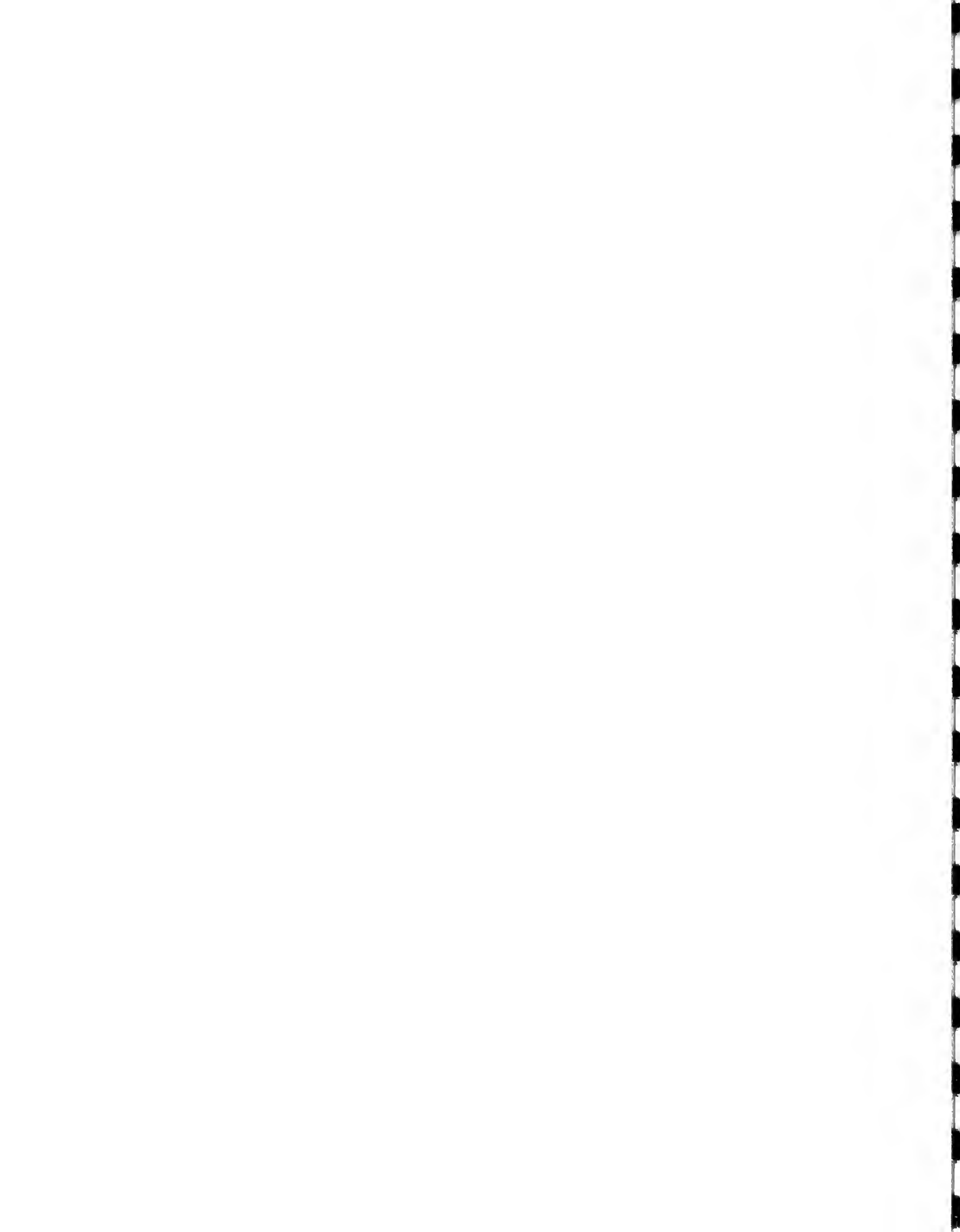
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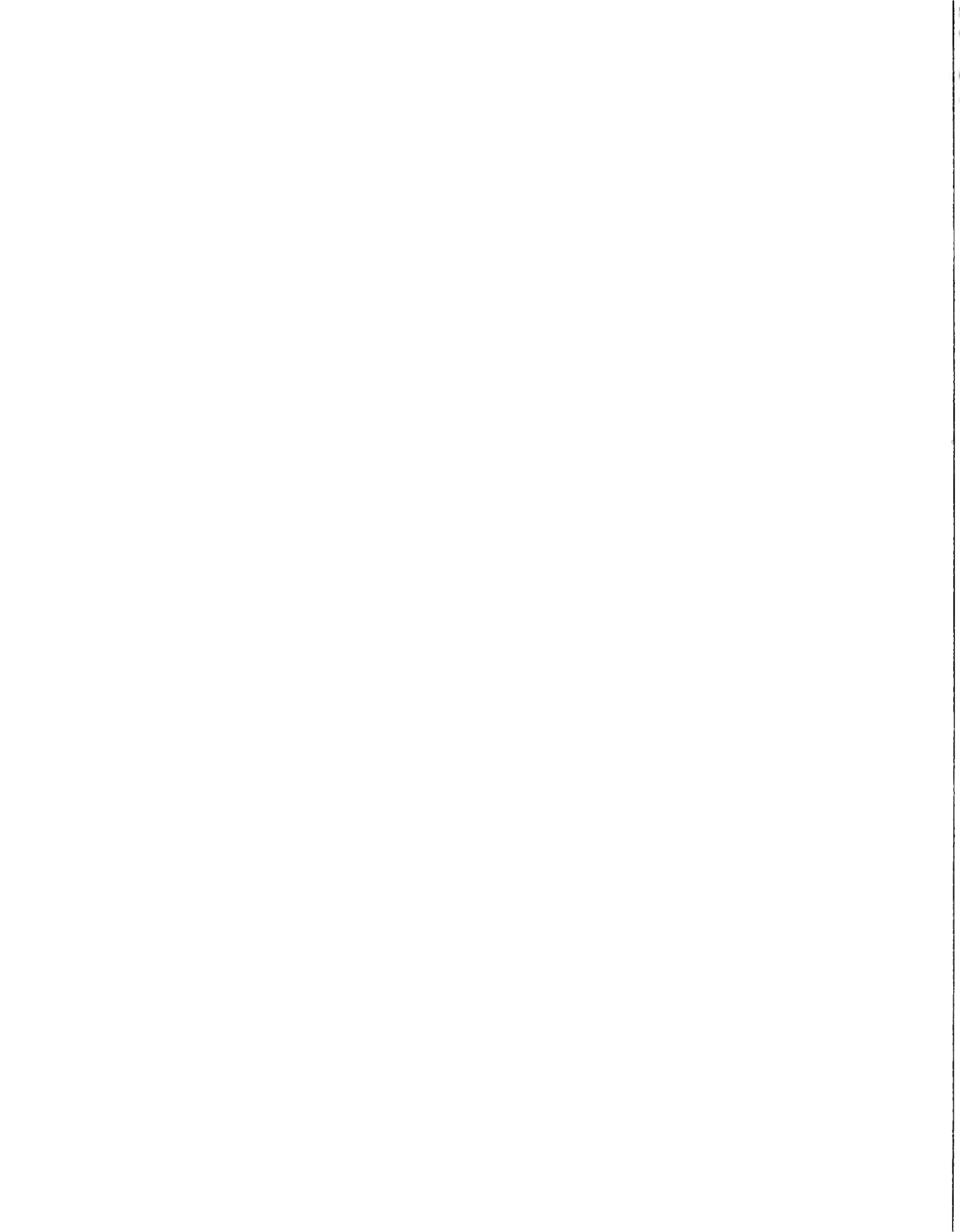
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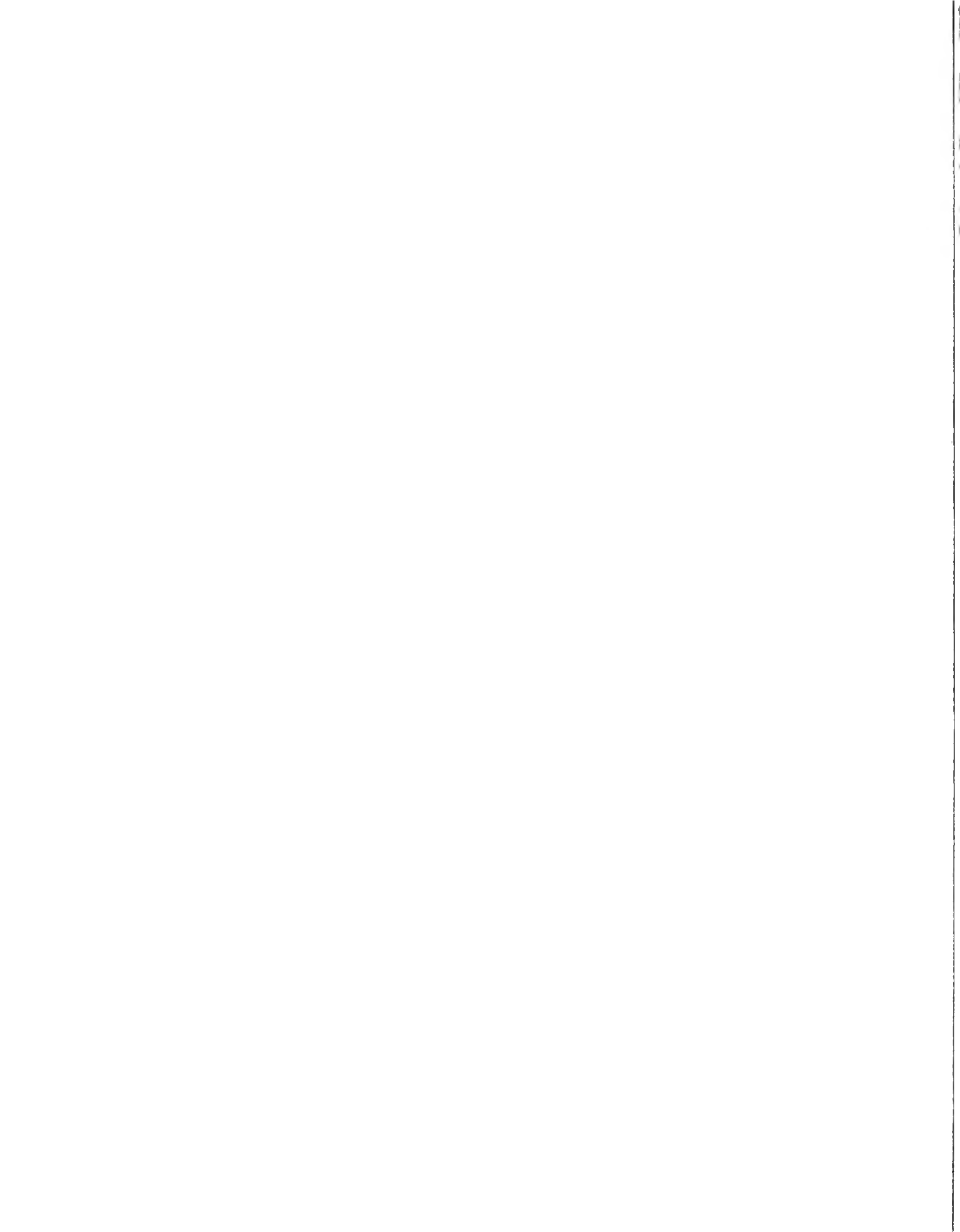
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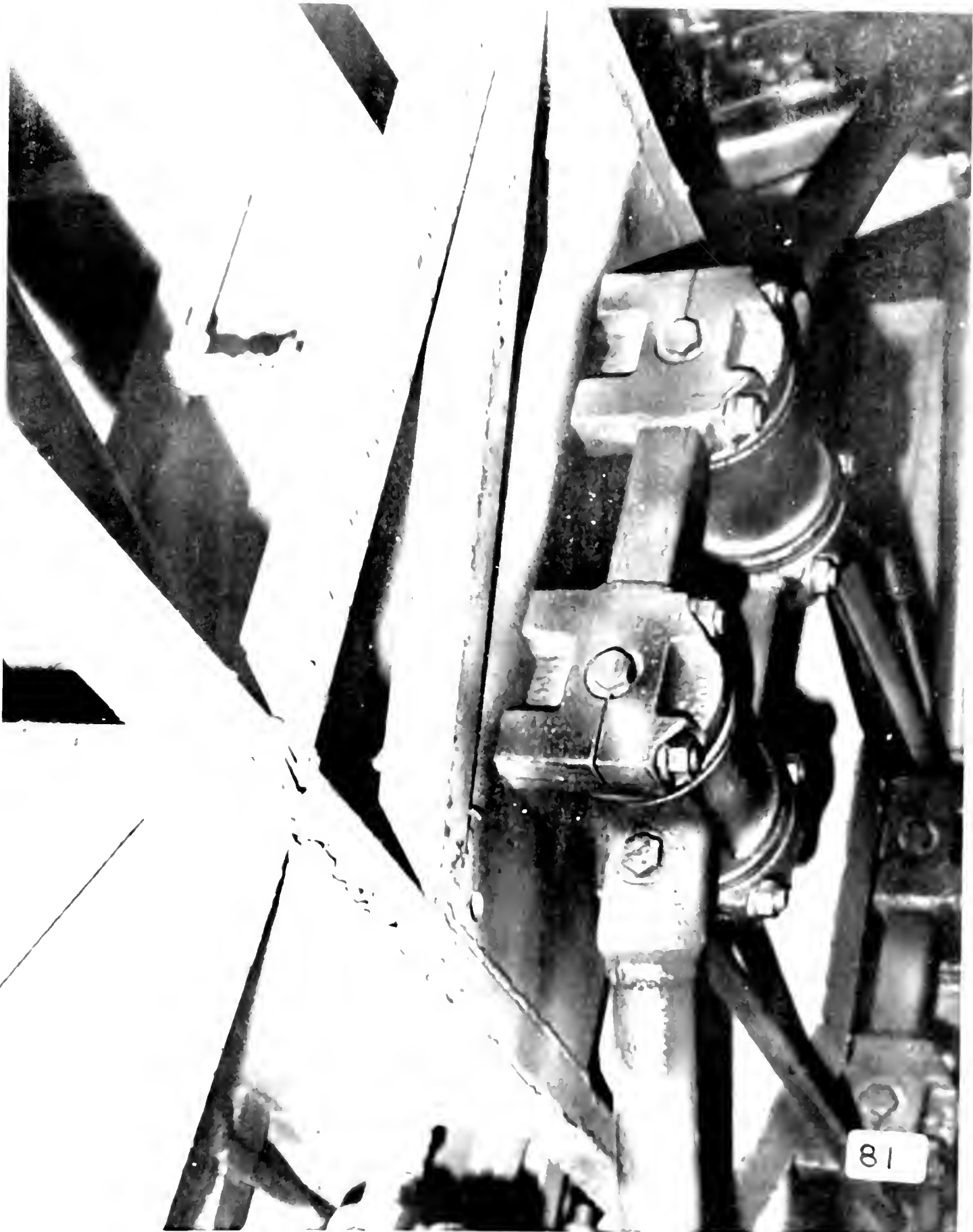


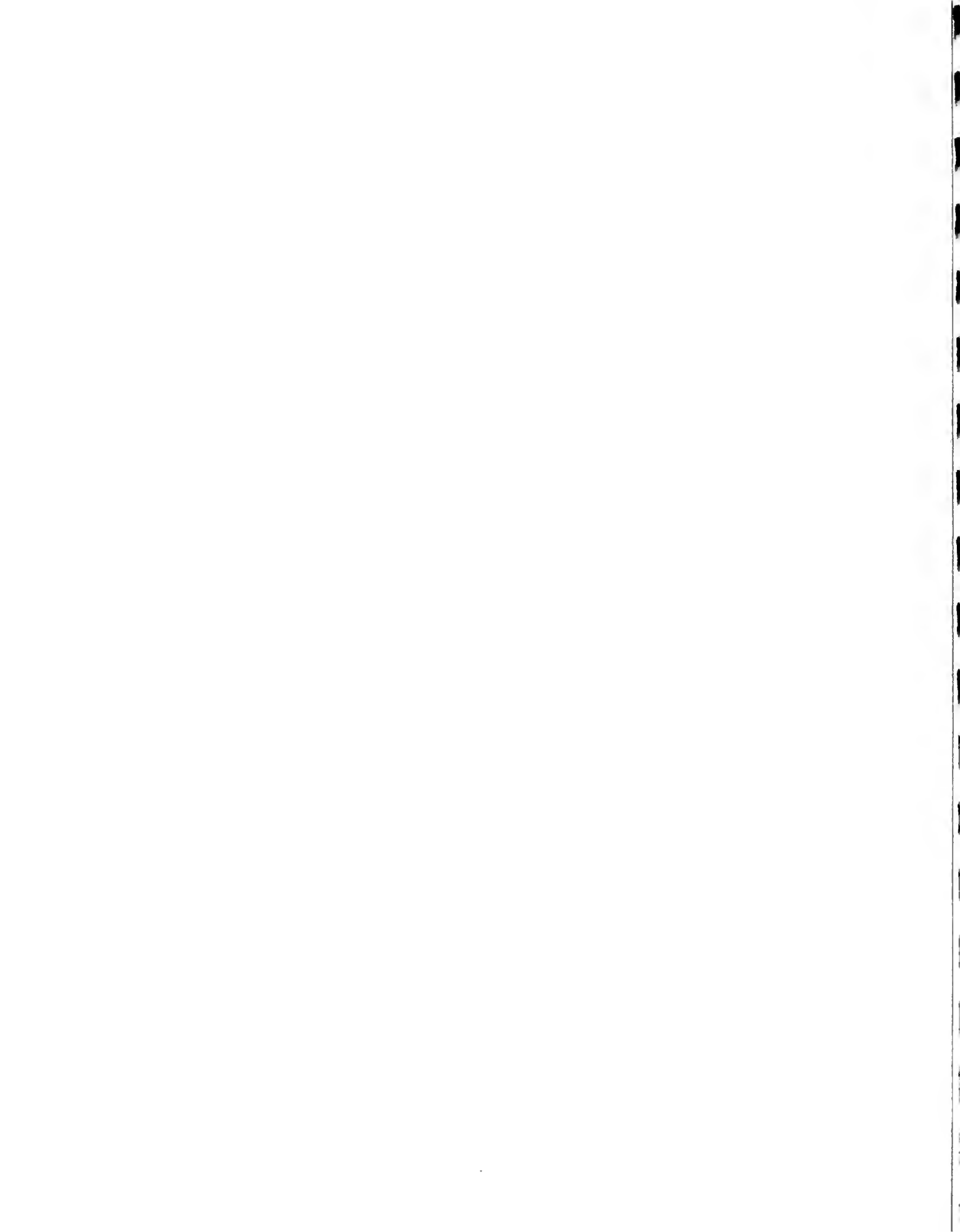


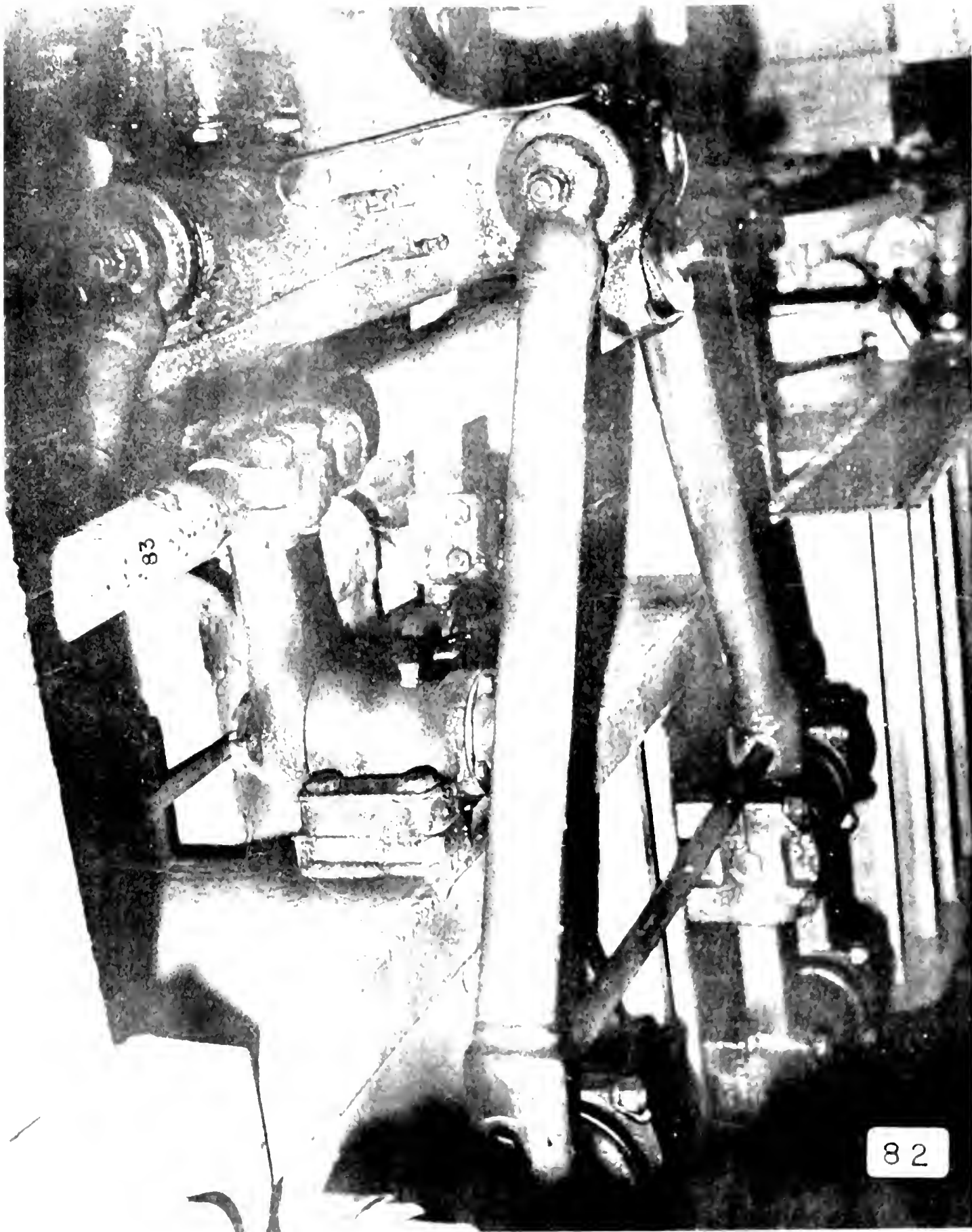
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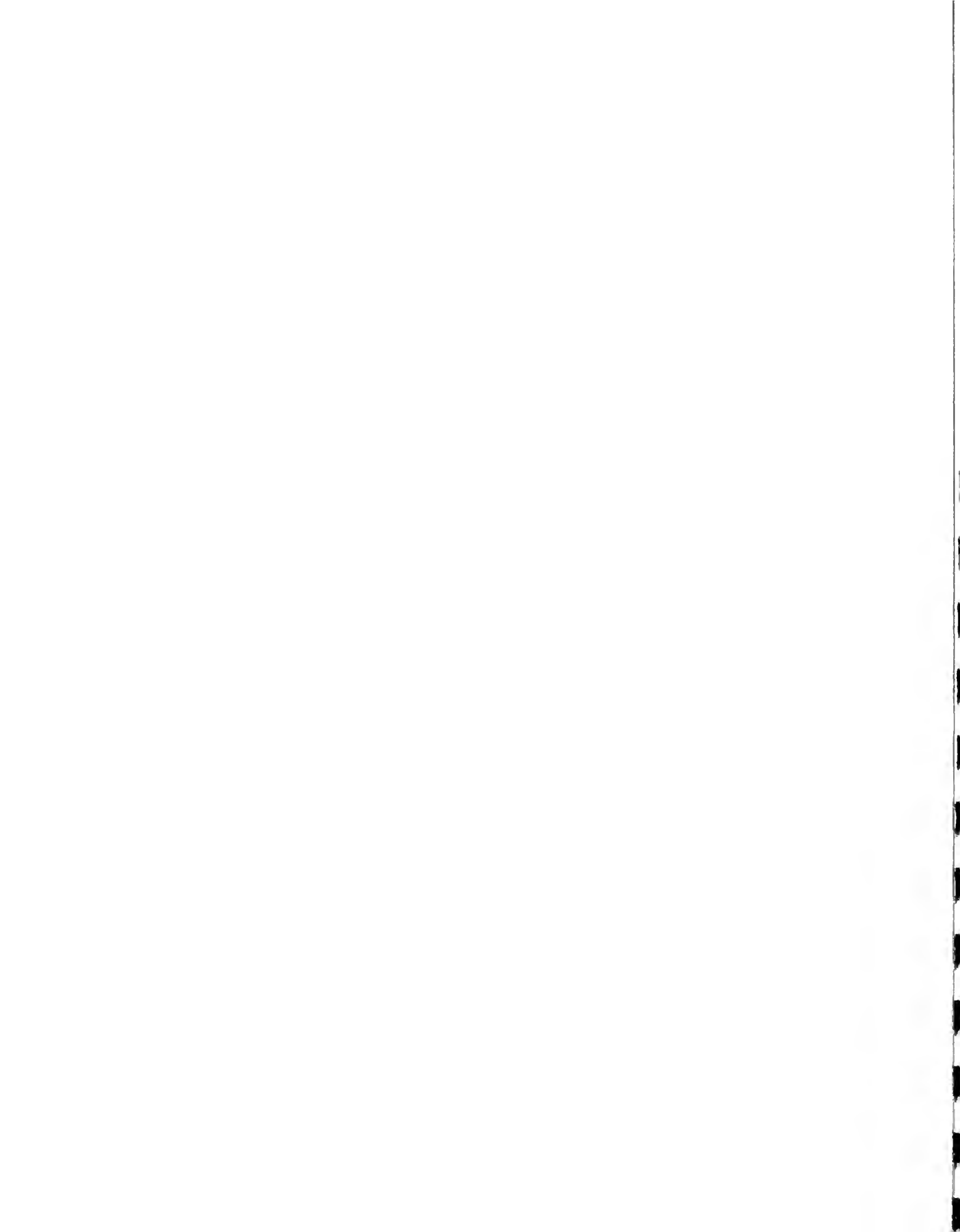




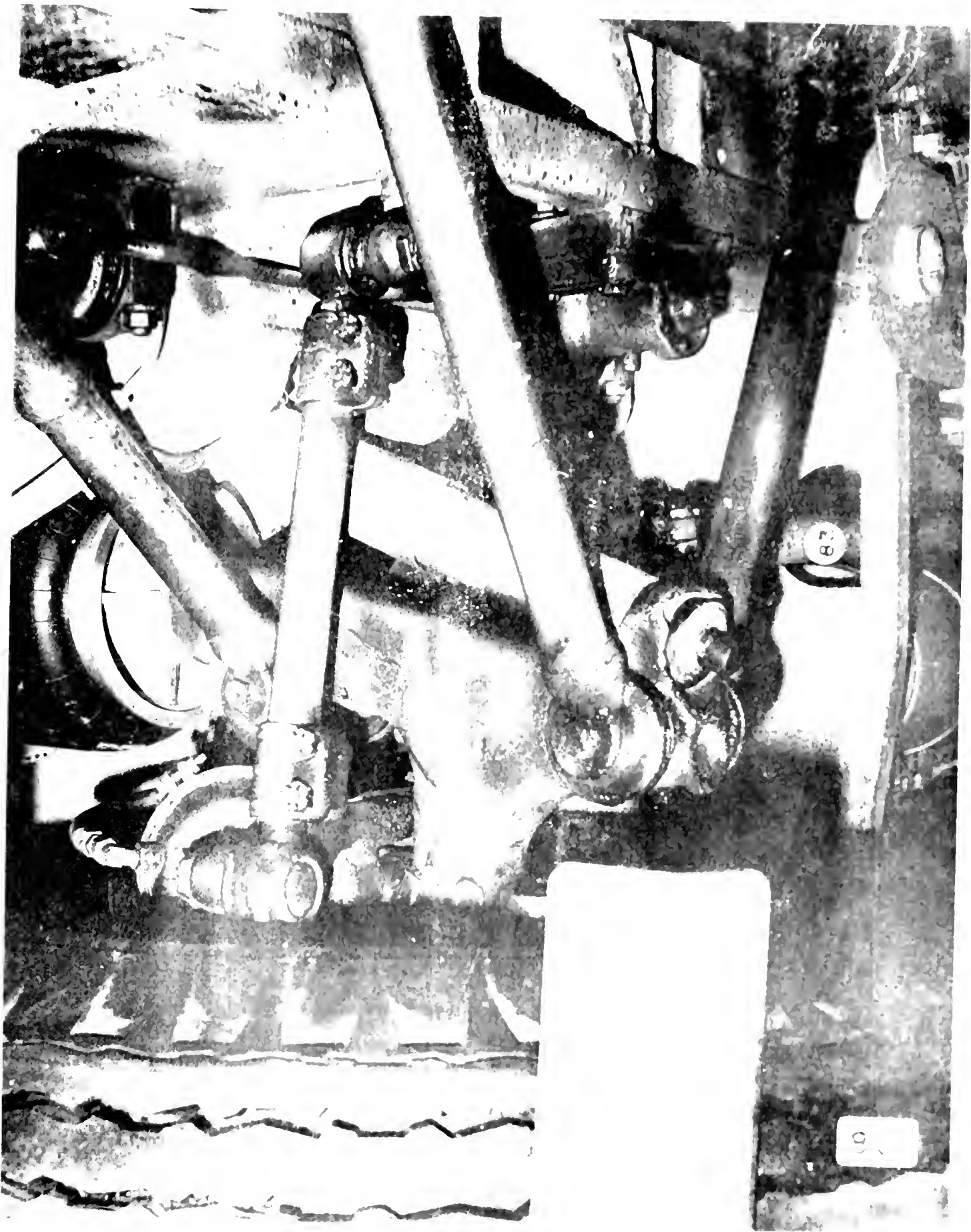


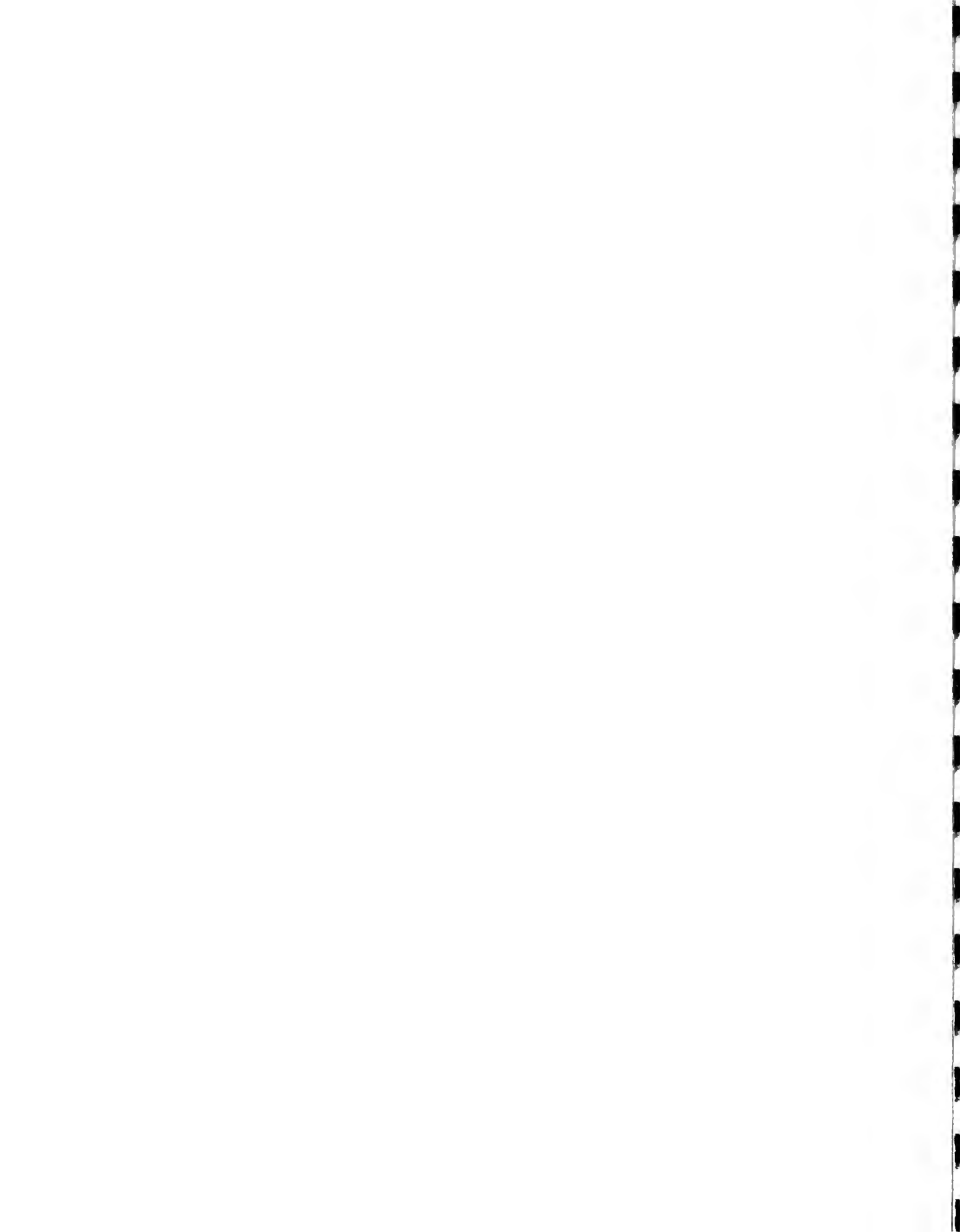


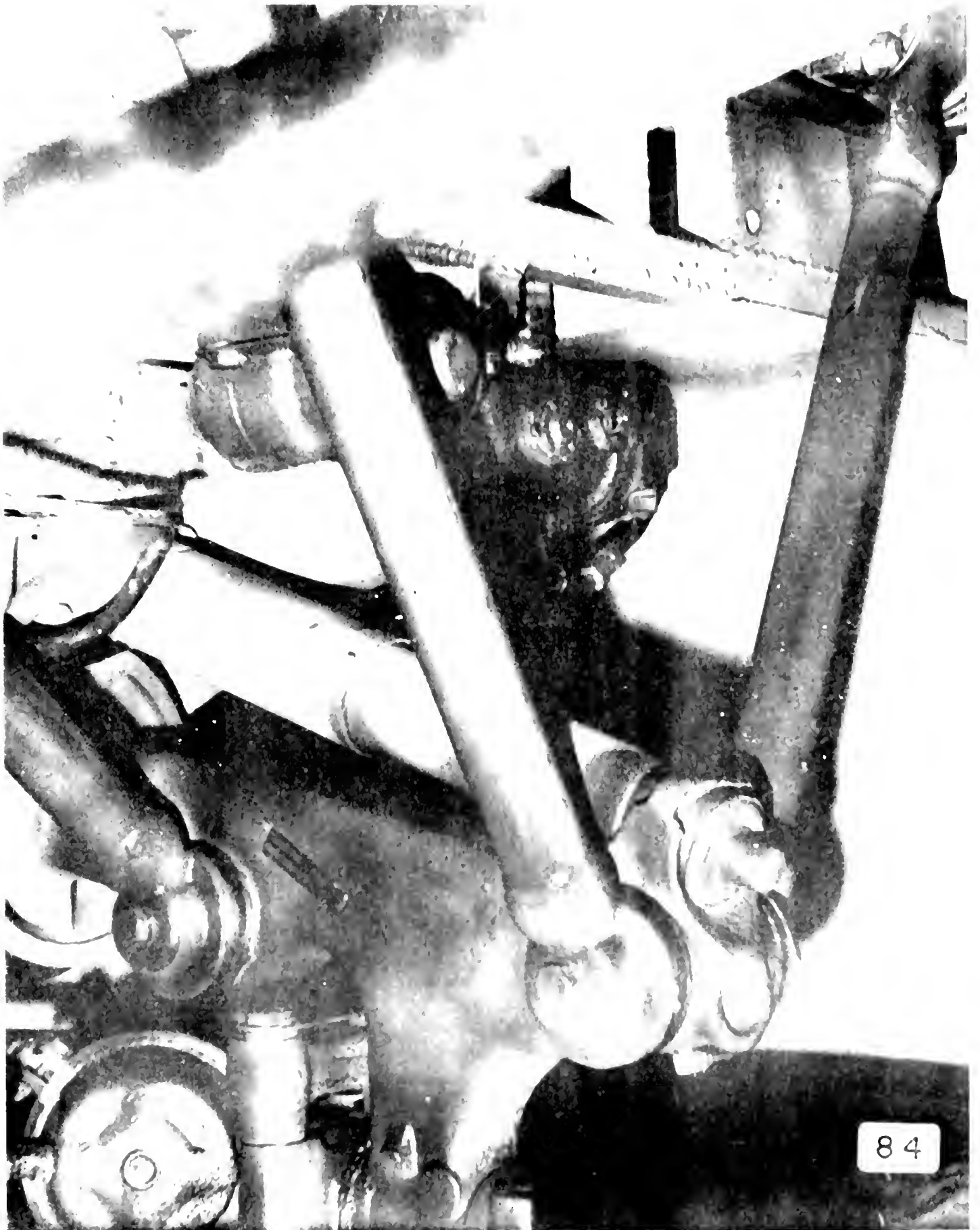
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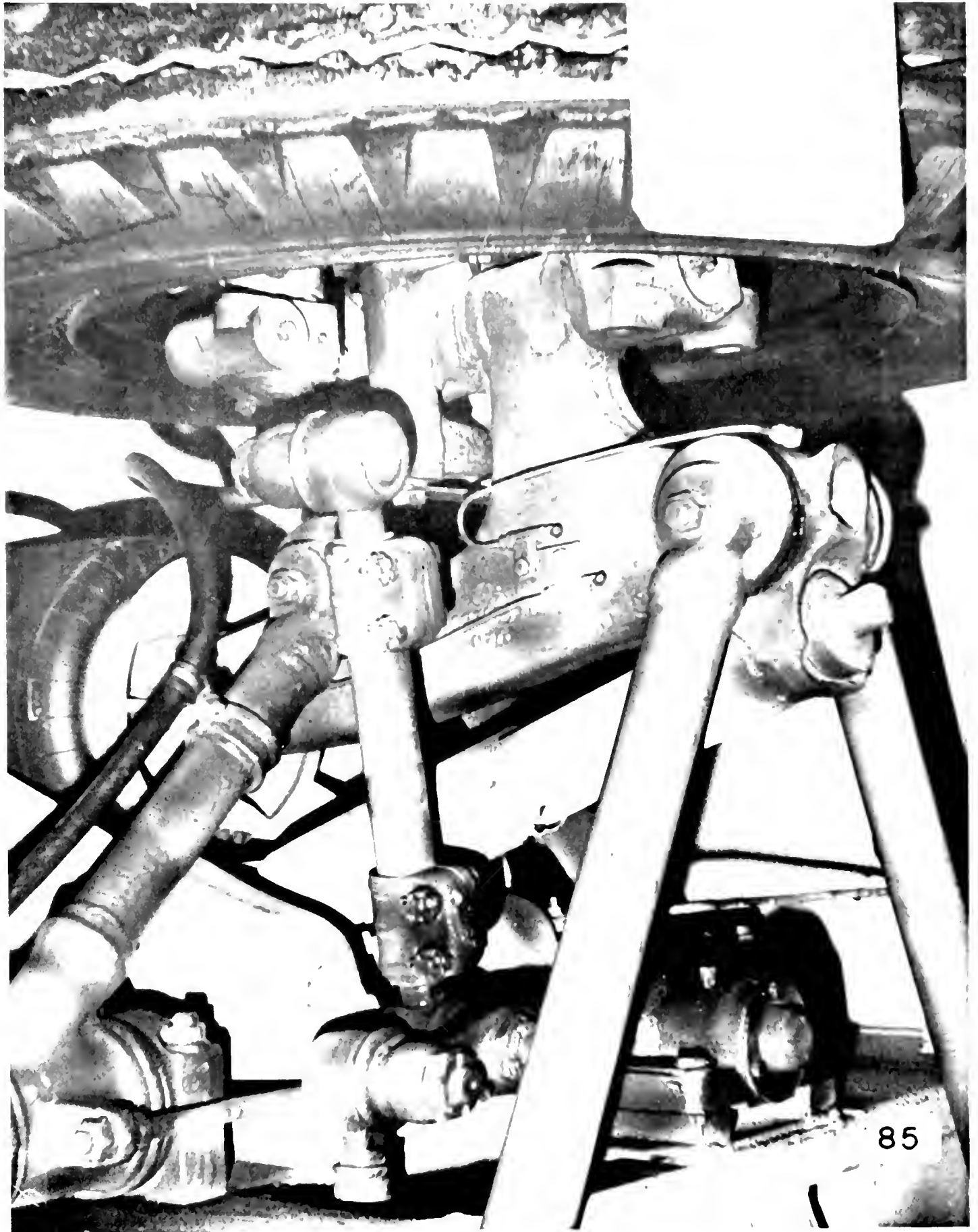




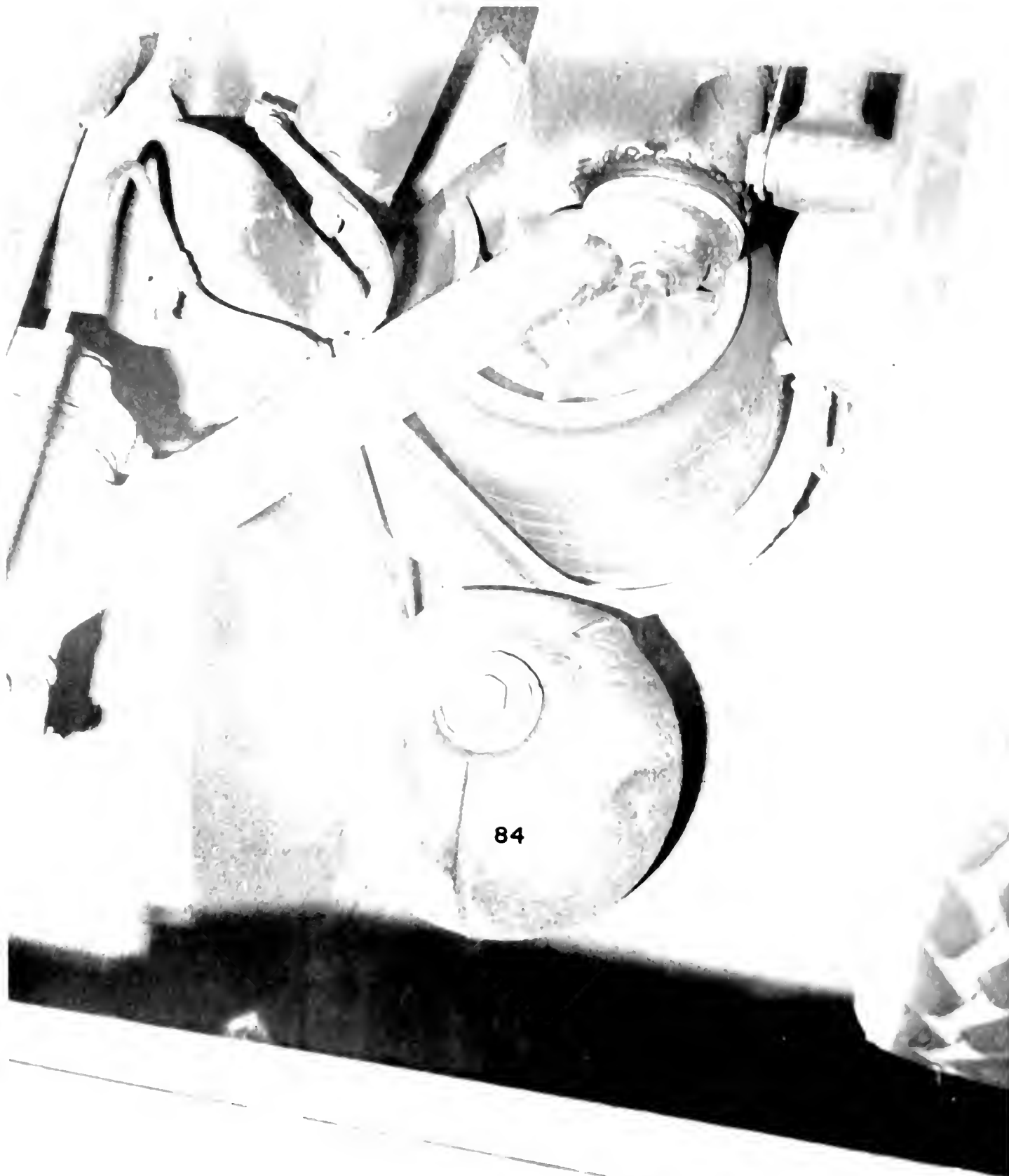




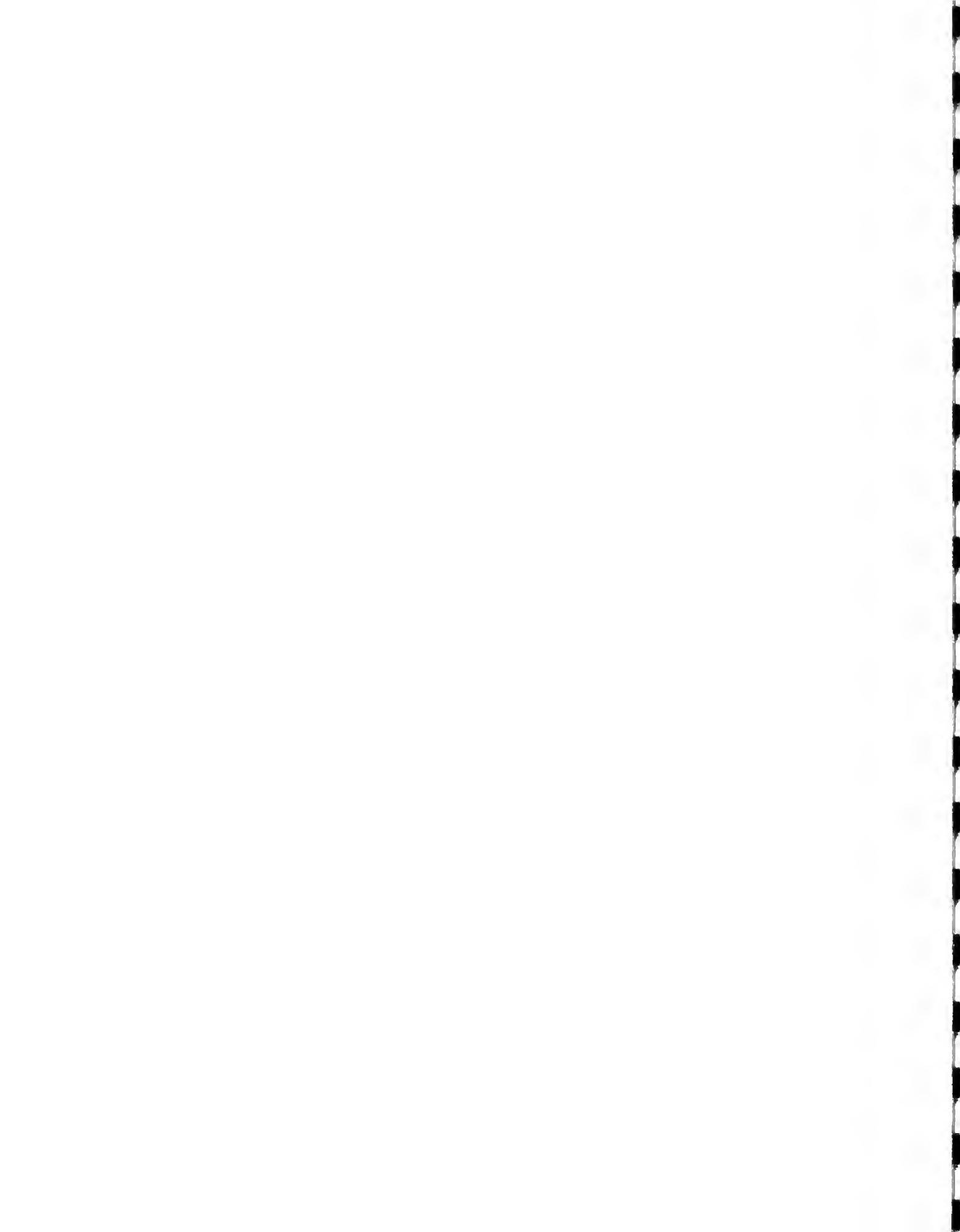




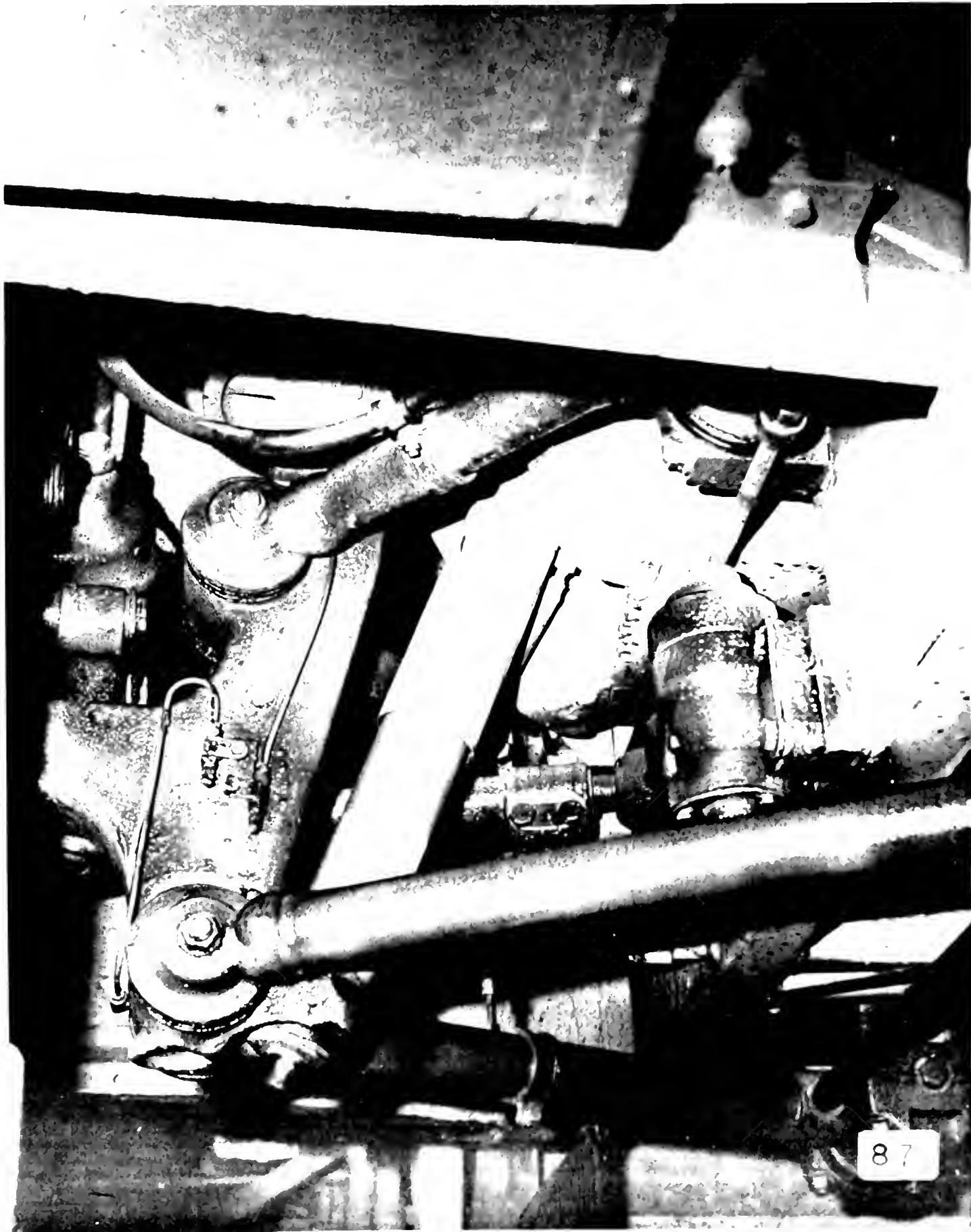


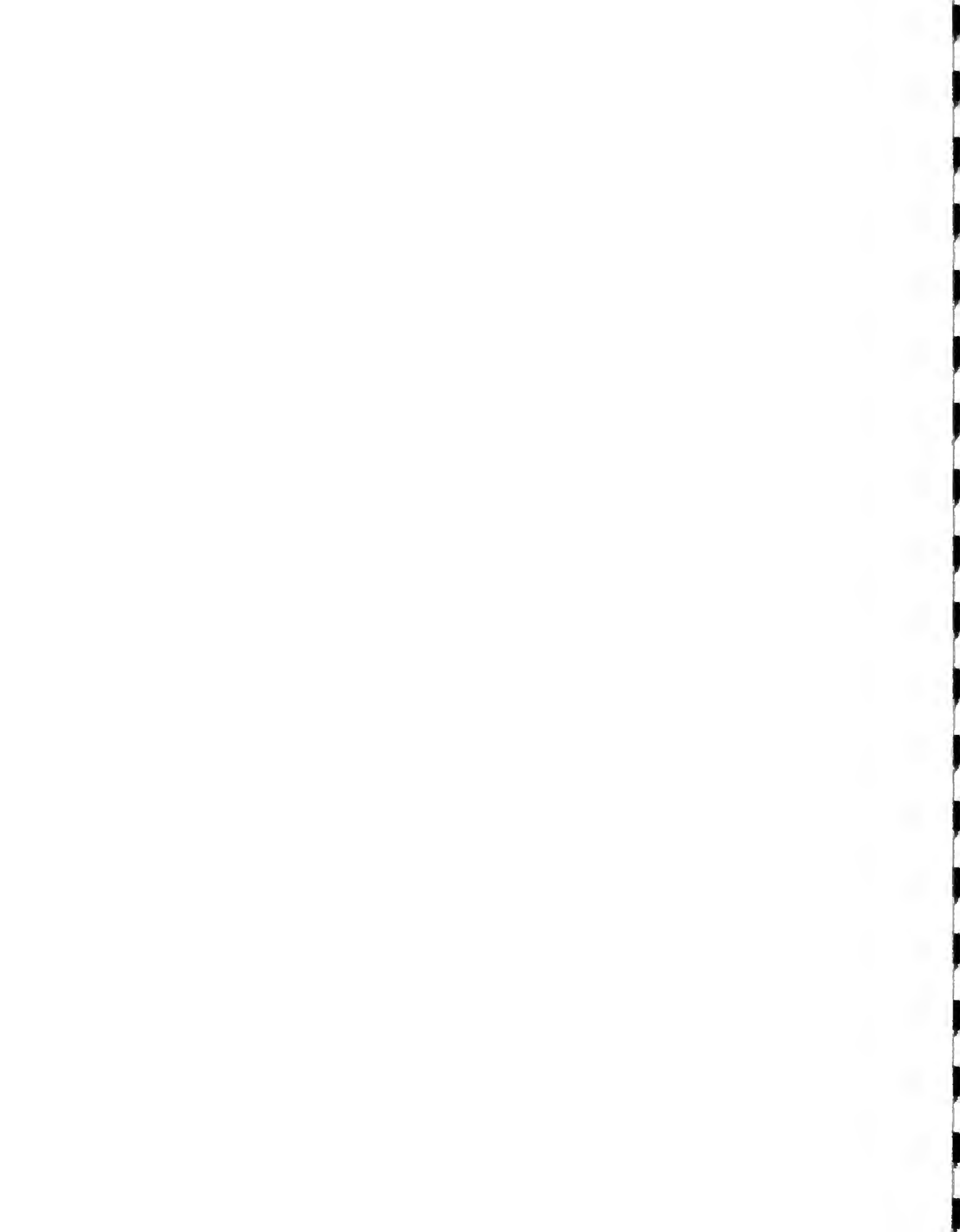


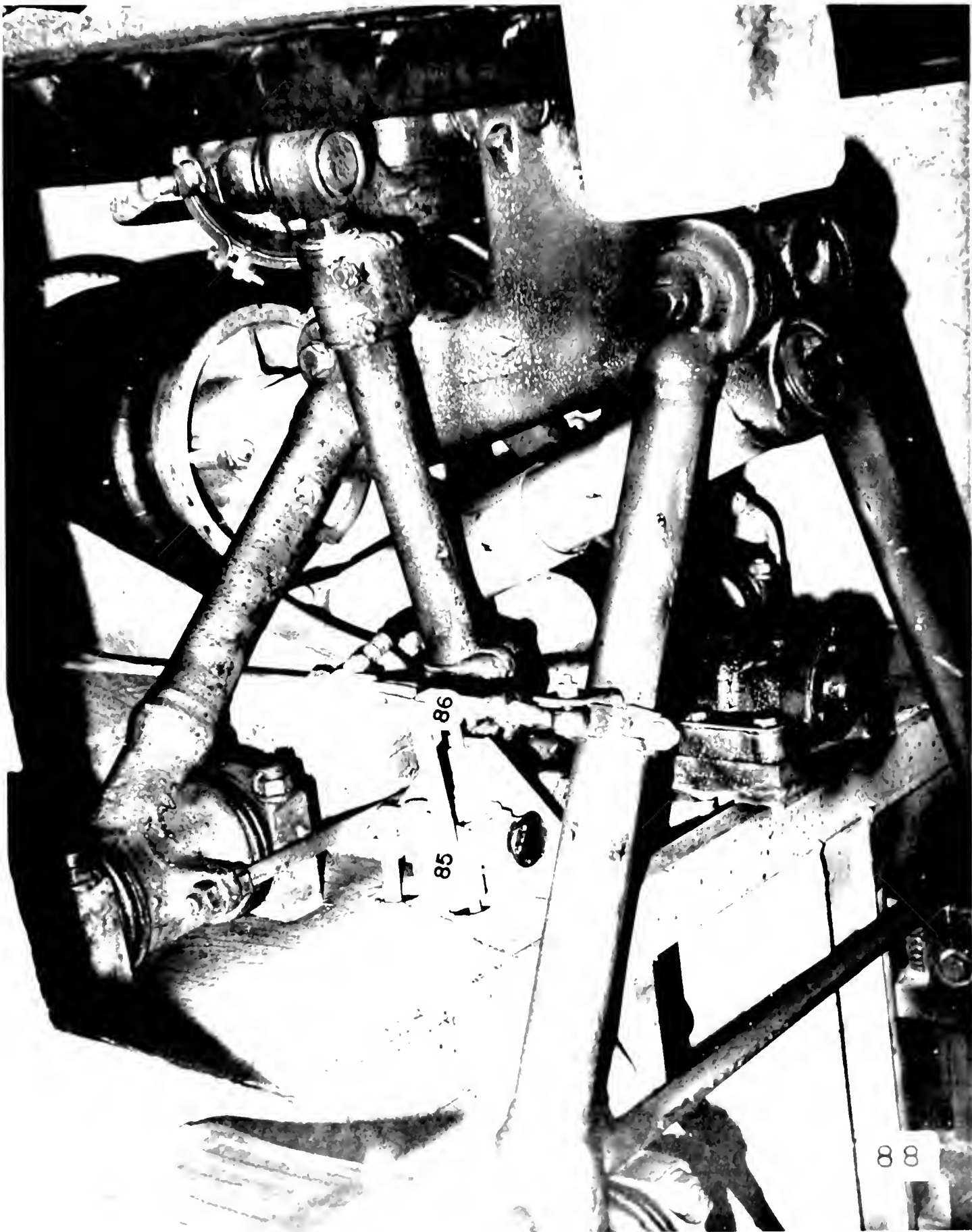
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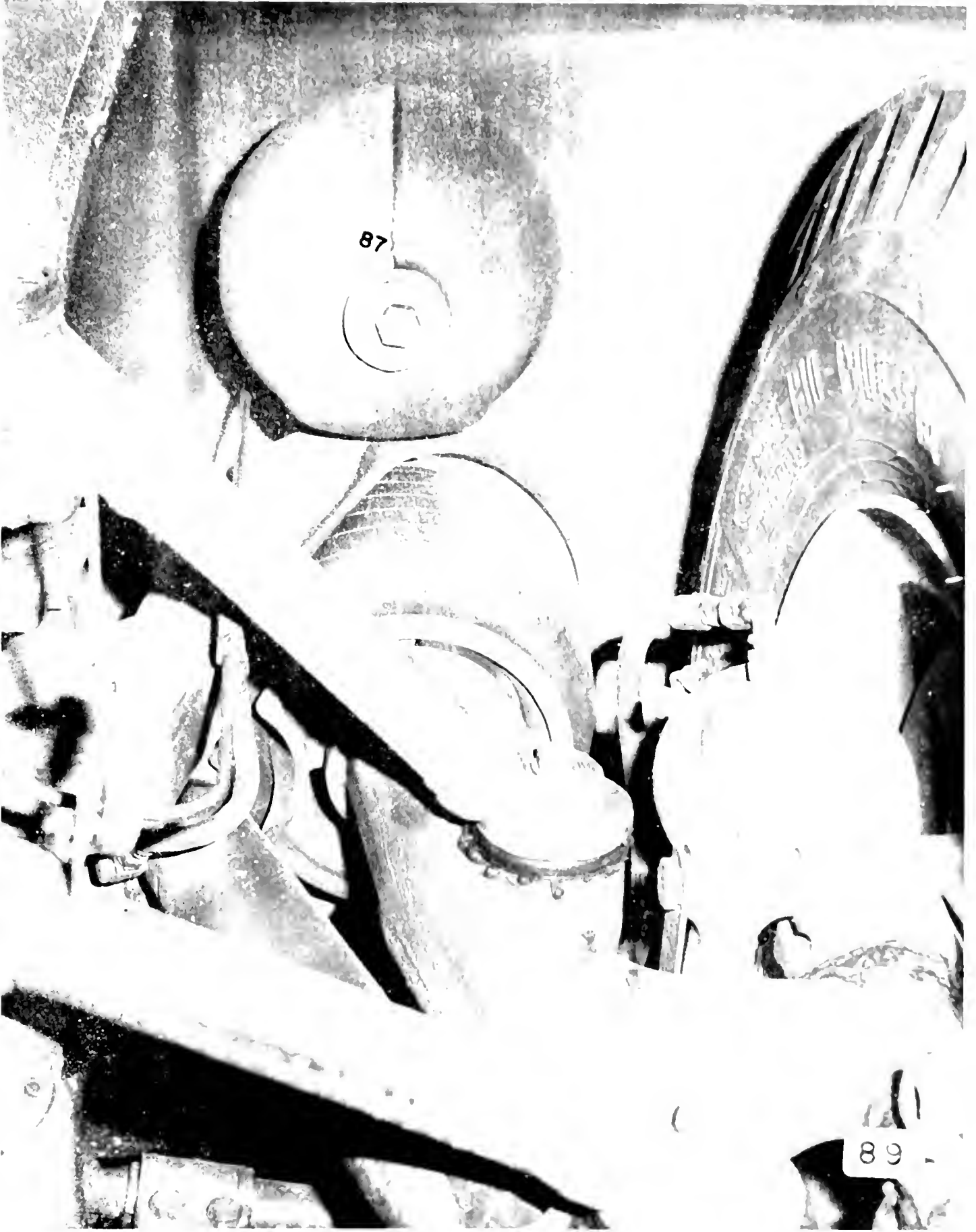


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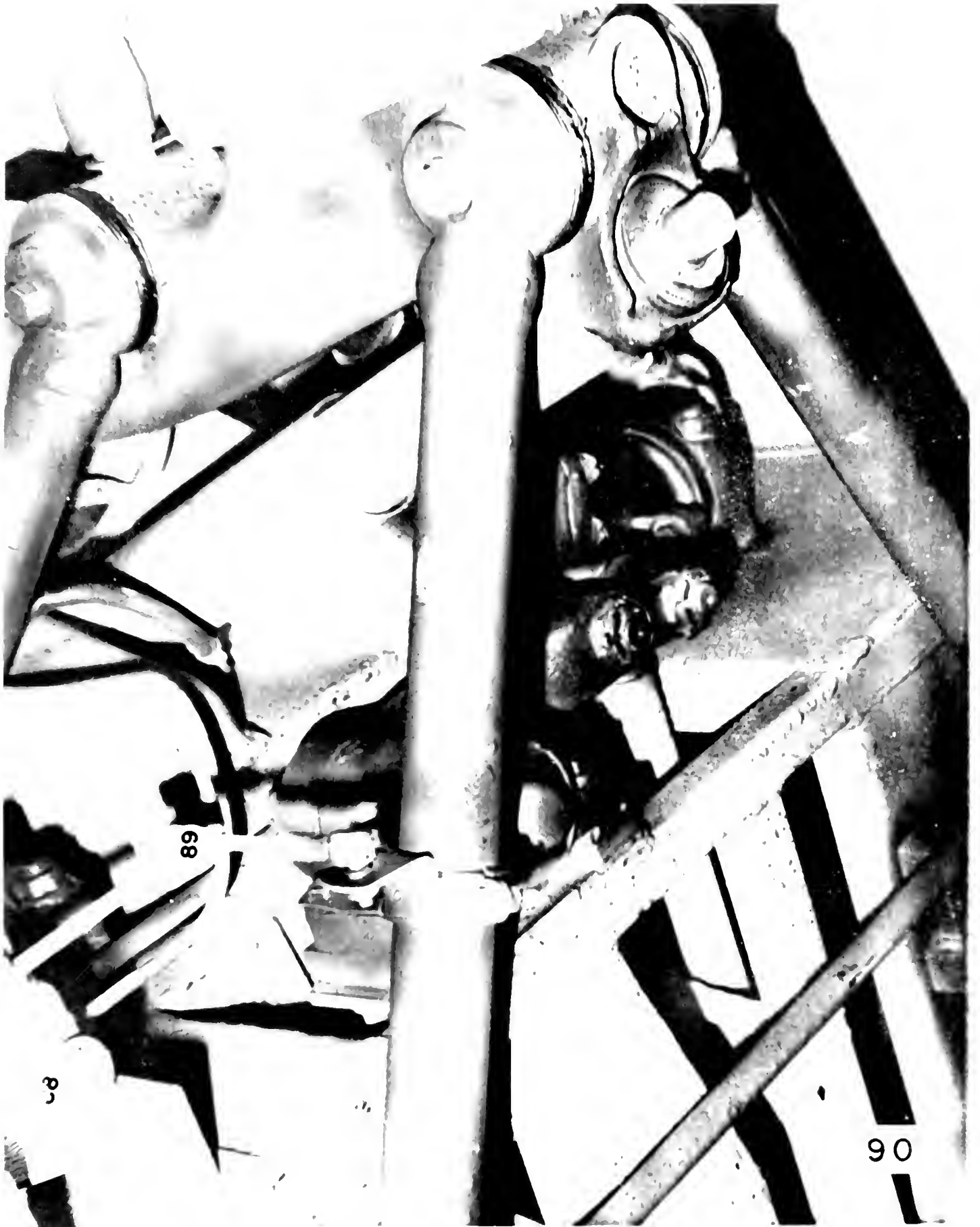




87

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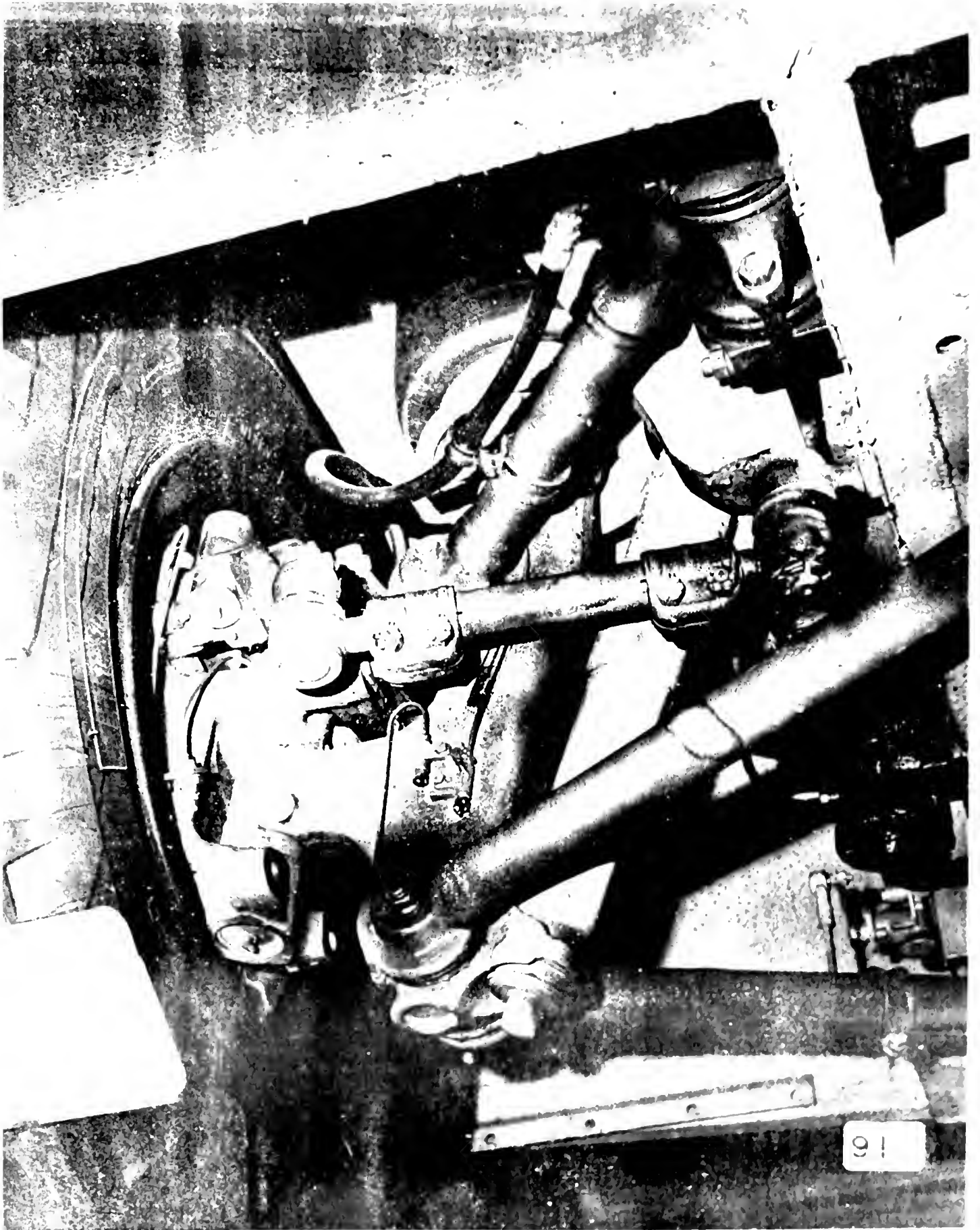
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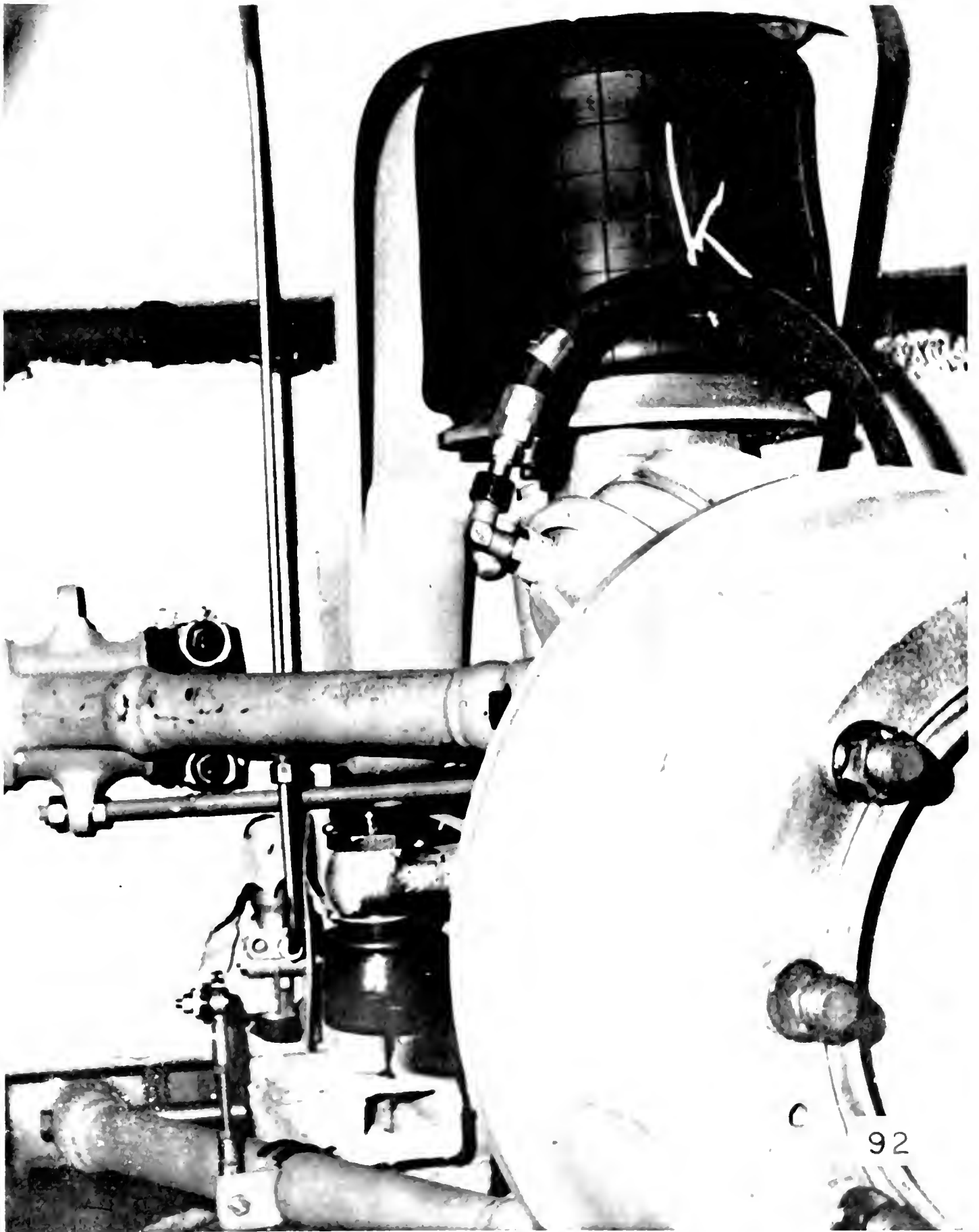
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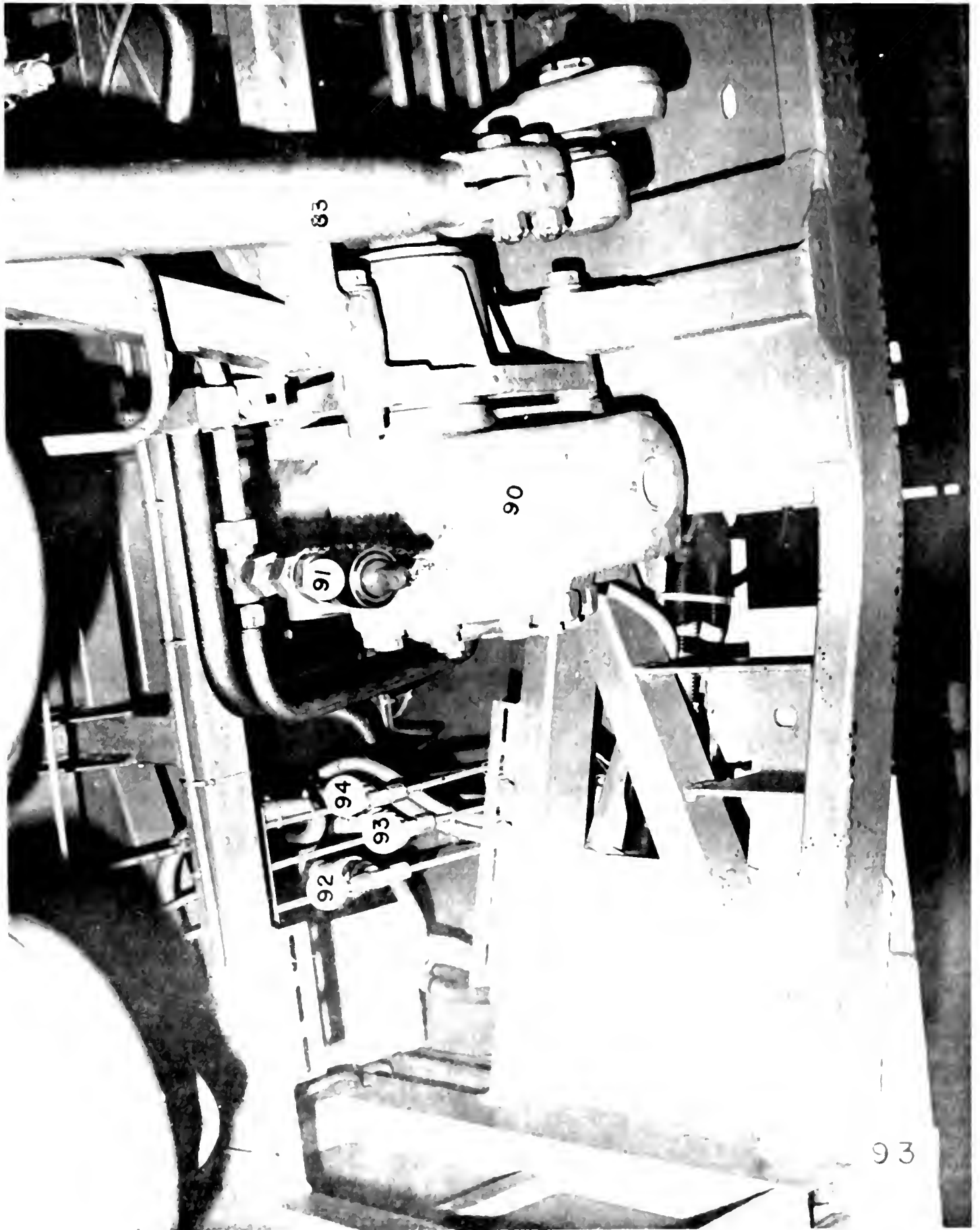




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92











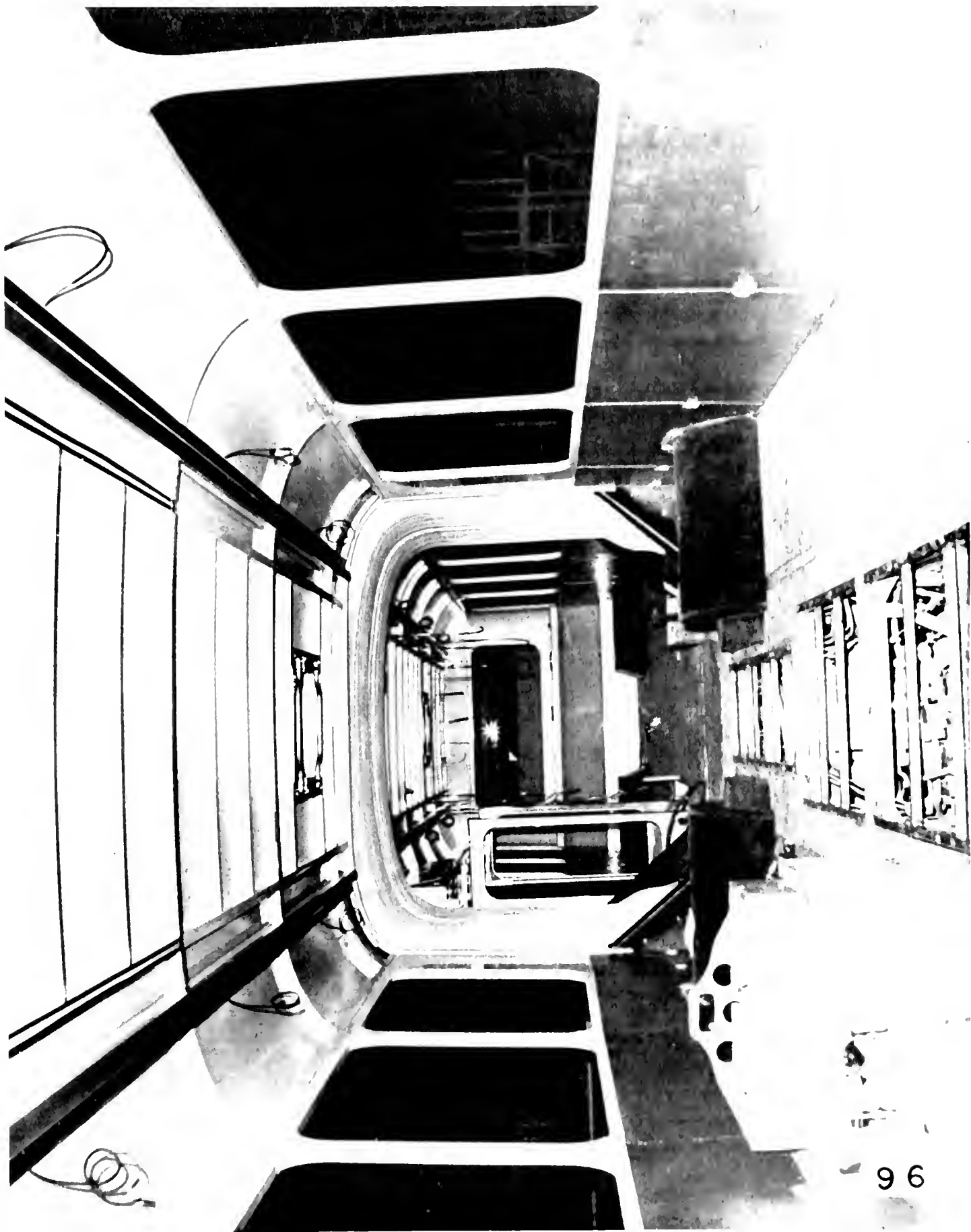


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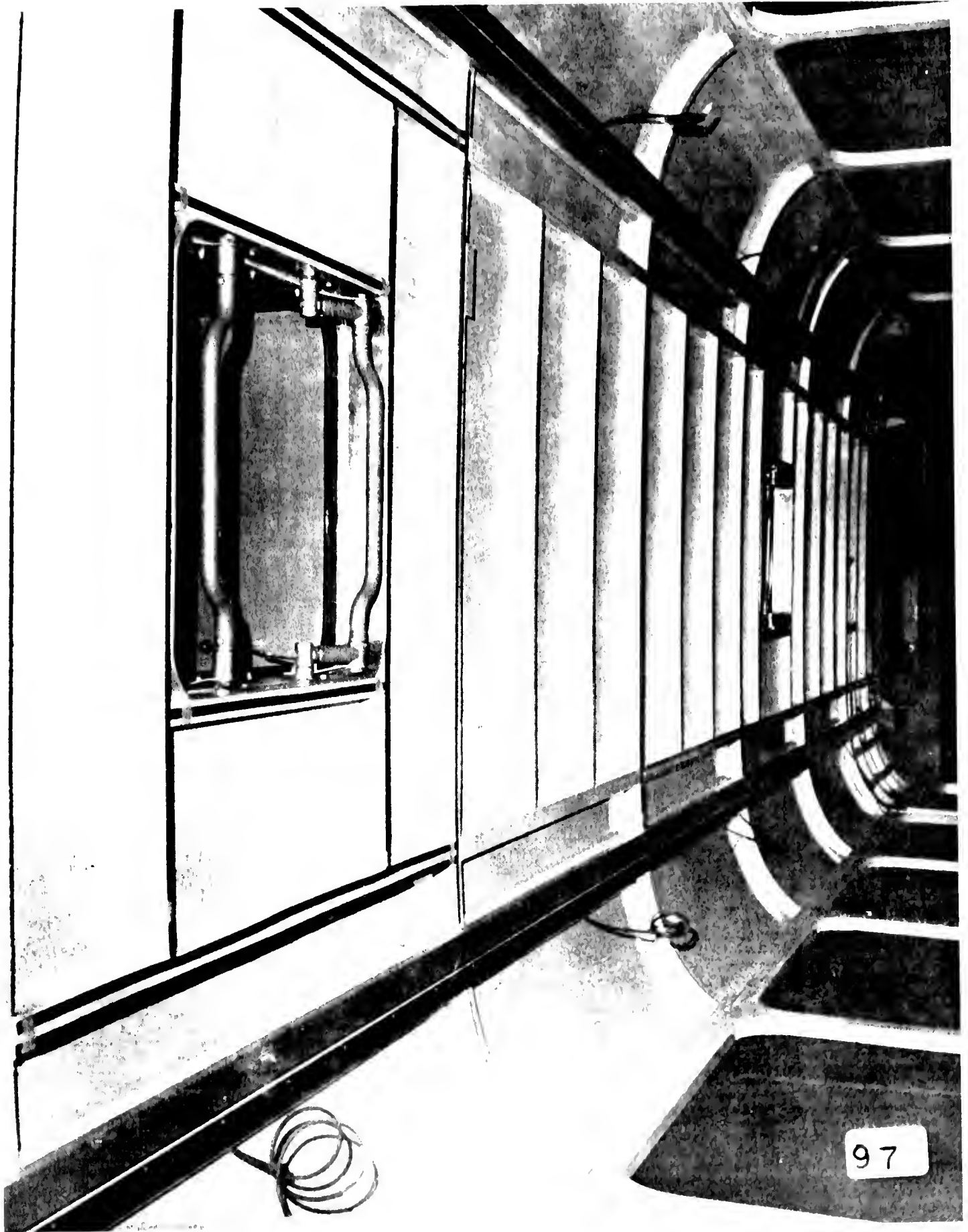
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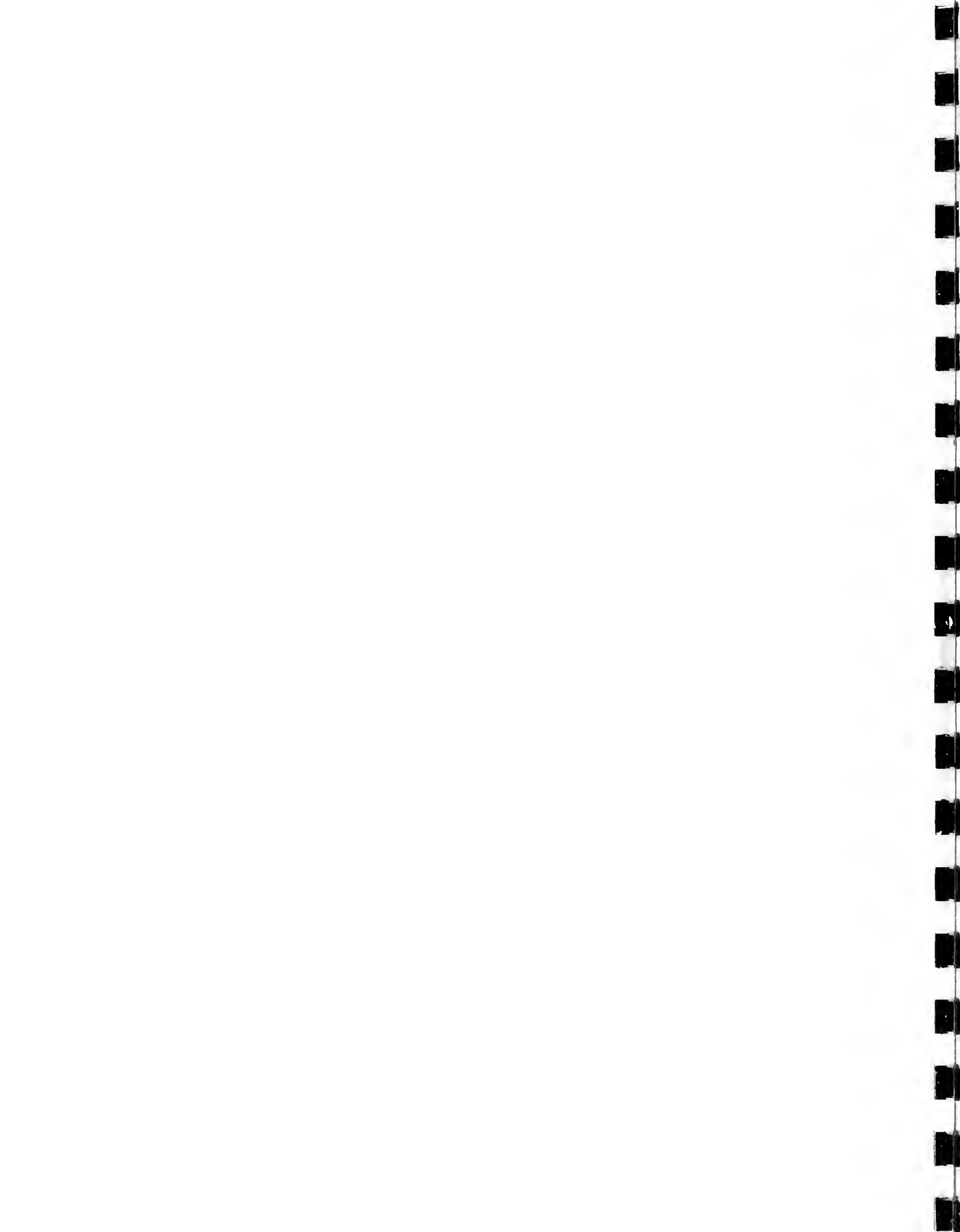






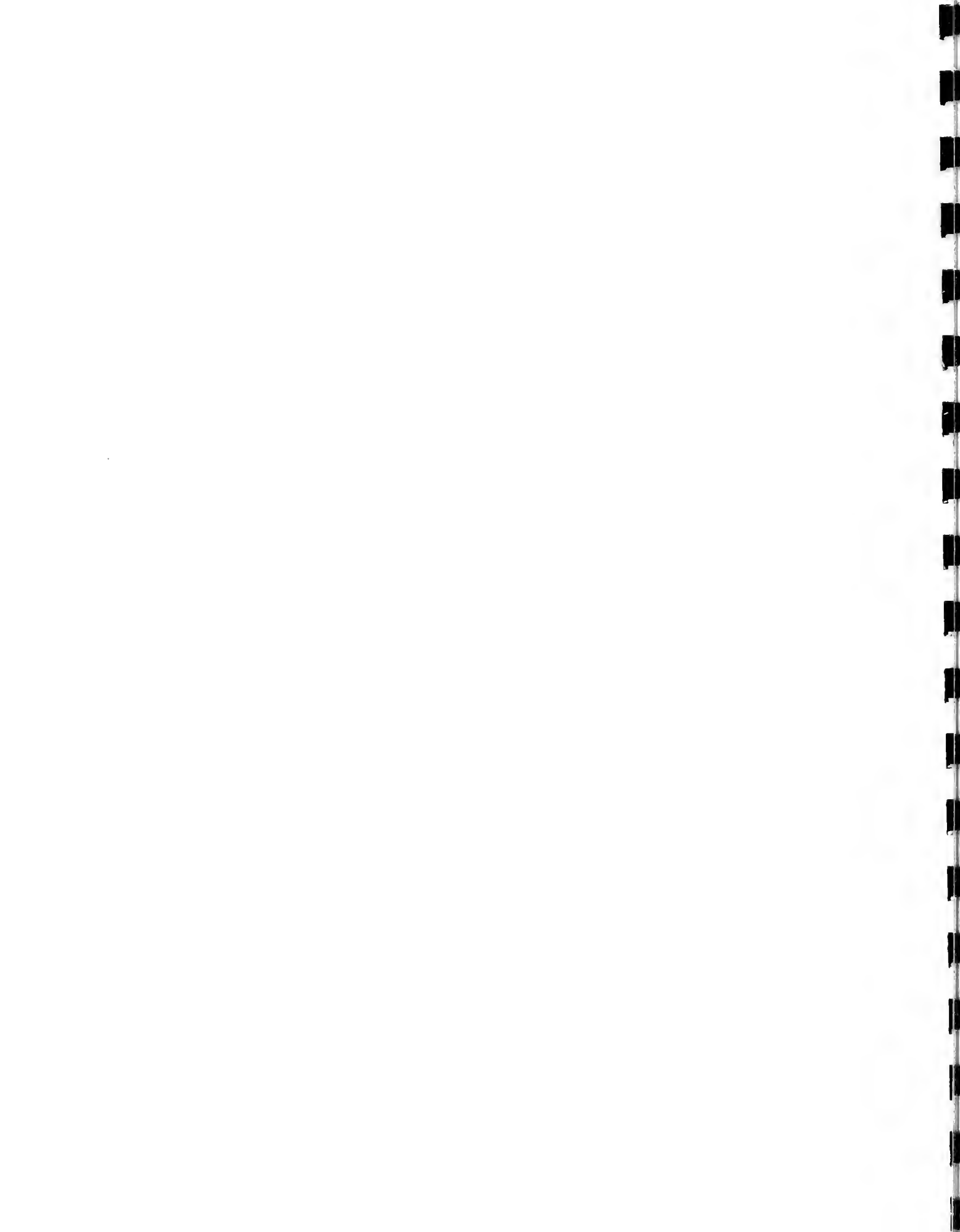


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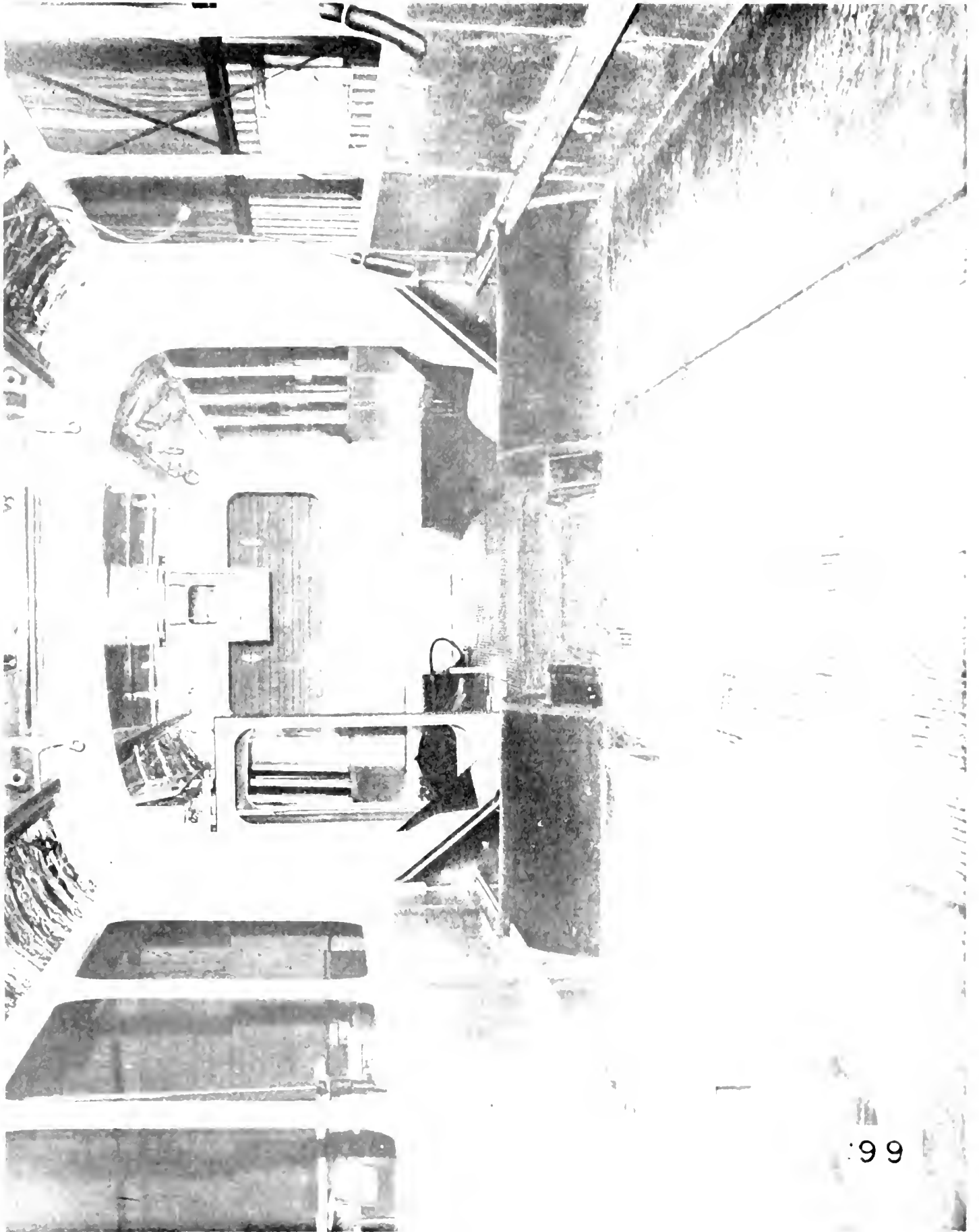




9.8









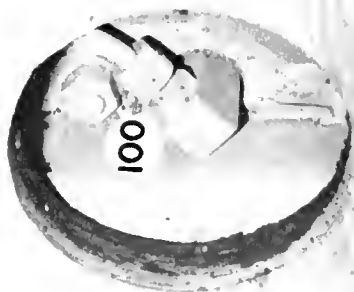
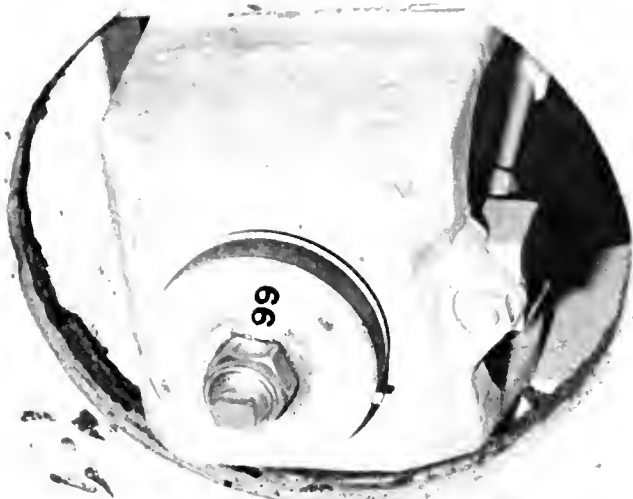


100









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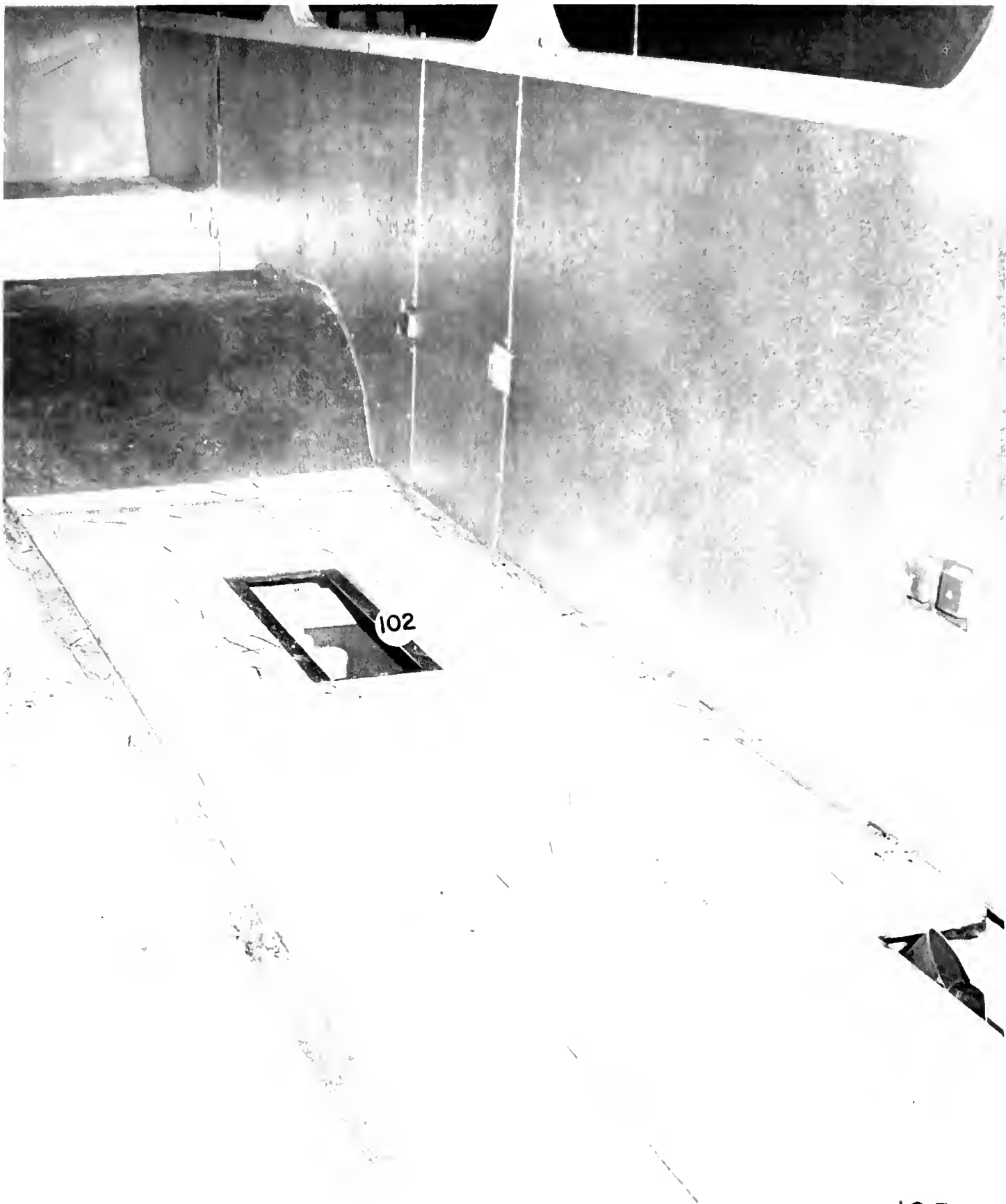




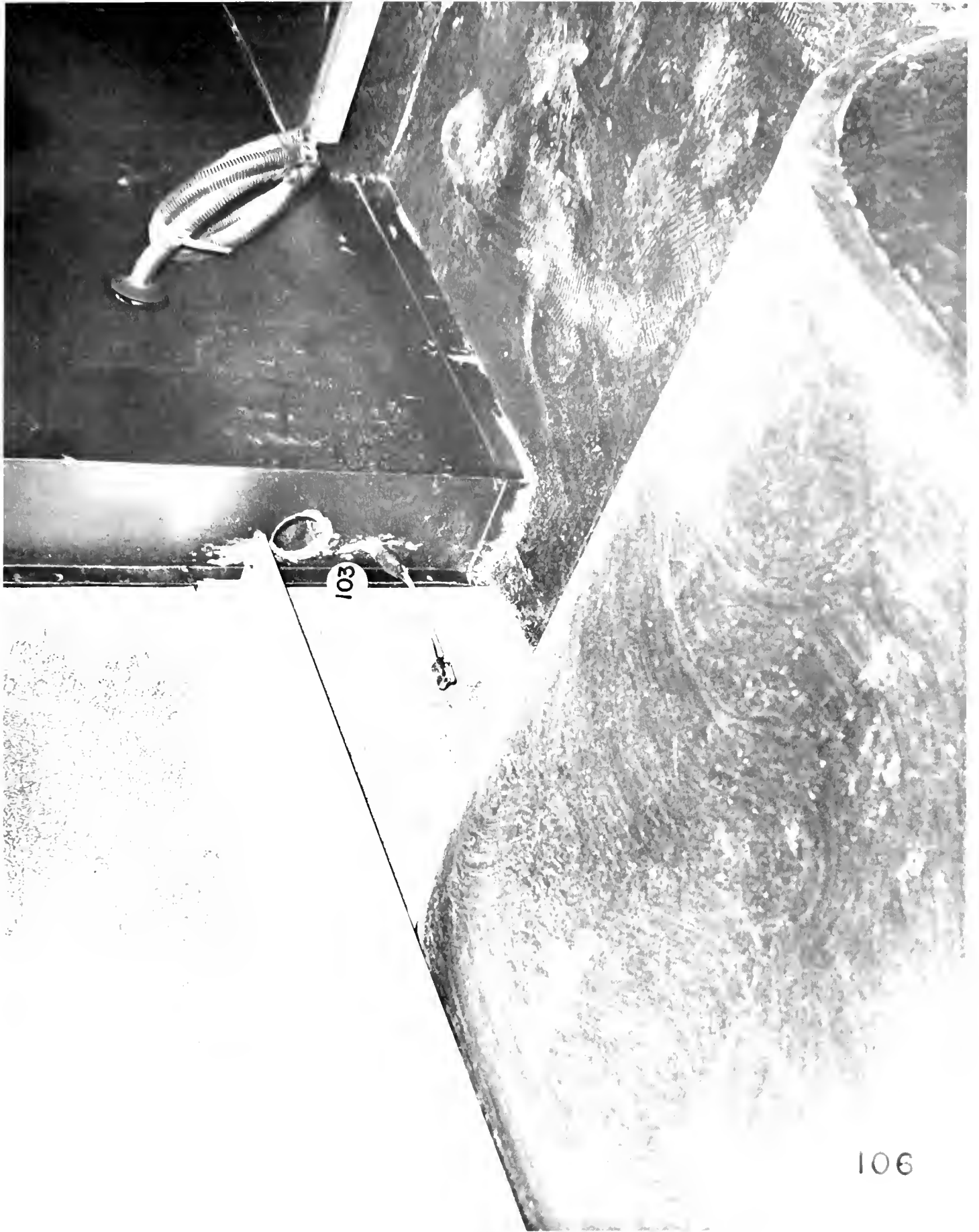


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1-9









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107

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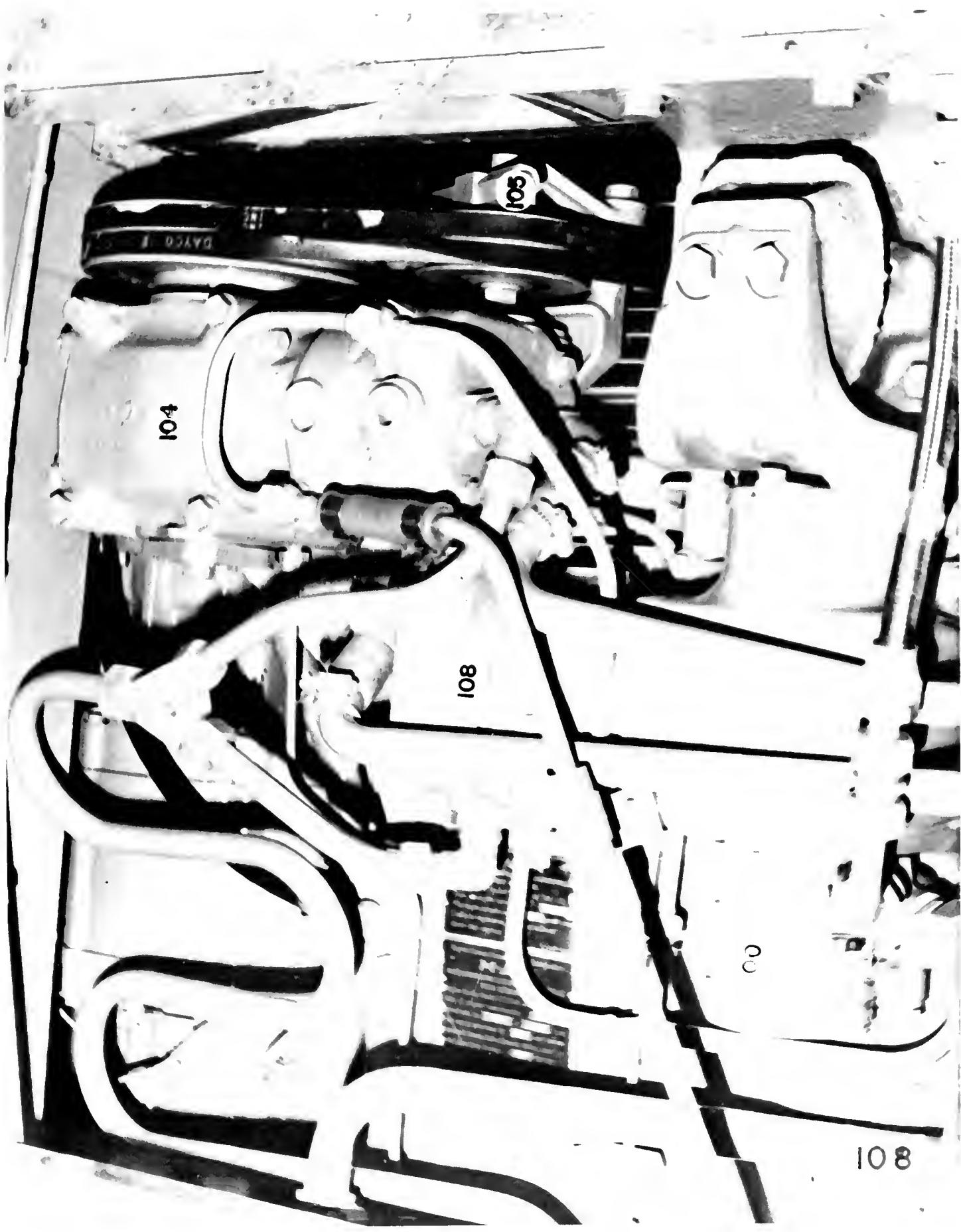
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107







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108

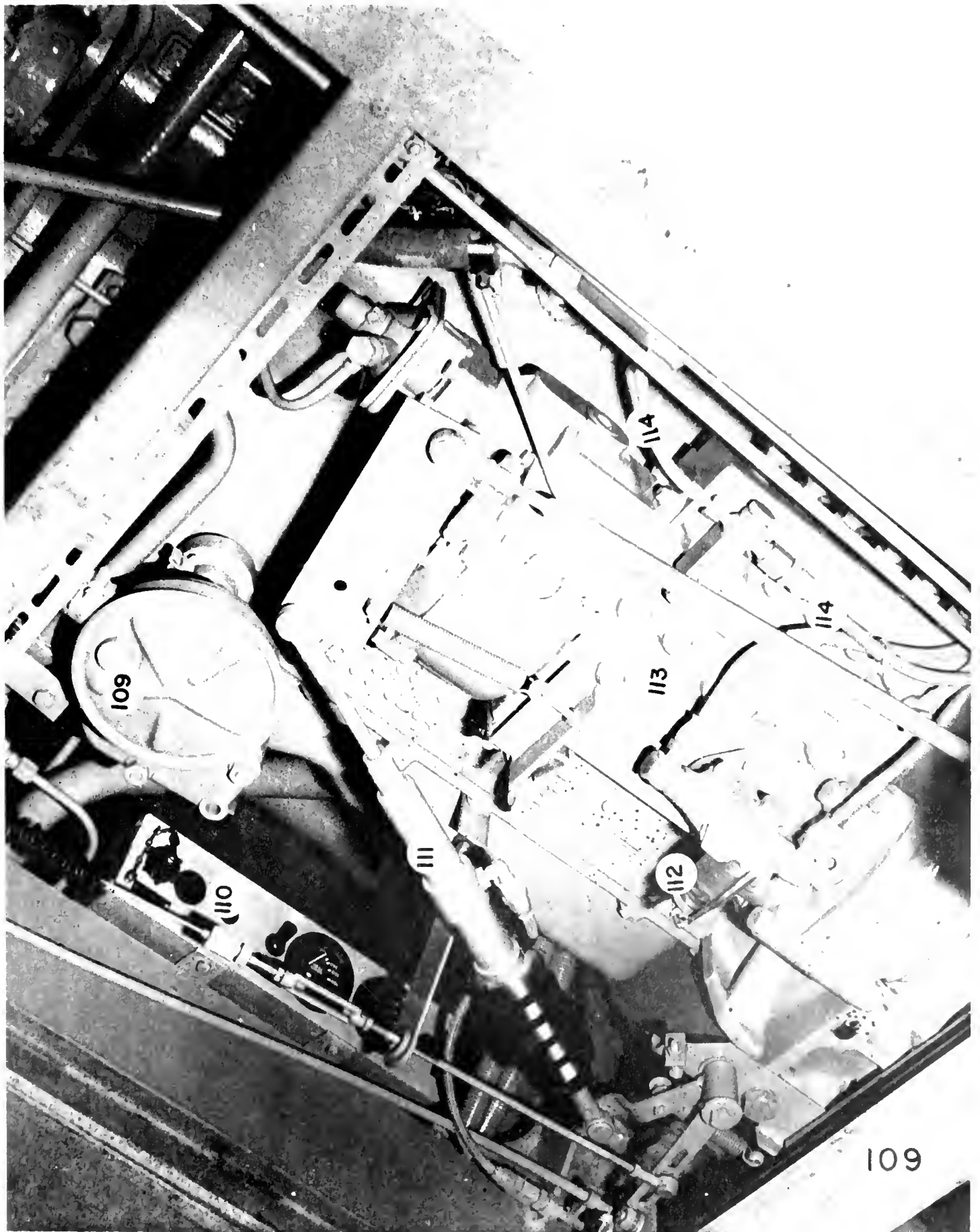
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108

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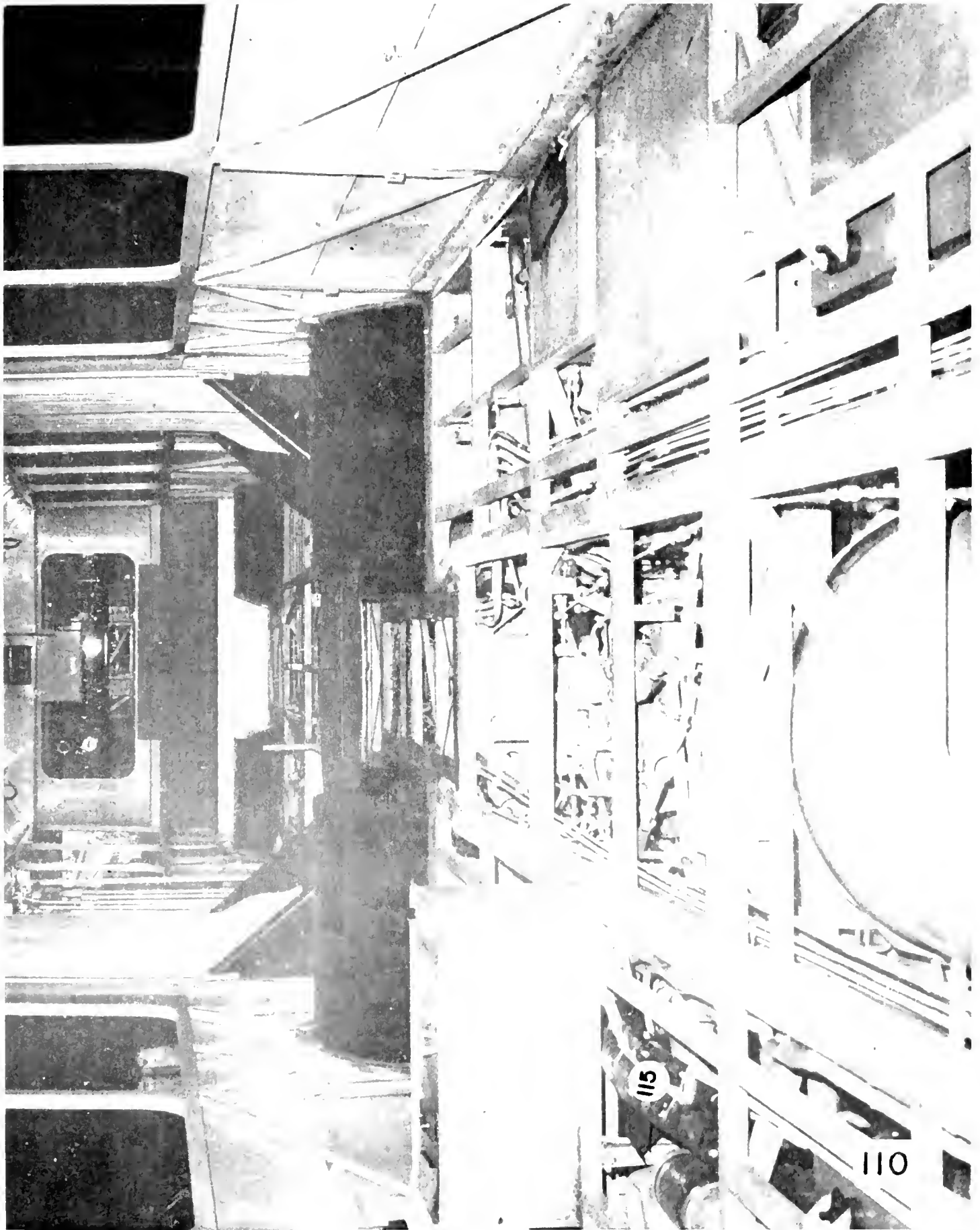
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109



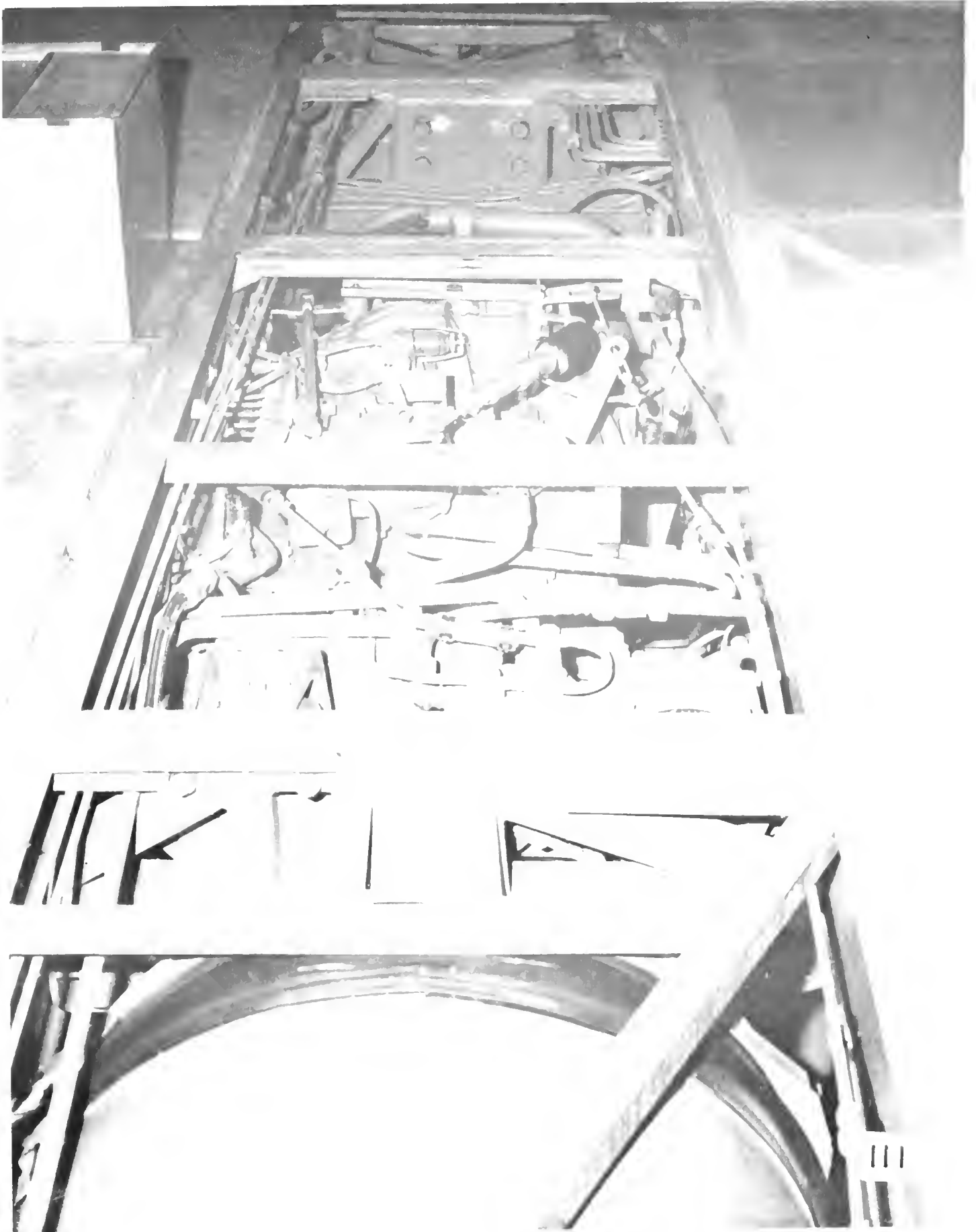


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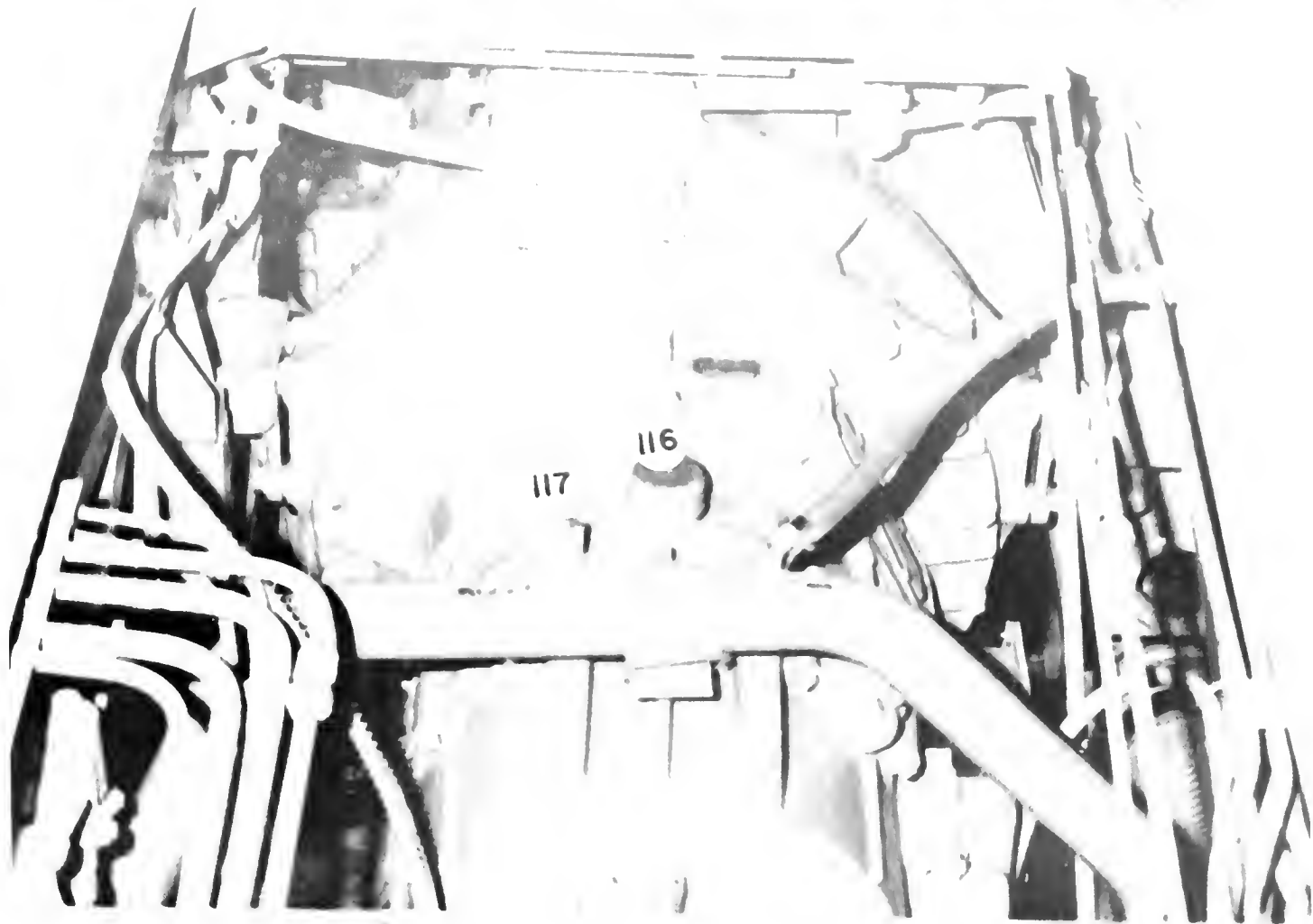
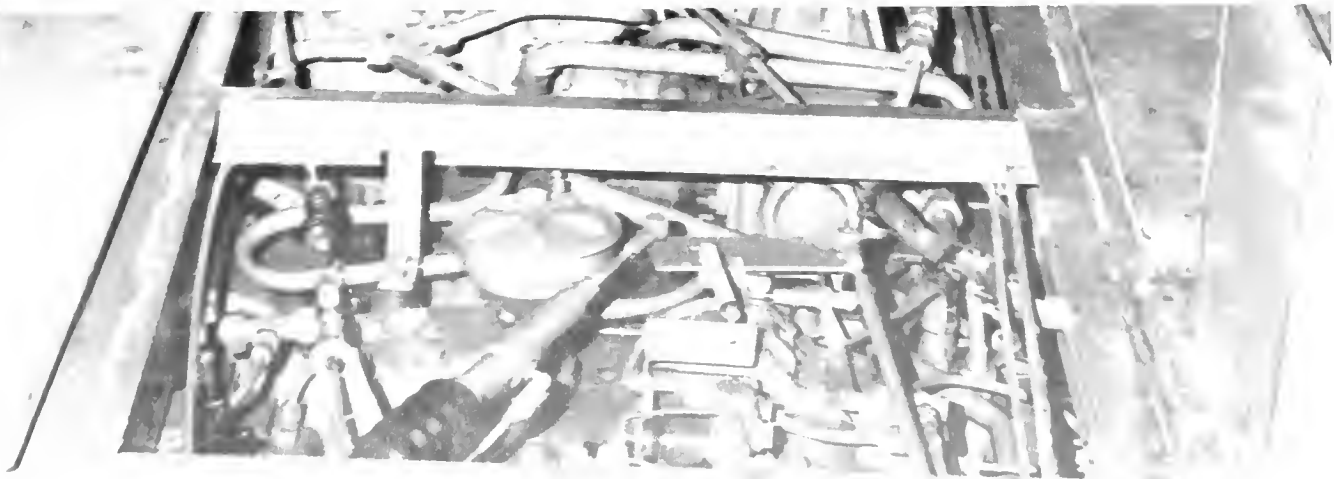
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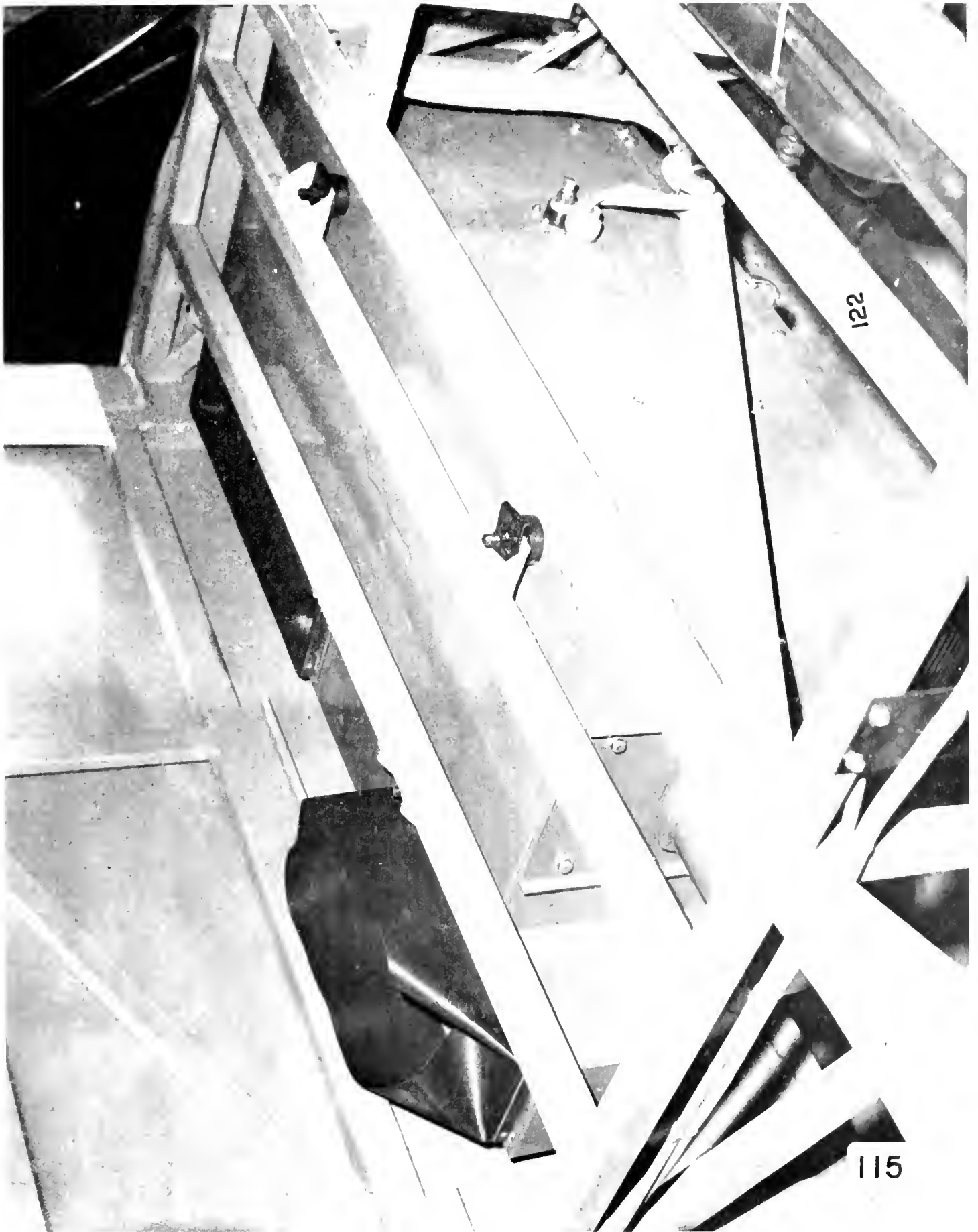




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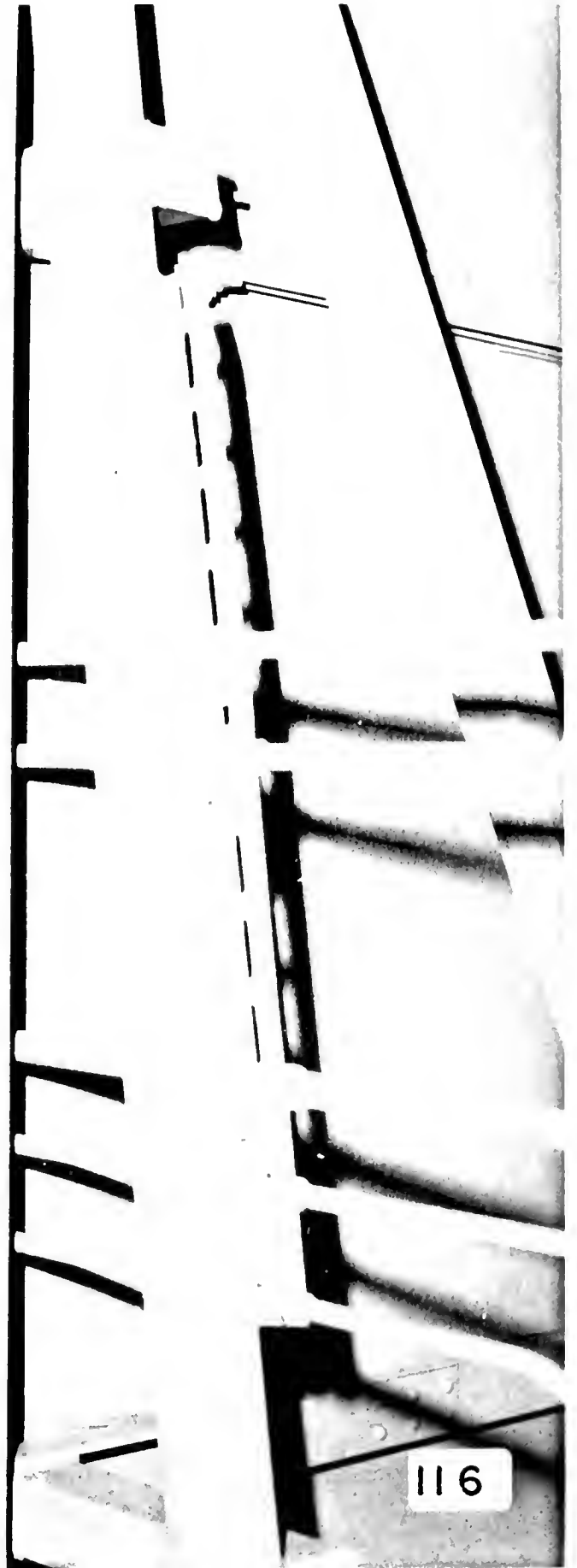
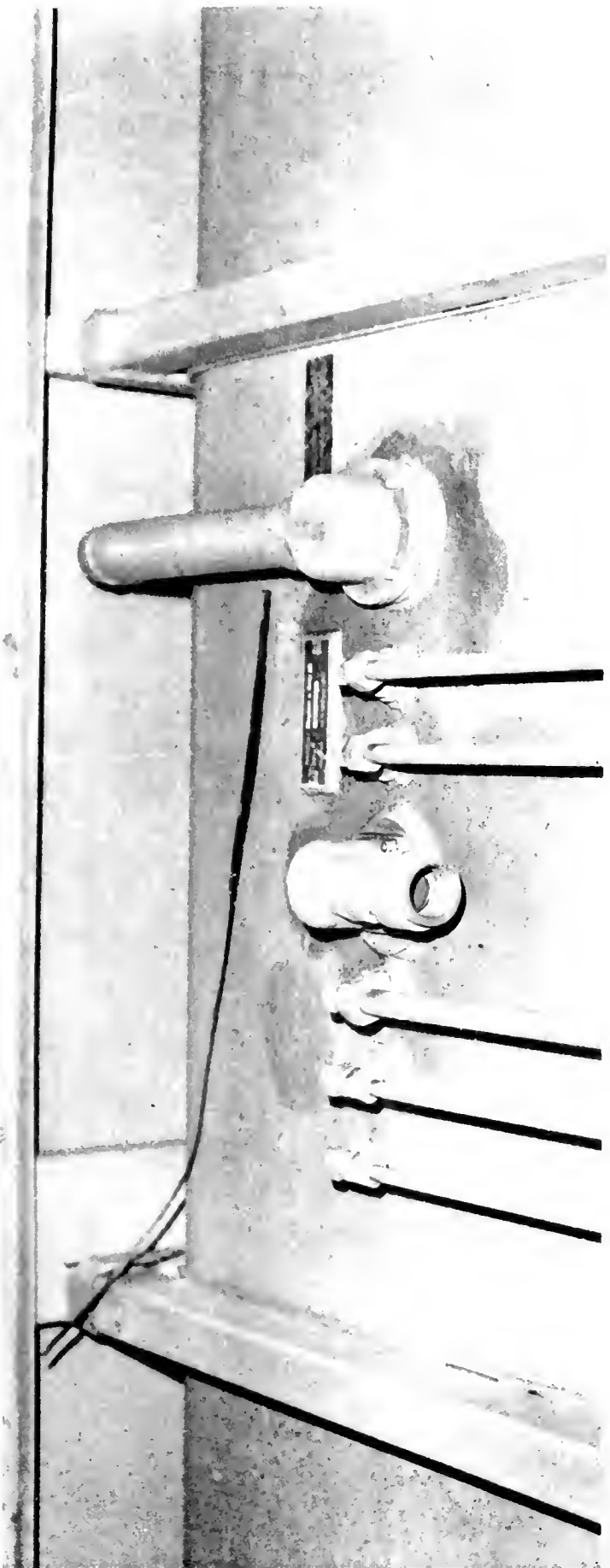




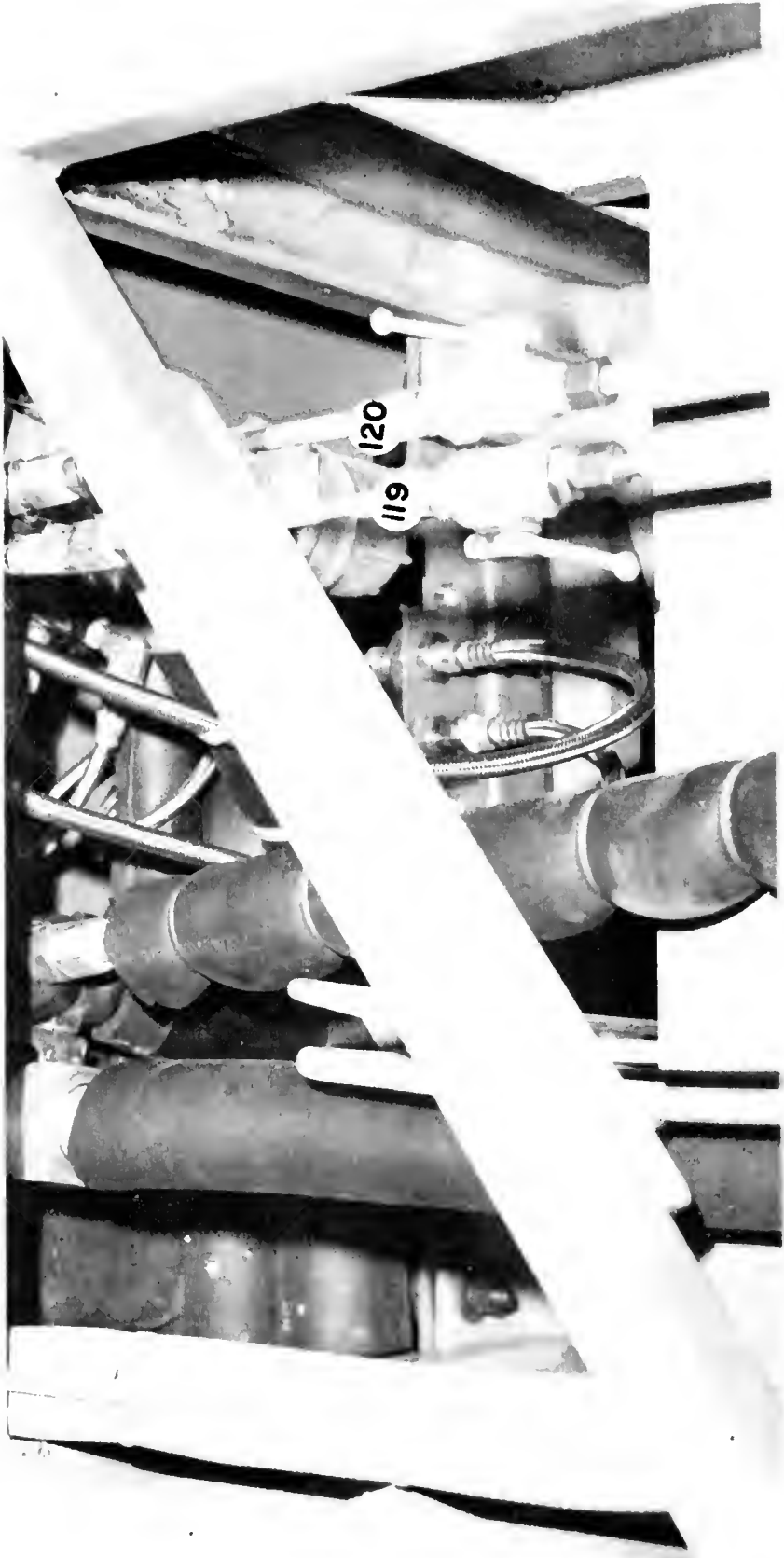
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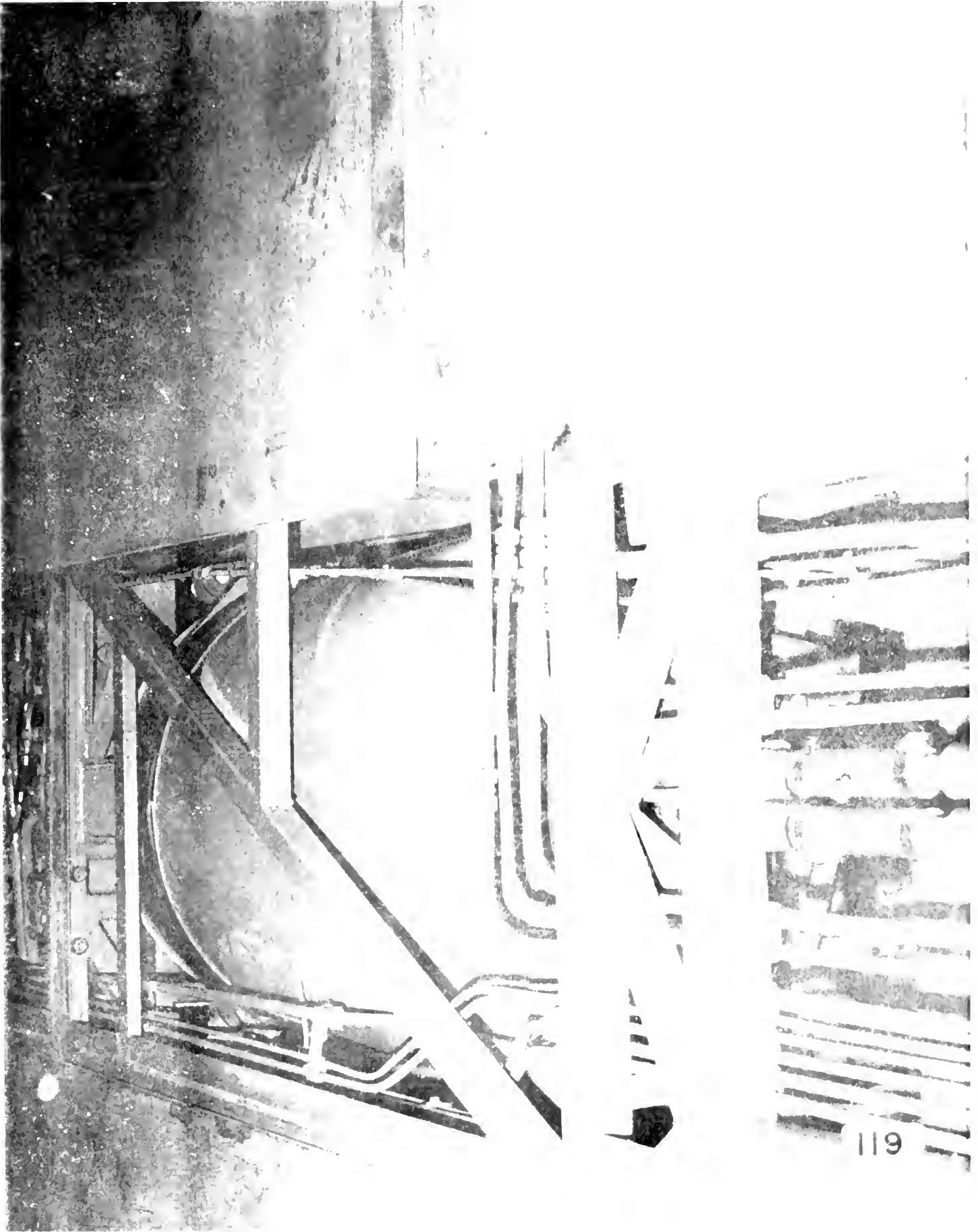


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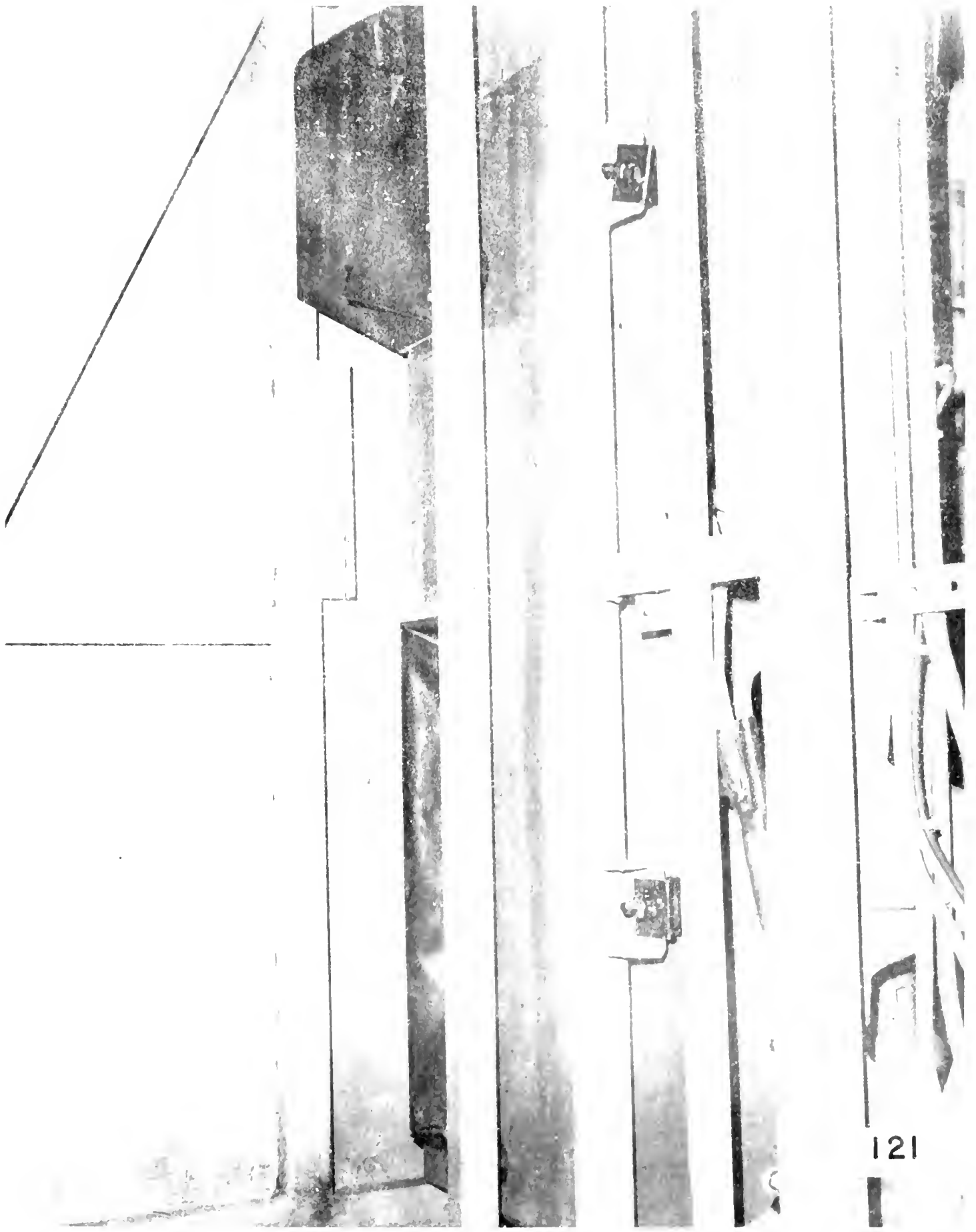




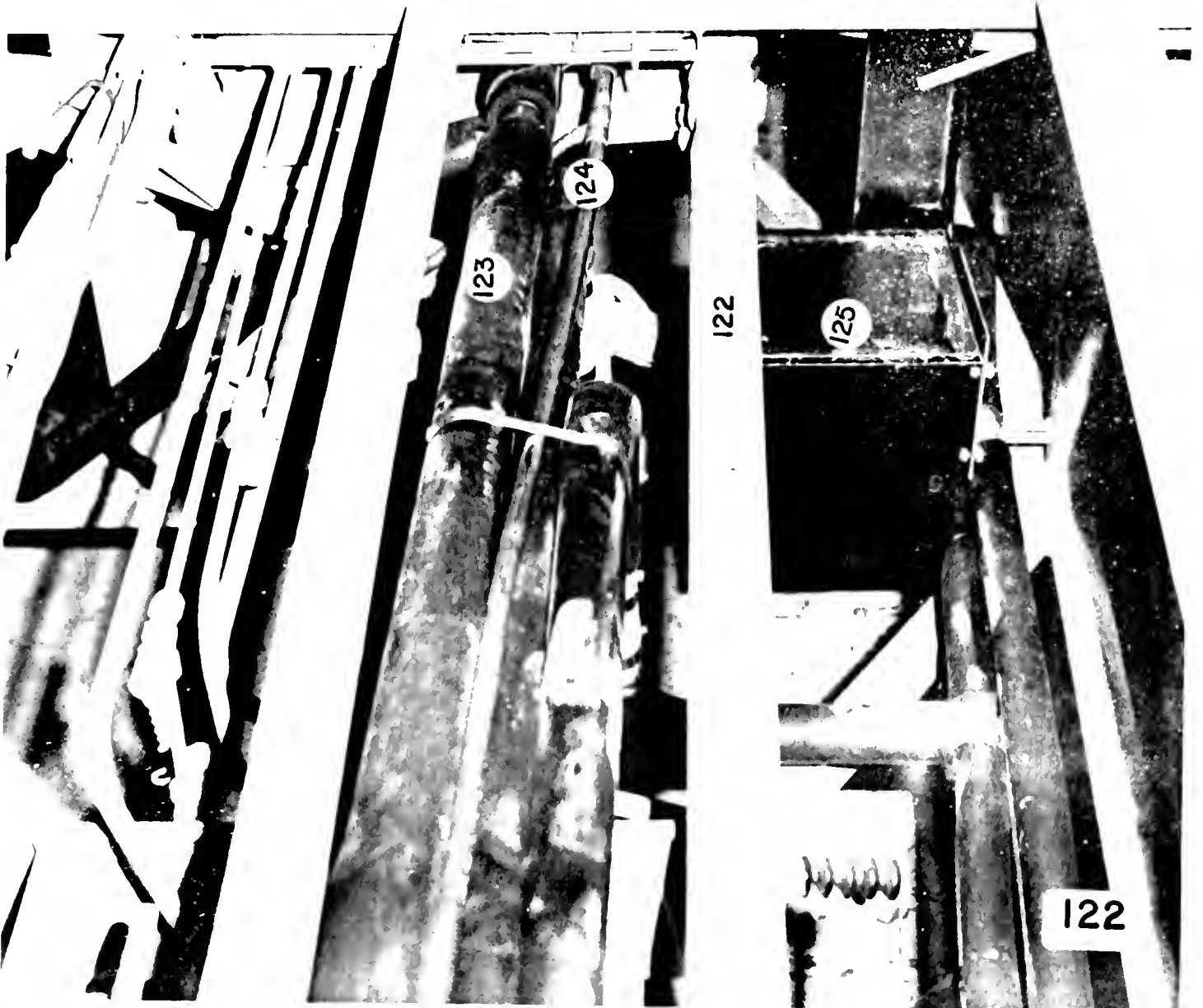
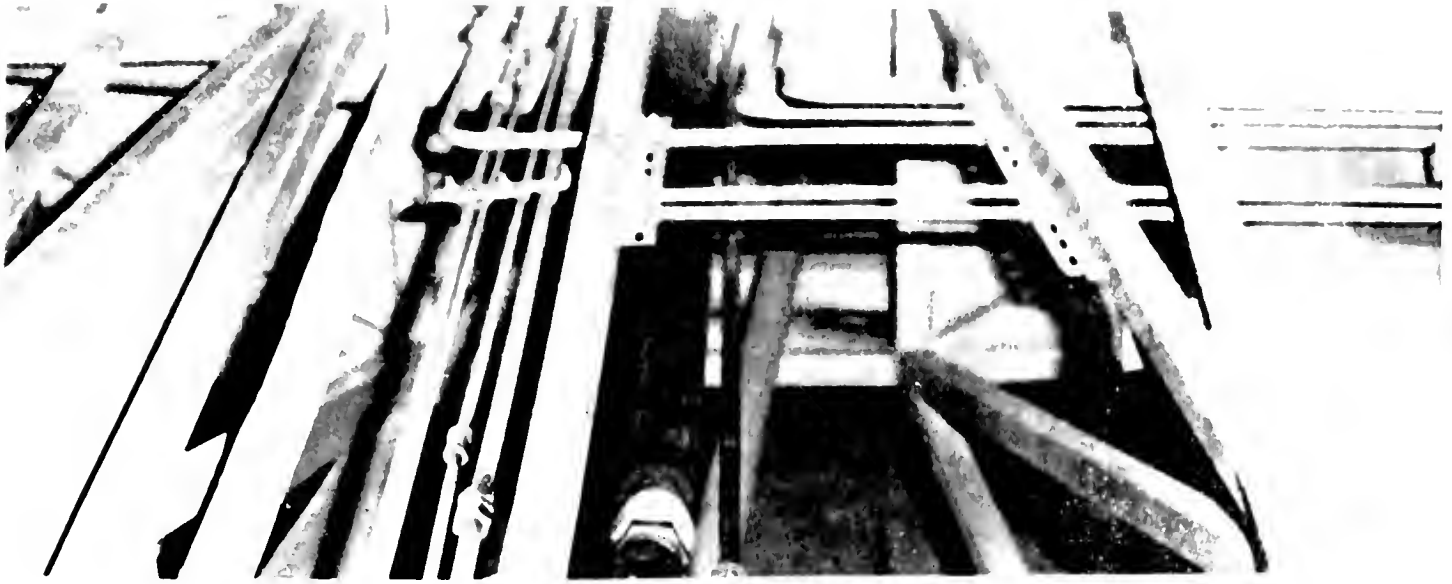


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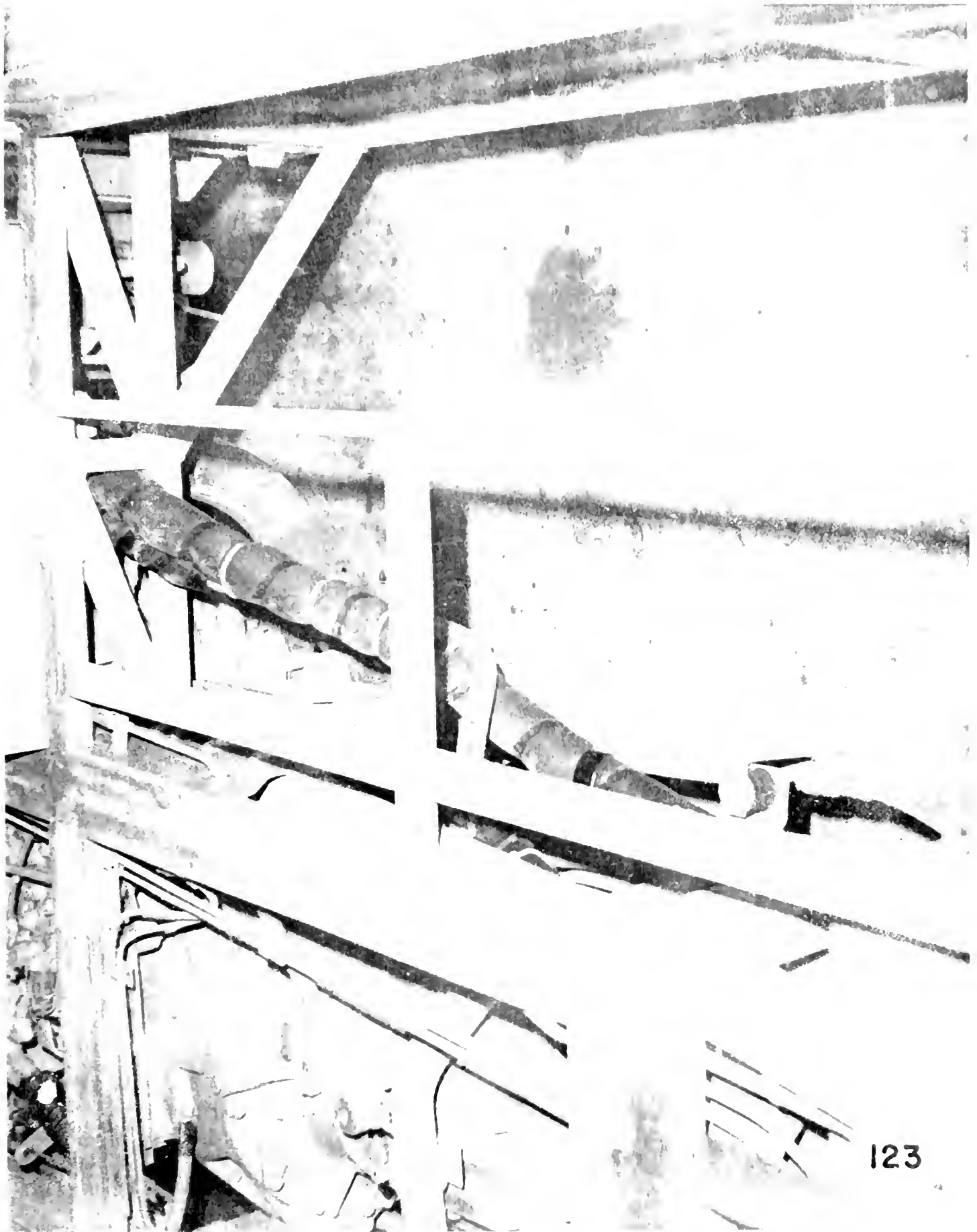




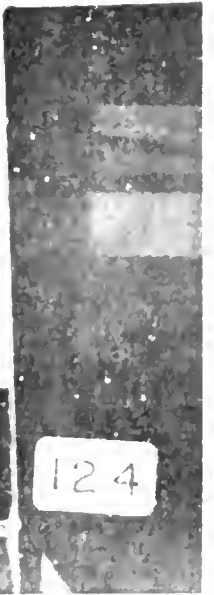
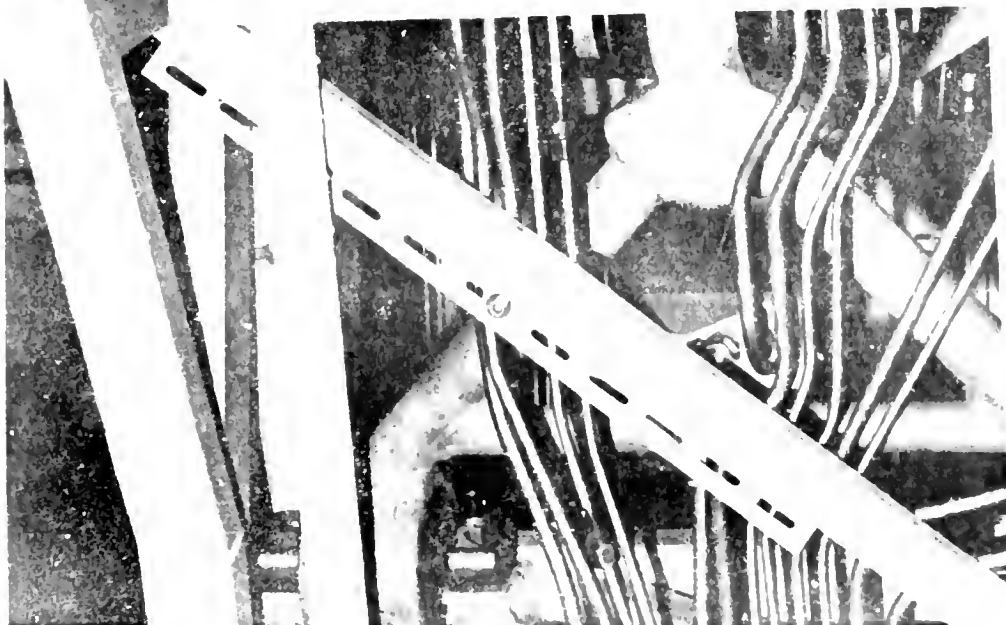
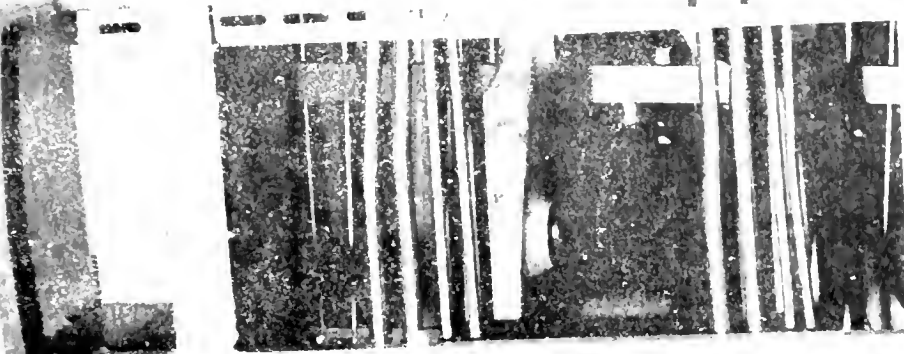
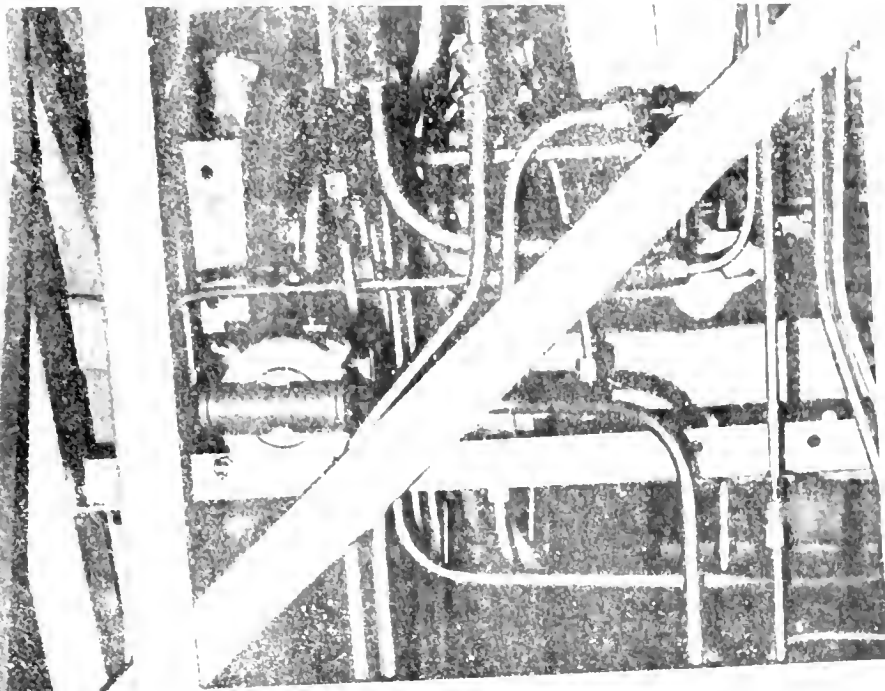




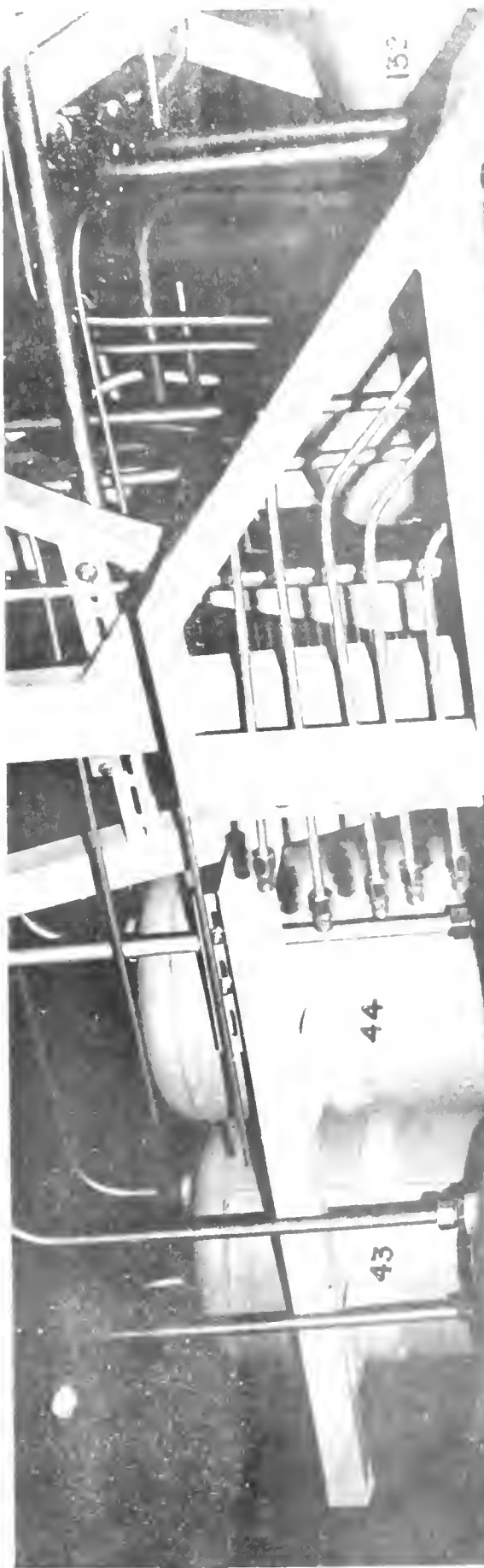




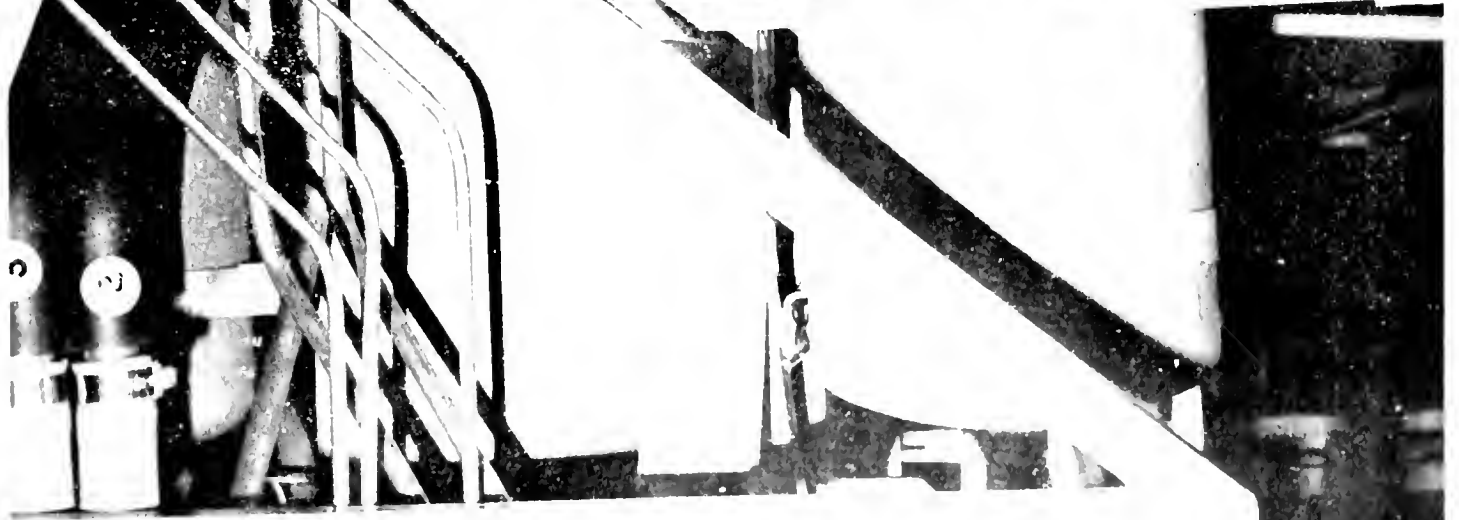
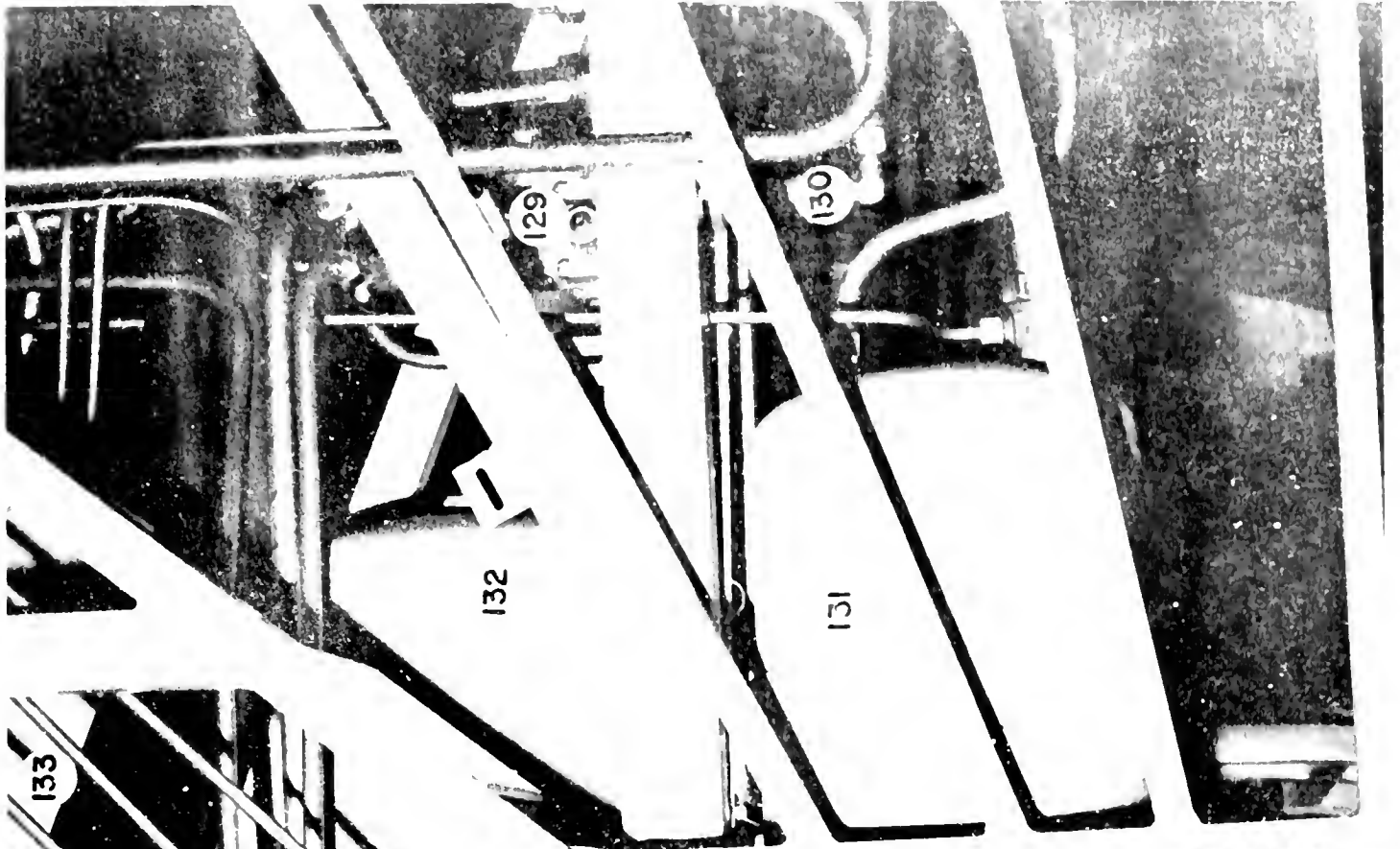








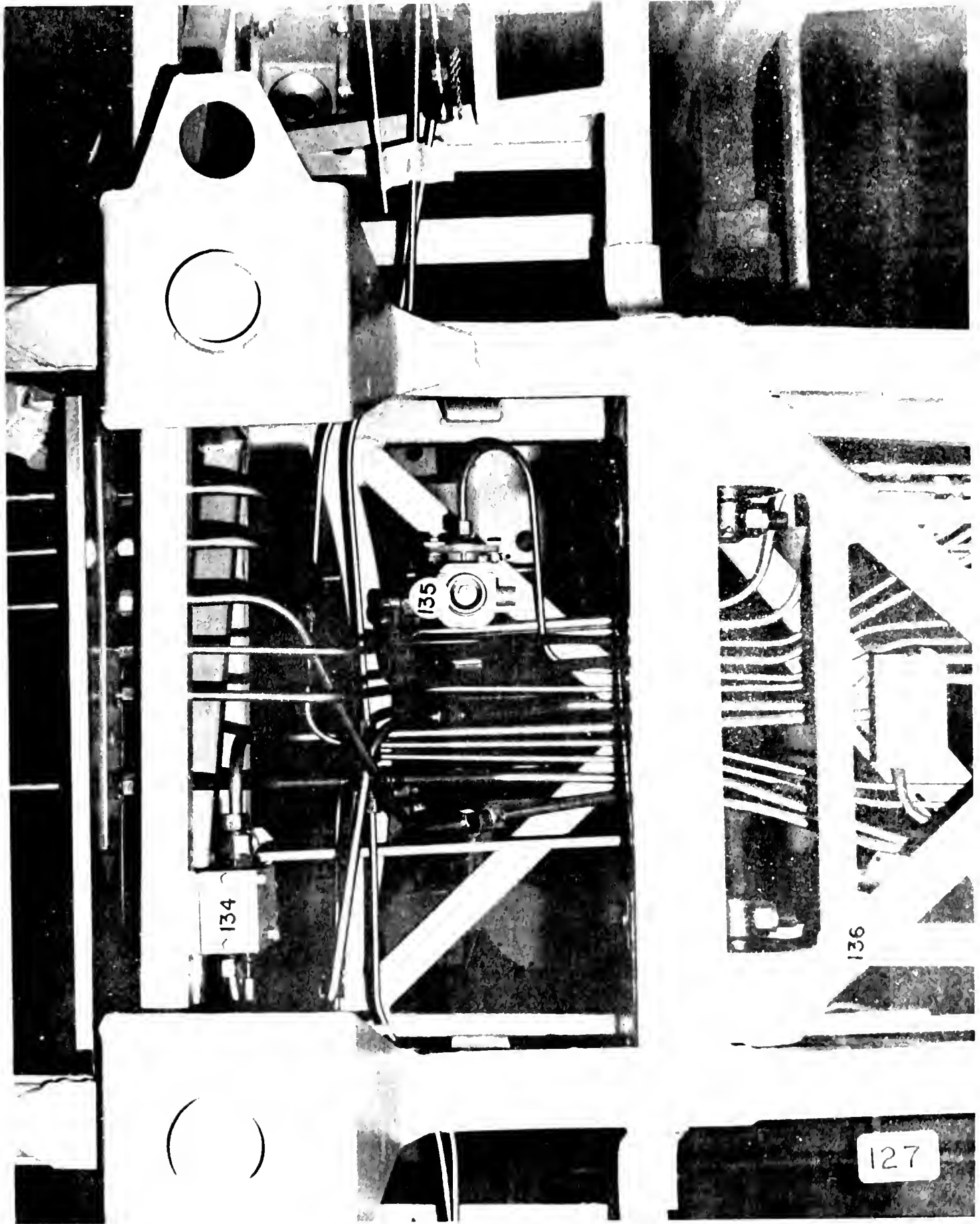




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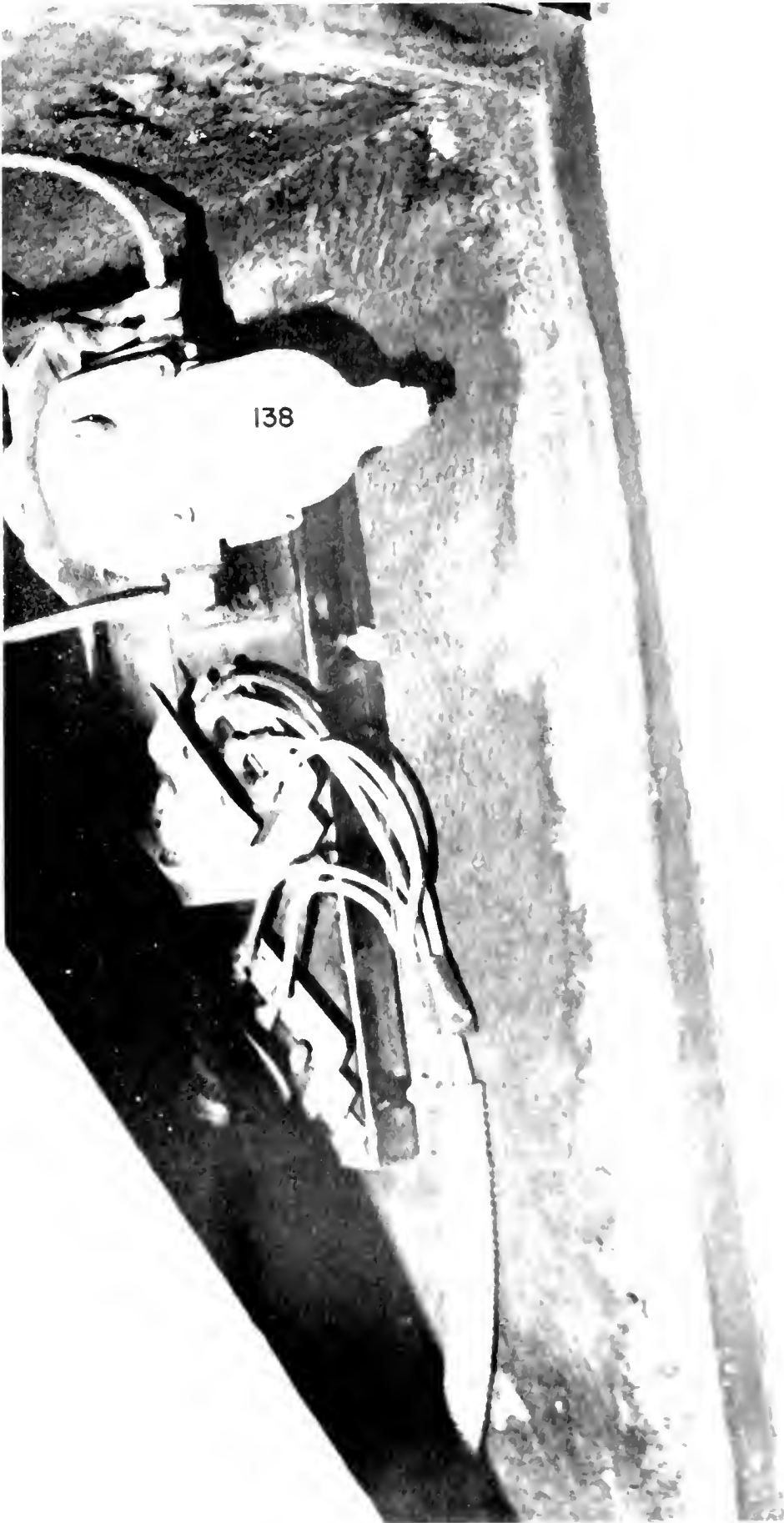




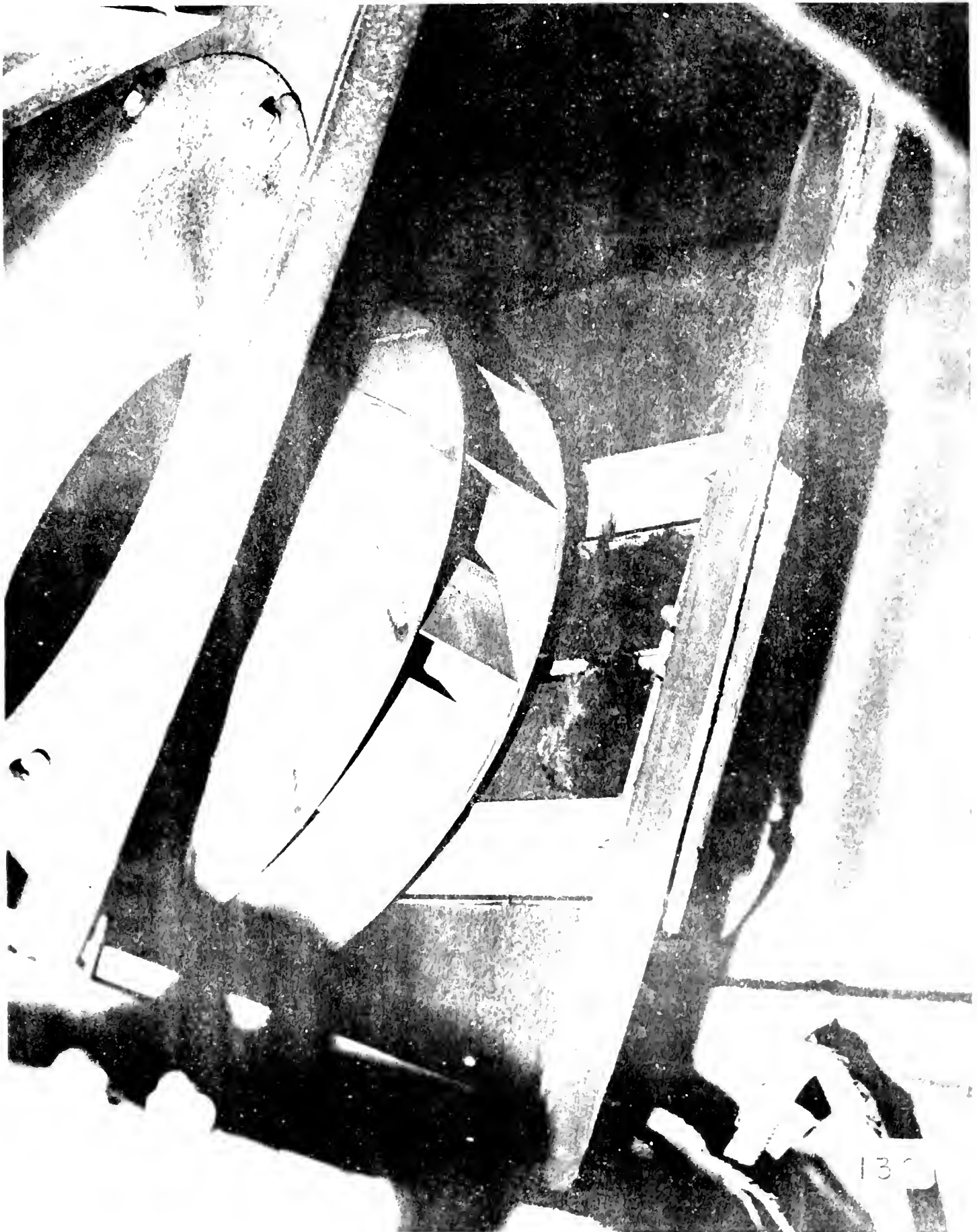
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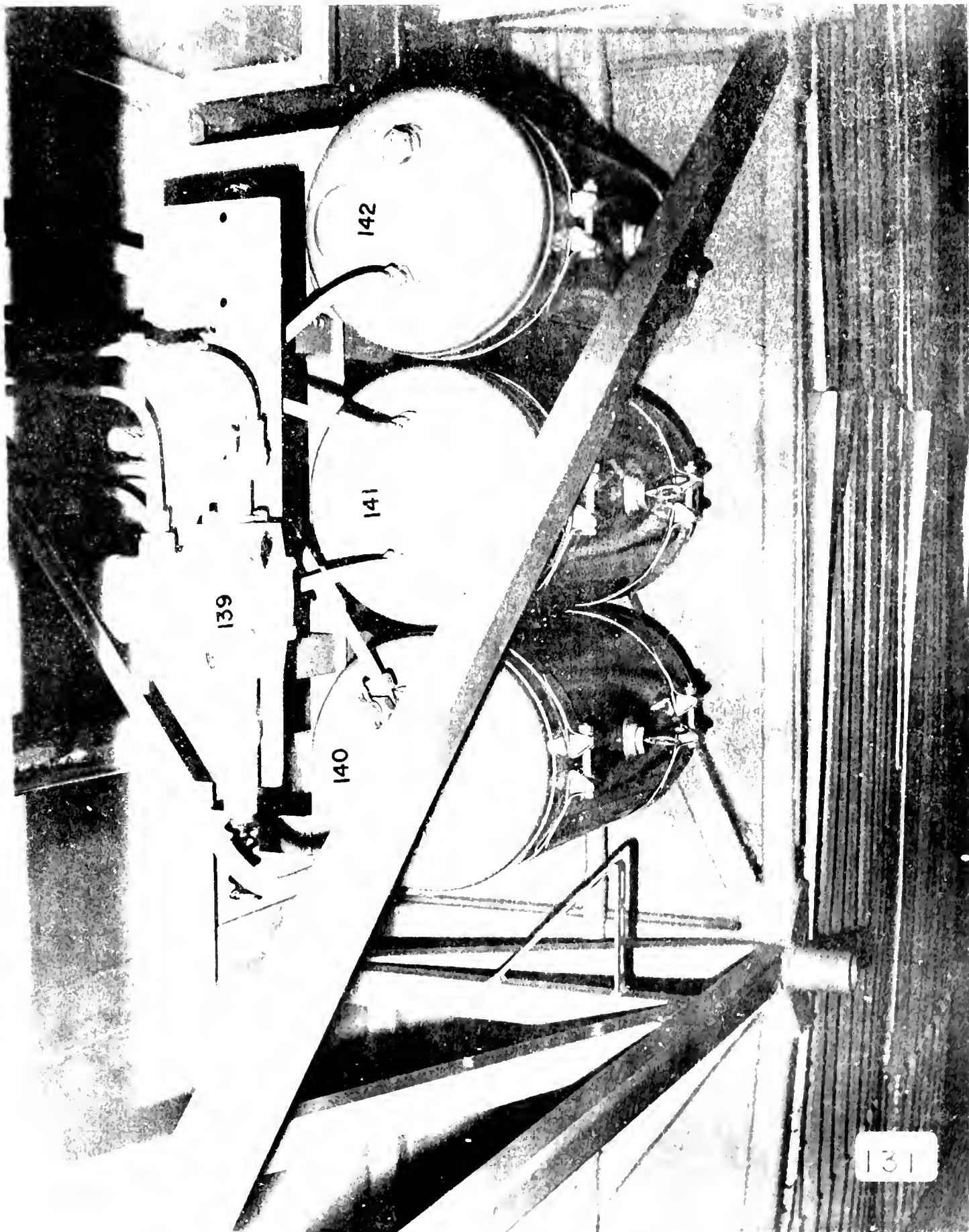






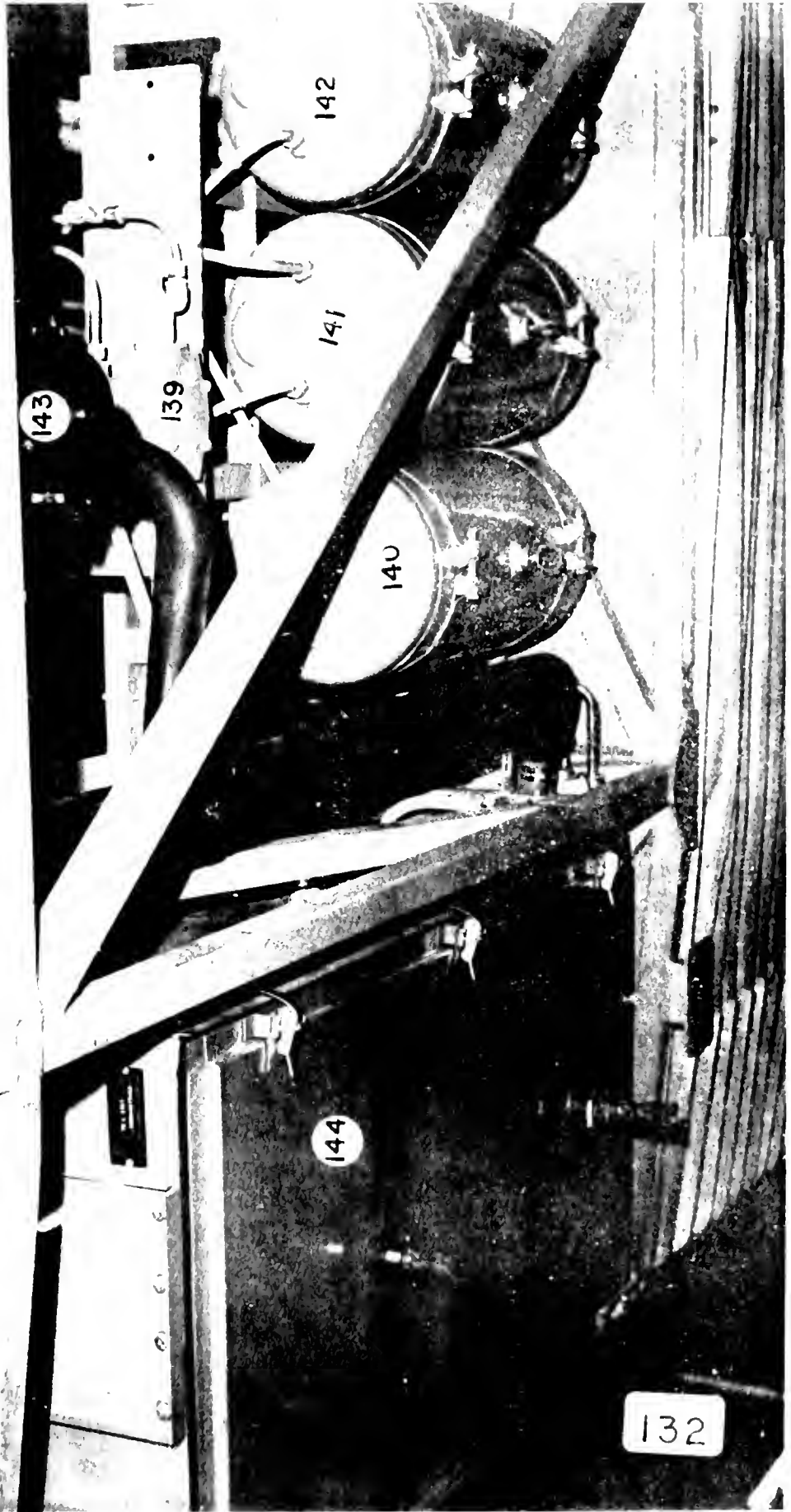






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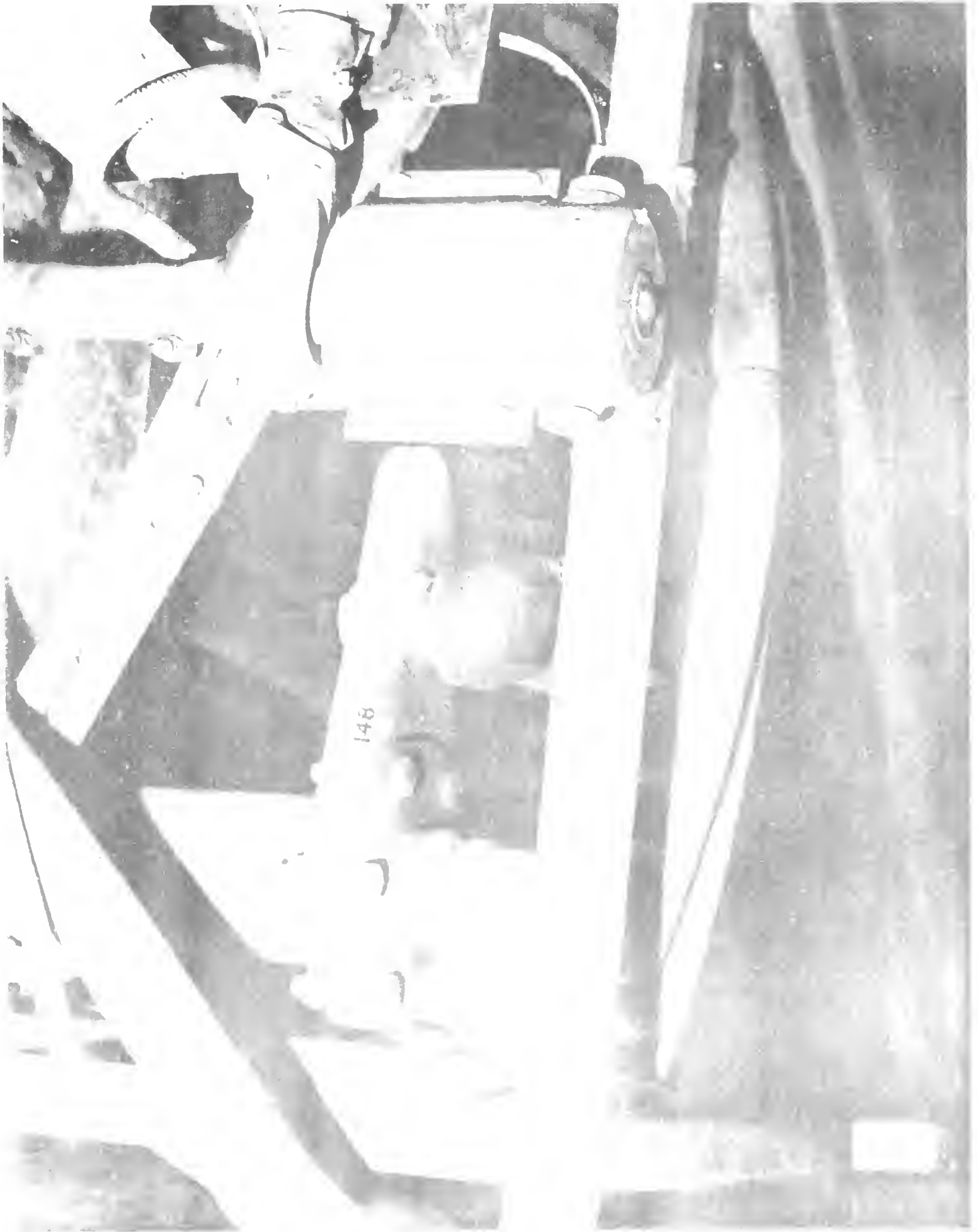






















P.A.H.S. 17

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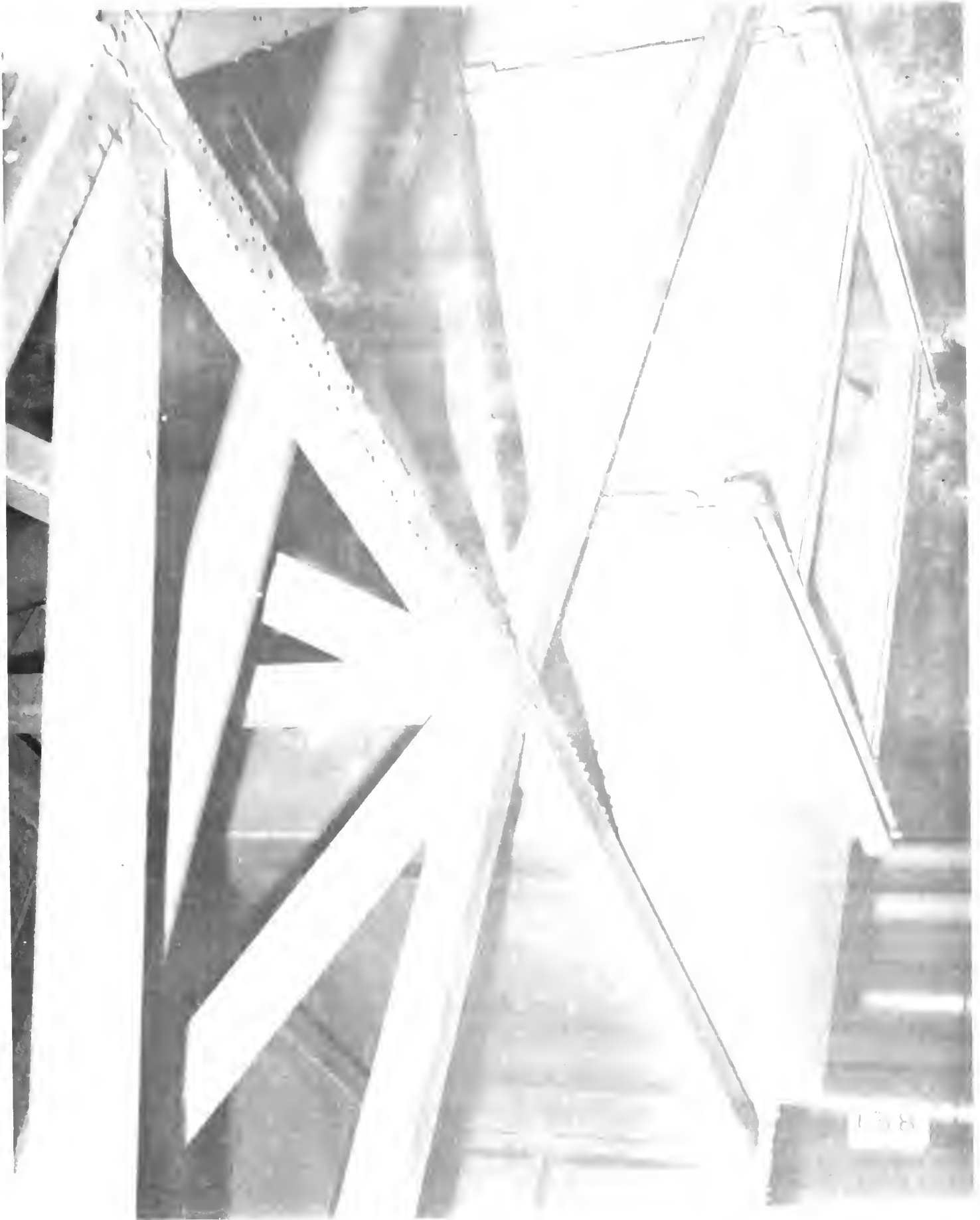




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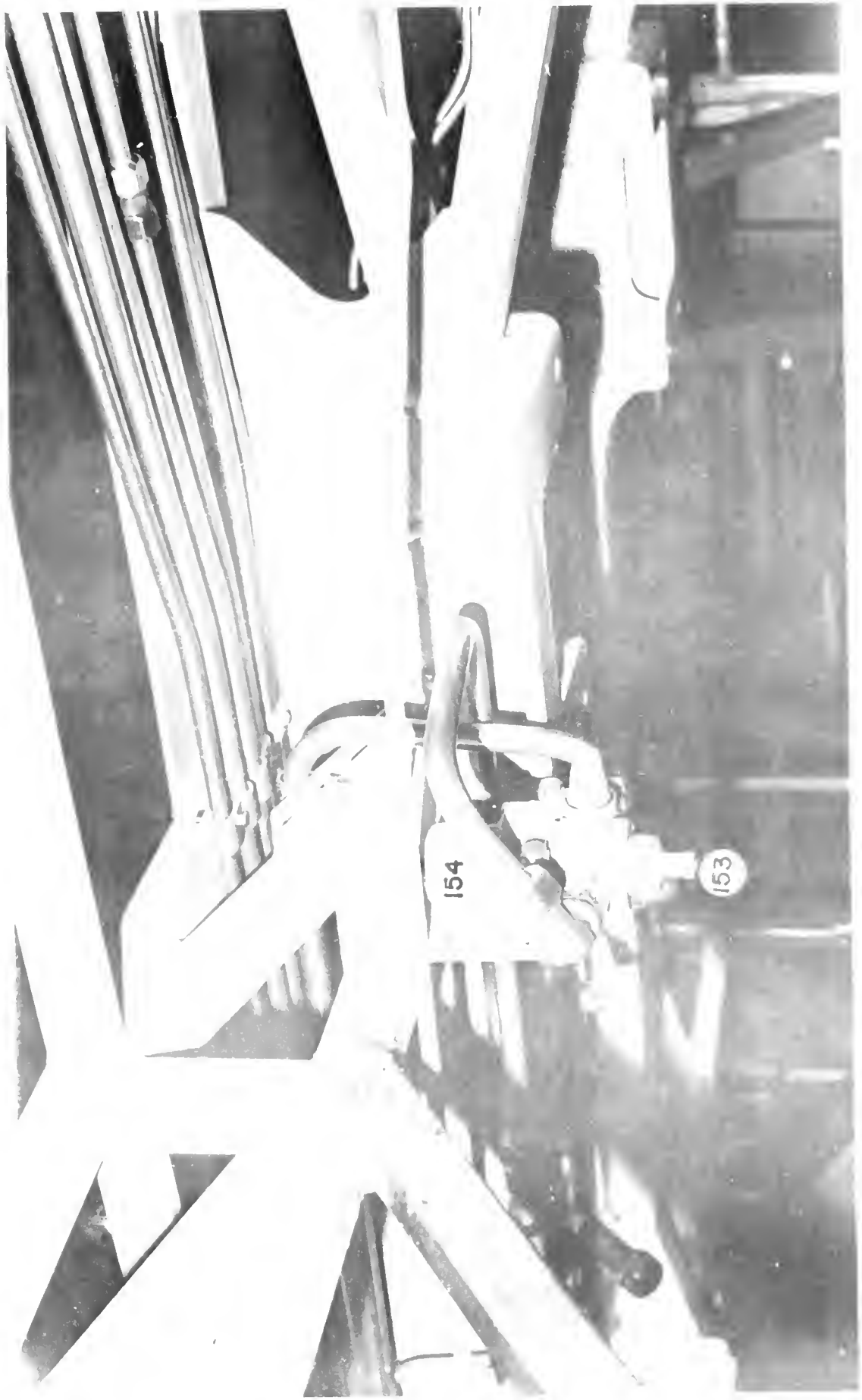
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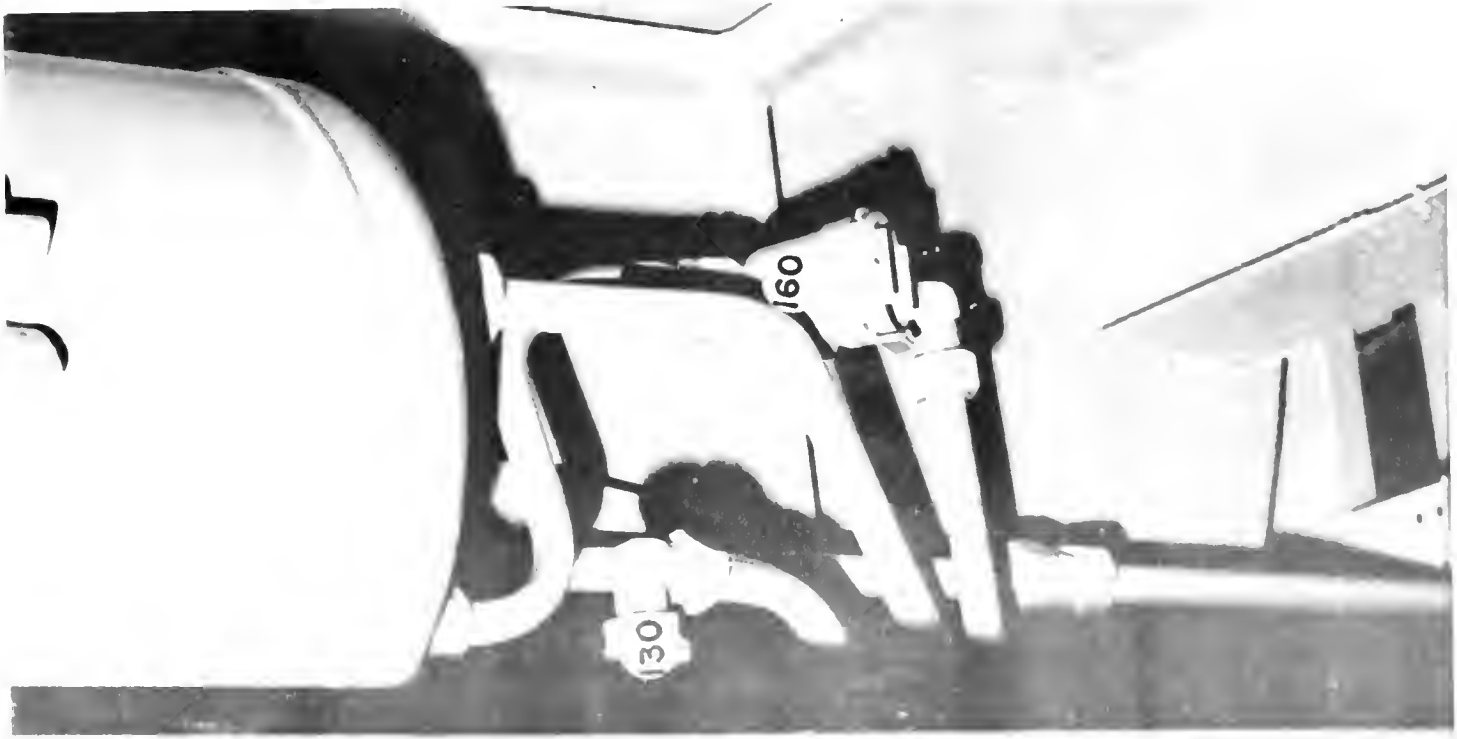
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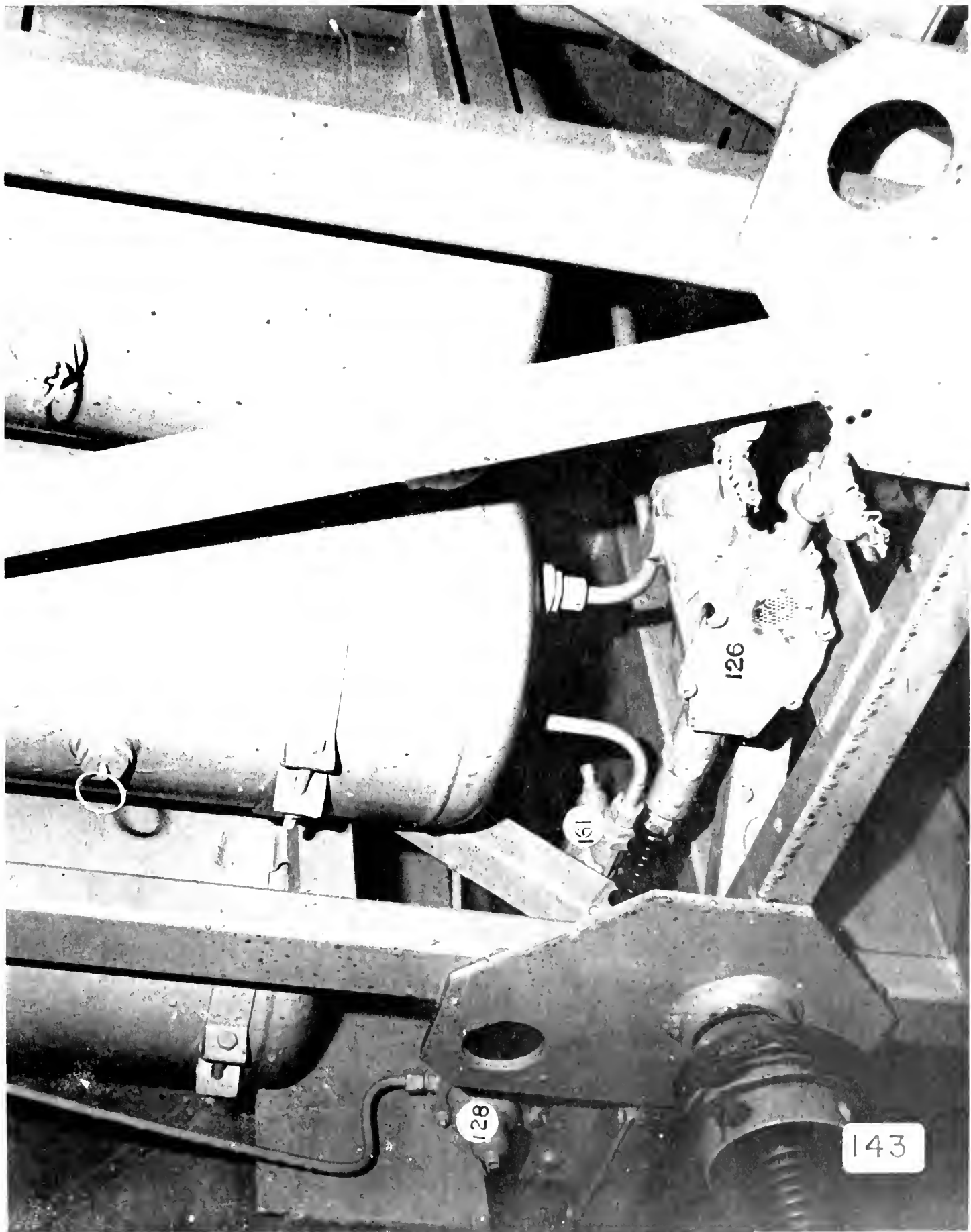




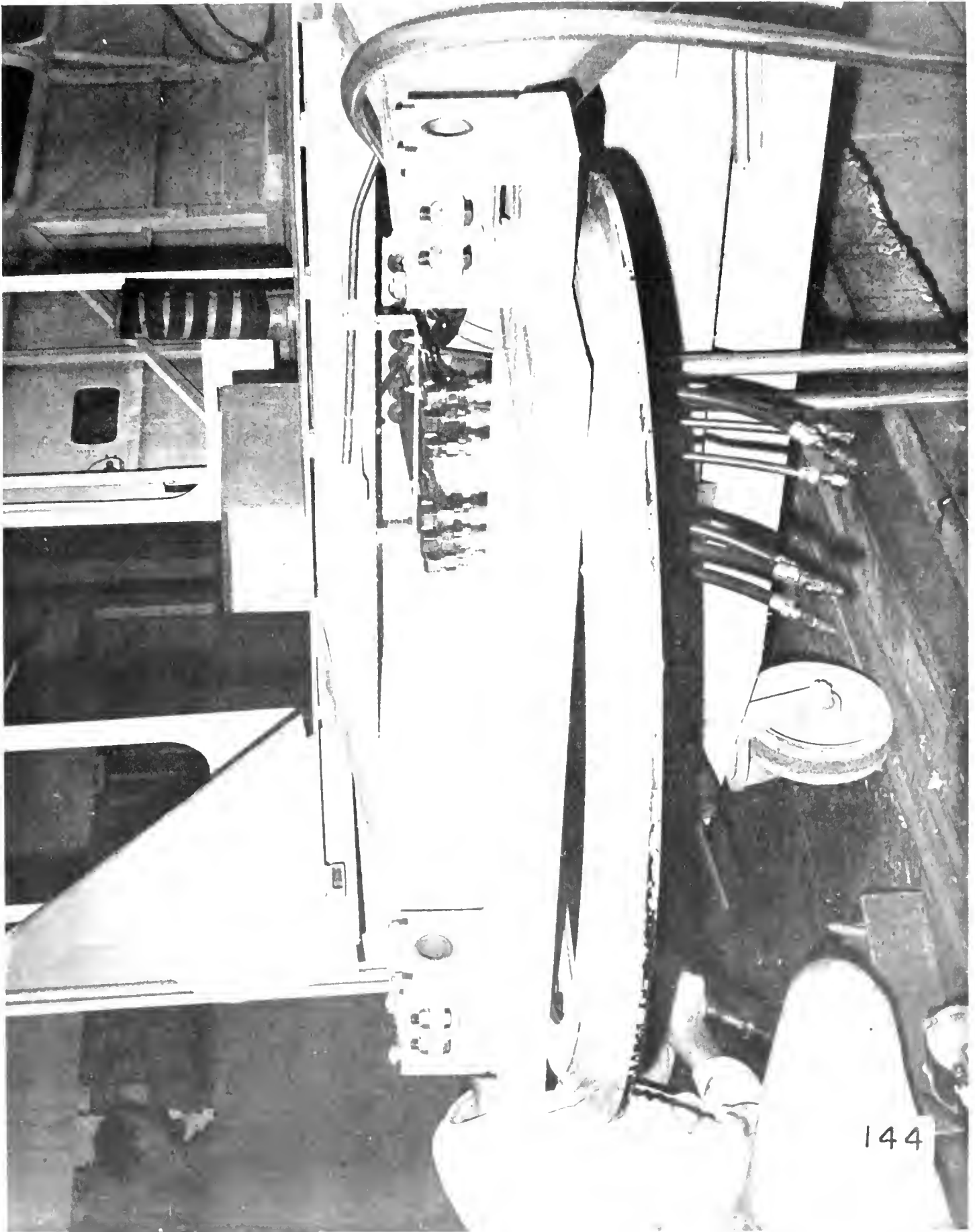




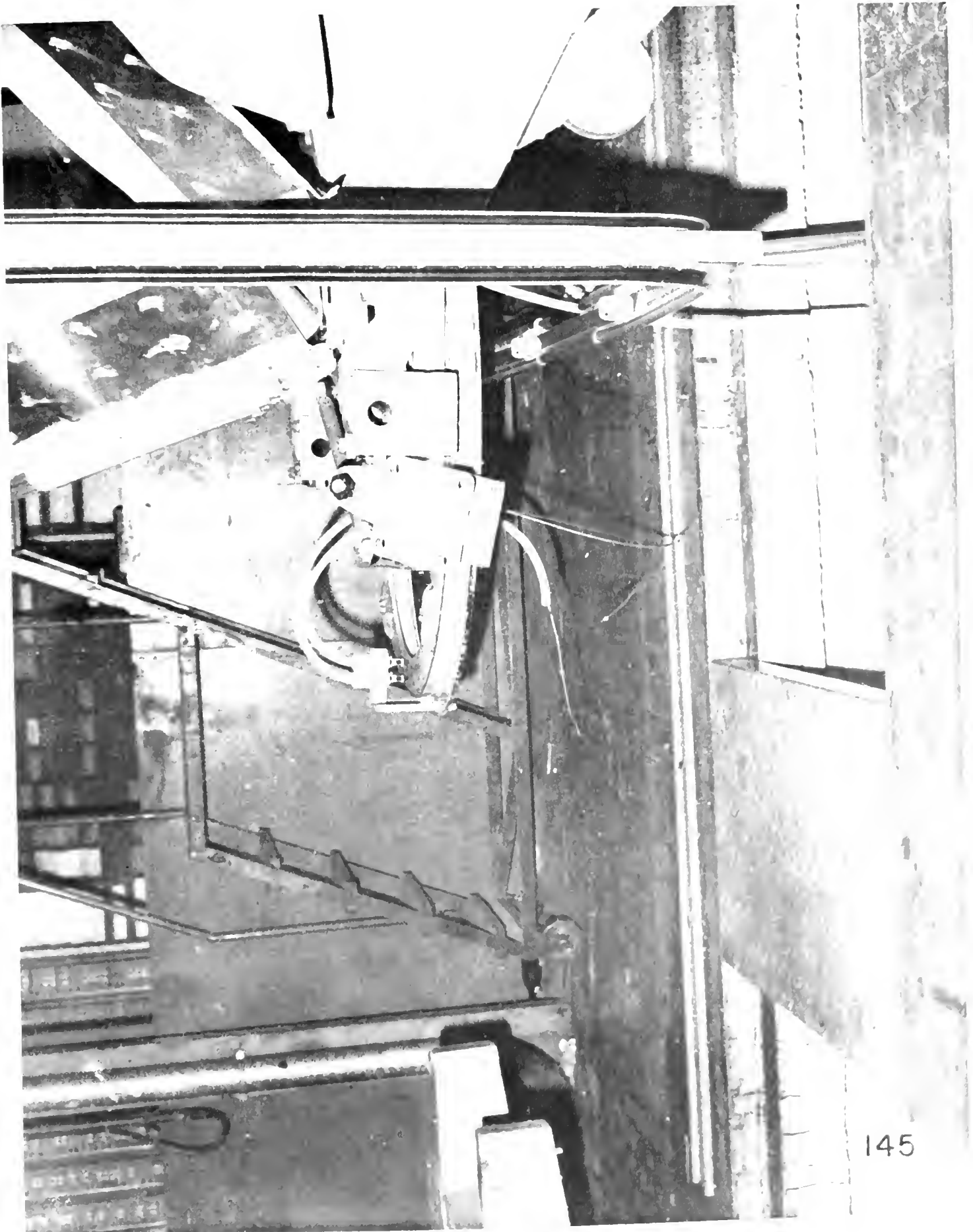




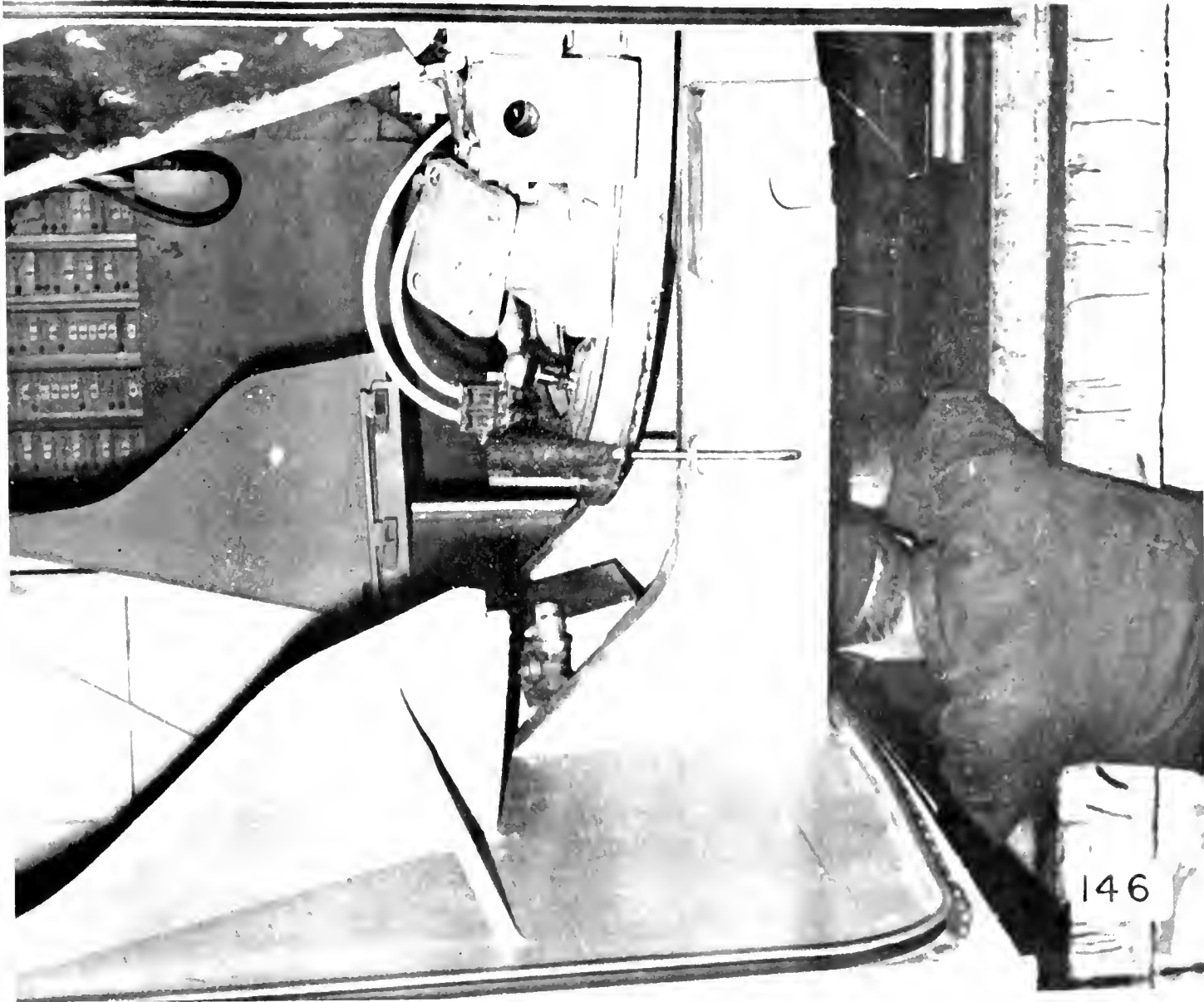
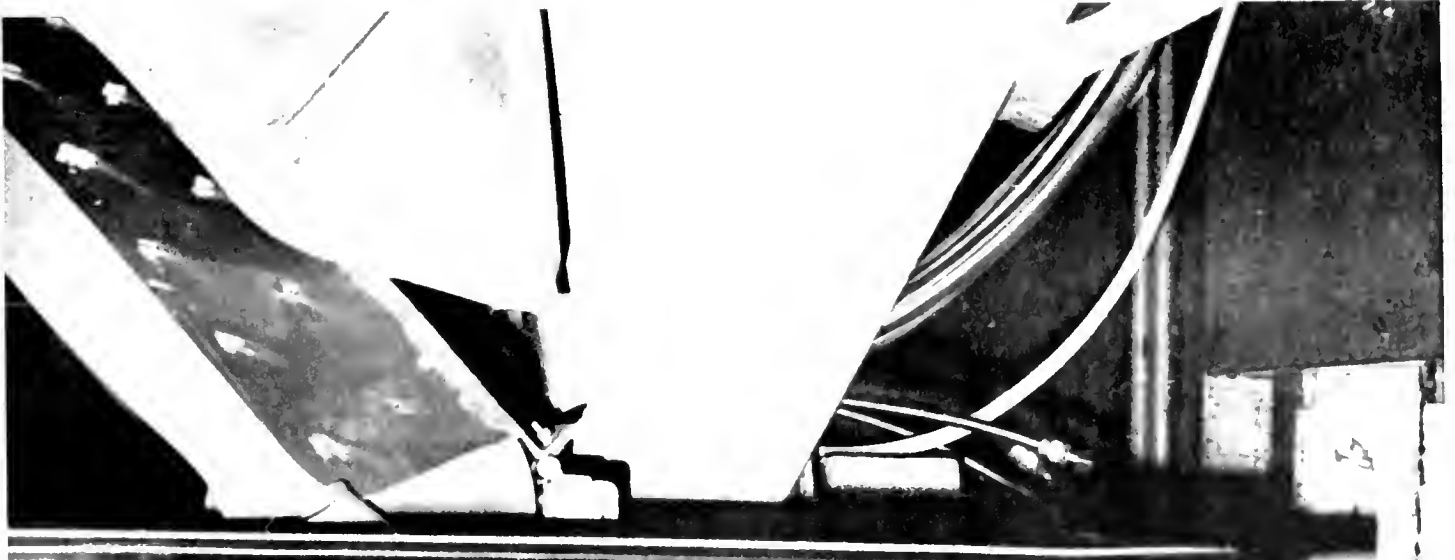






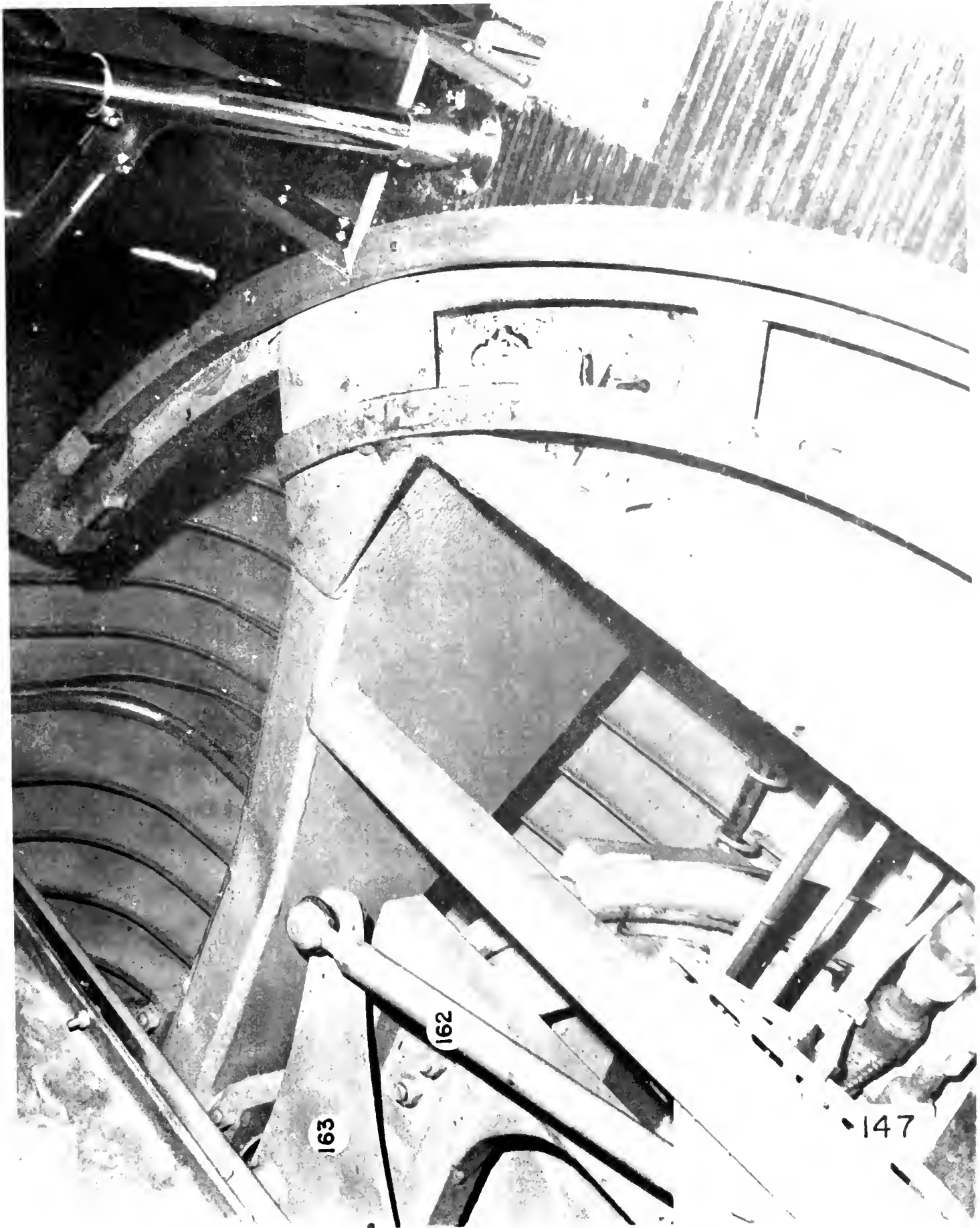




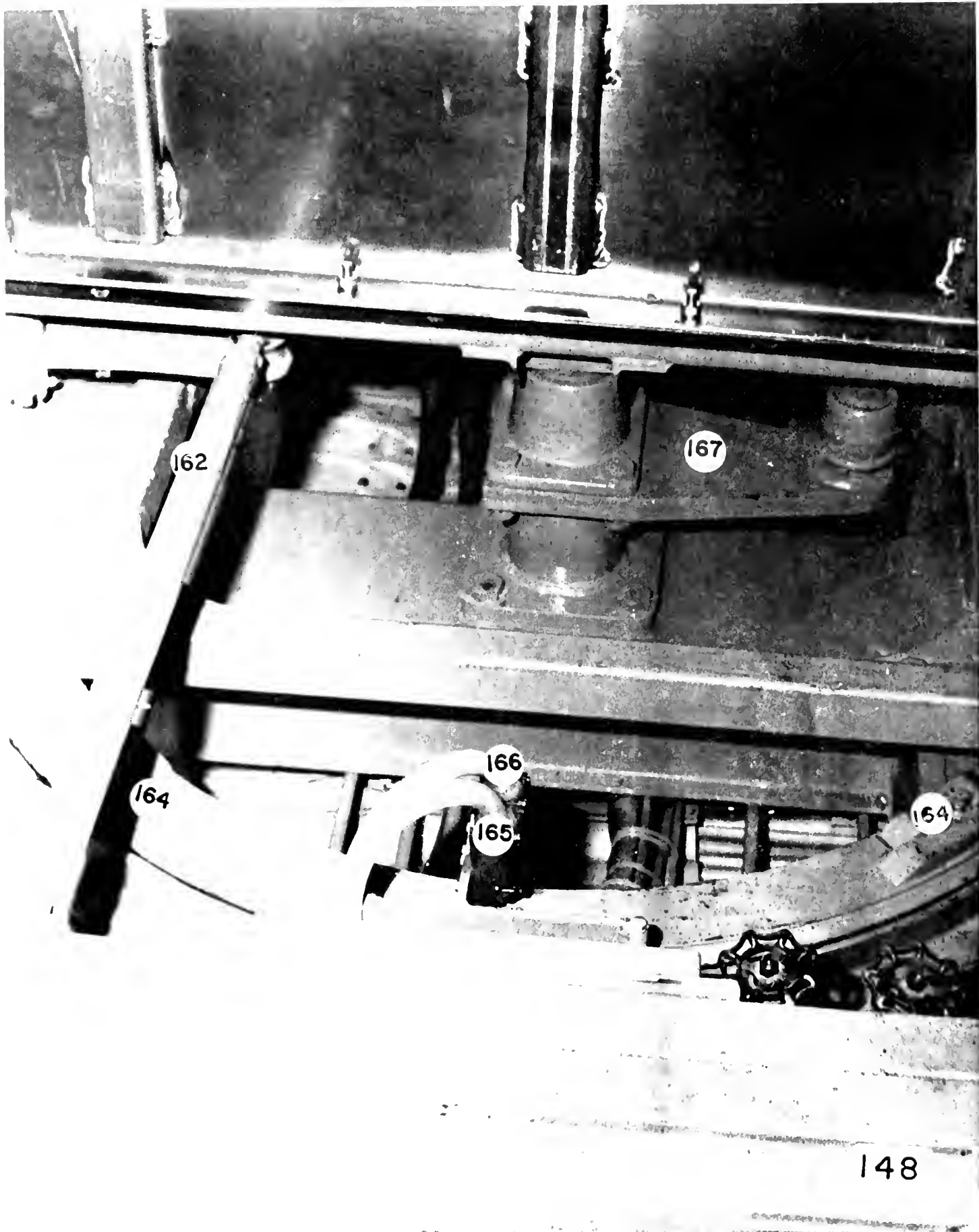














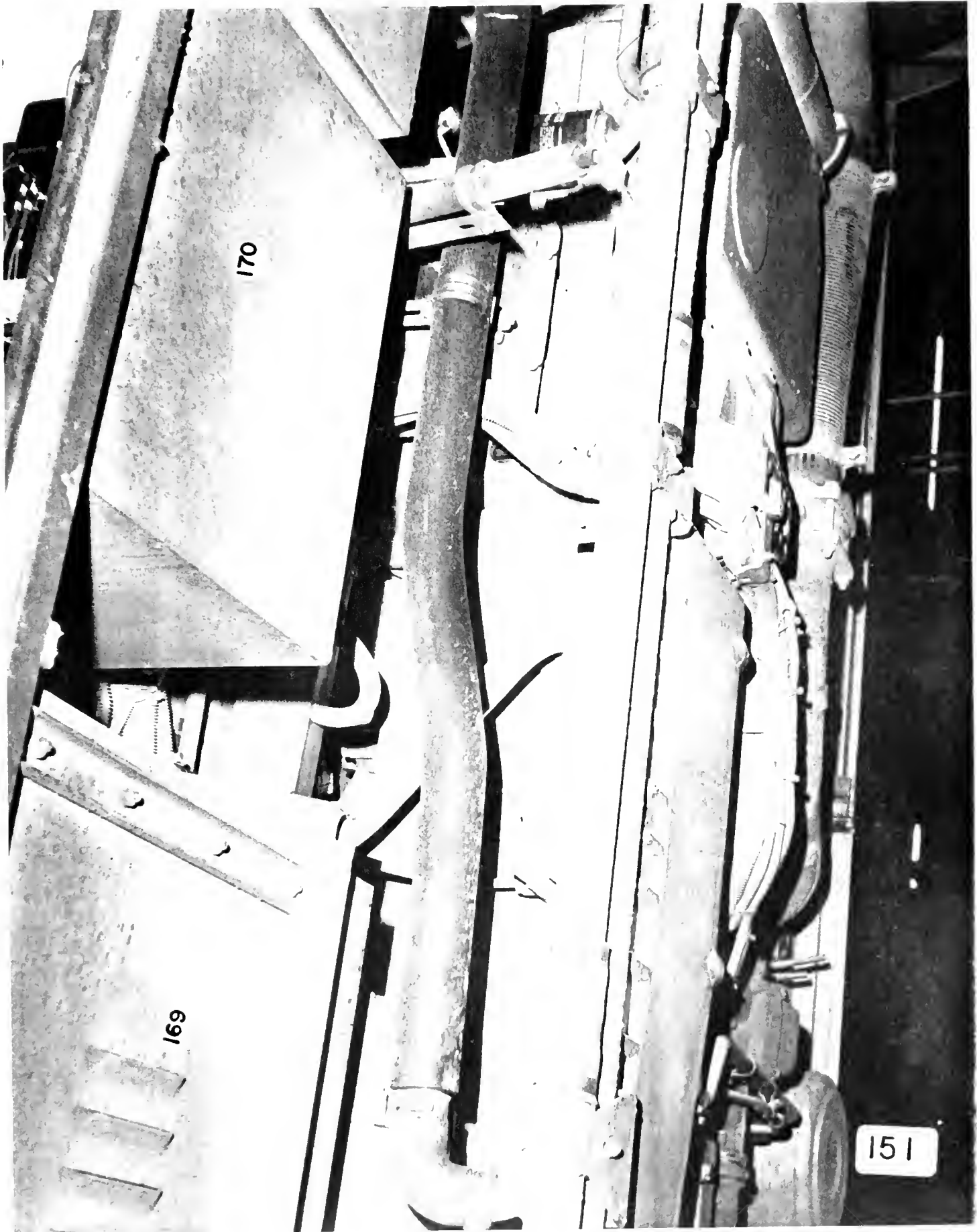










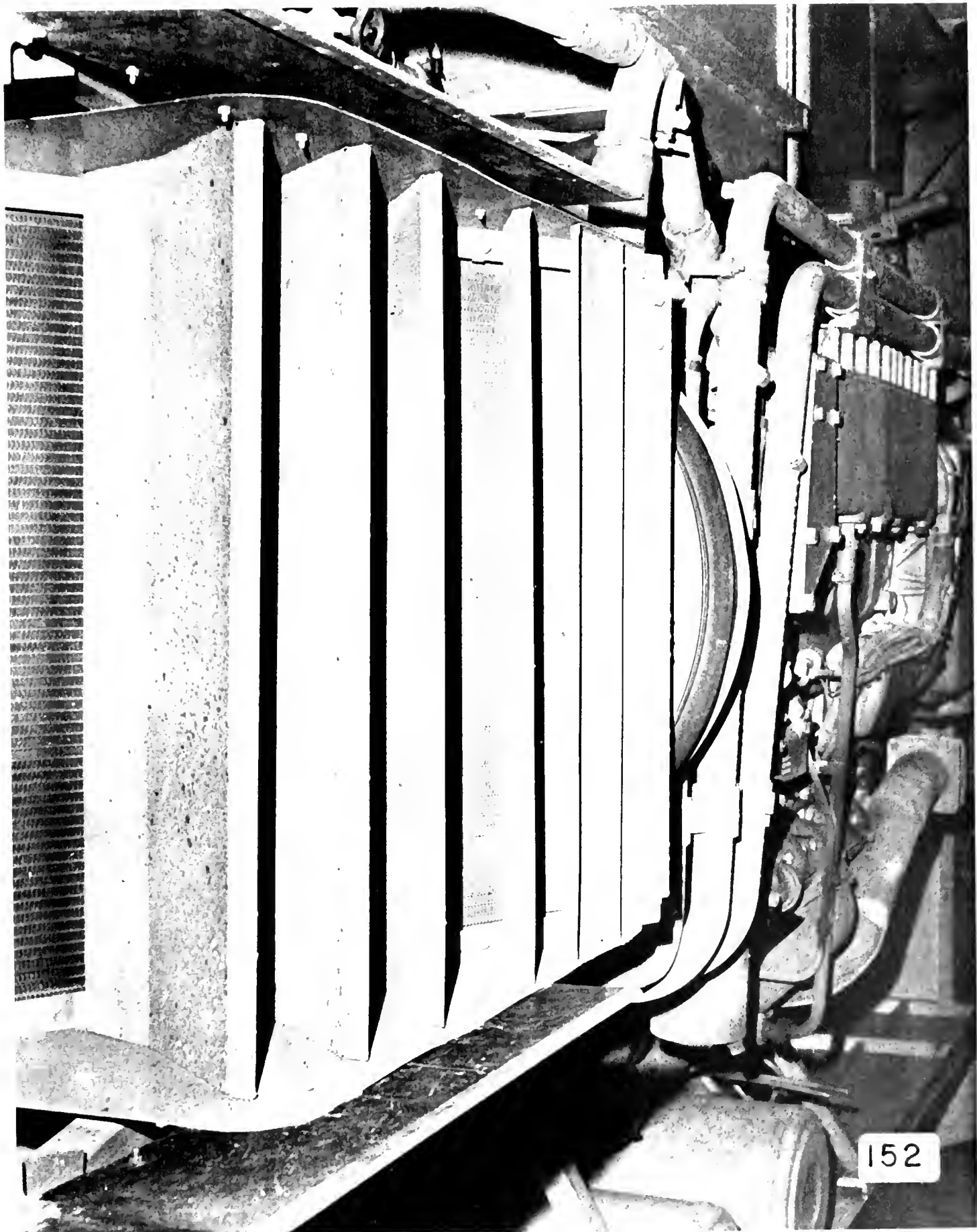


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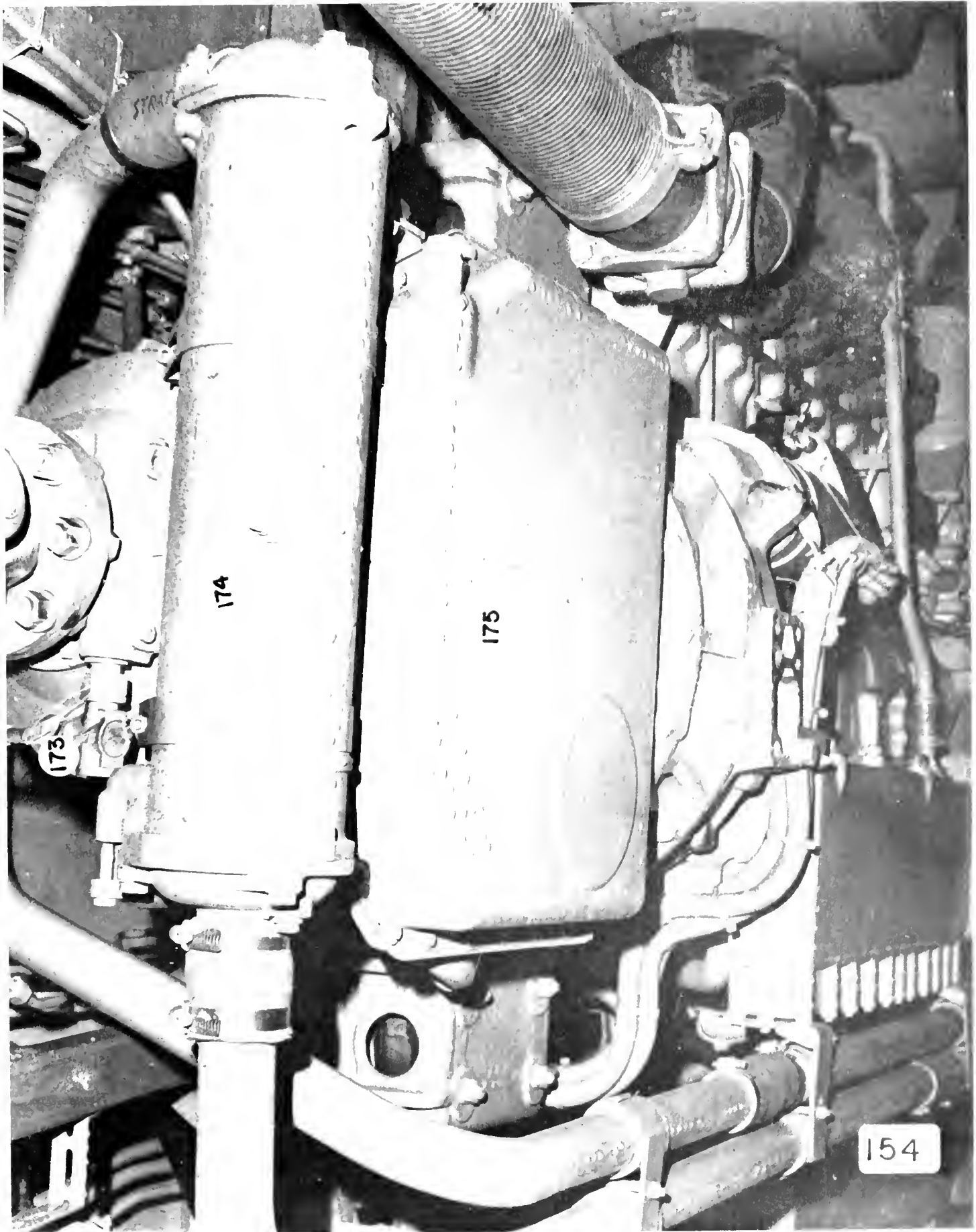


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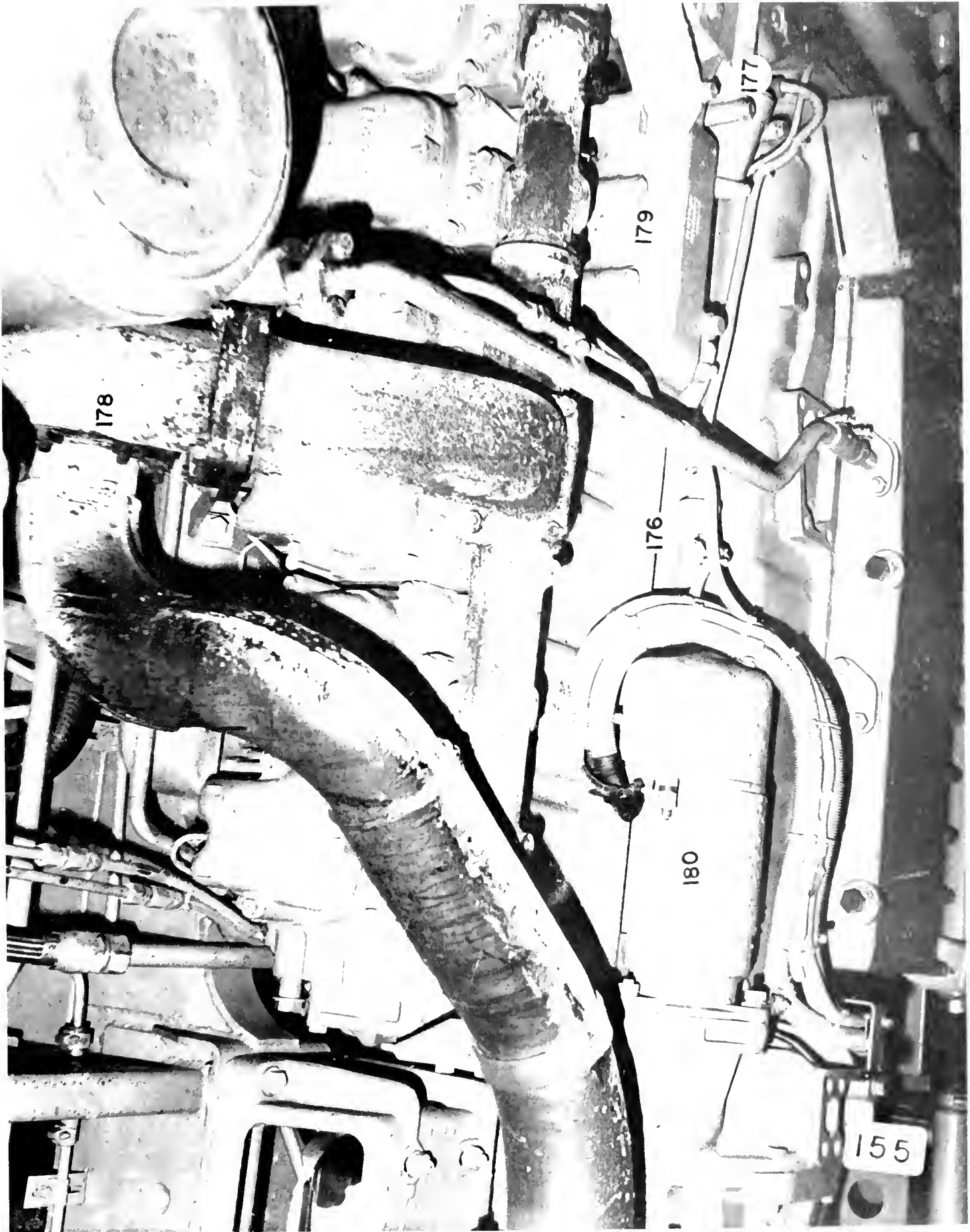
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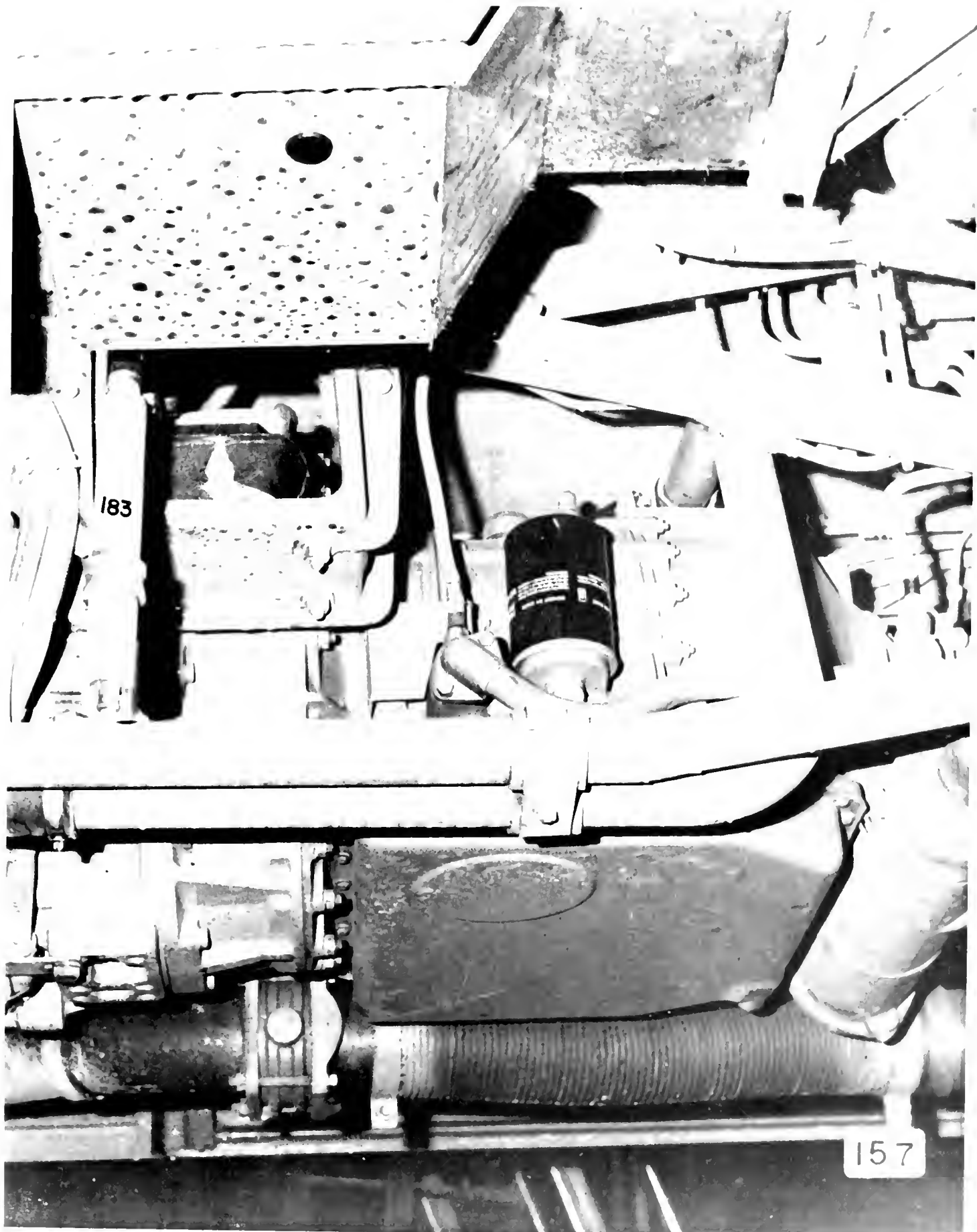








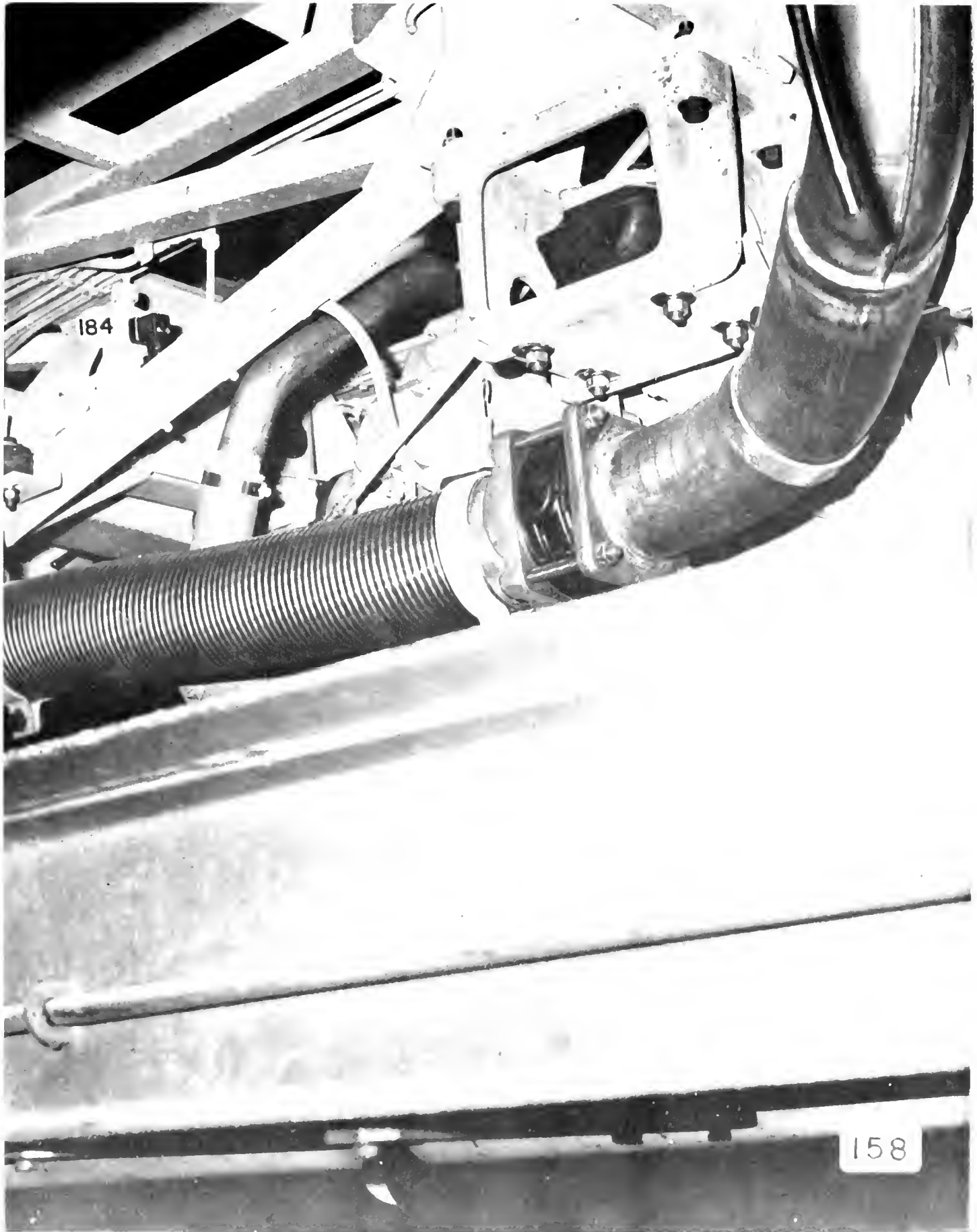




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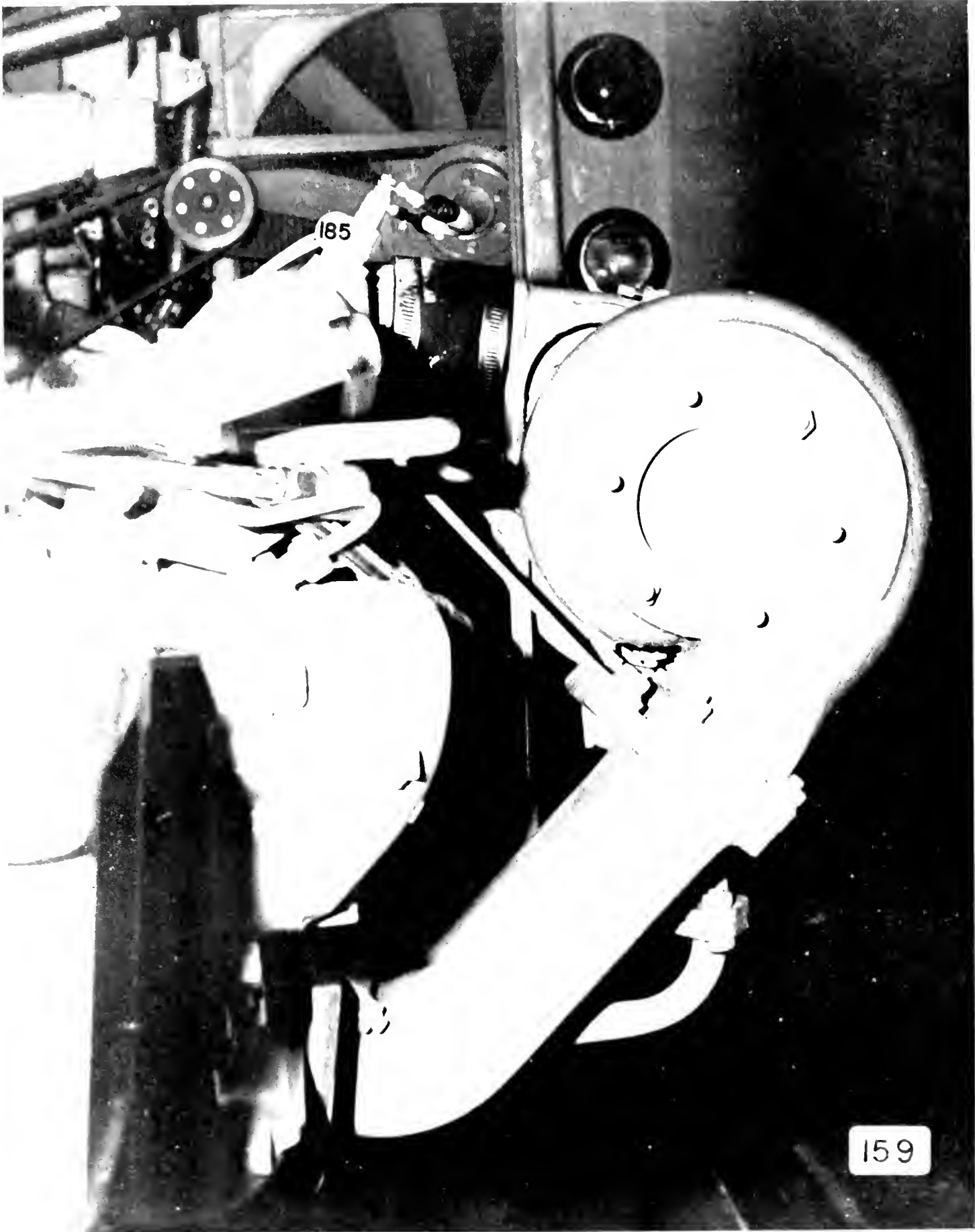


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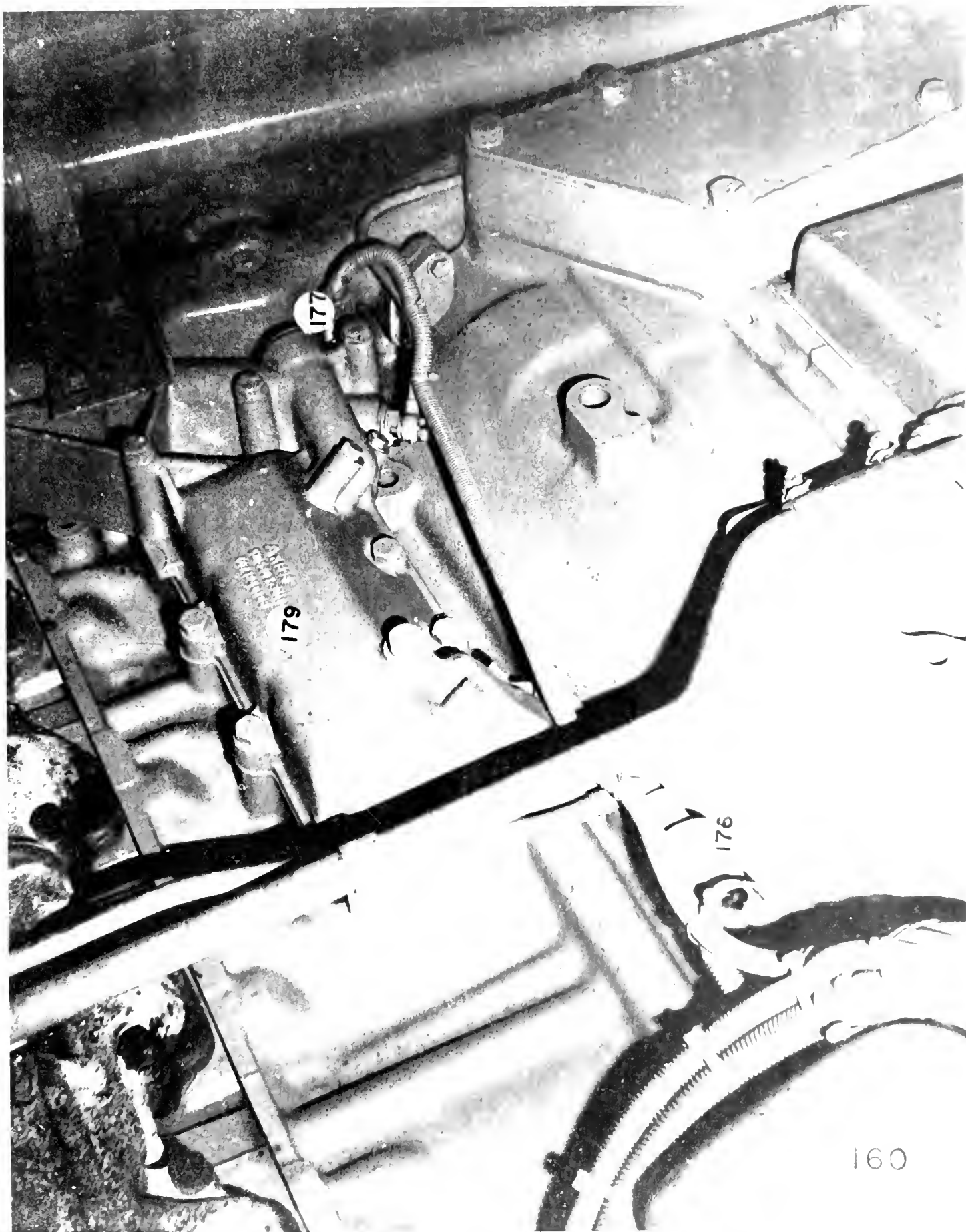




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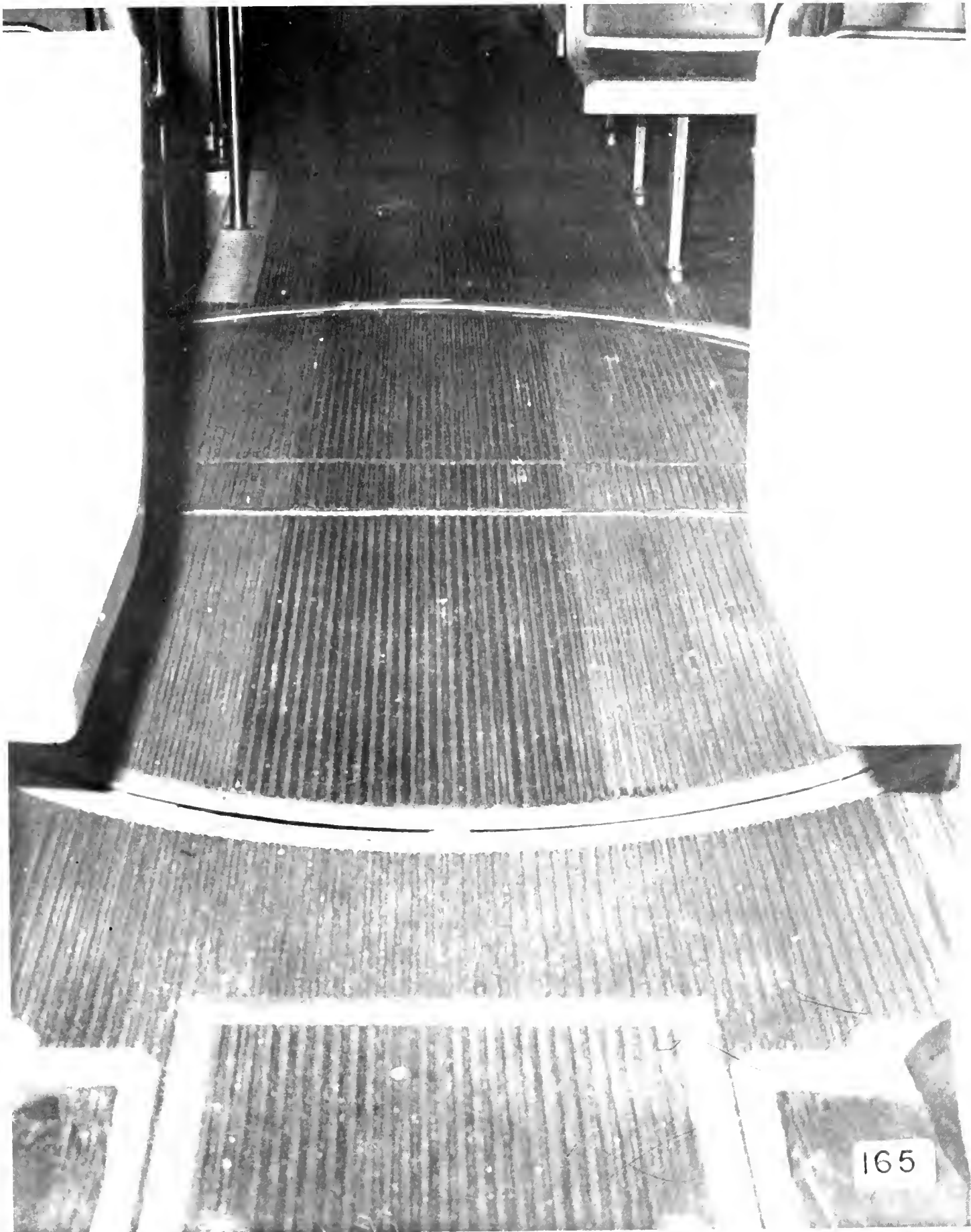






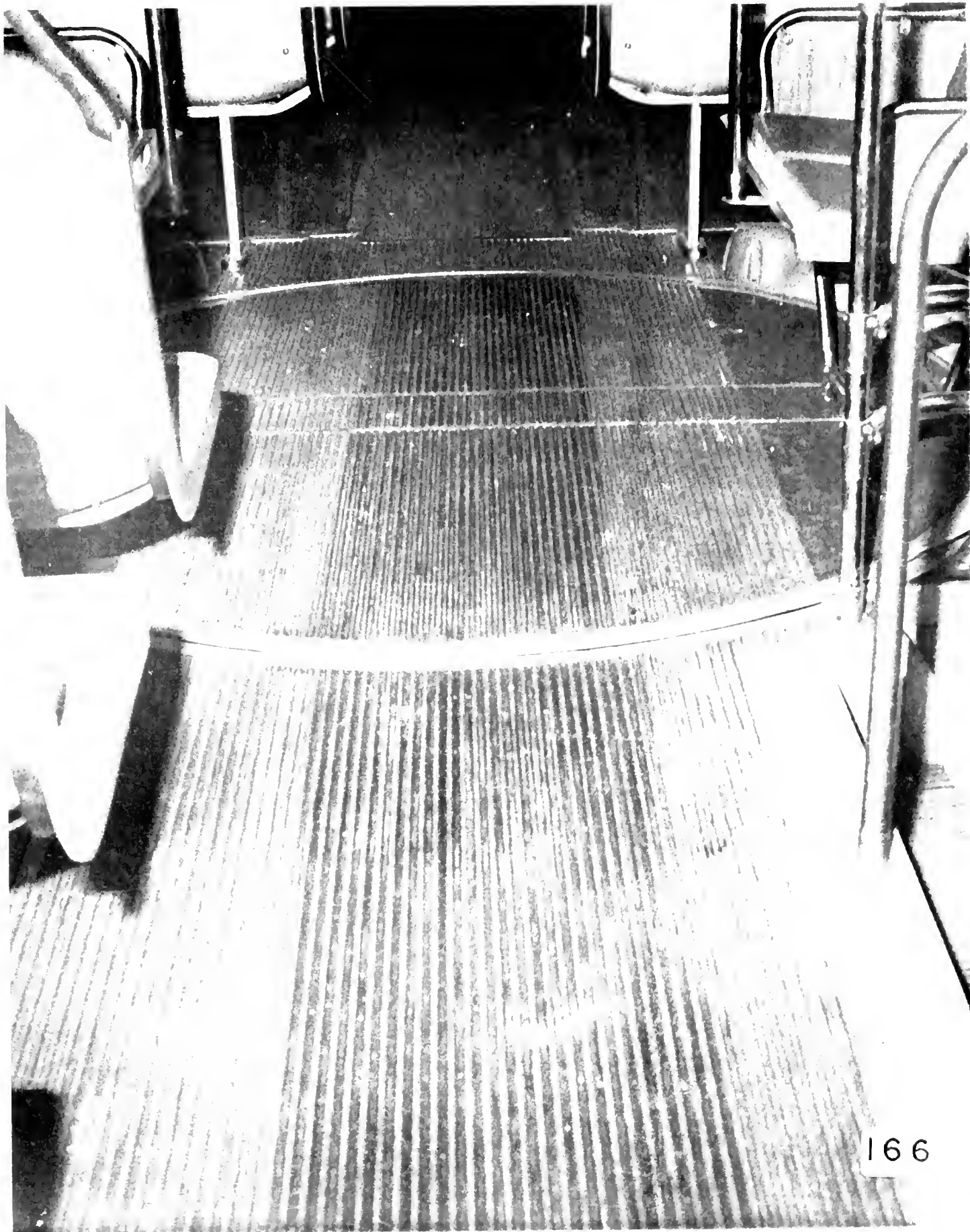
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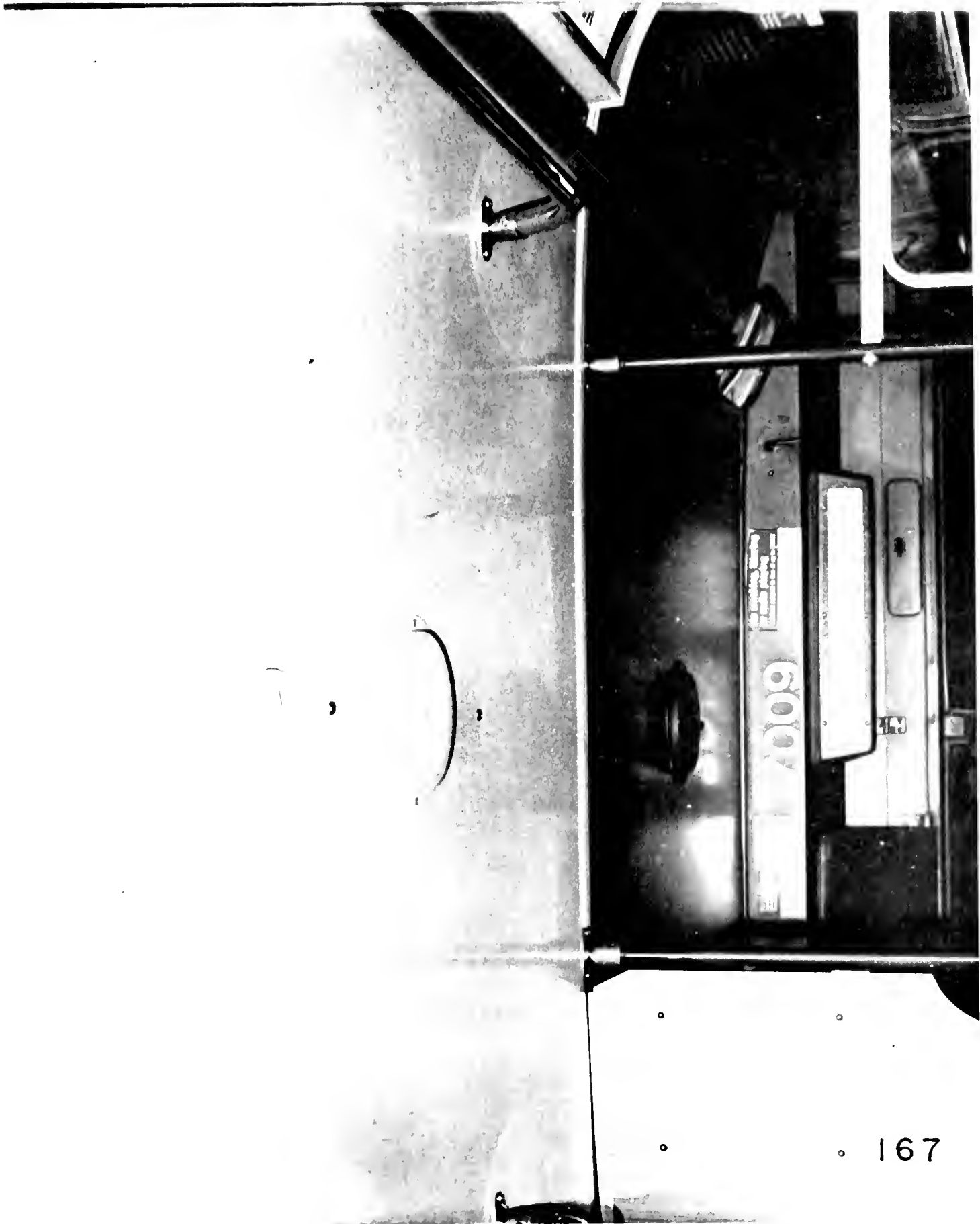
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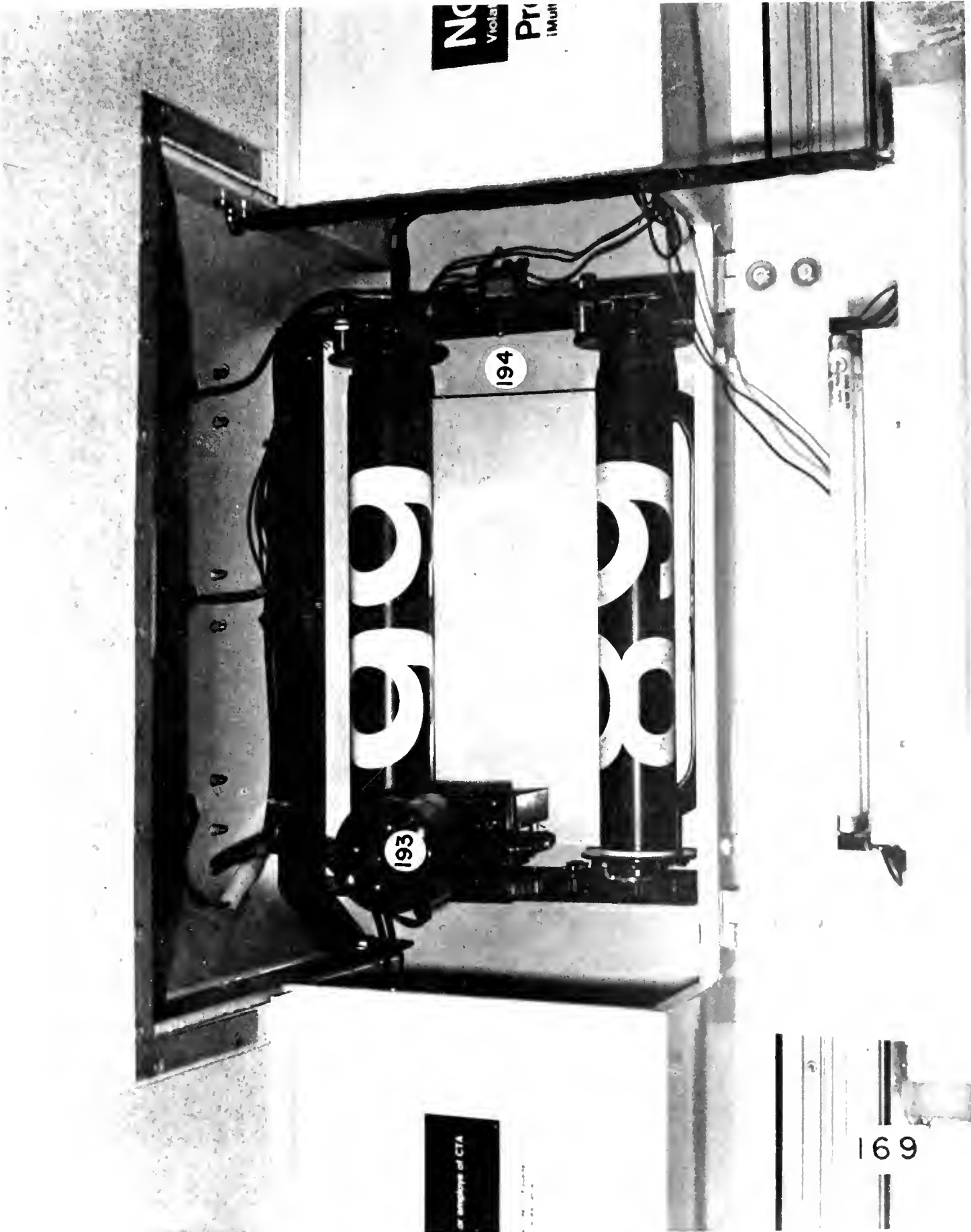












No Violation Prohibit

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an employee of CTA

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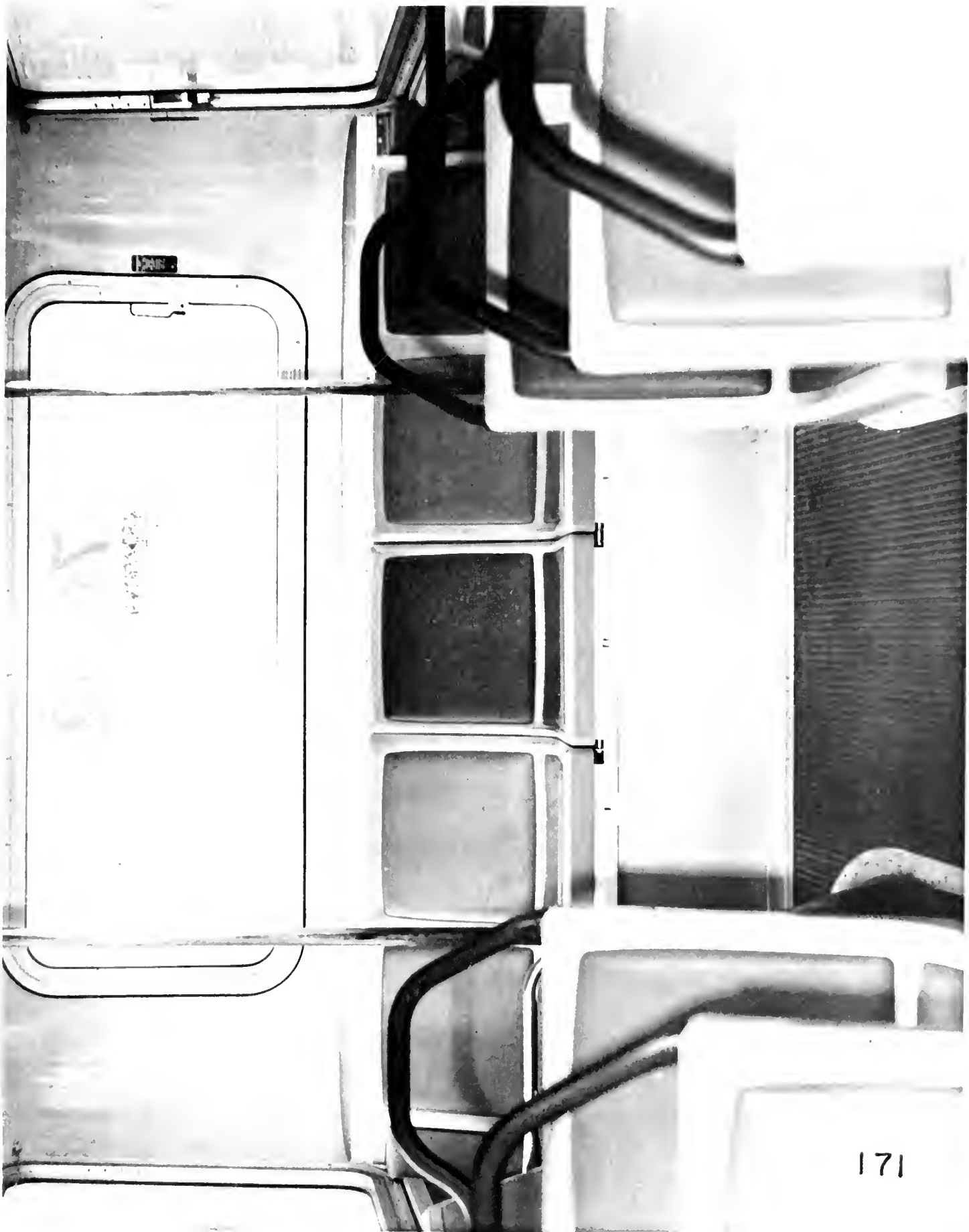




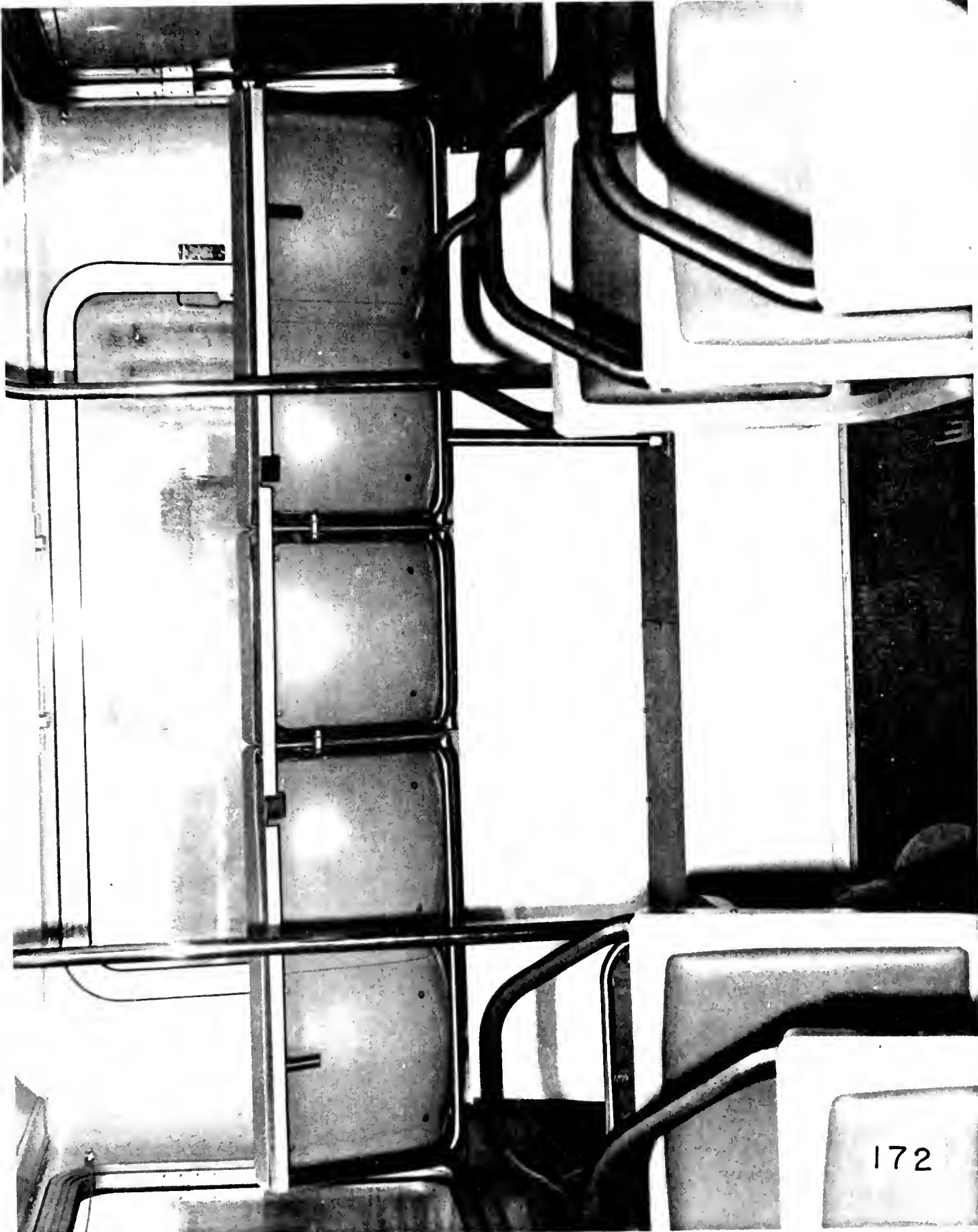
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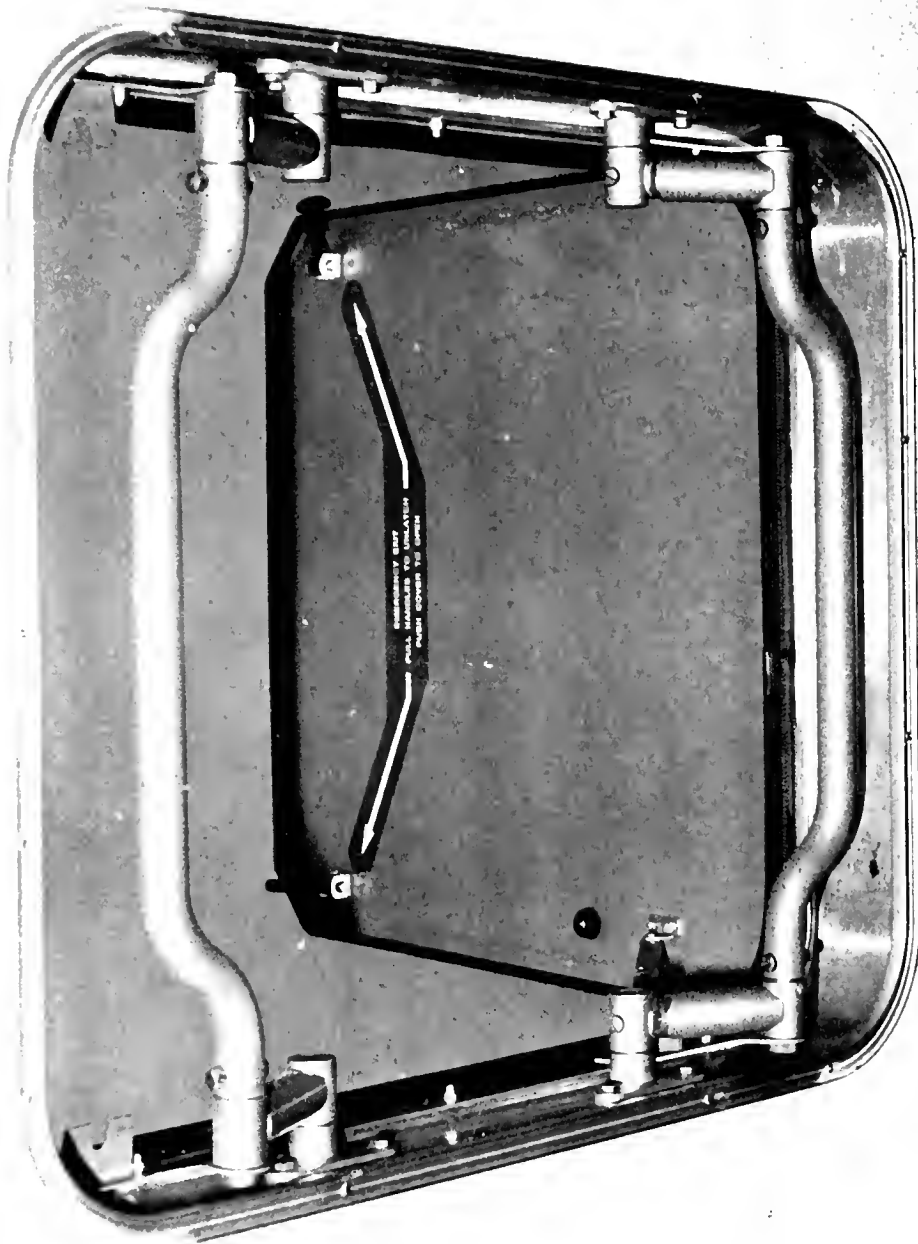
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EMERGENCY EXIT  
FULL HANDLES TO UNLATCH  
PUSH COVER TO OPEN

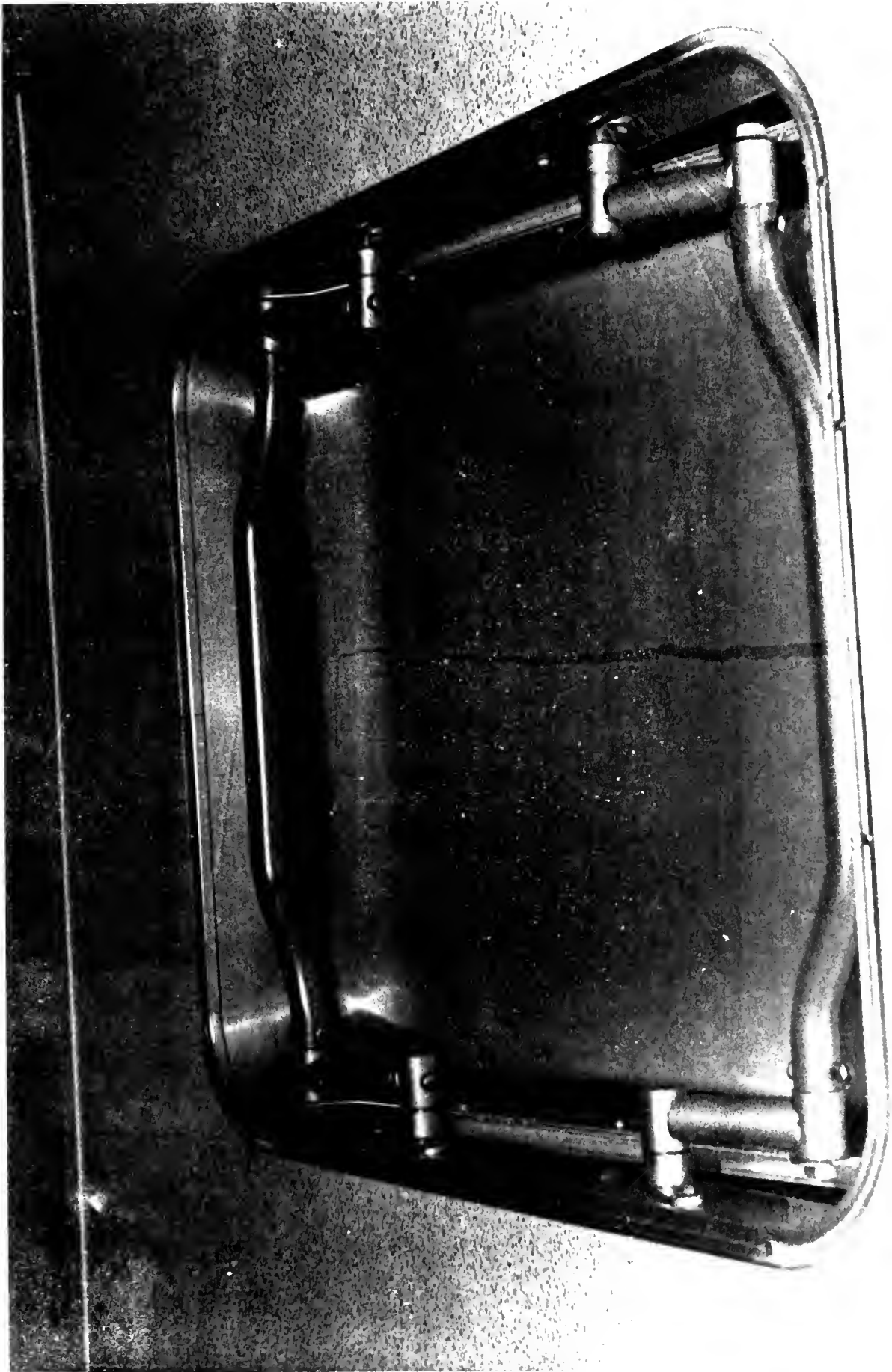




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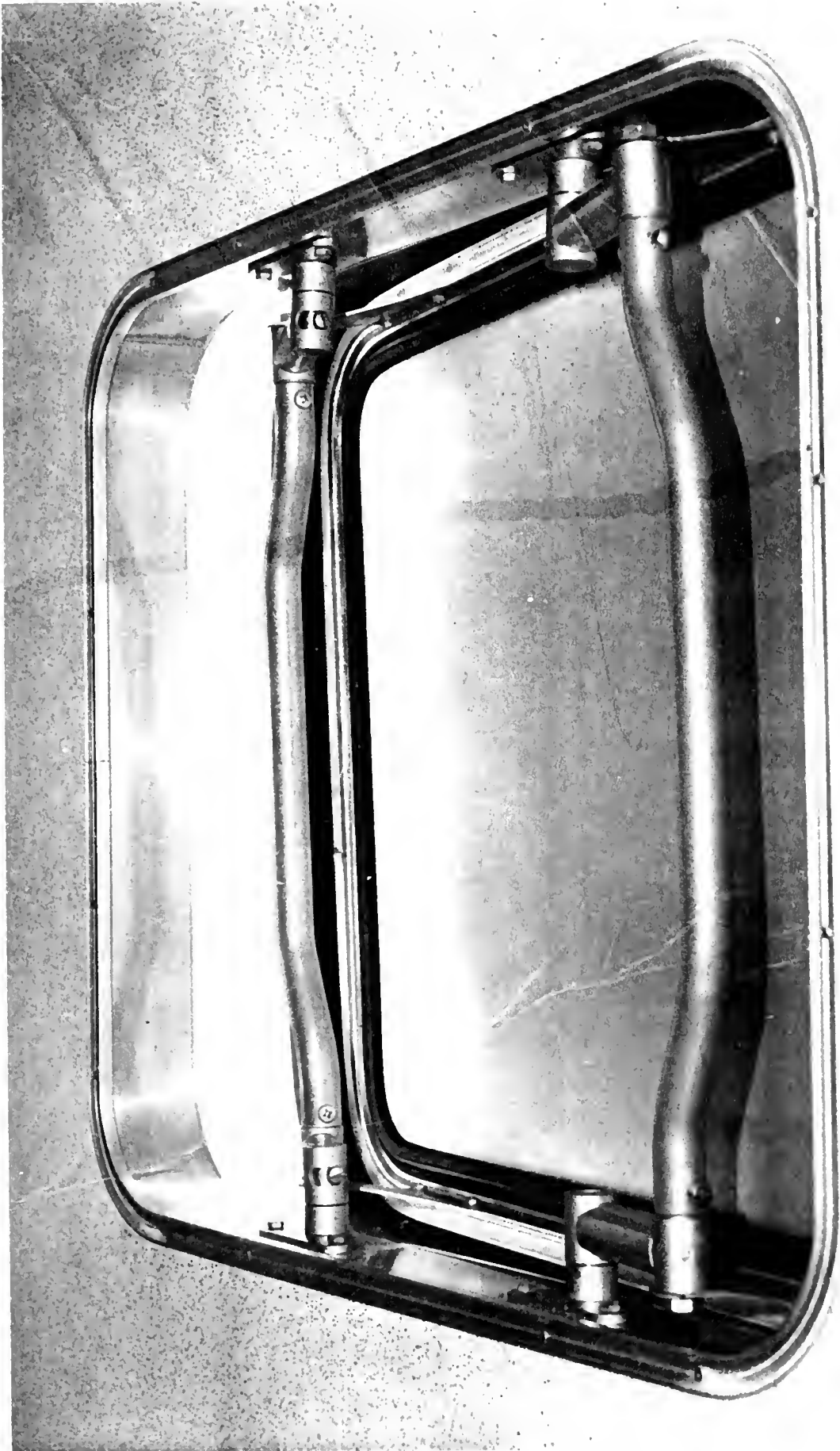




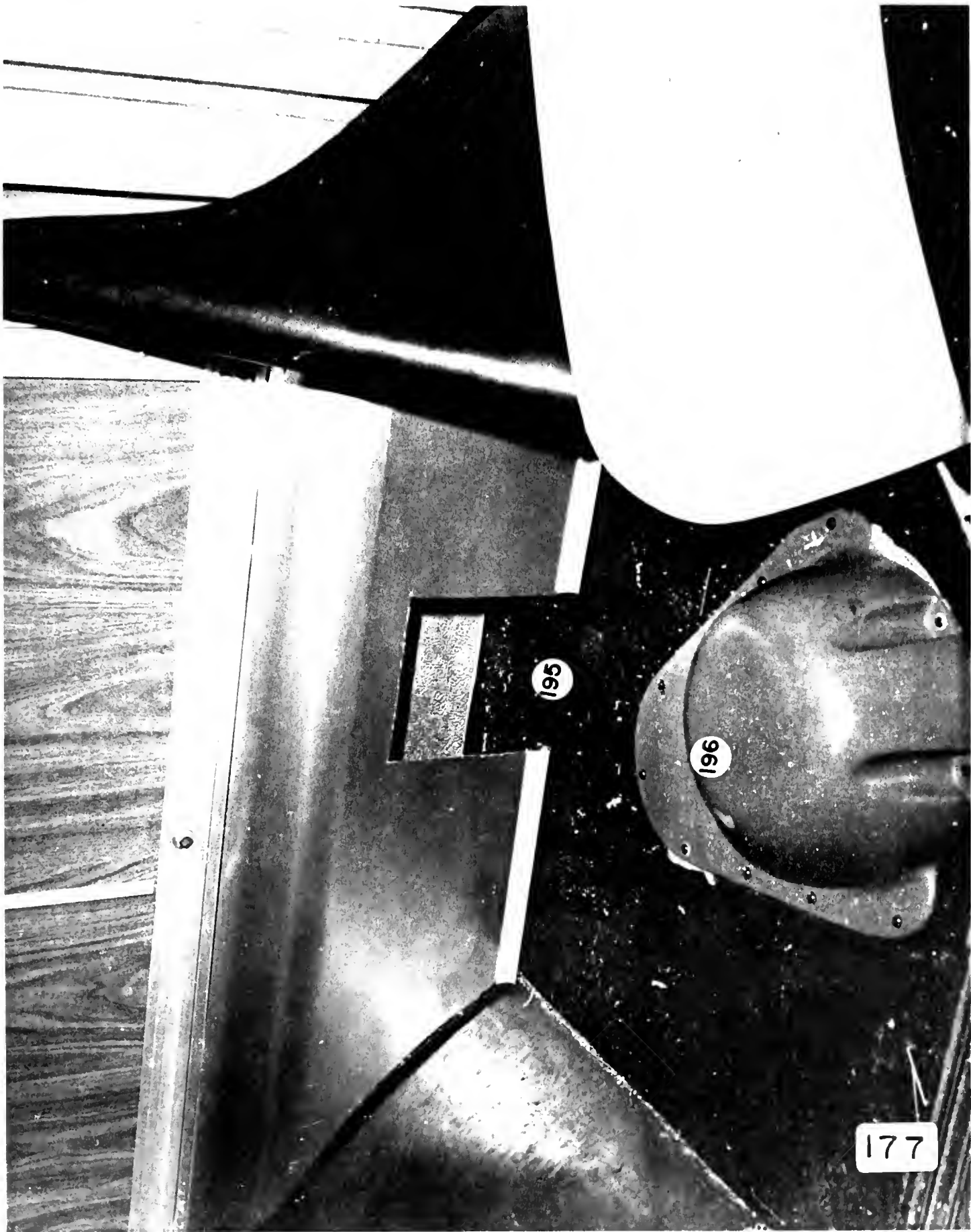


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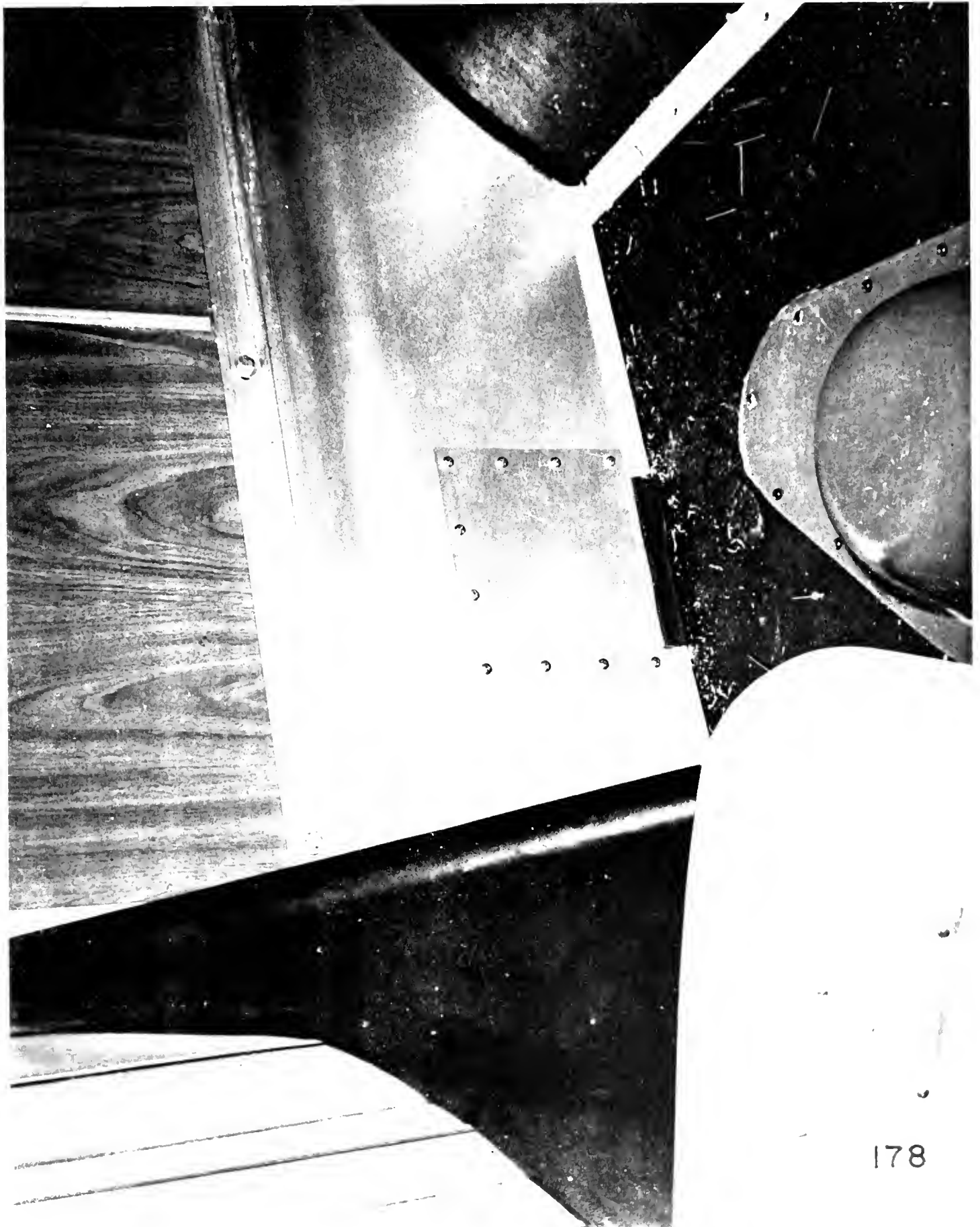






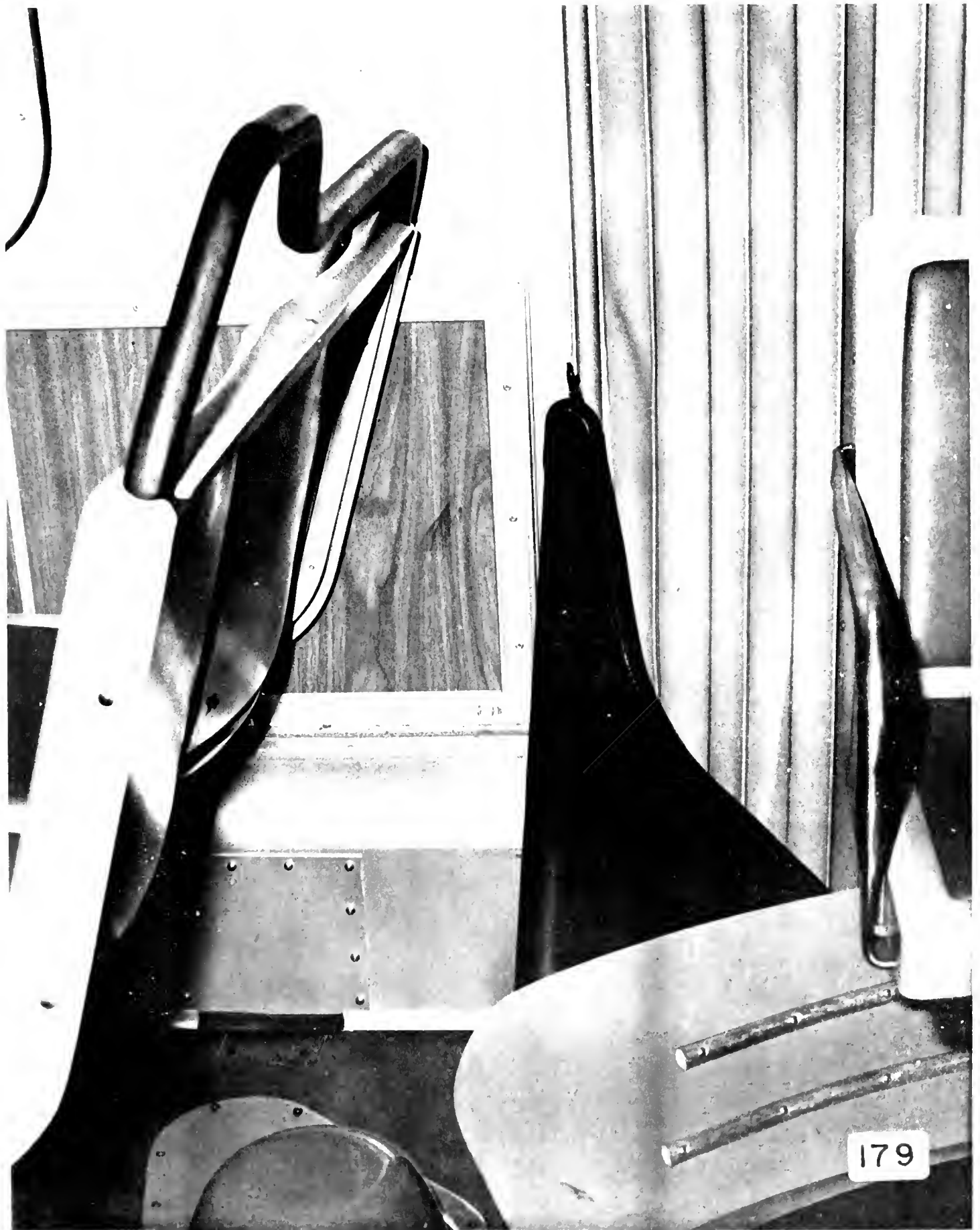






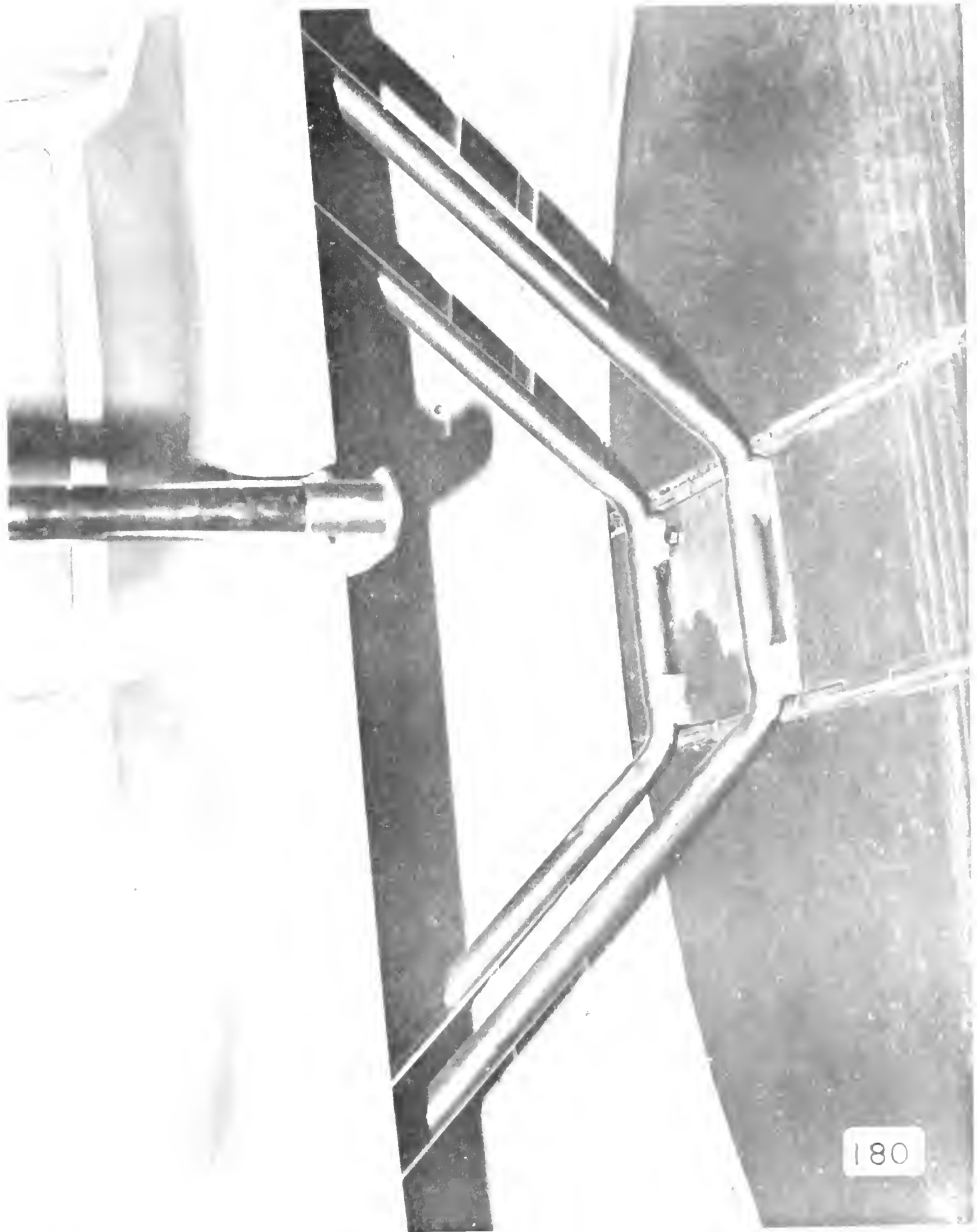




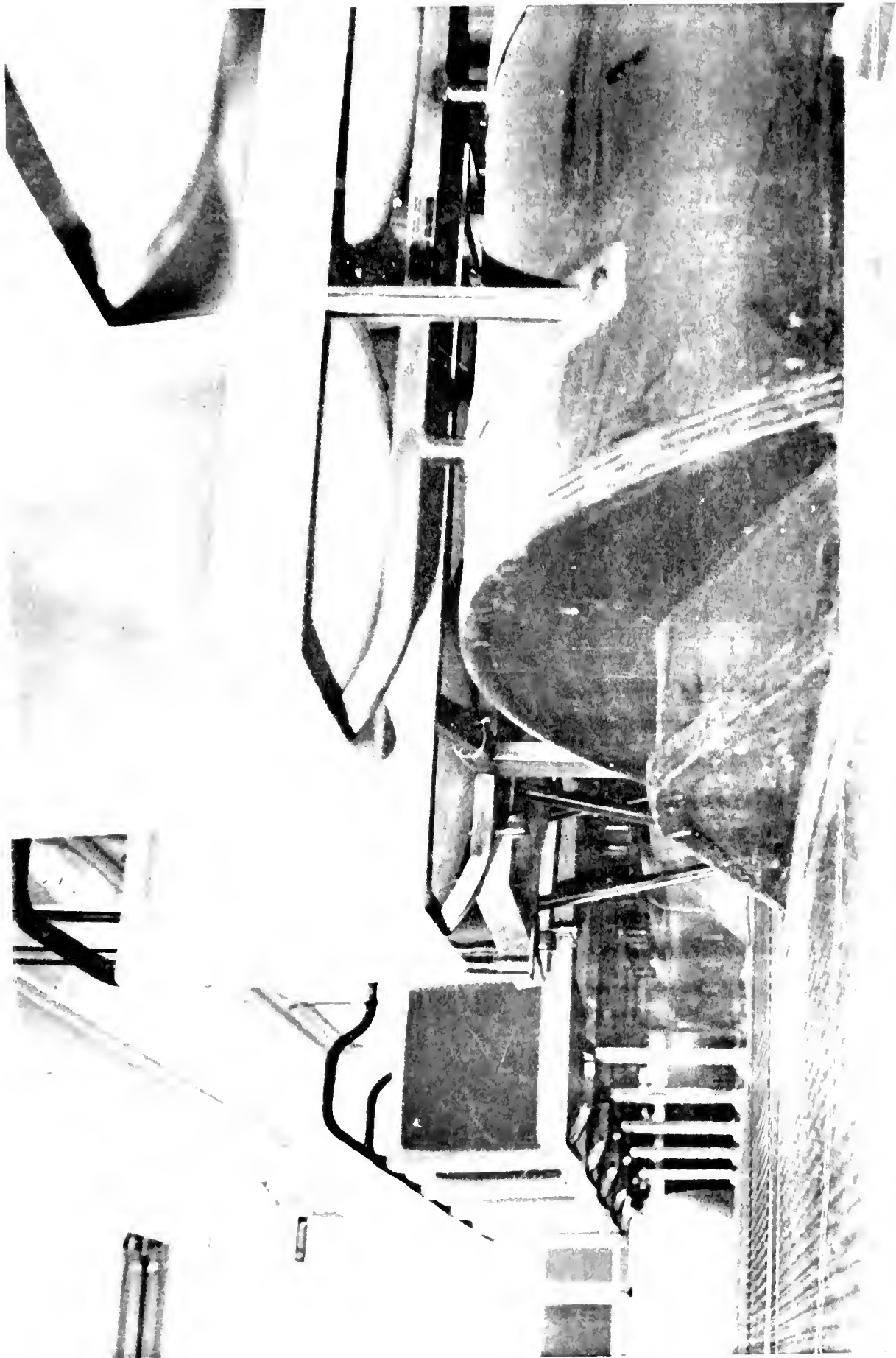


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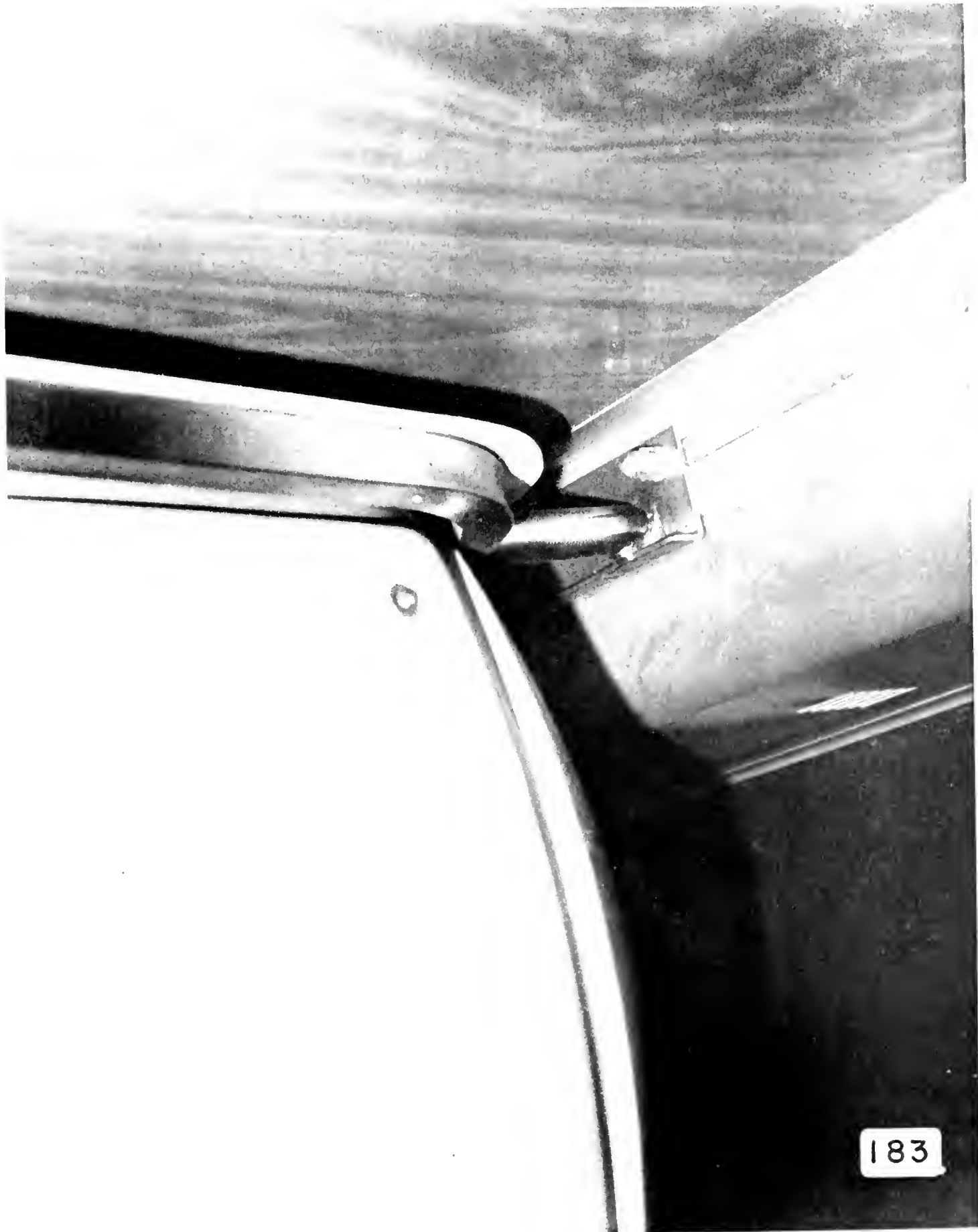






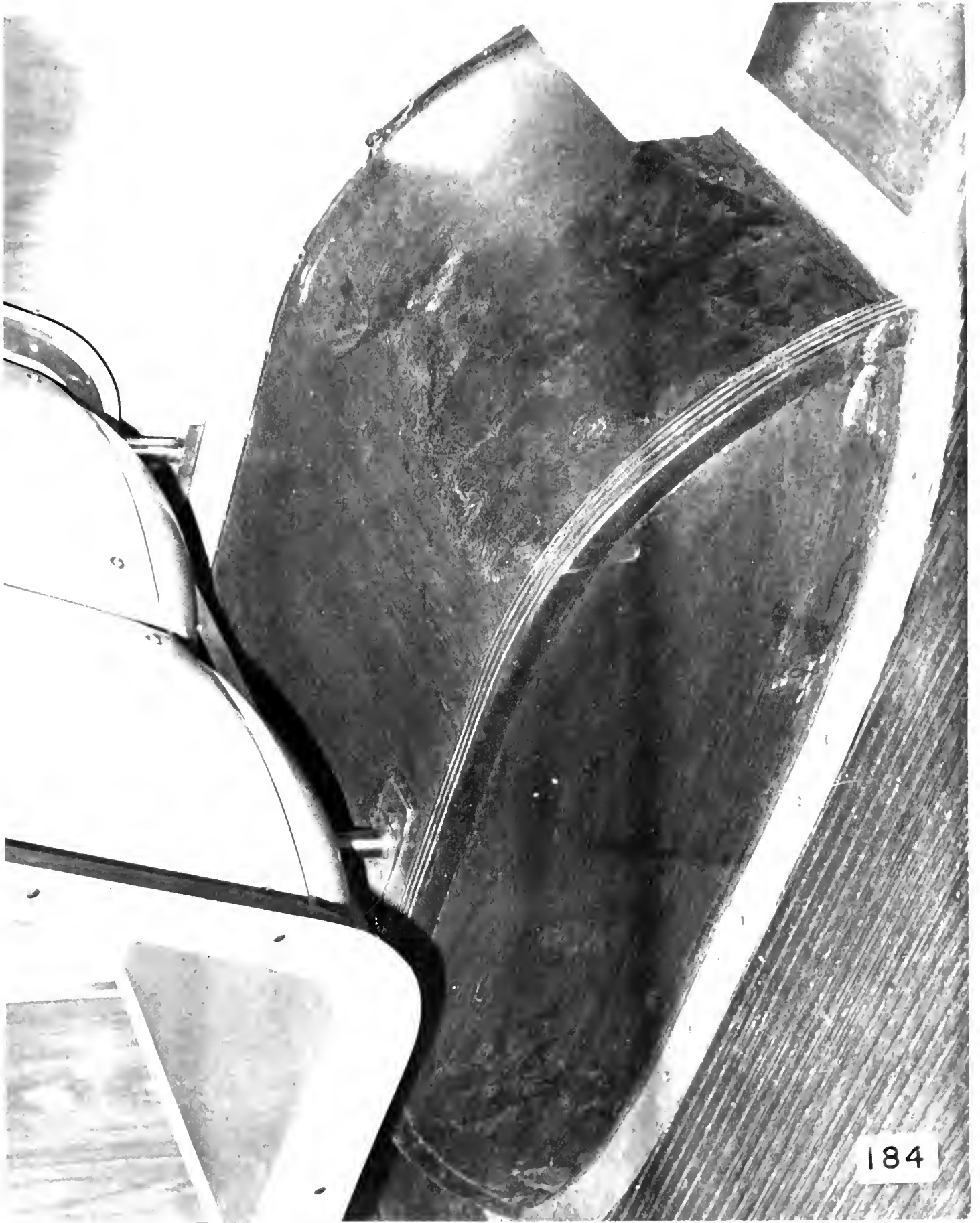




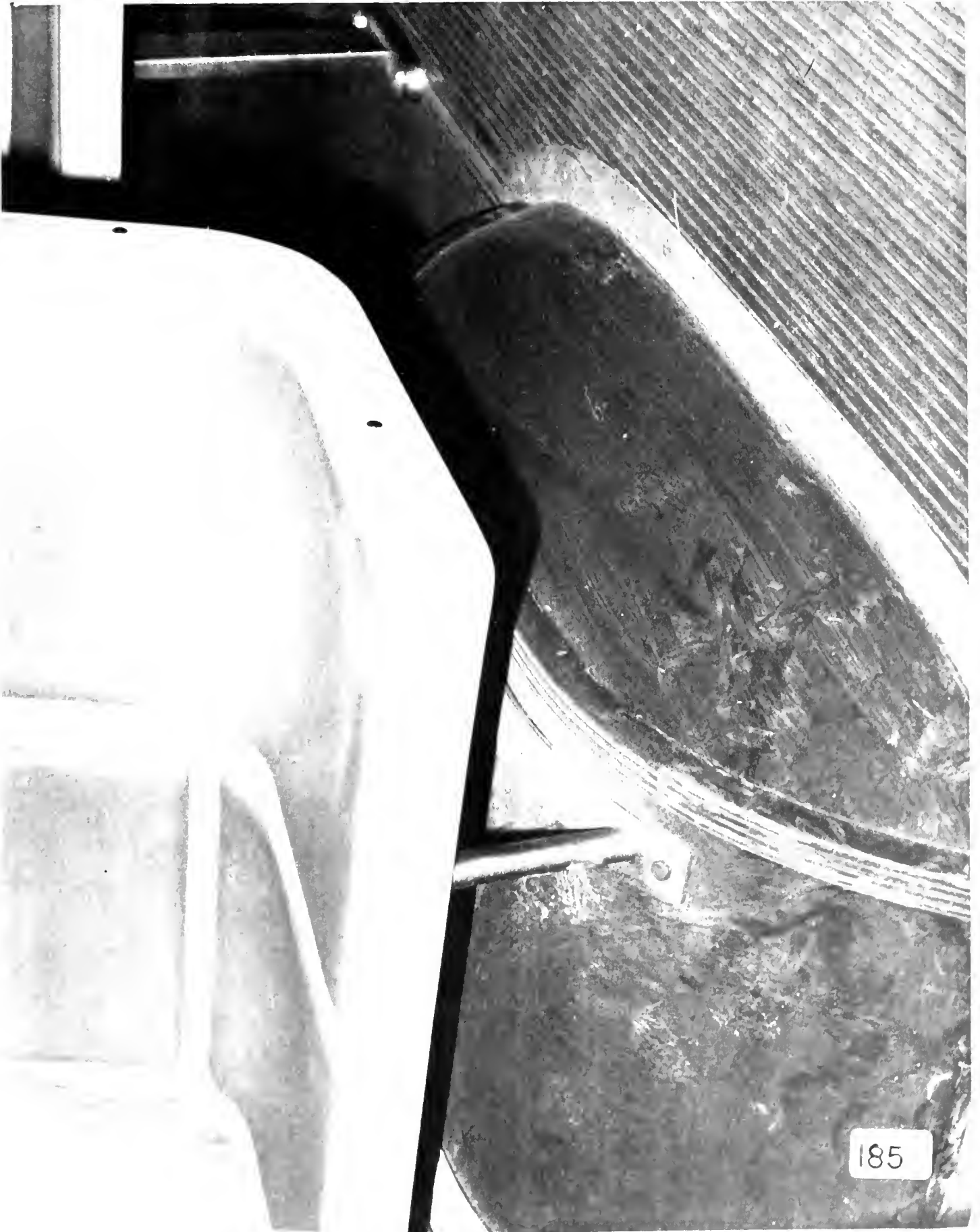


183









185





186





No smoking  
Prohibido fumar

7002

187



EXIT



No smoking  
Violators subject to fine of up to \$5000

Prohibido fumar  
Multas de hasta \$5000

7002

For more information  
on the new regulations  
on smoking in public  
places, visit the  
website at  
www.fda.gov



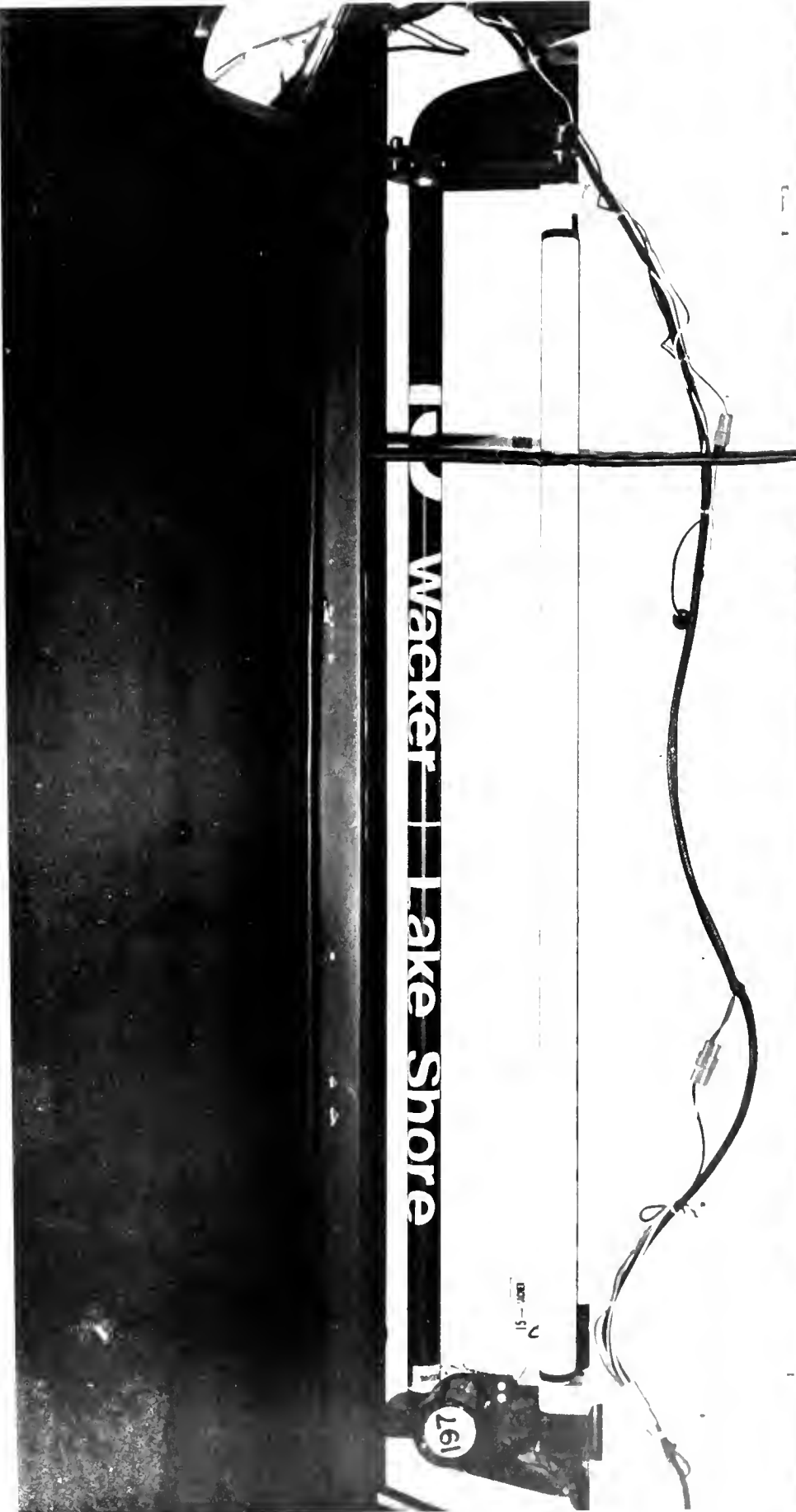
**No smoking**  
Visitors subject to fine of up to \$5000  
**Prohibido fumar**  
Multa de hasta \$5000

**7002**

For your protection  
The use of this equipment  
is limited to the  
purpose for which it  
was designed.

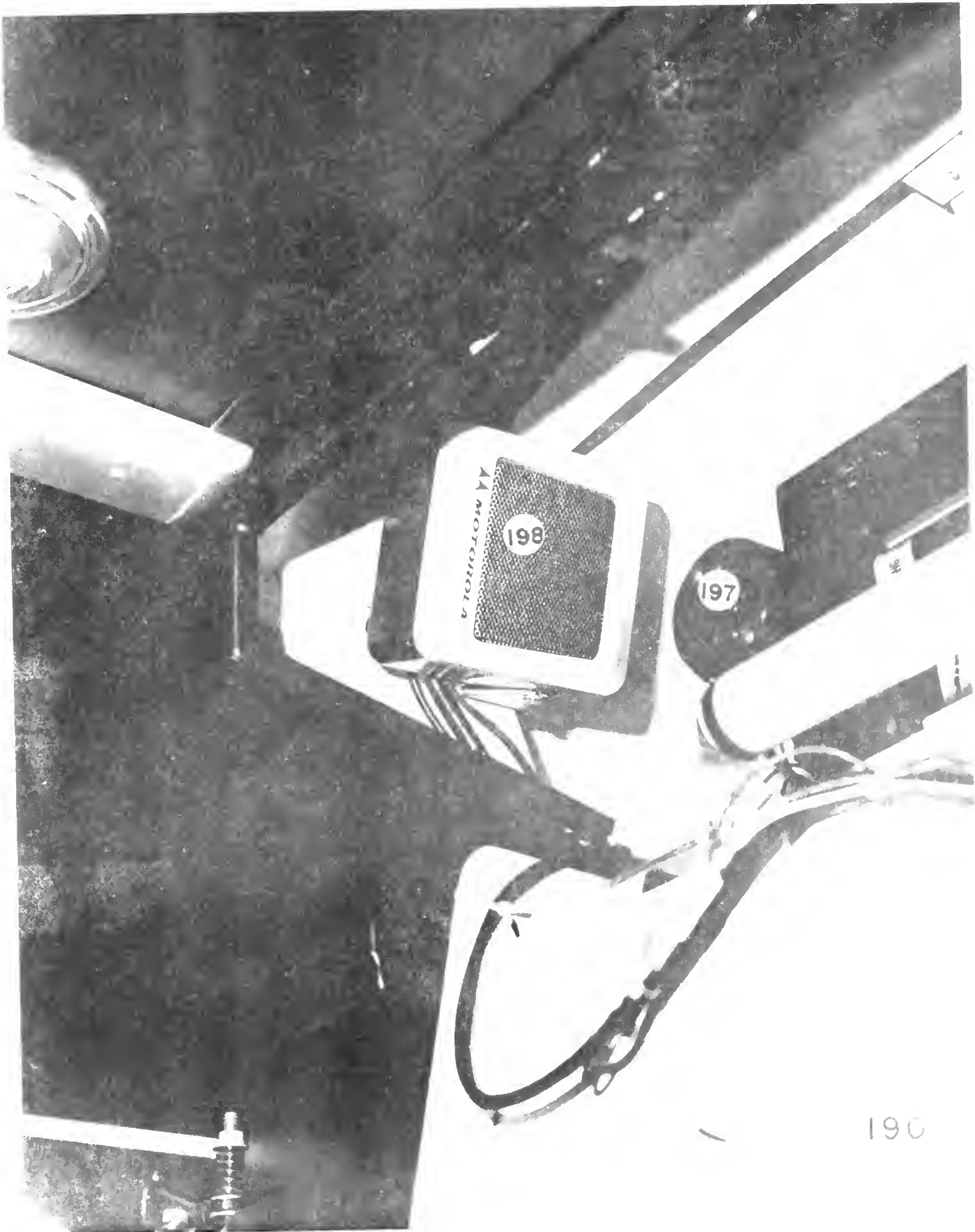




















200

192

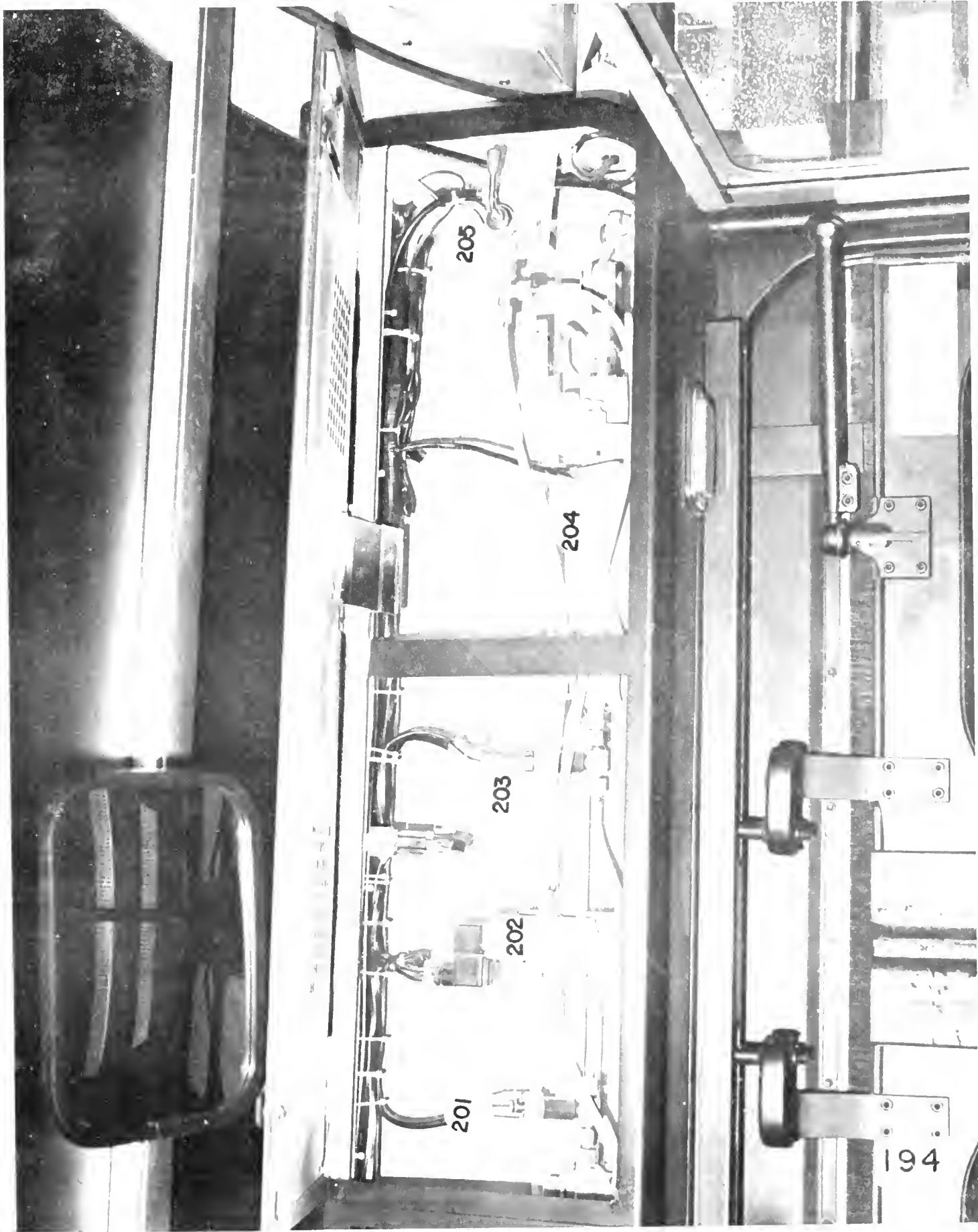


EMERGENCY  
TURN HANDLE  
COUNTER CLOCKWISE









201

202

203

204

205

194



200

206

EMERGENCY  
TURN HANDLE  
COUNTER CLOCKWISE

IN EMERGEN  
TURN HANDLE  
PULL TOP OF DO

Emergency exit doors  
- Wait for green light, then  
push door handle gently

Page 29 of 300 EPR 10  
Page 29 of 300 EPR 10  
Page 29 of 300 EPR 10  
Page 29 of 300 EPR 10

195



206

In emergency  
turn handle  
counterclockwise



207

196



**'Easy-out' exit doors**  
**- Wait for green light, then**  
**push door handle gently**

**Puertas de salida 'Easy-out'**

**- Espere por la luz verde y luego**  
**empuje suavemente la agarradera**  
**de la puerta**

**208**

197





216 217 218 219 220 221 222 223

210

211

212

213

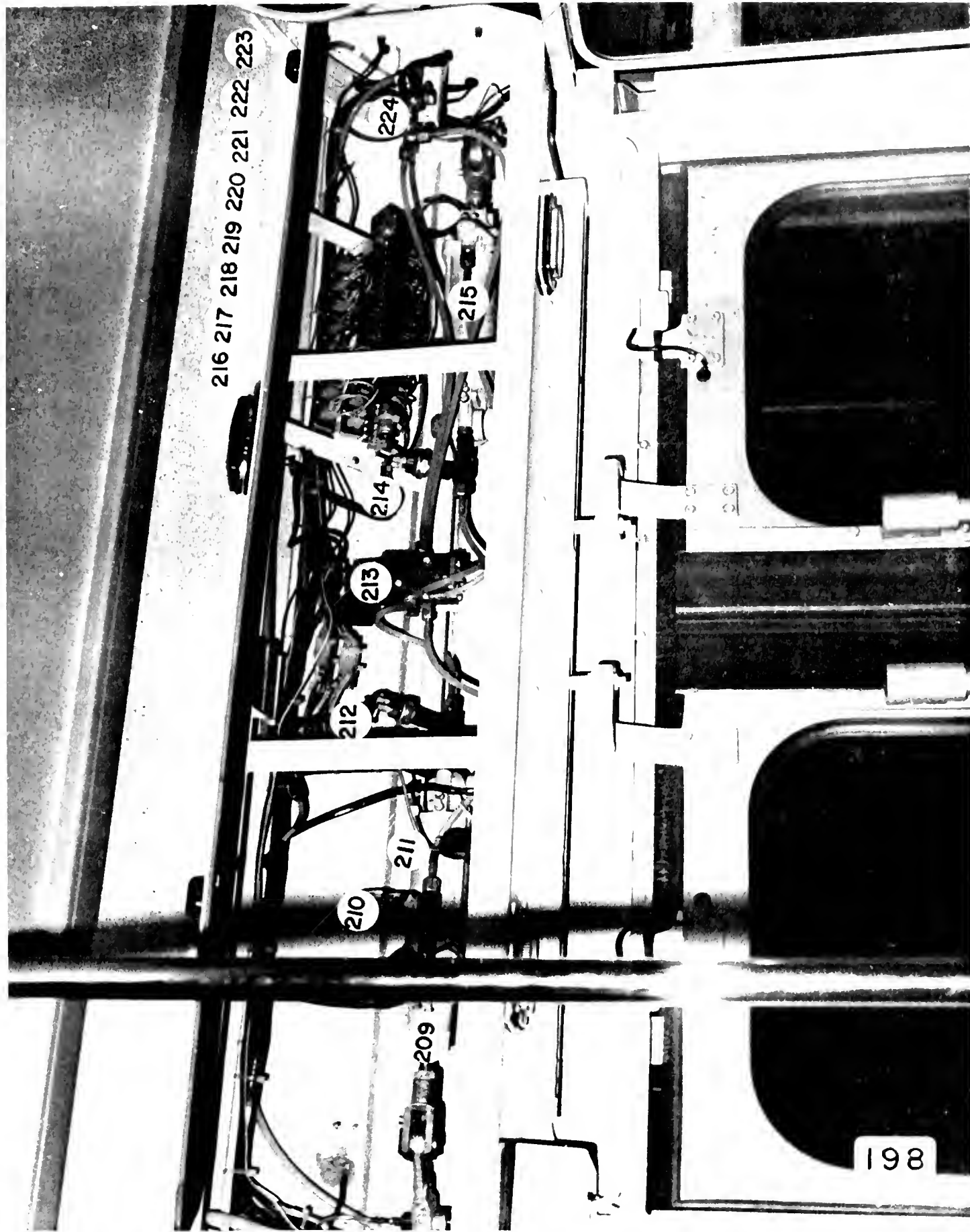
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215

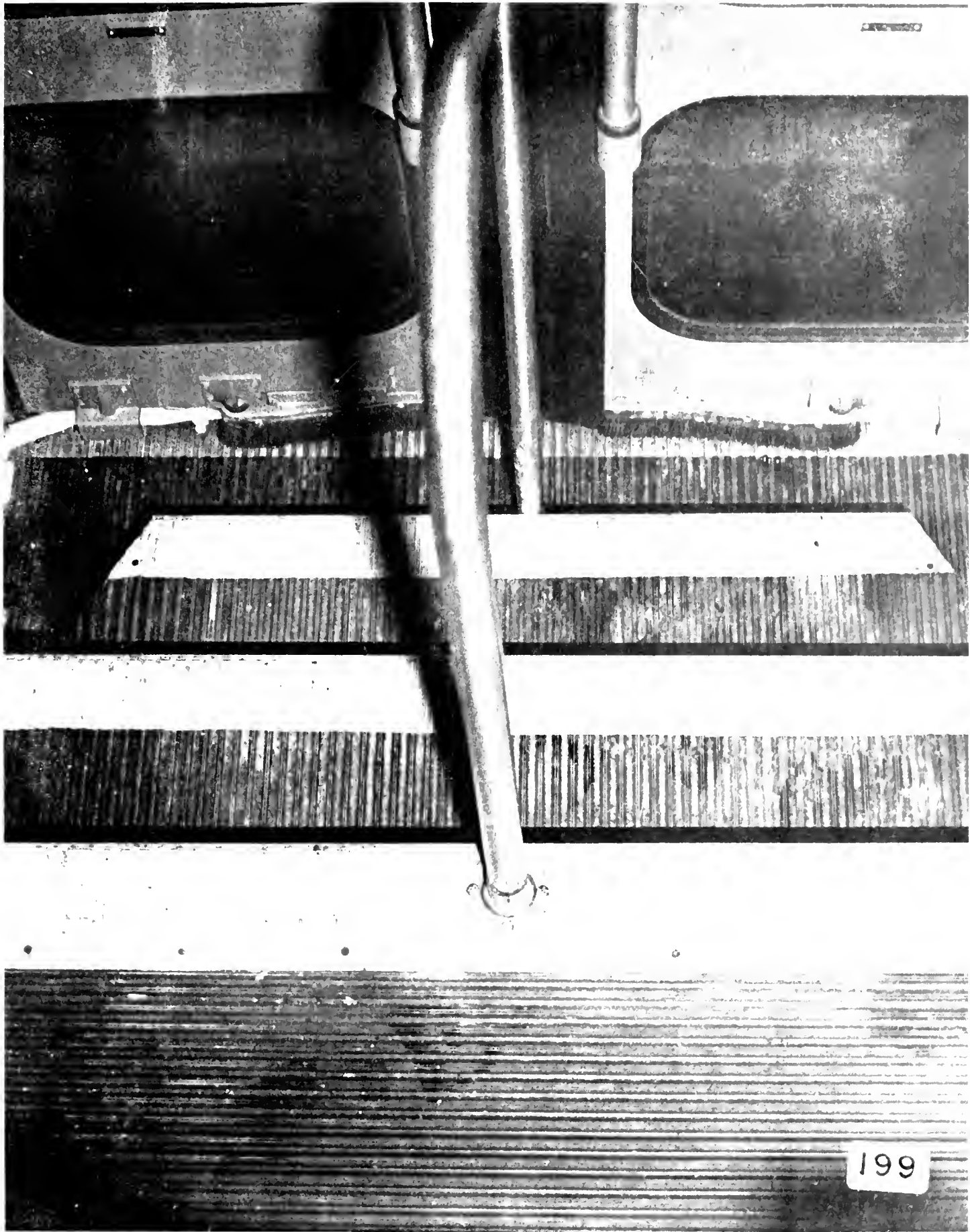
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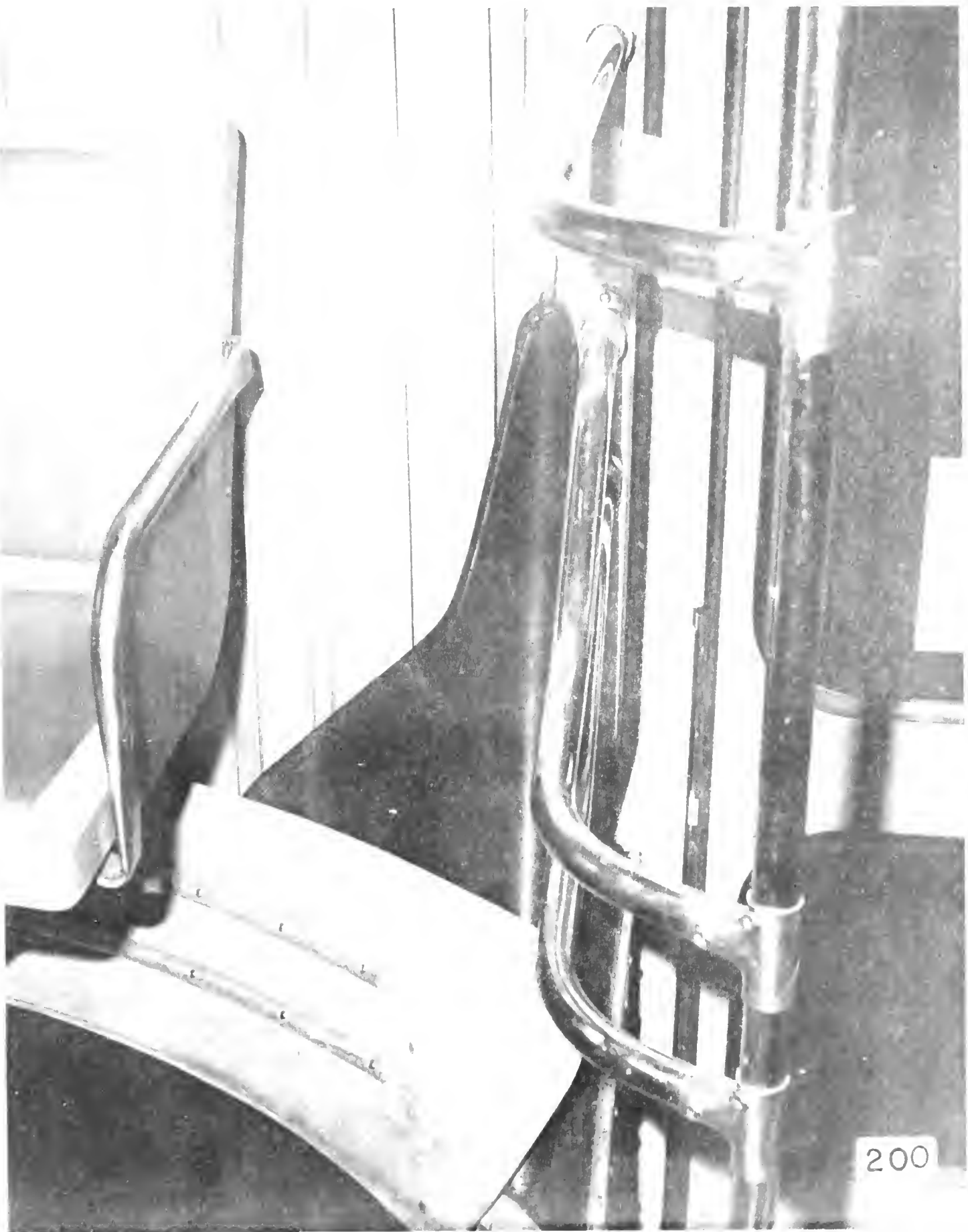
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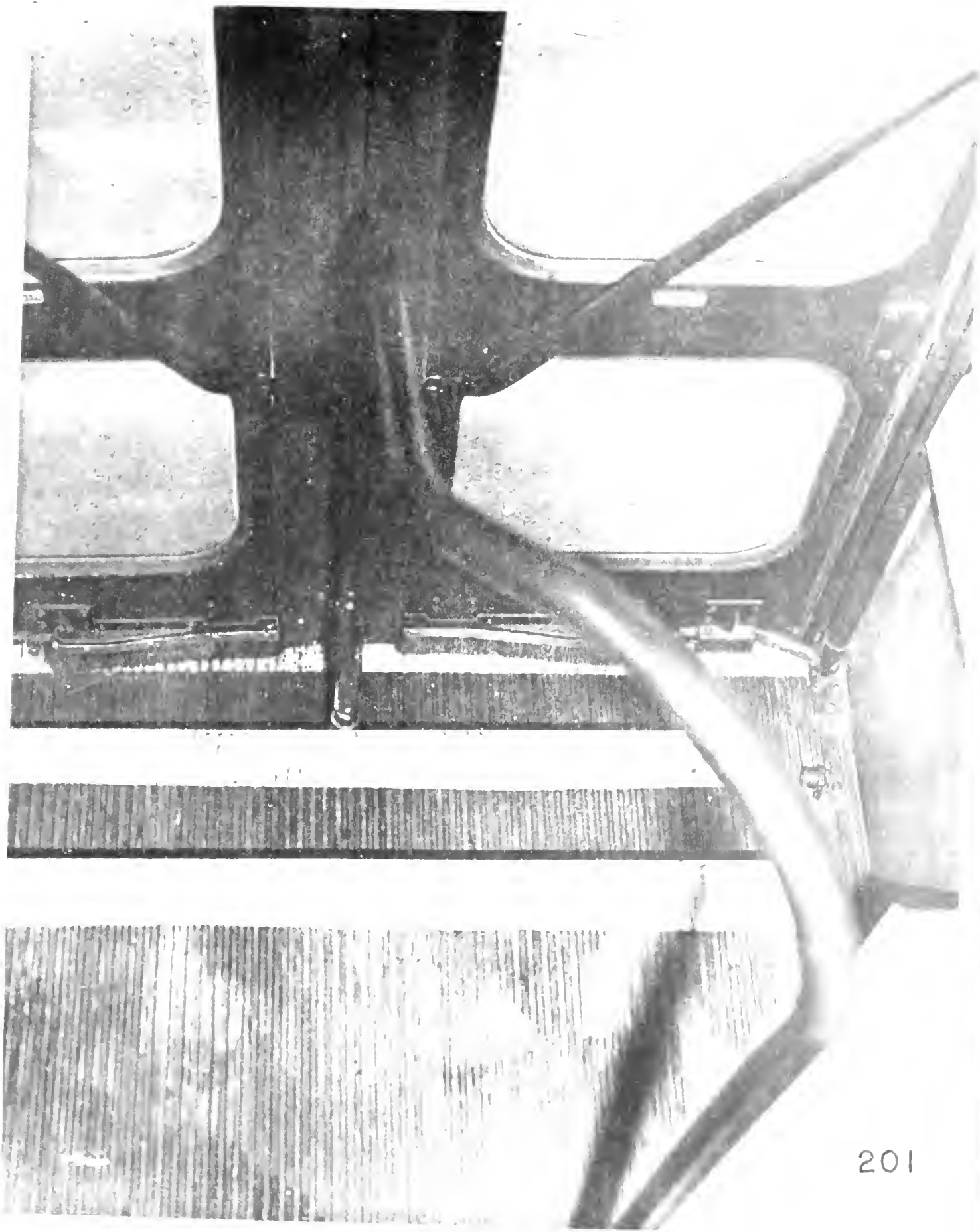






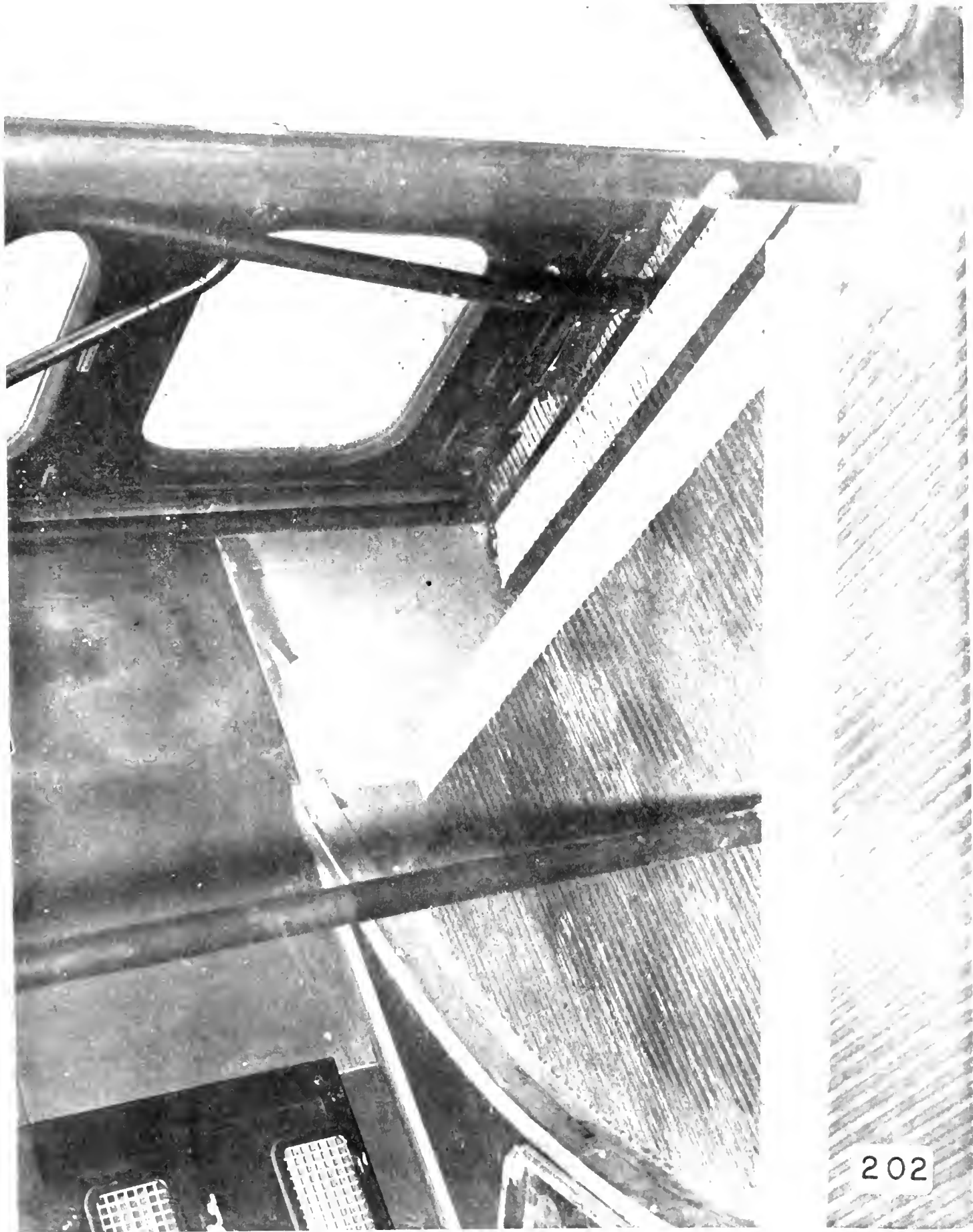




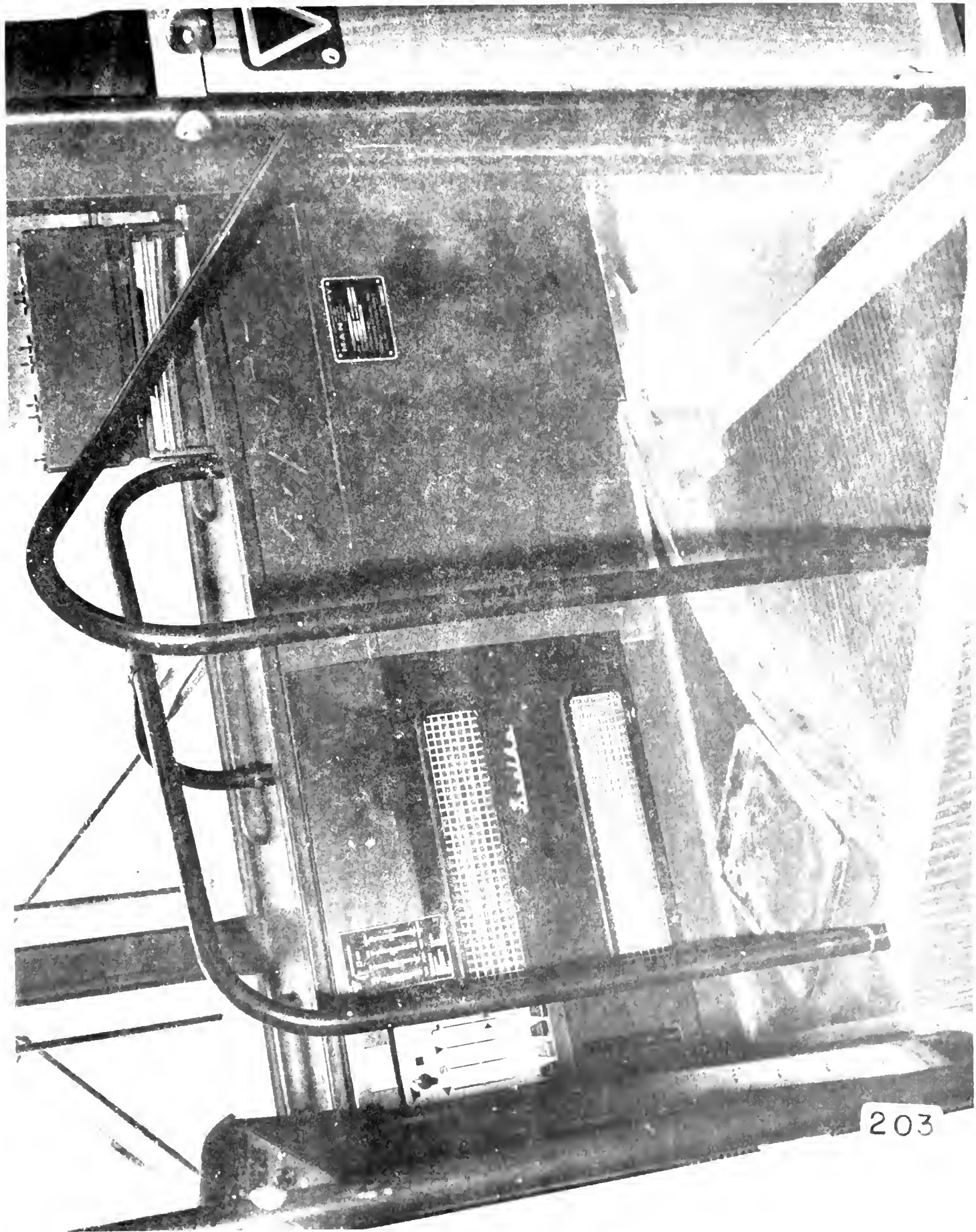












203

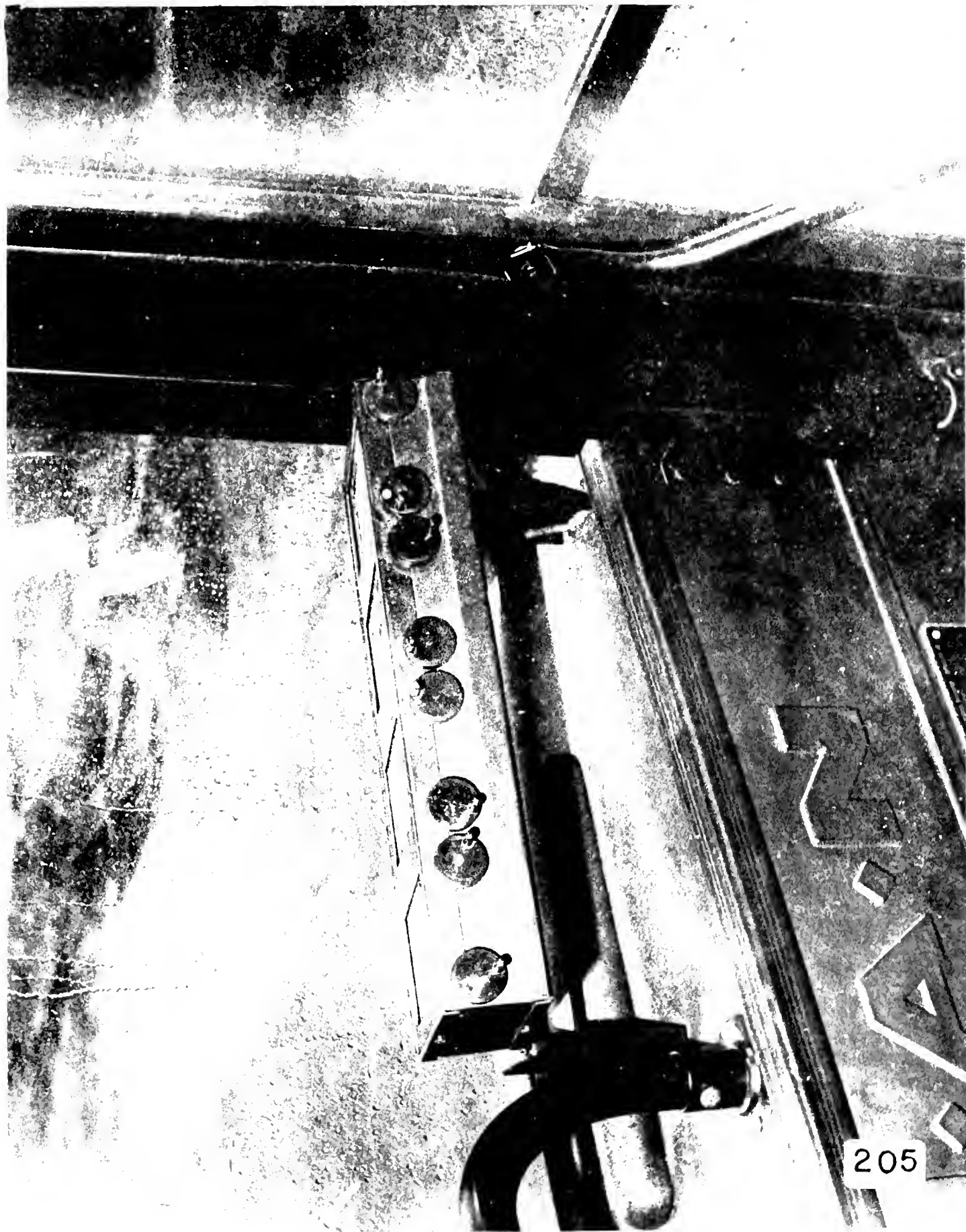




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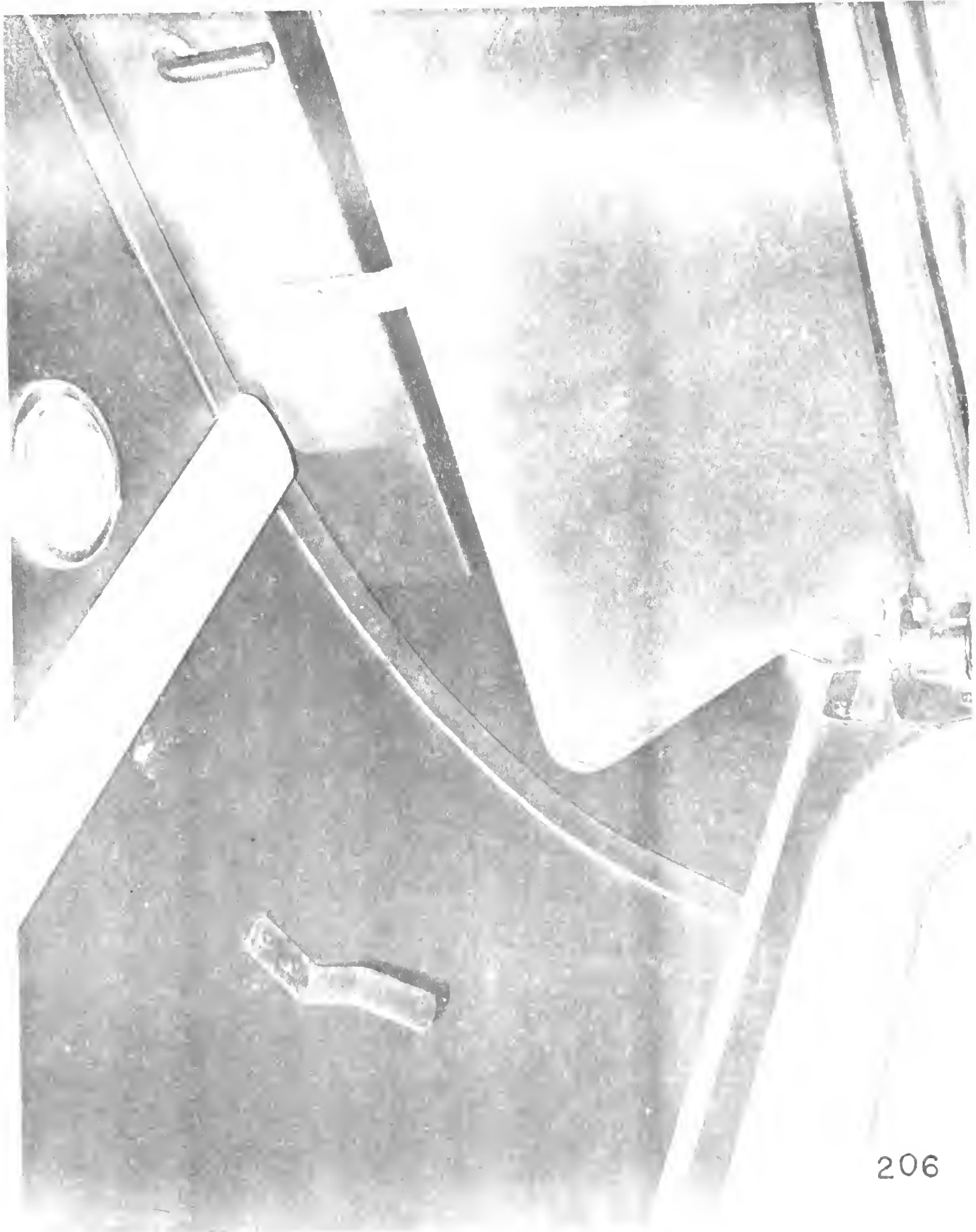




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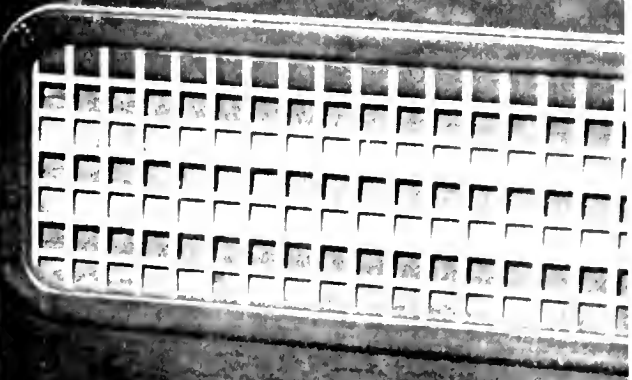




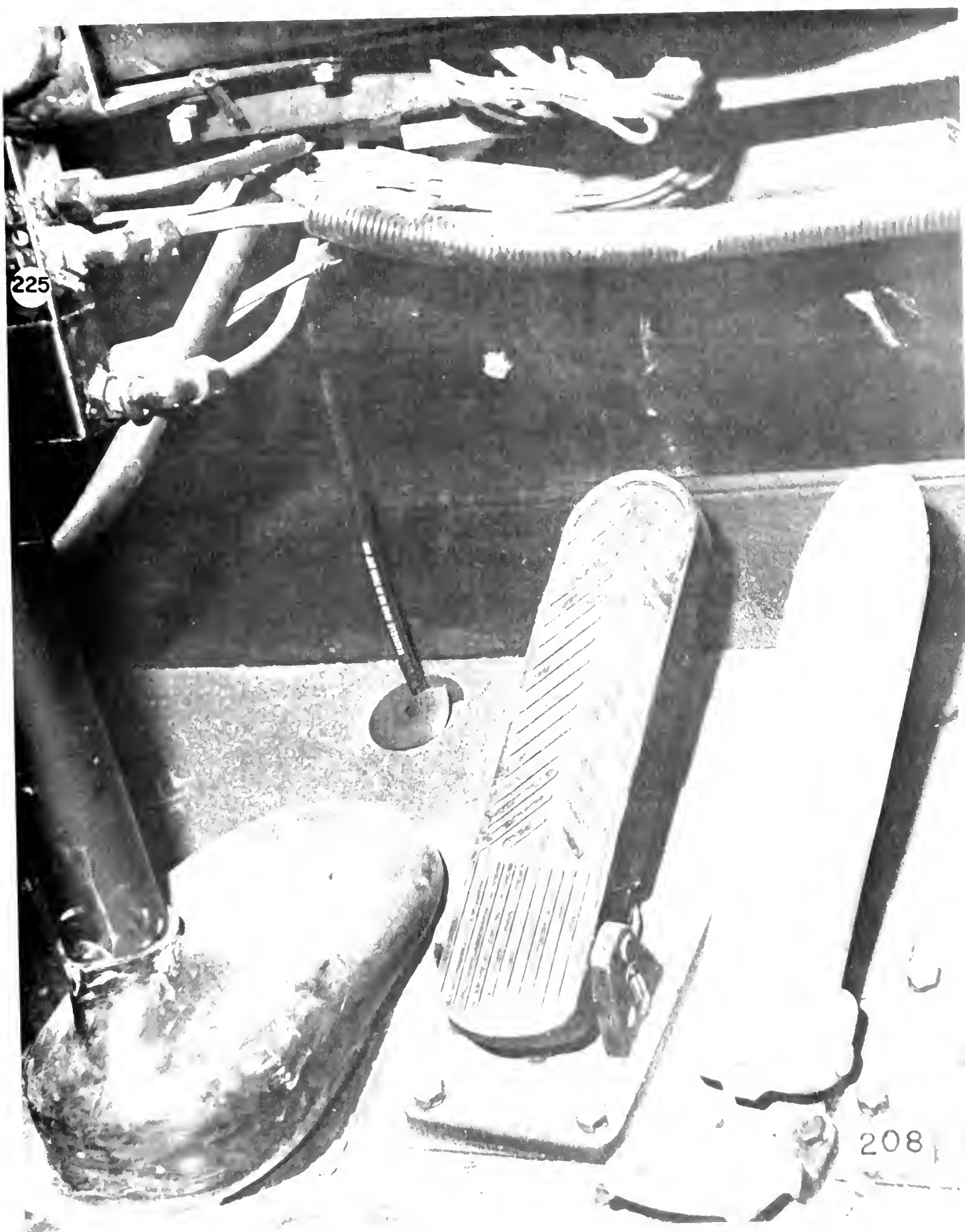


DEFROSTER  
CONTROLS

The control panel features four vertical sliders. The leftmost slider has a downward-pointing triangle at the top. The second slider has a leftward-pointing triangle at the top. The third slider has a downward-pointing triangle at the top. The rightmost slider has a rightward-pointing triangle at the top. At the bottom of the panel are three buttons: a small square button on the left, a larger rectangular button in the center, and another small square button on the right.







225

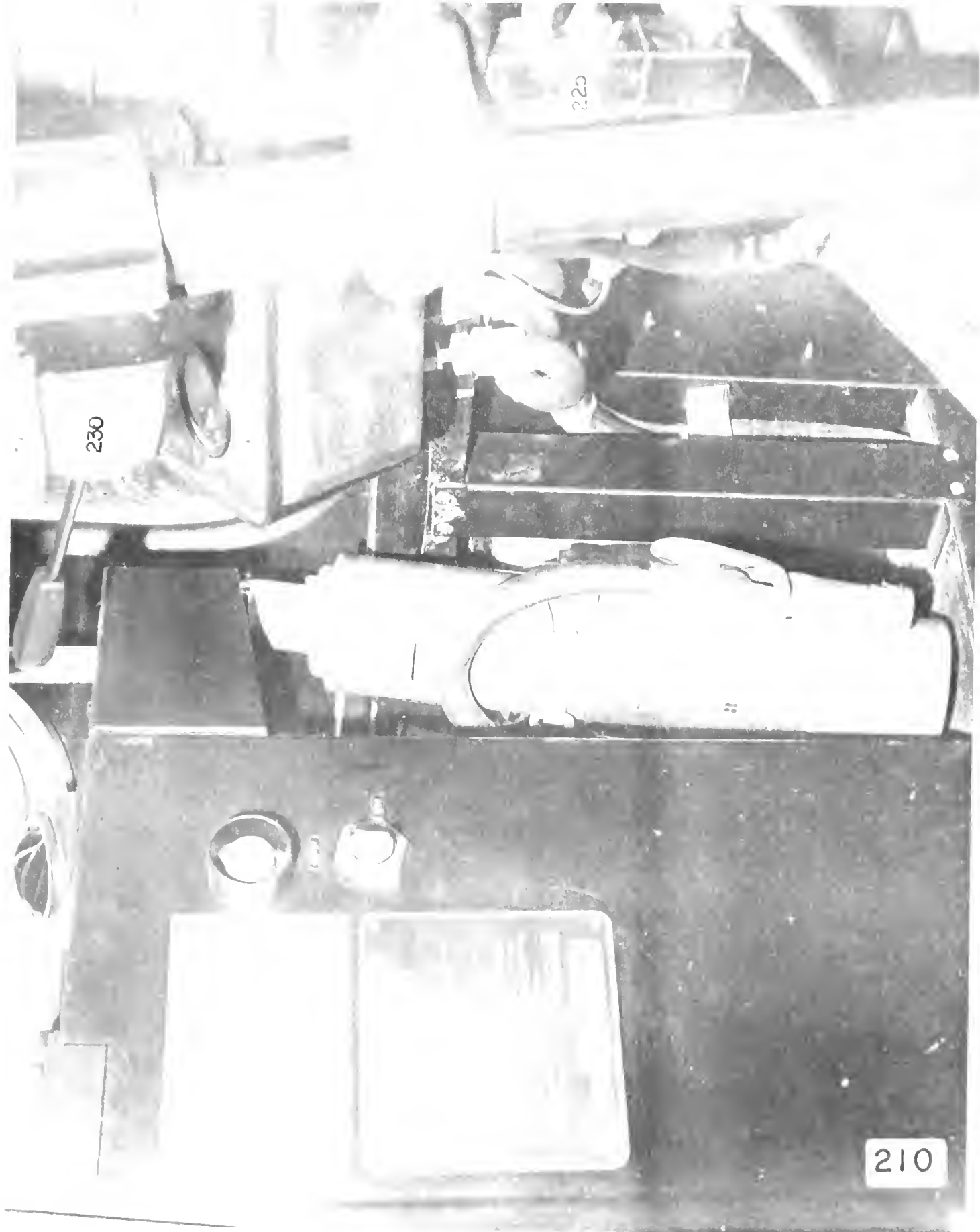
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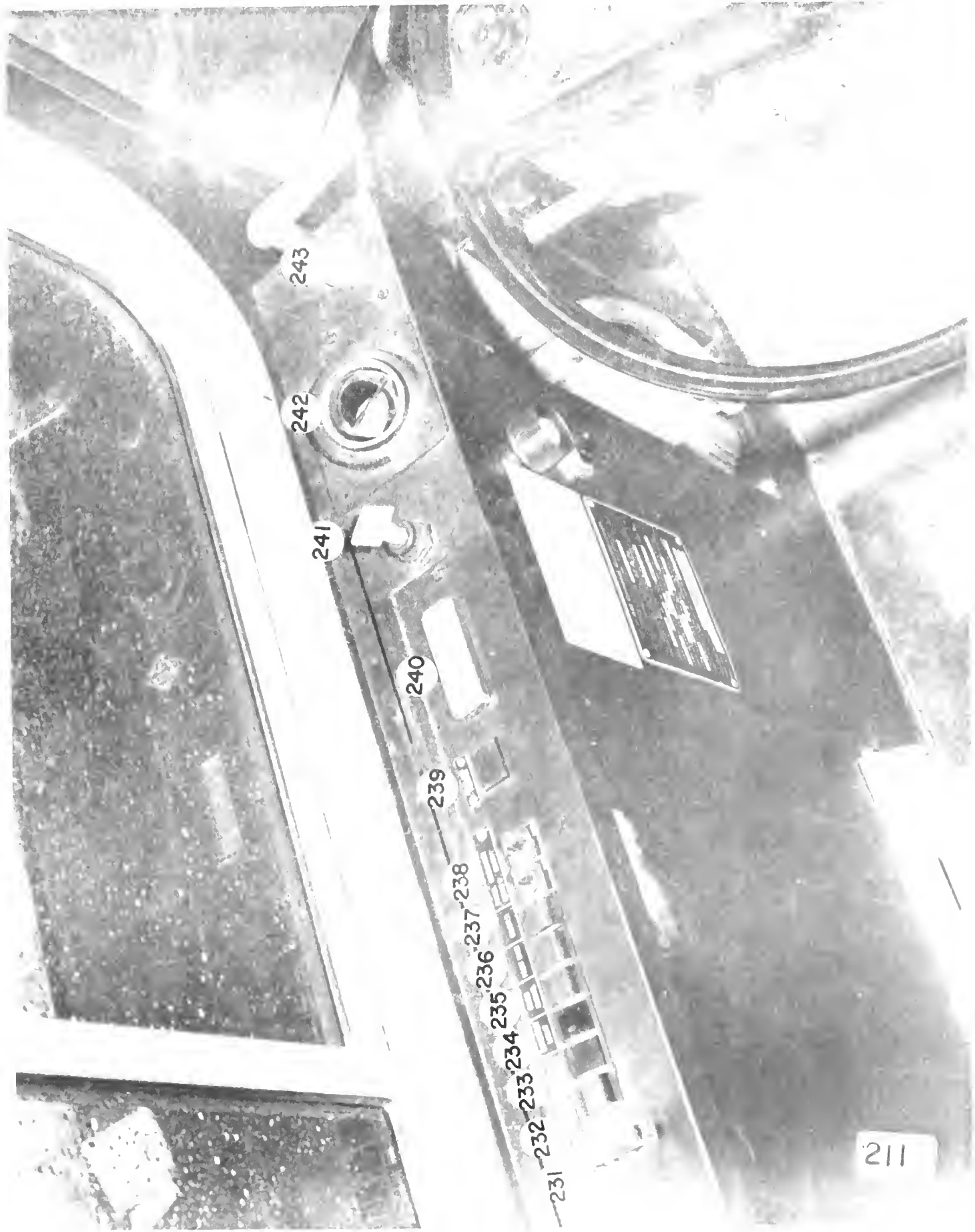


230

220

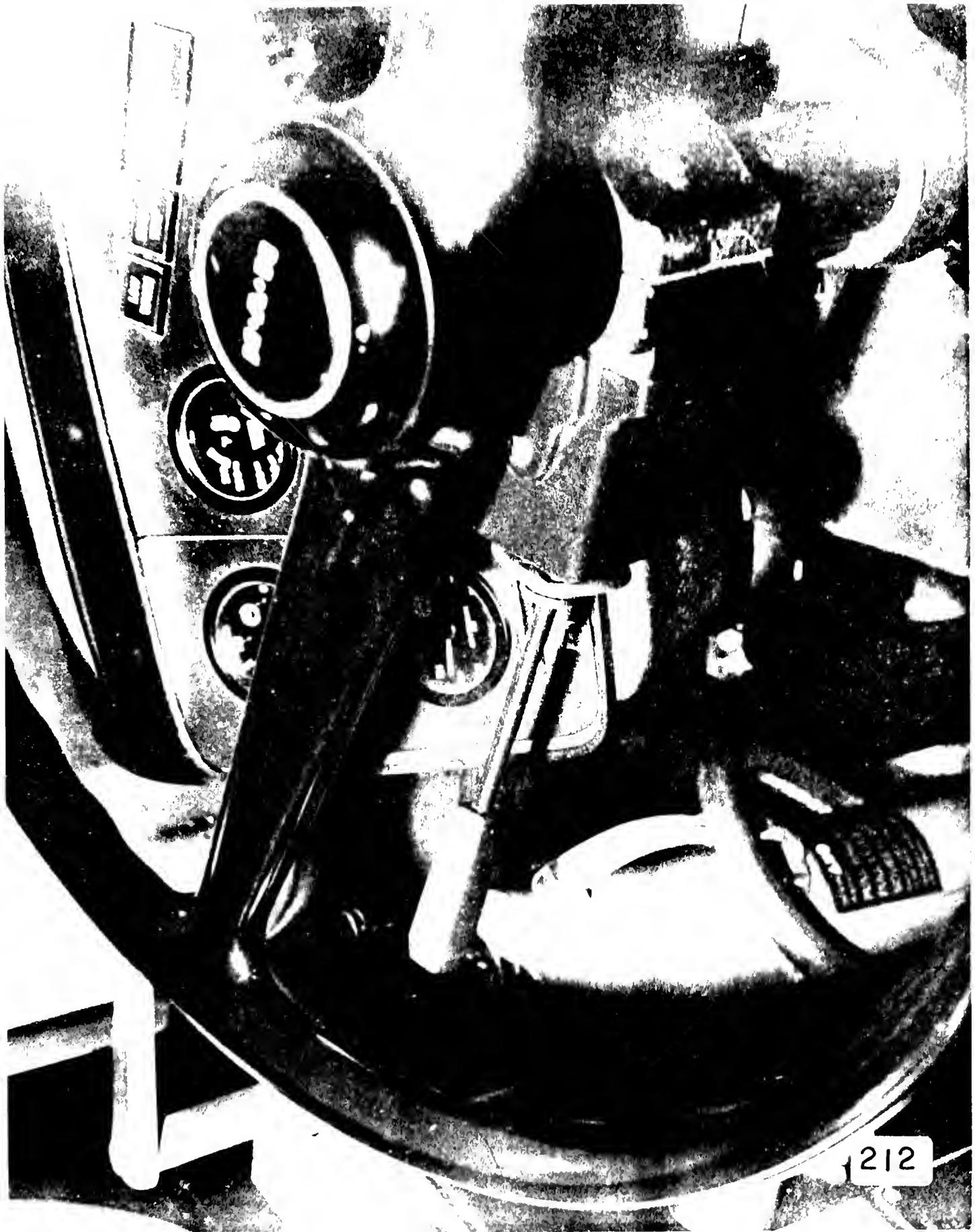
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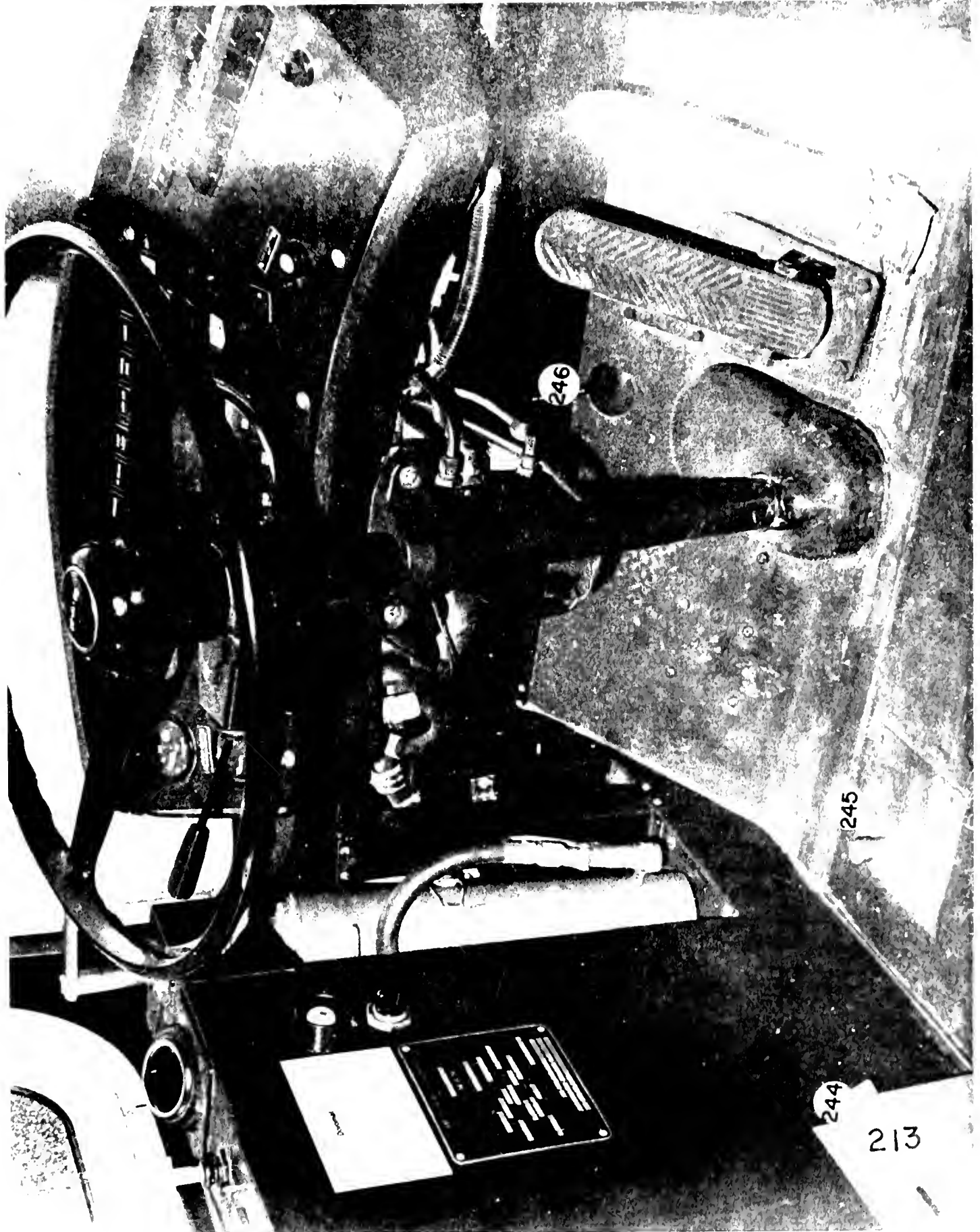


211









246

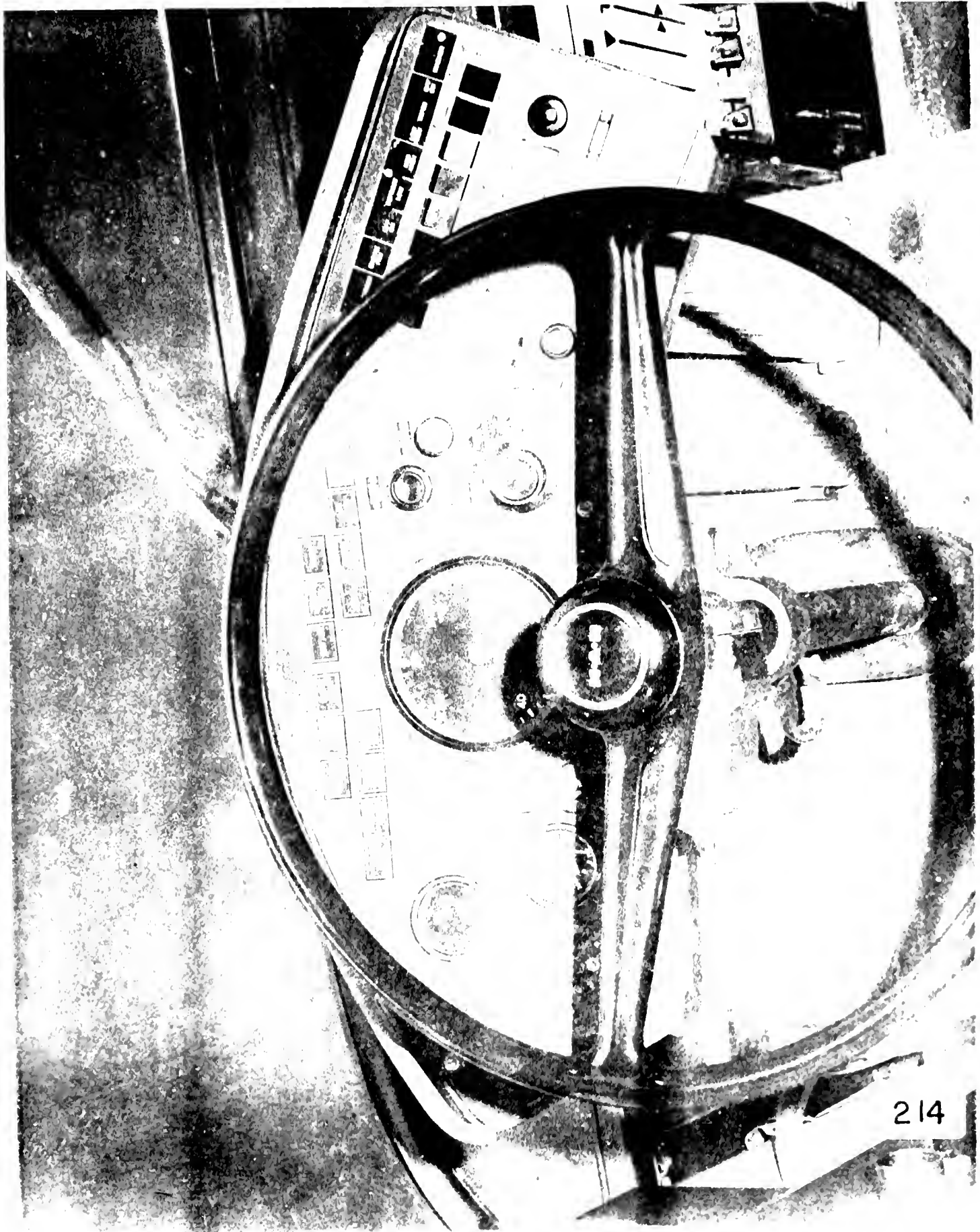
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244

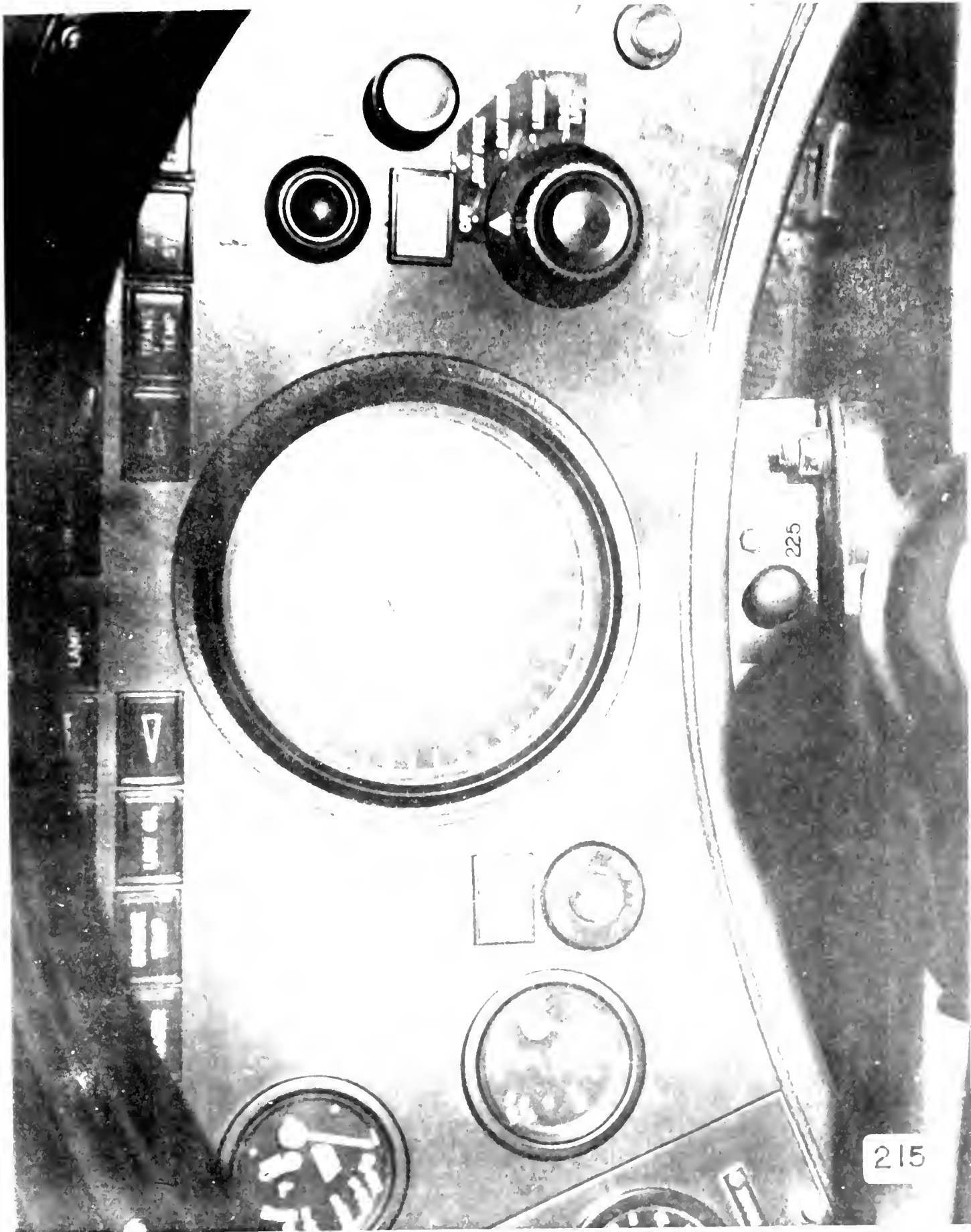
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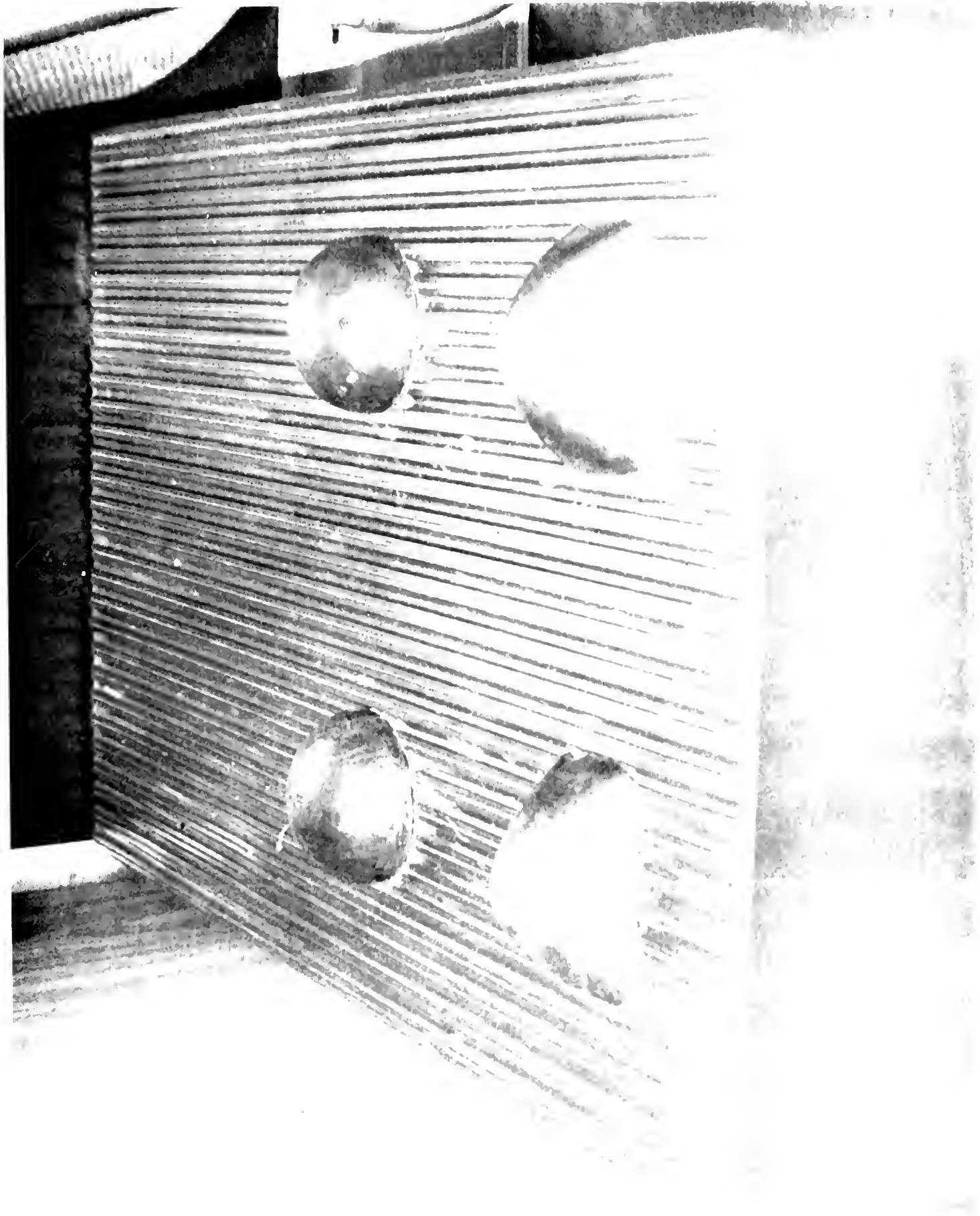












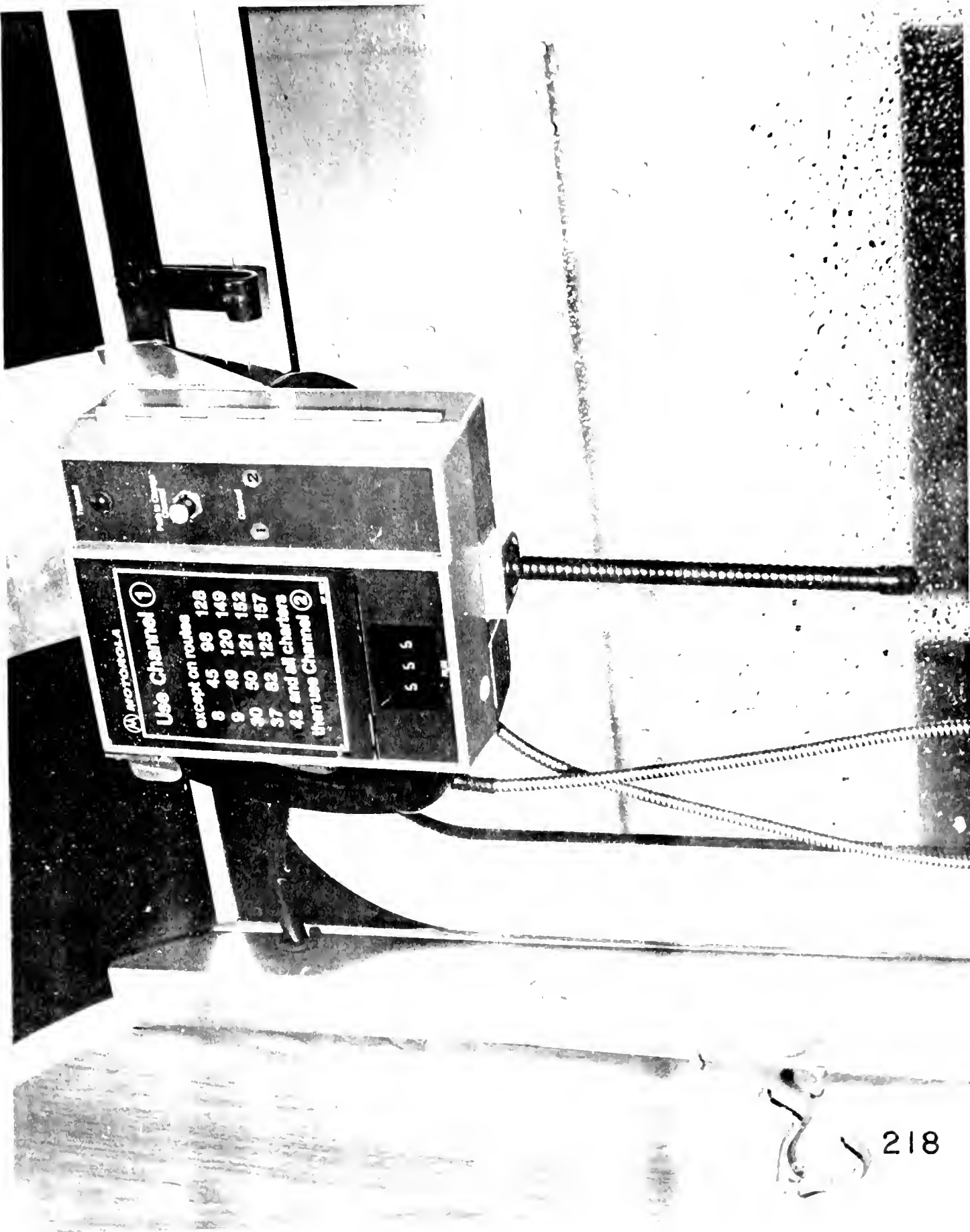




217







MOTOROLA

Use Channel ①

- except on routes
- 8 45 96 126
- 9 49 120 149
- 30 50 121 152
- 37 62 125 157

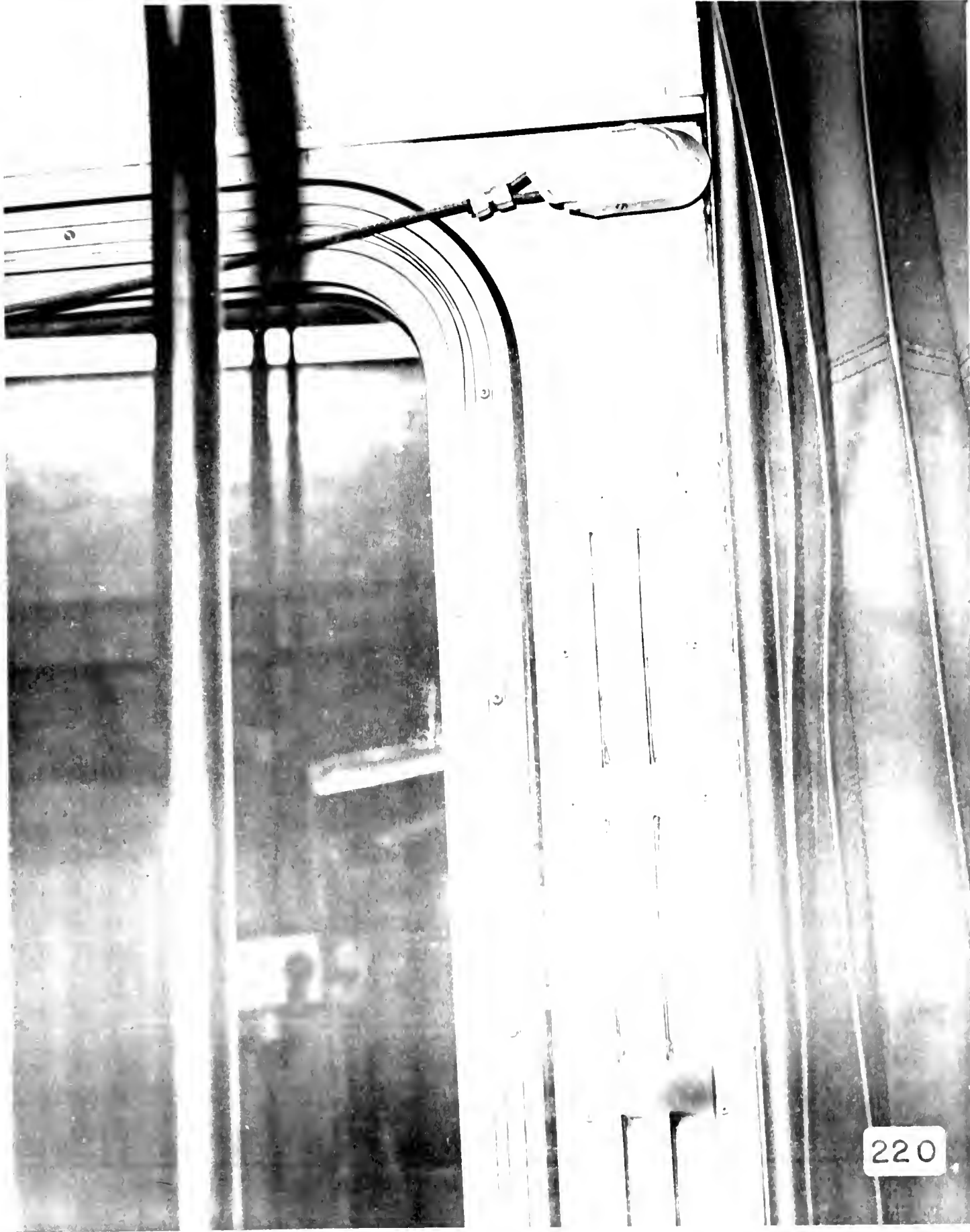
then use Channel ②

555



EMERGENCY EXIT INSTRUCTIONS  
• LOCATED ON INSIDE OF DOOR  
• SEE PAGE 117









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WARNING: Do not touch the  
interior of the door panel.

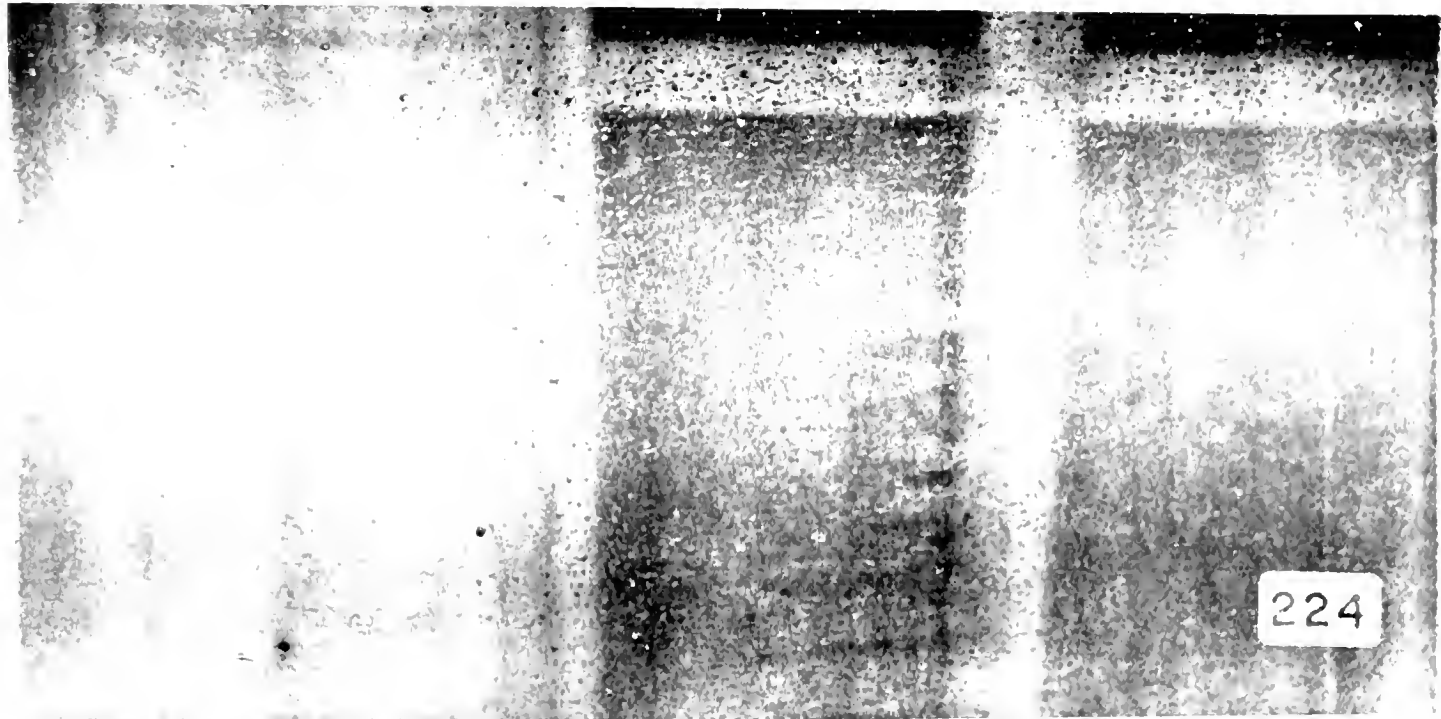


223





EMERGENCY  
EXIT  
PULL RED  
HANDLE  
DOWN  
AND HOLD  
WHILE  
PUSHING  
WINDOW  
OUT AT  
BOTTOM

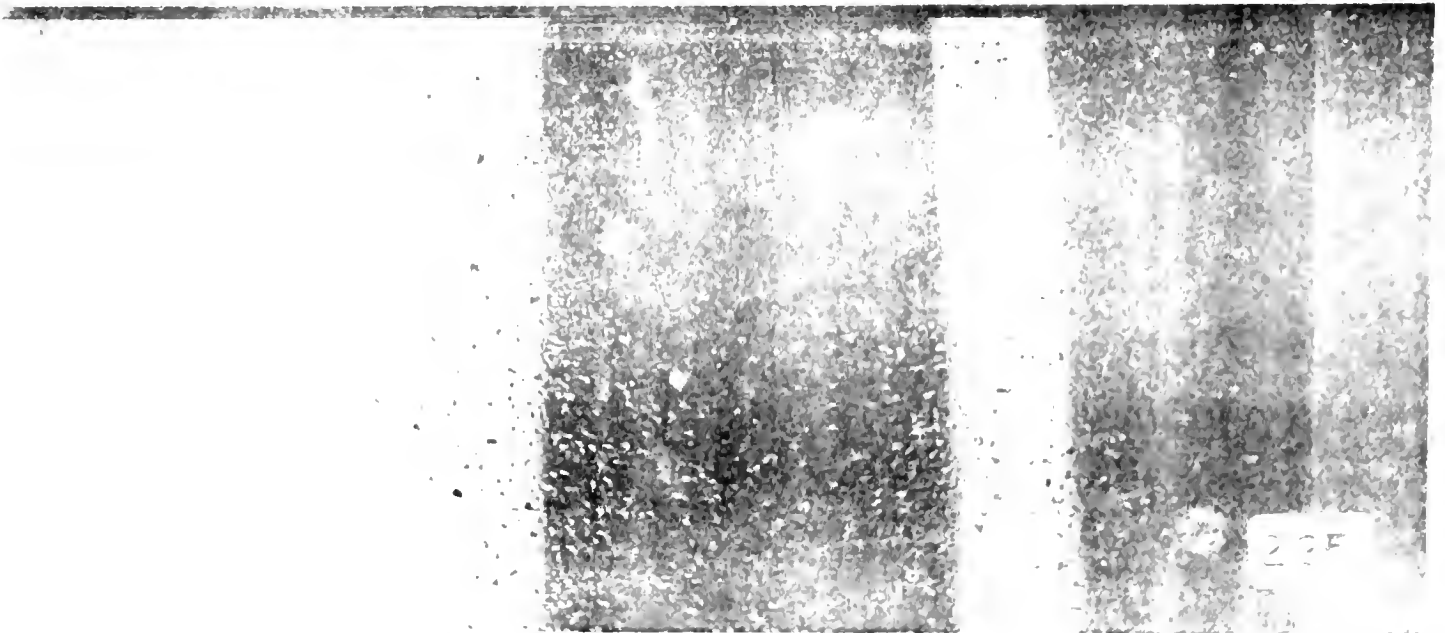


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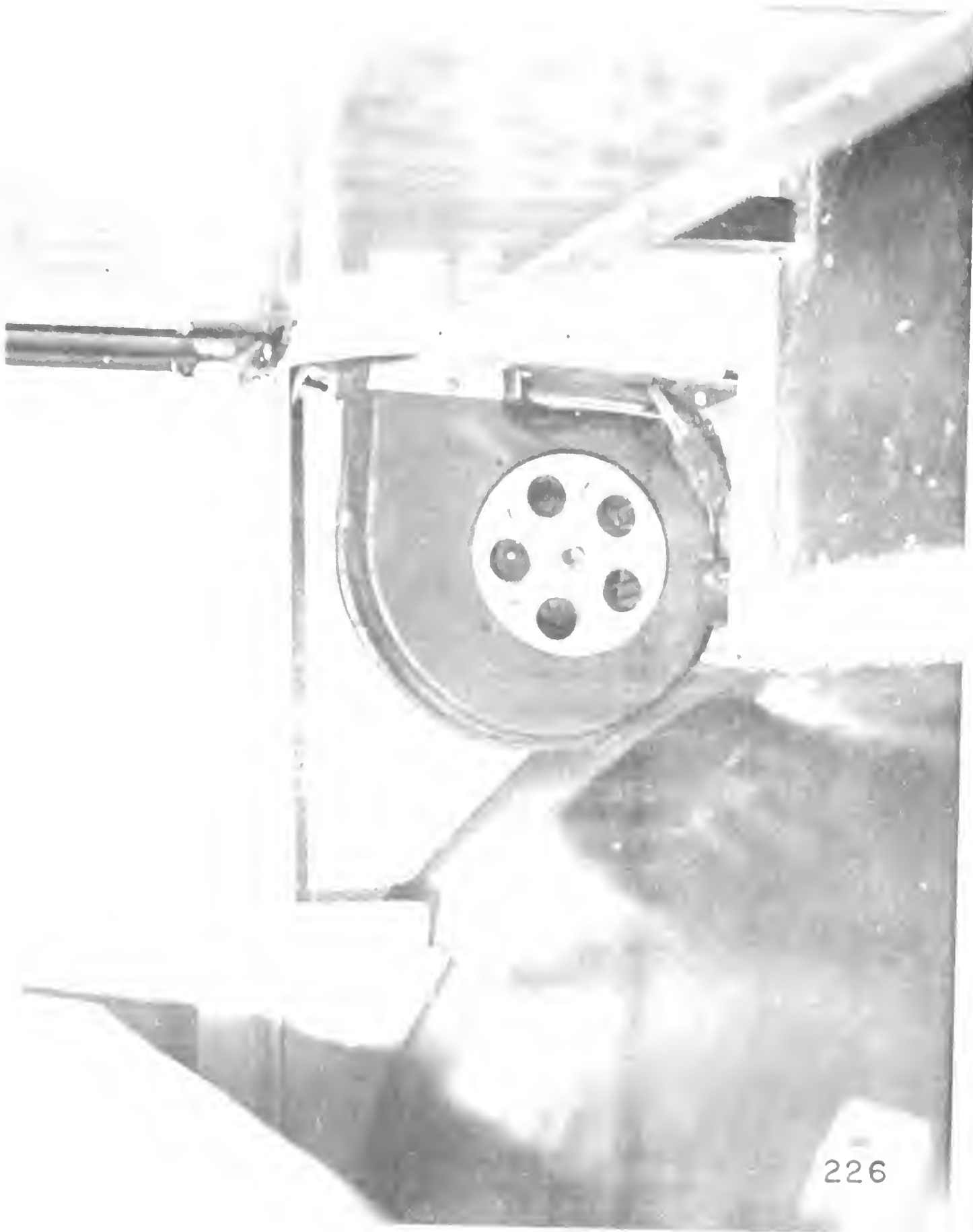


EMERGENCY  
EXIT  
PULL RED  
HANDLE  
DOWN  
AND HOLD  
WHILE  
PUSHING  
WINDOW  
OUT AT  
BOTTOM

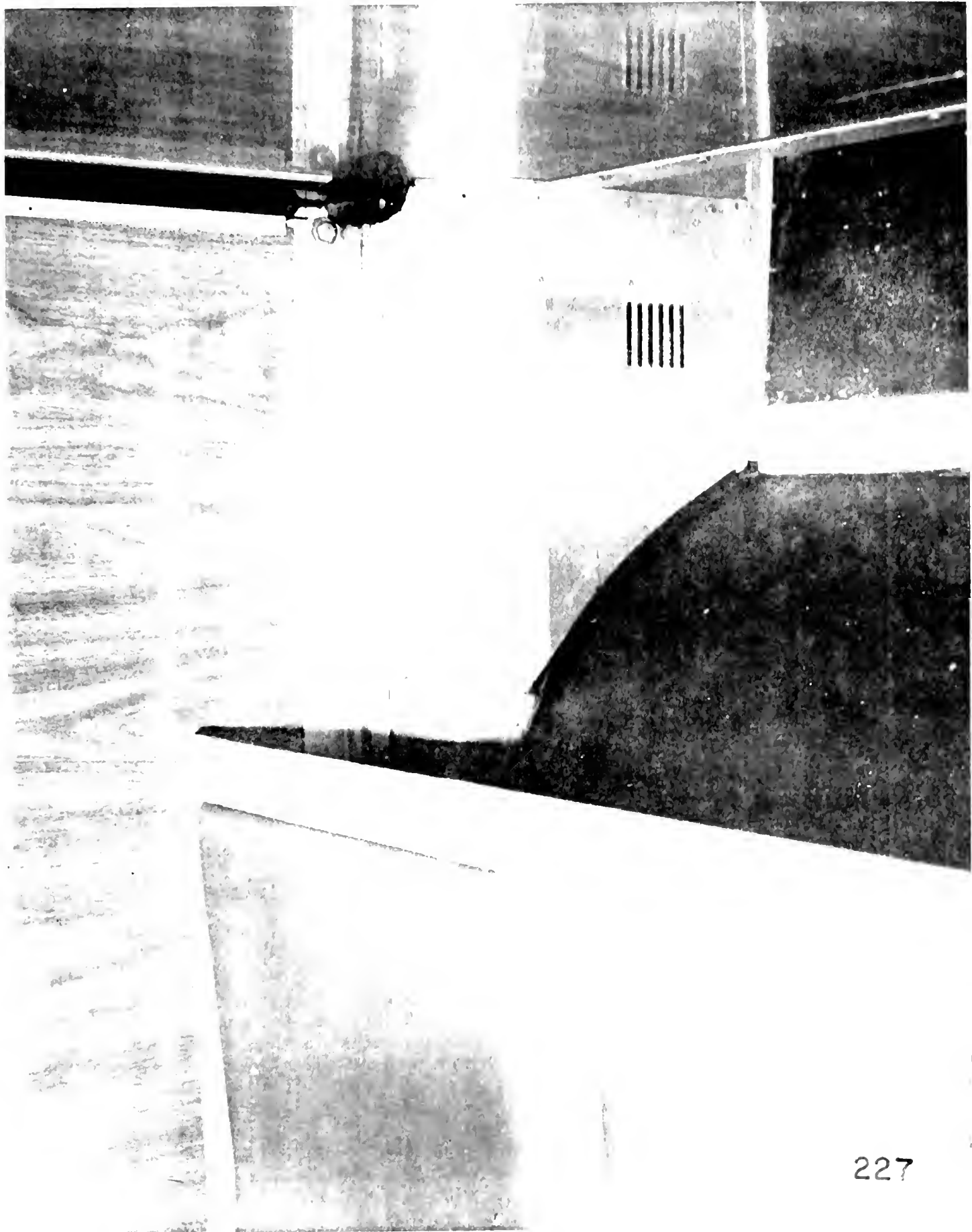














NUMERICAL INDEX OF COMPONENTS

ARTICULATED BUSES - SERIES 7000-7019

ITEM  
NUMBER

PHOTO #2

1. Alcohol evaporator for air system
2. Defroster heater coolant return line
3. Defroster heater coolant supply line
4. Defroster heater core air vent valve
5. Transmission kick down micro switch
6. Accelerator linkage
7. Service brake application valve with transmission  
retarder micro switches
8. Power steering gear assembly

PHOTO #3

9. Air conditioning hour meter
10. Air conditioning ambient temperature switch

PHOTO #4

11. Head lamp voltage resistor

PHOTO #6

12. Horn right side of coach

PHOTO #14

13. Transmission printed circuit control box
14. Turn indicator flasher unit
15. Hot engine coolant warning switch
16. Driver's air tube to console air outlet



NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTOS #16 - 17

- 17. Engine oil filler pipe
- 18. Engine oil level dip stick

PHOTO #18

- 19. Battery equalizer
- 20. Voltage regulator
- 21. Webasto heater control relays and switches
- 22. Engine starter motor relay
- 23. Heater box blower motors 160 amp master circuit breaker

PHOTOS #19 - 20

- 24. Webasto heater controls
- 25. Combustion chamber and water jacket
- 26. Webasto heater fuel filter

PHOTO #36

- 27. Power steering lines from reservoir
- 28. Engine emergency shutdown solenoid
- 29. Manual fuel pump
- 30. Engine fuel filters
- 31. Engine air intake to filters
- 32. Engine air filters
- 33. Engine air filter restriction indicator

PHOTO #38

- 34. Power steering oil reservoir
- 35. Engine coolant filler pipe
- 36. Engine coolant automatic pressure relief valve

PHOTO #44

- 37. Location of A/C engine oil cleaner
- 38. A/C Refrigerant compressor
- 39. A/C Engine final fuel filter
- 40. A/C Refrigerant compressor high head pressure switch
- 41. A/C Maintenance free batteries





NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTO #55

- 42. Front axle brake reservoir
- 43. Front axle brake reservoir
- 44. Drive axle brake reservoir

PHOTO #56

- 45. Leveling valve, right side drive axle

PHOTO #57

- 46. Leveling valve, left side drive axle

PHOTO #59

- 47. Heater coolant return from trailer
- 48. Heater coolant supply line to trailer

PHOTO #61

- 49. Air conditioning alternator
- 50. Air conditioning alternator voltage regulator
- 51. Air conditioning engine fuel pump
- 52. Air conditioning refrigerant hot gas by pass valve
- 53. Air conditioning primary fuel filter
- 54. Air conditioning engine air filter restriction indicator

PHOTOS #66 - 67 - 68

- 55. Refrigerant condenser core
- 56. Air conditioning Perkins engine coolant radiator

PHOTO #69

- 57. Hot engine shutdown switch
- 58. Speed sensor
- 59. Sixty (60) second time delay
- 60. CR2 Solenoid switch
- 61. CR3 Solenoid switch
- 62. PR2 Solenoid switch
- 63. AR1 Relay
- 64. CR1 Relay
- 65. CR4 Relay
- 66. CR5 Relay
- 67. CR6 Relay
- 68. Ten (10) second time delay
- 69. Coolant automatic pressure relief valve



NUMERICAL INDEX OF COMPONENTS  
(Continued)

<u>ITEM NUMBER</u>		<u>PHOTO #71</u>
70.	Coolant reservoir fill cap	
		<u>PHOTO #73</u>
71.	Air line to service brake chamber	
72.	Park brake release air line	
73.	Air line to service brake with psi check point	
		<u>PHOTO #75</u>
74.	Pressure protection valve	
75.	Drive shaft U joint	
76.	Service brake stoplight switch	
		<u>PHOTOS #76- 77</u>
77.	Service brake chamber	
78.	Spring applied park brake chamber	
		<u>PHOTO #78</u>
79.	Left side leveling valve link	
80.	Right side leveling valve link	
		<u>PHOTO #79</u>
81.	Shock absorber, right side drive axle	
		<u>PHOTO #80</u>
82.	Shock absorber, left side drive axle	
		<u>PHOTO #83</u>
83.	Trailer steering drag link	
		<u>PHOTO #86</u>
84.	Trailer, left side air suspension air reservoir	
		<u>PHOTO #88</u>
85.	Leveling valve, right side trailer	
86.	Leveling valve link	
		<u>PHOTO #89</u>
87.	Trailer, right side air suspension reservoir	



NUMERICAL INDEX OF COMPONENTS  
(Continued)

<u>ITEM NUMBER</u>		<u>PHOTO #90</u>
88.	Leveling valve	
89.	Leveling valve link	
		<u>PHOTO #93</u>
90.	Power steering unit	
91.	Power steering pressure check point	
92.	Park brake warning light switch	
93.	Front air pressure warning indicator light switch	
94.	Rear air pressure warning indicator light switch	
		<u>PHOTO #94</u>
95.	Micro switch with actuating ramps	
		<u>PHOTO #95</u>
96.	Driver's light wiring	
		<u>PHOTO #100</u>
97.	Shock mounting bracket, left side tractor	
98.	Access holes to air suspension retaining nuts, left side	
		<u>PHOTO #102</u>
99.	Shock mounting bracket, right side tractor	
100.	Access holes to air suspension retaining nuts, right side	
		<u>PHOTO #104</u>
101.	Fresh and recirculated air inlet opening	
		<u>PHOTO #105</u>
102.	Fuel tank access	
		<u>PHOTO #106</u>
103.	Location of driver's air blower	
		<u>PHOTO #107</u>
104.	Belt driven air compressor	
105.	Belt tension adjusting idler pulley	
106.	Engine coolant fan	
107.	Radiator and fan shroud	



NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTO #108

- 108. Gear driven air compressor
- 00. Power steering pump

PHOTO #109

- 109. Engine crankcase breather
- 110. Engine oil pressure temperature gauge and compartment light switch
- 111. Engine shutdown cylinder
- 112. Final engine fuel filter
- 113. Engine fuel injection pump
- 114. Fuel lines to engine cold start plugs
- 115. Refrigerant low and high pressure lines

PHOTOS #112 - 113

- 116. Transmission breather and fill cap
- 117. Transmission oil level dip stick
- 118. Transmission oil filter

PHOTO #117

- 119. A/C Engine fuel supply line shut-off valve
- 120. A/C Engine fuel return line shut-off valve

PHOTO #118

- 121. Muffler heat baffle

PHOTO #122

- 122. Trailer steering drag link
- 123. Refrigerant suction line
- 124. Refrigerant pressure line
- 125. Cover trailer modulating valve

PHOTO #126

- 126. Tractor, front axle brake load proportioning valve
- 127. Pressure protection valve
- 128. Automatic moisture ejecting valve
- 129. Four circuit protection valve
- 130. One-way check valve
- 131. Supply air reservoir
- 132. Accessory reservoir
- 133. Drive axle brake reservoir





NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTO #127

- 134. Horizontal hinge angle brake switch
- 135. Pressure limiting valve
- 136. Drive axle wishbone support

PHOTO #128

- 137. Tractor modulator valve

PHOTO #129

- 138. Pressure regulator for heater box motor rpm

PHOTO #131

- 139. Trailer axle brake load proportioning valve
- 140. Trailer brake air reservoir
- 141. Trailer suspension air reservoir
- 142. Accessory air reservoir

PHOTO #132

- 143. Marine pump
- 144. Heater box
- 145. Heater box blower motor

PHOTO #133

- 146. Modulating valve trailer
- 147. Fuel tank

PHOTO #134

- 148. Trailer steering linkage reversing lever

PHOTO #135

- 149. Heater supply and return coolant lines
- 150. Refrigerant suction and pressure lines

PHOTO #136

- 151. Cable and turnbuckle for securing bellows to coach

PHOTO #137

- 152. Manual drain valve



NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTO #139

- 153. Muffler location for unloader
- 154. Air compressor unloader valve

PHOTO #140

- 155. Stoplight switch horizontal hinge angle

PHOTO #141

- 156. Drive axle quick release relay valve, right side
- 157. Drive axle quick release relay valve, left side
- 158. Trailer brake control valve
- 159. Drive axle brake loading proportioning valve

PHOTO #142

- 160. Air filter main air line
- 161. Pressure charging valve

PHOTO #147

- 162. Rod assembly locating
- 163. Arm locating

PHOTO #148

- 164. Warning and brake application ramps
- 165. Warning switch
- 166. Brake application switch
- 167. Ball joint assembly carrier

PHOTO #150

- 168. Junction box, electrical

PHOTO #151

- 169. Battery box
- 170. Voltage regulator compartment

PHOTO #153

- 171. Alternator
- 172. 105° temperature switch



NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTO #154

- 173. Speedometer cable drive
- 174. Transmission oil heat exchanger
- 175. Transmission assembly

PHOTO #155

- 176. Oil pressure gauge switch
- 177. Starter protection oil switch
- 178. Engine turbo charger
- 179. Engine oil heat exchanger
- 180. Engine starting motor

PHOTO #156

- 181. Muffler
- 182. Tailpipe

PHOTO #157

- 183. Air compressor unloading valve muffler

PHOTO #158

- 184. Service brake stoplight switch

PHOTO #159

- 185. Engine cold start plugs

PHOTOS #161 - 162

- 186. Coolant temperature gauge switch
- 187. Radiator fan control switch
- 188. Coolant overheat warning switch
- 189. Engine thermostat
- 190. Engine compartment light
- 191. Engine oil filter

PHOTO #164

- 192. Grad-U-stat

PHOTO #169

- 193. Sign curtain control motor
- 194. Motor control switch



NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTO #177

- 195. Suspension nut undercover
- 196. Shock bracket cover

PHOTO #190

- 197. Front destination sign curtain motor
- 198. Voice page speaker

PHOTO #191

- 199. Door master switch

PHOTO #192

- 200. Passenger chime signal switch

PHOTO #194

- 201. Stepwell and curb light
- 202. Door control mag valve
- 203. Stepwell and curb lights
- 204. Door operating cylinder
- 205. Emergency door opening air release valve

PHOTO #195

- 206. Passenger chime and switch

PHOTO #196

- 207. Cam switch

PHOTO #197

- 208. Passenger signal light indicating doors unlocked

PHOTO #198

- 209. Forward door leaf operating cylinder
- 210. Sensitive edge pressure switch
- 211. Sensitive edge switch
- 212. Stepwell and curb light switch
- 213. Mag valve
- 214. Stepwell and curb light switch
- 215. AFT door leaf operating cylinder
- 216. By-pass relay
- 217. Door opening hold relay





NUMERICAL INDEX OF COMPONENTS  
(Continued)

ITEM  
NUMBER

PHOTO #198 - Cont'd.

- 218. Touch bar relay
- 219. Sensitive edge alarm relay
- 220. Alarm cut-out relay
- 221. Sensitive edge relay
- 222. Door fully open relay
- 223. Door fully open relay
- 224. Emergency door opening release valve

PHOTO #208

- 225. Park valve emergency release valve

PHOTO #209

- 226. Silent alarm switch
- 227. Entrance door dump valve
- 228. Fire extinguisher bracket
- 229. Exit door sensitive edge alarm buzzer
- 230. Turn indicator switch

PHOTO #211

- 231. Engine emergency shutdown switch
- 232. A/C engine start switch
- 233. Driver's ceiling light switch
- 234. Interior light switch
- 235. Passenger stop signal switch
- 236. Engine fast idle switch
- 237. Exit door open by-pass switch
- 238. Entrance and exit door leaf control switch
- 239. Webasto heater indicator light
- 240. Warning buzzer for, engine low oil pressure, low air pressure  
engine overheat and hinge angle
- 241. Park brake release valve
- 242. Driver's air flow ball
- 243. Entrance and exit door control valve

PHOTO #213

- 244. Adjustable air flow heat duct
- 245. Head lamp dimmer switch
- 246. Speedometer cable



ARTICULATED COACHES - SERIES 7000-7019

(PHOTO INDEX)

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