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WAR DEPARTMENT TECHNICAL MANUAL

SHOVEL, CRAWLER, GASOLINE, ¾-CU YD, WITH ATTACHMENTS, LIMA, MODEL PAYMASTER-34

(ENGINE: CHRYSLER, MODEL C-36-520)

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OPERATION, MAINTENANCE AND REPAIR INSTRUCTIONS

WAR DEPARTMENT • 24 JANUARY 1945

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Washington 25, D. C., 24 January 1945

TM 5-1312: Shovel, Crawler, Gasoline, ¾ cu yd, with Attachments, Lima, Model Paymaster-34 (Engine: Chrysler, Model C-36-520), is published for the information and guidance of all concerned.

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By Order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff.

Official:

J. A. ULIO,
Major General,
The Adjutant General.

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(For explanation of symbol see FM 21-6)

CONTENTS

Shovel, Crawler, Gasoline, ¾-Cu. Yd., With Attachments, Lima, Model Paymaster-34

Contents

PART ONE

INTRODUCTION

SECTION I

General

1. SCOPE.

a. This manual is published for the information and guidance of the personnel to whom this equipment is assigned. It contains information pertaining to the operation and maintenance of the equipment, as well as descriptions of the major units and their functions in relation to the other components of the equipment. These instructions, which apply only to the Lima Paymaster Model 34 convertible power shovel, dragline, clamshell, and crane, are arranged in five parts as follows: Part 1, Introduction; Part 2, Operating Instructions; Part 3, Maintenance Instructions; Part 4, Auxiliary Equipment; and Part 5, Repair Instructions.

b. Technical manuals and other publications applicable to the materiel covered by this manual are listed in the reference section at the end of this book.

2. RECORDS.

a. Forms for keeping records of these machines were not available at time this manual went to press.

SECTION II

Description and Data

3. DESCRIPTION.

a. General. The machine described in this manual is known as Shovel, Power, Crawler-mounted, Gasoline, ¾-cubic yard Lima Paymaster Model 34. By changing the booms, buckets, cables, and related equipment, the machine can be converted to dragline, clamshell, or crane operation (figs. 1, 2, 3, and 4). By interchanging the dipper and buckets, the machine will handle solid earth, loose rock, gravel, sand, coal, cinders, ashes, etc. When the hook block is installed in place of the buckets, the machine becomes a crane for handling steel girders, timbers, boxes, crates, or bundles. The machine travels either forward or backward under its own power and on its own track much like a tractor or tank.

b. Power Plant. The machine is powered by a Chrysler, Model C-36-520, 8-cylinder, L-head, liquid-cooled engine mounted on the rear of the rotating base. The engine fuel tank is located directly underneath the engine, where it is protected on all sides by the cast iron counterweight. Engine power is transmitted to the main operating shafts by means of a silent roller chain housed in an oiltight chain case.

c. Identification. The Paymaster Model 34 convertible machine described in this manual may be identified as follows:

(1) The front sections of the cab slope at an angle which gives a streamlined appearance to the entire machine.

(2) The operator's compartment is in left front corner of cab. In some machines of other manufacture, the operator's compartment is in the right-hand side of cab.

(3) The right side of cab is cut back, allowing uninterrupted vision for operator. The electric plant is mounted where cab is cut back.

(4) The standard, or low gantry is used. On some machines of this make and model, the high, back-hitch gantry is used.

(5) The standard one-piece counterweight is used on the machine described in this manual. Some Paymaster Model 34 machines have additional counterweights attached to the standard counterweight.

(6) The two front floodlights are located at lower front of cab. On some other machines, the floodlights are located near the top of the cab.

(7) An identification plate, including the manufacturer's serial number, is located on the left front of the rotating base and is visible from the ground in front of the machine.

Description and Data

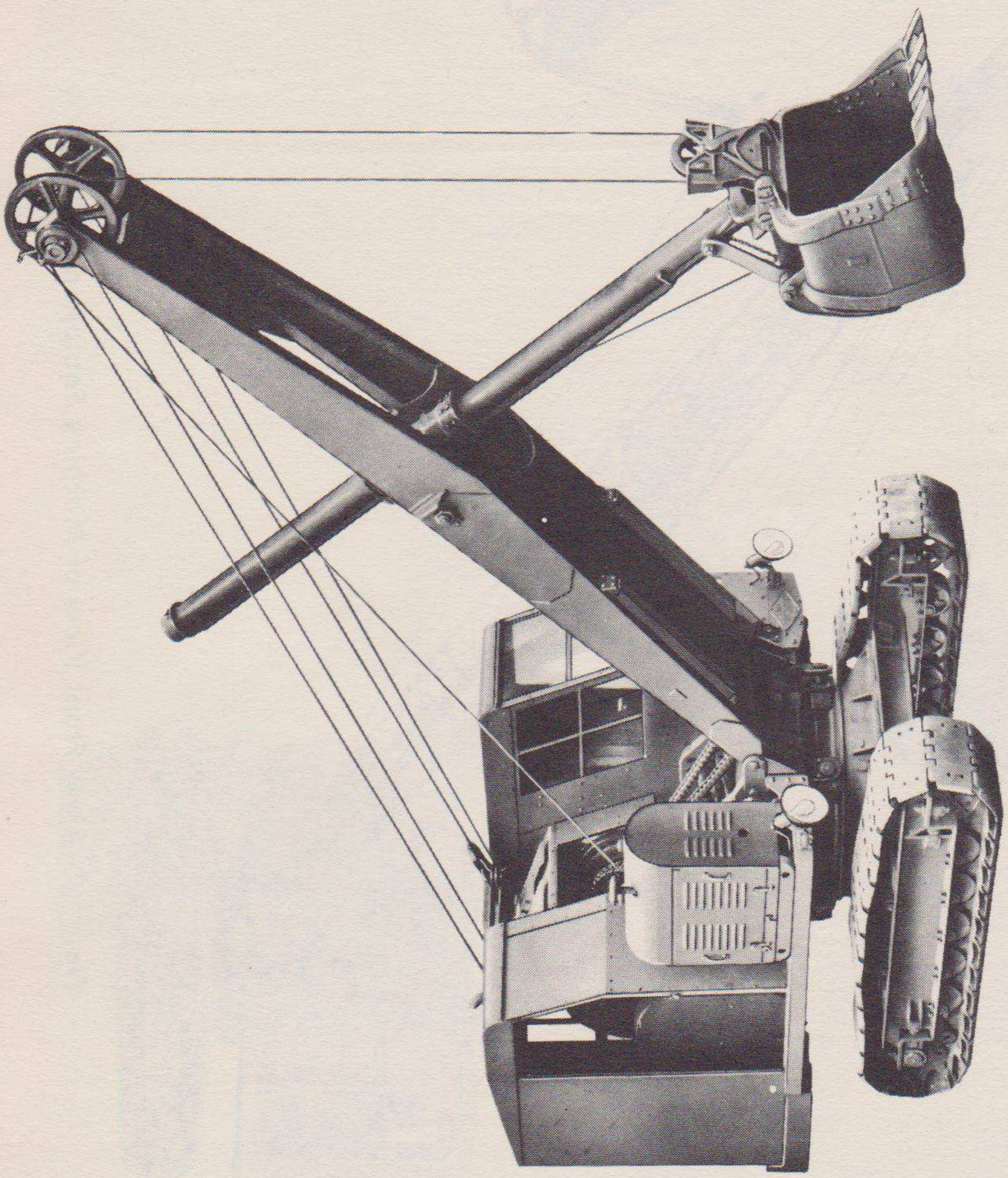


Figure 1—Right Front View of Machine Equipped as Shovel

Shovel, Crawler, Gasoline, ¾-Cu. Yd., With Attachments,
Lima, Model Paymaster-34

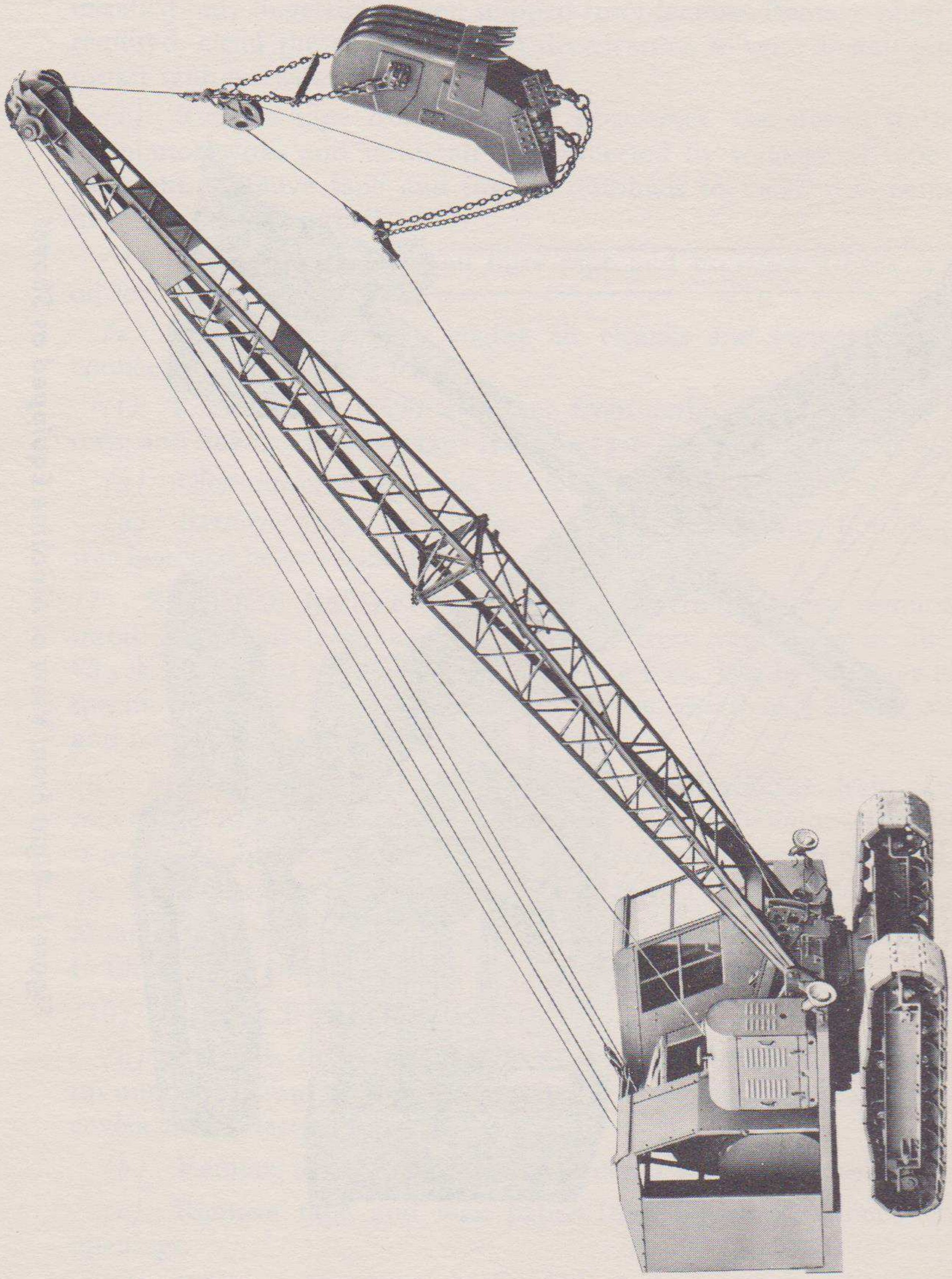


Figure 2—Right Front View of Machine Equipped as Dragline

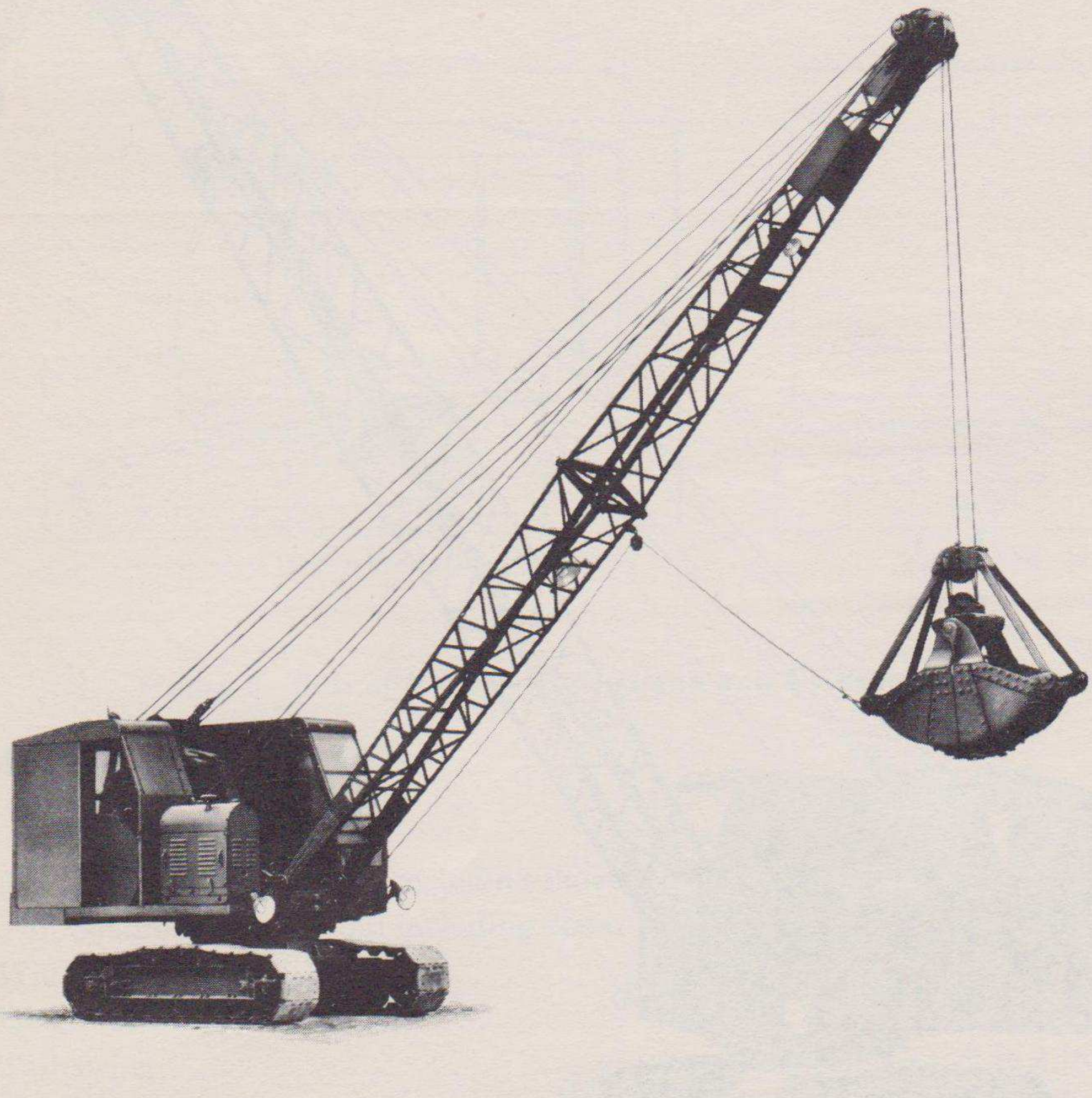


Figure 3—Right Front View of Machine Equipped as Clamshell

Figure 4—Right Front View of Machine Equipped as Crane

d. Differences in Models. This manual covers machines bearing serial numbers 1918 to 2417 inclusive and 2434 to 2493 inclusive, which are of the same design. The 60 machines bearing serial numbers 2434 to 2493 inclusive are provided with clamshell and dragline buckets. The 500 machines bearing serial numbers 1918 to 2417 do not have clamshell and dragline buckets. Machines bearing serial numbers 1918 to 2077 inclusive are provided with dippers manufactured by Lima Locomotive Works, Inc.; while machines bearing serial numbers 2078 to 2417 inclusive and 2434 to 2493 inclusive have dippers manufactured by Pettibone Mulliken Corporation.

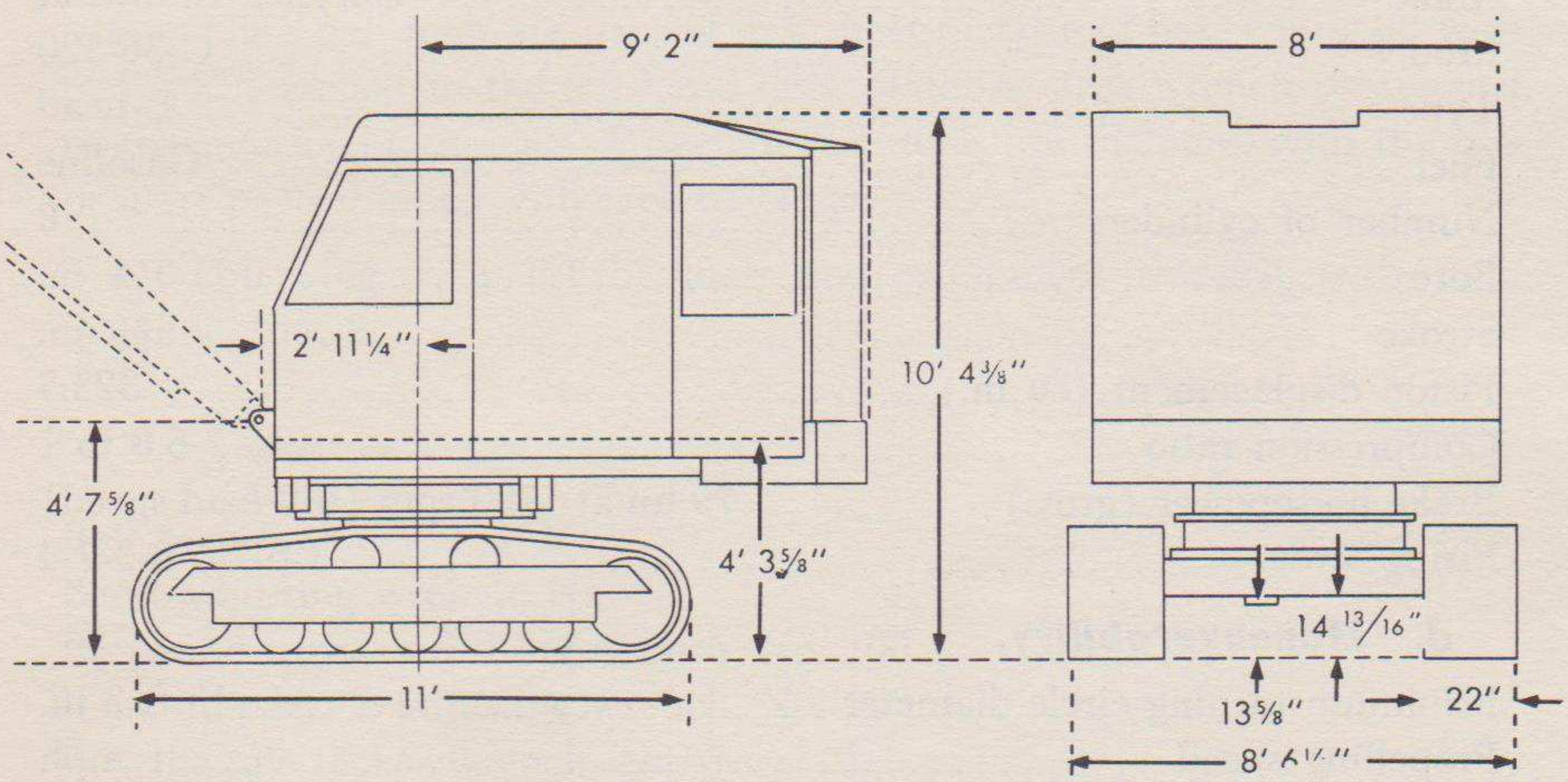


Figure 5—Cab and Truck Dimensions and Clearances

4. TABULATED DATA.

a. General (fig. 5).

Maximum over-all length, including shovel boom (from rear of counterweight to and including boom point sheave)	30 ft 1¼ in.
Width of cab	8 ft 0 in.
Height of cab	10 ft 4⅜ in.
Tail swing	9 ft 2 in.
Boom foot pin to ground	4 ft 7⅝ in.
Boom foot pin to center of rotation	2 ft 11¼ in.
Road clearance, under axle	14 13/16 in.
Road clearance, under gear case	13⅝ in.
Length of crawlers	11 ft 0 in.
Width of crawlers (over-all outside width)	8 ft 6½ in.
Width of crawler treads	22 in.

b. Weights (approximate).

Working weight:

Equipped as shovel	42,300 lb
Equipped as dragline (without bucket)	38,200 lb
Equipped as dragline (with bucket)	40,400 lb
Equipped as clamshell (without bucket)	38,000 lb
Equipped as clamshell (with bucket)	41,500 lb
Equipped as crane	38,400 lb

c. Engine Specifications.

Make	Chrysler Industrial
Model	C-36-520
Type	L-head
Fuel	Gasoline
Number of cylinders	8
Bore	3¼ in.
Stroke	4⅞ in.
Piston displacement (cu in.)	323.5
Compression ratio	6.8 to 1
Brake horsepower (gross)	79 hp at 1700 rpm (full load speed)
Firing order	1-6-2-5-8-3-7-4

d. Maneuverability.

Minimum turning circle diameter	15 ft 3 in.
Propelling speed	1 mph
Maximum grade ascending ability	30%
Maximum grade descending ability	30%

e. Operating Speeds.

Swing speed of rotating base	4.5 rpm
Hoist speed (dragline and clamshell)	170 fpm
Crowd-out speed (shovel)	105 fpm
Retract speed (shovel)	178 fpm
Boom hoisting time (from horizontal to 10 ft radius)	20 seconds

f. Capacities.

Engine fuel tank (gasoline)	50 gal
Engine cooling system (water)	9 gal
Electric plant fuel tank (gasoline)	5 gal
Engine crankcase	6 qt
Electric plant engine crankcase	7 qt
Truck gear case	8 qt
Reversing shaft gear case	7 gal
Chain case (power take-off)	8 qt

SECTION III

Tools, Equipment, and Spare Parts

5. TOOLS AND EQUIPMENT.

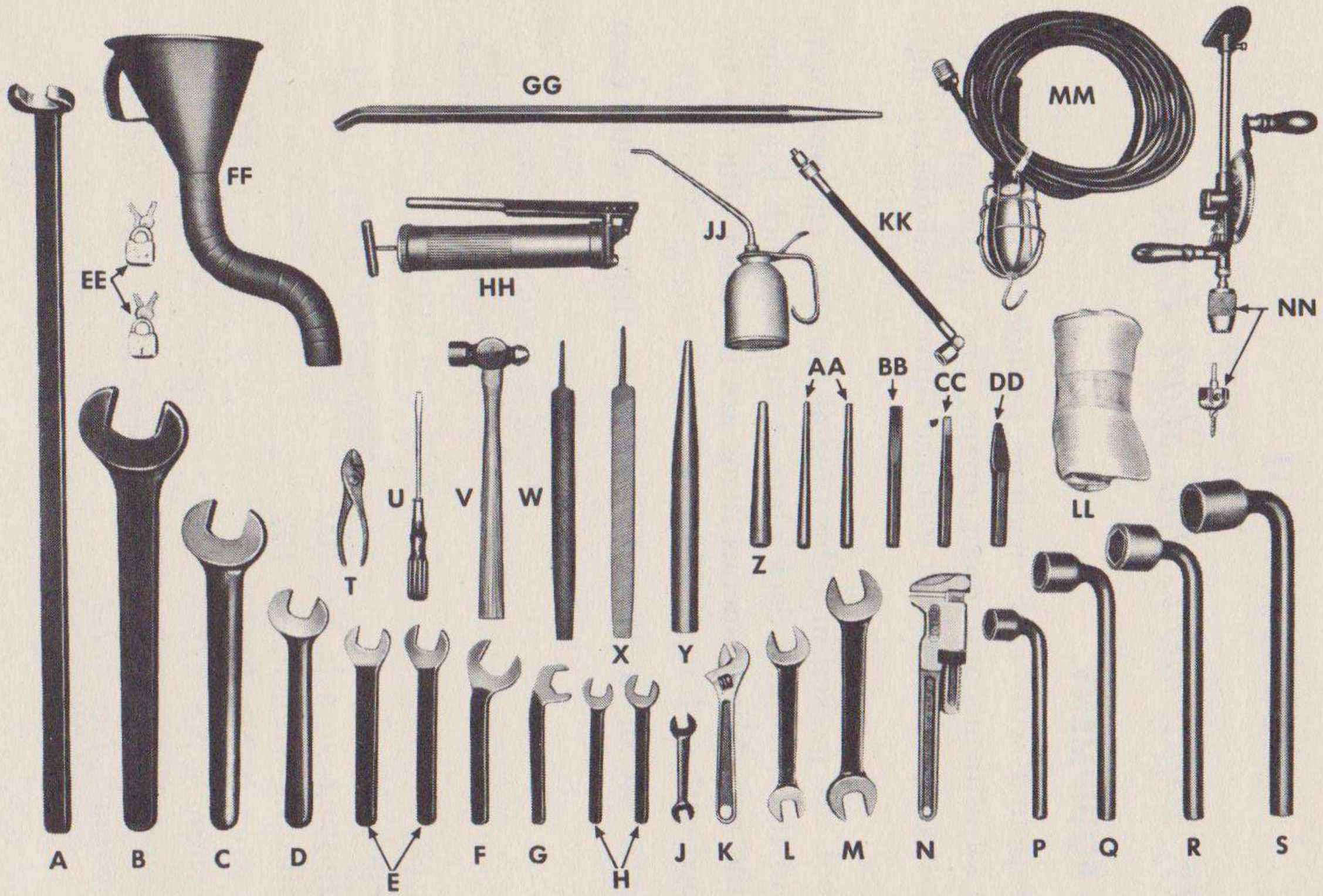
a. The tools supplied with each machine include those required to make all operating adjustments and minor repairs. The equipment includes such items as grease gun, oiler, special gasoline funnel, and electric light extension cord.

b. The small tools are packed in a sheet metal tool box, equipped with padlock, attached to the left-hand deck plate. A large wrench is attached to the interior of the cab. Miscellaneous items are included with the box of spare parts shipped with each machine.

c. Following is a list of tools and equipment shipped with each machine (fig. 6).

Tool	Number Carried
Ball peen hammer, 1¾ lb	1
Band adjusting wrench, No. 7	1
Band and toggle adjusting wrench, No. 100	2
Band and toggle adjusting wrench, No. 102	2
Bent handle socket wrench, No. 5	1
Bent handle socket wrench, No. 273-A	1
Bent handle socket wrench, No. 276-A	1
Bent handle socket wrench, No. 277-A	1
Chisel (cape)	1
Chisel (flat)	1
Chisel (gage)	1
Cleaning rags (lb)	1
Clutch adjusting wrench	1
Crescent wrench	1
Double-end wrench, No. 26	1
Double-end wrench, No. 34	1
Double-end wrench, No. 39	1
Drift pin, No. SA-3	2
Drift pin, No. SB-3	2
Drift pin, No. 901 (for tread)	1
Drill (brake lining)	1
Engineer's wrench, No. 12	1
Engineer's wrench, No. 104	1

A—REVERSE GEAR HOUSING WRENCH
B—ENGINEER'S WRENCH NO. 104
C—ENGINEER'S WRENCH NO. 12
D—OPEN-END WRENCH NO. 9
E—BAND AND TOGGLE ADJUSTING WRENCH NO. 102
F—BAND ADJUSTING WRENCH NO. 7
G—CLUTCH ADJUSTING WRENCH NO. 119
H—BAND AND TOGGLE ADJUSTING WRENCH NO. 100
J—DOUBLE-END WRENCH NO. 26
K—CRESCENT WRENCH, 10"
L—DOUBLE-END WRENCH NO. 34
M—DOUBLE-END WRENCH NO. 39
N—MONKEY WRENCH, 15"
P—BENT HANDLE SOCKET WRENCH NO. 273-A
Q—BENT HANDLE SOCKET WRENCH NO. 276-A
R—BENT HANDLE SOCKET WRENCH NO. 277-A
S—BENT HANDLE SOCKET WRENCH NO. 5
T—SLIP JOINT PLIERS, 6"
U—SCREWDRIVER, 10"
V—BALL PEEN HAMMER, 1¾ LB.
W—HALF-ROUND FILE, 14"
X—MILL FILE, 14"
Y—DRIFT PIN (TREAD) NO. 901
Z—DRIFT PIN NO. SB-3
AA—DRIFT PIN NO. SA-3
BB—FLAT CHISEL
CC—CAPE CHISEL



DD—GOUGE CHISEL
EE—PADLOCK
FF—GAS TANK FUNNEL
GG—PINCH BAR
HH—GREASE GUN
JJ—HYDRAULIC PUMP OILER
KK—GREASE GUN HOSE
LL—CLEANING RAGS, 1 LB.
MM—EXTENSION CORD
NN—COUNTERSINK DRILL

Figure 6—Tools and Equipment

Tool	Number Carried
Extension cord	1
File (14-in. half round)	1
File (14-in. mill)	1
Gas tank funnel	1
Grease gun	1
Grease gun hose	1
Monkey wrench	1
Oiler (hydraulic pump)	1
Open-end wrench, No. 9	1
Padlock	2
Pinch bar	1
Pliers (6-in.)	1
Reverse gear housing wrench, No. 107	1
Screwdriver (10-in.)	1

6. SPARE PARTS.

a. A set of spare parts is shipped along with each machine. These items are for field replacement of parts most likely to become unserviceable through breakage or wear. The set of spare parts should be kept complete by ordering new parts to replace those used.

b. The set of cable wedges and the extra shipper shaft shims are packed in the tool compartment of the counterweight. All other spare parts are shipped in a spare parts box provided especially for this purpose. Following is a list of spare parts shipped with each machine:

Item	Part Number or Size	Number Carried
TRUCK ASSEMBLY		
Tread	103SA209	1
Pin	101SA210	1
Rivet, countersunk, ½ x 2½ in.	LL-725	4
Link, chain	A1237	2
Pin, keeper	(for A1237)	2
SHOVEL BOOM ASSEMBLY		
Link, chain	1613-A	6
Wedge	992SA952	1
DIPPER ASSEMBLY		
Wedge	TP13	4
Point, tooth	161756	4
Insert, latch keeper	221SA152	1

Shovel, Crawler, Gasoline, ¾-Cu. Yd., With Attachments, Lima, Model Paymaster-34

Item	Part Number or Size	Number Carried
DIPPER DOOR ASSEMBLY		
Bolt, with nut	LL-35	1
Pin	221SA149	1
Bar, latch	221SA148	1
Rollers	221SA967	4
DIPPER TRIP ASSEMBLY		
Washer, spring	361SA117	1
HOOK BLOCK ASSEMBLY		
Clamp, cable	Std. ⅝ in.	1
SHIPPER SHAFT ASSEMBLY		
Bar, wearing	251SA122	4
Screw	251SB120	8
Shims, wearing bar, short	251SA119	48
Shims, wearing bar, long	252SA148	12
Shims, wearing bar, long	252SB148	12
ROTATING BASE ASSEMBLY		
Pin, boom foot	342SA372	1
Pin	521SB707	1
Fitting, lubricating	A-1186	1
HOIST DRUM SHAFT ASSEMBLY		
Wedge, cable	991SA102	2
Wedge	991SB1	1
BOOM HOIST DRUM SHAFT ASSEMBLY		
Wedge, cable	991SA126	1
RETRACT CLUTCH ASSEMBLY		
Nut, sleeve	431SA913	1
Nut	431SB915	1
Eyebolt	431SA912	1
Pin	431SA730	1
Eyebolt	431SB912	1
Nut	431SA915	1
Pin	431SB730	1
Spring	431SA948	1

Item	Part Number or Size	Number Carried
HOIST CLUTCH ASSEMBLY		
Pin	431SN110	1
Clevis	431SA323	1
Nut	431SA716	1
Nut, adjusting	431SA324	1
Nut	431SB716	1
Clevis	432SA147	1
Eyebolt	431SA733	1
Spring, release	431SA118	1
Nut	431SA732	1
Socket, adjusting	431SA720	1
Pin	431SB714	1
REVERSING CLUTCH ASSEMBLY		
Pin	432SB193	1
Pin, cotter	⅛ x 1 in.	1
Clevis	432SA186	1
Nut, adjusting	432SB185	1
Nut, slotted	¾ in. std	1
Pin	432SA184	1
Pin	432SB194	1
Nut, adjusting	432SA185	1
Spring	432SA299	1
CONICAL ROLLER ASSEMBLY		
Shim (⅛ in.)	462SC167	4
Shim (1/16 in.)	462SD167	4
HOIST CLUTCH BAND ASSEMBLY		
Rivet, brass	472SD139	60
Lining, clutch band	473SC110	2
Rivet, flathead	472SA139	18
Rivet, brass	472SF139	12
BOOM HOIST AND CHAIN CROWD RETRACT CLUTCH BAND ASSEMBLY		
Rivet	472SA139	4
Rivet	472SE139	6
Rivet	472SH139	12
Lining, clutch band	473SC113	1
Rivet	472SD139	6

Shovel, Crawler, Gasoline, 3/4-Cu. Yd., With Attachments, Lima, Model Paymaster-34

Item	Part Number or Size	Number Carried
BOOM HOIST BRAKE BAND ASSEMBLY		
Rivet	472SA139	4
Rivet	472SJ139	30
Lining, boom hoist brake	503SC117	1
HOIST BRAKE BAND ASSEMBLY		
Rivet	472SA139	16
Lining, hoist brake band	503SC126	2
Rivet	472SJ139	80
GANTRY FRAME ASSEMBLY		
Wedge	992SA102	1
HOIST BRAKE LEVER ASSEMBLY		
End rod	822SB102	2
Nut	821SB104	4
Spring	822SA828	2
Nut	821SA104	4
End rod	822SA102	2
Pin	821SB748	8
ROPE, wire, 3/8 in. by 45 ft long (6 by 42)		1
SHOVEL DIPPER BAIL		
Washer, thrust	201SA903	2
BOOM ASSEMBLY		
Bolt, boom splice	LL-47	12
ADDITIONAL BOOM PARTS		
Socket, cable	521SA27	1
Pin	821SB739	1
Wedge	992SA102	1
Pins, cotter	1/8 x 2 1/4 in.	50
Pins, cotter	3/8 x 3 1/2 in.	25
Pins, cotter	3/16 x 2 3/4 in.	12
Pins, cotter	5/16 x 4 in.	12
Pins, cotter	1/4 x 2 1/4 in.	12
Pins, cotter	1/2 x 3 1/2 in.	12
Fitting, lubricating	1/8 in.	6
Fitting, lubricating	1/4 in.	12
Cap screw, USS hex head	5/16 x 1 in.	6
Cap screw, USS hex head	3/8 x 1 in.	6
Cap screw, USS hex head	1/2 x 1 in.	6

Item	Part Number or Size	Number Carried
Cap screw, USS hex head	½ x 1¼ in.	6
Cap screw, USS hex head	⅝ x 1 in.	6
Wedge, cable (set of 4)	992-SA-276	1
Bolts, N.C.	½ x 2 in.	12
Bolts, N.C.	¾ x 4½ in.	6
Bolts, N.C.	⅝ x 2½ in.	6
Lock washer	⅜ in.	12
Lock washer	¼ in.	12
Lock washer	½ in.	50
Lock washer	¾ in.	50
Lock washer	⅝ in.	50
ELECTRIC PLANT, KOHLER		
(Model EH, 1500W)		
Valve, exhaust	KOH-S-120	1
Spring, valve	KOH-A-530	2
Key, spring retainer	KOH-A-532	2
Gasket, cylinder head	KOH-A-649	2
Gasket, cylinder head cover	KOH-A-653	1
Gasket, water outlet and inlet	KOH-A-656	1
Plug, spark, Champion	CP-7	8
Gasket, gas strainer	AC-854003	1
Belt, fan	KOH-5446	2
Brush and spring	BO-BR-529	1
Shim	BO-WA-107	2
Bracket (BK-566)	BO-BK-566	1
Lever, with point and spring	BO-LE-5236	1
Fuse, 25 amp.	KOH-A-804	2
Spring	KOH-D-948	1
Retainer, valve spring	KOH-A-531	1
Diaphragm, fuel pump	AC-855035	1
Brush, generator	KOH-D-742	4
ENGINE, CHRYSLER		
(Model C-36-520)		
Belt, fan and generator	928408	2
Plug, spark, Auto-Lite, A5	AL-A5	8
Filter, oil, cartridge, w/gasket	DX-JC-25-28	2
Gasket, fuel pump strainer bowl	AC-1523128	1
Screen, fuel pump	AC-1537193	1
Belt, governor	1070295	2

PART TWO

OPERATING INSTRUCTIONS

SECTION I

General Information on Operation

7. SCOPE.

a. Section 1 contains information for the guidance of the personnel responsible for the operation of this equipment.

b. Section II contains information on services required to prepare the equipment for operation.

c. Section III describes the various controls and instruments used to operate the equipment.

d. Section IV contains information on starting, stopping, propelling, and operating the equipment.

e. Sections V and VI cover operation of auxiliary equipment and operation under unusual conditions.

SECTION II

Service on Receipt of Equipment

8. SERVICING NEW AND USED MACHINES.

a. New Machines. New machines for overseas service are shipped without booms. Machines for domestic service usually are equipped for shovel operation. In addition to the main machine, the crane boom, hook block, fairlead, and box of spare parts are loaded on one flat car. To unload the machine and various pieces of equipment, it is first necessary to remove wood blocking and steel anchoring.

(1) UNLOADING FROM CAR.

(a) In case heavy equipment capable of lifting 20 tons is available, the machine can be lifted directly from the car.

(b) If lifting equipment is not available, the machine can be propelled from the car under its own power. Always propel machine with boom end first, regardless of whether or not boom is attached. When thus propelled from car, a suitable ramp must be available. If it is not, a temporary ramp can be built with railroad ties. Block under sides of car to prevent swaying.

CAUTION

Do not attempt to start engine or propel machine before completing the services outlined below.

(2) CHECK FOR MISSING PARTS. Before unloading new equipment from car, use packing list to check equipment for missing or damaged parts. If parts are missing, or if equipment is damaged because blocking has failed to keep it from shifting, notify officer in charge.

(3) REMOVE ANCHOR RODS AND BLOCKING. Before unloading the machine, remove all steel anchor rods, wires, and wood blocking.

(4) REMOVE WOOD CRATING AND PAPER TAPE.

(a) Remove the protective plywood crating from cab windows. Clean windows.

(b) Remove all tape and wax paper from edges of cab doors, windows, and openings.

(5) REMOVE TAPE FROM CLUTCH BANDS. Remove all tape from ends of the various clutch bands. These are the small, waterproof pieces of tape applied to ends of bands for protection of drums when clutches are processed for shipment. Clutches will not operate until this tape is removed.

(6) SERVICE ENGINE.

(a) When the machine is shipped from the factory, no heavy com-

pounds are applied which would interfere with operation. A light coating of thin oil is sprayed into the engine head through spark plug openings. This may cause excessive smoke when engine is started, but will not harm working parts.

(b) Tighten spark plugs and attach ignition wiring. Spark plugs are installed only fingertight when shipped from factory. Remove plugs and, if required, clean the electrodes with dry-cleaning solvent. Install plugs and install ignition wires.

(c) Remove tape from electrical accessories. Generator, starter, and distributor wires and terminals are protected by waterproof tape during shipment. Remove tape and inspect terminals to make sure connections have not been disturbed.

(d) Remove tape from oil filler pipe and breather. Check crankcase oil level.

(e) Remove tape from engine air cleaner and connections. Inspect connections for possible leaks.

(f) Remove wax paper and tape from carburetor, carburetor control rods, and linkage. Remove tape from fuel pump, fuel lines, and connections.

(g) Close drain plug in side of engine block.

(h) Remove green wax paper from fan belt. Adjust fan belt, which was loosened before shipment.

(7) SERVICE BATTERY. Remove tape from battery terminals and install cables on terminals. Remove tape from vent holes in filler caps. Check to see that water covers plates by ⅜ inch. Use hydrometer to check specific gravity. Correct reading will be not less than 1.225 at any time and not less than 1.280 in freezing weather.

(8) SERVICE COOLING SYSTEM. Close radiator drain plug. Remove tape from radiator cap; remove cap and fill radiator with soft water if available. In freezing weather, add antifreeze solution as required.

(9) FILL FUEL TANK. Remove tape from fuel tank filler cap. Examine vent holes in filler pipe. Use special funnel supplied with tool kit to fill tank. Be careful to keep dust and dirt from gasoline.

(10) SERVICE ELECTRIC PLANT.

(a) Remove the wood shipping box from electric plant by lifting it up and away from electric plant. Then remove the large paper bag which covers entire electric plant.

(b) Remove the two sections from sides of the metal housing.

(c) Remove tape and wax paper from all wires, connections, and openings.

(d) Inspect exterior oil lines, ignition wires, and controls. Check fan belt for proper tension.

(e) Fill fuel tank using gasoline which is free from lead. Make sure fuel reaches and fills fuel pump bowl.

(11) LUBRICATE ENTIRE MACHINE. Refer to Lubrication Orders and Instructions (Part Three, sec. III).

(12) CONVERT MACHINE IF NECESSARY.

(a) When shipped, the new machine is equipped for shovel operation. Shovel front end equipment consists of shovel boom, dipper handle, dipper, crowd and retract chains, and all necessary cables. When the machine is to be operated as a shovel, no further setting up or assembling of equipment will be necessary.

(b) If machine is to be operated as a dragline, clamshell, or crane, instead of shovel, it will be necessary to convert the entire front end and control equipment. This change-over operation requires at least two men as well as heavy lifting equipment. Detailed instructions on changing front end equipment are covered in paragraphs 56 through 60.

b. Used Machines. When a used machine is received and is being serviced for operation, follow the general instructions outlined in subparagraph **a** above.

(1) During inspection procedure, look for missing, broken, bent, or worn parts.

(2) When lubricating the machine, make sure that fittings and grease lines are not broken, bent, or obstructed. Follow detailed Lubrication Orders and Instructions (Part Three, sec. III).

(3) After starting the engine and main machinery, listen for unusual noises which might be caused by broken or excessively worn parts, such as bearings or bushings.

(4) Before operating the booms, buckets, and dipper, inspect cables for wear and broken strands. Make sure that cable clamps are not bent, broken, or improperly installed.

SECTION III

Controls and Instruments

9. GENERAL.

The information and instructions outlined in this section apply to the controls and instruments used to operate the Paymaster model 34 convertible machine. Various levers, pedals, and locks are required to control the many types of operations performed. Certain levers control more than one operation, depending on the position of other levers and on the type of equipment installed. Propelling and steering the machine requires automotive driving knowledge and is accomplished with a series of levers. Digging, hoisting, swinging, and dumping are controlled by the long levers in front of the operator's seat and by the short levers just to the right of the operator. The operator must be thoroughly familiar with all levers, pedals, and locks in order to operate the machine safely and efficiently.

Figure 7—Machine Name Plate

10. CAUTION AND INSTRUCTION PLATES (figs. 7, 8, 9, and 10).

Caution and instruction plates are installed in operator's compartment and on various parts of the machine. The name plate of the machine, including serial number, is located on left front section of rotating base. The engine name plate is located on the side of engine near the fuel pump.

The engine clutch name plate is located near the top of clutch housing. The lifting capacity plate is located in the operator's compartment at the left of the instrument panel.

11. NOMENCLATURE AND OPERATING TERMS.

a. Many of the parts used in excavators and cranes are specially designed for this particular type of equipment. In the operation of the

Figure 8—Engine Name Plate

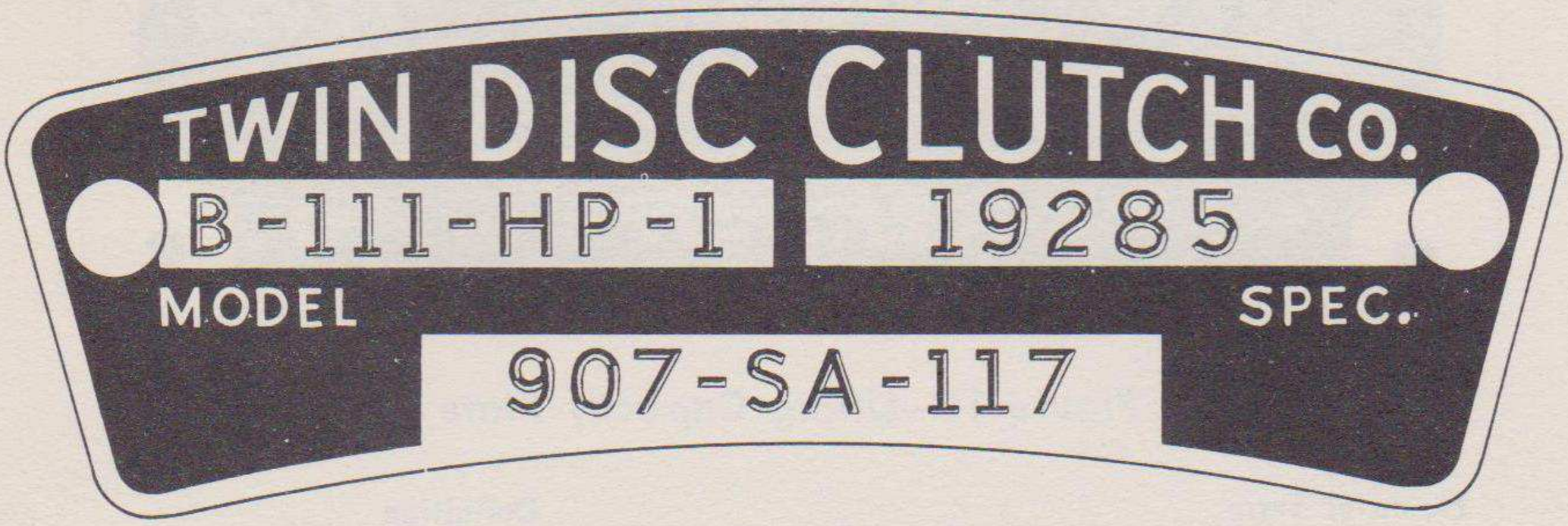


Figure 9—Clutch Name Plate

equipment, a number of terms and names are used which are generally applied to excavators and cranes.

b. Nomenclature. The nomenclature of the machine and its interchangeable equipment is shown in figures 11, 12, 13, 14, 15, 16, 17, and 18.

c. Operating Terms. The following list defines most of the terms commonly used in everyday operation of the machine:

Shovel, Crawler, Gasoline, ¾-Cu. Yd., With Attachments, Lima, Model Paymaster-34

Machine No. 1918

LIFTING CAPACITIES

FOR LIMA PAYMASTER CRANE

75% of Side Tipping Loads Machine on Level Ground

BOOM RADIUS	35′ BOOM	40′ BOOM	45′ BOOM	50′ BOOM				
10′	25,160	25,060	24,960	24,860				
12′	18,900	18,800	18,700	18,600				
15′	13,675	13,525	13,425	13,325				
20′	9,125	9,025	8,925	8,825				
25′	6,705	6,605	6,505	6,405				
30′	5,225	5,125	5,025	4,925				
35′	4,210	4,110	4,010	3,910				
40′		3,380	3,280	3,180				
45′			2,685	2,585				
50′				2,175				

IMPORTANT

THE ABOVE CAPACITIES ARE BASED ON THE STRENGTH AND STABILITY OF THIS MACHINE AS IT LEAVES THE FACTORY. IF THESE CAPACITIES ARE EXCEEDED OR THE COUNTERWEIGHT ALTERED IN ANY WAY, ALL GUARANTEES AND WARRANTIES ARE NULLIFIED.

ALL HOOK BLOCKS, LIFTING TACKLE AND JIB ATTACHMENTS, MUST BE CONSIDERED AS PART OF THE LOAD.

BOOM RADIUS SHOWN IN TABLE IS FROM CENTER LINE OF CENTER PIN TO CENTER OF LOAD.

LIMA LOCOMOTIVE WORKS, INCORPORATED
SHOVEL AND CRANE DIVISION
LIMA, OHIO, U. S. A.

Figure 10—Lifting Capacity Plate

Name or Term	Definition
BOOM	The long, angular device of box-type construction which supports dipper handle, dipper, bucket, or hook block.
BOOM HOIST	The hoist provided for raising and lowering the boom.
BOOM BASE	The lower end, or lower section, of the boom.
BOOM POINT	The upper end, or sheave end, of the boom.

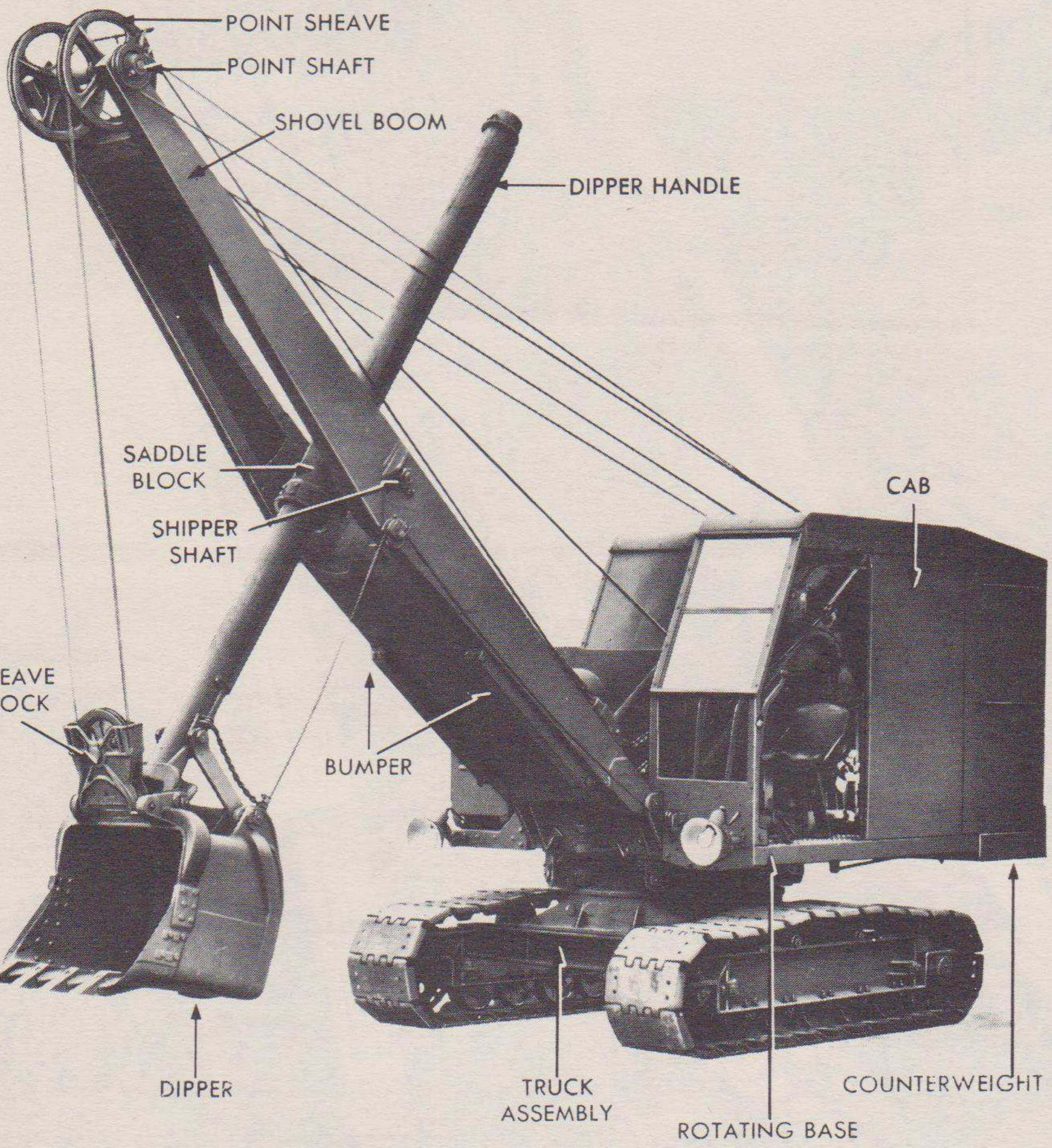


Figure 11—Shovel Nomenclature (Boom, Dipper Handle and Dipper)

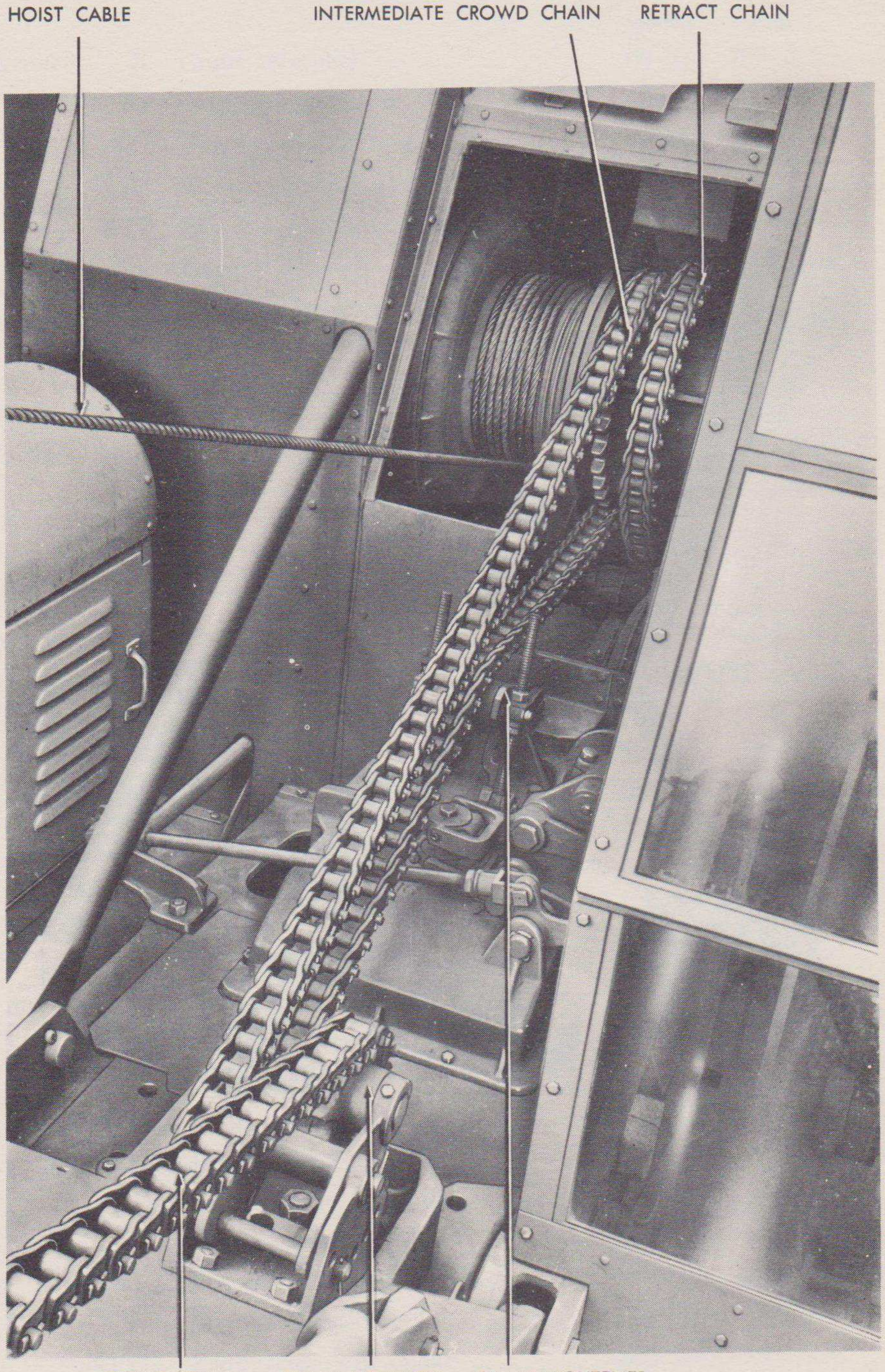


Figure 12—Shovel Nomenclature (Crowd and Retract Chains)

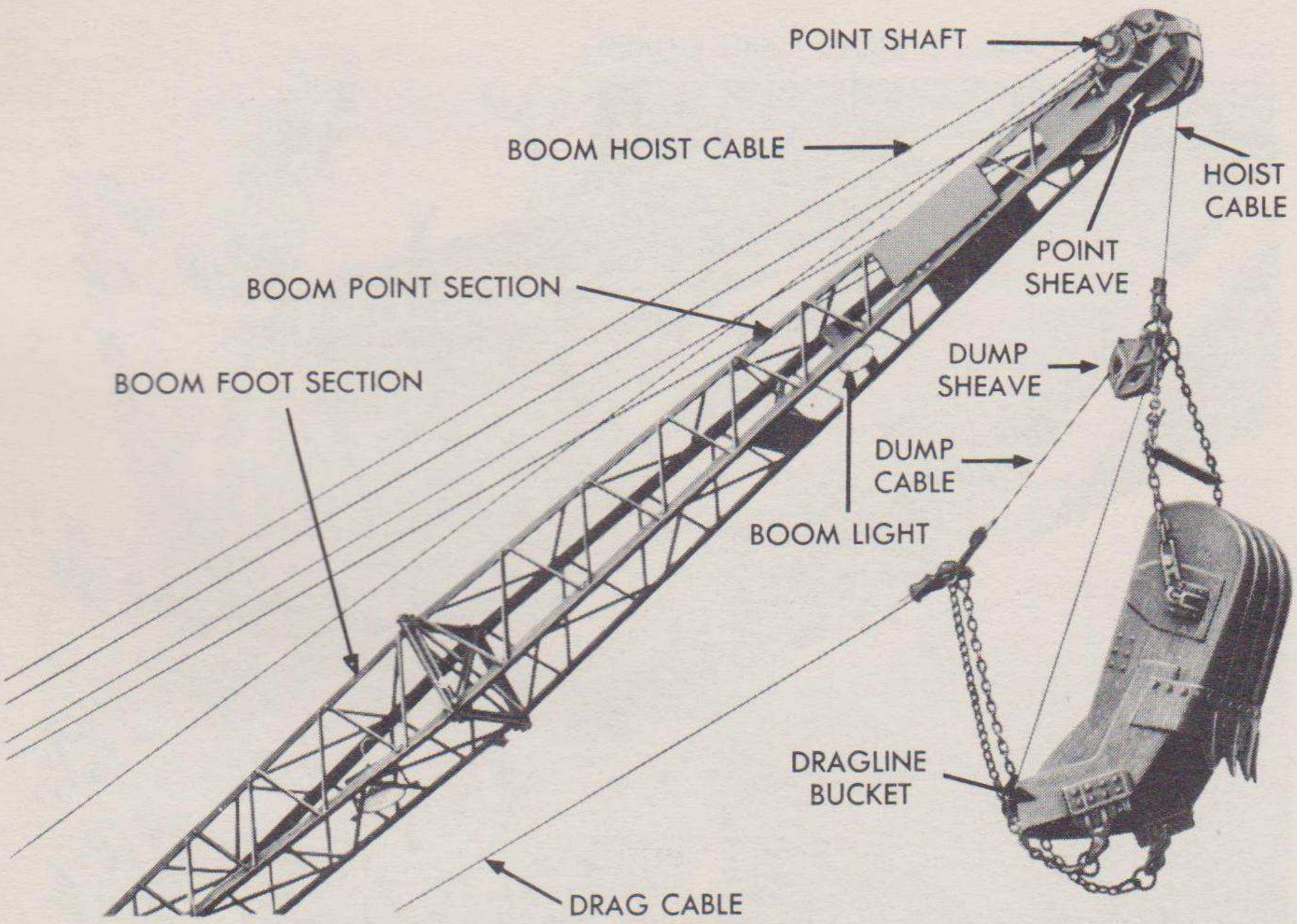


Figure 13—Dragline Nomenclature (Dragline Bucket, Sheave and Cables)

Name or Term	Definition
CASTING THE BUCKET . .	Placing or throwing dragline or *clamshell* bucket in position for dragging in or filling.
CLAMSHELL	The bucket which is constructed of identical halves and which is suspended from end of boom and operated by the closing and holding lines.
CONVERSION	Operation of changing front end and control equipment in order to change over from one kind of operation to another.
CRAWLER	The lower part of truck assembly which propels and supports the machine.
CLOSING LINE	The cable which closes and fills the clamshell bucket and raises and lowers the filled bucket.
CROWD	The operation of pushing or forcing the shovel dipper into the earth or rock.

Shovel, Crawler, Gasoline, ¾-Cu. Yd., With Attachments, Lima, Model Paymaster-34

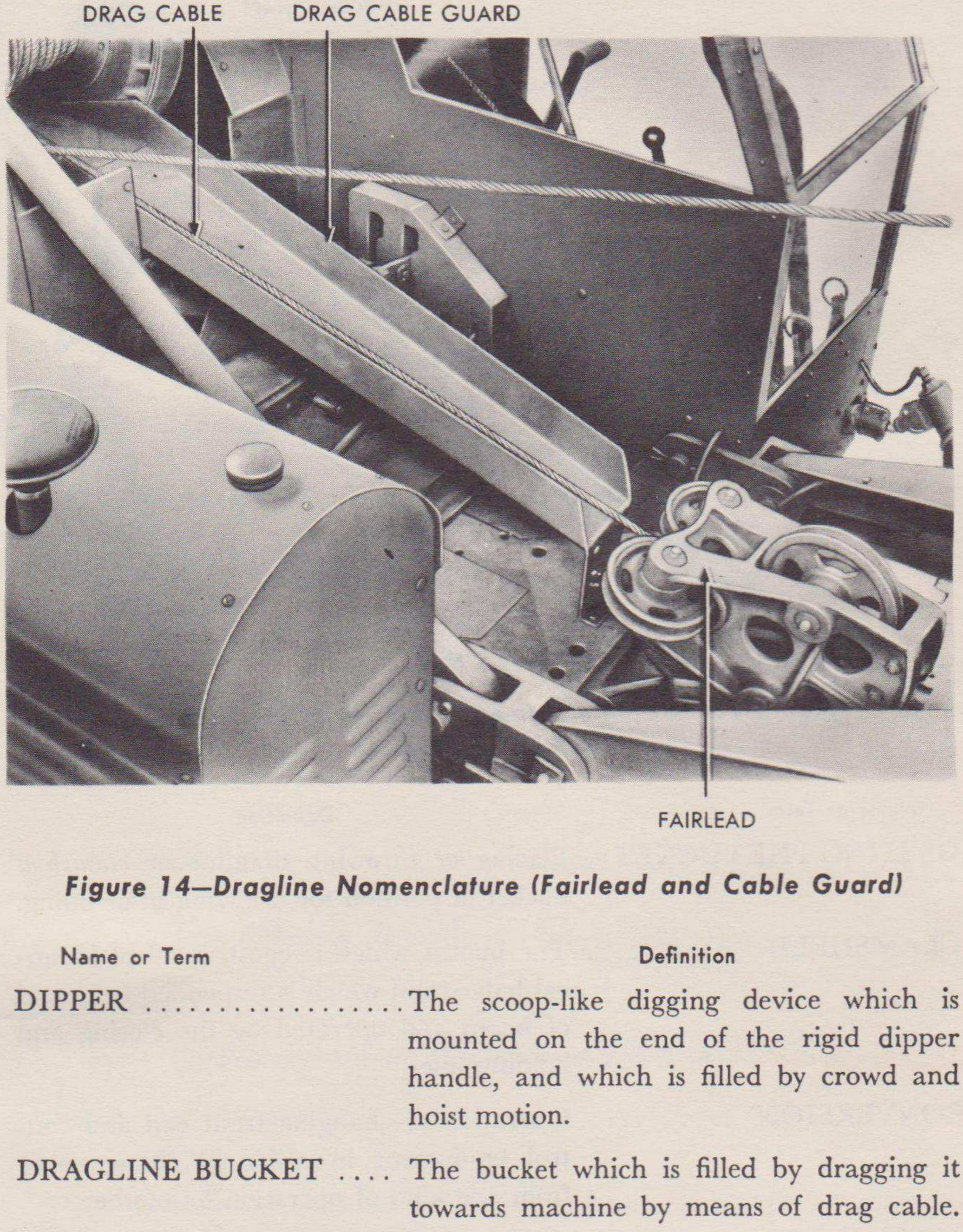


Figure 14—Dragline Nomenclature (Fairlead and Cable Guard)

Name or Term	Definition
DIPPER	The scoop-like digging device which is mounted on the end of the rigid dipper handle, and which is filled by crowd and hoist motion.
DRAGLINE BUCKET	The bucket which is filled by dragging it towards machine by means of drag cable.
DUMP	To empty the dipper or bucket.
ELECTRIC PLANT	The self-powered generating unit which provides electrical current for illuminating the working area at night.
FAIRLEAD	The four-sheaved mechanism provided to hold drag cable in alinement with drag drum.