No. 2020

HANDBOOK

OF

12-INCH GUN RAILWAY CARRIAGE

MODEL OF 1918

AND

GROUND PLATFORM CAR

AMI DEPOSIT
1969

(*FORTY-TWO PLATES*)

MARCH 29, 1919

WASHINGTON
GOVERNMENT PRINTING OFFICE
1919

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1919

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, March 29, 1919.

This Manual is published for the information and guidance of the Army of the United States.

By order of the Secretary of War.

W. S. PEIRCE,
Brigadier General Ordnance Department, United States Army,
Acting Chief of Ordnance.

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HANDBOOK OF 12-INCH GUN RAILWAY CARRIAGE,

MODEL OF 1918.

PART I.

12-INCH GUN RAILWAY CARRIAGE, MODEL OF 1918.

DESCRIPTION AND OPERATION.

SECTION A. GENERAL DESCRIPTION.

(*a*) *Description.*—(Refer to Plates I, II, III, and IV.)

The 12-inch gun railway carriage, model of 1918, is adapted to mount the 1895 and 1895MI models of 12-inch gun. The two models, being the same externally, are interchangeable on all 12-inch carriages of this type.

The mount consists mainly of a top carriage and car. A pin type of pintle at the forward end of the top carriage permits of a 10° traverse, 5° to the right and 5° to the left. The gun can be moved vertically from 5° depression to 38° elevation.

The principal parts of the mount are the top carriage (proper), cradle, recoil mechanism, recuperator, the liquid pump and piping, elevating and traversing mechanisms, panoramic sight and elevation quadrant (which are all included under the general name of top carriage), and the car. The car includes the car (proper), meaning the steel frame, trucks, and their included warping and brake mechanisms, couplers and draft gear, loading stand, and ammunition crane.

SECTION B. TOP CARRIAGE (PROPER).

(*a*) *Description.*—(Refer to Plate V.)

For lists of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 111.

The top carriage (proper) is built up of structural-steel shapes and plates. The side frames are plate and angle girders, with vertical angle stiffeners, deeper at their forward ends and recessed to take the cast steel trunnion bearings that are bolted to them. The right and left frames are held together by three structural-steel sections and transoms. The front transom is a box section designed to take the

most of the load and at the same time afford enough clearance for the cradle for a high-angle elevation.

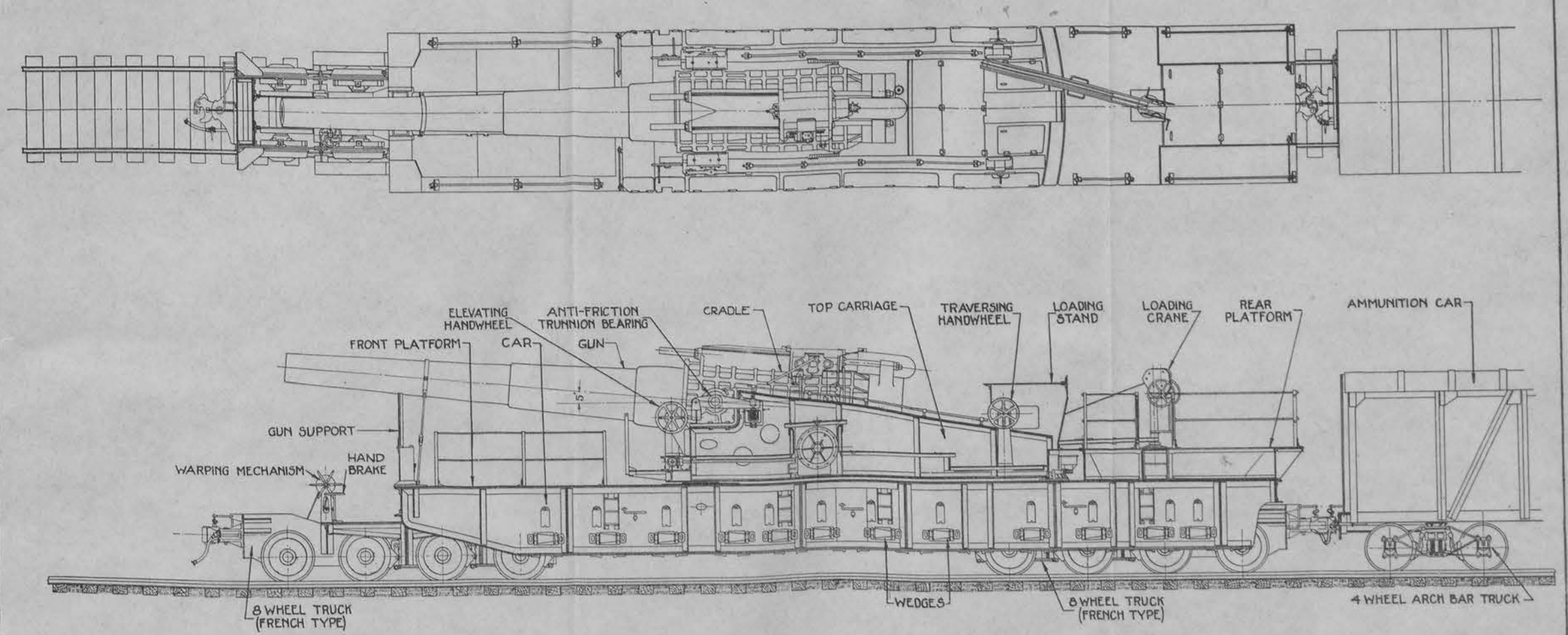
All transoms are fastened to the side frames with suitable connection angles and gusset plates. The pintle is fastened to the under side of the front transom. Two gusset plates, one on the under side of each end of the front transom, extend beyond the outside edges of the side frames and are provided with bearing plates to take the firing load, as will be explained later. The so-called front and rear sections, of plate and angle construction, are transoms holding the rear ends of the side frames together. The front section is straight and the rear section is built on an arc struck from the pintle as a center. The front and rear sections also act as supports for a platform. The part directly over these sections is stationary, but a continuation of it forward for the operation of the breech mechanism and for loading is made to fold back to provide the necessary clear space for the gun to recoil through when fired at the higher elevations. The stationary part of this platform is provided with two doors between the front and rear sections to make the traversing mechanism accessible. The platform extends beyond the rear section and the rear edge is an arc struck from the pintle as a center and the front edge of a continuation of this platform built on the car is a concentric arc with a working clearance between the two to allow the top carriage to swing in traversing. The front transom supports the brackets for a platform across the front end of the top carriage. This platform is provided with angle stanchions and steel-rod railing. Along the sides of the top carriage there are sectional platforms fitted with removable round steel stanchions with chains strung between them. These platforms can be folded in against the side frames to bring the top carriage within the railway clearances. A handrail and two stanchions on the upper side of each side frame are an aid to men climbing about on the carriage. Suitable steps and ladders are provided to reach the platforms. Brackets for the elevating and traversing handwheel shafts are fastened to the front and rear, respectively, of each side frame.

SECTION C. CRADLE.

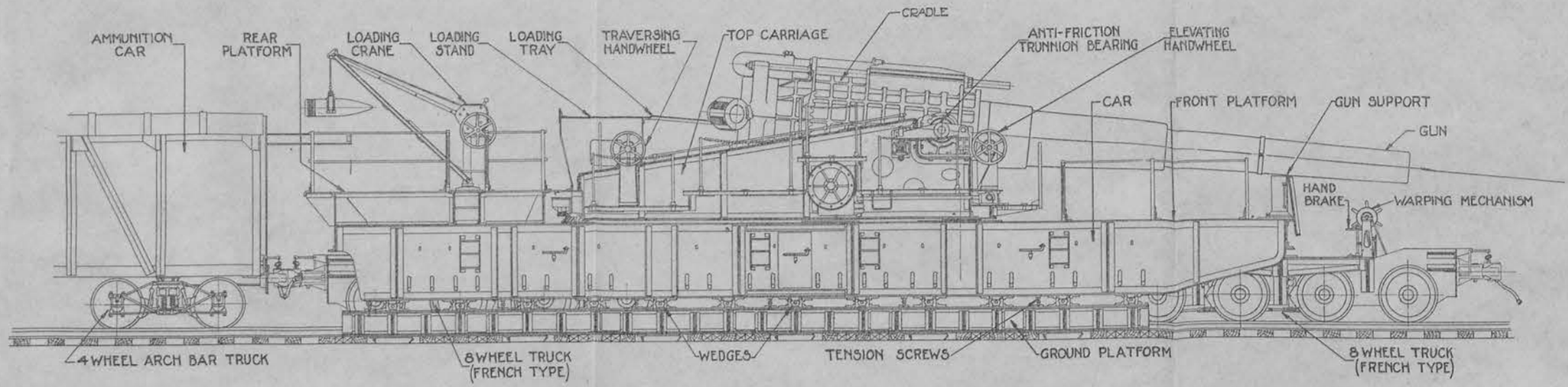
(*a*) *Description.*—(Refer to Plates V and VI.)

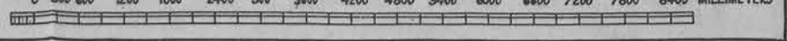
For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 102.

The cradles are cylindrical steel castings heavily ribbed around their girth and longitudinally. Cast with the cradle there is a cylinder on top for holding the recuperator, and two cylinders on the bottom for holding the recoil cylinders. Two trunnions are cast as a part of the cradle and are supported by cast-steel trunnion bearings, before mentioned, which are bolted to the top carriage side frames. Bolt-



DRAWING PERTAINS TO CLASS LOW DRG.	REVISIONS	12 INCH GUN RY. CARRIAGE MODEL OF 1918 LEFT SIDE VIEW ASSEMBLY	
		DRAWN BY: D.S. Armistead, 1ST LIEUT ORDNANCE DEPARTMENT U.S.A.	NOV. 23, 1918
		ORDNANCE DEPARTMENT U.S.A.	E.G.F. J.D. A.H.B.
		APPROVED BY ORDER OF THE ACTING CHIEF OF ORDNANCE: LT. COL. ORDNANCE DEPARTMENT U.S.A.	
		CLASS 36 DIVISION 10 DRAWING 5 FILE	





DRAWING PERTAINS TO CASS OV. DRG.

REVISIONS

12 INCH GUN RY. CARRIAGE
MODEL OF 1918
RIGHT SIDE VIEW
ASSEMBLY

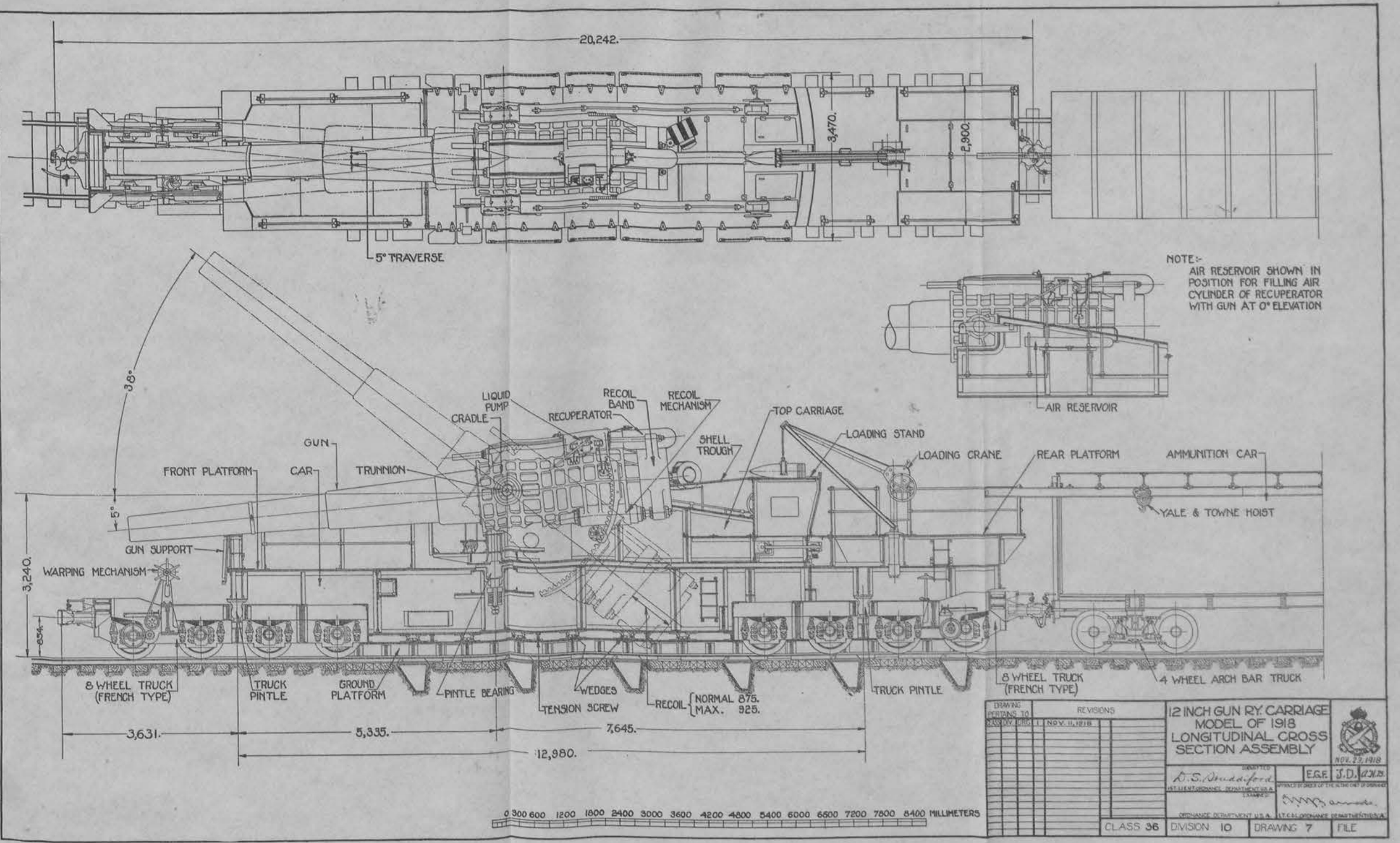
NOV. 23, 1918

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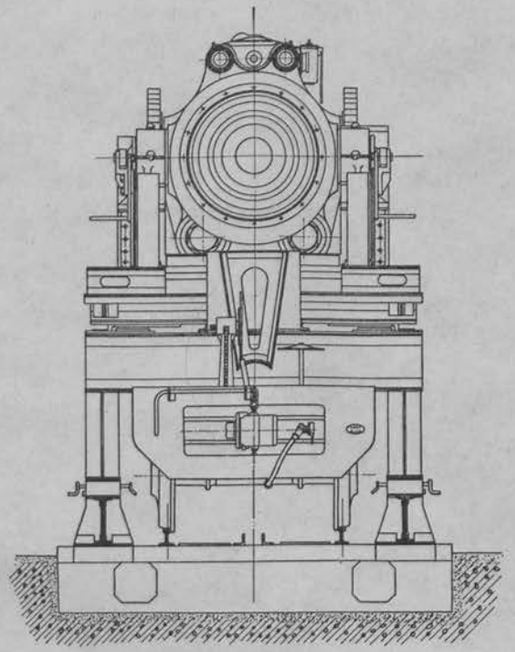
E.G.F. J.D. A.H.B.

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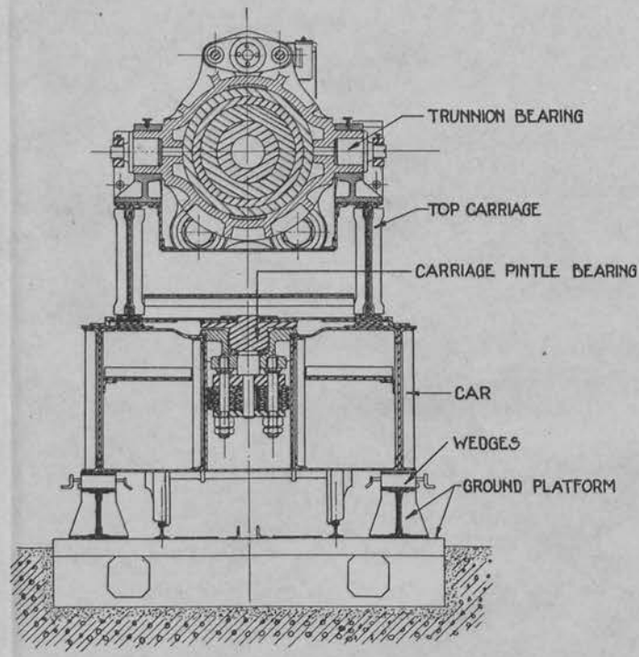
CLASS 36 | DIVISION 10 | DRAWING 6. | FILE



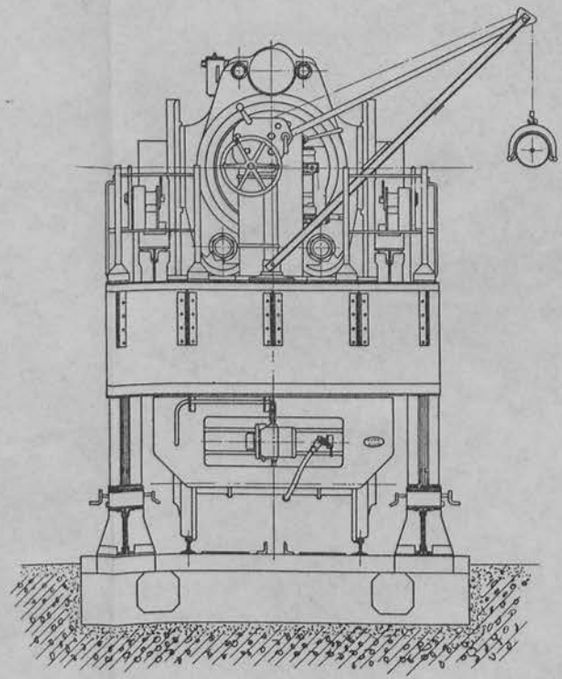
DRAWING PERTAINS TO	REVISIONS	12 INCH GUN RY. CARRIAGE MODEL OF 1918 LONGITUDINAL CROSS SECTION ASSEMBLY	
MASONRY ERG	NOV. 11, 1918		NOV. 27, 1918
		DRAWN D. S. Stradford 1ST LIEUT. ORDNANCE DEPARTMENT U.S.A. EXAMINED	E.G.F. J.D. APPROVED BY ORDER OF THE SECRETARY OF ORDNANCE
		ORDNANCE DEPARTMENT U.S.A.	LT. COL. ORDNANCE DEPARTMENT U.S.A.
		CLASS 36	DIVISION 10 DRAWING 7 FILE



FRONT VIEW



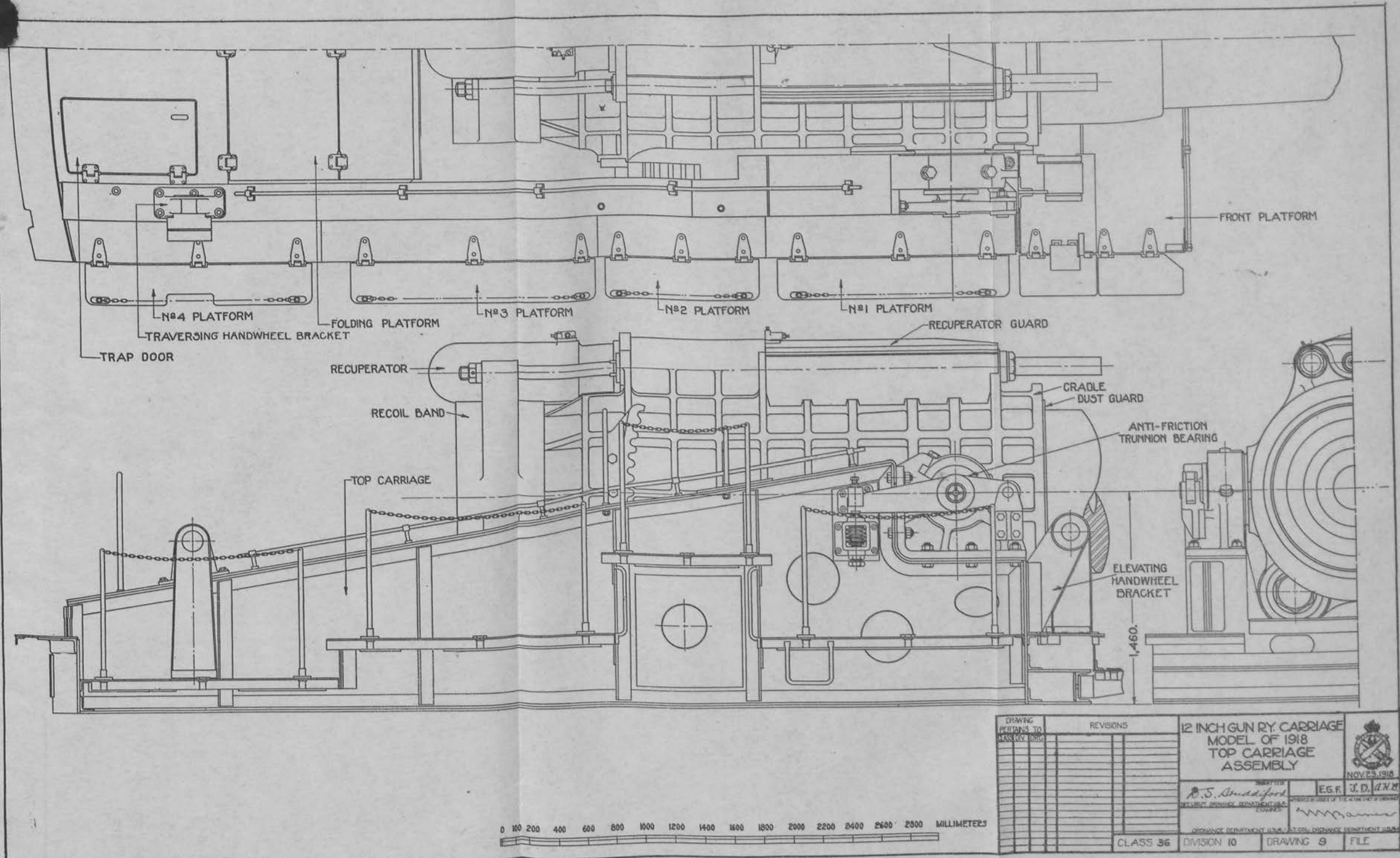
CROSS SECTION



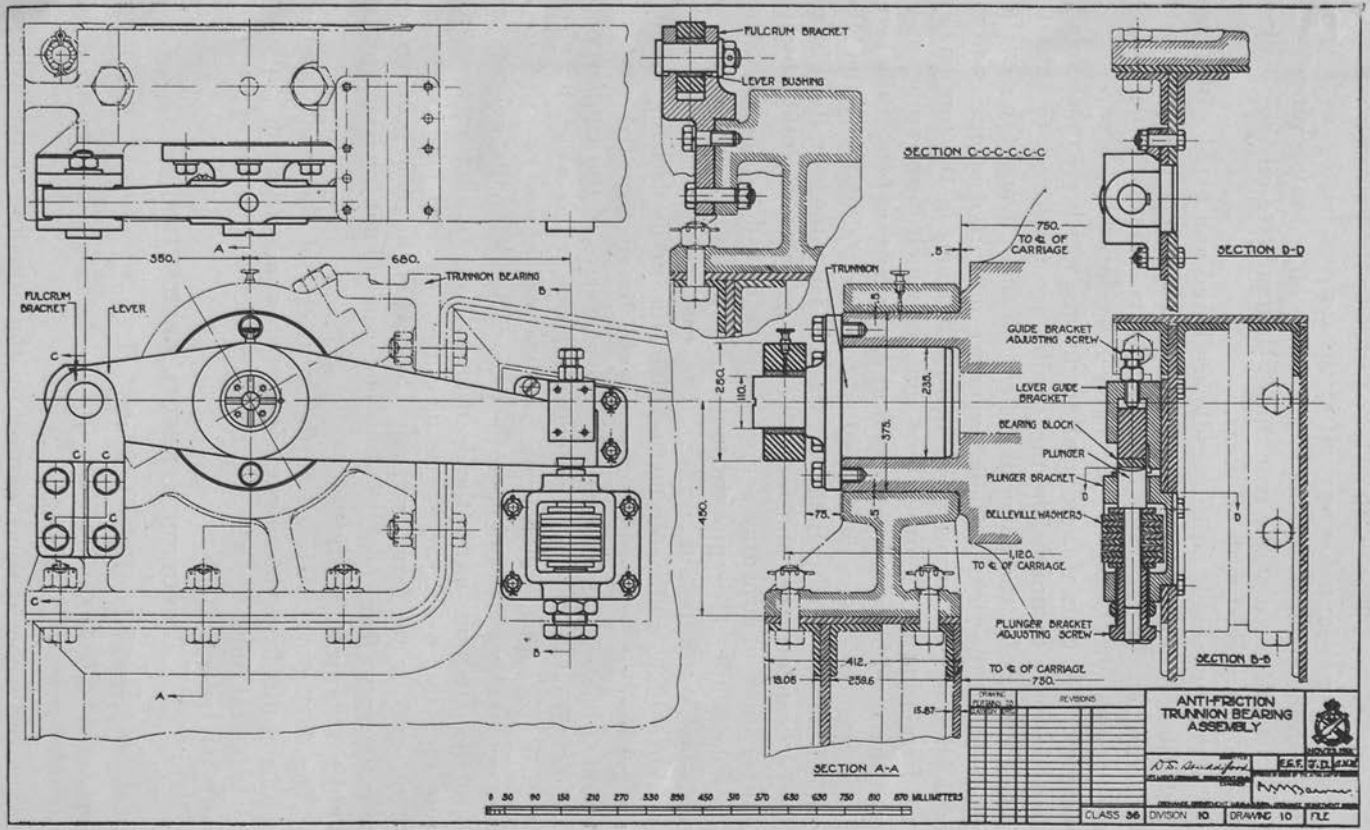
REAR VIEW

0 200 800 1600 2400 3200 4000 4800 5600 MILLIMETERS

ORD. PERTAINS TO CLASS DIV.	REVISIONS	12 INCH GUN RY. CARRIAGE MODEL OF 1918 END VIEWS AND CROSS SECTION ASSEMBLIES	NOV. 23 1918
		SUBMITTED: D.S. Ruddiford. 1ST. LIEUT. ORDNANCE DEPARTMENT USA	E.G.F. J.D. A.N.B.
		EXAMINED: ORDNANCE DEPARTMENT USA	APPROVED BY ORDER OF THE CHIEF OF ORDNANCE: LT. COL. ORDNANCE DEPARTMENT USA
	CLASS 35	DIVISION 10.	DRAWING 8	FILE



DRAWING PERTAINS TO ASSEMBLY DRG.	REVISIONS	12 INCH GUN RY. CARRIAGE MODEL OF 1918 TOP CARRIAGE ASSEMBLY	
			NOV 23, 1918
		E.G.F. J.D.	
CLASS 36	DIVISION 10	DRAWING 9	FILE


FULCRUM BRACKET
LEVER BUSHING
SECTION C-C-C-C-C-C
750.
TO ℄ OF CARRIAGE
SECTION D-D
350.
680.
A
TRUNNION BEARING
B
FULCRUM BRACKET
LEVER
C
TRUNNION
GUIDE BRACKET ADJUSTING SCREW
LEVER GUIDE BRACKET
BEARING BLOCK
PLUNGER
PLUNGER BRACKET
BELLEVILLE WASHERS
1,120.
TO ℄ OF CARRIAGE
PLUNGER BRACKET ADJUSTING SCREW
SECTION B-B
412.
TO ℄ OF CARRIAGE
750.
SECTION A-A
ANTI-FRICTION TRUNNION BEARING ASSEMBLY
CLASS 36
DIVISION 10
DRAWING 10
FILE

ing pads are provided on each side of the cradle for fastening on the elevating racks. The cradle is bored to clear the gun all around and has a groove or large keyway cut at the top and bottom as bearings for the bronze splines on the gun. Three oil holes are provided at the front and three at the rear end of the cradle to oil these splines. These are furnished with oil plugs.

The cast trunnions on the cradle are bored and fitted with forged steel trunnion plugs, called trunnions, which are each secured to the cast trunnions of the cradle by six tap bolts. Turned projections on these plugs, or trunnions, are carried by levers in bronze-bushed bearings. The ends of these small trunnions, which are much smaller than the cast trunnions on the cradle, are machined to take the proper fittings for the panoramic sight on the left and the elevation quadrant on the right. These levers are supported at one end on a steel fulcrum bolt carried in a fulcrum bracket on the top carriage side frame and at the other by a plunger which bears up against a hardened steel bearing block inserted in the bottom face of the lever. The movement of this end is limited to a vertical plane by the lever guide bracket. Eight Belleville washers contained in the plunger bracket support the plunger, whose height is adjustable by the plunger-bracket adjusting screw which is locked by the adjusting-screw lock nut. The upward motion of the lever is limited by the guide-bracket adjusting screw. The cast cradle trunnion has a clearance of 1 millimeter on its diameter in its bearing and the plunger-bracket adjusting screw should be so adjusted that this trunnion floats in its bearing. The dead-weight of the tipping parts is now carried on the small outer trunnion bearings which by virtue of their size and better bearing combination, bronze on steel, make it easier to elevate and depress the gun. The Belleville washers will float the trunnions under the dead load of the tipping parts, cradle, gun, etc., but when the gun is fired the increased load compresses them, causing the large trunnions to bottom in their bearings and take the heavy firing load. This mechanism will not function properly unless it is carefully adjusted.

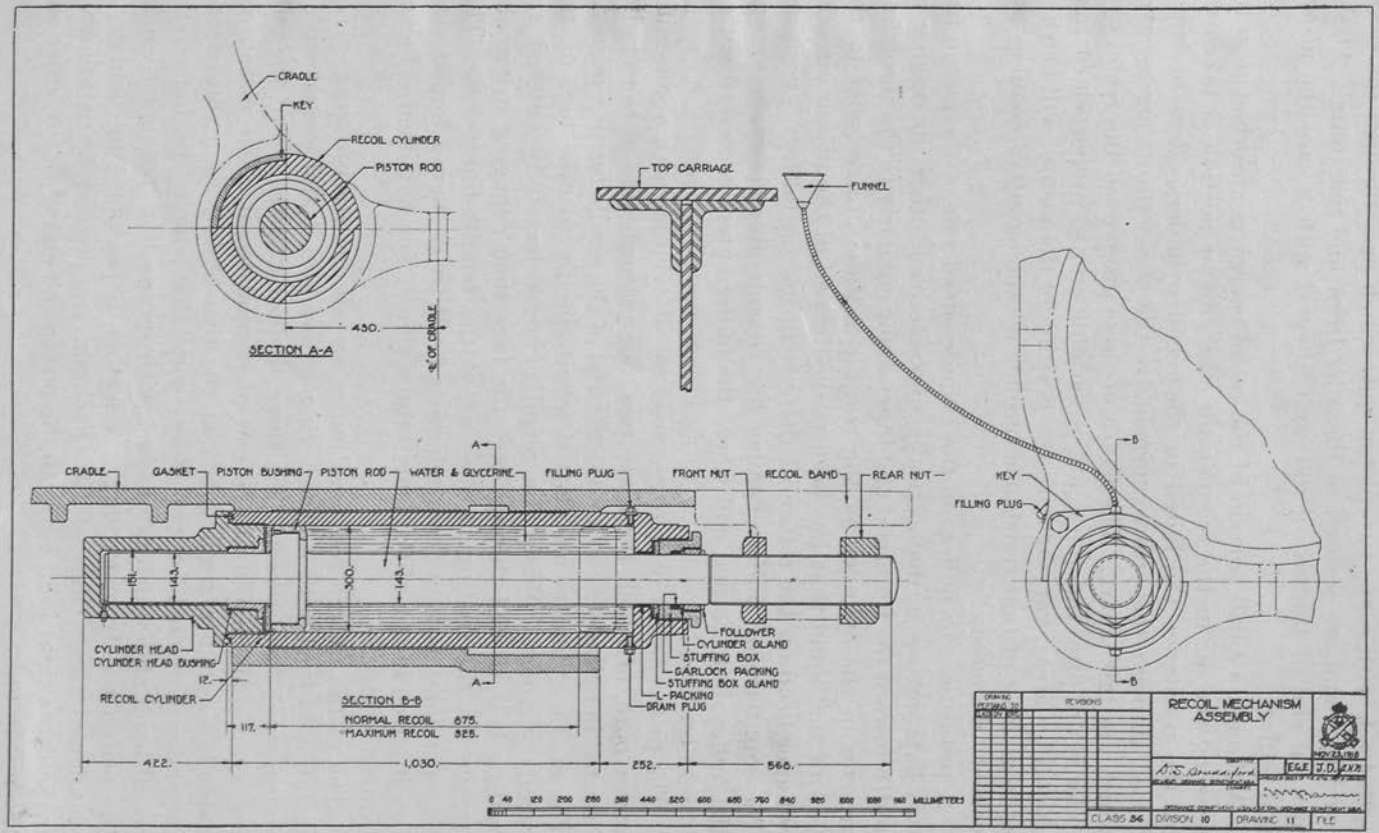
The dust guard fastened to the front end of the cradle prevents sand and dirt from entering it. It consists of a leather ring supported by two steel rings, the whole riveted together and bolted to the cradle with tap bolts.

SECTION D. RECOIL MECHANISM.

(*a*) *Description.*—(Refer to Plate VII.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 103.

The recoil mechanism operates on the principle of the hydraulic brake and is designed to limit the distance and regulate the velocity


CRADLE
KEY
RECOIL CYLINDER
PISTON ROD
430.
SECTION A-A
℄ OF CRADLE
TOP CARRIAGE
FUNNEL
KEY
FILLING PLUG
B
B
A
A
CRADLE
GASKET
PISTON BUSHING
PISTON ROD
WATER & GLYCERINE
FILLING PLUG
FRONT NUT
RECOIL BAND
REAR NUT
151.
143.
300.
143.
CYLINDER HEAD
CYLINDER HEAD BUSHING
12.
RECOIL CYLINDER
117.
SECTION B-B
NORMAL RECOIL 675.
MAXIMUM RECOIL 825.
FOLLOWER
CYLINDER GLAND
STUFFING BOX
GARLOCK PACKING
STUFFING BOX GLAND
L-PACKING
DRAIN PLUG
422.
1,030.
252.
566.
0 40 120 200 280 360 440 520 600 680 760 840 920 1000 1080 1160 MILLIMETERS
REVISIONS
RECOIL MECHANISM ASSEMBLY
E.A.E.
J.D.
CLASS 56
DIVISION 10
DRAWING 11
FILE

of the gun in recoil when fired. When the gun recoils in its cradle it pulls back with it the two piston rods which pass through the recoil band lugs and are secured to them by front and rear nuts. At the forward end of the piston rod, and integral with it, are the piston and buffer.

Although a small portion of the recoil energy is absorbed in compressing the air in the recuperator, the greater portion is taken up by the resistance the liquid in the recoil cylinders offers to being forced through the orifices formed by the three throttling grooves which are 120° apart. The width of these grooves in the recoil cylinder is uniform, but the depth is variable and so proportioned that the orifice areas, varying with the position of the piston, will be such as to give a constant resistance throughout the length of recoil as the velocity decreases.

A projection, or buffer, on the cylinder-head side of the piston has two flats cut on it, diametrically opposite each other, increasing in width toward the front end and functioning similarly to the throttling grooves in the cylinder by the resistance these orifices offer to the flow of the liquid that has been pushed ahead of the piston into the cylinder head on the return of the gun to its "in battery" position. The counterrecoil buffer chamber has considerable clearance around the buffer, but the rear end where the buffer enters is choked with a bronze bushing.

The piston works in a forged steel recoil cylinder with a 300-millimeter bore, of which there are two, one on each side of the cradle, inserted in cylinders cast on the bottom of the cradle for this purpose. The cradle cylinders are slotted longitudinally to take lugs on the recoil cylinders. When the recoil cylinder has fully entered the casting it is turned through 90°, the lugs then engaging in circular grooves in the casting at the end of the longitudinal slots. This bayonet joint is kept from releasing itself by a curved forged steel key inserted in one of the longitudinal slots. The key itself is locked in place with a bolt.

The piston, piston rod, and buffer are all one steel forging. The piston is bushed with a bronze ring screwed on it and locked with a countersunk head screw. The three shallow grooves afford the only passage for the liquid at the end of normal recoil. The piston rod extends through a stuffing box at the rear end of the cylinder and its end is threaded for two heavy nuts that clamp the lug on the recoil band and which are locked with screws that prevent them or the piston rod from turning. A leather L packing ring held by a gland and three rings of flax packing, compressed by a follower, make this a tight joint between the piston-rod end of the cylinder and the piston rod.

The cylinder head is a hollow steel forging screwed onto the front end of the cylinder and the joint made tight by fitting a lip turned on the underside of the flange into a groove turned in the end of the cylinder with a leather gasket between the two parts. The cavity in the cylinder head receives the buffer as the gun returns to its firing position. The buffer is 143 millimeters in diameter, the same as the piston rod, and is 467 millimeters long. The bore of the cylinder head is 151 millimeters in diameter and has a bronze bushing screwed into its rear end that has a sliding fit over the buffer. A filling plug and a drain plug are provided at the top and the bottom respectively of the back end of the recoil cylinder. A flexible tube and funnel are provided for filling.

The liquid used in the recoil cylinders is a mixture of water and glycerine having a specific gravity of 1.15 and a neutral or alkaline reaction.

SECTION E. RECUPERATOR.

(*a*) *Description.*—(Refer to Plate VIII.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 103.

After firing, the gun is returned into battery by a counterrecoil mechanism known as the recuperator which is operated by compressed air. There is no means of communication between the liquid used therein and the liquid in the recoil cylinders.

When the gun recoils the recuperator absorbs a small amount of the recoil energy, but its function is to compress the air in the air chamber, thus storing up energy to return the gun to firing position.

Its action can best be understood by the following explanation of its parts:

The forged steel air cylinder has its forward section straight bored and lined with phosphor bronze, and the expanded rear section is a compression chamber for the air that is fdriven ahead of the piston which slides in the forward section. The air chamber has a closed spherical end. The air cylinder is rigidly fastened to the cradle by being enveloped for about half its length by a cylinder cast integral with the cradle and is clamped in place by a flange on the rear and a cylinder locking nut threaded on the front end of the cylinder. The nut is locked by a lock screw and the whole prevented from turning by a locking block fitting into a slot in the flange and fastened to the cradle with countersunk head screws. Two holes are drilled on the center line of the air cylinder at the top. One is at the rear end of the cylinder and is used for admitting and discharging air. This hole is tapped to take a hollow air piston stop, which is a stud that prevents the piston from entering the air chamber when assembling, for great difficulty would be experienced in getting it out again.

The stop is made hollow to allow passage of the air through it, which is controlled by a valve mounted on the outside of the cylinder directly over the stop. The other hole is 90 millimeters from the front end of the cylinder and is used for admitting the liquid and releasing any air which has leaked past the piston. A valve controls this passage. These valves are explained in section G. The initial air pressure in this cylinder is 110 kilograms per square centimeter (1,565 pounds per square inch).

The piston is of phosphor bronze, taper bored and tapped to receive the end of the piston rod and is locked to it with a headless screw. The piston is packed with three rings of flax packing held in place by a bronze gland. The front side of this gland is machined to fit the round side of a leather U packing which is held in place by a phosphor bronze casting, called the packing retainer. This packing retainer holds all of the packing and gland in place by the force exerted on it by a helical spring whose compression is adjustable by a piston nut. The piston nut is threaded on the piston rod and held in its adjusted position by a split pin passing through it and the rod.

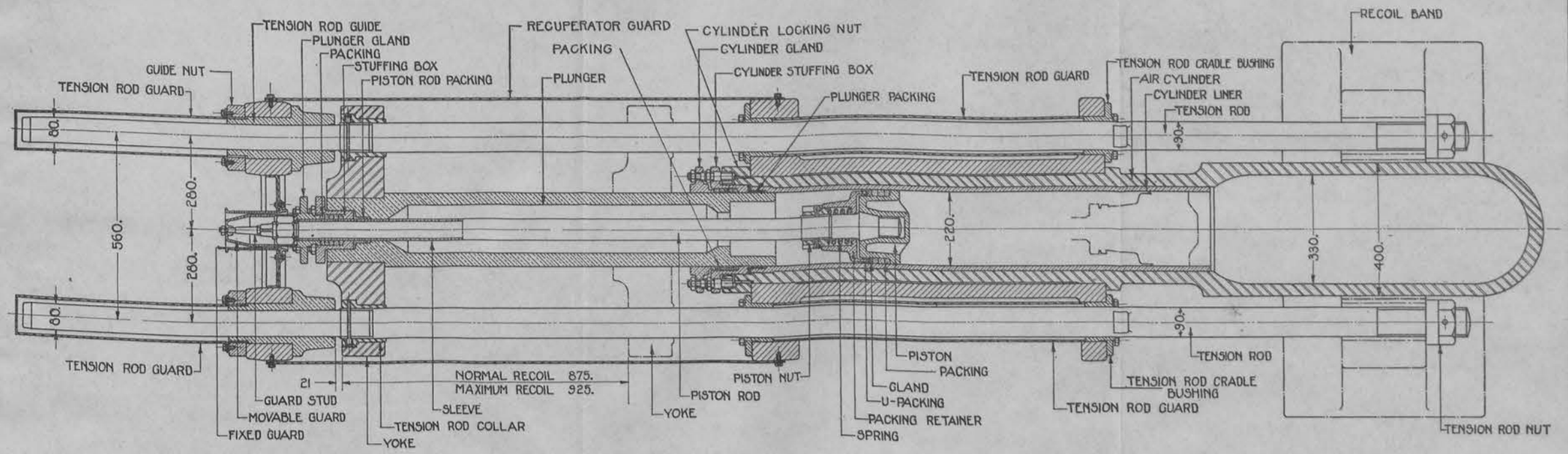
There are eight tapped holes in the front face of the cylinder locking nut for studs to hold the phosphor-bronze cylinder stuffing box and gland. Between the stuffing box and the cylinder liner there is a leather L packing inserted, and there are five rings of flax packing in the stuffing box compressed by the gland. The gland and stuffing box are separately adjustable by two sets of nuts on the studs. The function of this stuffing box is to make a tight joint between the plunger and the air cylinder.

The plunger is a hollow phosphor-bronze casting 220 millimeters in diameter that slides in the air cylinder. This piece, indirectly, by the medium of the liquid that fills the space between its front end and the piston, transmits the motion it receives from the yoke to the piston. There is a shoulder on its interior near the rear end that will bear against the piston-rod nut and transmit this motion directly should the liquid leak out and permit the plunger to move to the rear enough to take up the clearance between these two parts. The real purpose, therefore, of the liquid is to form a seal against the air on the other side of the piston, which is better than any mechanical means that could be employed. The front end of the plunger where the piston rod passes through is proofed against leakage of this liquid by a stuffing box like the one around the plunger except that it is smaller and there are but four holding studs. These studs are screwed into the front end of the plunger.

The piston rod passes all the way through the plunger and out through the stuffing box at its front end. Where it passes through this stuffing box it is turned down and a phosphor-bronze sleeve having the same outside diameter as the rest of the rod is forced on

NOTE:-
NORMAL PRESSURE OF LIQUID:
INITIAL = 1721 LBS. PER SQUARE INCH
FINAL = 2828 LBS. PER SQUARE INCH

NOTE:-
NORMAL PRESSURE OF AIR.
INITIAL = 1565 LBS. PER SQUARE INCH
FINAL = 2573 LBS. PER SQUARE INCH



0 50 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 MILLIMETERS

DRAWING PERTAINS TO U.S. GOVT. WORK	REVISIONS	RECUPERATOR ASSEMBLY	
		SUBMITTED: D.S. Rumsford, LIEUT. COL. ORDNANCE DEPARTMENT U.S.A. EXAMINED: ORDNANCE DEPARTMENT U.S.N.A.	NOV. 23 1918 E.G.F. J.D. A.V.H. APPROVED BY ORDER OF THE ACTING CHIEF OF ORDNANCE: [illegible] LT. COL. ORDNANCE DEPARTMENT U.S.A.
	CLASS 36	DIVISION 10	DRAWING - 12. FILE

and the joint at the shoulder soldered to prevent leakage. The relative motion of the rod and plunger is practically nothing if the liquid pressure is maintained at what it should be, namely, 121 kilograms per square centimeter (1,721 pounds per square inch). The front end of the piston rod is threaded for a crown nut under which is a forged steel washer clamped against the bronze sleeve before mentioned, to prevent the piston from sliding too far to the rear in the cylinder. There is a tapped hole in the end of the rod to receive the guard rod that will be explained later. There is a heavy forged steel yoke forced onto the front end of the plunger that transmits the recoil motion from the tension rods to the plunger and is locked to it with the yoke locking screw. The two ends are bored and counterbored to receive the tension-rod collars.

On each side of the recuperator there is a tension rod that connects the yoke with the recoil band on the gun. The two tension rod collars that fit into the counterbored holes in the end of the yoke are the means of connection between the rod and yoke by preventing the rod from sliding through it. These collars are locked to the rods with collar screw pins. The rear ends of the rods are threaded and fitted with tension-rod nuts screwed up against the rear faces of the upper lugs of the recoil band and pinned in place. Each rod is guided by three lugs cast on the cradle, the forward one being bushed with a bronze tension-rod guide held in position with a phosphor-bronze guide nut which is locked with a screw, and the other two lugs are fitted with tension-rod cradle bushings fastened to the cradle with four tap bolts, each through their flanges. Between these two bushings there is a light steel tube called the center tension-rod guard and another tube with a closed end, bolted to the guide nut, protects the front end of the tension rod. About one meter from the back end of each tension rod there are two lugs opposite each other on its circumference so located as to just touch the faces of the rear tension-rod bushings when the recoil band is up against the end of the cradle. These are to properly locate the tension rods when tightening up on the tension-rod nuts. The holes in the recoil band through which these rods pass are of large enough diameter to allow these lugs to pass through. To take up the clearance around and to center the rod, a steel bushing is then inserted into the band and is secured with a lock screw.

The recuperator guard extends from the front of the air cylinder to the forward lugs on the cradle and completely incloses the plunger, yoke stuffing boxes, and tension rods. It is built up of steel plates and angles with a removable top to facilitate the inspection and adjustment of the inclosed parts. The vertical front plate of the guard supports the bronze fixed guard. The guard stud is threaded

into the end of the piston rod and a crown nut on its end holds on the cast bronze movable guard against the washer on the end of the piston rod.

SECTION F. LIQUID PUMP.

(*a*) *Description.*—(Refer to Plates IX and X.)

For list of parts with their numbers, piece marks, drawing numbers, and material of which they are made, see page 138.

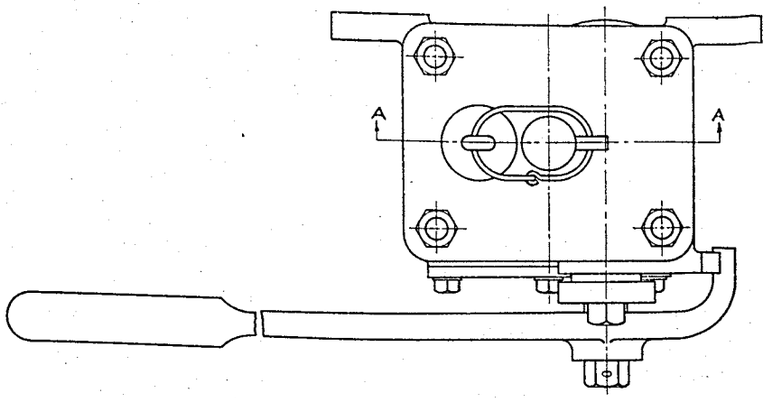
The liquid pump is a short-stroke high pressure force pump, operated by a hand lever.

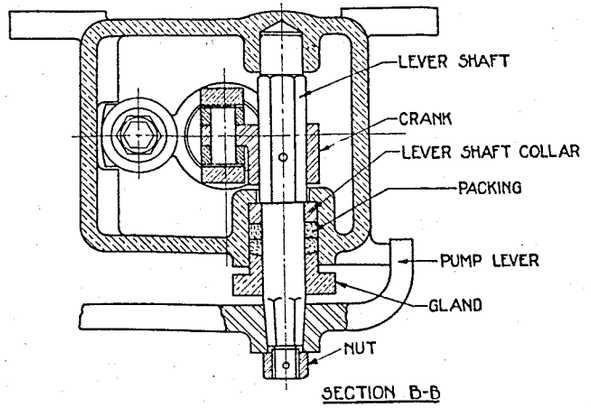
The pump case is a rectangular bronze casting that incloses the working parts of the pump and also serves as a reservoir. The top of the case is provided with a cover. There is a projection on the top of the cover with a reamed and vented hole in it that is a guide and guard for the upper end of the plunger. Inspection of the pump can be made through a hole in the front of the case, closed by a cover. A bored hole in the bottom of the case receives a projection on the pump body which is held in position with a nut. The case is provided with a drain hole, plug, and gasket.

The lever shaft is supported by the front and back of the pump case, at the front by the packed bearing and at the back in a reamed hole. A collar pressed on the shaft has a bearing in the packing recess and the shaft itself has a bearing in the gland.

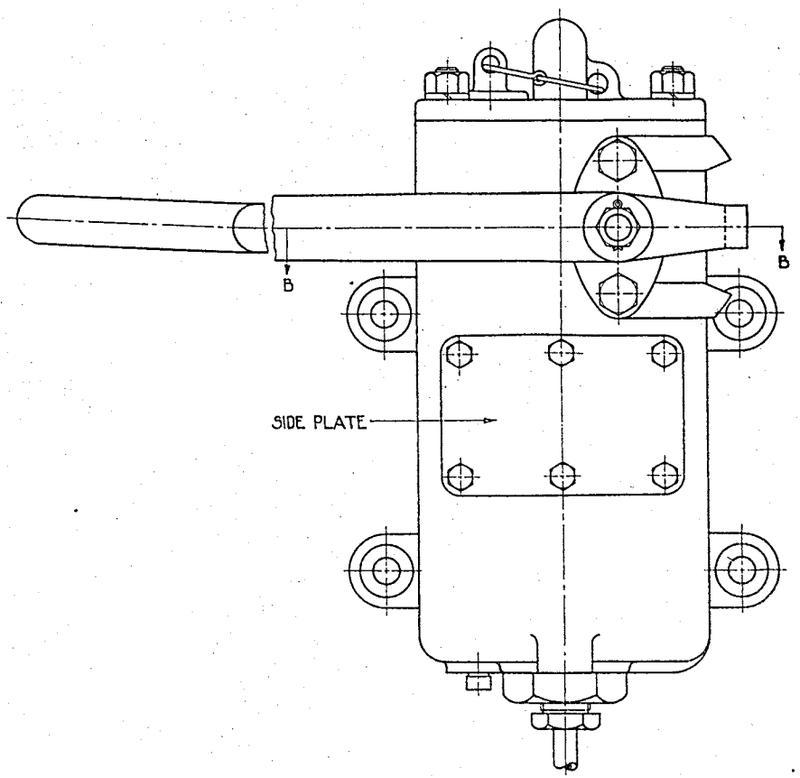
The pump body is a water-tight mechanical phosphor bronze casting. Its general shape is that of two cylinders cast together and a projection that provides of a passage from the upper end of one to the lower end of the other. The larger cylinder is bored for the plunger and counterbored and threaded at its upper end to receive the body gland and body nut through which the plunger passes. This joint is made tight by the plunger leather which is clamped between the gland and the body. The bottom of the bore is closed, but is connected to the suction chamber by a drilled hole. The suction-valve seat which contains the strainer is screwed into the lower end of the smaller cylinder and holds the suction-valve stem which seats by gravity.

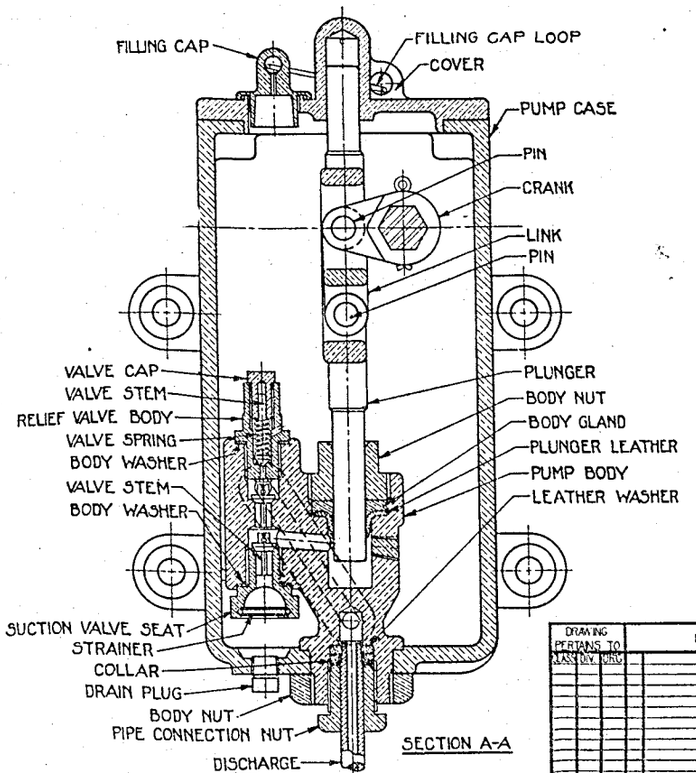
The suction-valve stem has a conical point and the stem itself is in the shape of three fins which bear in the drilled hole, keeping the valve in an upright position and at the same time allowing the passage of the liquid. The strainer is a circular piece of fine brass screen that is held in place by the strainer ring, a brass-wire ring, that is sprung into a V-shaped groove cut in the side wall of a counterbore. The drilled hole connecting the two bores enters the suction bore just above the suction-valve stem seat and just below a second suction-valve stem which acts as a check valve also seated by gravity. Drilled holes form a passage connecting the space





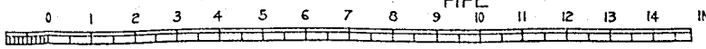
SECTION B-B



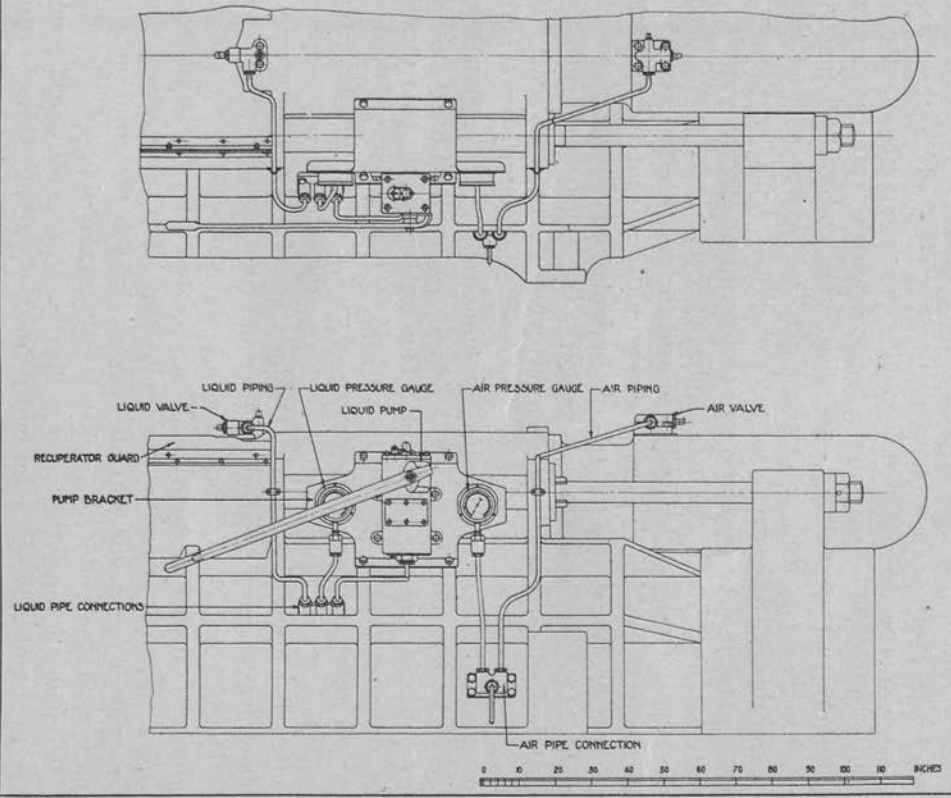


SECTION A-A

TYPE: HAND
SIZE: .75 X 1.
PRESSURE: 2500. LBS.
BLOW OFF PRESSURE: 2200 TO 2500. LBS.



DRAWING PERTAINS TO	REVISIONS	LIQUID PUMP ASSEMBLY	
			NOV. 23, 1918
		J.D. E.G.F. J.D. A.N.B.	
	CLASS 36	PLATE 10	DRAWING 13 FILE



DR'G. PER TABLE TO SUBJ. &c.	REVISIONS	GAUGES, VALVES, PIPING AND PUMP ASSEMBLY	
		DRAFTED: D. E. Bradford	E.G.F. J.D. U.S.N.
CLASS 56	DIVISION 10	DRAWING 14	FILE

above the check valve with the recess for the discharge-pipe connection at the lower end of the larger cylinder. This lower end is turned and fitted into the bore in the bottom of the pump case as before stated. The extreme end of this projection is threaded on the outside and a nut provided which screws up against the outside of the case and holds the body in place, a shoulder on the body bearing on the inside. A projection which fits between two lugs on the side of the case prevents the body from turning. The discharge pipe has a collar on it that is forced against a leather washer, in turn bearing against the counterbore by a connection nut threaded into the lower end of the pump body. The remaining fitting for the pump body is the relief valve which is assembled as a unit and screwed into the upper end of the smaller cylinder just above the opening that connects with the outlet. This valve consists of the relief-valve body, cap, stem, and spring. The body is the part that is screwed into the pump body and it contains the other parts. A hole to allow the escape of the liquid when the valve acts is drilled obliquely just above the valve seat. The valve itself, called the relief-valve stem, has a conical point to fit the seat and a stem that passes through the spring and up into a hole drilled in the cap that acts as a guide keeping the valve stem in an upright position so it will seat properly. The relief-valve spring is compressed between the head on the relief-valve stem and the cap which is screwed into the body. The cap is screwed down tightly so that the underside of its hex head bears on the top of the body, permitting of no adjustment after the valve is assembled. The relief-valve spring is so designed as to allow the valve to lift when the pressure reaches 2,000 to 2,500 pounds. The joints between the pump body and the suction and relief valve bodies are made tight by the use of gaskets.

The bronze plunger, or piston, is of cast bronze turned to a diameter of 0.75 inch at each end. The two ends are connected by a central part that is split or forked, which is necessary to make room for the crank and link. Each side of the forked section has a reamed hole as a bearing for a pin that passes through the solid end of the link. The inner faces of the forked section of the plunger are finished. The lower pin is pinned to the link and rotates in the plunger.

The link is also a bronze casting and connects the crank to the plunger. As before mentioned, the lower end is solid, but the upper end is split and straddles the crank arm. The two parts of this end are reamed for a pin that also passes through the crank arm and is prevented from moving endwise by the two sides of the plunger. The inside of the forked end is finished to provide bearing surfaces for the crank and the solid end is finished on both sides to properly fit between the two machined surfaces on the inside of the split portion of the plunger.

The crank is a steel forging in the form of a sleeve and an arm. The sleeve is broached out to fit a hexagonal portion on the shaft, and the piece is prevented from sliding by a split pin. The crank arm is reamed for the pin that connects it to the link and fits between the two sides of the forked end of the link.

The shaft is of forged steel with two hexagonal portions for crank and lever. The end thrust on the shaft is taken by the crank and the collar that is pressed on the shaft and bears in the packing recess. Outside the pump case the shaft has a tapered hexagonal portion to which the pump lever is fitted and secured by a nut locked with a split pin.

The pump lever is a flat bar-steel forging with a round handle at one end. The other end is bent in toward the pump case and limits the stroke by coming in contact with two cast lugs on the case.

The pump lever through the shaft oscilates the crank which by means of the link gives a vertical motion to the plunger. The partial vacuum created by the upward movement of the plunger causes the liquid to pass up through the strainer, lift the suction valve, and enter the plunger bore through the drilled hole that connects the two chambers. The downward stroke of the plunger forces the liquid back through this same hole, up through the check valve, and through the passage just above it down to the discharge pipe. The function of the suction valve is to prevent the liquid from being forced out into the reservoir again, and the check valve prevents its return to the plunger bore. The relief valve, as its name implies, allows the escape of the liquid through the vent hole drilled in the body of the valve when the pressure becomes too great.

SECTION G. PIPING, FITTINGS, AND VALVES.

(*a*) *Description.*—(Refer to Plate X.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 103.

The liquid pump and gauges are connected to the recuperator by suitable pipes, connections, and valves. The liquid valve is bolted to the front end of the recuperator air cylinder with two tap bolts and lock washers and the joint of the projection on the bottom in the counterbore is made tight with a soft lead gasket. The valve consists of a bronze body, exhaust and supply stems, gland, gland follower, pipe nut, and packing.

The body is made a suitable shape and size to accommodate the above parts. The pipe nut is threaded into the body and bears on the collar threaded onto the pipe and forces it against a leather washer seated in the body thus making a tight joint. All other pipe connections in this system are made in the same manner.

The exhaust stem is for blowing off the air if there is any in the liquid chamber and has a drilled hole through it for this purpose. It is threaded into the body and has a conical seat in the body.

The supply stem is threaded into the valve body and passes through the gland follower and leakage around the stem is prevented by packing. This stem also has a conical seat in the valve body.

The liquid pipe connection is a bronze casting bolted to the cradle and connects the three copper pipes, one from the pump, one to the liquid pressure gauge, and one to the liquid valve. The connections to this piece are as previously explained.

Both the liquid and air pressure gauges are of the round dial type. They are fitted with a bronze connection that takes the pipe nut.

The air-pipe connection is also bolted to the cradle and is the means of connection between the pipe to the air gauge and the one to the air valve on the recuperator. When charging the recuperator with air a third connection from the air bottle can be made which opening is closed by a plug and nut when the charging pipe is disconnected. This plug is prevented from being lost by a chain which fastens it to the body. Connection is made to the air bottle by means of a copper pipe, adapter, and coupling nut.

The air valve is of a different shape from the liquid valve but embodies the same features using the same valve stems and packing, etc. It is furnished with a supply and exhaust stem. The projection on the bottom of the body fits into the top of the air piston stop and the joint made tight with a soft lead gasket. The valve is fastened to the top of the air chamber with two tap bolts and lock washers.

The piston stop is a forged steel plug threaded at its large end for screwing into air cylinder, the joint being made tight by tinning the threads and screwing shoulder up tight against a lead gasket. The top is then counterbored to receive the lead gasket and projection of the air valve. This plug is not to be removed after assembling and its function is as explained in Section E.

The pipes are of copper bent to fit the cradle and secured at intervals to the cradle with pipe clips and screws.

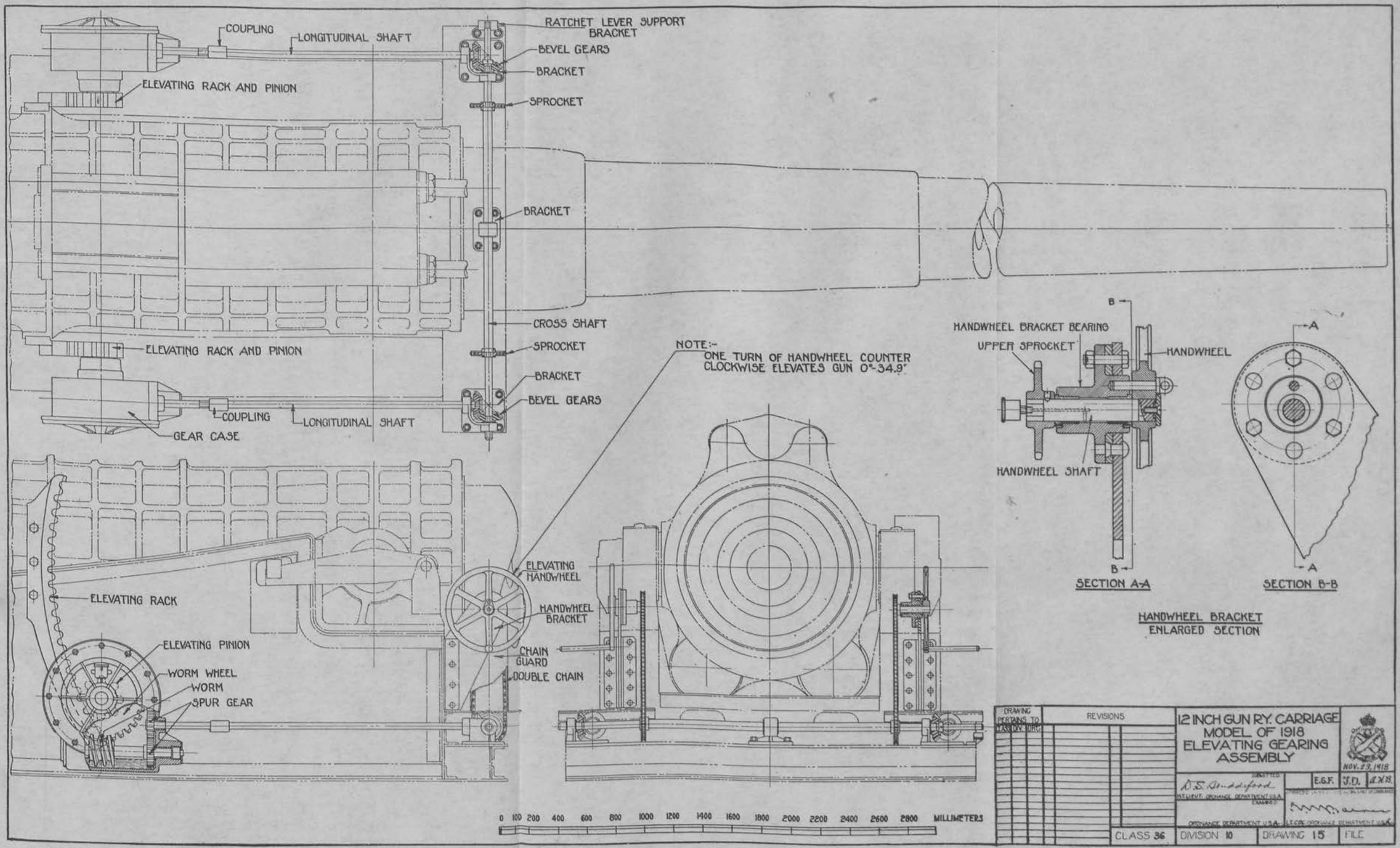
SECTION H. ELEVATING MECHANISM.

(*a*) *Description.*—(Refer to Plates XI and XII.)

For list of parts with their numbers, piece marks, drawing numbers, and material of which they are made, see page 106.

The gun is elevated and depressed by two handwheels located at the front ends of the top carriage side frames and connected through a chain and gear reduction to the gear segment, or so-called rack, that is fastened to the cradle.

This rack is bolted to a pad on the cradle with three bolts. Two machined lugs are fitted over the upper and lower ends of this pad



DRAWING PERTAINS TO HANDLY DIRK

REVISIONS

12 INCH GUN RY. CARRIAGE MODEL OF 1918 ELEVATING GEARING ASSEMBLY

NOV. 23, 1918

DRAWN E.G.F. TRACED J.D. CHKD. A.N.B.

D.S. Stoddard
LIEUT. ORDNANCE DEPARTMENT U.S.A.

ORDNANCE DEPARTMENT U.S.A.

CLASS 36 | DIVISION 10 | DRAWING 15 | FILE

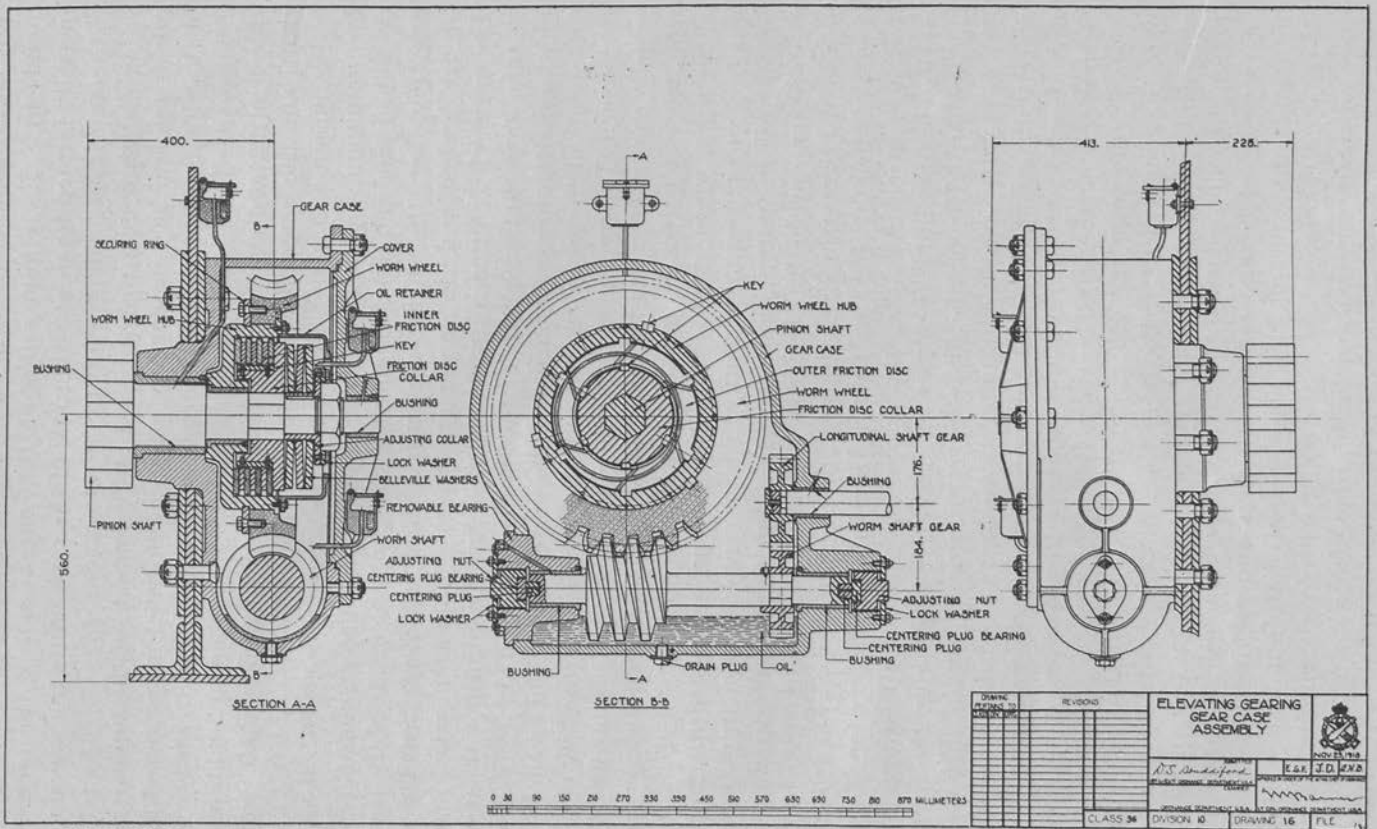

400.
GEAR CASE
SECURING RING
COVER
WORM WHEEL
OIL RETAINER
INNER FRICTION DISC
WORM WHEEL HUB
KEY
FRICTION DISC COLLAR
BUSHING
BUSHING
ADJUSTING COLLAR
LOCK WASHER
BELLEVILLE WASHERS
REMOVABLE BEARING
PINION SHAFT
WORM SHAFT
560.
ADJUSTING NUT
CENTERING PLUG BEARING
CENTERING PLUG
LOCK WASHER
B
B
SECTION A-A
A
KEY
WORM WHEEL HUB
PINION SHAFT
GEAR CASE
OUTER FRICTION DISC
WORM WHEEL
FRICTION DISC COLLAR
LONGITUDINAL SHAFT GEAR
176.
BUSHING
WORM SHAFT GEAR
184.
ADJUSTING NUT
LOCK WASHER
CENTERING PLUG BEARING
CENTERING PLUG
BUSHING
BUSHING
DRAIN PLUG
OIL
A
SECTION B-B
413.
228.
0 30 90 150 210 270 330 390 450 510 570 630 690 750 810 870 MILLIMETERS
INCHES
REVISIONS
ELEVATING GEARING
GEAR CASE
ASSEMBLY
NOV 23 1918
E.G.R.
J.D.
K.N.B.
CLASS 36
DIVISION 10
DRAWING 16
FILE

PLATE XII.

thus taking some of the load off of the bolts. The teeth are special round cut. The pinion works on the concave side of the rack. A specially formed tooth at either end of the rack limits the movement of the gun from 5° depression to 38° elevation.

The elevating gear case is bolted on the outside of the top carriage side frame and held in place by a projection fitted into a bored hole in the side frame web and fastened with 12 bolts and crown nuts. The case itself consists of three parts, the gear case, cover, and removable bearing and contains the bearings for the pinion shaft, worm shaft, and the longitudinal shaft.

The pinion and pinion shaft are made in one piece. One bearing for the pinion shaft is in the boss or projection that extends through the side frame web thus bringing the pinion on the inside of the frame and the other, the smaller one, is in the cover. Both bearings are bronze bushed and the larger one has a shoulder to take thrust. The worm wheel hub is a cup shaped steel forging splined on the inside to take keys that are a part of the bronze friction disks. The bore for the shaft is bronze bushed and the whole is mounted on the shaft just inside of the large bearing with the open side of the hub toward the cover. The bronze worm wheel is fastened to the hub with three equally spaced keys and held in its longitudinal position by a securing ring, made in halves, bolted to the worm wheel and fitted in a groove in the worm wheel hub. The friction disk collar is fitted to a hexagonal section on the pinion shaft which prevents the piece from turning but yet allows motion along the shaft that is necessary to maintain the pressure on the friction disks. It is fitted with six staked keys, held with countersunk head screws, that fit into key ways cut on the inside of the steel friction disks. There are alternately four bronze and three steel disks, the inner bronze disk having a bearing on the worm wheel hub and the outer one having a bearing on the friction disk collar. The bronze disks have oil grooves cut in their faces. The keys fastening the alternate bronze and steel disks to the worm wheel hub and friction disk collar, respectively, have sliding fits so that the disks are allowed motion along the shaft as thus they can be pressed together by the three Belleville washers that are forced down by the adjusting collar and pinion shaft nut that is threaded onto the pinion shaft. The adjusting collar has a sliding fit over a staked key in the pinion shaft that prevents it from turning and the pinion shaft nut is locked to it by a washer broached out in the shape of two crossed hexagons fitting the nut and making it possible to lock it at intervals of 30°. This pinion shaft nut lock washer is fastened to the upper side of the collar with four tap bolts. A cast-steel oil retainer is fastened to the edge of the worm wheel hub by 12 hexagon head steel screws and the joint made oil-tight by a vul-

canized fiber gasket. The worm shaft has the worm cut on it and is supported at each end by a bronze bushed bearing. These bushings are secured in place by headless screws threaded half in the case and half in the bushings at their inner ends. The bearings at the end toward the front of the carriage is a part of the case but the bearing at the other end is contained in a separate casting held by four studs and crown nuts. Each end of the shaft has a tapered hole that is fitted with a centering plug made with a spherical end. The centering plug bearing has a spherical recess as a bearing for the centering plug and is held in the adjusting nut which in turn is threaded into the bearing at the end.

On the centering plug there are four small lugs, semicircular in cross section 90° apart, that fit grooves in the recess in the adjusting nut and prevent the bearing from turning. The adjusting nut is made with a hexagonal head which is engaged by a lock washer with two crossed hexagons cut in it and fastened by two studs and crown nuts. The worm shaft gear is mounted on a hexagonal section on the shaft and locked in place with a set screw just inside the forward bearing. The longitudinal shaft bearing is directly over the worm shaft bearing. The end of the shaft has a hexagonal section and the horizontal shaft gear fitted to this end is secured by a retaining washer that fits into a counterbore in the end of the shaft and is fastened with a countersunk head screw. The hub of the gear bears against a shoulder on the bushing. The two worm shaft bearings, longitudinal shaft bearing, and pinion shaft bearings are provided with oil holes. An oil cup mounted on the side frame just above the elevating gear case feeds the large pinion shaft bearing through a copper pipe. Two more such oil cups are mounted on the cover, one above and one below the bearing and respectively feed the friction disks and the worm through copper pipes. The oil which collects in the bottom of the case and serves as a bath for the worm can be drained off by removing the drain plug at the bottom of the case. A vulcanized fiber gasket is used to make this plug oil tight.

The longitudinal shaft is made in two parts for assembling purposes and the two sections are held together by the longitudinal shaft coupling fitted to the hexagonal ends of the shafts and secured with set screws. One end is supported by the cast-steel bracket at the front of the top carriage and carries the horizontal shaft gear which meshes with the cross shaft gear, another bevel gear of the same size that is mounted on the cross shaft. The cross shaft extends to the other side of the top carriage where it is supported in another bracket and, through another set of miter gears and longitudinal shaft, is connected to the other elevating gear case.

The cross shaft has a third bearing at its center. These shaft bearings are steel castings bronze bushed. All gears are fitted to the shafts on hexagonal sections as are the two sprockets, one at each side, over which the chains from the handwheel sprockets pass. The cast-steel handwheel and its sprocket are mounted on the ends of the handwheel shaft which is supported by the bronze bushed handwheel bracket bearing in turn carried by a structural steel handwheel bracket, one of which is mounted on the front end of each side frame. The shaft bearing in the bracket is kept lubricated by a grease cup, screwed into the sprocket end of the shaft, which feeds through holes drilled in the shaft. The bearings for the shaft is made eccentric, so that by rotating the handwheel bracket bearing and bolting it in different positions the handwheel shaft may be raised or lowered, thus tightening or loosening the chain. The handwheel is made with a sleeve handle and can be locked and prevented from turning by bringing the holes in the hub and the handwheel bracket bearing opposite each other and inserting the locking pin which is fastened to the wheel with a chain. The two ends of the cross shaft are hexagonal sections on which the ratchet lever can be fitted which is used to elevate or depress the gun when the handwheels are found inadequate in the event of the gun hanging out of battery and upsetting the balance of the tipping parts or for any other reason. There is considerable extension of the cross shaft on one side, so that a ratchet lever support bracket is provided to rest the ratchet lever in on that side.

Power applied to the handwheels is transmitted through the chains to the cross shaft and thence by the miter gears to the longitudinal shaft to the elevating gear case. The gear on the end of the longitudinal shaft drives the worm through the worm shaft gear, the worm meshing with the worm wheel and driving the elevating pinion. Since the worm is self-locking, damage would result from a heavy overload or shock, but for the action of the friction disks which allow the pinion shaft to slip within the worm wheel hub. They also tend to equalize the loads on the pinions.

The chains and upper sprockets are covered with steel chain guards fastened to the brackets and platforms. The ratchet lever consists of a lever, two fork plates, ratchet wheel, pawl pin, pawl, and pawl spring with the necessary bolts and nuts. The fork plates are held with four bolts to the lever and act as bearings for the ratchet wheel and pawl pin. The pawl spring is fastened to the lever and keeps the pawl engaged. The ratchet wheel is broached to fit the hexagonal sections on the ends of the cross shaft. The whole is simply a large ratchet wrench.

SECTION I. TRAVERSING MECHANISM.

(a) *Description.*—(Refer to Plates XIII and XIV.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 108.

The traversing of the gun is accomplished by two handwheels, one at the rear end of each side frame, which are connected by chains and a gear reduction to the traversing rack.

The traversing rack is bolted to the traversing rack support, which is in turn fastened to the curved transom, No. 6, of the car. These rack bolts have specially shaped heads that are sunk into the rack between teeth. Two forged steel stops, one at each end of the rack, limit the travel of the top carriage by engaging pads on the traversing gear case. The pinion that meshes with the rack is integral with the pinion shaft which is carried in a long bronze bushed bearing in the under side of the traversing gear case. The bronze worm wheel is fitted to a hexagonal shaped section on the upper end of the pinion shaft and is secured by a crown nut and pinion shaft washer. The lower end of the hub of the worm wheel bears on the bearing bushing and supports these parts. The worm shaft is carried in two bronze bushed bearings in this case between which is mounted the worm. The worm is fitted to a hexagonal section on this shaft and is secured by a set screw seated in the round part of the shaft. The traversing gear case is a steel casting of the shape to inclose the parts mentioned and is fastened to the curved transom at the rear end of the top carriage by six bolts. The top of the case is closed with a flange steel gear case cover held in place with five tap bolts. Two holes are provided in the cover, one for oiling the worm and the other for feeding the wick carried on the worm wheel between its rim and hub. A spring steel oil hole cover pivoted halfway between the holes covers both holes when closed.

The worm shaft passes through the rear section and to the left of the connection section of the top carriage. Its forward end is supported in a bronze bushed bearing in the intermediate bracket that is fastened to the connecting and front sections. The intermediate bracket also has a bearing for the cross shaft and partially incloses the set of miter gears that connect the worm shaft and the cross shaft. Both of these gears are fitted to hexagonal sections on their shafts. The one on the worm shaft is held in place by a retaining washer and countersunk head screw at the end of the shaft and the one on the cross shaft is secured by the cross-shaft collar. A small steel casting called the outer bearing, containing a bronze bushing, is fastened by two bolts and crown nuts to the outside of the top carriage side frame web plate on each side of the top carriage where the cross shaft comes through. These bearings are fitted in holes bored in

the web plate. Just outside of these bearings the lower sprockets are fitted to the hexagonal sections on the ends of the cross shaft and secured with retaining washers. These lower sprockets are connected by double chains to the upper sprockets which are bronze bushed and mounted on the eccentric shaft. Part of the hub of the upper sprocket is made hexagonal shape and the handwheel is fitted over it, and the sprocket and handwheel are kept from running off the eccentric shaft by the retaining washer. The eccentric shaft is supported by the cast-steel bracket, which is fastened with six bolts to the top of the top carriage side frame near its rear end. The part of the shaft held in the bracket is not turned on the same centers as the journal is; hence its name, eccentric shaft. The eccentric-shaft lever is fitted and pinned to the hex section on the inner end of the shaft and by means of a bolt and crown nut can be locked in any position provided for by the 11 holes for the bolt in the inner flange of the bracket, thus making it possible to rotate the shaft to many positions and adjust the chain tension.

The handwheel is of cast steel and is provided with a sleeve handle. An oil hole is drilled through the handwheel hub and through the upper sprocket hub for oiling the bearing on the eccentric shaft. All bearings are provided with oil holes and grooves, except the bearings in the traversing-gear case, which are without oil holes and are fed by the oil from the case. The sprockets and chains are covered by guards of flange steel.

SECTION J. PINTLE, SIDE, AND REAR BEARINGS.

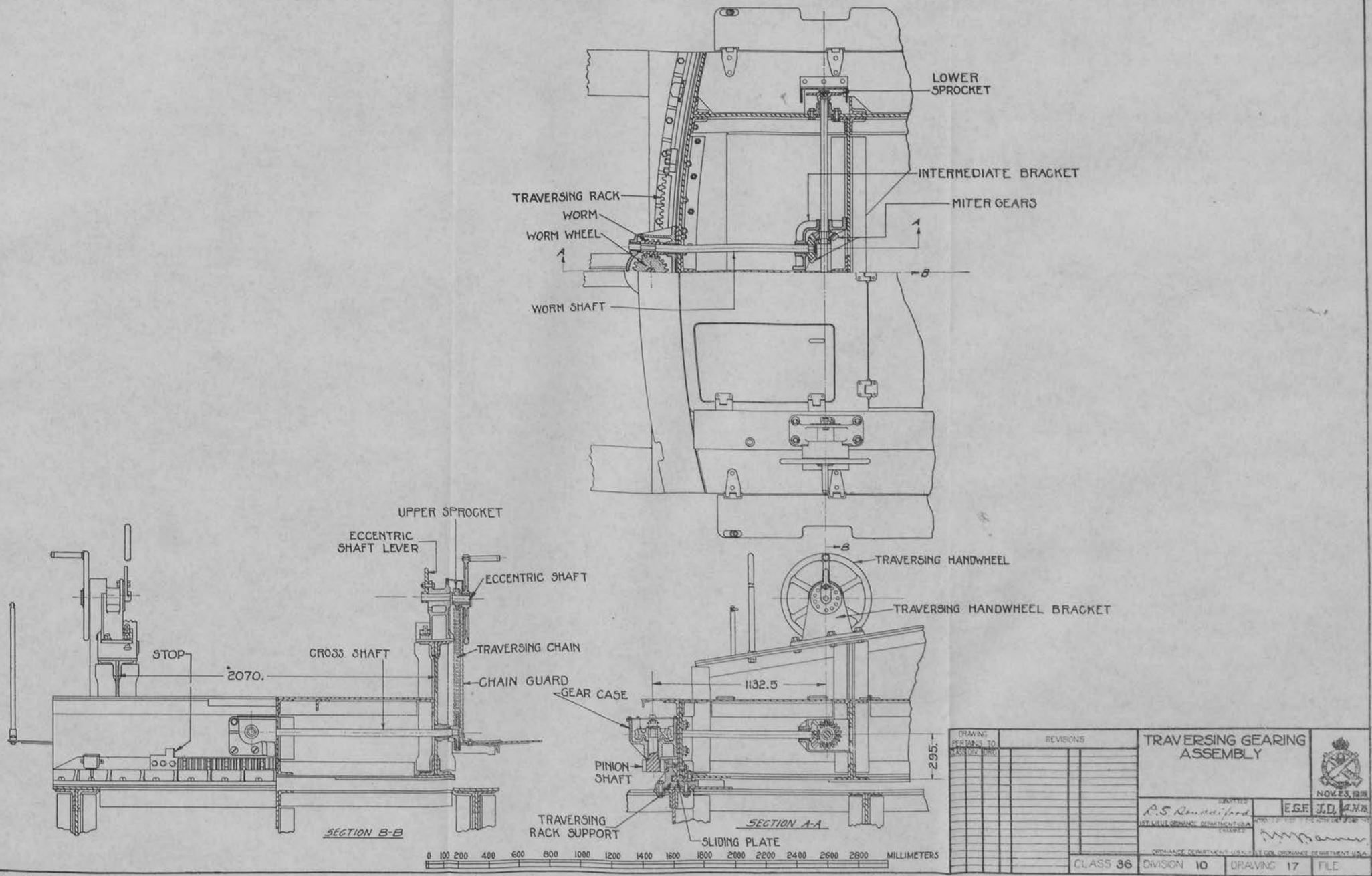
(*a*) *Description.*—(Refer to Plate XV.)

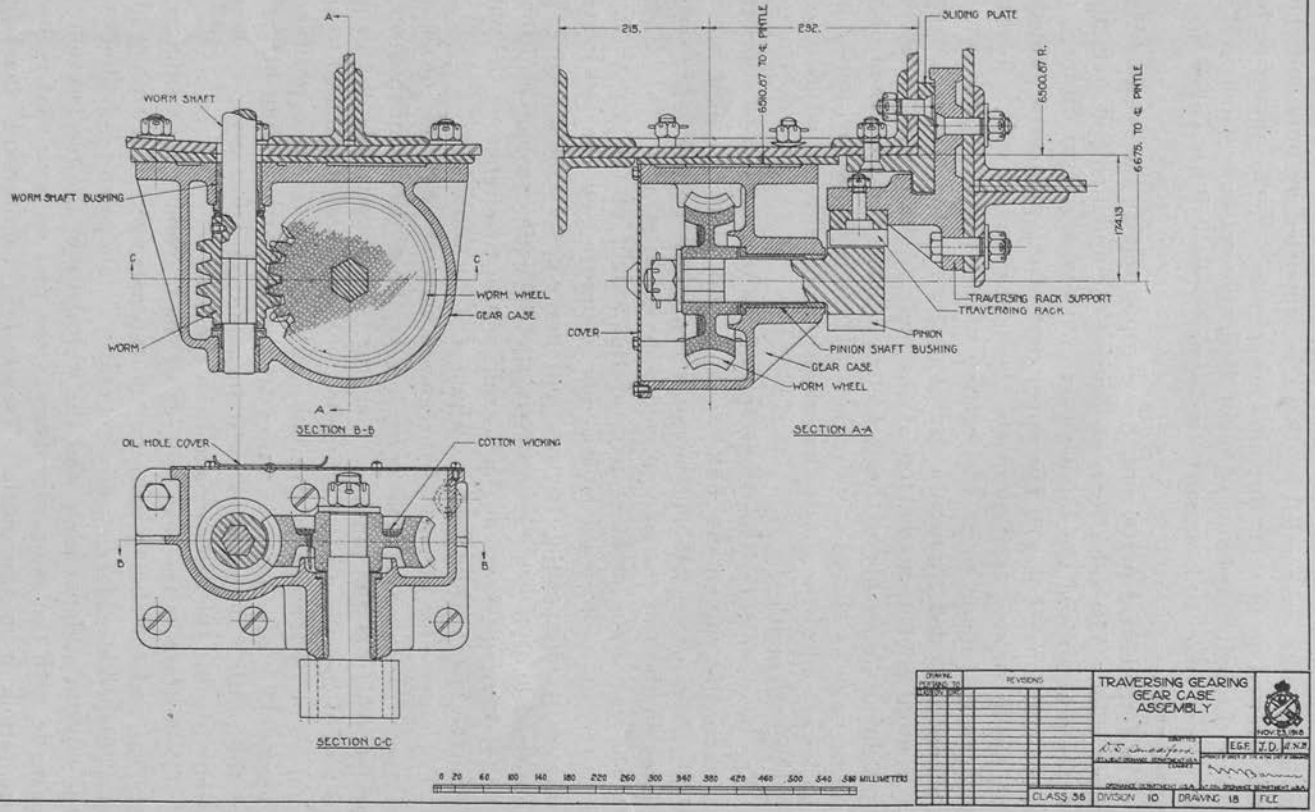
For list of parts with their numbers, piece marks, drawing numbers, and material of which they are made, see page 111.

The pintle as a unit consists of a pintle, pintle support, pintle plunger, supporting bolts, upper and lower yokes, Belleville washers, and the necessary bolts and small parts.

The pintle is a steel forging fastened to the bottom of the front transom of the top carriage and a turned section on the upper side of the pintle fits into a hole in the bottom tie plate, that is reinforced by plates on the top and bottom fastened on with countersunk head screws. Ten bolts and crown nuts hold the pintle in place. These bolts pass through two parts of the front transom through spacers.

The cast-steel pintle support is fitted to the No. 3 transom of the car, and the flange around the top is fastened with 10 bolts and crown nuts through the upper angles of this transom. A filler piece is used between the pintle support and the transom called the pintle support shim plate. This pintle support is essentially a socket for the pintle. It has two tapped holes in its under side for the supporting bolts and a hole at the bottom of the socket for the pintle plunger.


LOWER SPROCKET
INTERMEDIATE BRACKET
MITER GEARS
TRAVERSING RACK
WORM
WORM WHEEL
WORM SHAFT
A
B
UPPER SPROCKET
ECCENTRIC SHAFT LEVER
ECCENTRIC SHAFT
TRAVERSING HANDWHEEL
TRAVERSING HANDWHEEL BRACKET
STOP
2070.
CROSS SHAFT
TRAVERSING CHAIN
CHAIN GUARD
GEAR CASE
1132.5
295.
PINION SHAFT
TRAVERSING RACK SUPPORT
SLIDING PLATE
SECTION B-B
SECTION A-A
0 100 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 MILLIMETERS
DRAWING PERTAINS TO
REVISIONS
TRAVERSING GEARING ASSEMBLY
NOV 23 1918
DRAWN
R.S. Rowland
E.G.F.
J.D.
ORDNANCE DEPARTMENT U.S.A.
CHECKED
ORDNANCE DEPARTMENT U.S.A.
CLASS 36
DIVISION 10
DRAWING 17
FILE


A
WORM SHAFT
WORM SHAFT BUSHING
C
C
WORM WHEEL
GEAR CASE
WORM
A
SECTION B-B
215.
6510.67 TO ℄ PINTLE
232.
SLIDING PLATE
6500.67 R.
6675. TO ℄ PINTLE
174.13
TRAVERSING RACK SUPPORT
TRAVERSING RACK
COVER
PINION
PINION SHAFT BUSHING
GEAR CASE
WORM WHEEL
SECTION A-A
OIL HOLE COVER
COTTON WICKING
B
B
SECTION C-C
0 20 40 80 140 180 220 260 300 340 380 420 460 500 540 580 MILLIMETERS
DRAWING CHECKED BY
REVISIONS
TRAVERSING GEARING
GEAR CASE
ASSEMBLY
NOV 23 1910
DRAWN
E.G.F.
J.D.
W.N.P.
CLASS 36
DIVISION 10
DRAWING 18
F.L.C.

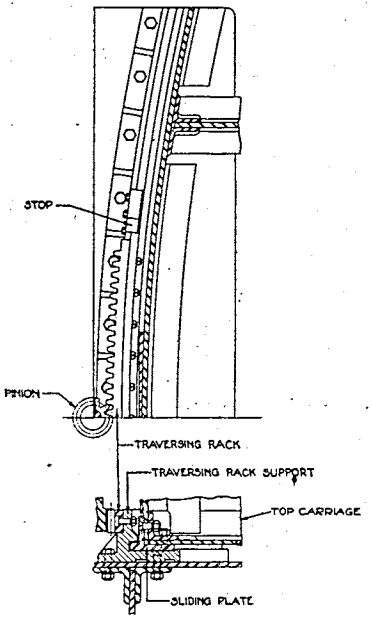
The supporting bolts are screwed up into the pintle support, and the lower yoke, suspended by them, is supported by nuts and check nuts screwed on to their threaded lower ends. Each supporting bolt passes through a column of eight Belleville washers which rest on the lower yoke and support the upper yoke. Both yokes are of forged steel.

The forged-steel pintle plunger is supported at the center of the upper yoke. The yoke bears up against the under side of a shoulder on the plunger and the smaller part of it extends down through the upper and lower yokes. The upper part of the plunger is guided in the pintle support and supports the pintle on its upper spherical concave end made to fit the bottom of the pintle. These contact surfaces are oiled through a drilled passage in the pintle that ends in a small pocket on the top of the piece. The pocket is fed into by a pipe from an oil cup that is fastened to the front transom of the top carriage by the oil-cup bracket. There is waste packing around the lower end of the pintle that absorbs and holds the oil as it feeds through the pintle.

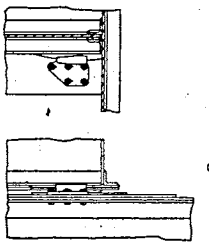
The dead weight of the front end of the top carriage is supported through the supporting bolts, yokes, and pintle plunger on the Belleville washers. When the pintle is properly adjusted the bearing plates on the top carriage on each side are lifted just clear of those on the car. The greatest part of the weight of the top carriage, which is at its forward end, is now supported on the pintle, thus practically eliminating friction and making traversing easy. The increased load of firing compresses the Belleville washers and forces the top carriage down on the bearing plates, thus relieving the pintle from the heavy firing load for which it is not intended.

The outer edge of part of the gusset plate on each side of the top carriage on the same transverse line as the pintle is finished on an arc struck from the pintle as a center. The upper side of this projection of the gusset plate is finished. A cast-steel clip is held to each side frame of the car by five bolts and crown nuts in a position to engage the gusset plate and prevent the top carriage from lifting off of the pintle. These clips must be removed if for any reason it is desired to lift the top carriage from the car.

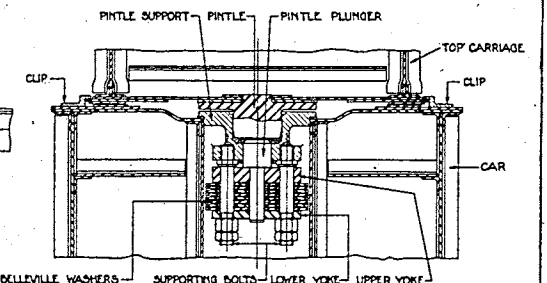
The bearing at the rear consists of the traversing rack support on the car and the sliding plate on the top carriage. The sliding plate is a finished steel forging of a general "T" shape and is bolted on to the bottom stiffener plate and the web plate of the rear section. It is made with the same curvature as the rear section; that is, on an arc struck from the pintle. Twenty-four countersunk head bolts and crown nuts are used to fasten this piece in place. The traversing rack support is a curved steel casting bolted to the No. 6 transom of the car and forms the bearing for the sliding plate and also serves



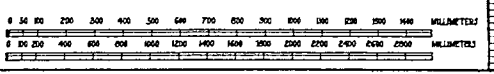
REAR BEARING



SIDE BEARING



PINTLE



DRAWING	REVISIONS	PINTLE, SIDE AND REAR BEARINGS ASSEMBLY			
			NOV. 23, 1918		
		DRAWN	T.J.O	E.G.E	J.D.
		TRACED	A.S. Armistead		
		CLASS 36	DIVISION 10	DRAWING 21	FILE

as a clip to hold down the rear end of the top carriage. The bearing surface is provided with oil grooves and is oiled by an oil cup at each end through an oil pipe. This casting, as its name implies, also carries the traversing rack. It is fastened to the transom with 14 common hex head bolts and 14 countersunk head bolts and crown nuts, the countersunk bolts being used for the bearing surface. The travel of the top carriage on this rear bearing is limited by stops on the traversing rack support as explained in the description of the traversing gear.

SECTION K. CAR.

(*a*) *Description.*—(Refer to Plates XVI and XVII.)

For list of parts, with their number, piece marks, drawing number, and material of which they are made, see page 120.

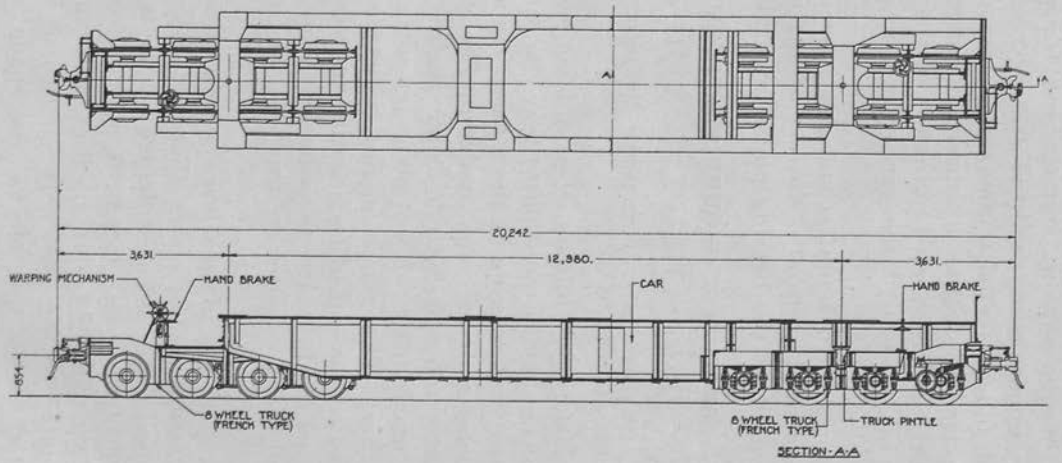
The car consists of two side girders, connected by eight main transoms, which act as platform supports, the whole mounted on two 8-wheel trucks of the French type. It is equipped with 24 wedges and 12 tension screws, by means of which it is attached to the ground platform. It acts as a support for the top carriage when the gun is fired and is a transport vehicle for the gun, top carriage, tools, and accessories.

The car body is built up of structural steel angles and plates. The side plates are plate girders with vertical angle stiffeners. The lower rear corner of the girder is cut away and the lower part of the front of the girder slopes upward. The first and seventh transoms, of practically the same construction, are box girders with a recess in the center for the truck pintle castings, which are bolted on. Near each end of the transoms, at the bottom, are attached bearing castings which slide on corresponding bearing plates on the trucks. Transom No. 3 is of slightly heavier construction than the others, as it transmits the larger part of the stresses due to the weight of the top carriage and gun to the car body. It is a box girder with a square recess in the center for the carriage pintle support. Bearing plates which slide on corresponding plates on lower side of the top carriage are attached near each end of this transom. The remaining transoms are straight girders with the exception of No. 6, which is built on an arc struck from the pintle as a center.

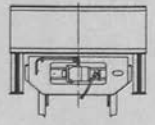
Three tool boxes are riveted to the inside of the car. Suitable steps and ladders are provided to make each part of the car accessible. Guides for the wedges and clips for the tension screws are attached to the bottom of the girders. In transit the wedges are carried on the sides of the car on brackets riveted to the girder plates.

The front of the car is covered with a 0.312-inch checkered plate platform. Three trapdoors in the platform provide access to the

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SECTION - A-A



0 300 600 1200 1800 2400 3000 3600 4200 4800 5400 6000 6600 7200 7800 8400 MILLIMETERS

DRAWING REVISED TO	REVISIONS	CAR AND TRUCK ASSEMBLY
		CLASS 56 / DIVISION 10 / DRAWING EE / FILE

inside of car. The platform at the rear of the car is supported by four transoms, the end one being a continuation of transom No. 8. The platform is of 0.312-inch checkered plate. A trapdoor and ladder provide access to the truck. The rear platform is on a level with the rear platform on the top carriage and serves as a loading platform.

Handrailings are fastened at each side of both the front and rear platforms and across part of the end of the rear platform. When the gun is in the traveling position (elevated 5°) it is held in position by the gun support and the gun transport ties. The base of the gun support is a structural steel box used for carrying tools or supplies and is riveted to the top of transom No. 1. The gun support is attached to this by means of hinges. One end of the gun transport ties are riveted to the top of the side girders and are folded down on the top of the car when the gun is in firing position.

The oil cups for the truck pintles and side bearing castings must be kept clean and filled with oil. No rust or dirt must be allowed to accumulate on either the bearing plates or pintles.

SECTION L. GROUND PLATFORM.

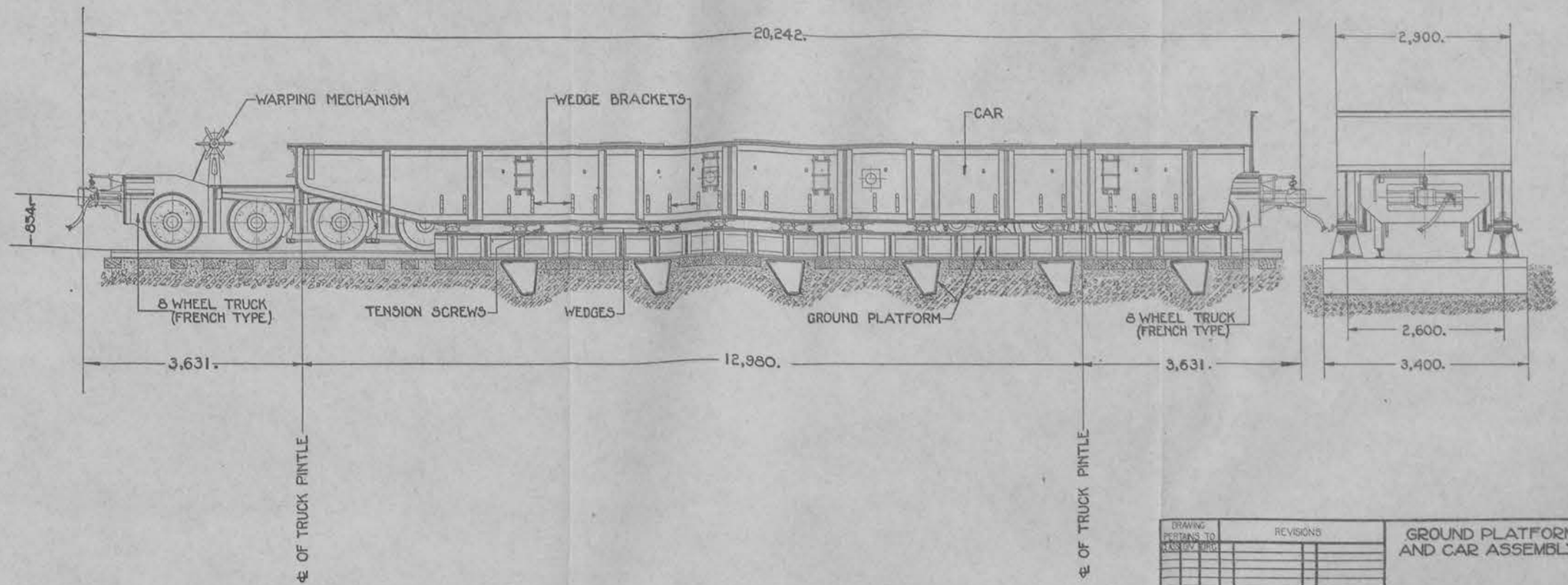
(*a*) *Description.*—(Refer to Plates XVII, XVIII, and XIX.)

For list of parts, with their number, piece marks, drawing number, and material of which they are made, see page 136.

The ground platform is built up in six similar sections, which are bolted together when laid in position to take the car. Each section is composed of two girders, a spade and a base. In addition to these there are the tension screws and wedges. The girders are built up of a web plate, top and bottom flange angles, cover plates on top and bottom, and four sets of bent plates on each side for stiffeners, all riveted together. Two pair of angles, with one leg of each cut short, are riveted to the top of each girder and serve as guides for the wedges. A set of clip plates for a tension screw is bolted to the top near one end. Splice plates are provided for connecting adjoining girders.

The spade is made up of two large structural steel plates bent around and riveted to small plates that have been flanged on all sides. These small plates act as stiffeners for the large plates. The base is made up of three oak ties with eight spacing blocks bolted to them, and two rails spiked to the ties 1,500 millimeters apart. The spade is bolted to the rails between two of the ties and the girders are bolted to the ties, blocks, and spade, perpendicular to and near the ends of the ties.

The wedge is made up of two side wedges and a center wedge, held together by a bolt through each wedge and the front and rear



DRAWING PERTAINS TO ASSEMBLY DWG.

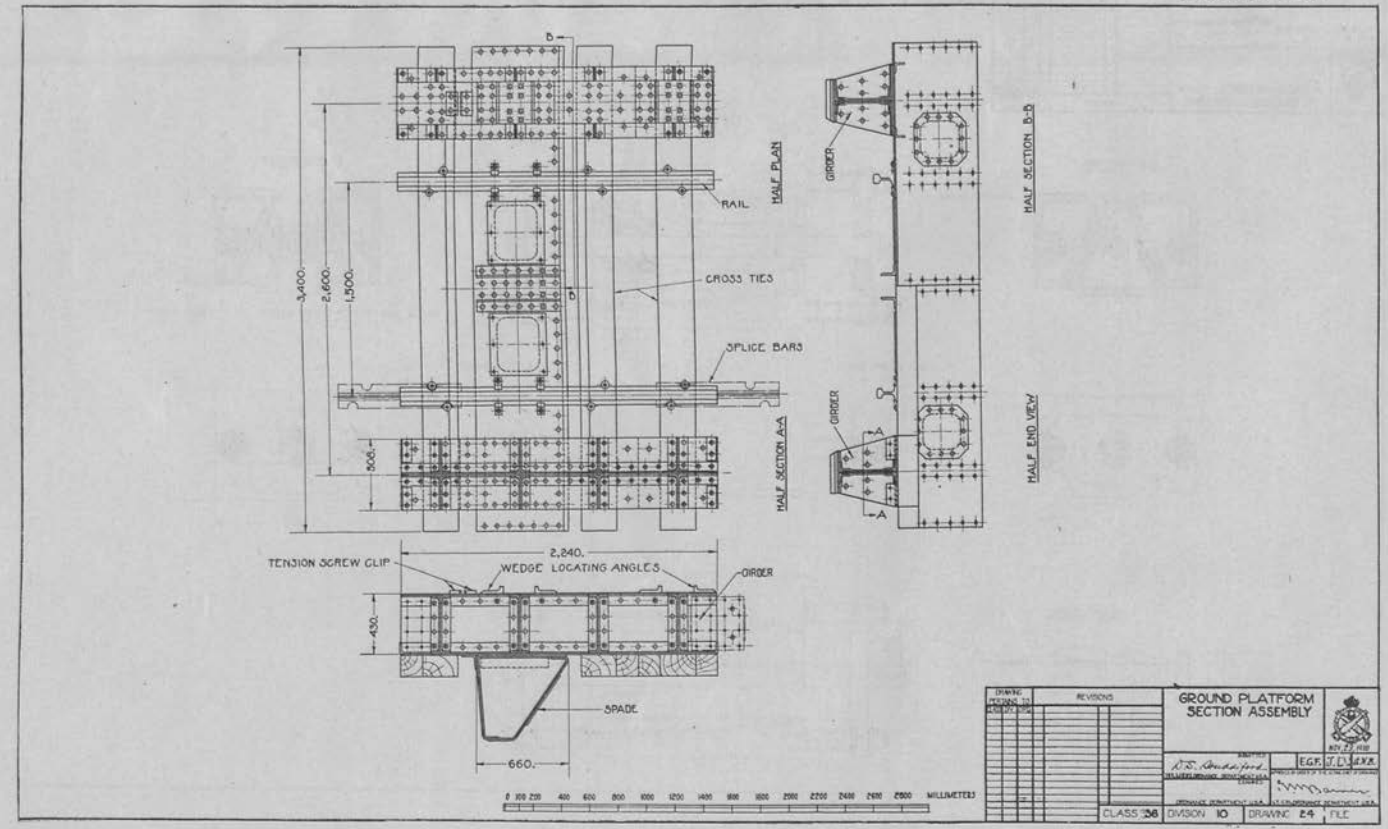
REVISIONS

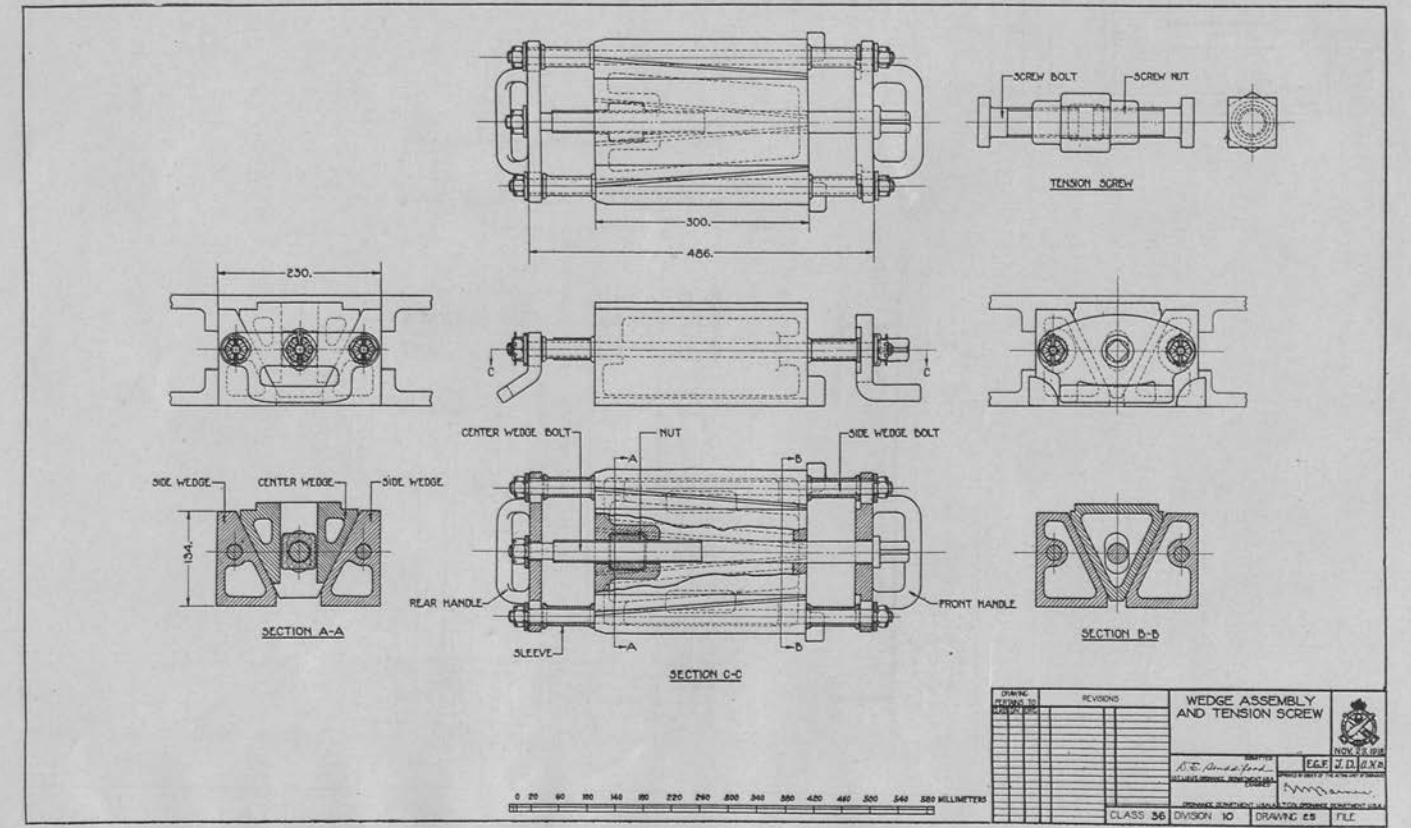
GROUND PLATFORM AND CAR ASSEMBLY

NOV. 23, 1918.

	W.C.N.	E.G.F.	J.D.	A.H.B.

CLASS 36 | DIVISION 10 | DRAWING 23 | FILE


B
RAIL
CROSS TIES
SPLICE BARS
3,400.
2,600.
1,500.
506.
HALF PLAN
HALF SECTION A-A
GIRDER
HALF SECTION B-B
HALF END VIEW
2,240.
TENSION SCREW CLIP
WEDGE LOCATING ANGLES
GIRDER
430.
SPADE
660.
MILLIMETERS
REVISIONS
GROUND PLATFORM
SECTION ASSEMBLY
E.G.F.
J.D.
H.N.K.
CLASS 38
DIVISION 10
DRAWING 24
FILE


SCREW BOLT
SCREW NUT
TENSION SCREW
300.
486.
230.
CENTER WEDGE BOLT
NUT
SIDE WEDGE BOLT
SIDE WEDGE
CENTER WEDGE
SIDE WEDGE
134.
REAR HANDLE
FRONT HANDLE
SLEEVE
SECTION A-A
SECTION C-C
SECTION B-B
0 20 40 60 100 140 180 220 260 300 340 380 420 460 500 540 580 MILLIMETERS
REVISIONS
WEDGE ASSEMBLY AND TENSION SCREW
NOV 24 1918
E.G.F.
CLASS 36
DIVISION 10
DRAWING 25
FILE

handles. The center wedge bolt is threaded and screwed into a nut held in the center wedge. To screw up wedge a handle is provided which fits on one end of the center wedge bolt.

The tension screws are made of two bolts, with square, flat heads, called tension screw bolts, connected by a tension screw nut.

A spacing gauge and an excavation gauge are provided for making the excavations.

SECTION M. TRUCKS.

(*a*) *Description.*—(Refer to Plate XX.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 139.

The trucks are eight-wheel, French type, having 180 by 310 millimeter journals and structural steel truck bodies. Two side frames are connected by two end plates and four transverse transoms. On either side of trucks, parallel with side frames and riveted to same, are two side bearing supports which take the load of the car. Symmetrically located on each side of center line of truck are longitudinal transoms extending from rear end plate to two No. 1 transoms. Spaced at intervals between transom No. 1 and rear end plate are three transoms—Nos. 2, 3, and 4. Transom No. 3 cover plate, as its name implies, covers transom No. 3 and is riveted to it. The rear end cover plate is riveted to an angle which connects it with rear end plate. The front-end plate is riveted to the two No. 1 transoms, side frames, and two structural steel triangular braces, which are riveted to the side frames. The pintle bearing is riveted to the pintle-bearing supports, which in turn are riveted to the two center longitudinal transoms.

Four rectangular areas are cut from each side frame to accommodate journal boxes, which are guided in their vertical motion by two bronze-lined steel pedestals riveted to side frame. Two suspension-rod supports are riveted to side frames, one on each side of journal-box opening. Two suspension rods pass through spring and through the suspension-rod supports, their heads bearing upon the spring bearings, which fit into the spring slots. The lower ends of the suspension rods are threaded and fitted with nuts and lock nuts, which screw up against the bottoms of the suspension-rod supports through the upper and side frames to the spring. Passing around the spring, midway between ends, is the spring band, upon the lower face of which is a bearing—shape a segment of a sphere. The upper part of spring band is a cylinder, which runs in the spring-band guide. The sphere-shaped bearing of spring band fits into a corresponding recess in top of journal box support, thus forming a ball-and-socket joint. It is through this joint that the weight of car is transmitted to the journals. This suspension system is located on inside of side frames.

The journal box, forming the lower face of the journal-box support, is secured by the journal-box support pin, which passes through the sides of the journal-box support and through lugs on the under face of the journal box. The journal-box bearing, a babbit-lined bronze casting, is held in place in the journal-box support by the journal. A woolen pad, mounted in a steel plate, is pressed against the lower surface of the journal by four springs. The pad is kept saturated with oil drawn up by wicks from the lower part of the journal box.

SECTION N. WARPING MECHANISM.

(*a*) *Description.*—(Refer to Plate XXI.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 146.

The warping mechanism is a device for moving the car along the track by hand in order to line up the car with the ground platform. It is worked by a handwheel connected through a chain and a gear reduction to one of the axles. The driving pinion can be thrown in and out of engagement. The warping mechanism must always be thrown out of engagement when the mount is traveling.

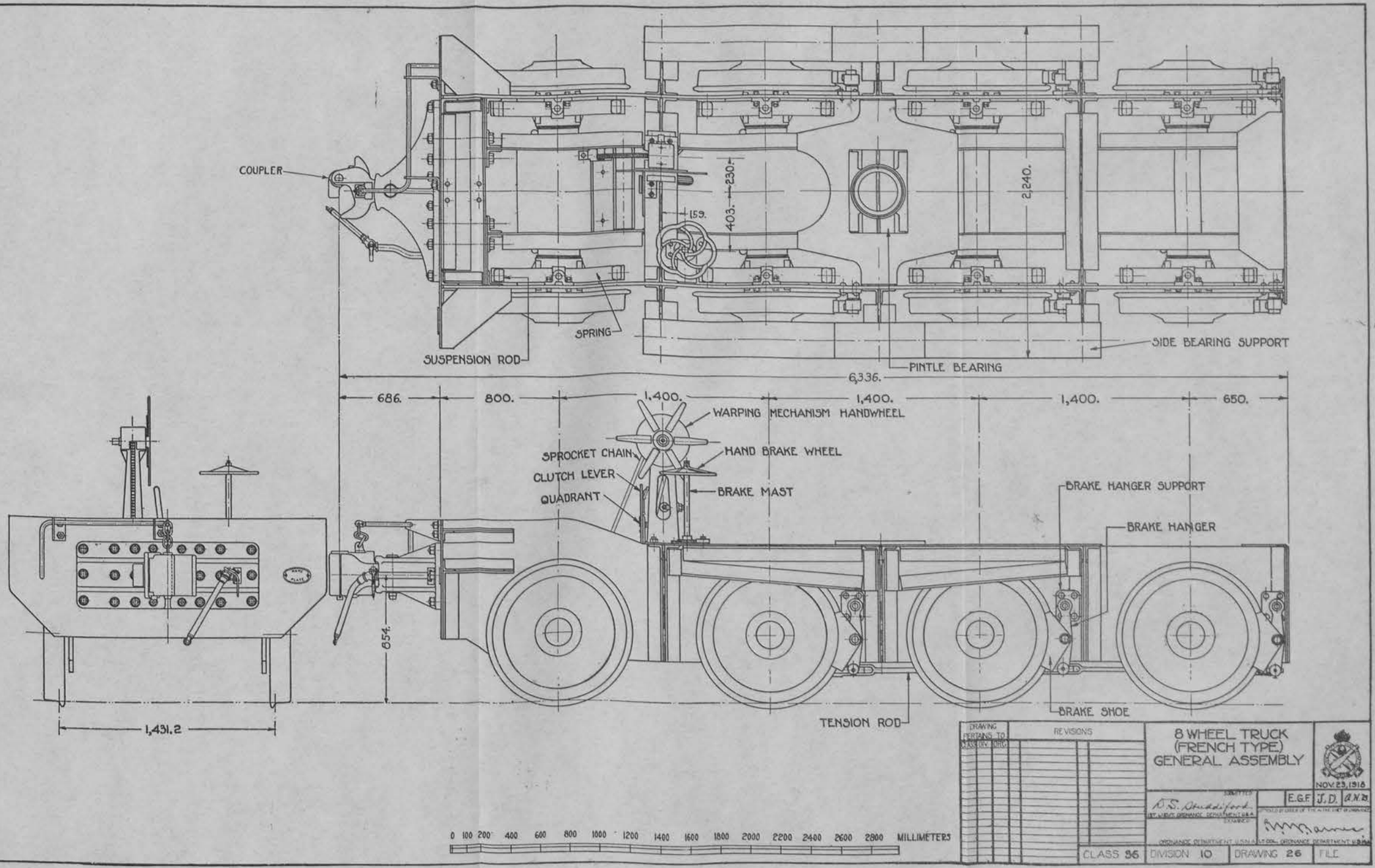
The cast-steel handwheel shaft support is bolted to transom No. 2 of the truck and has bolted to it two cast bronze bearings which support the handwheel shaft. A sprocket is mounted on this shaft between the bearings and the handwheel is mounted on the left end. The other end is hexagonal in shape and an auxiliary handle can be attached to utilize the work of another man if required. A sprocket cover fits over the sprocket and bearings, and is provided with two oil tubes, fitted with plugs, that project down to the bearings. A chain connects this upper sprocket with the one on the sprocket shaft and its tension is adjustable by an adjusting roller or idler mounted on the handwheel shaft support.

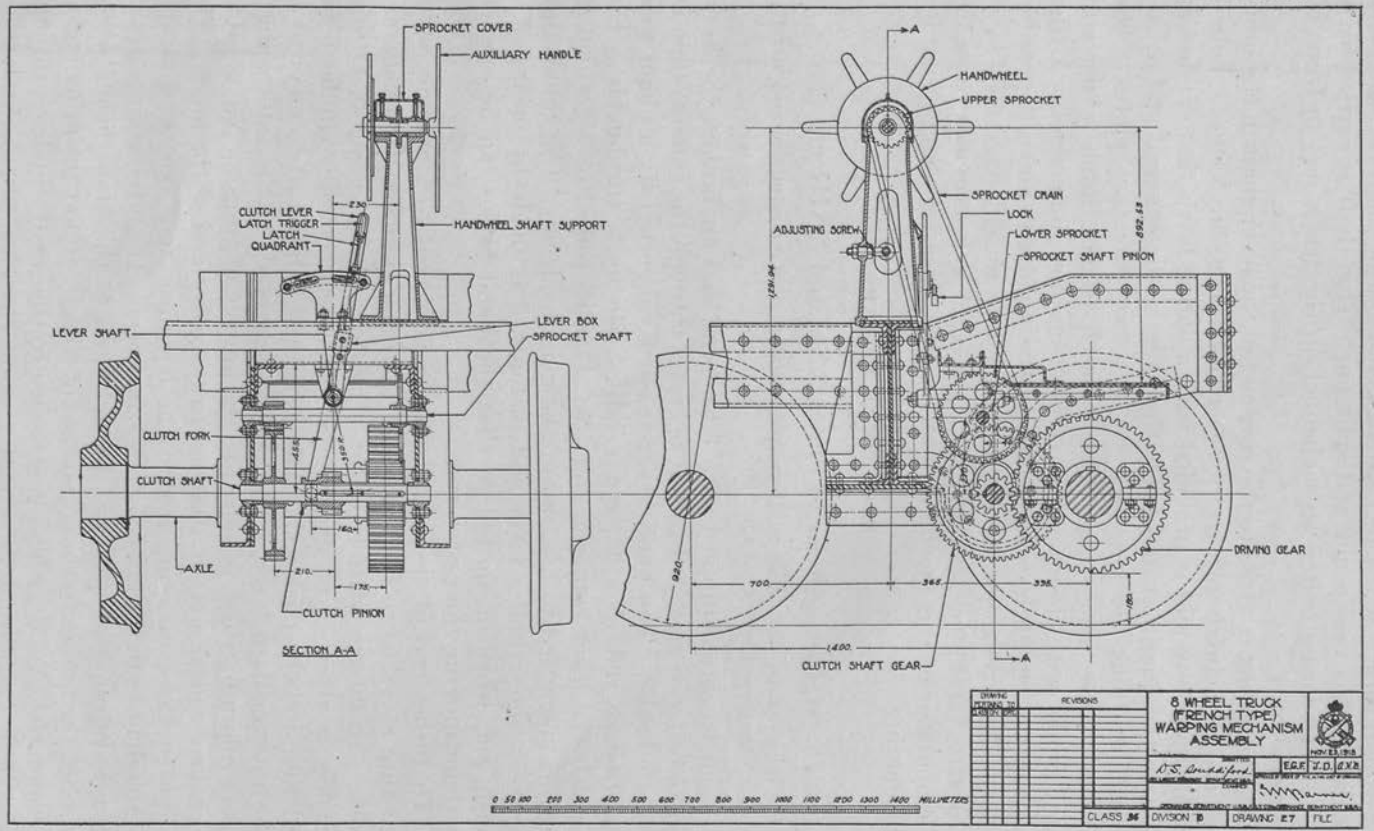
Also keyed to the sprocket shaft is a pinion which meshes with clutch-shaft gear keyed to that shaft. Bronze bearings, bolted to the truck side plates, carry these shafts. They are made with oil holes and grooves.

The final drive is accomplished by the clutch pinion on the clutch shaft, which meshes with the driving gear on the front axle. Two keys are seated in and fastened with screws to the shaft, and the pinion has a sliding fit over them so that it may be moved in and out of engagement.

The driving gear is made in halves and held together by studs and bolts and four cast-steel angles riveted to its web. A keyway in each half provides for a key, which fits on a flat on the axle.

The clutch fork is fitted with clutch pins which hold the clutch slides. The two clutch slides fit in a groove cut in the hub of the clutch pinion diametrically opposite each other. The upper end of


COUPLER
SUSPENSION ROD
SPRING
159.
403.
230.
2,240.
SIDE BEARING SUPPORT
PINTLE BEARING
6,336.
686.
800.
1,400.
1,400.
1,400.
650.
WARPING MECHANISM HANDWHEEL
SPROCKET CHAIN
CLUTCH LEVER
QUADRANT
HAND BRAKE WHEEL
BRAKE MAST
BRAKE HANGER SUPPORT
BRAKE HANGER
854.
1,431.2
TENSION ROD
BRAKE SHOE
0 100 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 MILLIMETERS
DRAWING PERTAINS TO MASTER DWG
REVISIONS
8 WHEEL TRUCK (FRENCH TYPE) GENERAL ASSEMBLY
NOV 23, 1918
E.G.F
J.D.
A.N.P.
CLASS 36
DIVISION 10
DRAWING 26
FILE


SPROCKET COVER
AUXILIARY HANDLE
CLUTCH LEVER
LATCH TRIGGER
LATCH
QUADRANT
HANDWHEEL SHAFT SUPPORT
LEVER SHAFT
LEVER BOX
SPROCKET SHAFT
CLUTCH FORK
CLUTCH SHAFT
AXLE
CLUTCH PINION
SECTION A-A
A
HANDWHEEL
UPPER SPROCKET
SPROCKET CHAIN
LOCK
ADJUSTING SCREW
LOWER SPROCKET
SPROCKET SHAFT PINION
DRIVING GEAR
CLUTCH SHAFT GEAR
700
365
335
1400
920
8 WHEEL TRUCK
(FRENCH TYPE)
WARPING MECHANISM
ASSEMBLY
REVISIONS
CLASS M
DIVISION 18
DRAWING 27
FILE

the clutch fork is fitted to the hexagonal end of the lever shaft and secured with a crown nut and split pin. This shaft is carried by a cast-steel bearing bolted to a channel on the truck just in front of transom No. 1.

The lever box is fitted to the rear end of the lever shaft in the same way as is the clutch fork on the other end. The clutch lever is bolted to the lever box and is provided with a spring latch that catches in slots in the quadrant and holds the lever in the engaged and disengaged positions, as indicated by the two direction plates. The latching device consists of a latch, latch trigger, latch spring and latch guide, with the necessary connecting pins and screws. A ring bolt on the clutch lever and two on the quadrant make it possible to lock the lever in position with the padlock provided.

A structural steel platform over the front axle provides room for the operator of this mechanism and at the same time a covering for the gearing.

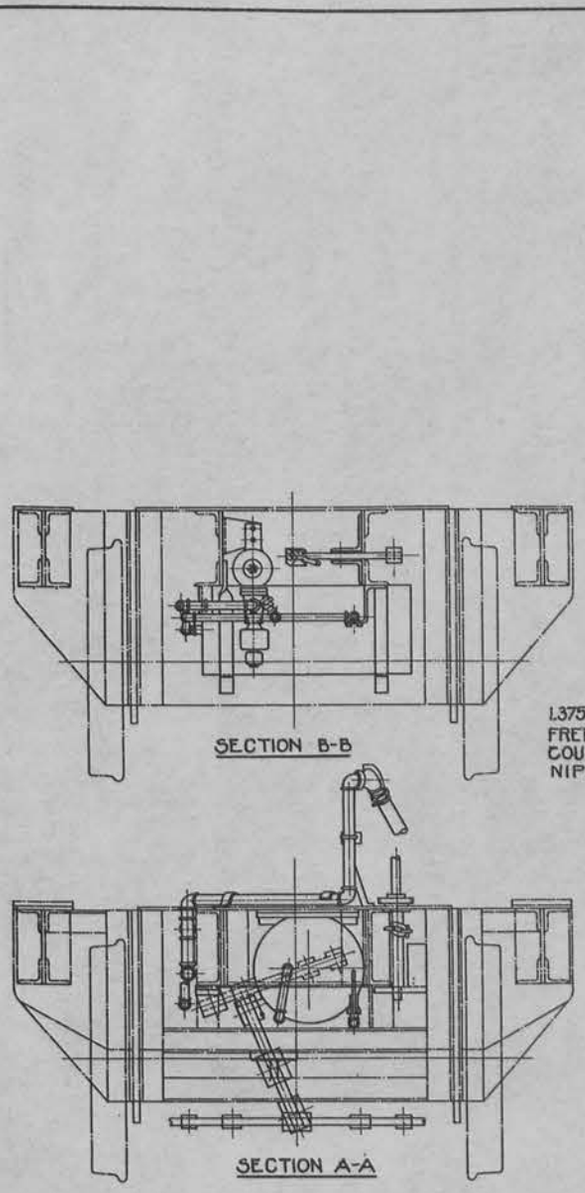
SECTION O. BRAKES.

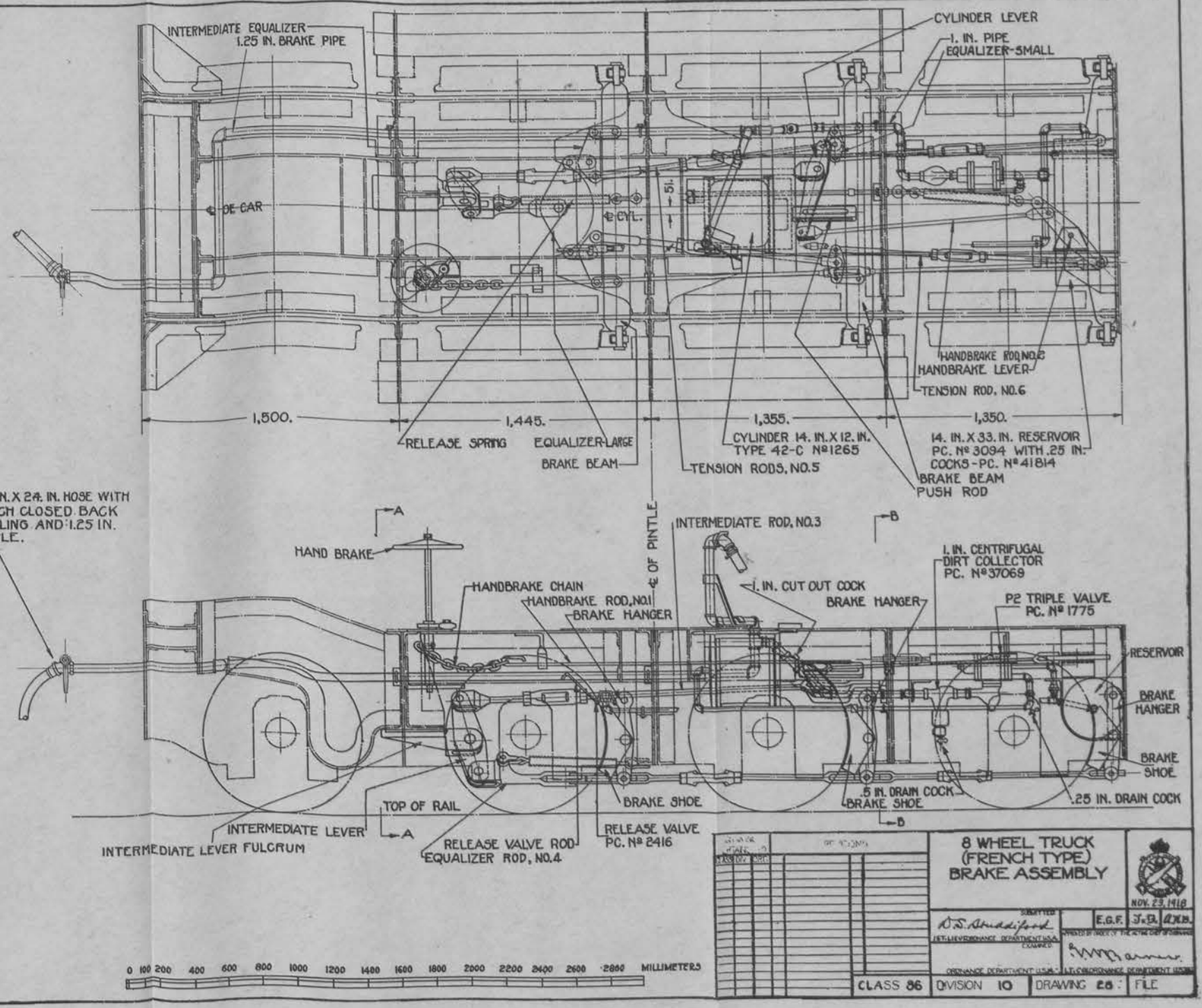
(*a*) *Description.*—(Refer to Plates XXII and XXIII.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 148.

Each truck is equppied with both hand and air brakes, the hand brake being so arranged that it operates through the same system as the air brake. The hand brake mast is connected by a chain to a hand-brake rod (No. 1), made adjustable by a turnbuckle. The hand-brake lever connects rod (No. 1) with rod (No. 2), which in turn is connected to one end of the cylinder lever. The connection between the cylinder lever and piston rod is made by means of a push rod, which is slotted so that the hand brake can be applied without moving the piston rod.

The other end of the cylinder lever is hinged to a cylinder lever fulcrum attached to the bottom of the inner right longitudinal transom. An intermediate rod (No. 3), adjustable by means of a turnbuckle, is attached to the cylinder lever between the cylinder lever fulcrum and the push rod. The other end is fastened to one end of the intermediate lever. This lever is pivoted on the intermediate lever fulcrum, which is bolted to the bottom of transom No. 2. The equalizer rod (No. 4) is attached to the other end of the lever. The large equilizer is connected to the equalizer rod (No. 4) and also through links to the intermediate equalizers. The intermediate equalizer is, at one end, attached through links to the brake beam, which applies the brakes to the second set of wheels, and at the other end to tension rod (No. 5), which is attached to the small equalizer, through which, by means of links and tension rod (No. 6), the brakes are applied to the third and fourth sets of wheels, respectively. The brake





NOTE:-
PIECE NUMBERS REFER TO NUMBERS TAKEN FROM W.A.B. CO'S. CATALOGUE

8 WHEEL TRUCK
(FRENCH TYPE)
BRAKE ASSEMBLY

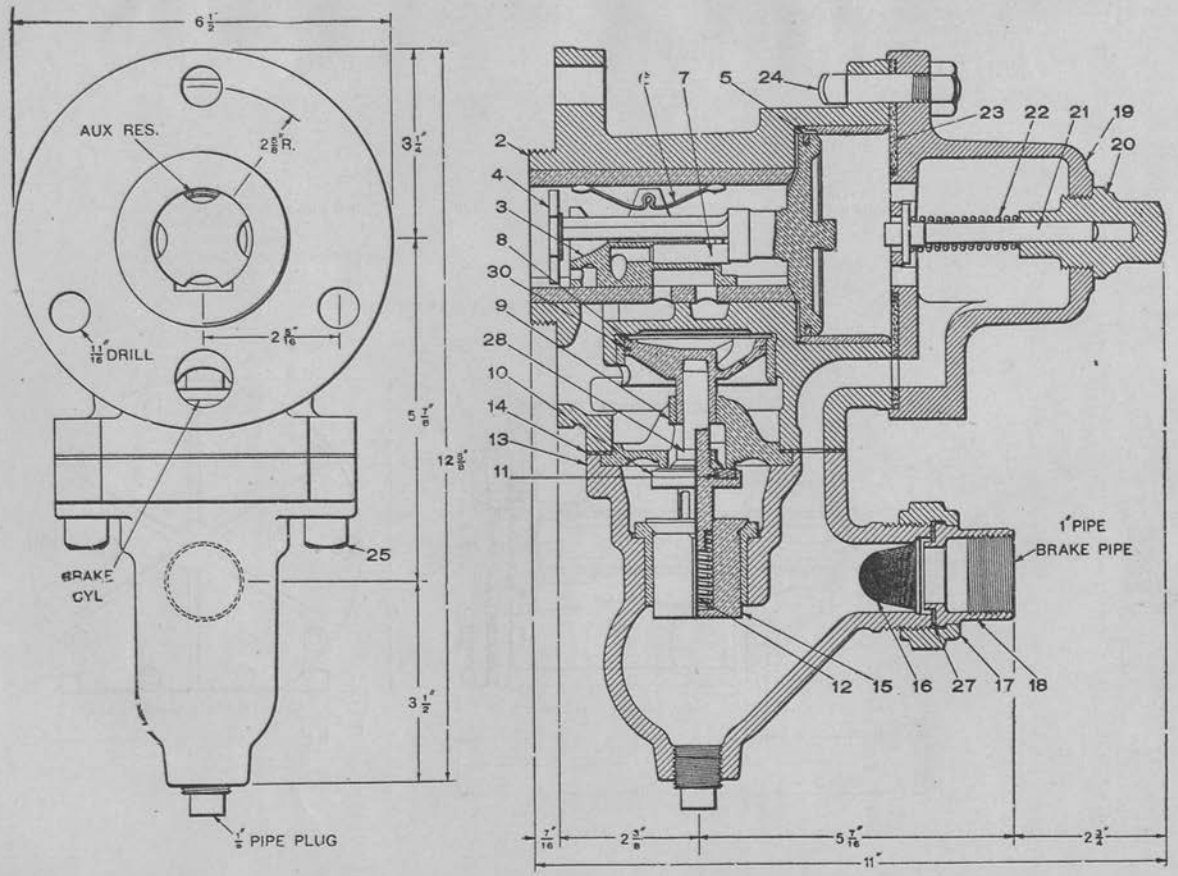
NOV. 23. 1918

SUBMITTED
O.S. Riddiford
ASST. ENGINEER OF EQUIPMENT, U.S.A. ORDNANCE DEPARTMENT U.S.A.

E.G.F. J.B. A.K.B.

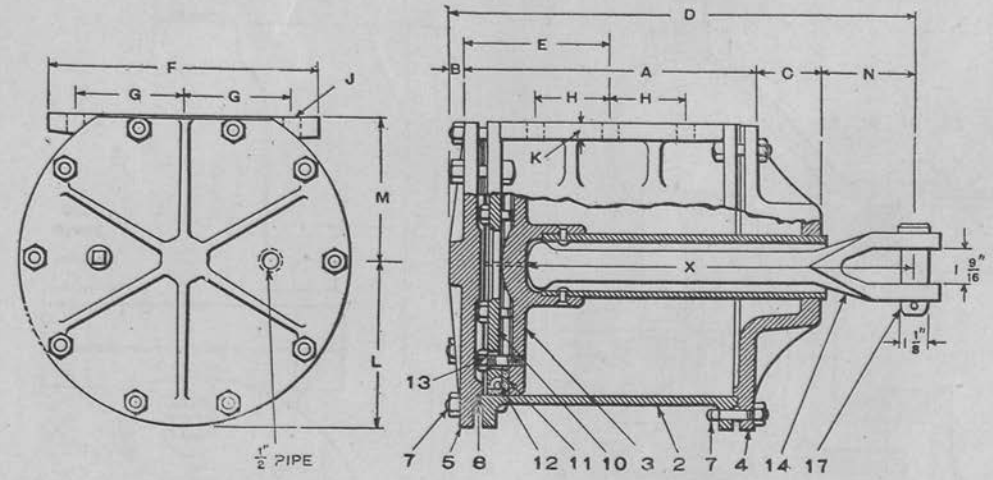
APPROVED BY ORDER OF THE ACTING CHIEF OF ORDNANCE
[illegible]
LT. COL. ORDNANCE DEPARTMENT U.S.A.

CLASS 86 | DIVISION 10 | DRAWING 28 | FILE



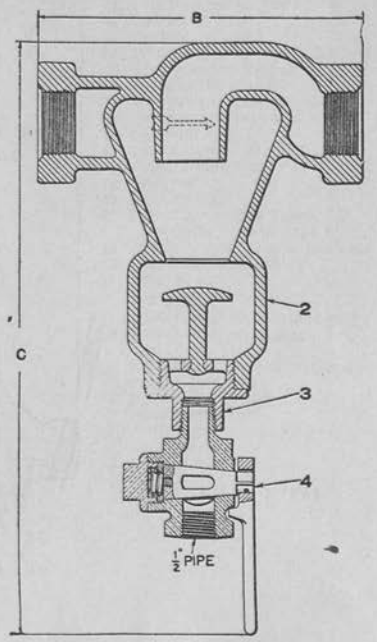
P-2 TRIPLE VALVE.

2. Body, bushed.
3. Slide valve.
4. Main piston (includes 5).
5. Main piston ring.
6. Slide valve spring.
7. Graduating valve.
8. Emergency piston (includes 30).
9. Emergency valve seat.
10. Emergency valve (includes 11 and 28).
11. Rubber seat.
12. Check valve spring.
13. Check valve case, complete (includes 0.5-inch pipe plug).
14. Check valve case gasket.
15. Check valve.
16. Strainer.
17. 1-inch union nut.
18. 1-inch union swivel.
19. Cylinder cap.
20. Graduating stem nut.
21. Graduating stem..
22. Graduating spring
23. Cylinder cap gasket.
24. Bolt and nut (for cylinder cap).
25. Cap screw.
27. 1-inch union gasket.
28. Emergency valve nut.
30. Emergency piston ring.



AIR-BRAKE CYLINDER, TYPE C.

2. Cylinder body.
3. Piston and rod (includes 13 only).
4. Nonpressure head.
5. Pressure head.
7. Cylinder head bolt and nut.
8. Cylinder gasket.
10. Follower.
11. Packing leather.
12. Packing expander.
13. Follower stud and nut.
14. Push rod, with pin and cotter.
17. Push rod pin, with cotter.



Dirt Collector.

hangers are attached at their ends to the outside of the main longitudinal plates of the truck by means of the brake hanger supports. The brake beam is attached at each end to the lower end of a brake hanger. The brake shoe fits over the center of the brake hanger and is fastened to it by the brake-shoe pin.

Two springs, one attached to the bottom of transom No. 3 and to the equalizer rod No. 4, the other attached to transom No. 4 and to the hand-brake lever, pull the brakes free from the wheels when they are released.

The air equipment is standard Westinghouse. Each truck is equipped with one 14 by 12 inch cylinder, one 14 by 33 inch reservoir, one P–2 triple valve, and one 1-inch centrifugal dirt collector, with the necessary pipes, valves, and connections. The train line of the car is connected to the train line of the trucks by a 1.375 by 24-inch hose with French closed back coupling and standard 1.25-inch nipple. This same connection is used for connection to other cars. A 1-inch branch from the truck train line runs to the dirt collector and from there to the triple valve. From the triple valve one pipe runs to the brake cylinder and the other runs to a tee, from which one pipe goes to the air reservoir and the other to the release valve.

SECTION P. COUPLER AND DRAFT GEAR.

(*a*) *Description.*—(Refer to Plate XXIV.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 143.

The coupler is known as the locomotive pivoted type and has an M. C. B. head with 11-inch knuckle and 6 by 6 inch shank 5 inches long from horn of coupler to center of 2-inch pivot pin. New couplers for replacement should be ordered according to the above-given dimensions.

The draft gear is known as the locomotive type. The coupler is pivoted in a socket in the draft casting, and as no springs are provided the car should not be subjected to severe switching shocks.

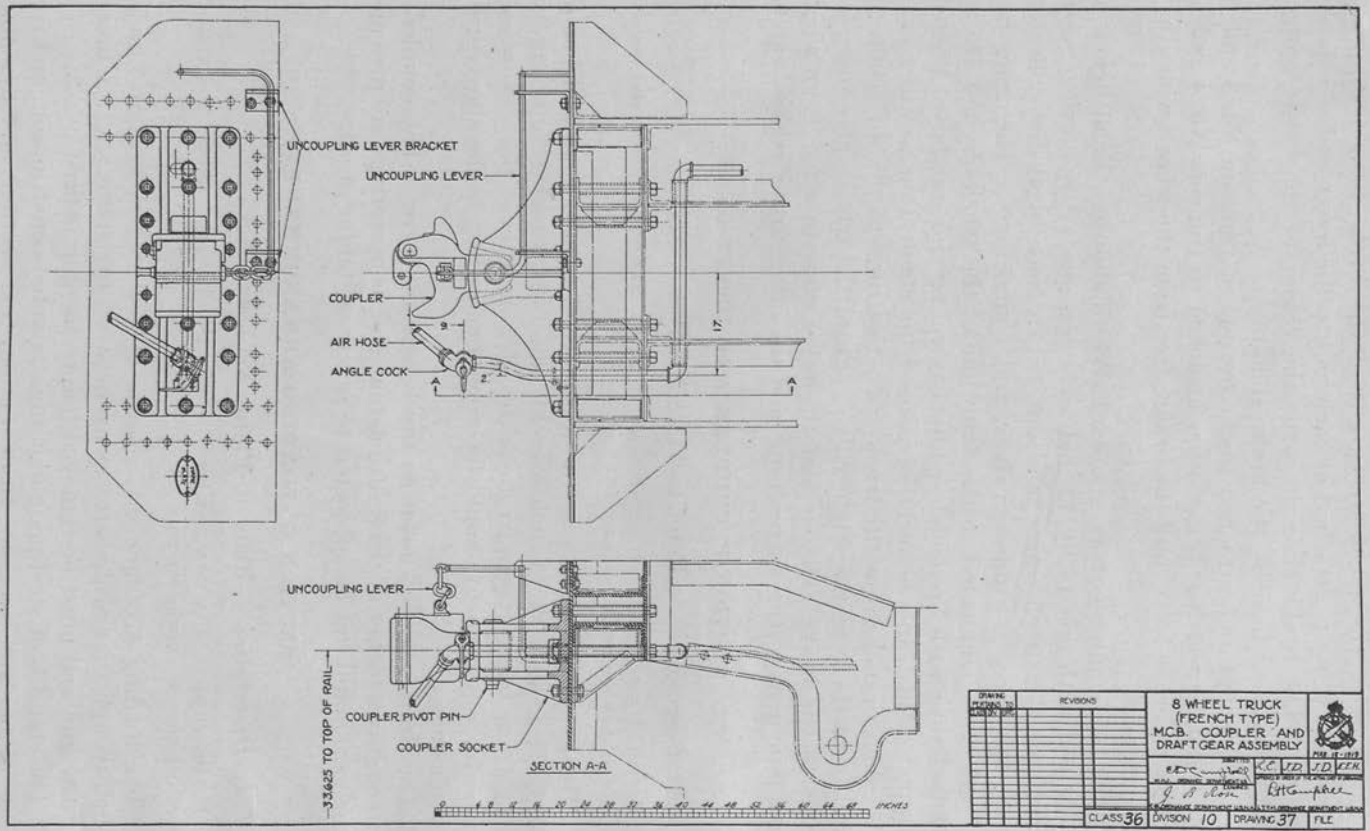
SECTION Q. LOADING ARRANGEMENT.

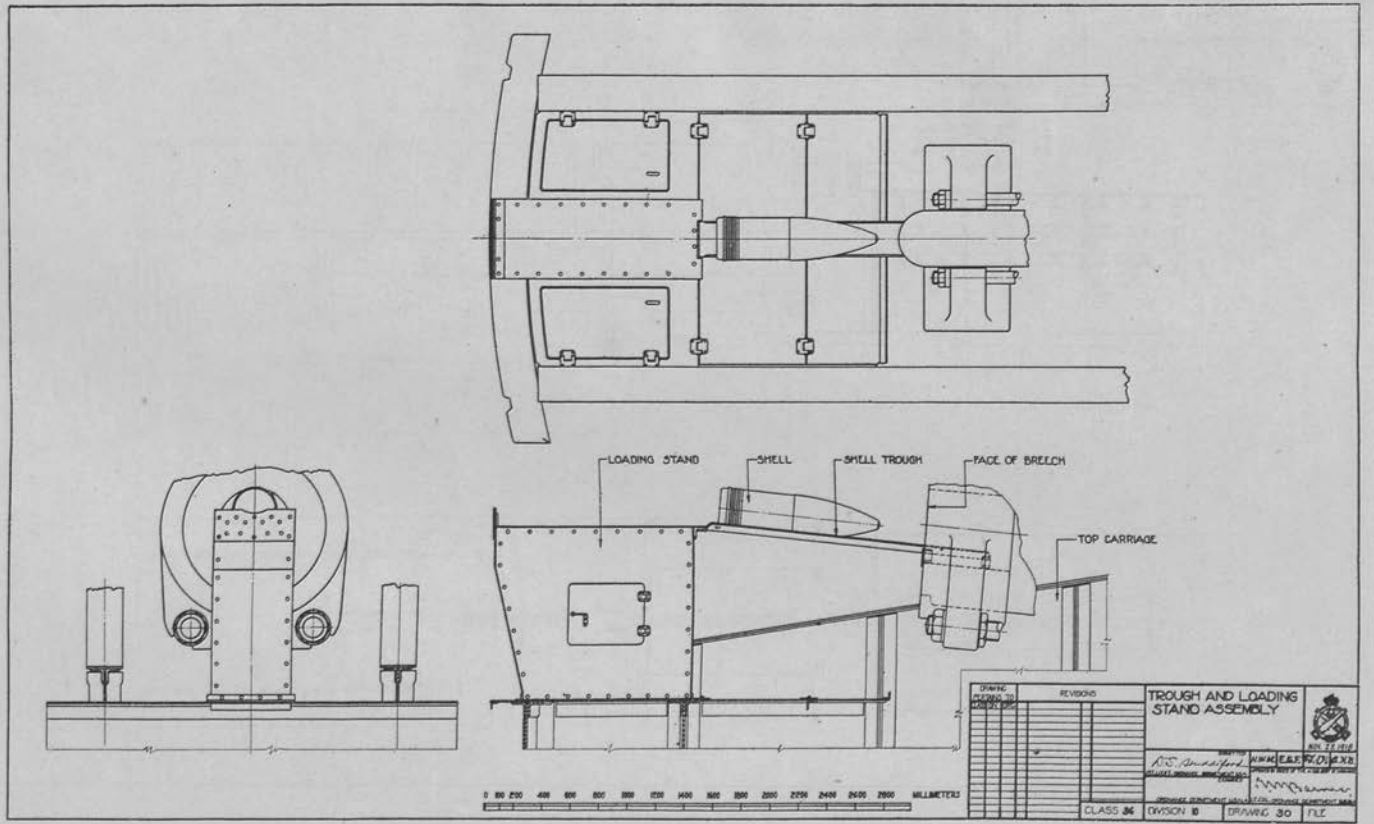
(*a*) *Description.*—Refer to Plates XXV and XXVI.)

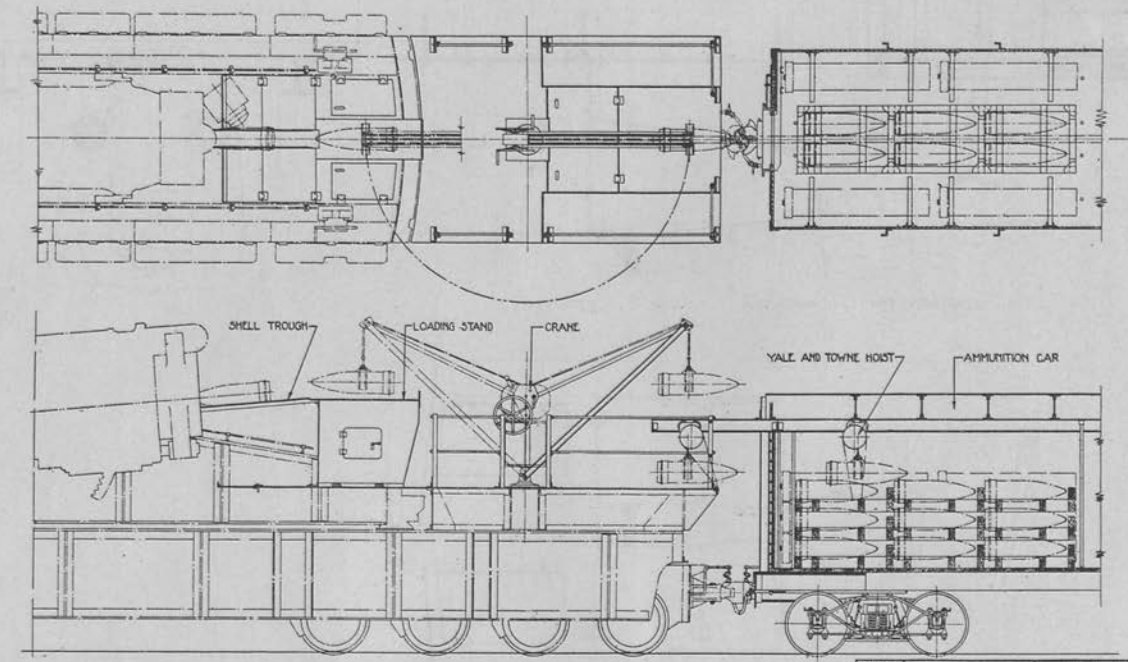
For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 132.

The loading arrangement consists of a steel box or stand and a shell trough that bridges the space between the stand and the breech of the gun and must be removed before the gun is fired.

The stand is of steel plate and angle, riveted construction, and consists of two side sections, front section, rear section, and top plate.


UNCOUPLING LEVER BRACKET
UNCOUPLING LEVER
COUPLER
AIR HOSE
ANGLE COCK
9
17
2
UNCOUPLING LEVER
COUPLER PIVOT PIN
COUPLER SOCKET
SECTION A-A
33.625 TO TOP OF RAIL
INCHES
8 WHEEL TRUCK
(FRENCH TYPE)
M.C.B. COUPLER AND
DRAFT GEAR ASSEMBLY
CLASS 36
DIVISION 10
DRAWING 37
FILE


LOADING STAND
SHELL
SHELL TROUGH
FACE OF BREECH
TOP CARRIAGE
REVISIONS
TROUGH AND LOADING STAND ASSEMBLY
CLASS 36
DIVISION 16
DRAWING 30
FILE



SHELL LOADING ARRANGEMENT

CLASS 36 | DIVISION 10 | DRAWING 411 | FILE

It is fastened at the ends through the rear platform plate to the front and rear sections and at the sides to the rear platform plate by bolts and crown nuts. The general shape of the stand is rectangular except for the back end, which is undercut to get a fastening on the rear section of the top carriage, as the top of stand extends back beyond this rear section. Each side is provided with a door, hung on two hinges, which has a latch and latch handle with which it can be locked, in its closed position, with a padlock to a staple riveted on the door. These padlocks are fastened to the doors with chains and chain rivets. The foot angle on the front section has a piece cut out at the center of its outstanding leg to provide clearance for the rear folding platform plate hinge. The front section is provided with holes for fastening on the platform fastener angles and the eye rivet chain of the platform fastener. This platform fastener consists of two short pieces of angle with a small space between their outstanding legs so located that the stiffener angle leg on the folding platform plate fits between them when it is folded up and the eye pin provided can be dropped through the holes in these three angles. An angle at the top of the front section provides a fastening for the top plate and also serves as a rest for the shell trough when in place. The rear section extends up above the top plate and is there stiffened by a plate. Its upper edge has a circular segment cut from it to hold the powder tray, which by this means is supported at a 5° angle, the same slope as the shell trough. The top plate is fastened to the connection angles on the vertical sections. It is made trough-shaped in the middle to prevent the shell from rolling off. There is a small section cut from the front end to provide room for a rest for the shell trough on the angle which is fastened to the front section, and as the top plate and shell trough are of the same thickness it makes a flush joint for the shell to slide over.

The shell trough is one piece of steel plate of a curved section and provided at one end with two bronze castings riveted on, both called trough supports. These rest in the breechblock recess and hold the trough in line with the powder chamber of the gun to allow the shell and powder to slide easily in place.

The operation of this loading rig is obvious. The shell is dropped onto the top of the stand and is simply pushed down the incline into the bore, the shell trough being in place. In the case of putting in the powder charge that is also dropped onto the stand in the powder tray and slid off the tray and down the trough into the powder chamber of the gun. The shell trough must be removed each time before attempting to close the breechblock. The folding platform must also always be raised up before firing.

SECTION R. AMMUNITION CRANE.

(*a*) *Description.*—(Refer to Plates XXVII and XXVIII.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 133.

The ammunition is transferred from the rear end of the car platform up on the loading stand by means of the ammunition crane. It is a revolving jib crane with a chain hoist operated by two handwheels through a suitable gear reduction.

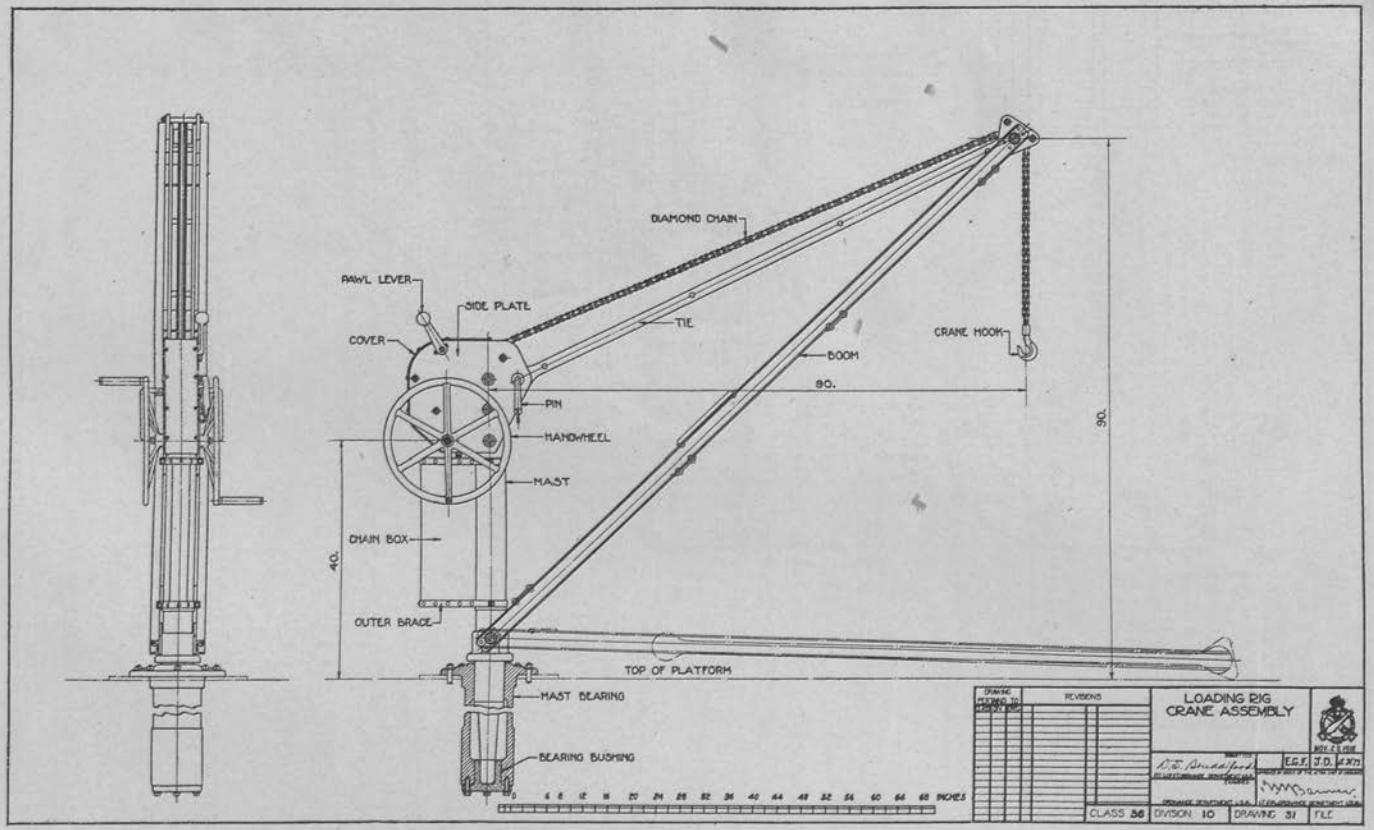
The crane is supported by the mast bearing which is bolted to the center of the car. The mast is carried in this bearing and rests on a bronze bearing at the bottom which takes the entire load.

The jib or boom consists of two channels placed back to back 6.25 inches apart at the bottom where they straddle the mast and are pivoted to it and 5.5 inches apart at its upper end. Four tie plates keep them in this position. A tie composed of two eye bars attached, one end to the top of the mast, the other end to the top of the boom holds the latter in position. The tie and boom are held together by the idler shaft. The other end of the tie is connected by a removable pin, to the side plates which in turn are bolted to the mast. A roller chain on one end of which a crane hook is attached leads over the idler sprocket on the idler shaft and from there to the sprocket wheel near the top of the mast. The sprocket wheel is mounted on the upper shaft which is supported by the two side plates. The upper gear attached to the hub of the sprocket wheel meshes with the intermediate pinion. The intermediate pinion is attached to the hub of the intermediate gear together with the idler which is a means of affording increased wrap of chain around sprocket, the whole being mounted on the intermediate shaft which is supported by the two side plates. The intermediate gear meshes with the handwheel shaft pinion which is mounted on the handwheel shaft, the latter being supported by the two side plates. A handwheel is attached to each end of the handwheel shaft on the outside of the side plates. A pawl attached to a shaft above the ratchet on the sprocket wheel is so balanced by a pawl lever that it will automatically catch when the chain is pulled up unless the pawl lever has been moved to its forward position. A structural steel cover is bolted on the top and rear of the side plates and a chain box is attached to the mast below the side plates.

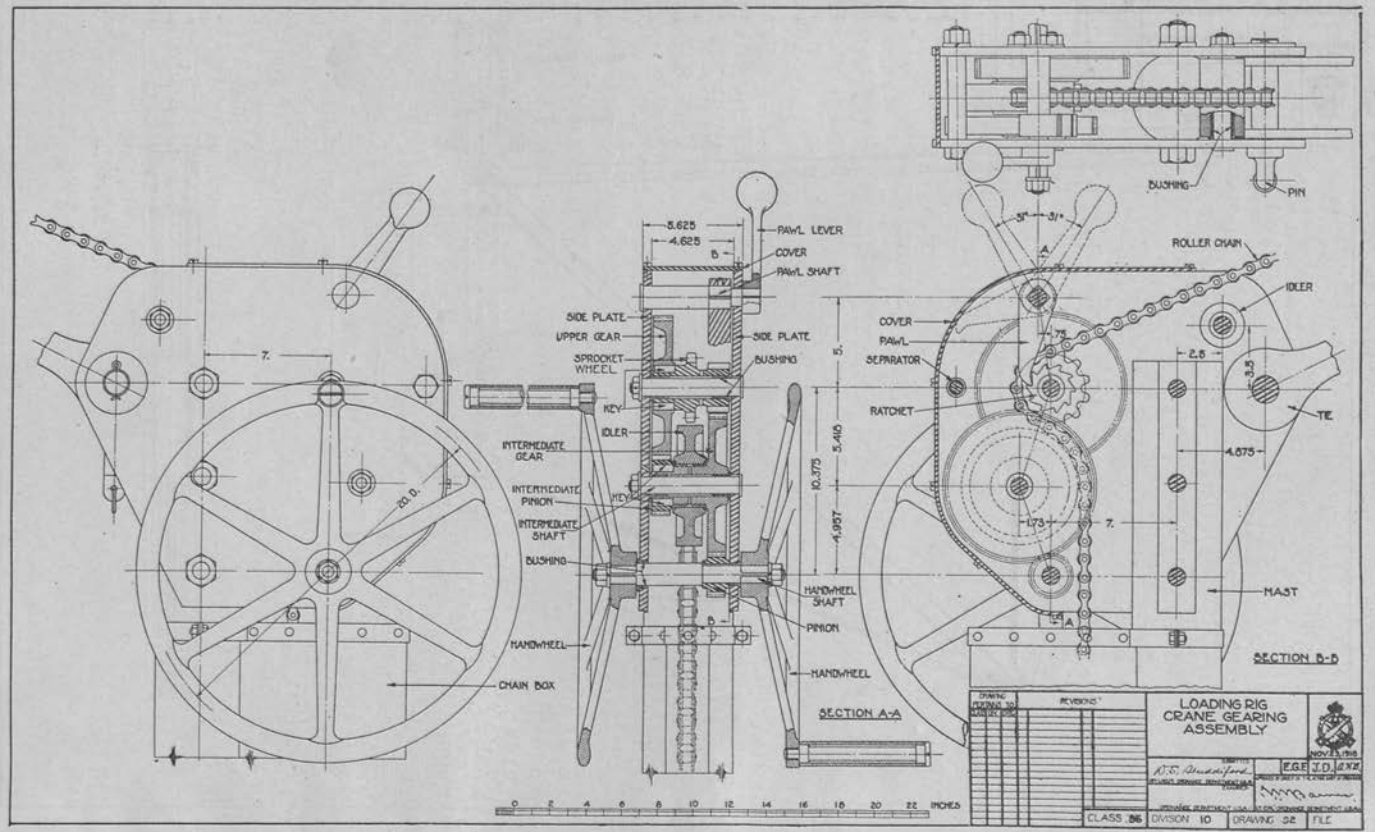
SECTION S. SHOT TONGS.

(*a*) *Description.*—(Refer to Plate XXIX.)

The shot tongs frame is a steel casting of channel section resembling a U with ends bent outward. Each end is slotted to receive a cam which rotates upon a bolt passing through the bosses which


DIAMOND CHAIN
PAWL LEVER
SIDE PLATE
TIE
COVER
CRANE HOOK
BOOM
80.
PIN
HANDWHEEL
MAST
90.
40.
CHAIN BOX
OUTER BRACE
TOP OF PLATFORM
MAST BEARING
BEARING BUSHING
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 INCHES
DRAWING REVISIONS
LOADING RIG
CRANE ASSEMBLY
CLASS 36
DIVISION 10
DRAWING 31
FILE

112169—19——4


BUSHING
PIN
ROLLER CHAIN
IDLER
COVER
PAWL
SEPARATOR
RATCHET
TIE
MAST
SECTION B-B
PAWL LEVER
COVER
PAWL SHAFT
SIDE PLATE
UPPER GEAR
SPROCKET WHEEL
BUSHING
KEY
IDLER
INTERMEDIATE GEAR
INTERMEDIATE PINION
INTERMEDIATE SHAFT
HANDWHEEL SHAFT
PINION
HANDWHEEL
CHAIN BOX
SECTION A-A
LOADING RIG
CRANE GEARING
ASSEMBLY
CLASS 86
DIVISION 10
DRAWING 32
FILE

form the ends of the frame. The cams are free to rotate through a small arc, the outward motion resulting from a pull transmitted through a wire rope to a short link which is pivoted in a slot in the cam. Motion in this direction is limited by two stop pins driven in the frame and projecting into the cam opening which work in slots on each side of the cam. The inward motion due to gravity, is limited by the inner end face of the recess which is shaped to serve as a stop.

A clevis in the form of an eye bolt is permanently attached to the frame at the top of the U. The aforementioned wire rope, held in place by guides, passes between the two ribs of the frame to the cams actuating the links. Midway between the ends of the rope, a ring, serving as a handle is attached.

At the top of the frame on each side is a short flange, integral with the casting. The purpose of these flanges is to form additional bearing for the shell with a view to preventing tipping or partial rotation upon the cam faces.

In use, the tongs attached to the cradle of the crane are let down upon a shell. The cams travel back into the recesses as the tongs are lowered until they pass the diameter of the shell. Beyond this point under the influence of gravity, the cams fall downward. When the tongs come to rest upon the shell, the cams have reached their lowest point and the distance between them is less than the diameter of the shell. Lifting the tongs thus places the weight of the shell upon the two cams. After the shell has been deposited upon the loading box the cams are raised through the agency of the rope and links so that the tongs can be lifted free of the shell.

In use, the tongs should be so located on the shell that it will remain in a horizontal position when lifted free of the platform.

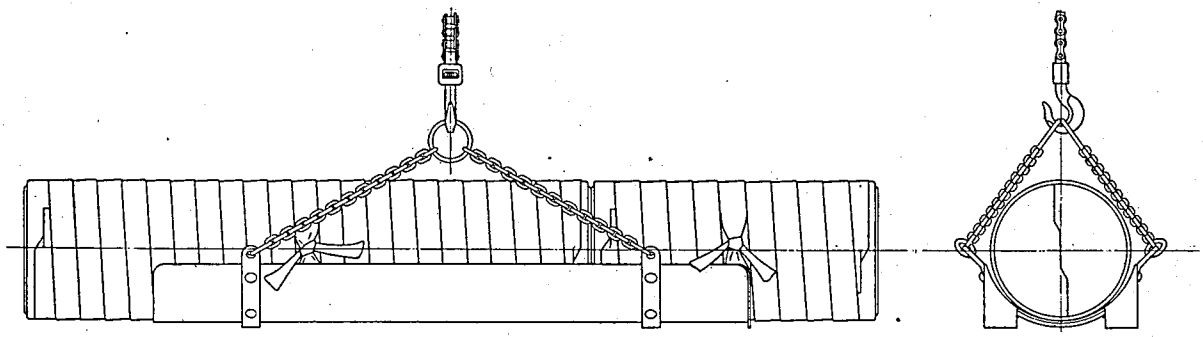
SECTION T. POWDER TRAYS.

(*a*) *Description.*—(Refer to Plate XXIX.)

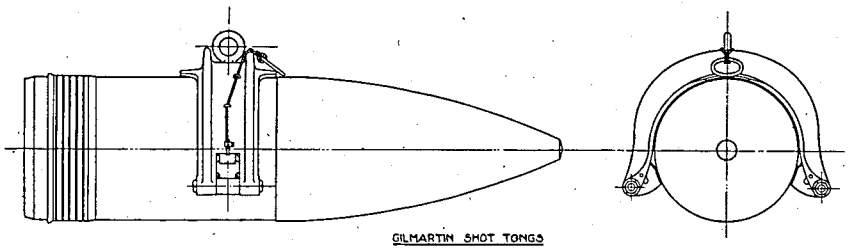
The powder tray is a steel plate, in cross section, an arc of a circle of such diameter as to conform in shape to the cylindrical powder bag. Two short legs at one end on each side of the center line, project below the lowest part of the plate, and hooking on the upper edge of the rear section of the loading stand, serve as stops when the tray is lowered upon the stand.

Two bands symmetrically located with respect to the center of the length of the tray extend beyond the edge of the tray on each side. The four carrying chains which meet above the center of the tray are connected to the ends of the bands by rings.

In use the chain of the loading crane is connected to the two rings to which the carrying chains are attached. The powder bag is then placed upon the tray and transferred to the loading stand.



POWDER TRAY



GILMARTIN SHOT TONGS

0 3 6 9 12 15 18 21 24 27 30 33 INCHES

DRAWING NOTHING TO BE ADDED OR TAKEN AWAY	REVISIONS	12 INCH GILMARTIN SHOT TONGS AND POWDER TRAY ASSEMBLY	
		DRAWN: M.A.K. TRACED: E.G.E. CHECKED: J.D. APPROVED:	
	CLASS 36	DIVISION 10	DRAWING 33

SECTION U. ARMAMENT CHEST.

(*a*) *Description.*—The armament chests are both of the same general construction but of different size. The No. 1 chest contains two trays, the No. 2 chest contains four trays. The chests, made of sheet steel, are riveted along the edges and reinforced with angles and bar iron. The cover is secured along the rear edge with four hinges, at each of the two front corners with sliding bolt latches, and in the middle, on the front edge, a hinge hasp is provided which, with a padlock chained to the chest, provides for locking the chest. Attached to the cover on the inside at either end is a bracket to which an arm is pivoted. The other end of the arm carries a boss which runs in a slot in a plate riveted to the end on the inside of the chest. As the cover is raised, the arm slides to the rear in the slot and reaching the end of the slot, limits the rearward motion of the cover. Two hinged handles running across each end of the chests furnish the necessary means of handling the chest in the event of its being removed from the mount.

The trays, likewise made of sheet steel, are divided into compartments with angle iron riveted to the sides and bottom. Hinged handles are provided at the ends of the trays to facilitate removal.

Chest No. 1 contains the smaller tools such as commercial wrenches, hammer, pliers, screw driver, files, etc. Each of these tools has a definite location in the chest.

Chest No. 2 contains the special tools and accessories, each of which also has a definite place.

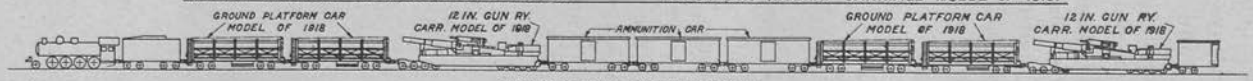
REGIMENTAL HEADQUARTERS.
1-FIRE CONTROL CAR

BATTALION HEADQUARTERS. | BATTALION HEADQUARTERS. | BATTALION HEADQUARTERS.

BATTERY OF FOUR GUNS
4 GUNS
8 GROUND PLATFORM CARS
12 AMMUNITION CARS
1 FIRE CONTROL CAR

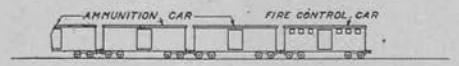
BATTERY OF FOUR GUNS | BATTERY OF FOUR GUNS | BATTERY OF FOUR GUNS | BATTERY OF FOUR GUNS | BATTERY OF FOUR GUNS

RAILWAY ARTILLERY REGIMENTAL ORGANIZATION — 12 INCH GUN RAILWAY CARRIAGE MODEL OF 1918.



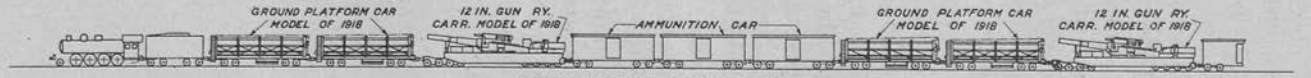
BATTERY TRAIN-FIRST SECTION

TOTAL WEIGHT OF THIS SECTION EXCLUDING ENGINE & TENDER = 737 TONS APPROX.



NOTE:—
CAPACITY OF ONE AMMUNITION CAR

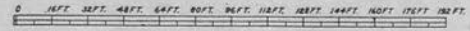
12 INCH AMMUNITION { 36 ROUNDS OF POWDER-APPROX. WT.= 13,500 LBS.
36 ROUNDS OF SHELL -APPROX. WT.= 25,200 LBS.
APPROX. TOTAL WT.= 38,700 LBS.



BATTERY TRAIN-SECOND SECTION

TOTAL WEIGHT OF THIS SECTION EXCLUDING ENGINE & TENDER = 716 TONS APPROX.





DRAWING PREPARED IN OFFICE OF
REVISIONS

BATTERY TRAIN ARRANGEMENT 12 IN. GUN RY CARR. MODEL OF 1918

NOV. 23, 1918

CLASS 35 | DIVISION 10 | DRAWING 34 | FILE

PART II.

GROUND PLATFORM CAR, MODEL OF 1918.

DESCRIPTION AND OPERATION.

SECTION A. GENERAL DESCRIPTION.

(*a*) *Description.*—(Refer to Plates XXXI and XXXII.)

The ground platform car, made of steel throughout, is mounted on two standard four-wheel trucks. The car consists of an underframe carrying a steel floor, steel arches which serve to carry both the shelves upon which the ground platforms are carried, and the hoist runway and extension in which the hoist travels. A vertical winch mounted at the rear center of the car is used to raise and lower the hoist runway extension through a cable passing over the top of the car. Two bins hung on the underside of the underframe, between the trucks, carry sufficient sand to pack the ground platform solidly in the excavations in case the soil itself is of such a nature as not to pack well.

SECTION B. CAR BODY.

For list of parts, with their numbers, piece marks, drawing number, and material of which they are made, see page 152.

(*a*) *Description.*—The underframe of the ground platform car consists of two side sills connected by two end sills; 2,500 millimeters from each end are two bolsters, between which are two center sills 700 millimeters apart symmetrically spaced and running parallel with the center line of the car body. At each end between the bolster and end sill running parallel with the center line of the car body and symmetrically spaced with same are two draft sills 400 millimeters apart and two buffer struts 1,730 millimeters between centers. These draft sills and buffer struts are tied together by the undertie. Between the bolsters and symmetrically located with respect to the transverse center line are six cross supports. Steel plates riveted to top of underframe serve as a floor. Riveted on underside of underframe, between the trucks and on each side of center line of car is a sand bin. Hinged to the top of each bin are three doors, one for each compartment, while on the front side and along the lower edge are three slides opening one into each compartment.

Five vertical arches extending across the car are tied together with cross braces and riveted to the underframe, one near either end, the remaining three equally spaced along the car. These arches, made of plates and angles into an "H" section, have a

narrow flat top at the center. The remaining portion of the top on either side slopes downward, is bent into an arc, and meets the vertical sides. On the inside face of each arch, symetrically spaced with respect to its vertical center line, is a structural steel bracket to which the hoist runway (to be described later) is attached.

On the inner face near the upper end of the vertical portion of each arch is attached a structural steel bracket, at the upper end of which is attached a hinged stop. The brackets are connected with structural steel shelves upon which the upper tier of ground platform sections is placed. The aforementioned stops serve to hold the ground platform sections in place during transit.

A second set of brackets, also connected with shelves, is attached to the arches along the right side of the car and below the aforementioned set of brackets. Along the opposite side of the car run two angles. The shelf formed by the two angles, together with the shelf and brackets on the other side, accommodate the lower tier of ground platform sections. There being no stops provided on the lower shelves, the ground platform sections are held in place with two short angle bars attached to the floor, one toward either end of the car.

A steel ladder secured to the outer face of the arch at the front end of the car gives access to the top of the car from either side.

SECTION C. COUPLER AND DRAFT GEAR.

(*a*) *Description.*—(Refer to Plate XXIV.)

For list of parts, with their numbers, piece marks, drawing number, and material of which they are made, see page 172.

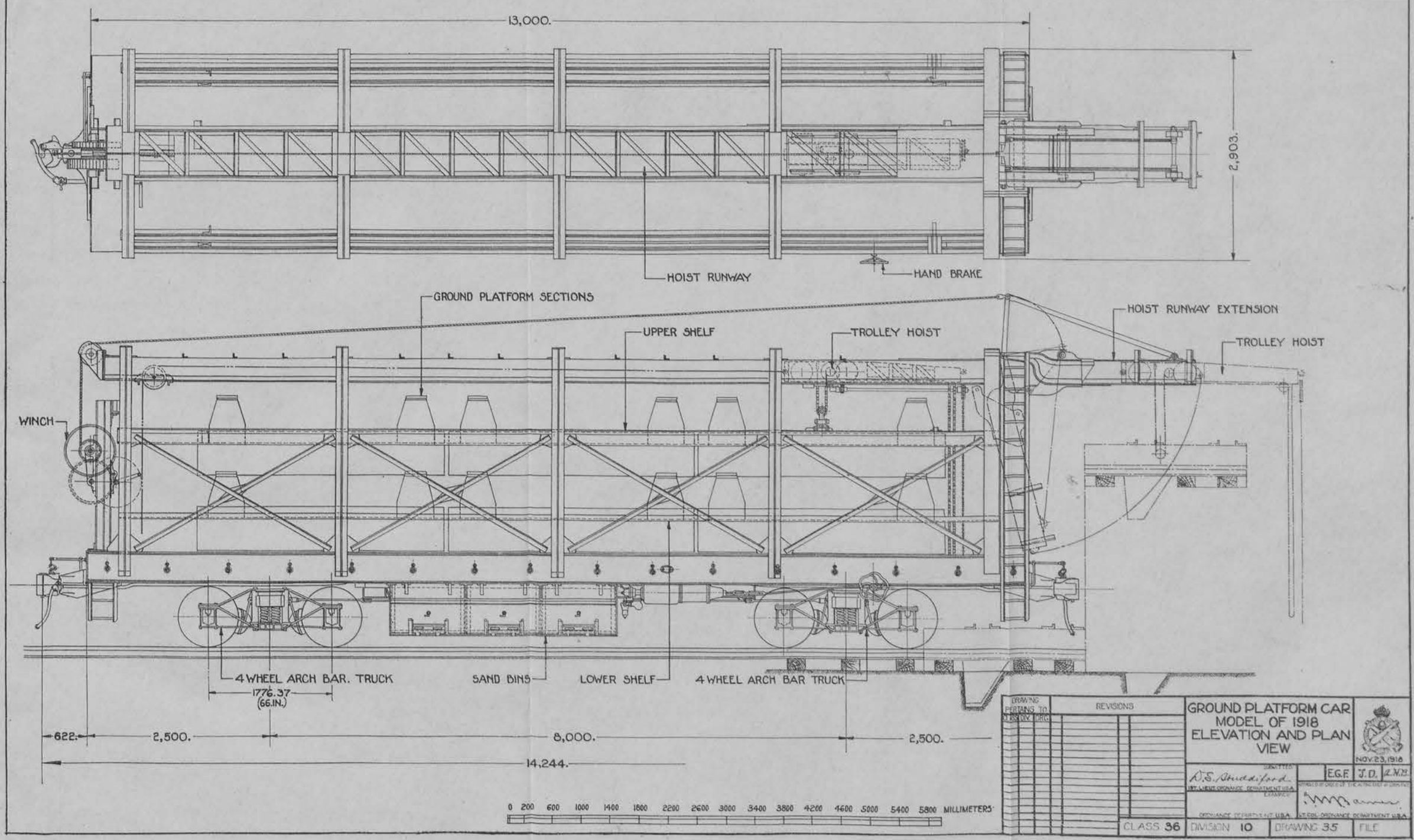
The coupler and draft gear and their application are the same as that used on the eight-wheel truck (French type) with the following exception: The draft casting of the draft gear is different from that used on the eight-wheel truck (French type), due to the difference of the structural framework to which it is attached. For description of the above referred to coupler and draft gear see Part II, section R, division (*a*).

SECTION D. HOIST RUNWAY AND EXTENSION.

(*a*) *Description.*—(Refer to Plate XXXIII.)

For list of parts, with their numbers, piece marks, drawing number, and material of which they are made, see page 163.

Running full length at the top of the car and attached to the brackets previously mentioned is the hoist runway. The sides of the runway are steel plates and angles connected at either end across the top with a steel plate. Through the remaining length the sides are connected across the top with angle ties and bar cross braces. At the lower edge of the sides are two angles, one on the inside, the other



DRAWING PERTAINS TO HISTORY DRG

REVISIONS

GROUND PLATFORM CAR MODEL OF 1918 ELEVATION AND PLAN VIEW

NOV. 23, 1918

D. S. Stuckford
1ST. LIEUT. ORDNANCE DEPARTMENT U.S.A.
EXAMINED

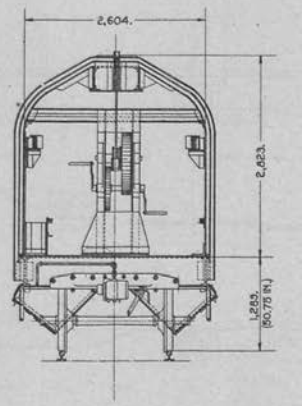
E.G.F. J.D. A.N.M.

ORDNANCE DEPARTMENT U.S.A.

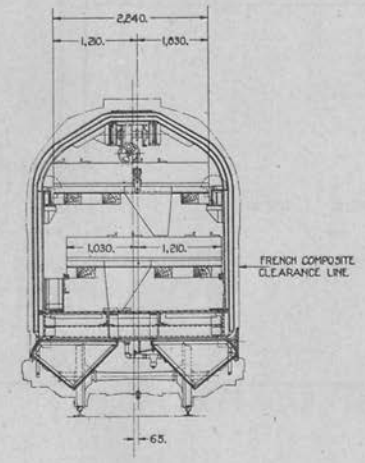
APPROVED BY ORDER OF THE SECRETARY OF WAR

Wm. Crozier
LT. GEN. ORDNANCE DEPARTMENT U.S.A.

CLASS 36 | DIVISION 10 | DRAWING 35 | FILE



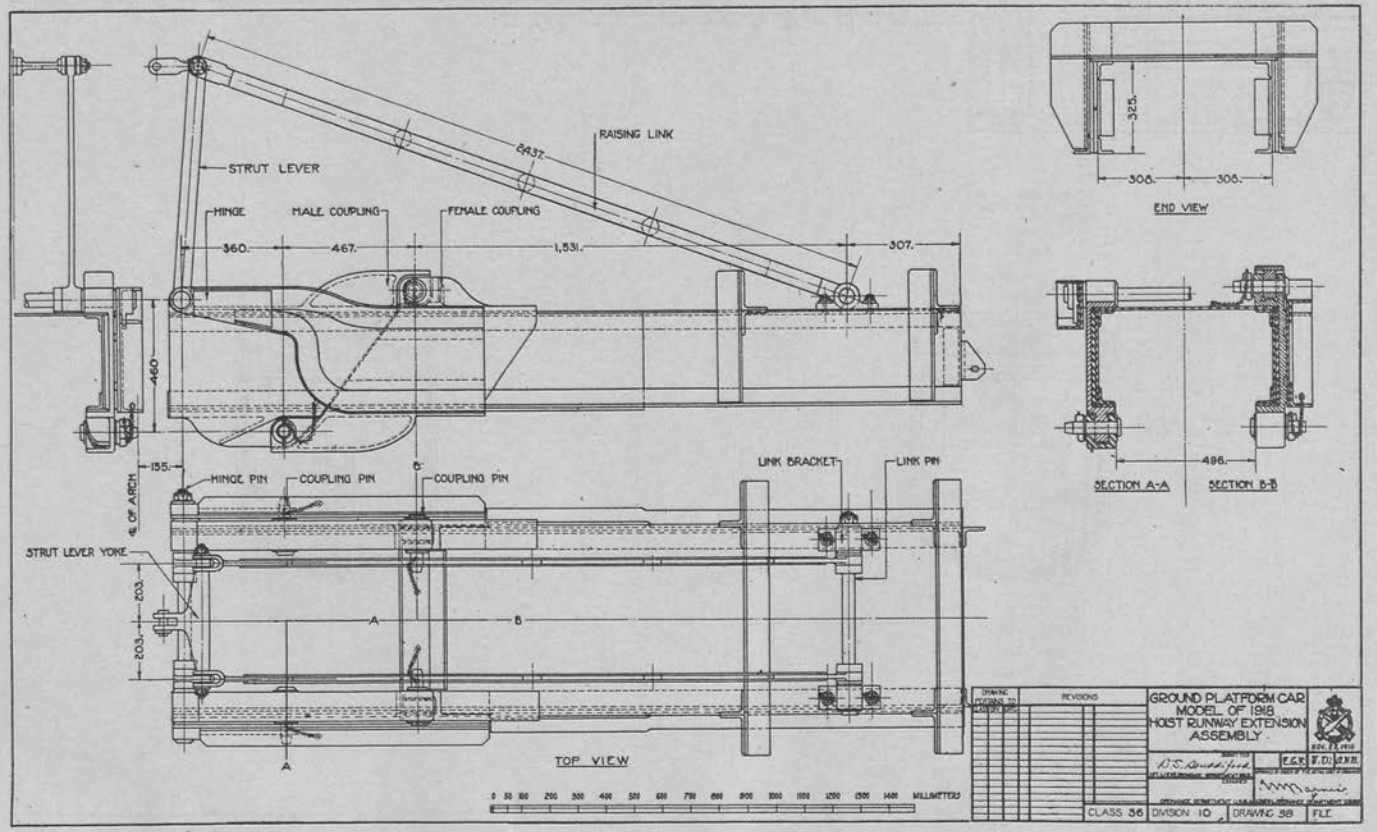
REAR ELEVATION



SECTION A-A
SEE CL.36 DIV.10 DRG.35

0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 MILLIMETERS

DRAWING PLOTTING SCALE	REVISIONS	GROUND PLATFORM CAR MODEL OF 1918 END VIEWS ASSEMBLY	
		DRAWN E.G.F. 27.0.27	
		TRACED	
		CHECKED	
		CLASS 36	DIVISION 10 DRAWING 36 FILE


STRUT LEVER
RAISING LINK
2437.
HINGE
MALE COUPLING
FEMALE COUPLING
360.
467.
1,531.
307.
460
155.
HINGE PIN
COUPLING PIN
COUPLING PIN
LINK BRACKET
LINK PIN
℄ OF ARCH
STRUT LEVER YOKE
203
203
A
B
A
TOP VIEW
0 50 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 MILLIMETERS
325.
308.
308.
END VIEW
496.
SECTION A-A
SECTION B-B
REVISIONS
GROUND PLATFORM CAR
MODEL OF 1918
HOIST RUNWAY EXTENSION
ASSEMBLY
E.G.R.
V.D.
CLASS 56
DIVISION 10
DRAWING 38
FILE

on the outside. The inner angle serves as a rail for the traveling hoist. At the rear end of the runway is attached the sheave bracket made of structural steel. This bracket carries a sheave over which passes a cable from the winch to the runway extension. A sheave mounted near the rear end of the runway between the side plates carries the traversing rope.

The hoist runway extension is of substantially the same construction as is the hoist runway, differing only as regards the hinged joint, with the necessary means of raising and lowering. Connection between the hoist runway and hoist runway extension is made through the hoist runway couplings, male and female, and hinge. The extension is hinged at the upper rear corner of the male coupling upon the hinge pin, which also carries the two strut levers, the latter being held against the inner faces of the male coupling hinge pin bearings by collars carried on the hinge pin. Through the upper bearings of the strut levers pass the bearings of the strut lever yoke, upon which latter bearings are likewise carried the upper bearings of the raising links, all held in place with crown nuts threaded to the end of the strut lever yoke bearings. The other end of the raising links are carried by the link pin which passes through the link brackets located near the outer end of the extension, one on either edge.

Toward the rear end of the extension on either side is attached the female hoist runway coupling carrying two bearings, which, when the extension is raised, register with bearings on the male coupling. Coupling pins thrust through both bearings and secured with split keys hold the extension in the raised position. These coupling pins—two on each side—transmit the total load to the male coupling.

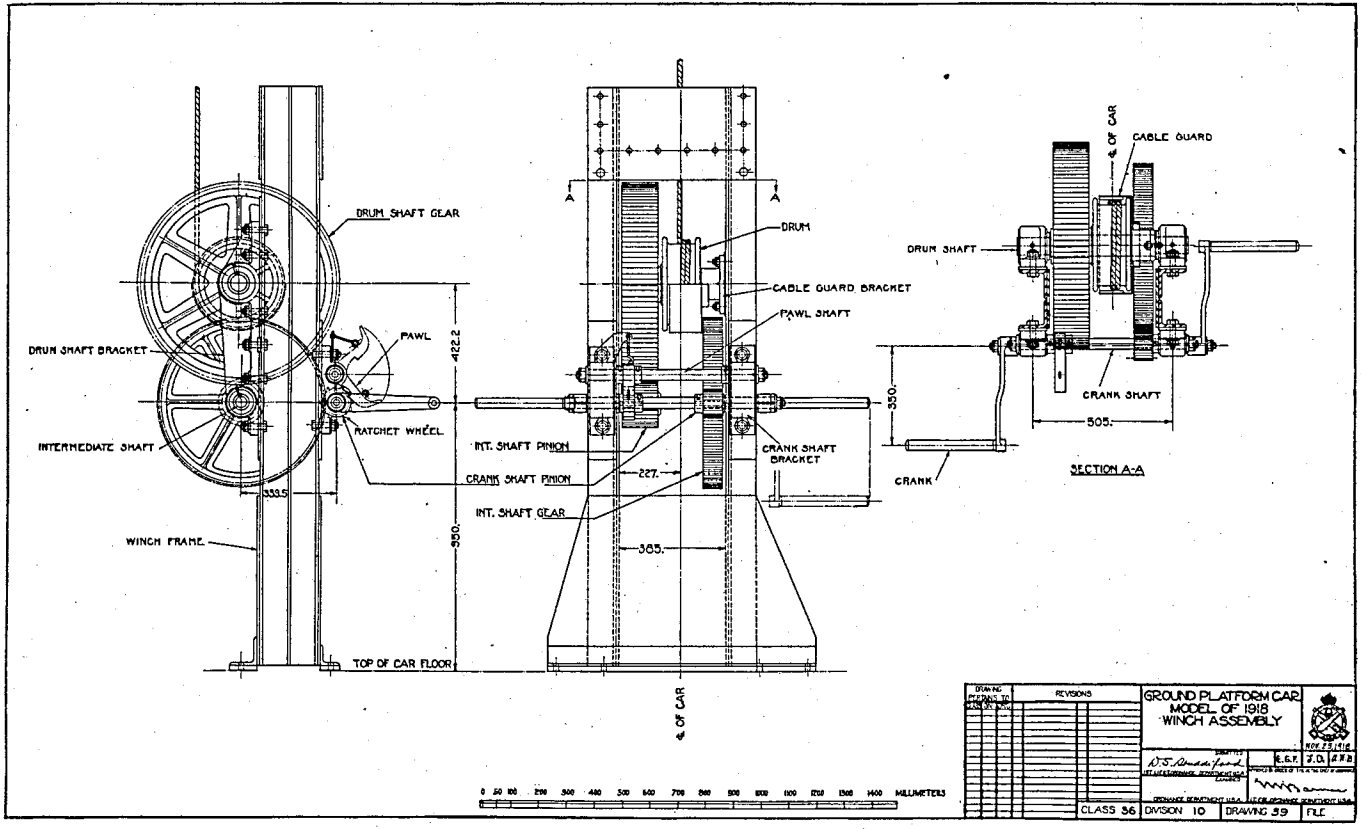
At the outer end, on either inside face of the extension, is a short angle bar which coming in contact with the wheels of the traveling hoist limit the travel of same. A traveling lock made of angle iron and attached to the end of the extension, when engaging with similar parts on the end sill of the car, provides the necessary means of locking the extension in the lowered or traveling position.

SECTION E. WINCH.

(*a*) *Description.*—(Refer to Plate XXXIV.)

For list of parts, with their numbers, piece marks, drawing number, and materia of which they are made, see page 166.

A vertical winch frame is fixed in center at rear end of the car, the lower end to the floor, the upper end to a cross beam on rear arch. The winch frame is made up of two standards, each composed of a plate and two angles, the two standards being connected at top and bottom each by two plates.


DRUM SHAFT GEAR
DRUM SHAFT BRACKET
PAWL
422.2
INTERMEDIATE SHAFT
RATCHET WHEEL
INT. SHAFT PINION
CRANK SHAFT PINION
333.5
INT. SHAFT GEAR
WINCH FRAME
550.
TOP OF CAR FLOOR
℄ OF CAR
A
A
DRUM
CABLE GUARD BRACKET
PAWL SHAFT
227.
CRANK SHAFT BRACKET
385.
℄ OF CAR
CABLE GUARD
DRUM SHAFT
350.
CRANK SHAFT
505.
CRANK
SECTION A-A
0 50 100 200 300 400 500 600 700 800 900 1000 1200 1300 1400 MILLIMETERS
DRAWING PREPARED TO CONFORM WITH
REVISIONS
GROUND PLATFORM CAR MODEL OF 1918 WINCH ASSEMBLY
NOV 15 1918
DRAWN
E.G.F.
J.D.
APP'D
CLASS 36
DIVISION 10
DRAWING 39
FILE

Bolted on the two standards on the side toward the front of the car are two crank-shaft brackets. Passing through the lower bronze bushed bearings of these brackets is the crank shaft with ends of square cross-section, mounting cranks which are held in place by a crown nut. The crank-shaft pinion and ratchet wheel are on the crank shaft between the two brackets. Passing through the upper holes of the brackets is the pawl shaft secured by a crown nut at each end. The pawl is located on this shaft directly above the ratchet wheel and held in place by two shaft collars, the collars in turn being secured by set screws. A third shaft collar is mounted on the pawl shaft above the crank-shaft pinion and serves to prevent side motion of the shaft. A pawl-hook plate, mounting a pawl hook directly above pawl, is held in place by the upper of the two bolts which secure the crank-shaft bracket.

Bolted on the two standards of the winch frame on the rear side are two drum-shaft brackets carrying each two bronze bushed bearings. The intermediate shaft is mounted in the lower bearings of the drum-shaft brackets and keyed upon it is the intermediate shaft gear and the intermediate shaft-gear pinion, the former in mesh with the crank-shaft pinion, the latter meshing with the drum-shaft gear to be mentioned later. The drum shaft is mounted in the upper two bronze bushed bearings. Keyed to the drum shaft directly above the intermediate shaft pinion is the drum-shaft gear. Adjacent to the drum-shaft gear is keyed the flanged drum upon which the cable is wound. A cone-shaped billet on the cable end fits into a recess below the cylindrical surface of the drum. From this recess the cable passes out upon the drum.

SECTION F. TROLLEY HOIST.

(*a*) *Description.*—(Refer to Plates XXXV and XXXVI.)

For list of parts, with their numbers, piece marks, drawing numbers, and material of which they are made, see page 168.

The trolley hoist is a chain hoist contained in a structural steel frame, mounted on four flanged wheels, which run on hoist runway. The frame is of rectangular section made up of plates, angles, and lattice bars, plates being provided with suitable holes for holding various bearings and fittings for hoisting mechanism. Two hooks, one at each end of frame, are provided for attaching traversing ropes. By means of these ropes the operators can pull the traveling hoist to the front or the rear of the hoist runway when removing and replacing ground platform sections.

The trolley wheels and axles are carried in cast steel, bronze bushed bearings bolted to side plates of trolley frame. Wheels are held in place on end of shaft with key and nut. At the outer end of trolley hoist frame, mounted on operating shaft which is supported in oper-

ating shaft bearing is the chain wheel and the hand chain. Operating shaft collar at end of shaft holds chain wheel in place. A bearing supports the other end of operating shaft upon which is mounted a collar and the operating shaft pinion. This pinion meshes with the worm-shaft gear mounted on worm shaft, supported in two bronze bushed bearings, which are provided with adjustable thrust bearings. These take the thrust of shaft through the center plugs which are fitted into ends of worm shaft. Operating shaft pinion and worm shaft gear are keyed and secured with a set screw.

The worm-wheel shaft is mounted in two bronze bushed cast-steel bearings bolted to side of frame and is held in place by an integral head at one end and a washer and crown nut at other end. On hexagonal section between these two bearings are mounted the worm wheel and worm-wheel shaft sprocket. The sprocket-gear case and its cover almost cover entire sprocket and forms a guide for chain around sprocket.

One end of chain is permanently fastened by a chain clevis and a chain clevis crossbar and looped down around shackle sprocket, thence up over worm-wheel sprocket. From worm-wheel sprocket the chain passes through chain tube, thence over chain guide wheel, and its end is fastened with a chain clip to the hoist frame. As the load is lifted the chain is pushed through the chain tube, from which it falls into a loop.

The yoke pin passing through the shackle sprocket supports the swivel yoke. The yoke nut and ball-thrust bearing on lower end of swivel yoke support the swivel trunnion. Two trunnion nuts hold a shackle link on each side of the trunnion. The shackle pin is provided for passing through shackle links and lifting by means of angles on spade.

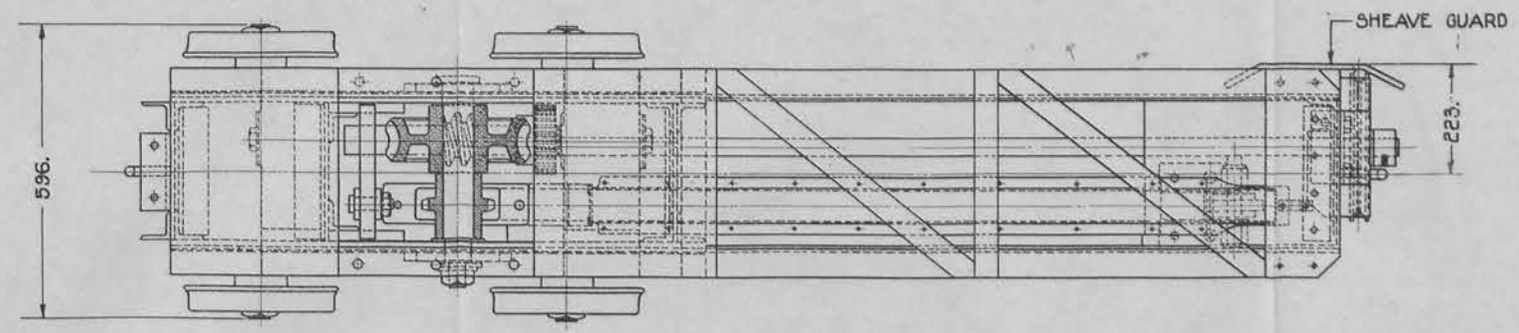
Tubes leading from bearings to top of frame provide for proper lubrication.

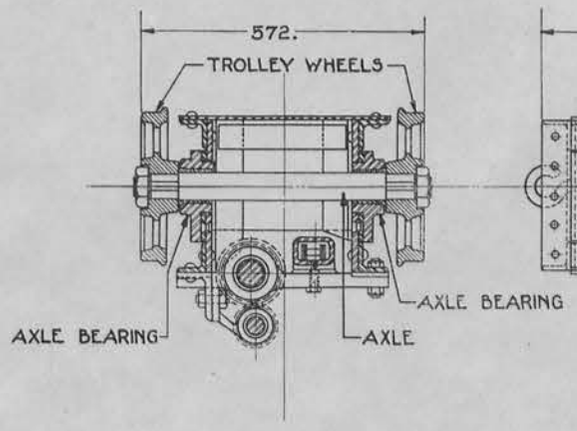
SECTION G. TRUCKS.

(*a*) *Description.*—(Refer to Plate XXXVII.)

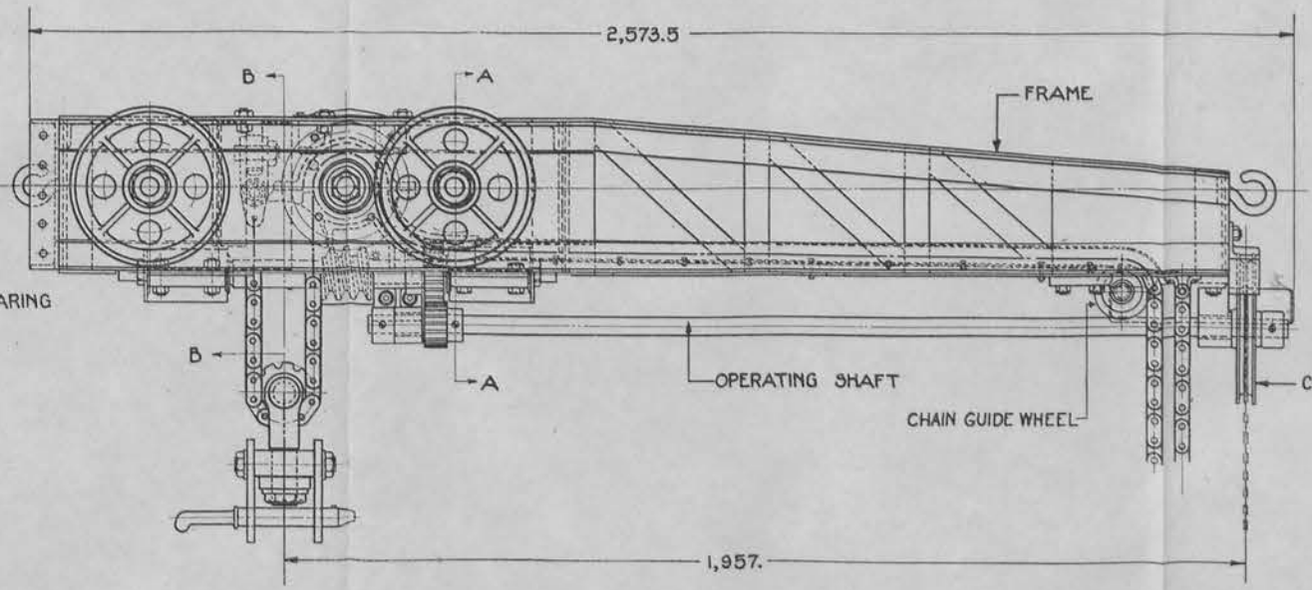
For list of parts, with their numbers, piece marks, drawing number, and material of which they are made, see page 173.

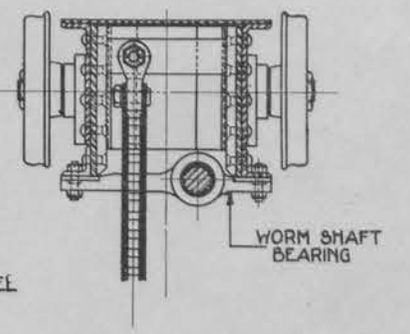
The truck consists essentially of two pairs of 33-inch wheels and axles with four 4.25 by 8 inch journals, two arch bar side frames, four columns, a spring plank, two sets of four spring coils, a bolster with center plate and side bearings, four brake shoes, two brake beams, and the brake mechanism. The journal boxes are held in place between the ends of the arch and tie bars by two long bolts. Column base castings are placed at the lower part of the arch bars at the center, and the columns are held in place between these and the upper bars of the arch bar by long bolts. The ends of the spring plank are riveted to the columns and cloumn base of each arch bar, and the





SECTION A-A

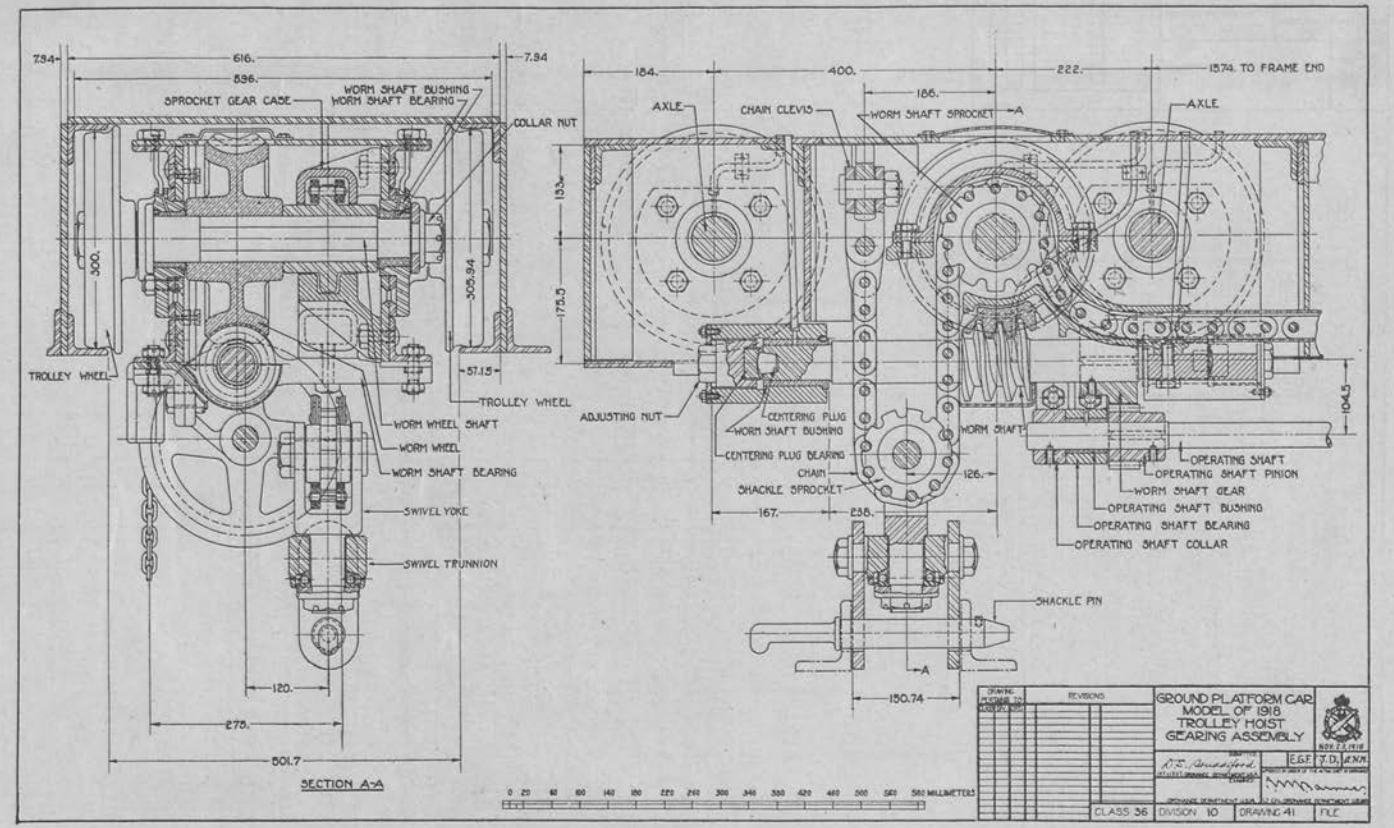


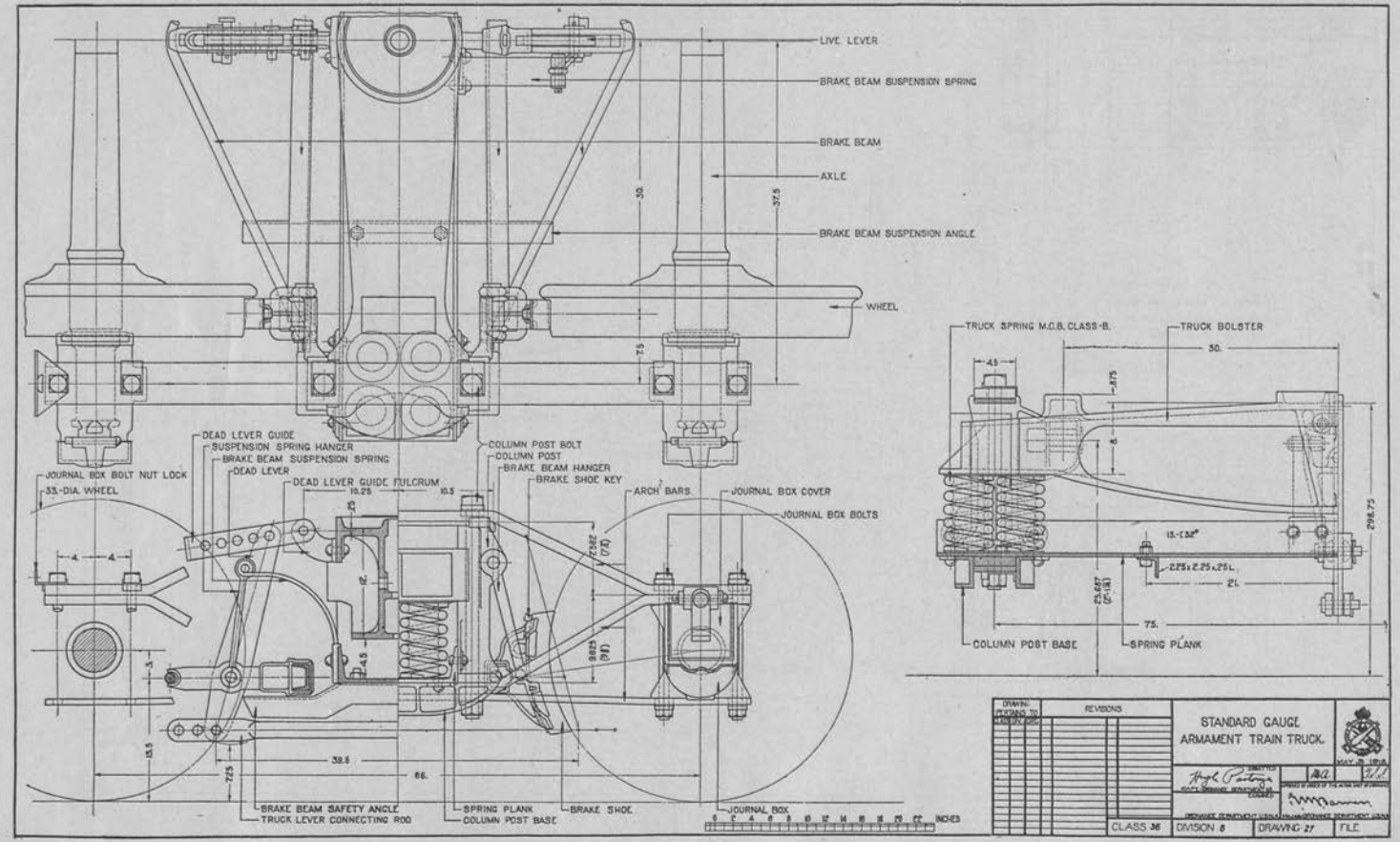


SECTION B-B

0 50 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 MILLIMETERS

DRAWING PERTAINS TO CLASS DIV. DIRC.	REVISIONS	GROUND PLATFORM CAR MODEL OF 1918 TROLLEY HOIST GENERAL ASSEMBLY	
		SUBMITTED D. S. Studdiford 1ST LIEUT. ORDNANCE DEPARTMENT U.S.A.	NOV. 23, 1918
		E.G.F. J.D. D.N.M.	
		EXAMINED ORDNANCE DEPARTMENT U.S.A.	APPROVED BY ORDER OF THE ACTING CHIEF OF ORDNANCE LT. COL. ORDNANCE DEPARTMENT U.S.A.
CLASS 36		DIVISION 10	DRAWING 40 FILE


7.94
616.
596.
7.94
SPROCKET GEAR CASE
WORM SHAFT BUSHING
WORM SHAFT BEARING
COLLAR NUT
300.
308.94
57.15
TROLLEY WHEEL
TROLLEY WHEEL
WORM WHEEL SHAFT
WORM WHEEL
WORM SHAFT BEARING
SWIVEL YOKE
SWIVEL TRUNNION
120.
275.
501.7
SECTION A-A
184.
400.
222.
1574. TO FRAME END
186.
AXLE
CHAIN CLEVIS
WORM SHAFT SPROCKET
A
AXLE
133.
175.5
ADJUSTING NUT
CENTERING PLUG
WORM SHAFT BUSHING
CENTERING PLUG BEARING
CHAIN
SHACKLE SPROCKET
167.
238.
126.
WORM SHAFT
104.5
OPERATING SHAFT
OPERATING SHAFT PINION
WORM SHAFT GEAR
OPERATING SHAFT BUSHING
OPERATING SHAFT BEARING
OPERATING SHAFT COLLAR
SHACKLE PIN
A
150.74
0 20 40 60 100 140 180 220 260 300 340 380 420 460 500 540 580 MILLIMETERS
REVISIONS
GROUND PLATFORM CAR
MODEL OF 1918
TROLLEY HOIST
GEARING ASSEMBLY
NOV 12 1918
E.G.F.
T.D.
CLASS 36
DIVISION 10
DRAWING 41
FILE


LIVE LEVER
BRAKE BEAM SUSPENSION SPRING
BRAKE BEAM
AXLE
BRAKE BEAM SUSPENSION ANGLE
WHEEL
DEAD LEVER GUIDE
SUSPENSION SPRING HANGER
BRAKE BEAM SUSPENSION SPRING
DEAD LEVER
DEAD LEVER GUIDE FULCRUM
JOURNAL BOX BOLT NUT LOCK
33-DIA. WHEEL
COLUMN POST BOLT
COLUMN POST
BRAKE BEAM HANGER
BRAKE SHOE KEY
ARCH BARS
JOURNAL BOX COVER
JOURNAL BOX BOLTS
BRAKE BEAM SAFETY ANGLE
TRUCK LEVER CONNECTING ROD
SPRING PLANK
COLUMN POST BASE
BRAKE SHOE
JOURNAL BOX
INCHES
TRUCK SPRING M.C.B. CLASS-B.
TRUCK BOLSTER
COLUMN POST BASE
SPRING PLANK
STANDARD GAUGE
ARMAMENT TRAIN TRUCK.
CLASS 36
DIVISION 8
DRAWING 27
FILE

ends of the bolster are guided directly over the spring plank by column guides. The sets of four coil springs which are placed between the ends of the bolster and spring plank have caps on the top and bottom, bolted together to hold the springs in groups. The brake shoes and brake beams are hung from brackets on the columns by U hangers, and the truss rods of the brake beams are hung from the suspension springs fastened to the spring plank. A study of Plate XXXVII will make clear the operation of the levers during application of the brakes.

SECTION H. BRAKES.

(a) *Description.*—(Refer to Plates XXXVIII and XXXIX.)

For list of parts, with their numbers, piece marks, drawing number, and material of which they are made, see page 156.

The car is equipped with both hand and air brake, the hand brake being so arranged as to operate through the same lever system as does the air brake. A study of Plate XXXVIII will make clear the operation of this arrangement. One end of the hand brake rod is connected through a clevis to the push rod, the other end is connected with the bell crank, which is operated in turn by the hand-wheel. The connection between the brake lever and the brake piston is made by means of the push rod, which slides in the lever of the brake pison rod. This allows the application of the hand brake without moving the brake piston. The brake lever is connected at one end to the push rod by means of a pin. Connected to the other end of the brake lever is the brake rod, which is in turn connected to the live lever on the truck. The lever connection rod connects the brake levers at the cylinder end of the car to the brake lever at the other end of the car. One end of the brake lever is connected to the brake rod, which is in turn connected to the live lever of the truck. The other end of the brake lever is connected to the lever fulcrum.

The air brake is standard Westinghouse equipment, and each end of the car is equipped with one Type C, 8 by 12, freight brake cylinder and reservoir combined, one Type K–1 triple valve, and one centrifugal dirt collector with necessary pipes, valves, and connections.

Plate XXXIX shows the brake cylinder and reservoir combined. The brake cylinder (2) is smooth-bored, and a tight joint is made between it and the piston (3) by a Johns-Manville expansion ring. After a service application, the release spring (9) forces the piston to release position. The nonpressure head (4) pipe, shown in the lower section of and parallel to the axis of the reservoir, is used to carry the auxiliary air from the triple valve to the brake cylinder when an application of the brake is being made. A clear understanding of the construction of the brake cylinder will make its action appear very simple. Air enters the brake cylinder from the auxiliary reservoir (13) through the triple valve.

The pressure carried in the pipes which are in connection with engine reservoir is called the train-line pressure. Although there are always some leaks in the train pipe, the air that is lost is supplied by the main reservoir, but if the main reservoir supply is shut off or an apparently large leak should develop, the brakes would be automatically set. To prevent as far as possible the brakes setting under such conditions, each cylinder is provided with a narrow groove, extending from the pressure head to a short distance past the piston, when it is in release position. Unless the air leaks into the piston faster than it leaks through the groove, it will not disturb the piston or apply the brake. In a service application of the brake the air rushes into the cylinder faster than it leaks through the groove, and consequently causes the piston to move and set the brake. The auxiliary reservoir is equipped with a release valve for reducing the pressure when the brake sticks on the car or when it is desired to release the brakes after they have been set on the car cut from its position in the train.

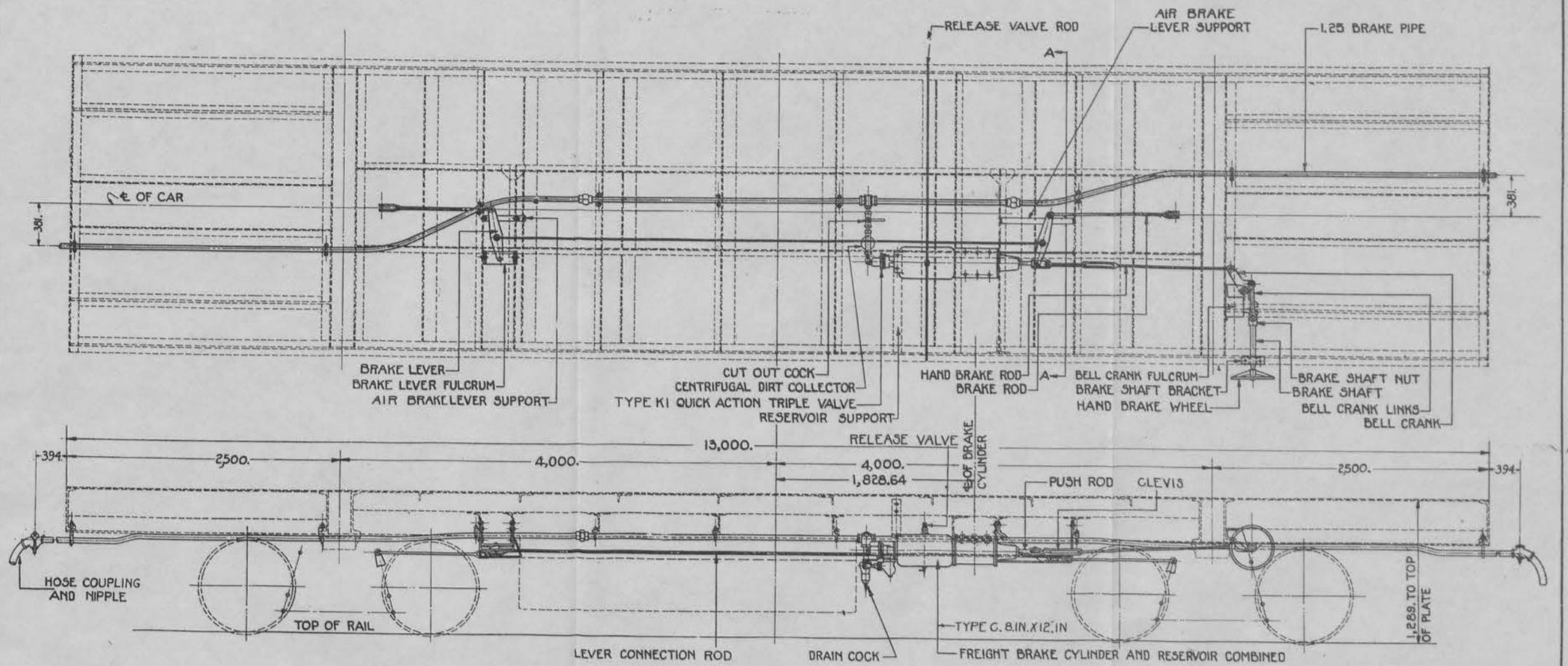
Plate XXXIX A shows sectional drawing of the K–1 triple valve. This valve gets its name from the fact that it performs the three fold function of charging the auxiliary reservoir, applying the brakes, and releasing the brakes.

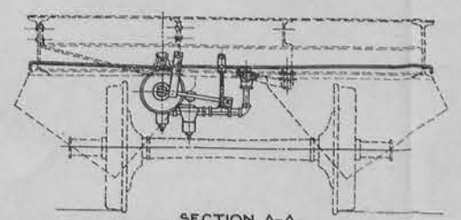
The K–1 triple valve is in full release and charging position when its various parts so arrange themselves that the air passes from the train pipe to the auxiliary reservoir and from the brake cylinder to the atmosphere. On a train that has just been coupled up, the admission of air to the train pipe forces all triple valves to full release and charging position; if the train has been coupled up and a service application has been made, the valves are forced to full release and charging position by increasing the train-line pressure.

The triple valve is in full service position when passage of air from the train line to the auxiliary reservoir is stopped and air is admitted to the brake cylinder from the auxiliary reservoir. A full service application of the brakes is made by reducing the train-line pressure and causing the valve parts to assume the above referred to position.

The retarded release and charging position is merely a modification of the full release and charging position, and is designed to hold the brakes applied on the front end of the train until the rear end brakes have had time to release, thus preventing undue shock and danger of pulling train in two.

The emergency application position is assumed by the valves when a sudded reduction in train-pipe pressure is made. In this position the valve, in addition to admitting air fron the auxiliary reservoir to the brake cylinder, admits air from the train pipe direct to the brake cylinder.



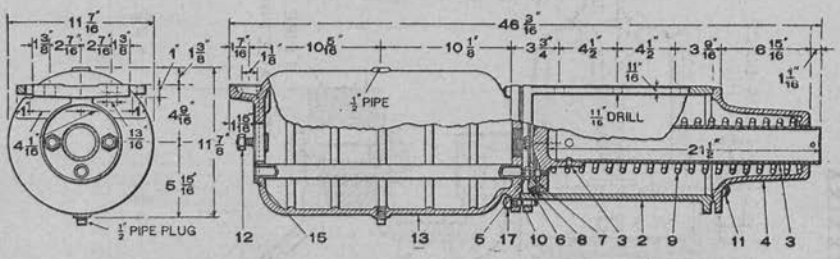


SECTION A-A

0 150 450 750 1050 1350 1650 1950 2250 2550 2850 3150 3450 3750 4050 MILLIMETERS

DRAWING PERTAINS TO MASS OV. RING	REVISIONS	GROUND PLATFORM CAR MODEL OF 1918 BRAKE ASSEMBLY	
		SUBMITTED: D.S. Braddford, 1ST LIEUT. ORDNANCE, ROYAL MOTOR S.S.A. ENGRS.	E.S.F. J.D. A.N.B. NOV. 23, 1918
		ORDNANCE DEPARTMENT U.S.A.	1ST LIEUT. ORDNANCE DEPARTMENT U.S.A.
	CLASS 36	DIVISION 10	DRAWING 42	FILE

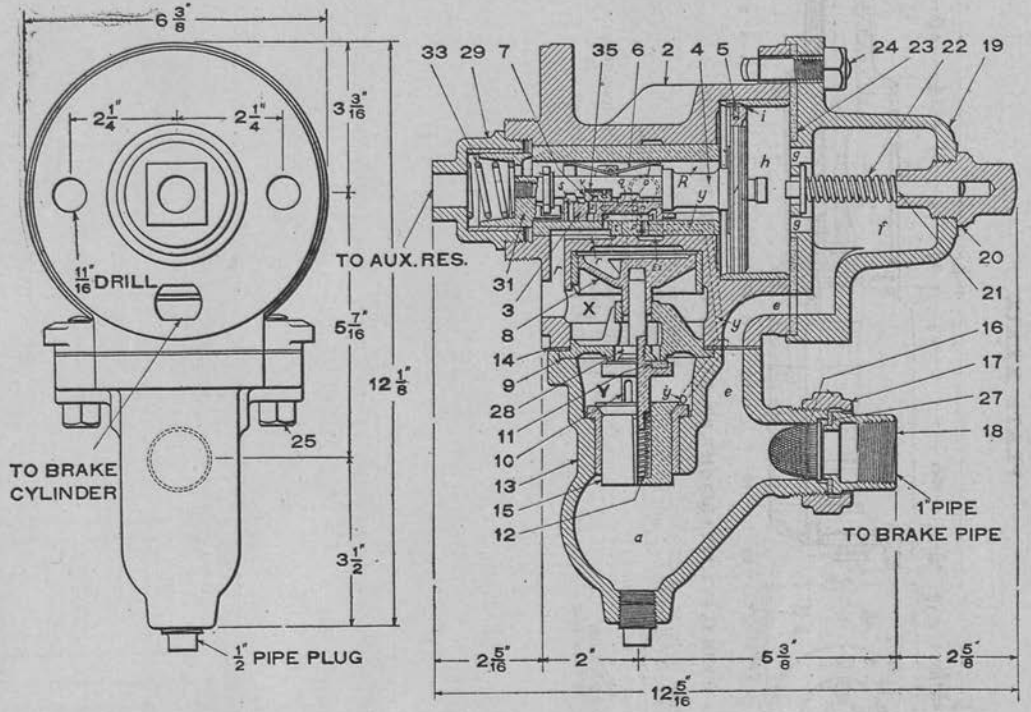
PLATE XXXIX.



TYPE C, 8″ X 12″, FREIGHT BRAKE CYLINDER AND RESERVOIR.

2. Cylinder body, 10 by 12 inches.
3. Piston and rod (includes 5 only).
4. Nonpressure head.
5. Follower stud and nut.
6. Follower.
7. Packing leather.
8. Packing expander.
9. Release spring.
10. Cylinder gasket.
11. Cylinder head bolt and nut.
12. Reservoir stud and nut.
13. Reservoir (includes 1½-inch drain plug).
15. Triple valve gasket.
17. Reservoir cylinder bolt and nut.

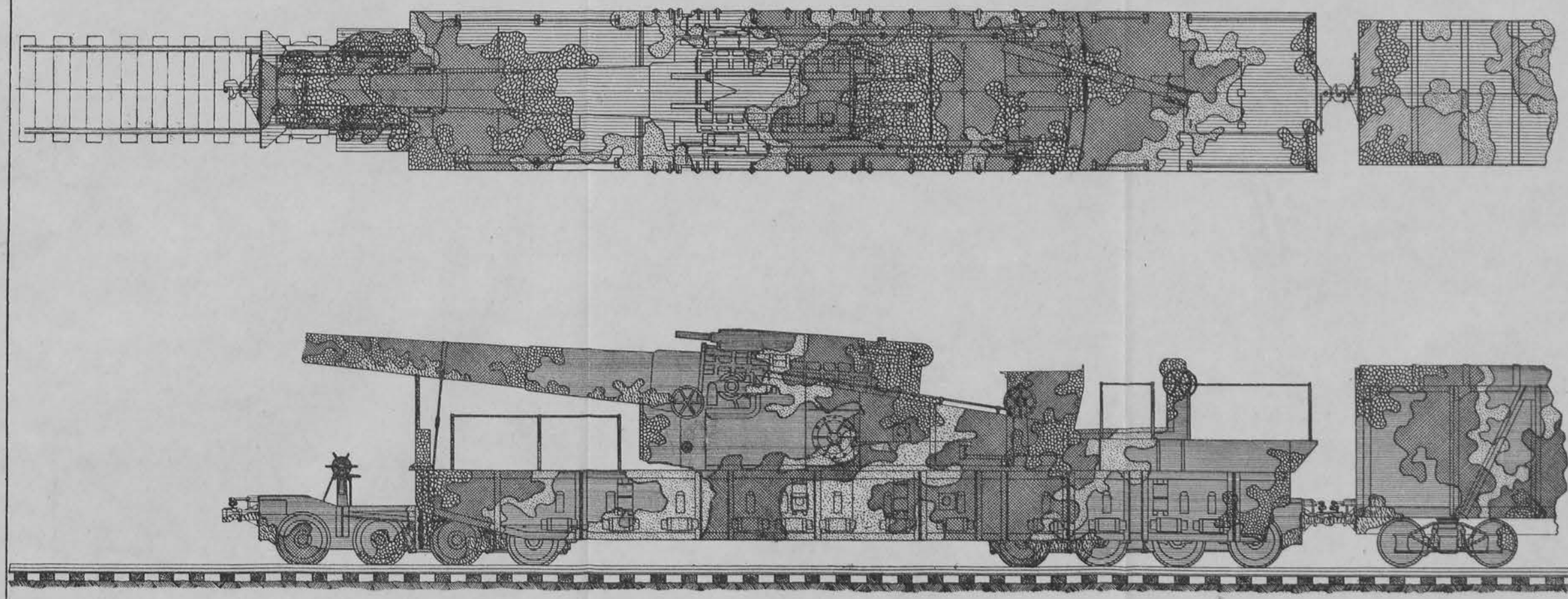
PLATE XXXIXA.



TRIPLE VALVE, K-1.

K-1 TRIPLE VALVE.

2. Body, complete (includes ⅜-inch pipe plug).
3. Slide valve.
4. Main piston (includes 5).
5. Main piston ring.
6. Slide valve spring.
7. Graduating valve.
8. Emergency piston.
9. Emergency valve seat.
10. Emergency valve (includes 11 and 28).
11. Rubber seat.
12. Check valve case.
13. Check valve case complete (includes ½-inch pipe plug).
14. Check valve case gasket.
15. Check valve.
16. Strainer.
17. 1-inch union nut.
18. 1-inch union swivel.
19. Cylinder cap.
20. Graduating stem nut.
21. Graduating stem.
22. Graduating spring.
23. Cylinder cap gasket.
24. Bolt and nut (for cylinder cap).
25. Cap screw.
27. 1-inch union gasket.
28. Emergency valve nut.
29. Retarding device body (marked "K-1")
31. Retarding stem.
33. Retarding spring.
35. Graduating valve spring.



LIST	KEY TO COLORS
BROWN	
YELLOW	
CREAM	
GREEN	
MAUVE	

0 300 600 1200 1800 2400 3000 3600 4200 4800 5400 6000 6600 7200 7800 8400 MILLIMETERS

DRAWING PERTAINS TO CLASS IV. BTRY.

REVISIONS

12 INCH GUN (BATIGNOLLES) RY. CARRIAGE MODEL OF 1918 LEFT SIDE CAMOUFLAGE ARRANGEMENT

MAY 1919

SUBMITTED: E.D.C. Campbell, CHIEF CAMOUFLEUR, FIELD ORDNANCE DEPARTMENT U.S. A.

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E. H. Campbell, LIEUT. COL., ORDNANCE DEPARTMENT U.S.A.

CLASS 86 | DIVISION 21 | DRAWING 1 | FILE

112166—19. (To face page 60.)

"THE DUAL SCIENTIFIC COMPLEMENTARY CAMOUFLAGE SYSTEM."

SECTION I. CAMOUFLAGE.

(*a*) *Description.*—(Refer to Plate XL.) The 12-inch gun railway carriage may be camouflaged, using the "Dual Scientific Complementary Camouflage System," following the foliage design, with color key in black and white shown on Plate XL.

The object of this system of painting is, first, the blending of the complementary groups of color into a neutral gray, at long range; second, to close range descriptive grouping of foliage forms and atmospheric colors.

To completely camouflage the car, it should be covered with a semitransparent camouflage canopy of tent form similar to that used for the 12-inch gun railway carriage shown on drawings class 86, division 22, drawings 1, 2, and 3.

(*b*) *Paints.*—The paints to be used are the United States Government camouflage paints prepared for the five-color system and in the proportion as follows:

1. Brown....No. 4041	10 parts.
2. Yellow....No. 4042	3 parts.
3. Cream.....No. 4043	5 parts.
4. Green.....No. 4044	10 parts.
5. Mauve.....No. 4046	2 parts.
6. Black.....No. 4045	1 part.

The paint numbers referred to above refer to the United States Government paint numbers. The parts referred to indicate the relative amounts of paints of the different colors which will be required to camouflage one 12-inch gun railway carriage.

Each color, for convenience, should be furnished for use in 1-gallon "friction top" cans with handle. Paints should be furnished in the cans mixed ready for use. When paint becomes too thick and it is necessary to thin, use linseed oil and turpentine for that purpose, being careful not to use too much turpentine.

(*c*) *To apply the paint.*—To apply the paint the surface should be free of all sand, cinders, dirt, and oil. Paint formerly applied and adhering firmly to the surface need not be removed. The sections to which the different colors are to be applied are then laid off in accordance with the design shown on plate.

After the mount has been properly marked off into the different sections the colors should be carefully applied, care being taken to insure an even smooth coat. After the different colors have been applied the lines where the colors meet should be covered with a black band about 1¼ inches wide. Precaution should be taken to see that the paint is dry and hard before permitting anything to come in contact with the painted surface.

(*d*) *To remove paint.*—The paint may be removed by turpentine or by the use of a paint torch if care is taken in the use of the flame.

PART III.

12-INCH GUN RAILWAY CARRIAGE, MODEL OF 1918.

ASSEMBLING, DISASSEMBLING.

SECTION A. TOP CARRIAGE (PROPER).

(Refer to Plate V.)

The top carriage in itself is a unit and has few parts that need be disassembled but it can be dismounted from the car. Before dismounting the top carriage it will be necessary to dismount and disassemble other parts.

(*a*) *To dismount top carriage—*

Men required, four.
Tools needed, 1 car and top carriage sling, U592A.

1. Dismount loading stand. (See section N, part a.)
2. Dismount the cradle and its associated parts. (See Section B, part a.)
3. Disassemble traversing mechanism. (See section H, part a.)
4. Disassemble elevating mechanism. (See section G, part a).
5. Remove clips at front of top carriage. (See section I, part c.)
6. Remove traversing rack support and sliding plate. (See section I, part e.)
7. Lift top carriage off from car.

(*b*) *To mount top carriage—*

Men required, 4.
Tools needed, 1 car and top carriage sling, U592C.

Reverse operations for dismounting.

SECTION B. CRADLE.

(Refer to Plates V and VI.)

The cradle in itself is a unit and has few parts that need be disassembled but it can be dismounted from the top carriage. Before dismounting the cradle, it will be necessary to dismount and disassemble other parts.

(*a*) *To dismount cradle—*

Men required, 4.
Tools needed—
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 1.5 and 1.875 inch nuts, U43FB.
1 pair of pliers, U47AQ.
1 wrench for 2.5 inch nuts, U43KC.
1 6-inch monkey wrench, U45DA.
1 cradle sling beam (complete).
2 gun slings, U592B.
2 cradle slings, U592C.
2 3 by 3 by 36 inch hardwood blocks.

1. Dismount sight.
2. Dismount elevation quadrant.
3. Dismount liquid pump and remove piping. (See section E, part (*a*) and section F, part (*a*).)
4. Loosen plunger bracket adjusting screw, unbolt and remove the plunger bracket. This part of the mechanism can now be reduced to its parts by taking out the plunger bracket screw.
5. Take out fulcrum bracket bolt.
6. Remove the four bolts that secure the fulcrum bracket and slide it out toward the front of the carriage.
7. Remove the nuts from the four bolts that hold the lever guide bracket and remove it together with the lever.
8. Dismount loading stand and crane.
9. Take off dust guard.
10. Remove gun from cradle.
11. Remove elevating racks.
12. Remove trunnion caps.
13. Lift out cradle.

(*b*) *To mount cradle.—*

Men required, 4.
Tools needed—
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 1.5 and 1.875 inch nuts, U43FB.
1 wrench for 2.5 inch nut, U43KC.
1 6-inch monkey wrench.
1 pair of pliers, U47AQ.
1 cradle sling beam (complete).
2 gun slings, U592B.
2 cradle slings, U592C.
2 3 by 3 by 36 inch hardwood blocks.

1. Reverse operations for dismounting.
2. After mounting the cradle adjust the antifriction mechanism in the following manner: Screw the plunger bracket adjusting screw up or down until the cradle trunnion has 0.5 millimeter clearance all around it in the trunnion bearing. Set up the adjusting screw lock nut. Bring the guide bracket adjusting screw down until it very nearly touches the lever and set up its check nut.

SECTION C. RECOIL MECHANISM.

(Refer to Plate VII.)

(*a*) *To disassemble recoil mechanism*—

Men required, 5.

Tools needed:

1 screw driver, U55T.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench, U486D.
1 wrench, U486C.
1 wrench, U486B.
1 wrench, U486A.
1 spanner wrench, U423L.
3 5-gallon cans.

1. Elevate gun about 10°, remove filling and drain plugs and drain liquid into 5-gallon cans. Return gun to 0° elevation.

2. Remove nut locking screws and recoil band locking screw. Loosen front nut and remove rear nut.

3. Unscrew cylinder head.

4. Unscrew follower, remove packing and unscrew stuffing box. Unseat cylinder gland and L packing. The cylinder and stuffing box glands, L, packing, stuffing box, and follower can be removed as the piston is taken out.

5. Draw piston rod out toward the front unscrewing the front nut at the same time until it is removed from piston rod and allows it to come through rear end of cylinder.

The weight of the piston rod is approximately 800 pounds and great care should be exercised that the piston and bore are not injured in disassembling.

The bushing on the piston need not be removed except for renewal and this shall not be done in the field.

If it becomes necessary to remove the recoil cylinder from the cradle proceed as follows:

1. Relieve air pressure in recuperator and draw back gun as far as it will go.

2. Remove key lock bolt and use it as a jack screw to withdraw key. If, on using key lock bolt for its full length, it is impossible to withdraw key, there is now room to rap it out. Rotate cylinder-90° and withdraw it from cradle.

(*b*) *To assemble recoil mechanism*—

Men required, 5.

Tools needed:

1 screw driver, U55T.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench, U486D.
1 wrench, U486C.
1 wrench, U486B.
1 wrench, U486A.
1 spanner wrench, U423L.

If the recoil cylinder has been removed from the cradle proceed as follows:

1. The gun being drawn back as far as recuperator will allow, insert cylinder in cradle and turn through 90°. Drive in key and lock it with key lock bolt.
2. Push gun into its battery position.
3. Insert piston rod in recoil cylinder from head end. Before passing threaded end of piston rod through recoil band lug, place L packing, stuffing-box gland, stuffing box, cylinder gland, and follower over the end of the piston rod in order named. Also screw on front nut.
4. Locate piston in cylinder so that its front face is 117 millimeters from forward end of cylinder and the shallow grooves on piston line up with throttling grooves of cylinder, lining up the same grooves that originally went together.
5. Bring front nut to a bearing on recoil band being careful not to move piston. Screw on rear nut and tighten and lock both with screws provided.
6. Push L packing and cylinder gland in place. Screw stuffing box in place.
7. Pack stuffing box. (See part (*d*)).
8. Screw drain plug in place and fill cylinder. (See part (*e*).)

(*c*) *To clean recoil mechanism*—

Men required, 2.
Tools needed:
3 5-gallon cans.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
Cotton waste.
Kerosene.

1. Elevate gun 10°, remove filling and drain plugs and drain liquid into 5-gallon cans. Replace drain plug. Return gun to 0° elevation.
2. Draw gun slightly back.
3. Clean cylinder with kerosene oil forced into it with a hand force pump. Remove drain plug, elevate gun 10° and allow cylinder to drain dry.

When a thorough cleaning is necessary, disassemble mechanism as explained in part (*a*) and carefully clean each part with kerosene oil removing all dirt, sediment, and gummed deposits. Be particularly careful to clean throttling grooves well. See that all shreds of waste used for wiping parts are removed and that none is left in cylinder. The piston and cylinder must be entirely cleaned before reassembling.

(*d*) *To pack stuffing box—*

Men required, 1.
Tools needed:
1 wrench for 0 625 and 0.75 inch nuts, U43F.
1 wrench, U486B.
1 spanner wrench, U423L.
Packing.
1 hand mallet, U47AN.
Several sticks of pine, 1 by 1 by 12 inches.
3 5-gallon cans.

1. Elevate gun 10°, remove filling and drain plugs and drain liquid fnto 5-gallon cans. Return gun to 0° elevation.

2. Unscrew follower and slide it back on piston rod. Pull out old packing and discard any unfit for use. If any old packing is used in repacking stuffing box it should be put in last.

3. Cut packing so that it fits snugly around piston rod and ends butt neatly together. Place one ring of packing on piston rod and sorce well to bottom of stuffing box with stick and mallet. Treat each ring in the same manner, being careful to stagger the joints, until three rings have been inserted. Screw the follower in the tuffing box and set up tight.

It will be necessary to tighten up the follower from time to time. When the follower bottoms in its thread another ring of packing should be added. If the follower be set up too hard unnecessary friction on the piston rod will result. The tool provided for the purpose of tightening up the follower is adequate and the use of a pipe or other extension for the handle shall not be allowed.

(*e*) *To fill recoil cylinder—*

Men required, 2.
Tools needed:
1 filling funnel, U422K, L, M, & P.
1 wrench for 0.625 and 0.75 inch nuts, U43F.

1. Remove filling plug and insert end of filling tube in hole. It will be necessary for one man to hold the funnel while the other pours the liquid. Fill the cylinder leaving no void. Be sure that the cylinder is entirely filled with the proper liquid and that all air is expelled.

The liquid used in the recoil cylinders is a mixture of glycerine and water to test to 1.15 specific gravity. It must be thoroughly mixed. If the mixture does not test to the proper specific gravity it should be corrected to 1.15 by adding water if over 1.15, or glycerine if under that figure.

Any new liquid that must be added to make up loss, must be carefully strained and tested to 1.15 specific gravity.

SECTION D. RECUPERATOR.

(Refer to Plate VIII.)

(*a*) *To disassemble recuperator*—

Men required, 6.
Tools needed:
1 box wrench, U423D.
1 wrench, U487A.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 screw driver, U55Q.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 1.5 and 1.875 inch nuts, U43FB.
1 screw driver, U55T.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 18 and 22 mm. nuts, U488C..
1 spanner wrench, U488E.
1 spanner wrench, U423H.
1 socket wrench, U488A.
1 socket wrench, U488B.
1 wrench, U486E.
1 screw driver, U45AN.
1 wrench, U488D.
1 wrench handle, U422H.
1 pair pliers, U47AQ.
2 5-gallon cans.

1. Open both cocks in air valve.

2. Open blow-off cock in liquid valve.

3. Disconnect pipes from valves and any pipe clamps that it is found necessary to remove. Remove recuperator guard from cradle.

4. Push piston rod, plunger, and yoke back as far as possible. Move tension rods forward far enough to uncover collar screw pins and unscrew tension rod collars. Remove tension rod nuts and bushings in recoil band and pull out tension rods to the rear through recoil band.

5. Unscrew crown nut on end of guard stud and remove movable guard. Take off crown nut and washer that bears against plunger gland.

6. Place 5-gallon can in a position to catch any liquid that will run out of front end of plunger and remove plunger gland, packing, stuffing box and leather piston rod packing.

7. Remove yoke locking screw and take off yoke from plunger.

8. Draw piston rod through front end of plunger until piston rod nut stops up against shoulder on inside of plunger.

9. Move receptacle to catch liquid under front end of cylinder and remove cylinder gland, packing, cylinder stuffing box, and leather plunger packing.

10. Carefully draw piston, piston rod, and plunger out of air cylinder together, supporting outer end and using special care that plunger is drawn out along axis of recuperator until it is entirely disengaged from cylinder in order not to injure end of plunger or bore of cylinder. When plunger is wholly withdrawn, allow piston rod to slide through it and support the rod as it disengages itself from plunger to prevent piston from binding in bore. Now draw out piston.

11. Hold squared front end of piston rod to prevent it from turning and unscrew piston nut after first removing split pin. Remove spring, packing retainer, leather U packing, gland and packing. Take out screw that locks the thread and unscrew piston rod from piston.

12. To remove tension rod guide, it is necessary first to remove end tension rod guard by taking out tap bolts that fasten it to guide nut. After taking out lock screw, guide nut can be unscrewed and guide taken out. The removal of four tap bolts in each tension rod cradle bushing releases them and center tension rod guards that are held in place by them.

13. Take out locking nut lock screw and unscrew cylinder locking nut when air cylinder can be pulled out to the rear. There is no occasion for taking off locking block.

(*b*) *To assemble recuperator—*

Men required, 6.
Tools needed:
1 box wrench, U423D.
1 wrench, U487A.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 screw driver, U55Q.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 1.5 and 1.875 inch nuts, U43FB.
1 screw driver, U55T.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 18 and 22 millimeter nuts, U488C.
1 spanner wrench, U488E.
1 spanner wrench, U423H.
1 socket wrench, U488A.
1 socket wrench, U488B.
1 wrench, U486E.
1 screw driver, U45AN.
1 wrench, U488D.
1 wrench handle, U422H.
1 pair of pliers, U47AQ.
1 piston guide, U348B.

1. Put air cylinder in place in cradle, screw on cylinder locking nut and lock same with locking-nut lock screw.

2. Slide center tension-rod guards through the lugs on the cast cylinder that hold the air cylinder, allowing an end to rest in each lug, and bolt tension-rod cradle bushings in place with flat sides of flanges toward the inside. Place tension-rod guides in front lugs, screw on guide nuts and lock same with lock screws provided.

3. Attach piston guide to cylinder locking nut by means of locking-nut studs.

4. Screw piston onto piston rod, locking it with headless screw provided, and place piston in piston guide. Assemble on piston, in the order named, packing, gland, leather U packing, packing retainer, spring, and piston nut. Tighten up on piston nut, insert split pin and push piston into cylinder, being careful to support outer end of piston rod and keep its axis coincident with that of the bore, so that piston or bore are not injured by binding of piston.

5. Slide plunger in place in cylinder, bringing piston rod through its front end, and push piston and plunger back in cylinder as far as they will go. Remove piston guide.

6. In the order named, assemble leather plunger packing, cylinder stuffing box, packing, and cylinder gland, and tighten up the two sets of nuts on studs.

7. Put yoke on end of plunger and secure with yoke locking screw.

8. In the order named, assemble leather piston-rod packing, stuffing box, packing, and plunger gland, and tighten up the two sets of nuts on studs.

9. Push tension rods through the lugs on recoil band, cradle bushings and yoke. Before pushing end of rod through tension-rod guide put tension-rod collar on tension rod. Now bring ends of rods through tension-rod guides and screw tension-rod collars in place, using screw pins to secure them.

10. Pull out plunger as far as it will go, thus seating tension-rod collars in counterbores of yoke and bringing lugs on tension rods up against faces of rear cradle bushings. Put recoil-band bushings in place and lock with set screws. Screw tension-rod nuts up to a bearing on recoil-band lugs and pin them.

11. Fasten removable guard over end of piston rod by screwing and pinning crown nut to guard stud. Having assembled fixed guard to it, fasten vertical section of recuperator guard to cradle.

12. Bolt the three remaining sections of recuperator guard and the end tension-rod guards in place.

(*c*) *To clean recuperator*—

Men required, 2.
Tools needed:
Cotton waste.
Kerosene.

1. Disassemble recuperator. (See part (*a*).)

2. Clean each part separately. Any liquid that has leaked into air chamber of air cylinder should be drained out and any film or deposit on inside of chamber removed. The sliding surfaces on the plunger, piston rod, cylinder bore, and tension rods should be thoroughly cleaned with kerosene and wiped dry and free from shreds of waste.

All rust, where it has been allowed to form, should be carefully removed without scratching or scoring the finish of the parts.

3. Assemble. (See part (*b*).)

(*d*) *To pack stuffing box—*

Men required, 1.
Tools needed:
1 socket wrench, U488A.
1 socket wrench, U488B.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
Packing.
1 hand mallet, U47AN.
Several sticks of pine, 1 by 1 by 12 inches.
2 5-gallon cans

Both stuffing boxes of the recuperator are the same except for size, so that they can be packed in the same manner.

1. Take outer nuts off of studs and draw back gland. Pull out old packing and discard any unfit for use. If any old packing is used in repacking the stuffing box it should be put in last.

2. Cut packing so that it fits snugly and ends butt neatly together. Place one layer of packing around plunger or piston rod, as the case may be, and force well to bottom of stuffing box with a stick of wood and mallet. Treat each layer of packing in the same way, being careful to stagger joints of packing, until packing recess is filled. Push gland in place against packing, screw nuts onto studs and tighten up on them.

It will be necessary to tighten up the gland from time to time. When the gland bottoms, more packing should be added. If the glands are set up too hard, unnecessary friction on the plunger and piston rod will result. The wrench provided for the nuts on the studs is the only tool that may be used on them.

(*e*) *To charge recuperator—*

Men required, 2.
Tools needed:
1 box wrench, U423D.
1 wrench, U423A.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
2 air bottles (charged) see drawing 15–5–319.

1. Filter through the strainer provided all of liquid taken from hydraulic joint and test it for specific gravity. Correct to 1.15 by adding water if over 1.15, or glycerine if under that figure. Mix the water and glycerine thoroughly and pour into reservoir of pump. Any new liquid that must be added to make up loss must also be strained and tested to 1.15 specific gravity.

2. Close exhaust valve of liquid valve and open supply valve. Work pump lever until liquid gauge, or forward gauge, shows 1,721 pounds pressure. If mechanism is in proper adjustment, front face of movable guard will then be flush with end of fixed guard. This indicates that hydraulic joint is full. As liquid leaks out, movable guard will project more and more toward the front. As long as this projection does not exceed 220 millimeters the joint will be air tight.

3. When hydraulic joint has been filled, charge cylinder with compressed air taken from portable bottles or tanks, each containing 3,173.1 cubic inches at a pressure of 2,844.2 lbs. per square inch. Three bottles are required to fill cylinder. These bottles are laid on platform No. 2 and connected each in turn to the connection that is bolted onto the cradle. Both valves in air valve must be closed before removing plug of air pipe connection. After taking out plug, connect air bottle to air pipe connection by means of a portable pipe and its couplings. Open supply valve on air cylinder and valve on bottle and empty bottle into cylinder. Close both valves and substitute another bottle and continue until air gauge, the one toward the rear, registers 110 kilograms. It will not be possible to entirely empty bottles into cylinder for when pressure in cylinder equals that of bottle the flow of air will stop. To prevent remaining air in bottles from escaping valve on end must be closed before disconnecting bottle. This will save time when recharging bottles. Failure to close supply valve on cylinder while changing bottles will result in loss of air charge.

SECTION E. LIQUID PUMP.

(Refer to Plates IX and X.)

(a) *To disassemble liquid pump.*

Men required, 3.

Tools needed:

1 5-gallon can.
1 wrench for 0.312 ($\frac{5}{16}$) inch nut, U82C.
1 pair of pliers, U47AQ.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench, U423A.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 1.625 and 1.75 inch nuts, U43CA.
1 wrench for .875 and 1 inch nuts, U43G.
1 6-inch monkey wrench, U45DA.
1 screw driver, U45AN.

1. Hold a clean 5-gallon can under the drain hole and remove drain plug, draining liquid from case.

2. Take out split pin and remove nut from end of shaft after which pump lever can be forced off of lever shaft.

3. Disconnect discharge pipe from pump and remove pump from its position on pump bracket. Pump can now be taken to some convenient place and worked on to greater advantage.

4. Take off pump case side plate by removing the six tap bolts which hold it, being careful not to tear gasket. Remove nuts and lock washers on top of case and lift off pump case cover.

5. Unscrew tap bolts that hold gland and take off gland and pull out packing.

6. Upon extracting split pin, passing through crank and shaft, shaft can be pulled out.

7. Lift plunger out of pump body and at the same time remove, together with plunger, link and crank. As pin in upper end of link is retained in its place by the two sides of the plunger, if link is swung out of its working position this pin can be pushed out and crank and link separated. The pin in lower end of link is held in place by a riveted pin and had best not be taken out unless it is necessary for the renewal of a part.

8. Unscrew body nut at bottom of case and take pump body out of case.

9. Take out suction valve seat; and if it is desired to remove strainer, this can be done by prying out strainer ring. Inverting valve seat will cause valve stem to drop out as it is only held in position by gravity.

10. Relief valve cap should be unscrewed and spring lifted out. By turning over relief valve body after it has been unscrewed from pump body relief valve stem will drop out.

11. Check valve can be shaken out of pump body in the same way. In breaking joints made tight by gaskets, use care that they are not destroyed.

12. Unscrew body nut and lift out body gland and packing.

(*b*) *To assemble liquid pump*—

Men required, 3.
Tools needed:
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 pair of pliers, U47AQ.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench, U423A.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 1.625 and 1.75 inch nuts, U43CA.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 6-inch monkey wrench, U45DA.
1 screw driver, U45AN.
Several sticks of pine 1 by 1 by 12 inches.

1. Seat valve stem in suction valve seat, place body washer in its seat and screw valve seat tightly in place in pump body.

2. Drop check valve down onto its seat in pump body.

3. Place body washer in its seat and screw relief valve body down on it. See that relief valve stem is properly seated and place spring over stem. Introduce end of stem into hole in relief valve cap and screw down cap.

4. Pump body, assembled, can now be placed in case. Projection on intake side should slide down between the two lugs on inside of case and care should be taken to see that shoulder at bottom is properly seated before body nut is screwed on from outside of case.

5. If pin has been removed from lower end, the solid end, of link, and link and plunger have been separated they should now be assembled and a new pin driven and riveted in link.

6. Connect crank to link with upper pin.

7. Put body nut, gland, and leather over lower end of plunger in the order named.

8. Hold plunger, link, and crank in their proper working positions and push lever shaft in place. See that the proper sides of hexagonal section on shaft and of hole in crank come together so that split pin can be inserted.

9. Put on pump case cover and fasten in place.

10. Tighten body nut. This can be done through opening in front of case. To do this before upper end of plunger is supported by guide in cover would prevent any side motion of plunger and any force near upper end would strain body nut and plunger at its lower end.

11. Pack stuffing box around lever shaft. This is done in the same manner as explained in sections C and D. Put gland in place and screw in tap bolts that hold it.

12. Bolt pump to pump bracket and make connection with discharge pipe, first placing collar and washer provided over the end of pipe.

13. With plunger at end of its downward stroke assemble pump lever so that curved end rests against upper stop on pump case and screw on nut and pin same.

14. Replace side plate over opening in case.

(*c*) *To clean liquid pump*—

Men required, 1.
Tools needed:
1 shallow receptacle.
Several sticks of pine, 1 by 1 by 12 inches.
Cotton waste.
Kerosene.

1. Disassemble liquid pump. (See part (*a*).)

2. Place all parts requiring cleaning in a bath of kerosene oil and clean thoroughly. Valves and valve seats should receive special attention and be very carefully cleaned. The strainer should be cleaned thoroughly so that none of the meshes are clogged. The pump case should be freed from sediment and any gummed deposits.

3. Assemble. (See part (*b*).)

(*d*) *To fill liquid pump.*—

Men required, 1.
Tools needed, 1 funnel.

1. Filter liquid before pouring it into pump case, for although a strainer is provided at intake, it can not be reached for cleaning except by emptying and disassembling pump and dirt in the liquid will very soon clog it.

2. Case should be filled through opening in cover with a funnel. Before filling, carefully wipe around opening to assure that no dirt is carried into case when filling.

SECTION F. PIPING, FITTINGS, AND VALVES.

(Refer to Plate X.)

(*a*) *To disassemble piping, fittings, and valves*—

Men required, 1.
Tools needed:
1 wrench, U423A.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.567 ($\frac{9}{16}$) inch nuts, U43LC.
1 box wrench, U423D.
1 screw driver, U55Q.
1 pipe wrench.

It may be necessary to remove piping and fittings for cleaning and renewals. The air and liquid valves should only be removed when absolutely necessary, and only after air and liquid pressure have been relieved.

1. Remove all pipes by unscrewing connection nuts and pipe clips.

2. Remove liquid and air pressure gauges and their couplings, if necessary.

3. Remove liquid and air pipe connections from cradle.

4. Remove liquid and air valves and take out the soft-lead gaskets.

5. Removing gland nuts, packing, and valve stems of liquid and air valves reduces them to their parts.

The gauges shall not be disassembled at any time. In the event of necessity of repairs to them, new ones will be mounted on the carriage and the defective gauges sent to their manufacturers for adjustment or repairs.

(*b*) *To assemble piping, fittings, and valves—*

Men required, 1.
Tools needed:
1 wrench, U423A.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 box wrench, U423D.
1 screw driver, U55Q.
1 pipe wrench.

Reverse operations for disassembling.

Always use new soft-lead gaskets when replacing liquid and air valves.

(*c*) *To clean piping, fittings, and valves—*

Men required, 1.
Tools needed:
1 shallow receptacle.
Several sticks of pine 1 by 1 by 12 inches.
Cotton waste.
Kerosene.

1. Disassemble valves, etc. (See part "a.")
2. Place all parts requiring cleaning in a bath of kerosene oil and clean thoroughly. Valve stems and valve seats should receive special attention and be very carefully cleaned.
3. Assemble. (See part "b.")

SECTION G. ELEVATING MECHANISM.

(Refer to Plates XI and XII.)

(*a*) *To disassemble elevating mechanism—*

Men required, 4.
Tools needed:
1 screw driver, U45QB.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 6-inch monkey wrench, U45DA.
1 screw driver, U55T.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 wrench, U487D.
1 wrench handle, U487E.
1 pin punch, U47AF.

1. Unbolt and remove chain guards and chains.
2. Take out grease cups from ends of handwheel shafts; remove set screws from upper sprockets and take off sprockets. Remove retaining washers and disassemble handwheels and shafts.

3. Remove elevating chain-guard platforms, thus making sprockets and miter gears accessible.

4. Use ratchet lever to bring set screws in lower sprockets on upper side of cross shaft and remove them. Also remove the one in the collar.

5. Remove ratchet-lever support bracket and collar which secures gear on this end.

6. On the right side on the carriage loosen set screws in longitudinal shaft coupling and slide coupling back on rear longitudinal shaft clear of end of front section. Be careful to support ends of shafts so that bearings in front side bracket and elevating gear case will not be damaged.

7. Take out the four bolts and remove front side bracket, shaft and gear on the same side, taking off miter gear from cross shaft at same time. Take off lower sprocket on this end and draw shaft out toward the right. The remaining sprocket and gear will slide off of cross shaft as it is taken out when they shoulder against front center bracket and remaining side bracket, respectively.

8. The front longitudinal shaft still in place, should be disconnected from rear section and pulled out of front side bracket. Longitudinal shaft gears can be taken off after removing retaining washers. Remaining brackets can now be removed if found necessary.

9. Oil cups on cover may or may not be taken off before removing cover. Remove cover and oil retainer, using care not to destroy fiber gaskets.

10. Unscrew the four tap bolts holding pinion shaft nut lock washer; take off washer and unscrew pinion shaft nut. This leaves worm wheel free to turn on pinion shaft.

11. Remove crown nuts that hold removable bearing in place and take out the bearing. Unscrew the worm wheel and withdraw worm shaft as far as worm-shaft gear will allow.

12. Take hold of worm wheel and pull out worm wheel, worm wheel hub, securing ring, friction disk collar, friction disks, Belleville washers and adjusting collar. Worm wheel and worm wheel hub can be separated by taking out tap bolts that hold securing ring.

13. Take off longitudinal shaft gear by removing retaining washer and pull out shaft.

14. Remove worm shaft and worm shaft gear assembled from case after which by taking out set screw in hub, gear can be pulled off of shaft.

15. The upper oil cup should now be disconnected and bolts through bottom of case, now accessible, taken out and case and pinion shaft removed from side frame and pinion shaft removed from case.

16. After removing lock washers, adjusting nuts can be taken out.

17. Centering plugs and centering plug bearings need not be removed unless so worn as to require replacement.

18. Bushings can be removed for renewal by taking out screws that lock them in place.

(*b*) *To assemble elevating mechanism—*

Men required, 4.
Tools needed:
1 screw driver, U45QB.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 6-inch monkey wrench, U45DA.
1 screw driver, U55T.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 wrench, U487D.
1 wrench handle, U487E.
1 pin punch, U47AF.

1. Replace any bushings that may have been removed.

2. Replace centering plugs and centering plug bearings if same nave been removed.

3. Replace adjusting nuts.

4. Put pinion shaft in its bearing. Bolt elevating gear case to side frame and connect oil cup to pinion-shaft bearing with copper pipe.

5. Assemble worm-shaft gear on worm shaft and place worm shaft in case so that end of shaft just enters its bearing.

6. Replace longitudinal shaft in its bearing, carefully supporting its outer end and assemble on it the longitudinal shaft gear and secure same with retaining washer and screw.

7. Fasten worm-wheel hub and worm wheel together by means of securing ring and put them in place on pinion, shaft. Place one bronze friction disk in worm-wheel hub and fit remaining ones on friction-disk collar alternately bronze and steel, placing a bronze disk on first, and assemble friction-disk collar and friction disks on pinion shaft. It is supposed that the keys on friction-disk collar have not been removed and are already in place. Place the Belleville washers on shaft being sure to put concave side of first one against friction-disk collar and concave sides of other two together.

8. Screw worm into mesh with worm wheel and fasten removable bearing in place.

9. Assemble adjusting collar on shaft and screw down on pinion-shaft nut until it comes to a bearing on collar. Replace pinion shaft nut lock washer and secure it with the four tap bolts provided.

10. By means of adjusting nuts, locate center of worm on a line passing through pinion chaft center and normal to worm shaft and

adjust nuts so that worm turns freely and yet has no end play. After adjusting worm shaft, attach lock washers.

11. Replace oil retainer and cover with their gaskets. Replace oil cups.

12. Place couplings on rear longitudinal shafts and push back as far as possible. Do not secure them.

13. Bolt side bracket in place on the left side on the carriage.

14. Put front longitudinal shaft through its bearing and couple to rear section. Assemble and secure miter gear to end of shaft.

15. Bolt center bracket in place.

16. Push end of cross shaft through center bracket, from right to left, through sprocket, side bracket, and miter gear, which must be held in its proper assembled position, in mesh with the longitudinal shaft gear. Replace collar and bolt ratchet lever support bracket in place. Fasten remaining sprocket to cross shaft.

17. Assemble remaining front longitudinal shaft and its gear to the remaining side bracket. Holding the remaining cross-shaft gear in its assembled position, pass it and the side bracket over the free end of the cross shaft and bolt the bracket in place. Couple the two parts of the longitudinal shaft together.

18. Assemble elevating handwheels on their shafts, push the shafts through their bearings, and assemble the upper sprockets on their inner ends. Replace grease cups.

19. Replace chains so that when the handwheels are in their locked positions the gun is at 5° elevation, the traveling position. Adjust chain tension by rotating bearing.

20. Replace elevating chain-guard platform and chain guards.

NOTE.—The Belleville washers should exert enough pressure on the friction disks to give them the necessary holding power for all normal loads. It is intended that these disks shall only slip enough to prevent breakage of any of the parts of the elevating gear under an overload. Should the friction disks become so worn that when the pinion-shaft nut comes to a bearing on the adjusting collar, the disks fail to hold the normal load the body of the adjusting collar should be slightly shortened by facing off the end or, if necessary, the disks should be renewed.

Any wear on the thrust bearings at the end of the worm shaft can be taken up by the adjusting nuts, and this should be done as soon as any end play is discovered.

(*c*) *To clean elevating mechanism*—

Men required, 1.
Tools needed:
Several sticks of pine, 1 by 1 by 12 inches.
Cotton waste.
Kerosene.

1. Disassemble entire elevating mechanism. (See part (*a*).)

2. Clean each part separately paying particular attention to the cleaning of contents of elevating gear case. The journals of all shafts should be cleaned of any gummed oil and the oil grooves in the bearing bushings should be cleared of dirt and sediment before reassembling.

3. Assemble. (See part (*b*).)

SECTION H.—TRAVERSING MECHANISM.

(Refer to Plates XIII and XIV.)

(*a*) *To disassemble traversing mechanism—*

Men required, 5.
Tools needed:
1 screwdriver, U45QB.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 pair of pliers, U47AQ.

1. Take out headless set screws and countersunk head screws from retaining washers at ends of eccentric shafts and remove retaining washers and handwheels from sprockets.

2. Remove traversing chain guards and traversing chains.

3. Upper sprockets can now be removed from eccentric shafts and shafts themselves taken out of brackets by taking out bolts that lock eccentric shaft levers in place, removing set screw and removing eccentric shaft levers. Brackets can now be taken off if it is advisable.

4. Take off retaining washers from ends of cross shaft and remove two lower sprockets.

5. Pull out cross shaft to the right until cross-shaft collar comes in contact with outer bearing on right side of top carriage. The left end of shaft will have passed through cross-shaft miter gear and same removed. Remove bolts that secure right outer bearing, remove bearing and withdraw shaft. Cross-shaft collar can now be taken off of shaft and left outer bearing removed.

6. The hole through the front section facilitates the use of a screwdriver for removing countersunk head screw that holds on retaining washer. With this removed, worm-shaft miter gear can be taken off of shaft.

7. Take off cover from gear case and take out set screw that secures worm on shaft. After taking out the six bolts that fasten gear case to rear section, case can be removed and as shaft disengages itself from case, worm and worm-shaft washer can be lifted out. Pull worm shaft out to the rear.

8. Remove intermediate bracket if desirable.

9. By removing split pin, crown nut, and pinion-shaft washer, the pinion shaft and worm wheel, the remaining parts in the case, can be taken out.

10. Remove stops by taking out the three tap bolts in each one.

11. Take out bolts that fasten traversing rack to traversing rack support and remove traversing rack.

Bushings in the various bearings shall only be removed when it is found necessary to renew them.

(*b*) *To assemble traversing mechanism*—

Men required, 5.
Tools needed:
1 screw driver, U45QB.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.675 and 0.75 inch nuts, U43F.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 pair of pliers, U47AQ.

1. Bolt traversing rack to traversing-rack support, using the eleven special rack bolts and crown nuts, being careful that rack is replaced in the same position as it was. It is possible to reverse rack when replacing it, but this had better not be done.

2. Attach stops at each end of rack.

3. Assemble pinion shaft in traversing-gear case and worm wheel on pinion shaft. Replace pinion-shaft washer, screw on crown nuts, and insert split pin.

4. Fasten intermediate bracket in place, using care that it is properly aligned, for misalignment will cause binding of the shafts.

5. Slide worm shaft in place from the rear through rear section, pushing it forward far enough so that rear end is clear of rear section. Bolt gear case to rear section, carefully locating it, so that pinion will not bind but work freely over entire length of rack. Hold worm and worm-shaft washer in their assembled positions and draw worm shaft back through them into its position in bearings in gear case. If proper sides of hexagonal section on shaft and hole in worm have not been brought together, it will be impossible to insert set screw. After inserting set screw, replace cover. Assemble and secure worm shaft miter gear on end of shaft.

6. Bolt outer left bearing to side frame. Slip cross shaft collar onto its seat on cross shaft. Hold cross-shaft miter gear in its proper assembled position in mesh with worm shaft miter gear and push cross shaft through opening in right side frame through gear and intermediate bearing and left outer bearing. Bolt right outer bearing in place.

7. Fasten lower sprockets to ends of cross shaft and fix cross-shaft collar with set screw.

8. If brackets for eccentric shafts have been dismounted, replace them. Replace eccentric shafts and eccentric-shaft levers, pinning the latter securely, but for the present do not bolt eccentric-shaft levers in any position. Turn shafts in the position that will give the most slack to chains. Mount sprockets on eccentric shafts.

9. Replace chains and chain guards. Replace chains so that when handwheels are mounted the handles will be at their lowest positions when the gun is at 0° azimuth, thus bringing them within the railroad clearances in this, the traveling position. Replace chain guards.

10. Mount handwheels on sprockets and secure same with retaining washers and screws. Swing eccentric shaft lever until proper working tension for chains is obtained and bolt in this position.

(*c*) *To clean traversing mechanism—*

Men required, 2.
Tools needed:
Several sticks of pine 1 by 1 by 12 inches.
Cotton waste.
Kerosene.

1. Disassemble entire traversing mechanism. (See part (*a*).)

2. Clean each part separately, paying particular attention to the cleaning of contents of traversing-gear case.

The journals of all shafts should be cleaned of any gummed oil and the oil grooves in the bearing bushings should be cleared of dirt and sediment before reassembling.

3. Assemble. (See part (*b*).)

SECTION I. PINTLE, SIDE, AND REAR BEARINGS.

(Refer to Plate XV.)

(*a*) *To disassemble pintle—*

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
2 wrenches, U487B.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench, U487 C.

1. Unscrew nuts from supporting bolts and remove upper and lower yoke, belleville washers, and pintle plunger.

2. Remove supporting-bolt lock washer after unscrewing the nuts from the four studs screwed into pintle support.

3. The supporting bolts may now be unscrewed from the pintle support.

If it is necessary to replace either the pintle or pintle support, the following procedure will be necessary:

4. After the top carriage has been lifted high enough above car, remove the pintle support after first removing the bolts securing it to the transom.

5. Remove the pintle after removing the bolts securing it to the top carriage.

(*b*) *To assemble pintle—*

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
2 wrenches, U487B.
1 wrench, U487C.

1. If the pintle and pintle support have been removed from the top carriage they must first be securely bolted in place.

2. Screw the supporting bolts in place and lock them with the supporting bolt lock washer.

3. Drop the pintle plunger in the upper yoke and slide same in place on supporting bolts.

4. Holding the upper yoke and plunger in place, put Belleville washers and lower yoke in place in proper order.

5. Replace nuts on supporting bolts and drawn them up until the flanges of pintle and pintle support are separated a distance of 15 mm. Use care that both nuts are screwed up to the same height to prevent binding the plunger.

(*c*) *To disassemble side bearing—*

Men required, 1.
Tools needed:
1 pair of pliers, U47AQ.
1 wrench for 18 and 22 mm. nuts, U488C.

1. Withdraw split pins and remove nuts.

(*d*) *To assemble side bearing—*

Men required, 1.
Tools needed:
1 hammer, U48F.
1 wrench for 18 and 22 mm. nuts, U488C.

1. Locate in proper position and place bolts from under side Secure nuts with split pins.

(*e*) *To disassemble rear bearing—*

Men required, 4.
Tools needed:
1 hammer, U48F.
1 pair of pliers, U47AQ.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 0.625 and 0.75 inch nuts, U43F.

1. Remove oil cups, copper pipes and stops. Traverse top carriage till one-half of securing bolts are exposed and remove same. When carriage is in this position one-half of bolts on opposite end can be removed from bottom of sliding plate.

2. Traverse carriage in opposite direction till remaining bolts are exposed and removed in rear bearing and bottom of sliding plate.

3. Pull traversing rack support out to rear and remove rear bolts in sliding plate.

4. It is very important that the overhanging end of the top carriage should be blocked up to prevent its tipping when traversed out to expose bolts.

(*f*) *To assemble rear bearing—*

Men required, 4.
Tools needed:
1 hammer, U48F.
1 pair of pliers, U47AQ.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 0.625 and 0.75 inch nuts, U43F.

To assemble rear bearing reverse preceding operations.

SECTION J. TRUCKS.

(Refer to Plate XX.)

(*a*) *To remove trucks from car—*

Men required, 4.
Tools needed, 1 hammer, U48F.

1. Disconnect brake pipe on truck from brake pipe on car, at coupling.

2. Remove split pin and unscrew pintle retainer from pintle.

3. Raise car high enough to clear warping hand wheel and remove trucks.

(*b*) *To replace trucks under car—*

Men required, 4.
Tools needed, 1 hammer, U48F.

To replace tracks under car, reverse preceding operations.

(*c*) *To disassemble trucks—*

Men required, 2.
Tools needed:
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 44 and 88 mm. nuts, U43CA.
1 wrench for 18 and 22 mm. nuts, U488C.
1 6-inch monkey wrench, U45DA.
1 screw driver, U55Q.
1 pin punch, U47AF.
1 pair of pliers, U47AQ.

1. Disassemble warping mechanism. (See section K, division (*a*).)
2. Disassemble hand brake. (See section L, division (*a*).)
3. Disassemble air brake. (See section L, division (*c*).)
4. Disassemble draft gear. (See section M.)
5. Unbolt and remove guard plates, one below each journal box. Replace bolts in side frame. Truck frame can then be lifted so that journal boxes will slide out of recesses in side frames.
6. Unscrew nuts on suspension rods. Take off upper and lower support bearings, remove collars, and withdraw suspension rods.
7. Unbolt the spring band guide.
8. After draining journal box, withdraw journal-box support pin, separate and remove journal box and journal-box support.
9. Remove journal-box bearing from journal-box support. Remove lubricating pad, pad support, and the four support springs from the journal box.
10. Remove upper and lower dust guards from the journal-box cover and journal box, respectively.
11. Remove screws holding cover plate. Remove cover plate and cover-plate joints.
12. Pull out spout-lid pin and remove spout lid and spout-lid spring.

(*d*) *To assemble trucks—*

Men required, 2.
Tools needed:
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 44 and 48 mm. nuts, U43CA.
1 wrench for 18 and 22 mm. nuts, U488C.
1 6-inch monkey wrench, U45DA.
1 screw driver, U55Q.
1 pin punch, U47AF.
1 pair of pliers, U47AQ.

To assemble trucks reverse preceding operations.

(*e*) *To pack journal boxes—*

Men required, 1.
Tools needed:
1 wrench for 18 and 22 mm. nuts, U488C.
1 6-inch monkey wrench, U45DA.
1 pin punch, U47AF.
1 pair of pliers, U47AQ.

1. Unbolt and remove guard plate below journal box.
2. After draining journal box, withdraw journal-box support pin and remove journal box.
3. Replace old lubricating pad with new one and assemble journal box by reversing above operations.

(*f*) *To replace journal bearings—*

Men required, 2.
Tools needed:
1 wrench for 18 and 22 mm. nuts, U488C.
1 6-inch monkey wrench, U45DA.
1 pin punch, U47AF.
1 pair of pliers, U47AQ.

1. If journal bearings are for axle No. 2, disconnect equalizer rod from release spring, intermediate lever fulcrum, and large equalizer. If for axle No. 3, disconnect and remove tension rods No. 5. If for axle No. 4, disconnect and remove tension rods No. 6.

2. Unbolt and remove guard plates below each journal box. Raise truck until journal box is in the clear.

3. After draining journal box, withdraw journal box support pin separate and remove journal box and journal-box support.

4. Replace old journal bearings with new ones and assemble again by reversing above operations.

SECTION K. WARPING MECHANISM.

(Refer to Plate XXI.)

(*a*) *To disassemble warping mechanism—*

Men required, 2.
Tools needed:
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 12-inch monkey wrench, U45G.
1 screw driver, U45QB.
1 pair of pliers, U47AQ.

1. Unbolt and remove sprocket cover.

2. Loosen inner nut of adjusting screw. Open chain at removable link and remove chain.

3. Take out countersunk head screw in end of handwheel shaft. Remove washer and draw off handwheel.

4. Unbolt both handwheel shaft bearings and remove assembly.

5. Draw off bearing on side toward handwheel. Carefully remove upper sprocket, using a babbitt hammer or wooden block if force is required. Pull out key and remove other bearing.

6. Unscrew outer nut from adjusting screw and withdraw adjusting screw.

7. Remove adjusting roller pin and adjusting roller.

8. Unbolt and remove the handwheel shaft support.

9. Remove the two bolts holding quadrant back plate to quadrant. Remove back plate with the two quadrant filler pieces.

10. Unbolt and remove quadrant.

11. Unscrew clutch pins in the clutch fork and remove clutch slides.

12. Unscrew nut from lever shaft on end carrying the clutch fork. Draw clutch fork off of the shaft.

13. Unscrew nut from lever shaft on end carrying the clutch lever. Pull lever out of bearing while holding on to lever. Remove lever. Lever may be further disassembled if necessary by removing the parts of the latch.

14. Unbolt and remove lever shaft bearing.

15. Draw out both sprocket and sprocket-shaft pinion gib keys.

16. Unbolt and remove both sprocket-shaft bearings. Draw the sprocket shaft out through the pinion, sprocket, and side frame, and remove pinion and sprocket.

17. Separate the two halves of the driving gear by unscrewing nuts from studs. Remove the two halves together with the two keys.

18. Withdraw key from clutch-shaft gear.

19. Unbolt and remove the two clutch-shaft bearings, and draw clutch shaft out through pinion, gear, and side frame. Remove pinion and gear.

20. If necessary, the clutch key may be removed after taking out the three countersunk head screws that secure it.

(*b*) *To assemble warping mechanism*—

Men required, 2.

Tools needed:

1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 12-inch monkey wrench, U45G.
1 screw driver, U45QB.
1 pair of pliers, U47AQ.

To assemble warping mechanism, reverse preceding operations.

SECTION L. BRAKES.

(Refer to Pls. XXII and XXIII.)

(*a*) *To disassemble hand brake*—

Men required, 2.

Tools needed:

1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 pair of pliers, U47AQ.

1. Unscrew nut from eyebolt which connects hand-brake chain to brake mast. Withdraw eyebolt.

2. Take out split pin at lower end of mast. Raise mast out of bearings and remove.

3. Unscrew nut on upper end of mast and carefully drive off hand-brake wheel.

4. Withdraw the split pin above the brake ratchet wheel and carefully drive off the brake ratchet wheel, using babbitt hammer or wooden block.

5. Take out bolts holding brake pawl carrier and remove.

6. Unbolt and remove the brake mast step.

7. With block and tackle pull out spring and release pressure on release spring clevis pin in hand-brake lever, and drive out pin. Replace pin in clevis and release block and tackle.

8. Drive out pin attaching release spring clevis to transom No. 4 and replace pin in clevis.

9. Disconnect the hand-brake rod No. 1 from the hand-brake lever by removing pin. Disconnect the two parts of rod held together by turnbuckle and remove.

10. Disconnect hand-brake rod No. 2 from the hand-brake lever at one end and from cylinder lever at the other end, by removing pins.

11. Remove hand-brake lever after removing pin holding it to fulcrum.

(*b*) *To assemble hand brake—*

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.473 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 pair of pliers, U47AQ.

To assemble hand brake, reverse preceding operation.

(*c*) *To disassemble air brake—*

Men required, 3.
Tools needed:
1 pair of pliers, U47AQ.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nuts, U43LC.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.

1. With block and tackle pull out spring and release pressure on equalizer rod pin. Drive out pin connecting release spring clevis to equalizer rod. Replace the pin in the clevis and release block and tackle.

2. Drive out pin attaching release spring clevis to transom No. 3.

3. Disconnect intermediate rod No. 3 from cylinder lever by withdrawing pin.

4. Disconnect intermediate rod No. 3 at its other end from intermediate lever by withdrawing pin.

5. Take out pin connecting cylinder lever and push rod.

6. Take out pin connecting cylinder lever to cylinder lever fulcrum. Remove the cylinder lever.

7. Remove cylinder lever fulcrum.

8. Disconnect equalizer rod No. 4 from intermediate lever.

9. Disconnect intermediate lever from intermediate lever fulcrum.

10. Remove the intermediate lever fulcrum.

11. Disconnect equalizer rod No. 4 from large equalizer by withdrawing pin.

12. Disconnect large equalizer at each end from intermediate links by moving the bolts and remove the equalizer.

13. Disconnect intermediate links from each of the two intermediate equalizers by removing bolts. Replace the bolts in links keeping them paired.

14. Disconnect the two intermediate equalizers from the intermediate equalizer links by withdrawing the bolts. Replace bolts in links.

15. Disconnect the two intermediate equalizers from the two No. 5 tension rods by withdrawing the bolts.

16. Unbolt and remove the two sets of intermediate equalizer links from brake beam. Replace bolts in the brake beam.

17. Disconnect each of the two No. 5 tension rods from small equalizers by removing the bolts. Remove the tension rods and replace the bolts in same.

18. Disconnect small equalizer links from the two small equalizers by removing bolts. Replace bolts in links keeping them paired.

19. Disconnect tension rods, No. 6, from the two small equalizers by withdrawing bolts.

20. Disconnect small equalizer links from brake beam by withdrawing bolts. Replace the bolts in the brake beam.

21. Disconnect the two No. 6 tension rods from brake beam by withdrawing bolts. Replace the bolts in the brake beam.

22. Remove collars from the ends of brake hanger supports, and remove nuts from ends of brake beams. Draw brake hangers off of brake hanger support bearings and brake beam bearings using care that brake beam is supported. Nuts should be replaced on brake beams and collars on brake hanger supports.

23. Disconnect brake shoes from brake hangers by withdrawing brake shoe pins. Replace pins in brake shoes.

24. Remove triple valve from angle bracket and disconnect union just beyond centrifugal dirt collector, also unions in pipes leading to brake cylinder and reservoir, when triple valve and dirt collector can be removed.

25. Remove pipe leading to brake cylinder.

26. Unbolt cylinder support plate and, leaving cylinder support and cylinder support plate connected, remove cylinder support from transom No. 3 cover plate, when air brake cylinder may be removed.

27. Air reservoir may be removed after reservoir straps have been taken off.

28. If it is necessary to further take down the piping system, this may be accomplished by removing the U bolts and disconnecting the system at various points.

(*d*) *To assemble air brake—*

Men required, 3.
Tools needed:
1 pair of pliers, U47AQ.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.437 ($\frac{7}{16}$) and 0.562 ($\frac{9}{16}$) inch nut, U43LC.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.

To assemble air brake, reverse preceding operations.

(*e*) *To take up brake shoe wear—*

Men required, 1.
Tools needed:
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 1.625 and 1.75 inch nuts, U43CA.
1 wrench handle, U487E.

1. Loosen all nuts on brake rods used to lock turn buckles.

2. By means of turnbuckles draw up brake shoes toward wheels the desired distance. They should not be drawn up so close that there is no clearance between the shoes and the wheels when brakes are released.

3. Lock turn buckles in their adjusted positions with check nuts.

(*f*) *To replace brakes shoes—*

Men required, 1.
Tools needed:
1 hammer, U48F.
1 pair of pliers, U47AQ.

1. Remove split pin, washer, and brake shoe pin. This allows brake shoe to be removed.

2. Put a new brake shoe in place and secure with brake shoe pin, washer and split pin.

(*g*) *To clean and oil brake cylinder.*—(Refer to Plate XXIII A.)

Men required, 2.
Tools needed:
1 hammer, U48F.
1 pair of pliers, U47AQ.
1 pinch bar.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 Stillson pipe wrench.
1 12-inch monkey wrench, U45G.

1. Unbolt and remove cylinder from cylinder support.
2. Remove piston head.
3. With kerosene oil, thoroughly clean and remove all particles of sand and grit from piston, piston ring, and inside of cylinder.
4. Oil piston leather in piston with heavy oil or light grease.
5. Replace parts and replace whole on car.

(*h*) *To disassemble, oil, and clean triple valve.*—(Refer to Plate XXIII.)

Men required, 2.
Tools needed:
1 Stillson pipe wrench.
1 hammer, U48F.
1 pair of pliers, U47AQ.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 12-inch monkey wrench, U45G.

1. Disconnect triple valve from air system.
2. Unscrew union nut 17 and remove strainer 16.
3. Unscrew graduating stem nut 20 and remove graduating spring 22.
4. Remove nuts from bolts 24 and take off cylinder cap 19 and cylinder cap gasket 23.
5. Withdraw piston and slide valve from casing.
6. Remove cap screws 25 and take off check valve case 13 and emergency valve seat 9.
7. Remove piston 8.
8. Remove emergency valve 10 and check valve 15.
9. Clean all parts thoroughly with kerosene oil. Using oil sparingly, oil triple piston and surface between slide valve and slide-valve seat; also surface between graduating valve and slide valve.

(*i*) *To assemble triple valve*—

Men required, 2.
Tools needed:
1 Stillson pipe wrench.
1 hammer, U48F.
1 pair of pliers, U47AQ.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 12-inch monkey wrench, U45G.

Assemble by reversing procedure as given above for disassembling.

(*j*) *To clean centrifugal dirt collector.*—(Refer to Plate XXIII A.)

Men required, 1.
Tools needed, none.

1. Open cock at bottom of dirt collector and blow out all particles of dirt, sand, and waste.

SECTION M. COUPLER AND DRAFT GEAR.

(Refer to Plate XXIV.)

(*a*) *To couple cars together—*

Men required, one.
Tools needed, none.

Car pusher or warping mechanism can be used if locomotive is not available.

1. Set the hand brakes on one car enough to keep it from moving easily when bumped.

2. Open the knuckle on one car by lifting the handle of the uncoupling lever. This movement will first unlock the knuckle so it can be pulled open, but continuing the movement of the uncoupling lever will throw the knuckle open without the necessity of going in front of or between the cars. When the knuckle on either car is open, it is only necessary to bring the cars together until the open knuckle closes, and it will lock automatically.

(*b*) *To uncouple cars—*

1. Raise the uncoupling lever on one car enough to release the knuckle and the cars may be pulled apart.

SECTION N. LOADING ARRANGEMENT.

(Refer to Plates XXV and XXVI.)

(*a*) *To disassemble loading arrangement—*

Men required, 2.
Tools needed, 1 wrench for 0.625 and 0.75 inch nuts, U43F.

1. The loading stand should be removed as a unit. There will be no occasion to disassemble it.

(*b*) *To assemble loading arrangement—*

Men required, 2.
Tools needed, 1 wrench for 0.625 and 0.75 inch nuts, U43F.

1. Bolt the loading stand securely in place on the top carriage.

2. The shell trough is not fastened to the fixed trough and hence may be put in place and removed at will.

SECTION O. AMMUNITION CRANE.

(Refer to Plates XXVII and XXVIII.)

(*a*) *To disassemble ammunition crane—*

Men required, 2.
Tools needed:
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 screw driver, U55S.

1. Remove roller chain and crane hook by releasing pawl from ratchet and pulling on chain until it comes free. Hook can be released from chain by removing split pin from nut and unscrewing hook.

2. Remove pin holding tie to side plates and lower tie and boom to top of rear platform.

3. Remove nut and lock washer from idler shaft and pull shaft out thus releasing the idler sprocket and disconnecting tie bars from boom.

4. Unscrew crown nut from mast pin and disconnect boom from mast by removing mast pin.

5. Unscrew nuts from handwheel shaft and remove handwheels.

6. Remove chain box by unbolting the four bolts holding it to the mast.

7. Remove cover by unbolting it from the side plates.

8. Remove the split pin from pawl lever and remove lever from pawl shaft.

9. Pull pawl shaft free and remove pawl after loosening set screw in pawl.

10. Remove all nuts from left side of left-side plate and remove plate.

11. Pull hand-wheel shaft free from right-side plate and remove hand-wheel shaft pinion.

12. Remove upper gear and sprocket wheel from the upper shaft and remove shaft from side plate. Remove countersunk head screw, hold gear on sprocket wheel, and pull gear off of sprocket wheel hub.

13. Remove intermediate pinion, idler, and intermediate gear from intermediate shaft and remove shaft from side plate. Remove countersunk head screw holding pinion on gear and pull pinion and idler off of gear hub.

14. Remove bolts and right-side plates.

15. Remove mast from mast bearing.

16. Unbolt and remove mast bearing from rear platform.

17. Unbolt and remove bearing bushing from mast bearing.

(*b*) *To assemble ammunition crane—*

Men required, 2.
Tools needed:
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.375 and 0.5 inch nuts, U43C.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 screw driver, U55S.

To assemble ammunition crane, reverse preceding operations.

PART IV.

GROUND PLATFORM CAR, MODEL OF 1918.

ASSEMBLING AND DISASSEMBLING.

SECTION A. COUPLER AND DRAFT GEAR.

(Refer to Plate XXIV.)

(*a*) *To couple cars together.*—(See Part III, section M, division (*a*).)

(*b*) *To uncouple cars.*—(See Part III, section M, division (*b*).)

SECTION B. HOIST RUNWAY EXTENSION.

(Refer to Plate XXXIII.)

(*a*) *To disassemble hoist runway extension—*

Men required, 4.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 hammer, U48F.
1 pair of pliers, U47AQ.

1. Lower the extension after withdrawing the four coupling pins.

2. Disconnect cable from strut lever yoke by removing shackle pin. Replace pin in yoke.

3. Unscrew nut from link, loosen set screws in collars, and withdraw pin.

NOTE.—Extension should not be taken down farther than this without the use of a hoist.

4. With hoist attached to the extension, remove the hinge pin after removing nut on end. Remove raising links, strut levers, and strut lever yoke; lower hoist to ground.

5. Remove raising links and strut levers from yoke after unscrewing nuts from ends of yoke.

6. Remove bolts to take off link brackets. Brackets need only be removed in case of renewal.

(*b*) *To assemble hoist runway extension—*

Men required, 4.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 hammer, U48F.
1 pair of pliers, U47AQ.

To assemble hoist runway extension reverse above operations.

(*c*) *To disassemble rear sheave—*

Men required, 1.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 pair of pliers, U47AQ.
1 hammer, U48F.

1. After cable has been slackened, drive out pin and remove sheave.

2. Take out bolts holding bracket to runway and remove bracket.

(*d*) *To assemble rear sheave—*

Men required, 1.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 pair of pliers, U47AQ.
1 hammer, U48F.

To assemble rear sheave reverse above operations.

(*e*) *To disassemble traverse sheave—*

Men required, 1.
Tools needed:
1 pair of pliers, U47AQ.
1 hammer, U48F.

1. Withdraw split pin, remove sheave pin, and withdraw sheave.

(*f*) *To assemble traverse sheave—*

Men required, 1.
Tools needed:
1 pair of pliers, U47AQ.
1 hammer, U48F.

To assemble traverse sheave reverse above operation.

SECTION C. WINCH.

(Refer to Plate XXXIV.)

(*a*) *To disassemble winch—*

Men required, 3.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 26 mm. nuts U43G.
1 screw driver, U45QB.
1 hammer, U48F.
1 pair of pliers, U47AQ.

1. Before taking down winch, the extension runway should be lowered and locked. Remove yoke shackle pin from strut lever yoke and release end of cable.

2. Pull out rear sheave pin, remove rear sheave and pull cable through rear sheave bracket.

3. Remove nuts on crank shaft and remove handles.

4. Remove bolts on crank shaft brackets and remove pawl and crank shafts and brackets.

5. Remove nuts from pawl shaft, withdraw brackets, unscrew set-screws and slide collars, pawl, ratchet, and pinion off of shafts.

6. Remove cable guard from drum.

7. With ropes attached to gears and shafts remove drum shaft brackets after removing bolts. Lower shafts to ground. Remove cable guard bracket from left drum shaft bracket.

8. Pull intermediate shaft gear, intermediate shaft pinion, drum and drum shaft gear off of shafts.

NOTE.—Cable should not be removed from drum except for renewal.

(*b*) *To assemble winch—*

Men required, 3.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 26 mm. nuts, U43G.
1 screw driver, U45QB.
1 hammer, U48F.
1 pair of pliers, U47AQ.

To assemble winch, reverse preceding operations.

SECTION D. TROLLEY HOIST.

(Refer to Plates XXXV and XXXVI.)

(*a*) *To disassemble trolley hoist—*

Men required, 3.
Tools needed:
1 wrench for 1.5 and 1.875 inch nuts, U43FB.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 1.625 and 1.75 inch nuts, U43CA.
1 wrench for 1.375 inch nuts, U43BB.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 pair of pliers, U47AQ.
1 hammer, U48F.
1 screw driver, U45QB.

1. With hoist runway extension removed, disconnect ropes from hooks at ends of hoist, pull hoist out through end of car and lower it.

2. Remove nuts and wheels from axles and pull out axles through bearings.

3. Unbolt and remove axle bearings after removing oil pipes and clamps.

4. Release shackle sprocket from swivel yoke by removing yoke pin. Further disassembling of swivel is unnecessary except for renewal.

5. Disconnect chain clevis from clevis cross bar by removing clevis bolt. Unbolt chain clip and pull chain out to the rear.

6. Unbolt front and rear operating shaft bearings, remove set screws, slide off collars, chain wheel, rear bearing, and pinion. Remove front key and slide off front bearing.

7. Unbolt and remove chain wheel guard.

8. Unbolt and remove chain tube.

9. Remove chain wheel pin and chain guide wheel. Unbolt and remove chain wheel brackets.

10. Unbolt and remove worm oil retainer.

11. Unscrew nuts from collar bolts and tap bolt in front bearing and remove worm shaft and bearings. Slide bearings off of worm shaft.

12. If it is desired to further disassemble bearing, unscrew nuts and remove lock washer. Unscrew adjusting nut and remove centering plug bearing. Do not remove centering plug except for renewal.

13. Remove cover plate on frame after unscrewing six bolts.

14. Unbolt and remove sprocket gear case cover.

15. Unscrew collar nut from worm wheel shaft and draw shaft out of bearings, worm wheel, and worm-wheel shaft sprocket. Remove worm wheel and sprocket.

16. Unbolt and remove worm-shaft bearings.

17. Unbolt and remove sprocket gear case.

(*b*) *To assemble trolley hoist—*

Men required, 3.

Tools needed:

1 wrench for 1.5 and 1.875 inch nuts, U43FB.
1 wrench for 1.125 and 1.25 inch nuts, U43AU.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 1.625 and 1.75 inch nuts, U43CA.
1 wrench for 1.375 inch nuts, U43BB.
1 wrench for 18 and 22 mm. nuts, U488C.
1 wrench for 0.312 ($\frac{5}{16}$) inch nuts, U82C.
1 pair of pliers, U47AQ.
1 hammer, U48F.
1 screw driver, U45QB.

To assemble trolley hoist, reverse preceding operations.

SECTION E. TRUCKS.

(Refer to Plate XXXVII.)

(*a*) *To remove trucks from car—*

Men required, 2.

Tools needed:

4 auxiliary jacks.
1 pair of pliers, U47AQ.
1 hammer, U48F.
4 blocks about 15 inches high

1. Place jacks on secure blocking under side sills at junction of bolster and side sill. The blocking should be of a height such that the jacks, when adjusted to their minimum length, can be put in place, just clearing the bottom face of underframe.

2. Disconnect pull rod from live levers on truck by removing 1.125-inch pin. Insert pin and cotter in pull rod for safe keeping. Push trucks from under car and lower car onto secure blocking placed under it.

(*b*) *To replace trucks under car*—

Men required, 3.
Tools needed:
4 auxiliary jacks.
1 pair of pliers, U47AQ.
1 hammer, U48F.
4 blocks about 15 inches high.

To replace trucks reverse preceding operations.

(*c*) *To disassemble trucks*—

Men required, 4.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 18-inch monkey wrench, U45K.
1 pair of pliers, U47AQ.
1 chisel.
1 hammer, U48F.
1 crowbar, U56C.
1 pinch bar, U47BF.
1 combination hook and packing tool.

1. Remove 0.75 by 1.875 inch bolts, with cotters, holding safety angle to each side of spring plank, allowing safety angle to drop out of place. Remove brake beams and levers by withdrawing four 1.25-inch pins, with split keys and washers, holding U hangers to column brackets, by withdrawing 0.75-inch pins, with cotters and washers holding hangers to suspension springs, and one 1.125-inch pin and cotter holding lever to dead lever guide.

2. Disassemble brake mechanism by removing two 1.125-inch pins, with cotters guiding rod to bottom holes of levers, and two 1.125-inch pins, with washers and cotters holding levers and suspension spring hangers to brake beams. Pull out brake-shoe keys with pinch bar or hammer and remove shoes and U hangers.

3. Using hammer and chisel, pound lugs of nut locks situated under journal boxes and column bases up against tiebars. Remove two 1.125 by 14.75 inch bolts from each journal box and the 1.5 by 22 inch bolts from each column, allowing tiebars to drop out of place. Lift upper bars of arch bars and card holders off of journal boxes and

columns, springs, and bolster. Remove the tiebars from columns and lift bolster, spring sets, spring plank, with columns and column bases attached, and finally lower bars of arch bars from journal boxes.

4. Open journal-box lids and remove packing, with combination hook and packing tool. Lift the boxes, pull wedges out, remove journal bearings, and pull boxes off of axles. Remove oak wedges from slots in back of journal boxes and remove dust guards.

(*d*) *To assemble trucks*—

Men required, 4.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 18-inch monkey wrench, U45K.
1 pair of pliers, U47AQ.
1 chisel.
1 hammer, U48F.
1 crowbar, U56C.
1 pinch bar, U47BF.
1 combination hook and packing tool.

To assemble trucks, reverse preceding operations.

(*e*) *To pack journal boxes*—

Men required, 1.
Tools needed:
1 hook and packing tool.
1 bucket or tin can of 3 to 5 gallons capacity.
Galena oil.

1. With hook and packing tool remove waste, also all particles of sand and grit from journal boxes.

2. In the bucket or tin can place enough waste to pack the unmber of journal boxes to be packed; wool waste is preferable, but cotton waste will do, and saturate with Galena oil.

(*f*) *To replace journal bearings*—

Men required, 2.
Tools needed:
1 pinch bar.
1 car-box jacking screw.
1 hook and packing tool.

1. With car-box jacking screw, raise the journal box from which the bearing is to be removed about 2 inches.

2. Raise the journal-box lid and remove bearing wedge with hook; withdraw bearing.

3. Put new bearing in position and replace bearing wedge, pack journal box, packing firmly around lower half of journal and be certain that journal bearing and wedge are properly seated.

SECTION F. BRAKES.

(Refer to Plates XXXVIII and XXXIX.)

(*a* *To disassemble hand brake—*

Men required, 2.
Tools needed:
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 pair of pliers, U47AQ.
1 hammer, U48F.

1. Remove brake-shaft key, unscrew brake shaft, and pull out through brake-shaft bracket. Unscrew nut and remove wheel.
2. Unbolt and remove brake-shaft bracket.
3. Unscrew nuts from bell crank and link pin and brake-shaft nuts. Remove links and brake-shaft nut.
4. Remove clevis pin and separate clevis from hand-brake rod.
5. Pull out brake pin from hand-brake rod and remove rod.
6. Pull out bell-crank fulcrum pin and remove bell crank.
7. Unbolt and remove bell-crank fulcrum.

(*b*) *To assemble hand brake—*

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 pair of pliers, U47AQ.
1 hammer, U48F.

To assemble hand brake, reverse preceding operations.

(*c*) *To disassemble air brake—*

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 Stilson pipe wrench, 0.25 to 2.5 inches, 637D.
1 pair of pliers, U47AQ.
1 hammer, U48F.

1. Pull out pins holding lever connecting rod to brake levers and remove rod.
2. Disconnect brake rods from brake levers and remove brake rods.
3. Disconnect front brake lever from push rod and rear brake lever from brake-lever fulcrum by removing pins.
4. Disconnect brake cylinder and reservoir, triple valve, dirt collector, and cut-out cock from train line.
5. Disconnect and remove release valve rod.
6. Remove bolts holding brake cylinder and reservoir to car and remove brake cylinder and reservoir, triple valve, dirt collector, and cut-out cock. These must be separated for cleaning or renewal.

(*d*) *To assemble air brake—*

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 Stilson pipe wrench 0.25 to 2.5 inches, 637D.
1 pair of pliers, U47AQ.
1 hammer, U48F.

To assemble air brake, reverse preceding operations.

(*e*) *To clean and oil brake cylinder.*—(Refer to Plate XXXIX.)

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.875 inch nuts, U153E.
1 12-inch monkey wrench, U45G.
1 pair of pliers, U47AQ.
1 pinch bar, U47BF.
1 hammer, U48F.

1. Disconnect push rod from brake lever and clevis.
2. Disconnect pipe at train-line tee.
3. Remove bolts holding brake cylinder and reservoir to car and remove brake cylinder and reservoir, triple valve, dirt collector, and cut-out cock.
4. Disconnect and remove release valve rod.
5. Remove bolts, connect reservoir, and brake cylinder.
6. Place cylinder in convenient position and remove piston.
7. With kerosene oil, thoroughly clean and remove all particles of sand and grit from piston, piston ring, and inside of cylinder.
8. Oil piston leather in piston with heavy oil or light grease.
9. Put piston back in cylinder and reassemble on car.

(*f*) *To clean and oil triple valve.*—(Refer to Plate XXXIX A.)

Men required, 2.
Tools needed:
1 wrench for 0.625 and 0.75 inch nuts, U43F.
1 12-inch monkey wrench, U45G.
1 Stillson pipe wrench, 0.25 to 2.5 inches, 637D.
1 wrench for 0.875 and 1 inch nuts, U43G.
1 wrench for 0.375 and 0.5 inch nuts, U153B.
1 pair of pliers, U47AQ.
1 hammer, U48F.

1. Repeat first four operations of (*e*).
2. Disconnect triple valve from reservoir and dirt collector.
3. Unscrew union nut 17 and remove strainer 16.
4. Unscrew graduating stem nut 20 and remove graduating spring 22.
5. Remove nut from bolts 24 and take off cylinder cap 19 and cylinder-cap gasket 23.
6. Withdraw piston and slide valve from casing.

7. Remove cap screws 25 and take off check-valve case 13 and emergency valve C–9.

8. Remove piston 8.

9. Remove emergency valve 10 and check valve 15.

10. Unscrew retarding device 29 and remove retarding spring 23 and stem 31.

11. Clean all parts thoroughly with kerosene oil. Using oil sparingly, oil triple piston and surface between slide valve and slide-valve seat. Also surface between graduating valve and slide valve.

12. Assemble by reversing procedure, as outlined above, and replace triple valve in position.

(*g*) *To clean centrifugal dirt collector.*—(Refer to Plate XXIII A.)

Men required, one.
Tools needed, none.

1. Open cock at bottom of collector until all particles of sand, dirt, and water are blown out.

(*h*) *To take up brake shoe wear*—

Men required, 1.
Tools needed:
1 pair of pliers, U47AQ.
1 pinch bar, U47BF.
1 hammer, U48F.

1. Release brake, both hand and air.

2. Disconnect dead lever from dead-lever guide; move out until the live lever will not go back to less than 1.5 inches from the truck bolster and remake connection in proper hole in dead-lever guide.

3. If necessary the shoes can be set up tighter by moving the dead lever and live lever to the end holes of the bottom connection rod.

(*i*) *To replace brake shoes*—

Men required, 1.
Tools needed:
1 pinch bar, U47BF.
1 hammer, U48F.

1. Release brakes, both hand and air.

2. Withdraw brake-shoe keys; take out worn shoes and replace with new ones.

PART V.

LIST OF PARTS.

12-INCH-GUN RAILWAY CARRIAGE, MODEL OF 1918.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
1	11A	10	23	11	Cradle	C. S. No. 2	With 6-20. oil plugs.
					CRADLE DUST GUARD.		
2	14A	10	23	14	Plates	Steel	1250. O. D. x 1150. I. D. x .125 in. thick.
2	14B	10	23	14	Oily leather rings	Leather	1250. O. D. x 1130. I. D. x 5. thick, with 52. 25 in. countersunk head copper screw.
16	14C	10	23	14	Tap bolts[1]		10 x 34., thread 19. long.
					RECUPERATOR GUARD.		
1	18A	10	23	18	Top plate	Steel	674. x .187 ($\frac{3}{16}$) in. x 1584.
1	18B	10	23	18	Right side plate	do	388. x .187 ($\frac{3}{16}$) in. x 1584.
1	18C	10	23	18	Left side plate	do	388. x .187 ($\frac{3}{16}$) in. x 1584.
1	18D	10	23	18	End plate	do	272. x .187 ($\frac{3}{16}$) in. x 560.
2	18E	10	23	18	Filler plates	do	36. x .187 ($\frac{3}{16}$) in. x 160.
2	18F	10	23	18	do	do	40. x .312 ($\frac{5}{16}$) in. x 215.
2	18G	10	23	18	do	do	40. x .5 in. x 214.
1	18H	10	23	18	Right side angle, right	do	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 1584.
1	18K	10	23	18	Right side angle, left	do	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 1584.
1	18L	10	23	18	Left side angle, right	do	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 1584.
1	18M	10	23	18	Left side angle, left	do	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 1584.
1	18N	10	23	18	Front angle, top	do	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 450.
1	18P	10	23	18	Front angle, bottom	do	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 870.
15	18Q	10	23	18	Bolts[2]		10. x 30, thread 23. long.
15	18R	10	23	18	Lock nuts		10. x 7. thick.
38	18S	10	23	18	Tap bolts[1]		10. x 38., thread full length.
					PUMP BRACKET.		
1	19A	10	23	19	Plate	Steel	638. x .187 ($\frac{3}{16}$) in. x 700.
1	19B	10	23	19	Angle	do	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 700.
4	19C	10	23	19	Tap bolts[1]		14. x 31., thread 25. long.

[1] Provided with lock washers.

[2] Provided with nuts.

					MISCELLANEOUS.		
1	9A	10	23	19	Tubing	Copper	.25 in. x .55 in. x 1200.
1	9B	10	23	19	....do	....do	.25 in. x .55 in. x 425.
1	9C	10	23	19	....do	....do	.25 in. x .55 in. x 550.
1	9D	10	23	19	....do	....do	.25 in. x .55 in. x 685.
1	9E	10	23	19	....do	....do	.25 in. x .55 in. x 1635.
1	9F	10	23	19	....do	....do	.25 in. x .55 in. x 1375.
1	24A	10	23	24	Elevating rack, right	F. S. No. 2	
1	24B	10	23	24	Elevating rack, left	....do	
2	24C	10	23	24	Tap bolts[1]		40. x 105.
4	24D	10	23	24	Bolts[3]		40. x 130.
1	25A	10	23	25	Rack brace	F. S. No. 2	
8	25B	10	23	25	Bolts[5]	Special	
8	25C	10	23	25	....do[5]	....do	
2	A83A	15	OK	83	Recoil piston rod	F. S. No. 2	
					RECOIL MECHANISM.		
1	A81A	15	OK	81	Recoil cylinder, right	F. S. No. 3	
1	A81B	15	OK	81	Recoil cylinder, left	....do	
2	A81C	15	OK	81	Cylinder head	F. S. No. 2	With 2-.375 in. std. pipe plugs.
2	A81D	15	OK	81	Gasket	Leather	5. thick.
2	A81E	15	OK	81	Cylinder head bushing	Bronze, No. 3	
2	A81F	15	OK	81	Headless set screws		10. x 15.
2	A82A	15	OK	82	Follower	Bronze, No. 2	
2	A82B	15	OK	82	Stuffing box	....do	
3	A82C	15	OK	82	Rings, Garlock's waterproof hydraulic packing		10. sq. x 512. long.
2	A82D	15	OK	82	Stuffing box gland	Bronze, No. 2	
2	A82E	15	OK	82	Cylinder gland	....do	
2	A82F	15	OK	82	Cylinder L, packing	Leather	
4	A82G	15	OK	82	Drain and filling plug washer	....do	
4	A82H	15	OK	82	Drain and filling plug	F. S. No. 2	
2	A82K	15	OK	82	Key lock bolt	....do	With 2-30. lock washers.
2	A82L	15	OK	82	Key	C. S. No. 2	
2	A83A	15	OK	83	Recoil piston rod	F. S. No. 2	
2	A83B	15	OK	83	Piston bushing	Bronze, No. 3	
2	A83C	15	OK	83	Countersunk head copper screws		12. x 22.
2	A83D	15	OK	83	Nut, rear	F. S. No. 2	
2	A83E	15	OK	83	Nut, front	....do	
4	A83F	15	OK	84	Nut locking screw	....do	
2	A83G	15	OK	83	Recoil band locking screw	....do	
					RECUPERATOR.		
1	A86A	15	OK	86	Air cylinder	F. S. No. 2	
1	A87A	15	OK	87	Cylinder stuffing box	Phosphor bronze	
5	A87B	15	OK	87	Rings, flax coil packing		.5 in. square, style 32, Garlock.
1	A87C	15	OK	87	Locking nut, lock screw	F. S. No. 2	
1	A87D	15	OK	87	Cylinder locking nut	....do	
8	A87E	15	OK	87	Locking nut stud	F. S. No. 3	

[1] Provided with lock washers.

[3] Provided with crown nuts.

[5] Provided with nuts and lock washers.

Number for one carriage.	Piece mark.	Drawing. Class.	Division.	Number.	Name of part.	Material.	Remarks.
					RECUPERATOR—continued.		
8	A87F	15	OK	87	Nut		26. x 16. thick.
8	A87G	15	OK	87	do		22. x 16. thick.
1	A87H	15	OK	87	Cylinder gland	Phosphor bronze	
1	A87K	15	OK	87	Cylinder liner	do	
1	A88A	15	OK	88	Plunger	do	
4	A88B	15	OK	88	Stud	F. S. No. 3	
4	A88C	15	OK	88	Nut		20. x 16. thick.
4	A88D	15	OK	88	do		24. x 16. thick.
1	A88E	15	OK	88	Stuffing box	Phosphor bronze	
5	A88F	15	OK	88	Rings of flax coil packing		.5 in. sq., style 32, Garlock.
1	A88G	15	OK	88	Plunger gland	Phosphor bronze	
1	A88H	15	OK	88	Plunger packing	Leather	
1	A88K	15	OK	88	Piston rod packing	do	
1	A89A	15	OK	89	Piston	Phosphor bronze	
3	A89B	15	OK	89	Rings of flax coil packing		.625 in. sq., style 32, Garlock.
1	A89G	15	OK	89	Headless Steel screw		6. x 10.
1	A89C	15	OK	89	Gland	Phosphor bronze	
1	A89D	15	OK	89	Packing retainer	Bronze No. 3	
1	A89E	15	OK	89	U packing	Leather	
1	A89F	15	OK	89	Spring	Steel	
1	A90A	15	OK	90	Piston rod	F. S. No. 2	With 1-52. crown nut and 1-4. x 33. steel pin.
1	A90B	15	OK	90	Sleeve	Phosphor bronze	
1	A90C	15	OK	90	Guard, movable	Brass	
1	A90D	15	OK	90	Guard stud	F. S. No. 2	With 1-14. crown nut.
1	A90E	15	OK	90	Guard, fixed	Brass	
4	A90F	15	OK	90	Bolts [5]		10. x 32., thread 17. long.
1	A90G	15	OK	90	Piston nut	F. S. No. 2	With 1-.312 ($\frac{5}{16}$) in. x 4.5 in. split pin.
1	A90H	15	OK	90	Washer	F. S.	
2	A91A	15	OK	91	Tension rod	F. S. No. 2	
2	A91B	15	OK	91	Guide nut, lock screw	do	
2	A91C	15	OK	91	Guide nut	Phosphor bronze	
2	A91D	15	OK	91	Tension rod nut	F. S. No. 2	With 2-14. x 120. steel pins.
2	A91E	15	OK	91	Tension rod guide	Bronze No. 2	
2	A91F	15	OK	91	Tension rod collar	F. S. No. 2	
2	A91G	15	OK	91	Collar screw pin	do	
4	A91H	15	OK	91	Tension rod cradle bushing	Bronze No. 2	
16	A91K	15	OK	91	Tap bolts [1]		16. x 46., thread 26. long.
1	A92A	15	OK	92	Yoke	F. S. No. 2	
1	A92B	15	OK	92	Yoke locking screw	do	

[5] Provided with nuts and lock washers.

[1] Provided with lock washers.

2	A92C	15	OK	92	Locking block screw	do	
1	A92D	15	OK	92	Locking block	C. S. No. 2	
2	A93A	15	OK	93	Tension rod guard, end	Steel	
12	A93B	15	OK	93	Tap bolts [1]		10. x 18., thread full length.
2	A93C	15	OK	93	Tension rod guard, center	Steel	
1	A102A	15	OK	102	Liquid pipe connection, body	Phosphor bronze	
1	A102B	15	OK	102	Headless screw		.625 in. x .562 ($\frac{9}{16}$) in.
1	A103A	15	OK	103	Liquid valve, body	Phosphor bronze	
2	A103B	15	OK	103	Tap bolts [1]		.625 in. x 1.687 ($1\frac{11}{16}$) in. Thread .625 in. long.
6	A103C	15	OK	103	Rings, garlock packing or equal		1.25 in. O. D. x .75 in. I. D. x .25 in. thick.
1	A104A	15	OK	104	Air pipe connection inlet plug	Bronze No. 3	
					INLET PLUG FASTENER.		
2	A104B	15	OK	104	Screw eyes	Steel	
2	A104C	15	OK	104	Rings	do	
1	A104D	15	OK	104	Chain	do	
2	A104E	15	OK	104	Valve supply stem	Bronze No. 3	
2	A104F	15	OK	104	Valve exhaust stem	do	
2	A104G	15	OK	104	Gland follower	Bronze No. 2	
2	A104H	15	OK	104	Gland	do	
12	A104K	15	OK	104	Pipe connecting nut	do	
1	A105A	15	OK	105	Air pipe connection, body	Phosphor bronze	
1	A105D	15	OK	105	Headless screw		.437 ($\frac{7}{16}$) in. x .5 in.
8	A105B	15	OK	105	Tap bolt [1]		.5 in. x 1.625 in., thread 1. in. ldng.
10	A105C	15	OK	105	Gasket	Leather	1. in. O. D. x .5 in. I. D. x .125 in. thick.
1	A106A	15	OK	106	Air valve, body	Phosphor bronze	
2	A106B	15	OK	106	Tap bolt [1]		.625 in. x 1.875 in., thread .875 in. long.
2	A106C	15	OK	106	do		.625 in. x 3. in., thread .875 in. long.
11	A107B	15	OK	107	Pipe collar	Bronze No. 3	
2	A107C	15	OK	107	Pipe clip	Steel	.093 ($\frac{3}{32}$) in. thick.
4	A107E	15	OK	107	Round head screws		.242 in. x .375 in. long.
1	A107F	15	OK	107	Coupling	F. S. No. 1	
1	A107G	15	OK	107	Coupling nut	do	
1	A108A	15	OK	108	Air piston stop	F. S. No. 2	
1	A108B	15	OK	108	Piston stop gasket	Soft lead	
2	A108C	15	OK	108	Valve body gasket	do	
2	A111A	15	OK	111	4.5-inch gauge		Ashcroft Mfgs. Cos. type SF form C or equal.
6	A111B	15	OK	111	Round head bronze screws		.216 in. x .312 ($\frac{5}{16}$) in.
2	A111C	15	OK	111	Connection	Phosphor bronze	
2	A112A	15	OK	112	Cover	Steel	
4	A112B	15	OK	112	Hinge	do	
2	A112C	15	OK	112	Hinge pin	F. S.	With .093 ($\frac{3}{32}$) in. x .5 in. split pin.
					PIN FASTENER.		
2	A112D	15	OK	112	Chain	Steel	
4	A112E	15	OK	112	Chain rings	do	
2	A112F	15	OK	112	Chain rivet	do	
2	A112H	15	OK	112	Latch pin	F. S.	

[1] Provided with lock washers.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					ELEVATING GEARING.		
2	A116A	15	OK	116	Pinion shaft bushing	Phosphor bronze	
2	A116B	15	OK	116	Headless steel screws		10. x 12.
4	A116C	15	OK	116	Worm shaft bushing	Bronze No. 2	
4	A116D	15	OK	116	Headless steel screws		8. x 12.
1	A116E	15	OK	116	Gear case, right	C. S.	With 1 oil cup.
1	A116F	15	OK	116	Gear case, left	do	With 1 oil cup.
14	A116G	15	OK	116	Bolts [3]		39. x 117.5.
4	A116H	15	OK	116	Studs [3]		
10	A116K	15	OK	116	Special countersunk bolt [3]	Steel	With 10-6. x 15. steel pins.
2	A116L	15	OK	116	Drain plug	F. S.	
2	A116M	15	OK	116	Vulvanized fiber gaskets		3. x 25. I. D. x 45. O. D.
2	A116N	15	OK	116	Clamp	Steel	
4	A116P	15	OK	116	Fillister head steel screws		8. x 12.
2	A116Q	15	OK	116	Horizontal shaft bushing	Bronze No. 2	
2	A116R	15	OK	116	Oil pipe	Copper	
2	A116S	15	OK	116	do	do	
2	A117A	15	OK	117	Cover	C. S. No. 2	With 4 oil cups.
2	A117B	15	OK	117	4 vulcanized fiber gaskets		
16	A117C	15	OK	117	Bolts [3]		24. x 79.
8	A117D	15	OK	117	Studs [3]		24.
8	A117E	15	OK	117	do [3]		10.
2	A117G	15	OK	117	Cover bushing	Bronze No. 2	
2	A117H	15	OK	117	Headless steel screws		8. x 12.
2	A117K	15	OK	117	Removable bearing	C. S. No. 2	
8	A117L	15	OK	117	Studs [3]		20.
4	A117N	15	OK	117	Oil pipe	Copper	
4	A117P	15	OK	117	Adjusting nut	F. S. No. 2	
1	A117Q	15	OK	117	Centering plug bearing	F. S. No. 0	
4	A117R	15	OK	117	Lock washer	F. S.	
8	A117S	15	OK	117	Studs [3]		10.
4	A117U	15	OK	117	Centering plug	F. S. No. 0	
2	A118A	15	OK	118	Worm wheel hub	F. S. No. 3	
6	A118B	15	OK	118	Keys	F. S. No. 2	18. x 25. x 53.
4	A118C	15	OK	118	Securing ring (half)	F. S.	
20	A118D	15	OK	118	Hexagonal head steel screws		16. x 39., thread 29. long.
2	A118E	15	OK	118	Worm wheel	Tobin bronze	
2	A118F	15	OK	118	Worm wheel bushing	Bronze No. 2	
2	A118G	15	OK	118	Headless steel screws		8. x 10.

[3] Provided with crown nuts.

2	A118H	15	OK	118	Oil retainer	C. S.	
2	A118K	15	OK	118	Vulcanized fiber gasket		3.
24	A118L	15	OK	118	Hexagonal head steel screws		8. x 25., thread 15. long.
2	A118M	15	OK	118	Worm shaft	F. S. No. 3	
2	A119A	15	OK	119	Worm shaft gear	F. S. No. 2	
2	A119B	15	OK	119	Pinion shaft nut	F. S.	
2	A119C	15	OK	119	Pinion shaft	F. S. No. 3	
2	A119D	15	OK	119	Keys	do	10. x 15. x 55.
2	A119E	15	OK	119	Horizontal shaft gear	F. S. No. 2	
6	A119F	15	OK	119	Belleville washer	Spring S	
1	A119H	15	OK	119	Set screw	F. S.	
6	A119K	15	OK	119	do	do	
4	A119L	15	OK	119	do	do	
4	A119M	15	OK	119	do	do	
8	A120A	15	OK	120	Friction disk, outer	Phosphor bronze	
2	A120B	15	OK	120	Friction disk, collar	F. S. No. 2	
6	A120C	15	OK	120	Friction disk, inner	do	
2	A120D	15	OK	120	Adjusting collar	do	
2	A120E	15	OK	120	Pinion shaft nut lock washer	Steel	
8	A120F	15	OK	120	Tap bolts		10. x 23.
12	A120G	15	OK	120	Friction disk key	F. S. No. 3	
24	A120H	15	OK	120	Countersunk head steel screws		8. x 22.
2	A121A	15	OK	121	Longitudinal shaft, rear end	F. S. No. 2	
1	A121B	15	OK	121	Cross shaft	do	
2	A121C	15	OK	121	Longitudinal shaft coupling	do	
1	A121D	15	OK	121	Collar	do	
2	A121E	15	OK	121	Longitudinal shaft, front end	do	
3	A121F	15	OK	121	Horizontal shaft gear	do	
1	A121G	15	OK	121	Cross-shaft gear	do	
2	A121H	15	OK	121	Handwheel shaft	do	
2	A121K	15	OK	121	0.25 in. grease cups		Simons No. 207/1 or equal.
9	A121L	15	OK	121	Retaining washer	F. S. No. 2	
9	A121M	15	OK	121	Countersunk head steel screws		12. x 30.
2	A122A	15	OK	122	Handwheel	C. S.	
2	A122B	15	OK	122	Locking pin	F. S. No. 2	
					FASTENING CHAIN.		
4	A122C	15	OK	122	Rings	Steel	
2	A122D	15	OK	122	Chains	do	Std. Chain Co's. No. 3 or equal.
2	A122E	15	OK	122	Handlesleeve	Brass	
2	A122F	15	OK	122	Handle	F. S. No. 2	
4	A122G	15	OK	122	Handle washer	F. S.	
2	A122H	15	OK	122	Sprocket, lower	C. S. No. 2	
2	A122K	15	OK	122	Double chain	N. S.	
2	A122L	15	OK	122	do	do	
2	A122M	15	OK	122	Sprocket, upper	C. S. No. 2	
1	A122N	15	OK	122	Direction plate	Bronze	
4	A122P	15	OK	122	Round head screws		.25 in. x .625 in.
1	A122Q	15	OK	122	Direction plate	Bronze	
3	A123K	15	OK	123	Longitudinal shaft bushing	Bronze No. 2	
1	A123L	15	OK	123	Cross shaft bushing	do	

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					HANDWHEEL BRACKET, 1 RIGHT AND 1 LEFT.		
1	A123A	15	OK	123	Bracket, front side	C. S.	
1	A123B	15	OK	123	do	do	
4	A123C	15	OK	123	Bolts [3]		24. x 73.
4	A123D	15	OK	123	do [3]		24. x 86.
2	A123P	15	OK	123	Plates	Steel	436.63 x .75 in. x 824.5.
2	A123Q	15	OK	123	do	do	245. x .687 ($\frac{11}{16}$) in. x 245.
4	A123R	15	OK	123	Angles	do	4. in. x 4. in. x .5 in. x 490.
2	A123S	15	OK	123	Handwheel bracket bearing	C. S.	
3	A123T	15	OK	123	Bolts [3]		20. x 79.5.
4	A123U	15	OK	123	Bracket bearing bushing	Bronze No. 2.	
4	A123W	15	OK	123	Headless steel screws		6. x 12.
1	A124A	15	OK	124	Ratchet lever support bracket	C. S.	
1	A124B	15	OK	124	Bolt [3]		24. x 73.
1	A124C	15	OK	124	do [3]		24. x 86.
1	A124D	15	OK	124	Bracket, front center	C. S.	
2	A124E	15	OK	124	Bolts [3]		24. x 37.
2	A124F	15	OK	124	do [3]		24. x 86.
1	A124G	15	OK	124	Bracket bushing, front center	Bronze No. 2.	
					RATCHET LEVER.		
4	A126A	15	OK	126	Fork plate	F. S.	
8	A126B	15	OK	126	Bolt	do	
8	A126C	15	OK	126	Nut	do	
2	A126D	15	OK	126	Lever	do	
2	A126E	15	OK	126	Ratchet wheel	F. S. No. 0	
2	A126F	15	OK	126	Pawl	do	
2	A126G	15	OK	126	Pawl pin	F. S.	
2	A126H	15	OK	126	Pawl spring	Spring steel	
4	A126K	15	OK	126	Countersunk head steel screws		6. x 12.
					TRAVERSING GEARING.		
4	A131A	15	OK	131	Gear case washer	F. S.	
1	A131B	15	OK	131	Worm shaft bushing, long	Bronze No. 2.	
1	A131C	15	OK	131	Worm shaft bushing, short	do	
1	A131D	15	OK	131	Gear case, rear	C. S. No. 2.	
1	A131E	15	OK	131	Bolt [3]		24. x 91.
1	A131F	15	OK	131	do [3]		24. x 82.

[3] Provided with crown nuts.

2	A131G	15	OK	131	Countersunk head bolts [3]		24. x 92.
2	A131H	15	OK	131	....do.[3]		24. x 87.
1	A131K	15	OK	131	Pinion shaft bushing	Bronze No. 2	
1	A132A	15	OK	132	Gear case cover	Steel	
5	A132B	15	OK	132	Tap bolts		.187 ($\frac{3}{16}$) in. plate.
1	A132C	15	OK	132	Oil hole cover	Spring steel	10. x 15., thread 12. long.
1	A132D	15	OK	132	Pinion shaft washer	F. S.	With 1.312 ($1\frac{5}{16}$) in. steel rivet 18. long.
1	A132E	15	OK	132	Pinion shaft	F. S. No. 2	With 1-34 crown nut.
1	A132F	15	OK	132	Worm wheel	Phosphor bronze	
1	A132G	15	OK	132	Worm	F. S. No. 3	
11	A132H	15	OK	132	Rack bolt	F. S.	
11	A132K	15	OK	132	Crown nuts		18. x 13. thick.
1	A132L	15	OK	132	Traversing rack	F. S. No. 2	
1	A133A	15	OK	133	Stop, right	....do	
1	A133B	15	OK	133	Stop, left	....do	
6	A133C	15	OK	133	Tap bolts		20. x 45., thread 30. long.
2	A133D	15	OK	133	Oil pipe, rack support	Copper	
1	A133E	15	OK	133	Traversing rack support	C. S. No. 2	With 2 oil cups.
10	A133F	15	OK	133	Bolts [7]		24. x 91.
4	A133G	15	OK	133	....do.[7]		24. x 107.
10	A133H	15	OK	133	Countersunk head bolts [7]		24. x 101.
4	A133K	15	OK	133	....do.[7]		24. x 117.
4	A133L	15	OK	133	10 studs [3]		
1	A134A	15	OK	134	Sliding plate	F. S. No. 2	
12	A134B	15	OK	134	Countersunk head bolts [3]		22. x 72.
12	A134C	15	OK	134	....do.[3]		22. x 74.
2	A134D	15	OK	134	Cover plate	Steel	
8	A134E	15	OK	134	Fillister head screws		8. x 17., thread 12. long.
2	A134F	15	OK	134	Dust guard	Felt	
1	A134G	15	OK	134	Intermediate bracket	C. S. No. 2	
4	A134H	15	OK	134	Bolts [3]		24. x 73.
2	A134K	15	OK	134	Filler plate	Steel	
2	A134L	15	OK	134	Intermediate bracket bushing	Bronze No. 2	
2	A134M	15	OK	134	Outer bearing	C. S. No. 2	
2	A134N	15	OK	134	Bolts [3]		18. x 75.
2	A134P	15	OK	134	....do.[3]		18. x 62.
2	A134Q	15	OK	134	Outer bearing bushing	Bronze No. 2	
1	A135A	15	OK	135	Worm shaft	F. S. No. 2	
1	A135B	15	OK	135	Cross shaft	....do	
1	A135C	15	OK	135	Worm shaft washer	F. S.	
1	A135D	15	OK	135	....do	....do	
1	A135E	15	OK	135	Cross shaft collar	....do	
1	A135F	15	OK	135	Cross shaft miter gear	F. S. No. 2	
1	A135G	15	OK	135	Worm shaft miter gear	....do	
2	A136A	15	OK	136	Upper sprocket	C. S. No. 2	
2	A136B	15	OK	136	Upper sprocket bushing	Bronze No. 2	
2	A136C	15	OK	136	Lower sprocket	C. S. No. 2	
2	A136D	15	OK	136	Eccentric shaft	F. S. No. 2	
2	A136E	15	OK	136	Eccentric shaft lever	F. S.	
2	A136F	15	OK	136	Bolts [3]		20. x 66.

[3] Provided with crown nuts.

[7] Provided with plain washers and crown nuts

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					TRAVERSING GEARING—continued.		
2	A136G	15	OK	136	Retaining washer	F. S.	
2	A136H	15	OK	136	Headless set screws		8. x 22.
2	A136K	15	OK	136	Countersunk-head steel screws		12. x 39., thread 28. long.
1	A137A	15	OK	137	Bracket, right	C. S. No. 2.	
1	A137B	15	OK	137	Bracket, left	do.	
10	A137C	15	OK	137	Bolts [3]		24. x 91.
2	A137D	15	OK	137	Handwheel	C. S. No. 2.	
2	A137E	15	OK	137	Handle	F. S.	
2	A137F	15	OK	137	Handle sleeve	Brass.	
1	A137G	15	OK	137	Direction plate	Bronze.	
4	A137H	15	OK	137	Round-head screws		.25 in. x .625 in.
1	A137K	15	OK	137	Direction plate	Bronze.	
1	A139A	15	OK	139	Right trunnion bearing	C. S. No. 2.	
9	A139B	15	OK	139	Bolts [3]		40. x 132.
1	A139C	15	OK	139	Stud [3]		40. x 132.
1	A140A	15	OK	140	Left trunnion bearing	C. S. No. 2.	
9	A140B	15	OK	140	Bolts [3]		40. x 132.
1	A139C	15	OK	140	Stud [3]		40. x 132.
2	A140C	15	OK	140	Trunnion bearing cap	C. S. No. 2.	With 2-12 oil plugs.
4	A140D	15	OK	140	Tap bolts [1]		52. x 200., thread 70. long.
1	A143A	15	OK	143	Trunnion, right	F. S. No. 2.	
1	A143B	15	OK	143	Trunnion, left	do.	
6	A143C	15	OK	143	Tap bolts [1]		30. x 77.
1	A143D	15	OK	143	Quadrant bracket flange	C. S.	With 1-10. x 112. steel pin.
1	A143E	15	OK	143	Fulcrum bracket, right	C. S. No. 2.	
1	A143F	15	OK	143	Fulcrum bracket, left	do.	
6	A143G	15	OK	143	Tap bolts [1]		30. x 86., thread 47. long.
2	A143H	15	OK	143	Bolts [3]		30. x 125.
1	A143K	15	OK	143	Lever, right	F. S. No. 2.	With 1-12. oil plug.
1	A143L	15	OK	143	Lever, left	do.	With 1-12. oil plug.
2	A143M	15	OK	143	Bushings	Bronze No. 2.	
2	A143N	15	OK	143	Headless steel screws		12. x 15.
2	A143P	15	OK	143	Bearing block	F. S. No. 0.	
2	A143Q	15	OK	143	Lever bushing	F. S. No. 2.	
2	A143R	15	OK	143	Fulcrum bracket bolt	do.	With .40 crown nuts and 2-15. x 25. steel pins.
2	A143S	15	OK	143	Washer	F. S.	
2	A144A	15	OK	144	Plunger bracket	C. S. No. 2.	
8	A144B	15	OK	144	Bolts [3]		22. x 87.

[1] Provided with lock washers.

[3] Provided with crown nuts.

2	A144C	15	OK	144	Plunger	F. S. No. 0	
2	A144D	15	OK	144	Keys	Steel	14. x 20. x 60.
4	A144E	15	OK	144	Washer	F. S.	
16	A144F	15	OK	144	Belleville washer	Spring steel	
1	A144G	15	OK	144	Lever guide bracket, right	C. S. No. 2	
1	A144H	15	OK	144	Lever guide bracket, left	do	
2	A144K	15	OK	144	Countersunk head bolts [3]		22. x 87.
4	A144 L	15	OK	144	Bolts [3]		22. x 87.
2	A144M	15	OK	144	Guide bracket adjusting screw	F. S. No. 2	With 2-30.nuts.
2	A144N	15	OK	144	Plunger bracket adjusting screw	do	
2	A144P	15	OK	144	Adjusting screw lock nut	do	
					CARRIAGE PINTLE BEARING.		
1	A148A	15	OK	148	Pintle	F. S. No. 2	
1	A148B	15	OK	148	Pintle support	C. S. No. 2	
10	A148C	15	OK	148	Pintle support bolt	F. S	With 10-7. x 14. steel pin and 10-30. crown nuts.
10	A148D	15	OK	148	Pintle bolt	do	With 7. x 14. steel pins and 10-30. crown nuts.
10	A148E	15	OK	148	Spacer	Steel	
1	A149A	15	OK	149	Pintle plunger	F. S. No. 0	
2	A149B	15	OK	149	Supporting bolt	F. S. No. 2	With 2-96. nuts.
2	A149C	15	OK	149	Lock nuts		96. x 64. thick.
1	A149D	15	OK	149	Upper yoke	F. S. No. 2	
1	A149E	15	OK	149	Lower yoke	do	
1	A149F	15	OK	149	Supporting bolt lock washer	Steel	
16	A149G	15	OK	149	Belleville washer	Spring steel	
4	A149H	15	OK	149	16 studs [3]		
1	A150H	15	OK	150	Pipe	Copper	With 1 oil cup.
2	A150K	15	OK	150	Tap bolts [1]		10. x 26.
1	A150B	15	OK	150	Pipe	Wrought iron or steel	
					TOP CARRIAGE, SIDE FRAME, 1 RIGHT AND 1 LEFT.		
1	A155A	15	OK	156	Web plate, right	Steel	1,650. x .75 in. x 6,548.
1	A155B	15	OK	156	Web plate, left	do	1,650. x .75 in. x 6,548.
1	A155E	15	OK	156	Cover plate, upper, rear, right	do	254. x .625 in. x 4700.
1	A155F	15	OK	156	Cover plate, upper, rear, left	do	254. x .625 in. x 4700.
2	A155H	15	OK	156	Splice plates	do	412. x .625 in. x 530.
1	A155N	15	OK	156	Flange angle, upper, rear, inner, right	do	4. in. x 4. in. x .625 in. x 5780.
1	A155P	15	OK	156	Flange angle, upper, rear, inner, left	do	4. in. x 4 in. x .625 in x 5780.
2	A155Q	15	OK	155	Stiffener plate	do	12. in. x .75 in. x 12. in.
1	A155R	15	OK	156	Filler plate, right	do	321. x 1. in. x 535.
1	A155S	15	OK	156	Filler plate, left	do	321. x 1. in. x 535.
1	A155T	15	OK	156	Filler plate, outer, right	do	720. x .75 in. x 765.
1	A155U	15	OK	156	Filler plate, outer, left	do	720. x .75 in. x 765.
1	A155W	15	OK	156	Filler plate, inner, right	do	720. x .625 in. x 765.
1	A155X	15	OK	156	Filler plate, inner, left	do	720. x .625 in. x 765.
1	A155Z	15	OK	156	Cover plate, upper, front, right	do	.412. x .625 in. x 1205. Approx.
1	A155AA	15	OK	156	Cover plate, upper, front, left	do	.412. x .625 in. x 1205. Approx.
1	A155BA	15	OK	156	Cover plate, lower, right	do	254 x .625 in. x 6325. Approx.

[3] Provided with lock washers.

[3] Provided with crown nuts.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					FOR CARRIAGE, SIDE FRAME, 1 RIGHT AND 1 LEFT—continued.		
1	A155CA...	15	OK.....	156	Cover plate, lower, left	Steel	254 x .625 in. x 6325. Approx.
1	A155DA...	15	OK.....	156	Flange angle, upper, front, outer, right	do	4. in. x 4. in. x .625 in. x 1550. Approx.
1	A155EA...	15	OK.....	156	Flange angle, upper, front, inner, right	do	4. in. x 4 in. x .625 in. x 1550. Approx.
1	A155FA...	15	OK.....	156	Flange angle, upper, front, outer, left	do	4. in. x 4. in. x .625 in. x 1550. Approx.
1	A155GA...	15	OK.....	156	Flange angle, upper, front, inner, left	do	4. in. x 4 in. x .625 in. x 1550. Approx.
1	A155HA...	15	OK.....	156	Flange angle, upper, rear, outer, right	do	4. in. x 4. in. x .625 in. x 5780. Approx.
1	A155KA...	15	OK.....	156	Flange angle, upper, rear, outer, left	do	4. in. x 4. in. x .625 in. x 5780. Approx.
1	A155LA...	15	OK.....	156	Flange angle, lower, outer, right	do	4. in. x 4. in. x .625 in. x 6550. Approx.
1	A155MA...	15	OK.....	156	Flange angle, lower, inner, right	do	4. in. x 4. in. x .625 in. x 6570. Approx.
1	A155NA...	15	OK.....	156	Flange angle, lower, outer, left	do	4. in. x 4. in. x .625 in. x 6550. Approx.
1	A155PA...	15	OK.....	156	Flange angle, lower, inner, left	do	4. in. x 4. in. x .625 in. x 6570. Approx.
1	A155QA...	15	OK.....	156	Stiffner angle, outer, front, right	do	4. in. x 4. in. x 5 in. x 1325. Approx.
1	A155RA...	15	OK.....	156	Stiffner angle, inner, front, right	do	4. in. x 4. in. x .5 in. x 1325. Approx.
1	A155SA...	15	OK.....	156	Stiffner angle, outer, front, left	do	4. in. x 4. in. x 5 in. x 1325. Approx.
1	A155TA...	15	OK.....	156	Stiffner angle, inner, front, left	do	4. in. x 4. in. x .5 in. x 1325. Approx.
1	A155UA...	15	OK.....	156	Stiffner angle, inner, front, right	do	4. in. x 4. in. x .5 in. x 1310. Approx.
1	A155WA...	15	OK.....	156	Stiffner angle, inner, front, left	do	4. in. x 4. in. x .5 in. x 1310. Approx.
1	A155XA...	15	OK.....	156	Stiffner angle, outer, middle, right	do	4. in. x 4. in. x .5 in. x 1105. Approx.
1	A155ZA...	15	OK.....	156	Stiffner angle, inner, middle, right	do	4. in. x 4. in. x .5 in. x 1105. Approx.
1	A155AB...	15	OK.....	156	Stiffner angle, outer, middle, left	do	4. in. x 4. in. x .5 in. x 1105. Approx.
1	A155BB...	15	OK.....	156	Stiffner angle, inner, middle, left	do	4. in. x 4. in. x .5 in. x 1105. Approx.
1	A155CB...	15	OK.....	156	Stiffner angle, inner, middle, right	do	4. in. x 4. in. x .5 in. x 1085. Approx.
1	A155DB...	15	OK.....	156	Stiffner angle, inner, middle, left	do	4. in. x 4. in. x .5 in. x 1085. Approx.
1	A155EB...	15	OK.....	156	Stiffner angle, outer, rear, right	do	4. in. x 4. in. x .5 in. x 890. Approx.
1	A155FB...	15	OK.....	156	Stiffner angle, inner, rear, right	do	4. in. x 4. in. x .5 in. x 890. Approx.
1	A155GB...	15	OK.....	156	Stiffner angle, outer, rear, left	do	4. in. x 4. in. x .5 in. x 890. Approx.
1	A155HB...	15	OK.....	156	Stiffner angle, inner, rear, left	do	4. in. x 4. in. x .5 in. x 890. Approx.
					FRONT TRANSOM.		
1	A157A.....	15	OK.....	157	Vertical, front plate	Steel	966. x .625 in. x 2800.
1	A157B.....	15	OK.....	157	Vertical, rear plate	do	559. x .625 in. x 2038.
1	A157C.....	15	OK.....	157	Horizontal plate	do	305. x .625 in. x 1818.
2	A157D.....	15	OK.....	157	Vertical angle, right	do	4. in. x 4. in x .625 in. x 740.
2	A157E.....	15	OK.....	157	Vertical angle, left	do	4. in. x 4. in. x .625 in. x 740.
1	A157H.....	15	OK.....	157	Horizontal angle, front	do	3.5 in. x 3.5 in. x .5 in. x 1818.

1	A157K	15	OK	157	Horizontal angle, rear	do	3.5 in. x 3.5 in. x .5 in. x 1818.	
2	A157L	15	OK	157	Vertical angle, right	do	4. in. x 4 in. x .5 in. x 445.	
2	A157M	15	OK	157	Vertical angle, left	do	4. in. x 4 in. x .5 in. x 445.	
1	A157N	15	OK	157	Horizontal angle, bottom	do	3.5 in. x 3.5 in. x .5 in. x 1274.	
2	A157P	15	OK	157	Horizontal angle, bottom	do	3.5 in. x 3.5 in. x .5 in. x 210.	
1	A157R	15	OK	157	Horizontal angle, bottom	do	8. in. x 6. in. x .75 in. x 2800.	
1	A157S	15	OK	157	Horizontal angle, bottom rear	do	8. in. x 6. in. x .75 in. x 1274.	
1	A157T	15	OK	157	Horizontal angle, top front	do	8. in. x 6. in. x .75 in. x 1488.	
1	A157U	15	OK	157	Horizontal angle, top rear	do	8. in. x 6. in. x .75 in. x 1488.	
1	A157W	15	OK	157	do	do	8. in. x 6. in. x .75 in. x 1284.	
					REAR BRACE.			
1	A158A	15	OK	158	Horizontal plate	Steel	794. x .625 in. x 1488.	
1	A158B	15	OK	158	Vertical plate	do	191. x .625 in. x 1488.	
1	A158C	15	OK	158	Angle	do	4. in. x 4. in. x .5 in. x 1270.	
1	A158D	15	OK	158	do	do	3.5 in. x 3.5 in. x .5 in. x 1448.	
1	A158E	15	OK	158	do	do	3.5 in. x 3.5 in. x .5 in. x 1270.	
					FRONT BRACE.			
1	A158F	15	OK	158	Top plate	Steel	424. x .625 in. x 2800.	
1	A158G	15	OK	158	Front plate	do	191. x .625 in. x 2800.	
1	A158H	15	OK	158	Top angle	do	4. in. x 4. in. x .5 in. x 2800.	
1	A158K	15	OK	158	Middle angle	do	3.5 in. x 3.5 in. x .5 in x 2800.	
1	A158L	15	OK	158	Bottom angle	do	3.5 in. x 3.5 in. x .5 in. x 2800.	
					TRUNNION SUPPORT, 1 RIGHT AND 1 LEFT.			
1	A159A	15	OK	159	Web plate, right	Steel	1651. x .625 in. x 1906.	
1	A159B	15	OK	159	Web plate, left	do	1651. x .625 in. x 1906.	
1	A159C	15	OK	159	Flange angle, top, right	do	4. in. x 4. in. x .625 in. x 1550.	Approx.
1	A159D	15	OK	159	Flange angle, top, left	do	4. in. x 4. in. x .625 in. x 1550.	Approx.
1	A159E	15	OK	159	Flange angle, bottom, right	do	4. in. x 4. in. x .625 in. x 1570.	
1	A159F	15	OK	159	Flange angle, bottom, left	do	4. in. x 4. in. x .625 in. x 1570.	
1	A159G	15	OK	159	Flange angle, bottom, right	do	4. in. x 4. in. x .625 in. x 786.	
1	A159H	15	OK	159	Flange angle, bottom, left	do	4. in. x 4. in. x .625 in. x 786.	
1	A159K	15	OK	159	Angle, right	do	4. in. x 4. in. x .625 in. x 961.	
1	A159L	15	OK	159	Angle, left	do	4. in. x 4. in. x .625 in. x 961.	
1	A159M	15	OK	159	Angle, right	do	4. in. x 4. in. x .5 in. x 760.	
1	A159N	15	OK	159	Angle, left	do	4. in. x 4. in. x .5 in. x 760.	
1	A159P	15	OK	159	Angle, right	do	4. in. x 4. in. x .625 in. x 1050.	Approx.
1	A159Q	15	OK	159	Angle, left	do	4. in. x 4. in. x .625 in. x 1050.	Approx.
1	A159R	15	OK	159	Stiffener angle, right	do	4. in. x 4. in. x .5 in. x 1460.	
1	A159S	15	OK	159	Stiffener angle, left	do	4. in. x 4. in. x .5 in. x 1460.	
2	A159MA	15	OK	159	Angles, front	do	4. in. x 4. in. x .625 in. x 10 in.	
2	A159NA	15	OK	159	Plates	do	409. x .75 in. x 208.	

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					TRUNNION SUPPORT STIFFENER, 1 RIGHT AND 1 LEFT.		
2	A159T	15	OK	159	Web plates	Steel	247. x .625 in. x 1094.
1	A159U	15	OK	159	Front angle, right	do	4. in. x 4. in. x .5 in. x 963.
1	A159W	15	OK	159	Front angle, left	do	4. in. x 4. in. x .5 in. x 963.
1	A159X	15	OK	159	Rear angle, right	do	4. in. x 4. in. x .5 in. x 1058.
1	A159Z	15	OK	159	Rear angle, left	do	4. in. x 4. in. x .5 in. x 1058.
2	A159AA	15	OK	159	Bottom angle	do	4. in. x 4. in. x .5 in. x 210.
2	A159BA	15	OK	159	Web plates	do	247. x .625 in. x 934.
2	A159CA	15	OK	159	Angle, right	do	4. in. x 4. in. x .5 in. x 720.51.
2	A159DA	15	OK	159	Angle, left	do	4. in. x 4 in. x .5 in. x 720.51.
4	A159EA	15	OK	159	Angle	do	4. in. x 4. in. x .5 in. x 210.
2	A159FA	15	OK	159	Web plates	do	247. x .625 in. x 1461.
2	A159GA	15	OK	159	Angles, right	do	4. in. x 4. in. x .5 in. x 1240.
2	A159HA	15	OK	159	Angles, left	do	4. in. x 4. in. x .5 in. x 1240.
2	A159KA	15	OK	159	Angles, top	do	4. in. x 4. in. x .5 in. x 210.
2	A159LA	15	OK	159	Angles, bottom	do	4. in. x 4. in. x .5 in. x 210.
1	A160A	15	OK	160	Gusset plate, right	do	.625 in. thick.
1	A160B	15	OK	160	Gusset plate, left	do	.625 in. thick.
2	A160C	15	OK	160	Bearing plate	do	.75 in. thick.
1	A160D	15	OK	160	Bottom tie plate	do	.625 in. thick.
2	A160E	15	OK	160	Filler plate	do	.625 in. thick.
					TOP TIE PLATE.		
1	A160H	15	OK	160	Trunnion plate, right	Steel	.625 in. thick.
1	A160K	15	OK	160	Trunnion plate, left	do	.625 in. thick.
1	A160L	15	OK	160	Bottom pintle plate	do	.75 in thick.
16	A160M	15	OK	160	Countersunk-head steel screws		20. x 32. thread 18. long.
1	A160N	15	OK	160	Top pintle plate	Steel	.625 in. thick.
1	A160P	15	OK	160	Tie plate, lower top	do	.625 in. thick.
1	A160Q	15	OK	160	Tie plate, upper top	do	.625 in. thick.
					REAR TRANSOM, FRONT SECTION.		
1	A161A	15	OK	161	Web plate	Steel	498. in. x .625 in. x 2038.
1	A161C	15	OK	161	Horizontal angle, upper, front	do	4. in. x 4. in. x .5 in. x 1820.
1	A161F	15	OK	161	Horizontal angle, upper, rear	do	4. in. x 4. in. x .5 in. x 1820.
2	A161N	15	OK	161	Horizontal angle, lower	do	4. in. x 4. in. x .5 in. x 1788.
2	A161P	15	OK	161	Vertical angle	do	4. in. x 4. in. x .5 x in. 280.
1	A161Q	15	OK	161	Stiffener angle, right	do	4. in. x 4. in. x .5 in. x 880.

1	A161R	15	OK	161	Stiffener angle, left	do	4. in. x 4. in. x .5 in. x 880.
2	A161S	15	OK	161	Filler plate	do	101.6 x .625 in. x 400.
1	A161T	15	OK	161	Rear platform plate	do	.312 ($\frac{5}{16}$) in. thick.
1	A161U	15	OK	161	Rear platform support, right	do	4. in. x 4. in. x .5 in. x 790.
1	A161W	15	OK	161	Rear platform support, left	do	4. in. x 4. in. x .5 in. x 790.
1	A161DA	15	OK	161	Bottom gusset plate, right	do	.625 in. thick.
1	A161EA	15	OK	161	Bottom gusset plate, left	do	.625 in. thick.
1	A161HA	15	OK	161	Folding platform support, right	do	4. in. x 6. in. x .5 in. x 1134.
1	A161KA	15	OK	161	Folding platform support, left	do	4. in. x 6. in. x .5 in. x 1134.
					CONNECTING SECTION.		
1	A161X	15	OK	161	Web plate	Steel	483. x .625 in. x 1080.
2	A161Z	15	OK	161	Horizontal angles, upper	do	4. in. x 4. in. x .5 in. x 865.
1	A161AA	15	OK	161	Horizontal angles, lower	do	4. in. x 4. in. x .5 in. x 865.
1	A161BA	15	OK	161	Vertical angle	do	4. in. x 4. in. x .5 in. x 265.
1	A161CA	15	OK	161	do	do	4. in. x 4. in. x .5 in. x 265.
1	A161FA	15	OK	161	Trap-door support, right	do	3.5 in. x 3. in. x .375 in. x 946.
1	A161GA	15	OK	161	Trap-door support, left	do	3.5 in. x 3. in. x .375 in. x 946.
					REAR SECTION.		
1	A162A	15	OK	162	Web plate	Steel	504. x .75 in. x 2924.46.
1	A162B	15	OK	162	Filler plate	do	285. x .75 in. x 472.
1	A162C	15	OK	162	Stiffener angle, upper, front	do	4. in. x 4. in. x .5 in. x 1860. Approx.
1	A162D	15	OK	162	Stiffener angle, upper, rear	do	4. in. x 4. in. x .5 in. x 2950. Approx.
1	A162E	15	OK	162	Stiffener angle, lower, right	do	4. in. x 4. in. x .5 in. x 300. Approx.
1	A162F	15	OK	162	Stiffener angle, lower, center	do	4. in. x 4. in. x .5 in. x 1830. Approx.
1	A162G	15	OK	162	Stiffener angle, lower, left	do	4. in. x 4. in. x .5 in. x 300. Approx.
1	A162H	15	OK	162	Vertical stiffener angle, inner, left	do	4. in. x 4. in. x .5 in. x 720. Ayprox.
1	A162K	15	OK	162	Vertical stiffener angle, inner, right	do	4. in. x 4. in. x .5 in. x 720. Approx.
1	A162L	15	OK	162	Vertical stiffener angle, outer, left	do	4. in. x 4. in. x .5 in. x 720. Approx.
1	A162M	15	OK	162	Vertical stiffener angle, outer, right	do	4. in. x 4. in. x .5 in. x 720. Approx.
1	A162N	15	OK	162	Trap door, right	do	.312 ($\frac{5}{16}$) in. thick.
1	A162P	15	OK	162	Trap door, left	do	.312 ($\frac{5}{16}$) in. thick.
7	A162Q	15	OK	162	Trap-door hinge, female	F. S	With 7-.5 in. x 115. drill rod.
7	A162R	15	OK	162	Trap-door hinge, male	do	
1	A162S	15	OK	162	Bottom stiffener plate	Steel	.625 in. thick.
					FRONT PLATFORM.		
1	A165A	15	OK	165	Checkered plate, right	Steel	686. x .312 ($\frac{5}{16}$) in. x 1447.
1	A165B	15	OK	165	Checkered plate, left	do	686. x .312 ($\frac{5}{16}$) in. x 1447.
3	A165C	15	OK	165	Plate	do	183. x .5 in. x 759.
1	A165D	15	OK	165	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 2900.
1	A165E	15	OK	165	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 650
1	A165F	15	OK	165	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 650.
1	A165G	15	OK	165	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 650.
1	A165H	15	OK	165	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 650.
1	A165K	15	OK	165	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 471.
1	A165L	15	OK	165	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 471.
2	A165M	15	OK	165	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1170.
6	A165N	15	OK	165	do	do	4. in. x 4. in. x .5 in. x 159.
1	A165P	15	OK	165	Folding platform, right	do	.312 ($\frac{5}{16}$) in. thick.
1	A165Q	15	OK	165	Folding platform, left	do	.312 ($\frac{5}{16}$) in. thick.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					PLATFORM RAILING.		
2	A165R	15	OK	165	Plates	Steel	150. x .25 in. x 185.
1	A165S	15	OK	165	do	do	150. x .25 in. x 280.
1	A165T	15	OK	165	do	do	150. x .25 in. x 280.
2	A165U	15	OK	165	Angles	do	2. in. x 2. in. x .25 in. x 1123.
2	A165W	15	OK	165	do	do	2. in. x 2. in. x .25 in. x 1123.
2	A165X	15	OK	165	Rods	do	.875 in.
1	A165Z	15	OK	165	do	do	.875 in.
12	A165AA	15	OK	165	Collars	do	With 12–6. x 40. steel pins.
10	A165BA	15	OK	165	Bolts [3]		14. x 33.
					ELEVATING-CHAIN GUARD, 1 RIGHT AND 1 LEFT.		
1	A166A	15	OK	166	Plate, right	Steel	305. x .125 in. x 670.
1	A166B	15	OK	166	Plate, left	do	305. x .125 in. x 670.
1	A166C	15	OK	166	Plate, right	do	212.52 x .125 in. x 1816.
1	A166D	15	OK	166	Plate, left	do	212.52 x .125 in. x 1816.
2	A166E	15	OK	166	Plate	do	255. x .125 in. x 832.5.
2	A166F	15	OK	166	Angles	do	2. in. x 2. in. x .25 in. x 248.
1	A166G	15	OK	166	Angles, right	do	2. in. x 2. in. x .25 in. x 304.
1	A166H	15	OK	166	Angles, left	do	2. in. x 2. in. x .25 in. x 304.
20	A166K	15	OK	166	Tap bolts	do	8. x 14., thread 12. long.
8	A166L	15	OK	166	Bolts [3]	do	12. x 31.
					ELEVATING CHAIN GUARD PLATFORM, 1 RIGHT AND 1 LEFT.		
1	A166M	15	OK	166	Checkered plate, right	Steel	519. x .312 ($\frac{5}{16}$) in. x 675.
1	A166N	15	OK	166	Checkered plate, left	do	519. x .312 ($\frac{5}{16}$) in. x 675.
1	A166P	15	OK	166	Plate, right	do	225. x .312 ($\frac{5}{16}$) in. x 675.
1	A166Q	15	OK	166	Plate, left	do	225. x .312 ($\frac{5}{16}$) in. x 675.
1	A166R	15	OK	166	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in x 670.
1	A166S	15	OK	166	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 670.
1	A166T	15	OK	166	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 675.
1	A166U	15	OK	166	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$)in. x 675.
1	A166W	15	OK	166	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 670.
1	A166X	15	OK	166	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 670.
1	A166Z	15	OK	166	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 155.
1	A166AA	15	OK	166	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$)in. x 155.

[5] Provided with crown nuts.

4	A166BA	15	OK	166	Bolts [3]		16. x 44.
2	A166CA	15	OK	166	do. [3]		14. x 42.
8	A166DA	15	OK	166	do. [3]		14. x 34.
10	A166EA	15	OK	167	Countersunk head bolts [3]		14. x 34.
1	A167A	15	OK	167	Folding platform, right	Steel	.312 ($\frac{5}{16}$) in. thick.
1	A167B	15	OK	167	Folding platform, left	do	.312 ($\frac{5}{16}$) in. thick.
2	A167C	15	OK	167	Folding cover	do	.25 in. thick.
4	A167D	15	OK	167	Cover plate hinge, male	F. S	
4	A167E	15	OK	167	Cover plat hinge, female	do	With 4–.25 in. x 80 drill rods.
4	A167G	15	OK	167	Filler plate	do	.25 in. thick.
30	A167H	15	OK	167	Platform hinge, female	do	With 30–.5 in. x 124. drill rods.
32	A167K	15	OK	167	Platform hinge, male	do	
1	A167L	15	OK	167	Platform hinge side, right	do	With 1–.5 in. x 108. drill rod.
1	A167M	15	OK		Platform hinge side, left	do	With 1–.5 in. x 108. drill rod.
					PLATFORM NO. 1, 1 RIGHT AND 1 LEFT.		
1	A168A	15	OK	168	Checkered plate, right	Steel	399. x .312 ($\frac{5}{16}$) in. x 1798.
1	A168B	15	OK	168	Checkered plate, left	do	399. x .312 ($\frac{5}{16}$) in. x 1798.
2	A168C	15	OK	168	Plates	do	200. x .5 in. x 380.
1	A168D	15	OK	168	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1728.
1	A168E	15	OK	168	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1728.
1	A168F	15	OK	168	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 285.
1	A168G	15	OK	168	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 285.
1	A168H	15	OK	168	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A168K	15	OK	168	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A168L	15	OK	168	Angle, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1560.
1	A168M	15	OK	168	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1560.
16	A168N	15	OK	168	Platform stanchion	F. S	
2	A168P	15	OK	168	Guard chain	Chain iron	
2	A168Q	15	OK	168	do	do	
2	A168R	15	OK	168	do	do	
2	A168S	15	OK	168	do	do	
16	A168T	15	OK	168	Rings	do	
					FOLD PLATFORM, 1 RIGHT AND 1 LEFT.		
1	A168U	15	OK	168	Checkered plate	Steel	280. x .312 ($\frac{5}{16}$) in. x 1600.
1	A168W	15	OK	168	do	do	280. x .312 ($\frac{5}{16}$) in. x 1600.
4	A168X	15	OK	168	Plates	do	50. x .25 in. x 130.
2	A168CA	15	OK	168	Angles	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 480.
2	A168DA	15	OK	168	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 480.
16	A168Z	15	OK	168	Stanchion base	F. S	
32	A168AA	15	OK	168	Bolts [3]		14. x 47.
2	A168BA	15	OK	168	Step	F. S	
					PLATFORM NO. 2.		
2	A169A	15	OK	169	Checkered plates	Steel	399. x .312 ($\frac{5}{16}$) in. x 1150.
2	A169B	15	OK	169	Angles	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1150.
2	A169C	15	OK	169	do	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 710.

[3] Provided with crown nuts.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					PLATFORM NO. 2 SUPPORT, 1 RIGHT AND 1 LEFT.		
4	A169D	15	OK	169	Plates	Steel	200. x .5 in. x 380.
2	A169E	15	OK	169	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 275.
2	A169F	15	OK	169	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 275.
					FOLDING PLATFORM.		
2	A169G	15	OK	169	Checkered plates	Steel	280. x .312 ($\frac{5}{16}$) in. x 1050.
4	A168X	15	OK	169	Plates	do	50. x .25 in. x 130.
4	A169EA	15	OK	169	Angles	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 305.
4	A168P	15	OK	169	Plates	do	50. x .25 in. x 130.
2	A169H	15	OK	169	Grab iron	F. S.	
2	A169K	15	OK	169	do	do	
					PLATFORM NO. 3, 1 RIGHT AND 1 LEFT.		
1	A169L	15	OK	169	Checkered plate, right	Steel	399. x .312 ($\frac{5}{16}$) in. x 2000.
1	A169M	15	OK	169	Checkered plate, left	do	399. x .312 ($\frac{5}{16}$) in. x 2000.
2	A169N	15	OK	169	Plates	do	200. x .5 in. x 380.
2	A169P	15	OK	169	do	do	326. x .5 in. x 380.
1	A169Q	15	OK	169	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 2000.
1	A169R	15	OK	169	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 2000.
1	A169S	15	OK	169	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A169T	15	OK	169	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A169U	15	OK	169	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A169W	15	OK	169	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A169X	15	OK	169	Angle, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1100.
1	A169Z	15	OK	169	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1100.
2	A169AA	15	OK	169	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 280.
1	A169BA	15	OK	169	Angle, right	do	4. in. x 4. in. x .5 in. x 326.
1	A169CA	15	OK	169	Angle, left	do	4. in. x 4. in. x .5 in. x 326.
					FOLDING PLATFORM.		
2	A169DA	15	OK	169	Checkered plates	Steel	280. x .312 ($\frac{5}{16}$) in. x 1700.
4	A168X	15	OK	169	Plates	do	50. x .25 in. x 130.
4	A169FA	15	OK	169	Angles	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 635.

					PLATFORM NO. 4, 1 RIGHT AND 1 LEFT.		
1	A170A	15	OK	170	Checkered plate, right	Steel	399. x .312 ($\frac{5}{16}$) in. x 1816.
1	A170B	15	OK	170	Checkered plate, left	do	399. x .312 ($\frac{5}{16}$) in. x 1816.
1	A170C	15	OK	170	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A170D	15	OK	170	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 385.
1	A170E	15	OK	170	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1685.
1	A170F	15	OK	170	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1685.
4	A170G	15	OK	170	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 600.
1	A170H	15	OK	170	Angle, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 300.
1	A170K	15	OK	170	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 300.
					FOLDING PLATFORM, 1 RIGHT AND 1 LEFT.		
1	A170L	15	OK	170	Checkered plate, right	Steel	280. x .312 ($\frac{5}{16}$) in. x 1550.
1	A170M	15	OK	170	Checkered plate, left	do	280. x .312 ($\frac{5}{16}$) in. x 1550.
4	A168X	15	OK	170	Plate	do	50. x .25 in. x 130.
4	A170T	15	OK	170	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 558.
					TRAVERSING CHAIN GUARD, 1 RIGHT AND 1 LEFT.		
2	A170N	15	OK	170	Plates	Steel	300. x .125 in. x 1060.
1	A170P	15	OK	170	Plate, right	do	112. x .125 in. x 2252.
1	A170Q	15	OK	170	Plate, left	do	112. x .125 in. x 2252.
2	A170R	15	OK	170	Angles	do	3. in. x 2.5 in. x .25 in. x 306.
6	A170S	15	OK	170	Tap bolts	do	10. x 12., threads 10. long.
6	A166L	15	OK	170	Bolts [3]	do	12. x 31.
					REAR PLATFORM.		
1	A171A	15	OK	171	Plate	Steel	421. x .312 ($\frac{5}{16}$) in. x 2900.
1	A171B	15	OK	171	Angle	do	2. in. x 2. in. x .25 in. x 570.
1	A171C	15	OK	171	Cover plate	do	.312 ($\frac{5}{16}$) in. thick.
2	A171E	15	OK	171	Grab iron	Forged steel	With 2–26. crown nuts.
2	A171F	15	OK	171	do	do	With 2–26. crown nuts.
2	A171G	15	OK	171	do	do	With 2–26. crown nuts.
12	A171K	15	OK	171	Washer	do	
10	A171L	15	OK	171	Handrail, support	do	
20	A171N	15	OK	171	Tap bolts [1]		14. x 30.
4	A171P	15	OK	171	Handrail		With 4–5. x 40. steel pins.
1	A172A	15	OK	172	Folding platform plate, rear	Steel	.312 ($\frac{5}{16}$) in. thick.
					FOLDING PLATFORM, FRONT.		
1	A172B	15	OK	172	Checkered plate	Steel	560. x .312 ($\frac{5}{16}$) in. x 1790.
1	A172C	15	OK	172	Angle	do	2. in. x 2. in. x .25 in. x 1790.
1	A172D	15	OK	172	do	do	3. in. x 2.5 in. x .375 in. x 1720.
13	A172E	15	OK	172	Folding platform hinge, male	Cast steel	
13	A172F	15	OK	172	Folding platform hinge, female	do	
13	A172G	15	OK	172	Hinge pin	F. S	With 26–.125 in. x .625 in. split pins.

[3] Provided with crown nuts.

[1] Provided with lock washers.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					CAR, SIDE FRAME, 1 RIGHT AND 1 LEFT.		
1	A175A	15	OK	177	Web plate, front, right	Steel	1219. x .75 in. x 8199.
1	A175B	15	OK	177	Web plate, front, left	do	1219. x .75 in. x 8199.
1	A176C	15	OK	177	Web plate, rear, right	do	1219. x .75 in. x 7681.
1	A176D	15	OK	177	Web plate, rear, left	do	1219. x .75 in. x 7681.
4	A177E	15	OK	177	Splice plates, web	do	560. x .625 in. x 960.
2	A175F	15	OK	177	Cover plates, upper, front	do	300. x .625 in. x 7778.
1	A176G	15	OK	177	Cover plates, upper, rear, right	do	300. x .625 in. x 8240.
1	A176H	15	OK	177	Cover plates, upper, rear, left	do	300. x .625 in. x 8240.
2	A177K	15	OK	177	Splice plates, cover plate, upper	do	300. x .625 in. x 890.
1	A175L	15	OK	177	Cover plate, lower, front, right	do	300. x .625 in. x 5478.
1	A175M	15	OK	177	Cover plate, lower, front, left	do	300. x .625 in. x 5478.
2	A176N	15	OK	177	Cover plate, lower, rear	do	300. x .625 in. x 7717.
2	A177P	15	OK	177	Splice plates, cover, plate, lower	do	300. x .625 in. x 890.
2	A177Q	15	OK	177	Splice plates, angle, upper, right	do	196. x .75 in. x 1660.
2	A177R	15	OK	177	Splice plates angle, upper, left	do	196. x .75 in. x 1660.
2	A177S	15	OK	177	Splice plates, angle, lower, right	do	196. x .75 in. x 1660.
2	A177T	15	OK	177	Splice plates, angle, lower, left	do	196. x .75 in. x 1660.
4	A175U	15	OK	177	Filler plates	do	115. x .625 in. x 825.
12	A175W	15	OK	177	do	do	210. x .625 in. x 955.
1	A175Z	15	OK	177	Flange angle, upper, outer, front, right	do	5. in. x 5. in. x .625 in. x 7816.
1	A175AA	15	OK	177	Flange angle, upper, outer, front, left	do	5. in. x 5. in. x .625 in. x 7816.
1	A175BA	15	OK	177	Flange angle, upper, inner, front, right	do	5. in. x 5. in. x .625 in. x 8320.
1	A175CA	15	OK	177	Flange angle, upper, inner, front, left	do	5. in. x 5. in. x .625 in. x 8320.
1	A176DA	15	OK	177	Flange angle, upper, outer, rear, right	do	5. in. x 5. in. x .625 in. x 7798.
1	A176EA	15	OK	177	Flange angle, upper, outer, rear, left	do	5. in. x 5. in. x .625 in. x 7798.
1	A176FA	15	OK	177	Flange angle, upper, inner, rear, right	do	5. in. x 5. in. x .625 in. x 7294.
1	A176GA	15	OK	177	Flange angle, upper, inner, rear, left	do	5. in. x 5. in. x .625 in. x 7294.
1	A175HA	15	OK	177	Flange angle, lower, outer, front, right	do	5. in. x 5. in. x .625 in. x 8706. Approx.
1	A175KA	15	OK	177	Flange angle, lower, outer, front, left	do	5. in. x 5. in. x .625 in. x 8706. Approx.
1	A175LA	15	OK	177	Flange angle, lower, inner, front, right	do	5. in. x 5. in. x .625 in. x 9210. Approx.
1	A175MA	15	OK	177	Flange angle, lower, inner, front, left	do	5. in. x 5. in. x .625 in. x 9210. Approx.
1	A176NA	15	OK	177	Flange angle, lower, outer, rear, right	do	5. in. x 5. in. x .625 in. x 7462.
1	A176PA	15	OK	177	Flange angle, lower, outer, rear, left	do	5. in. x 5. in. x .625 in. x 7462.
1	A176QA	15	OK	177	Flange angle, lower, inner, rear, right	do	5. in. x 5. in. x .625 in. x 6958.
1	A176RA	15	OK	177	Flange angle, lower, inner, rear, left	do	5. in. x 5. in. x .625 in. x 6958.
2	A176SA	15	OK	177	Angles, rear, right	do	5. in. x 5. in. x .625 in. x 420.
2	A176GB	15	OK	177	Angles, rear, left	do	5. in. x 5. in. x .625 in. x 420.

24	A179TA...	15	OK.....	177	Stiffener angles	....do	4. in. x 4. in. x .5 in. x 1184.
1	A175WA..	15	OK.....	177	Stiffener angle, outer, right	....do	4. in. x 4. in. x .5 in. x 1064.
1	A175XA...	15	OK.....	177	Stiffener angle, outer, left	....do	4. in. x 4. in. x .5 in. x 1064.
1	A175ZA...	15	OK.....	177	Stiffener angle, inner, right	....do	4. in. x 4. in. x .5 in. x 1064.
21	A175AB...	15	OK.....	177	Stiffener angle, inner, left	....do	4. in. x 4. in. x .5 in. x1064.
22	A175BB...	15	OK.....	177	Locating angles, wedge	....do	8. in. x 3.5 in. x .75 in. x 300.
0	A175CB...	15	OK.....	177	.....do	....do	8. in. x 3.5 in. x .75 in. x 300.
2	A176DB...	15	OK.....	177	.....do	....do	8. in. x 3.5 in. x .75 in. x 300.
2	A177EB...	15	OK.....	177	.....do	....do	8. in. x 3.5 in. x .75 in. x 300.
2	A177FB...	15	OK.....	177	.....do	....do	8. in. x 3.5 in. x .75 in. x 300.
4	A175HB...	15	OK.....	177	Plates	....do	12. in. x .75 in. x 12. in.
10	A177GB...	15	OK.....	177	Tension screw clips	....do	
2	A177HB...	15	OK.....	177	.....do	....do	
20	A177KB...	15	OK.....	177	Countersunk head steel screws		22. x 74., with 20–22. crown nuts.
4	A177LB...	15	OK.....	177	.....do		22. x 93., with 4–22. crown nuts.
					TRANSOM NO. 1.		
					Front tie.		
1	A178A.....	15	OK.....	178	Plate	Steel	476. x .625 in. x 2900.
1	A178B.....	15	OK.....	178	Angle	....do	4. in. x 4. in. x .5 in. x 2900.
1	A178C.....	15	OK.....	178	.....do	....do	4. in. x 4. in. x .5 in. x 2900.
2	A178D.....	15	OK.....	178	.....do	....do	4. in. x 4. in. x .5 in. x 300.
2	A178E.....	15	OK.....	178	Plates, checkered	....do	150. x .25 in. x 300.
					Rear tie.		
1	A178F.....	15	OK.....	178	Plate	Steel	476. x .625 in. x 2537.
1	A178G.....	15	OK.....	178	Angle	....do	4. in. x 4. in. x .5 in. x 2290.
1	A178H.....	15	OK.....	178	.....do	....do	4. in. x 4. in. x .5 in. x 2330.
1	A178K.....	15	OK.....	178	Angle, right	....do	4. in. x 4. in. x .5 in. x 455.
1	A178L.....	15	OK.....	178	Angle, left	....do	4. in. x 4. in. x .5 in. x 455.
					Top cover plate.		
1	A178M.....	15	OK.....	178	Plate	Steel	460. x .625 in. x 2290.
2	A178N.....	15	OK.....	178	Plates	....do	590. x .625 in. x 600.
2	A178P.....	15	OK.....	178	Filler plate, inner	....do	.625 in. thick.
2	A178Q.....	15	OK.....	178	Filler plate, outer	....do	.625 in. thick.
1	A178R.....	15	OK.....	178	Stiffener angle	....do	4. in. x 4. in. x .5 in. x 494.
1	A178S.....	15	OK.....	178	.....do	....do	4. in. x 4. in. x .5 in. x 494.
					TRANSOM NO. 3, 1 RIGHT AND 1 LEFT.		
2	A179A.....	15	OK.....	179	Plates	Steel	1188. x .75 in. x 2537.
2	A179B.....	15	OK.....	179	.....do	....do	400. x .75 in. x 650.
2	A179C.....	15	OK.....	179	Angles	....do	4. in. x 4. in. x .625 in. x 2320.
2	A179D.....	15	OK.....	179	.....do	....do	4. in. x 4. in. x .625 in. x 2322.
2	A179E.....	15	OK.....	179	Angles, right	....do	4. in. x 4. in. x .625 in. x 1166.
2	A179F.....	15	OK.....	179	Angles, left	....do	4. in. x 4. in. x .625 in. x 1166.
4	A179G.....	15	OK.....	179	Filler plate, inner	....do	.625 in. thick.
4	A179H.....	15	OK.....	179	Filler plate, outer	....do	.625 in. thick.
4	A179K.....	15	OK.....	179	Stiffener angle	....do	4. in. x 4. in. x .625 in. x 1184.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					TRANSOM NO. 2.		
1	A179L	15	OK	179	Plate	Steel	1258. x .625 in. x 2537.
2	A179M	15	OK	179	Angles	do	4. in. x 4. in. x .5 in. x 2290.
2	A179N	15	OK	179	do	do	4. in. x 4. in. x .5 in. x 2290.
4	A179TA	15	OK	179	do	do	4. in. x 4. in. x .5 in. x 1184.
					Stiffener.		
4	A179TA	15	OK	179	Angles	Steel	4. in. x 4. in. x .5 in. x 1184.
2	A179P	15	OK	179	Plates	do	105. x .625 in. x 1184.
4	A179Q	15	OK	179	Filler plate	do	.625 in. thick.
					Horizontal tie.		
2	A180A	15	OK	180	Plates	Steel	440. x .75 in. x 770.
2	A180B	15	OK	180	Angles	do	4. in. x 4. in. x .625 in. x 770.
2	A180C	15	OK	180	do	do	4. in. x 4. in. x .625 in. x 770.
2	A180D	15	OK	180	do	do	6. in. x 6. in. x .625 in. x 440.
					Vertical tie.		
2	A180E	15	OK	180	Plates	Steel	440. x .75 in. x 1123.
4	A180F	15	OK	180	do	do	109. x .625 in. x 225.
4	A180G	15	OK	180	Angles	do	4. in. x 4. in. x .625 in. x 400.
2	A180H	15	OK	180	Angles, right	do	4. in. x 4. in. x .625 in. x 1123.
2	A180K	15	OK	180	Angles, left	do	4. in. x 4. in. x .625 in. x 1123.
1	A180L	15	OK	180	Pintle support shim plate	do	.75 in. thick.
12	A180M	15	OK	180	Countersunk head steel screws		20. x 33., tbread 18. long.
					Top cover plate.		
1	A180N	15	OK	180	Plate	Steel	1000. x .75 in. x 2320.
1	A180P	15	OK	180	do	do	620. x .75 in. x 1420.
1	A180Q	15	OK	180	do	do	620. x .75 in. x 1420.
2	A180R	15	OK	180	do	do	240. x .875 in. x 670.
2	A180S	15	OK	180	Angles	do	4. in. x 4. in. x .625 in. x 2320.
					Horizontal brace.		
2	A180T	15	OK	180	Plates	Steel	255. x .75 in. x 2322.
4	A180U	15	OK	180	do	do	530. x .75 in. x 920.
2	A180W	15	OK	180	Angles	do	5. in. x 5. in. x .625 in. x 810.

2	A180X	15	OK	180	.....do	.....do	5. in. x 5. in. x .625 in. x 810.	
2	A180Z	15	OK	180	.....do	.....do	4. in. x 4. in. x .625 in. x 2322.	
2	A180AA	15	OK	180	.....do	.....do	4. in. x 4. in. x .625 in. x 2322.	
1	A180BA	15	OK	180	Bottom cover plate	.....do	.75 in. thick.	
1	A180CA	15	OK	180	Plate	.....do	.312 ($\frac{5}{16}$) in. thick.	
10	A180DA	15	OK	180	Bolts [3]		14. x 45.	
					TRANSOM NO. 4.			
1	A181A	15	OK	181	Plate	Steel	500. x .625 in. x 2537.	
1	A181B	15	OK	181	Angle	.....do	4. in. x 4. in. x .5 in. x 2330.	
2	A179N	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 2290.	
1	A181C	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
1	A181D	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
1	A181E	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 520.	
1	A181F	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 520.	
2	A179H	15	OK	181	Filler plates	.....do	110. x .625 in. x 955.	
2	A181G	15	OK	181	Filler plate, inner	.....do	.625 in. thick.	
2	A181K	15	OK	181	Stiffener angle	.....do	4. in. x 4. in. x .5 in. x 1184.	
					TRANSOM NO. 5.			
1	A181L	15	OK	181	Plate	Steel	490. x .625 in. x 2537.	
2	A179N	15	OK	181	Angles	.....do	4. in. x 4. in. x .5 in. x 2290.	
2	A181B	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 2330.	
1	A181M	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
1	A181P	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
1	A181Q	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 480.	
1	A181R	15	OK	181	.....do	.....do	4. in. x 4. in. x .5 in. x 480.	
2	A179H	15	OK	181	Filler plates	.....do	110. x .625 in. x 955.	
2	A181K	15	OK	181	Angles	.....do	4. in. x 4. in. x .5 in. x 1184.	
2	A181S	15	OK	181	Filler plate, inner	.....do	.625 in. thick.	
					TRANSOM NO. 6.			
1	A182A	15	OK	182	Plate	Steel	500. x .625 in. x 2553.	
2	A182B	15	OK	182	.....do	.....do	108. x .625 in. x 715.	
1	A182C	15	OK	182	Angle	.....do	5. in. x 5. in. x .625 in. x 2400.	Approx.
1	A182D	15	OK	182	.....do	.....do	5. in. x 5. in. x .625 in. x 2375.	Approx.
1	A182E	15	OK	182	.....do	.....do	4. in. x 4. in. x .5 in. x 2390.	Approx.
1	A182F	15	OK	182	.....do	.....do	4. in. x 4. in. x .5 in. x 2430.	Approx.
1	A182G	15	OK	182	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
1	A182H	15	OK	182	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
1	A182K	15	OK	182	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
1	A182L	15	OK	182	.....do	.....do	4. in. x 4. in. x .5 in. x 1184.	
4	A179Q	15	OK	182	Plates	.....do	229. x .625 in. x 955.	
2	A179P	15	OK	182	.....do	.....do	105. x .625 in. x 1184.	
4	A179TA	15	OK	182	Angles	.....do	4. in. x 4. in. x .5 in. x 1184.	

[3] Provided with crown nuts.

Number for one carriage.	Piece mark	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					TRANSOM No. 6—continued.		
					Tie.		
1	A182N	15	OK	182	Plate	Steel	371. x .625 in. x 1220.
1	A182R	15	OK	182	Angle	do	4. in. x 4. in. x .5 in. x 977.
1	A182S	15	OK	182	do	do	4. in. x 4. in. x .5 in. x 1010.
2	A182T	15	OK	182	do	do	4. in. x 4. in. x .5 in. x 245.
2	A182U	15	OK	182	do	do	4. in. x 4. in. x .5 in. x 265.
1	A182M	15	OK	182	Filler plate	do	.625 in. thick.
1	A182W	15	OK	182	Transom cover	do	.625 in. thick.
					TRANSOM NO. 7.		
					Tie.		
1	A183A	15	OK	183	Plate	Steel	375. x .625 in. x 968.
1	A183B	15	OK	183	Angle	do	4. in. x 4. in. x .5 in. x 730.
1	A183C	15	OK	183	do	do	4. in. x 4. in. x .5 in. x 762.
2	A183D	15	OK	183	do	do	4. in. x 4. in. x .5 in. x 210.
2	A183E	15	OK	183	do	do	4. in. x 4. in. x .5 in. x 250.
					Top cover.		
1	A183F	15	OK	183	Plate	Steel	460. x .625 in. x 2290.
2	A183G	15	OK	183	do	do	600. x .625 in. x 1260.
					TRANSOM TIE, 1 RIGHT, 1 LEFT.		
1	A183K	15	OK	183	Plate	Steel	476. x .625 in. x 2537.
1	A183L	15	OK	183	do	do	476. x .625 in. x 2537.
2	A183M	15	OK	183	Angles	do	4. in. x 4. in. x .5 in. x 2290.
2	A178H	15	OK	183	do	do	4. in. x 4. in. x .5 in. x 2330.
2	A183N	15	OK	183	do	do	4. in. x 4. in. x .5 in. x 1184.
2	A183P	15	OK	183	do	do	4. in. x 4. in. x .5 in. x 1184.
4	A179G	15	OK	183	Plates	do	134. x .625 in. x 955.
4	A179H	15	OK	183	do	do	110. x .625 in. x 955.
4	A181K	15	OK	183	Angles	do	4. in. x 4. in. x .5 in. x 1184.
					Bottom cover.		
1	A183Q	15	OK	183	Plate	Steel	460. x .625 in. x 2330.
2	A178U	15	OK	183	do	do	220. x .625 in. x 300.

					Ladder.		
16	A184A	15	OK	184	Bars	Steel	60. x .437 ($\frac{7}{16}$) in. x 1020.
24	A184B	15	OK	184	Rods	do	.875 in. x 350.
4	A184C	15	OK	184	Bars	do	60. x .437 ($\frac{7}{16}$) in. x 1210.
8	A184B	15	OK	184	Rods	do	.875 in. x 350.
					TRANSOM NO. 8.		
1	A184D	15	OK	184	Plate	Steel	1010. x .375 in. x 2900.
1	A184E	15	OK	184	Angle	do	4. in. x 4. in. x .5 in. x 2900.
1	A184F	15	OK	184	do	do	3. in. x 3. in. x .375 in. x 2900.
48	A184G	15	OK	184	Wedge bracket	do	
					FRONT PLATFORM.		
					Front plate, right.		
1	A185A	15	OK	185	Checkered plate	Steel	785. x .312 ($\frac{5}{16}$) in. x 1190.
1	A185B	15	OK	185	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1093
3	A185C	15	OK	185	Countersunk head steel screws		12. x 25., thread 17. long.
					Front plate, left.		
1	A185D	15	OK	185	Checkered plate	Steel	785. x .312 ($\frac{5}{16}$) in. x 1190.
1	A185E	15	OK	185	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 797.
3	A185C	15	OK	185	Countersunk head steel screws		12. x 25., thread 17. long.
					Rear plate, right.		
1	A185F	15	OK	185	Checkered plate	Steel	785. x .312 ($\frac{5}{16}$) in. x 1222.
1	A185G	15	OK	185	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 995.
					Rear plate, left.		
1	A185H	15	OK	185	Checkered plate	Steel	785. x .312 ($\frac{5}{16}$) in. x 1222.
1	A185K	15	OK	185	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 721.
					Center plate, right.		
1	A185L	15	OK	185	Checkered plate	Steel	785. x .312 ($\frac{5}{16}$) in. x 1503.
1	A185M	15	OK	185	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1336.
					Center plate, left.		
1	A185N	15	OK	185	Checkered plate	Steel	785. x .312 ($\frac{5}{16}$) in. x 1503.
2	A185P	15	OK	185	Angles	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 500.
1	A185Q	15	OK	185	Trapdoor, front	do	.312 ($\frac{5}{16}$) in. thick.
1	A185R	15	OK	185	Trapdoor, center	do	.312 ($\frac{5}{16}$) in. thick.
1	A186K	15	OK	186	Trapdoor, rear	do	.312 ($\frac{5}{16}$) in. thick.
1	A186L	15	OK	186	Rear plate, center	do	.312 ($\frac{5}{16}$) in. thick.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					HANDRAILING, 1 RIGHT AND 1 LEFT.		
4	A186A	15	OK	186	Rods	Steel	.875 in. x 3081.
1	A186B	15	OK	186	Angle, right	do	2. in. x 2. in. x .25 in. x 1025.
1	A186C	15	OK	186	Angle, left	do	2. in. x 2. in. x .25 in. x 1025.
2	A186D	15	OK	186	Angles, right	do	2. in. x 2. in. x .25 in. x 1025.
2	A186E	15	OK	186	Angles, left	do	2. in. x 2. in. x .25 in. x 1025.
6	A186F	15	OK	186	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 190.
6	A186G	15	OK	186	Plates	do	160. x .25 in. x 190.
2	A186H	15	OK	186	Grab irons	F. S	
24	A165AA	15	OK	186	Collars		With 24–6. x 40. steel pins.
					PLATFORM SUPPORT.		
					Rear.		
1	A186M	15	OK	186	Angle	Steel	4. in. x 4. in. x .5 in. x 2500.
1	A186N	15	OK	186	Plate	do	246. x .5 in. x 280.
1	A186P	15	OK	186	do	do	246. x .5 in. x 280.
					Front.		
1	A186Q	15	OK	186	Angle	Steel	4. in. x 4. in. x .5 in. x 2290.
1	A186R	15	OK	186	Plate	do	276. x .5 in. x 276.
1	A186S	15	OK	186	do	do	276. x .5 in. x 276.
					GUN SUPPORT.		
1	A187A	15	OK	187	Plate	Steel	585. x .25 in. x 1038.
1	A187B	15	OK	187	do	do	63.5 x .25 in. x 311.
1	A187C	15	OK	187	Angle	do	2. in. x 2. in. x .25 in. x 1038.
1	A187D	15	OK	187	do	do	2. in. x 2. in. x .25 in. x 1038.
1	A187E	15	OK	187	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 333.
1	A187F	15	OK	187	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 585.
1	A187G	15	OK	187	Pin	F. S	
2	A187H	15	OK	187	Rings	Steel	
1	A187K	15	OK	187	Chain	do	
2	A187L	15	OK	187	Hinge, male	F. S	
2	A187M	15	OK	187	Hinge, female	do	With 1–.5 in. x 115. steel pin.
2	A187U	15	OK	187	do	do	With 1–.5 in. x 135. steel pin.
2	A187W	15	OK	187	Hinge, male	do	With 1–.5 in. x 135. steel pin.

1	A187X	15	OK	187	Lock plate	Steel	
2	A187Z	15	OK	187	Tap bolts[1]		12. x 27., thread 16. long.
1	A187AA	15	OK	187	Fastener	Steel	.125 in. thick.
2	A187BA	15	OK	187	Plate	do	63.5 x .312 ($\frac{5}{16}$) in. x 900.
2	A187DA	15	OK	187	Plates	do	2. in. x .312 ($\frac{5}{16}$) in. x 2.5 in.
2	A187EA	15	OK	187	Angles	do	2.5 in. x 4. in. x .312 ($\frac{5}{16}$) in. x 100.
1	A187FA	15	OK	187	Toggle pin	F. S.	
1	A188G	15	OK	188	Plate	Steel	691. x .312 ($\frac{5}{16}$) in. x 805.
2	A188H	15	OK	188	do	do	254. x .312 ($\frac{5}{16}$) in. x 691.
1	A188K	15	OK	188	do	do	254. x .312 ($\frac{5}{16}$) in. x 785.
2	A188L	15	OK	188	Filler plates	do	85. x .437 ($\frac{7}{16}$) in. x 420.
1	A188M	15	OK	188	Plate	do	100. x .312 ($\frac{5}{16}$) in. x 780.
1	A188N	15	OK	188	do	do	40. x .25 in. x 170.
1	A188P	15	OK	188	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 683.
1	A188Q	15	OK	188	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 683.
1	A188R	15	OK	188	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 614.
1	A188S	15	OK	188	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 614.
1	A188T	15	OK	188	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 660.
1	A188U	15	OK	188	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 650.
1	A188W	15	OK	188	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 244.
1	A188X	15	OK	188	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 244.
2	A188Z	15	OK	188	Angle	do	2. in. x 2. in. x .25 in. x 230.
2	A188AA	15	OK	188	do	do	3. in. x 3. in. x .437 ($\frac{7}{16}$) in. x 420.
1	A188BA	15	OK	188	Shelf	Oak	240. x 22. x 760.
4	A188CA	15	OK	188	Tap bolts[1]		22. x 38., thread 18. long.
1	A188DA	15	OK	188	Angle, right	Steel	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 108.
1	A188EA	15	OK	188	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 108.
1	A188A	15	OK	188	Gun rest	F. S.	
2	A188B	15	OK	188	Bolts[3]		22. x 63.
1	A188D	15	OK	188	Plate	Steel	539. x .125 in. x 675.
1	A188E	15	OK	188	do	do	40. x .25 in. x 145. with 1-.5 in. x 17. steel rivet.
2	A188F	15	OK	188	Grab iron	F. S.	
1	A189A	15	OK	189	Lower band	F. S.	
1	A189B	15	OK	189	Upper band	do	
2	A189C	15	OK	189	Bolts[3]		28. x 76.
2	A189F	15	OK	189	Upper lug	F. S.	
4	A189G	15	OK	189	Bolts[3]		24. x 89.
2	A189M	15	OK	189	Tie rods	F. S.	
2	A189N	15	OK	189	do	do	
2	A189P	15	OK	189	Turnbuckles		1.25 in.
4	A189Q	15	OK	189	Nuts		1.25 in., 15.87 thick.
2	A189R	15	OK	189	Lower lug	F. S.	
					LADDER.		
1	A193A	15	OK	193	Plate	Steel	60. x .437 ($\frac{7}{16}$) in. x 870. Approx.
1	A193C	15	OK	193	do	do	60. x .437 ($\frac{7}{16}$) in. x 870. Approx.
2	A184B	15	OK	193	Rods	do	.875 in. x 350.
1	A193D	15	OK	193	do	do	.875 in. x 370.
1	A193E	15	OK	193	Plate, right	do	220. x .375 in. x 205. Approx.
1	A193F	15	OK	193	Plate, left	do	220. x .375 in. x 205. Approx.

[1] Provided with lock washers.

[3] Provided with crown nuts.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					LADDER—continued.		
1	A193G	15	OK	193	Plate	Steel	1335. x .625 in. x 2900.
2	A193H	15	OK	193	do	do	220. x .625 in. x 300.
1	A193K	15	OK	193	Angle	do	4. in. x 4. in. x .5 in. x 2570.
1	A193L	15	OK	193	Angle, right	do	4. in. x 4. in. x .5 in. x 900.
1	A193M	15	OK	193	Angle, left	do	4. in. x 4. in. x .5 in. x 900.
1	A193N	15	OK	193	Plate	do	1380. x .625 in. x 2570.
2	A193P	15	OK	193	do	do	220. x .625 in. x 300.
2	A193Q	15	OK	193	Angle	do	4. in. x 4. in. x .5 in. x 2570.
2	A193R	15	OK	193	Angle, right	do	4. in. x 4. in. x .5 in. x 450.
2	A193S	15	OK	193	Angle, left	do	4. in. x 4. in. x .5 in. x 450.
4	A193T	15	OK	193	Plate	do	180. x .625 in. x 437.46.
2	A193U	15	OK	193	Angle	do	4. in. x 3. in. x .625 in. x 437.46.
2	A193X	15	OK	193	do	do	4. in. x 3. in. x .625 in. x 437.46.
2	A193Z	15	OK	193	do	do	4. in. x 3. in. x .625 in. x 437.46.
2	A193AA	15	OK	193	do	do	4. in. x 3. in. x .625 in. x 437.46.
					HANDRAILING, 1 RIGHT AND 1 LEFT.		
4	A194A	15	OK	194	Rods	Steel	.875 in. x 1003.
1	A186B	15	OK	194	Angle, right	do	2. in. x 2. in. x .25 in. x 1025.
1	A186C	15	OK	194	Angle, left	do	2. in. x 2. in. x .25 in. x 1025.
1	A186D	15	OK	194	Angle, right	do	2. in. x 2. in. x .25 in. x 1025.
1	A186E	15	OK	194	Angle, left	do	2. in. x 2. in. x .25 in. x 1025.
4	A194F	15	OK	194	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 190.
4	A186G	15	OK	194	Plates	do	160. x .25 in. x 190.
2	A186H	15	OK	194	Grab irons	F. S	
16	A165AA	15	OK	194	Collars	Steel	With 16–6. x 40. steel pins.
					HANDRAILING SUPPORT, 1 RIGHT AND 1 LEFT.		
1	A194M	15	OK	194	Angle, right	Steel	2. in. x 2. in. x .25 in. x 1025.
1	A194N	15	OK	194	Angle, left	do	2. in. x 2. in. x .25 in. x 1025.
2	A194F	15	OK	194	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 190.
2	A186G	15	OK	194	Plates	do	160. x .25 in. x 190.
					HANDRAIL.		
2	A194P	15	OK	194	Rods	Steel	.875 in. x 765.
8	A165AA	15	OK	194	Collars	do	With 8–6. x 40. steel pins.

					HANDRAILING, 1 RIGHT AND 1 LEFT.		
4	A194Q	15	OK	194	Rods	Steel	.875 in. x 2335.
1	A186B	15	OK	194	Angle, right	do	2. in. x 2. in. x .25 in. x 1025.
1	A186C	15	OK	194	Angle, left	do	2. in. x 2. in. x .25 in. x 1025.
1	A194R	15	OK	194	Angle, right	do	2. in. x 2. in. x .25 in. x 1025.
1	A194S	15	OK	194	Angle, left	do	2. in. x 2. in. x .25 in. x 1025.
4	A194F	15	OK	194	Angle	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 190.
4	A186G	15	OK	194	Plates	do	160. x .25 in. x 190.
2	A186H	15	OK	194	Grab irons	F. S	
16	A165AA	15	OK	194	Collars	Steel	With 16–6. x 40. steel pins.
24	A195A	15	OK	195	Hanger, upper	do	
24	A195B	15	OK	195	Hanger, lower	do	
4	A195C	15	OK	195	Wrench support, lower	do	
2	A195D	15	OK	195	do	do	
6	A195E	15	OK	195	Wrench support, upper	do	
12	A195F	15	OK	195	Tap bolts[1]		10. x 25., thread 18. long.
					TOOL CHEST.		
1	A195G	15	OK	195	Plate	Steel	365. x .25 in. x 1212.7.
1	A195H	15	OK	195	do	do	346. x .25 in. x 1212.7.
2	A195K	15	OK	195	do	do	346. x .25 in. x 359.
1	A195L	15	OK	195	do	do	51. x .312 ($\frac{5}{16}$) in. x 1212.7.
2	A195M	15	OK	195	do	do	51. x .312 ($\frac{5}{16}$) in. x 290.
2	A195N	15	OK	195	do	do	51. x .312 ($\frac{5}{16}$) in. x 280.
1	A195P	15	OK	195	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1212.7.
1	A195Q	15	OK	195	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 1186.
1	A195R	15	OK	195	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 353.
1	A195S	15	OK	195	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 353.
1	A195T	15	OK	195	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 346.
1	A195U	15	OK	195	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 346.
1	A195W	15	OK	195	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 280.
1	A195X	15	OK	195	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 280.
					CHEST FRONT.		
2	A196A	15	OK	196	Plates	Steel	296. x .125 in. x 800.
2	A196B	15	OK	196	do	do	38. x .25 in. x 688.
2	A196C	15	OK	196	Angles, right	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 244.
2	A196D	15	OK	196	Angles, left	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 244.
					CHEST, END, 2 RIGHT AND 2 LEFT.		
4	A196E	15	OK	196	Plates	Steel	296. x .125 in. x 296.
4	A196F	15	OK	196	do	do	38. x .25 in. x 245.
2	A196G	15	OK	196	Angles, right	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 296.
2	A196H	15	OK	196	Angles, left	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 296.
2	A196K	15	OK	196	Cover	do	.125 in. thick.
4	A196L	15	OK	196	Hinge, female	F. S	With 4–.25 in. x 150. steel drill rod.
4	A196M	15	OK	196	Hinge, male	do	

[1]Provided with lock washers.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					CHEST, BOTTOM.		
2	A196N	15	OK	196	Plates	Steel	300. x .125 in. x 800.
2	A196P	15	OK	196	Angles	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 800.
2	A196Q	15	OK	196	do	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 782.
2	A196R	15	OK	196	Angles, right	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 291.
2	A196S	15	OK	196	Angles, left	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 291.
					HASP, STAPLE.		
4	A196T	15	OK	196	Plates	Steel	40. x .125 in. x 70.
4	A196U	15	OK	196	Rods	do	.187 ($\frac{3}{16}$) in. x 90.
4	A196W	15	OK	196	Hasp hinge, female	F. S	With 4-.25 in. x 70. steel drill rods.
4	A196X	15	OK	196	Hasp hinge, male	do	
1	A197A	15	OK	197	Clip, right	C. S. No. 2	
1	A197B	15	OK	197	Clip, left	do	
10	A197C	15	OK	197	Bolts [3]		22. x 100.
11	A199A	15	OK	199	Pipe clamp	F. S	
11	A199B	15	OK	199	Bolts [3]		16. x 46.
11	A199C	15	OK	199	Pipe bracket	Steel	
4	A199D	15	OK	199	Bolts [3]		16. x 49.
18	A199E	15	OK	199	do. [3]		16. x 52.
					REAR PLATFORM. *Front plate, 1 right and 1 left.*		
1	A201A	15	OK	201	Checkered plate	Steel	1447. x .312 ($\frac{5}{16}$) in. x 1927.85.
2	A201B	15	OK	201	Reinforcing plate	do	338. x .375 in. x 1447.
2	A201C	15	OK	201	Angle	do	3. in. x 3. in. x .375 in. x 984.
1	A201BA	15	OK	201	Checkered plate	do	1447. x .312 ($\frac{5}{16}$) in. x 1927.85.
					TRANSVERSE TRANSOM NO. 1.		
1	A201D	15	OK	201	Plate	Steel	559. x .375 in. x 2900.
1	A201E	15	OK	201	Angle, top	do	3. in. x 3. in. x .375 in. x 2900.
1	A201F	15	OK	201	Angle, bottom	do	3. in. x 3. in. x .375 in. x 2900.
					LONGITUDINAL TRANSOM, FRONT.		
1	A201G	15	OK	201	Plate	Steel	548. x .375 in. x 1055.
2	A201H	15	OK	201	Angle, top	do	3. in. x 3. in. x .375 in. x 900.
1	A201K	15	OK	201	Angle, bottom, right	do	3. in. x 3. in. x .375 in. x 532.

[3] Provided with crown nuts.

1	A201L	15	OK	201	Angle, bottom, left	do	3. in. x 3. in. x .375 in. x 532.	
1	A201M	15	OK	201	Angle, rear, right	do	3. in. x 3. in. x .375 in. x 532.	
1	A201N	15	OK	201	Angle, rear, left	do	3. in. x 3. in. x .375 in. x 532	
1	A201P	15	OK	201	Angle, front, right	do	3. in. x 3. in. x .375 in. x 532.	
1	A201Q	15	OK	201	Angle, front, left	do	3. in. x 3. in. x .375 in. x 532.	
3	A201R	15	OK	201	Filler plate	do	162. x .375 in. x 400.	
					GUSSET, 1 RIGHT AND 1 LEFT.			
2	A201S	15	OK	201	Plates	Steel	300. x .375 in. x 570.	
1	A201T	15	OK	201	Angle, right	do	3. in. x 3. in. x .375 in. x 300.	
1	A201U	15	OK	201	Angle, left	do	3. in. x 3. in. x .375 in. x 300.	
1	A201W	15	OK	201	Angle, right	do	3. in. x 3. in. x .375 in. x 570.	
1	A201X	15	OK	201	Angle, left	do	3. in. x 3. in. x .375 in. x 570.	
1	A201Z	15	OK	201	Side stiffener angle, front, right	do	3. in. x 3. in. x .375 in. x 1060.	
1	A201AA	15	OK	201	Side stiffener angle, front, left	do	3. in. x 3. in. x .375 in. x 1060.	
					TRANSVERSE TRANSOM NO. 2.			
1	A202A	15	OK	202	Plate	Steel	558.8 x .375 in. x 2900.	
1	A202B	15	OK	202	Angle, top	do	3. in. x 3. in. x .375 in. x 2900.	
1	A202C	15	OK	202	Angle, bottom	do	3. in. x 3. in. x .375 in. x 2900.	
					TRANSVERSE TRANSOM NO. 3.			
1	A202D	15	OK	202	Plate	Steel	558.8 x .375 in. x 2900.	
1	A202E	15	OK	202	Angle, top	do	3. in. x 3. in. x .375 in. x 2900.	
1	A202F	15	OK	202	Angle, bottom	do	3. in. x 3. in. x .375 in. x 2900.	
2	A202G	15	OK	202	Step	do	.875 in. x 450. rods.	
					LONGITUDINAL TRANSOM, CENTER.			
2	A202H	15	OK	202	Plates	Steel	395. x .375 in. x 552.	
4	A202K	15	OK	202	Angles	do	3. in. x 3. in. x .375 in. x 380.	
2	A202L	15	OK	202	Angles, right	do	3. in. x 3. in. x .375 in. x 552.	
2	A202M	15	OK	202	Angles, left	do	3. in. x 3. in. x .375 in. x 552.	
1	A202N	15	OK	202	Center plate, bottom	do	580. x .625 in. x 600.	
1	A202P	15	OK	202	Center plate, top	do	580. x .625 in. x 600.	
					LONGITUDINAL TRANSOM, REAR, 1 RIGHT AND 1 LEFT.			
1	A203A	15	OK	203	Plate, right	Steel	570. x .375 in. x 1990.	
1	A203B	15	OK	203	Plate, left	do	570. x .375 in. x 1990.	
4	A203C	15	OK	203	Angles, right	do	3. in. x 3. in. x .375 in. x 532.	
4	A203D	15	OK	203	Angles, left	do	3. in. x 3. in. x .375 in. x 532.	
2	A203E	15	OK	203	Angles, top, right	do	3. in. x 3. in. x .375 in. x 1820.	
2	A203F	15	OK	203	Angles, top, left	do	3. in. x 3. in. x .375 in. x 1820.	
2	A203G	15	OK	203	Angles, bottom	do	3. in. x 3. in. x .375 in. x 1820.	
1	A203H	15	OK	203	Stiffener angle	do	3. in. x 3. in. x .375 in. x 1467.	Approx.
1	A203K	15	OK	203	Rear plate, center	do	1420. x .312 ($\frac{5}{16}$) in. x 1494.	
1	A203L	15	OK	203	Trap door	do	1018. x .312 ($\frac{5}{16}$) in. x 1494.	
1	A203M	15	OK	203	Rear plate, side, right	do	698. x .312 ($\frac{5}{16}$) in. x 2509.	
1	A203N	15	OK	203	Rear plate, side, left	do	698. x .312 ($\frac{5}{16}$) in. x 2509	

Number for one carriage.	Piece mark.	Drawing. Class.	Division.	Number.	Name of part.	Material.	Remarks.
					REAR SUPPORT, SIDE, 1 RIGHT AND 1 LEFT.		
2	A204A	15	OK	204	Plates	Steel	456. x .375 in. x 542.47.
2	A203B	15	OK	204	Angles	do	3. in. x 3. in. x .375 in. x 456.
1	A204C	15	OK	204	Angle	do	3. in. x 3. in. x .375 in. x 546.
1	A204D	15	OK	204	do	do	3. in. x 3. in. x .375 in. x 546.
2	A204E	15	OK	204	Filler plate	do	76. x .375 in. x 321.
					SIDE GUSSET, 1 RIGHT AND 1 LEFT.		
2	A204F	15	OK	204	Plates	Steel	540. x .375 in. x 570.
1	A204G	15	OK	204	Angles, right	do	3. in. x 3. in. x .375 in. x 540.
1	A204H	15	OK	204	Angles, left	do	3. in. x 3. in. x .375 in. x 540.
1	A204K	15	OK	204	Angles, right	do	3. in. x 3. in. x .375 in. x 570.
1	A294L	15	OK	204	Angles, left	do	3. in. x 3. in. x .375 in. x 570.
1	A204M	15	OK	204	Side stiffener, rear, right	do	3. in. x 3. in. x .375 in. x 1990.
1	A204N	15	OK	204	Side stiffener, rear, left	do	3. in. x 3. in. x .375 in. x 1990.
2	A204P	15	OK	204	Filler plate	do	159. x .375 in. x 321.
					REAR SUPPORT, CENTER.		
3	A204Q	15	OK	204	Plates	Steel	456. x .375 in. x 542.
6	A204R	15	OK	204	Angles	do	3. in. x 3. in. x .375 in. x 456.
3	A204S	15	OK	204	Angles, right	do	3. in. x 3. in. x .375 in. x 464.
3	A204T	15	OK	204	Angles, left	do	3. in. x 3. in. x .375 in. x 464.
1	A204U	15	OK	204	Platform stiffener angle, rear	do	3. in. x 3. in. x .375 in. x 2900.
					LOADING STAND.		
					Side section, 1 right and 1 left.		
1	A207A	15	OK	207	Plate, right	Steel	1213. x .25 in. x 1384.
1	A207B	15	OK	207	Plate, left	do	1213. x .25 in. x 1384.
1	A207C	15	OK	207	Angle, right	do	2. in. x 2. in. x .25 in. x 1213.
1	A207D	15	OK	207	Angle, left	do	2. in. x 2. in. x .25 in. x 1213.
2	A207E	15	OK	207	Angles	do	2. in. x 2. in. x .25 in. x 1270.
1	A207F	15	OK	207	Angle, right	do	2. in. x 2. in. x .25 in. x 1240. Approx.
1	A207G	15	OK	207	Angle, left	do	2. in. x 2. in. x .25 in. x 1240. Approx.
1	A207H	15	OK	207	Angle, right	do	2. in. x 2. in. x .25 in. x 1184.15.
1	A207K	15	OK	207	Angle, left	do	2. in. x 2. in. x .25 in. x 1184.15.
14	A207N	15	OK	207	Bolts [3]		16. x 44.

[3] Provided with crown nuts.

2	A207P	15	OK	207	Door	do	.125 in. thick.
2	JB5F	15	OK	207	1.75-inch Yale lock No. 840		
2	JB5G	15	OK	207	Clevis		
2	JB5E	15	OK	207	Clevis rivets		
2	A207T	15	OK	207	Chain 152.4 long		Std. Chain Co's. No. 3 or equal.
2	JB5L	15	OK	207	Chain rivets		
4	JB5M	15	OK	207	Chain rings		
4	A207X	15	OK	207	Door hinge, female	C. S.	
4	A207Z	15	OK	207	Door hinge, male	do	
2	A207AA	15	OK	207	Staple	Steel	
2	A207BA	15	OK	207	Latch handle	C. S.	
2	A207CA	15	OK	207	Latch	do	With 2-3. x 29. steel pins.
4	A207DA	15	OK	207	Hinge pin	Steel	With 8-.093 ($\frac{3}{32}$) in. x .5 in. split pins.
1	A208B	15	OK	208	Plate	do	559. x .25 in. x 1210.
1	A208F	15	OK	208	Angle	do	2.5 in. x 3.5 in. x .25 in. x 575. Approx.
1	A208G	15	OK	208	do	do	2. in. x 2. in. x .25 in. x 559.
4	A208H	15	OK	208	Bolts [3]	do	16. x 79.
					Rear section.		
5	A208H	15	OK	208	Bolts [2]		16. x 79.
1	A208K	15	OK	208	Plate	Steel	559. x .25 in. x 1380. Approx.
1	A208L	15	OK	208	do	do	559. x .25 in. x 225.
1	A208M	15	OK	208	Angle	do	2. in. x 2. in. x .25 in. x 453. Approx.
1	A208N	15	OK	208	do	do	2. in. x 2. in. x .25 in. x 620.
1	A208P	15	OK	208	Stiffener angle	do	3. in. x 4. in. x .312 ($\frac{5}{16}$) in. x 559.
1	A208Q	15	OK	208	Top plate	do	.375 in. thick.
1	A209H	15	OK	209	Platform fastener angle, lower	do	2. in. x 2. in. x .375 in. x 150.
1	A209K	15	OK	209	Platform fastener angle, upper	do	2. in. x 2. in. x .375 in. x 150.
1	A209L	15	OK	209	Eye pin	F. S.	
1	A209M	15	OK	209	Eye rivet	do	
2	A209N	15	OK	209	Rings	do	
1	A209P	15	OK	209	Chain	do	Std. Chain Co's. No. 3 or equal.
1	A210A	15	OK	210	Shell trough	Steel	
1	A210B	15	OK	210	Trough stop	Bronze	
1	A210C	15	OK	210	Trough support	do	
					CRANE.		
1	A214A	15	OK	214	Mast bearing	Cast iron	
8	A214B	15	OK	214	Bolt [5]		.75 in. x 3. in.
1	A214C	15	OK	214	Bearing bushing	Bronze No. 2	
4	A214D	15	OK	214	Tap bolts [1]		.75 in. x 2.125 in.
1	A214E	15	OK	214	Mast	F. S. No. 2	
1	A214F	15	OK	214	Chain box sides	Steel	.062 ($\frac{1}{16}$) in. x 21. in. x 25. in.
1	A214G	15	OK	214	Chain box bottom	do	.062 ($\frac{1}{16}$) in. x 4. in. x 9.687 ($9\frac{11}{16}$) in.
2	A214H	14	OK	214	Inner brace	Wrought iron	
1	A214K	15	OK	214	do	do	
2	A214L	15	OK	214	Clamp	do	
4	A214M	15	OK	214	Bolts [5]		.312 ($\frac{5}{16}$) in. x .812 ($\frac{13}{16}$) in.
2	A214N	15	OK	214	Outer brace	Wrought iron	

[1] Provided with lock washers [2] Provided with nuts. [3] Provided with crown nuts. [5] Provided with nuts and lock washers.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					CRANE—continued.		
1	A214P	15	OK	214	Mast pin	F. S.	With 1–1.125 in. crown nut.
1	A215A	15	OK	215	Right side plate	Steel	.5 in. thick.
3	A215B	15	OK	215	Bolts [5]		1. in. x 7. in.
1	A215C	15	OK	215	Bushing	Bronze No. 2	
2	A215D	15	OK	215	Flat fillister head machine screw		.190 in. x .312 ($\frac{5}{16}$) in., thread full length.
1	A215E	15	OK	215	Cover	Steel	5.625 in. x .187 ($\frac{3}{16}$) in. x 33.5 in. Approx.
14	A215F	15	OK	215	Fillister head screws		.312 ($\frac{5}{16}$) in. x .75 in.
1	A215G	15	OK	215	Left side plate	Steel	.5 in. thick.
1	A215H	15	OK	215	Bushing	Bronze No. 2	
1	A215K	15	OK	215	Pin	F. S.	With 1–.25 in. x 2. in. split pin.
1	A215L	15	OK	215	Chain	do	Std. Chain Co's. No. 3 or equal.
1	A215P	15	OK	215	Ring	do	1.25 in. I. D.
1	JB5M	15	OK	215	do	do	.625 in. I. D.
1	JB5L	15	OK	215	Chain rivet	do	
1	A215M	15	OK	215	Separator	Wrought iron	
1	A215N	15	OK	215	Bolt [5]		.75 in. x 6.625 in.
1	A216A	15	OK	216	Handwheel shaft	F. S. No. 2	With 2–.625 in. lock washers, 2–.625 in. nuts, 1–.25 in x .25 in. x 1.375 in steel key.
1	A216B	15	OK	216	Handwheel shaft pinion	do	
3	A216C	15	OK	216	Upper, intermediate, and idler shaft	do	With 3–.187 ($3\frac{3}{16}$) in. x .6 in. steel pins.
1	A216D	15	OK	216	Pawl shaft	do	
3	A216K	15	OK	216	Collar nut	F. S.	With 3–.125 in. x 1.187 ($1\frac{3}{8}$) in. steel pins.
1	A216E	15	OK	216	Pawl	F. S. No. 2	
1	A216F	15	OK	216	Headless set screw		.312 ($\frac{5}{16}$) in. x .625 in.
1	A216G	15	OK	216	Pawl lever	C. S.	With 1–.187 ($1\frac{3}{16}$) in. x 2.25 in. split pin
1	A216H	15	OK	216	Idler	Steel	
1	A217A	15	OK	217	Sprocket wheel	F. S. No. 2	With 2–.5 in. x .5 in. x 1.187 ($1\frac{5}{16}$) in. steel keys.
6	A217B	15	OK	217	Bushing	Bronze No. 2	
1	A217C	15	OK	217	Upper gear	C. S. No. 2	
2	A217D	15	OK	217	Headless steel screws		.375 in. x .437 ($\frac{7}{16}$) in.
2	A217E	15	OK	217	Bushing	Bronze No. 2	
1	A217F	15	OK	217	Intermediate gear	C. S. No. 2	With 2–.375 in. x .312 ($\frac{5}{16}$) in. x 1.125 in. steel keys.
1	A217G	15	OK	217	Idler	C. S.	
1	A217H	15	OK	217	Intermediate pinion	F. S. No. 2	
2	A218A	15	OK	218	Handwheel	C. S.	
2	A218B	15	OK	218	Handle	F. S.	
2	A218C	15	OK	218	Handle sleeve	Brass	

[5] Provided with nuts and lock washers.

1	A218D	15	OK	218	Idler sprocket	F. S. No. 2	
2	A218E	15	OK	218	Bushing	Bronze No. 2	
1	A218F	15	OK	218	Idler shaft	F. S. No. 2	
1	A218G	15	OK	218	Nut		1. in. x .5 in. thick with lock washer
2	A218H	15	OK	218	Separator	Wrought iron	.5 in. pipe.
2	A218N	15	OK	218	Bolts [5]		.5 in. x 6.25 in.
1	A218K	15	OK	218	Crane hook	F. S. No. 2	
1	A218L	15	OK	218	Swivel	do	
1	A218M	15	OK	218	Nut	do	With .125 in. x 1.125 in. steel pins.
					BOOM.		
2	A219A	15	OK	219	Channels	Steel	3. in x 4 lbs. x 125.875 in.
4	A219B	15	OK	219	Plates	do	4.5 in. x .187 ($\frac{3}{16}$) in. x 9. in.
2	A219C	15	OK	219	Plates, rear	do	3. in. x .5 in. x 4.75 in.
1	A219D	15	OK	219	Plates, front, right	do	5.375 in. x .5 in. x 7. in.
1	A219E	15	OK	219	Plates, front, left	do	5.375 in. x .5 in. x 7. in.
2	A219F	15	OK	219	Hand grabs	Wrought iron	.75 in. x 18. in.
1	A219G	15	OK	219	Roller chain, 340 links		Diamond Chain Co's. No. 154 or equal.
					TIE.		
2	A219H	15	OK	219	Eye bars	Steel	.5 in.
4	A219K	15	OK	219	Separators	Wrought iron	.5 in. std. pipe.
					WEDGE.		
24	A225A	15	OK	225	Side wedge, right	C. S. No. 2	
24	A225B	15	OK	225	Side wedge, left	do	
24	A225C	15	OK	225	Center wedge	do	
24	A225D	15	OK	225	Washer	F S	
24	A225E	15	OK	225	Center wedge bolt	do	With 24–18. crown nuts.
24	A225F	15	OK	225	Nut	Bronze	
96	A225G	15	OK	225	Washer	F. S	
48	A225H	15	OK	225	Side wedge bolt	do	With 96–16. crown nuts.
96	A225K	15	OK	225	Sleeve	do	
24	A226A	15	OK	226	Wedge plate, large	Steel	.5 in. thick.
24	A226B	15	OK	226	Wedge plate, small	do	.312 ($\frac{5}{16}$) in. thick.
24	A226C	15	OK	226	Handle, rear	C. S	
24	A226D	15	OK	226	Handle, front	do	
					TENSION SCREW.		
12	A226E	15	OK	225	Tension screw nut	F. S	
12	A226F	15	OK	226	Tension screw bolt	do	
12	A226G	15	OK	226	do	do	

[5] Provided with nuts and lock washers.

Number for oee carriage.	Piece mark.	Drawing. Class.	Division.	Number.	Name of part.	Material.	Remarks.
					GROUND PLATFORM, GIRDER, 6 RIGHT AND 6 LEFT.		
12	A229A	15	OK	229	Web plates	Steel	406.4 x .375 in. x 2234.
12	A229B	15	OK	229	Cover plates, upper	do	305. x .375 in. x 2240.
6	A229C	15	OK	229	Cover plates, lower, right	do	508. x .375 in. x 2234.
6	A229D	15	OK	229	Cover plates, lower, left	do	508. x .375 in. x 2234.
60	A229E	15	OK	229	Plates	do	320. Approx. x .375 in. x 542. Approx.
36	A229F	15	OK	229	do	do	320. Approx. x .375 in. x 542. Approx.
60	A229G	15	OK	229	do	do	320. Approx. x .375 in. x 542. Approx.
36	A229H	15	OK	229	do	do	320. Approx. x .375 in. x 542. Approx.
12	A229K	15	OK	229	Flange angles, upper, right	do	3. in. x 3. in. x .375 in. x 2240.
12	A229L	15	K	229	Flange angles, upper, left	do	3. in. x 3. in. x .375 in. x 2240.
12	A229M	15	OK	229	Flange angles, lower, right	do	3. in. x 3. in. x .375 in. x 2240.
12	A229N	15	OK	229	Flange angles, lower left	do	3. in. x 3. in. x .375 in. x 2240.
24	A229P	15	OK	229	Angles	do	3. in. x 3. in. x .375 in. x 169.
24	A229Q	15	OK	229	do	do	3. in. x 3. in. x .375 in. x 169.
24	A229R	15	OK	229	do	do	6. in. x 3.5 in. x .75 in. x 305.
24	A229S	15	OK	229	do	do	6. in. x 3.5 in. x .75 in. x 305.
24	A229T	15	OK	229	Plates	do	82.6 x .875 in. x 170.
20	A229U	15	OK	229	Splice plates	do	378. x .375 in. x 380.
20	A229W	15	OK	229	Filler plates	do	250. x .375 in. x 390.
8	A229X	15	OK	229	Plates	do	200. x .375 in. x 378.
8	A229Z	15	OK	229	Filler plates	do	200. x .375 in. x 250.
48	A229AA	15	OK	229	Bolts [3]		18. x 74.
192	A229BA	15	OK	229	do.[2]		18. x 78.
40	A229CA	15	OK	229	do.[2]		18. x 50.
232	A229DA	15	OK	229	Nuts		18. x 9. thick.
					SPADE.		
6	A230A	15	OK	230	Plates	Steel	1300. Approx. x .375 in. x 3400.
6	A230B	15	OK	230	do	do	1000. Approx. x .375 in. x 3400.
18	A230C	15	OK	230	Plates, right	do	750. Approx. x .375 in. x 815. Approx.
18	A230D	15	OK	230	Plates, left	do	750. Approx. x .375 in. x 815. Approx.
12	A230E	15	OK	230	Plates, right	do	770. Approx. x .375 in. x 835. Approx.
12	A230F	15	OK	230	Plates, left	do	770. Approx. x .375 in. x 835. Approx.
6	A230G	15	OK	230	Plates, right	do	750. Approx. x .375 in. x 815. Approx.
6	A230H	15	OK	230	Plates, left	do	750. Approx. x .375 in. x 815. Approx.
6	A230K	15	OK	230	Angles, right	do	3. in. x 4. in. x .625 in. x 597.5.
6	A230L	15	OK	230	Angles, left	do	3. in. x 4. in. x .625 in. x 597.5.

[2] Provided with nuts.

[3] Provided with crown nuts.

12	A230M	15	OK	230	Angles, right	do	3. in. x 3. in. x .375 in. x 480.
12	A230N	15	OK	230	Angles, left	do	3. in. x 3. in. x .375 in. x 480.
12	A230P	15	OK	230	Angles	do	4. in. x 4. in. x .375 in. x 508.
12	A230Q	15	OK	230	Plates	do	400. x .375 in. x 440.
12	A230R	15	OK	230	do	do	370. x .375 in. x 420.
144	A230S	15	OK	230	Tap bolts [1]		18. x 25., thread 12. long.
72	A230T	15	OK	230	do [1]		12. x 24., thread 12. long.
					BASE.		
12	A231A	15	OK	231	A. R. A. Series "B" 100 R. B. rails	Steel	2236. long.
10	A231B	15	OK	231	S. 100 R. B. splice bars, outer	do	34. in. long.
10	A231C	15	OK	231	S. 100 R. B. splice bars, inner	do	34. in. long.
48	A231D	15	OK	231	No. 118 rail clips	do	
6	A231E	15	OK	231	Ties	Oak	150. x 250. x 3400.
6	A231F	15	OK	231	do	do	150. x 250. x 3400.
6	A231G	15	OK	231	do	do	150. x 250. x 3400.
24	A231H	15	OK	231	Blocks	do	150. x 155. x 508.
12	A231K	15	OK	231	do	do	150 x 155. x 508.
12	A231L	15	OK	231	do	do	150. x 155. x 508.
72	A231M	15	OK	231	Screw spikes		
24	A231N	15	OK	231	Rods with 0.75 inch plain washers [2]	Steel	.75 in. x 37.75 in., thread 1.375 in. long each end.
48	A231P	15	OK	231	T bolts [3]		18. x 45.5, with 18. crown nuts.
60	A231Q	15	OK	231	Track bolts [5]		1. in. x 4.75 in.
24	A231R	15	OK	231	Bolts with 0.75 inch plain washers [2]		.75 in. x 15.25 in.
72	A231S	15	OK	231	Bolts [5]		18. x 183, with 144–18. plain washers.
96	A231T	15	OK	231	do [5]		18. x 173, with 192–18. plain washers.
					EXCAVATING GAUGE.		
6	A231U	15	OK	231	Top pieces	Oak	60. x 20. x 1000.
6	A231W	15	OK	231	Bottom pieces	do	60. x 20. x 285.6.
6	A231X	15	OK	231	Front pieces	do	60. x 20. x 718.
6	A231Z	15	OK	231	Rear pieces	do	60. x 20. x 566.6.
24	A231AA	15	OK	231	No. 14 wood screws		.875 in. long.
24	A231BA	15	OK	231	do		1.25 in. long.
					SPACING GAUGE.		
4	A232A	15	OK	232	Plates	Steel	2. in. x .25 in. x 3601 6.
4	A232B	15	OK	232	do	do	2. in. x .25 in. x 620.
4	A232C	15	OK	232	do	do	2. in. x .25 in. x 1830.
2	A232D	15	OK	232	do	do	2. in. x .312 ($\frac{5}{16}$) in. x 230.
2	A232E	15	OK	232	do	do	58. x .312 ($\frac{5}{16}$) in. x 380.
8	A232F	15	OK	232	do	do	130. 8 x .187 ($\frac{3}{16}$) in. x 130.8.
8	A232G	15	OK	232	Slides	F. S.	
4	A232H	15	OK	232	Round bars	Steel	.625 in. x 40.
8	A232K	15	OK	232	Plates	do	65. x .187 ($\frac{3}{16}$) in. x 140. Approx.
8	A232L	15	OK	232	Fillister head screws		6. x 15.
2	A232M	15	OK	232	Plates	Steel	220. x .187 ($\frac{3}{16}$) in. x 721.6.

[1] Provided with lock washers. [2] Provided with nuts. [3] Provided with crown nuts. [5] Provided with nuts and lock washers.

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Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					LIQUID PUMP.		
1	A236A	15	OK	236	Pump case	Bronze	
4	A236M	15	OK	236	Bolts [5]		.625 in. x 1.687 ($1\frac{11}{16}$) in.
1	A236B	15	OK	236	Gland	Bronze	
2	A236L	15	OK	236	Tap bolts		.5 in. x 1.5 in.
1	A236C	15	OK	236	Filling cap	Bronze	
1	A236D	15	OK	236	Pump case cover	do	
1	A236E	15	OK	236	Drain plug	do	
4	A236F	15	OK	236	Pump case cover stud [2]	F. S	With 4–.5 in. lock washer
1	A236G	15	OK	236	Filling cap loop	Bronze wire	No. 12 B. & S. gage.
1	A236H	15	OK	236	Pump case side plate		
6	A236K	15	OK	236	Tap bolts [1]		.312 ($\frac{5}{16}$) in. x .75 in.
1	A237A	15	OK	237	Pump body	Phosphor bronze	
4	A237B	15	OK	237	Pipe plugs	Bronze	.25 in.
1	A237C	15	OK	237	Body nut	do	
1	A238A	15	OK	238	Side plate gasket	Paper	
2	A238B	15	OK	238	Case stuffing box packing	Hemp	
2	A238C	15	OK	238	Body washer	Leather	
1	A238D	15	OK	238	Body gasket	Paper	
1	A238E	15	OK	238	Plunger	Bronze	
1	A238F	15	OK	238	Link	Bronze	[1] With 1–.125 in. x 1.062 ($1\frac{1}{16}$) in. bronze pin.
1	A238G	15	OK	238	Pin	F. S	
1	A238H	15	OK	238	do	do	
1	A239A	15	OK	239	Body gland	Bronze	
1	A239B	15	OK	239	Body nut	do	
1	A239C	15	OK	239	Plunger leather	Leather	
2	A239D	15	OK	239	Suction valve stem	Bronze	
1	A239E	15	OK	239	Suction valve seat	do	
1	A239F	15	OK	239	Strainer	Sheet brass	[1] No. 27 studs gage.
1	A239G	15	OK	239	Strainer ring	Brass wire	[1] No. 10 B. & S. gage
1	A239H	15	OK	239	Relief valve stem	Bronze	
1	A239K	15	OK	239	Relief valve body	do	
1	A239L	15	OK	239	Relief valve cap	do	
1	A239M	15	OK	239	Relief valve spring	Phosphor bronze	
1	A240A	15	OK	240	Lever shaft	F. S	
1	A240B	15	OK	240	Lever shaft nut	do	[1] With 1–.125 in. x 1. in. split pin.
1	A240C	15	OK	240	Lever shaft collar	do	
1	A240D	15	OK	240	Crank	do	[1] With 1–.187 ($\frac{3}{16}$) in. x 2. in. split pin.
1	A240E	15	OK	240	Pump lever	do	

[1] Provided with lock washers. [2] Provided with nuts. [5] Provided with nuts and lock washers.

					8 WHEEL TRUCKS, SIDE FRAME, 2 RIGHT AND 2 LEFT.		
2	GG5A	15	22S2	5	Side plate, right	Steel	1040 x 1. in. x 5612.
2	GG5B	15	22S2	5	Side plate, left	do	1040 x 1. in. x 5612.
2	GG5C	15	22S2	5	Angle, right, front, right	do	4. in. x 4. in. x .5 in. x 800.
2	GG5CL	15	22S2	5	Angle, right, front, left	do	4. in. x 4. in. x .5 in. x 800.
2	GG5D	15	22S2	5	Angle, left, front, right	do	4. in. x 4. in. x .5 in. x 800.
2	GG5DL	15	22S2	5	Angle, left, front, left	do	4. in. x 4. in. x .5 in. x 800.
4	GG5E	15	22S2	5	Angle, rear, right	do	4. in. x 4. in. x .5 in. x 779.
4	GG5F	15	22S2	5	Angle, rear, left	do	4. in. x 4. in. x .5 in. x 779.
					LADDER, 1 RIGHT AND 1 LEFT.		
1	GG5G	15	22S2	5	Angle, right	Steel	2. in. x 2. in. x .25 in. x 451.
1	GG5H	15	22S2	5	Angle, left	do	2. in. x 2. in. x .25 in. x 451.
1	GG5K	15	22S2	5	Angle, right	do	2. in. x 2. in. x .25 in. x 430.
1	GG5L	15	22S2	5	Angle, left	do	2. in. x 2. in. x .25 in. x 430.
1	GG5M	15	22S2	5	Angle, right	do	2. in. x 2. in. x .25 in. x 227.
1	GG5N	15	22S2	5	Angle, left	do	2. in. x 2. in. x .25 in. x 227.
1	GG5P	15	22S2	5	Angle, right	do	2. in. x 2. in. x .25 in. x 227.
1	GG5Q	15	22S2	5	Angle, left	do	2. in. x 2. in. x .25 in. x 227.
2	GG5R	15	22S2	5	Plates	do	191 x .25 in. x 201.
2	GG5S	15	22S2	5	do	do	176 x .25 in. x 201.
4	GG5T	15	22S2	5	Rods	do	.875 in. x 350.
4	GG5U	15	22S2	5	Grab iron	F. S	With 4-26. crown nuts.
4	GG5W	15	22S2	5	Washer	Steel	
16	GG5X	15	22S2	5	Guard plates	do	1. in. thick.
					SIDE BEARING SUPPORT, 2 RIGHT AND 2 LEFT.		
4	GG6C	15	22S2	6	Web plates, front	Steel	295. x .5 in. x 1394.
4	GG6D	15	22S2	6	Web plates, rear	do	295. x .5 in. x 1304.
2	GG6E	15	22S2	6	Cover plates	do	240. x .5 in. x 3040.
2	GG6F	15	22S2	6	do	do	240. x .5 in. x 3040.
4	GG6G	15	22S2	6	Bearing plates	do	240. x 1.125 in. x 600.
4	GG6H	15	22S2	6	Gusset plates, rear	do	457. x .5 in. x 774.
4	GG6K	15	22S2	6	Gusset plates, center	do	457. x .5 in. x 774.
8	GG6L	15	22S2	6	Filler plates, center	do	187. x .5 in. x 230.
8	GG6M	15	22S2	6	Filler plates, front and rear	do	102. x .5 in. x 230.
20	GG6N	15	22S2	6	Angles	do	4. in. x 4. in. x .5 in. x 779.
2	GG6P	15	22S2	6	Angles, right	do	4. in. x 4. in. x .5 in. x 779.
2	GG6Q	15	22S2	6	Angles, left	do	4. in. x 4. in. x .5 in. x 779.
4	GG6R	15	22S2	6	Flange angles, top, right	do	4. in. x 4. in. x .5 in. x 1101.
4	GG6S	15	22S2	5	Flange angles, top, left	do	4. in. x 4. in. x .5 in. x 1101.
3	GG6T	15	22S2	6	Flange angles, top, right	do	4. in. x 4. in. x .5 in. x 1191.
4	GG6U	15	22S2	6	Gusset plates, front	do	457. x .5 in. x 774.
3	GG6W	15	22S2	6	Flange angles, top, left	do	4. in. x 4. in. x .5 in. x 1191.
1	GG6X	15	22S2	6	Flange angles, top, right	do	4. in. x 4. in. x .5 in. x 1191.
1	GG6Z	15	22S2	6	Flange angles, top, left	do	4. in. x 4. in. x .5 in. x 1191.
8	GG6AA	15	22S2	6	Flange angles, bottom	do	4. in. x 4. in. x .5 in. x 1085.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					SIDE-BEARING SUPPORT, 2 RIGHT AND 2 LEFT—Continued.		
2	GG6BA	15	22S2	6	Flange angles, bottom, right	Steel	4. in. x 4. in. x .5 in. x 1180.
2	GG6CA	15	22S2	6	Flange angles, bottom, left	do	4. in. x 4. in. x .5 in. x 1180.
4	GG6DA	15	22S2	6	Flange angles, bottom	do	4. in. x 4. in. x .5 in. x 1180.
8	GG6EA	15	22S2	6	Flange angles, vertical, center, right	do	4. in. x 4. in. x .5 in. x 275.
8	GG6FA	15	22S2	6	Flange angles, vertical, center, left	do	4. in. x 4. in. x .5 in. x 275.
8	GG6GA	15	22S2	6	Flange angles, vertical, front and rear, right	do	4. in. x 4. in. x .5 in. x 190.
8	GG6HA	15	22S2	6	Flange angles, vertical, front and rear, left	do	4. in. x 4. in. x .5 in. x 190.
2	GG6KA	15	22S2	6	Flange angles, horizontal, rear, right	do	4. in. x 4. in. x .5 in. x 356.
2	GG6LA	15	22S2	6	Flange angles, horizontal, rear, left	do	4. in. x 4. in. x .5 in. x 356.
10	GG6MA	15	22S2	6	Flange angles, horizontal, right	do	4. in. x 4. in. x .5 in. x 356.
10	GG6NA	15	22S2	6	Flange angles, horizontal, left	do	4. in. x 4. in. x .5 in. x 356.
2	GG6A	15	22S2	6	Brake hanger stop	do	.5 in. thick.
2	GG6B	15	22S2	6	do	do	.5 in. thick.
					END PLATE, FRONT.		
2	GG7A	15	22S2	7	Plate	Steel	.5 in. thick.
					BUFFER BRACE, 4 RIGHT AND 4 LEFT.		
8	GG7B	15	22S2	7	Plates	Steel	395. x .5 in. x 474.
4	GG7C	15	22S2	7	Angles, right	do	3. in. x 3. in. x .375 in. x 780. Approx.
4	GG7D	15	22S2	7	Angles, left	do	3. in. x 3. in. x .375 in. x 780. Approx.
12	GG7R	15	22S2	7	Tap bolts[1]	do	22. x 40. thread 26. long.
4	GG7R	15	22S2	7	Tap bolts	do	22 x 40 thread, 26 long.
					TRANSOM NO. 1 TIE, 2 RIGHT AND 2 LEFT.		
4	GG7E	15	22S2	7	Plates	Steel	420. x .5 in. x 445.
2	GG7F	15	22S2	7	Angles, right	do	4. in. x 4. in. x .5 in. x 420.
2	GG7G	15	22S2	7	Angles, left	do	4. in. x 4. in. x .5 in. x 420.
					TRANSOM NO. 1.		
4	GG7H	15	22S2	7	Plates	Steel	287.3 x .5 in. x 1218.
8	GG7K	15	22S2	7	Filler plates	do	76.2 x .375 in. x 202.
8	GG7L	15	22S2	7	do	do	76.2 x .5 in. x 179.

[1] Provided with lock washers.

4	GG7M	15	22S2	7	Angles, rear	do	3. in. x 3. in. x .375 in. x 1218.
4	GG7N	15	22S2	7	Angles, front	do	3. in. x 3. in. x .375 in. x 1040.
4	GG7P	15	22S2	7	Angles, right	do	3. in. x 3. in. x .375 in. x 261.
4	GG7Q	15	22S2	7	Angles, left	do	3. in. x 3. in. x .375 in. x 261.
					HORIZONTAL TRANSOM, FRONT, 2 RIGHT AND 2 LEFT.		
2	GG8A	15	22S2	8	Plates, right	Steel	960. x .5 in. x 1141.
2	GG8B	15	22S2	8	Plates, left	do	960. x .5 in. x 1141.
2	GG8C	15	22S2	8	Angles, right	do	4. in. x 4. in. x .5 in. x 518.
2	GG8D	15	22S2	8	Angles, left	do	4. in. x 4. in. x .5 in. x 518.
2	GG8E	15	22S2	8	Angles, right	do	4. in. x 4. in. x .5 in. x 424.
2	GG8F	15	22S2	8	Angles, left	do	4. in. x 4. in. x .5 in. x 424.
4	GG8G	15	22S2	8	Angles, right	do	4. in. x 4. in. x .5 in. x 420.
4	GG8H	15	22S2	8	Angles, left	do	4. in. x 4. in. x .5 in. x 420.
2	GG8K	15	22S2	8	Angles, right	do	4. in. x 4. in. x .5 in. x 1525. Approx.
2	GG8L	15	22S2	8	Angles, left	do	4. in. x 4. in. x .5 in. x 1525. Approx.
2	GG8M	15	22S2	8	Angles, right	do	4. in. x 4. in. x .5 in. x 980. Approx.
2	GG8N	15	22S2	8	Angles, left	do	4. in. x 4. in. x .5 in. x 980. Approx.
4	GG8P	15	22S2	8	Angles	do	4. in. x 4. in. x .5 in. x 140.
					PLATFORM.		
2	GG8Q	15	22S2	8	Checkered plates	Steel	499. x .312 ($\frac{5}{16}$) in. x 548.
2	GG8R	15	22S2	8	Plates	do	60. x .25 in. x 425.
24	GG9X	15	22S2	9	Bolts [3]	do	20 x 66.
2	GG8S	15	22S2	8	Angles	do	2. in. x 2. in. x .25 in. x 450.
2	GG8T	15	22S2	8	Sprocket cover	do	.25 in. thick.
2	GG8U	15	22S2	8	Bolts [3]		12 x 37.
4	GG8W	15	22S2	8	do. [3]		12 x 35.
2	GG8X	15	22S2	8	do. [3]		12 x 29.
					BEARING SUPPORT.		
2	GG8Z	15	22S2	8	Channels	Steel	6. in. x 10.516 x 548.
2	GG8AA	15	22S2	8	Plates	do	60. x .25 in. x 190. Approx.
2	GG8BA	15	22S2	8	Platform	do	.312 ($\frac{5}{16}$) in. thick.
6	GG8CA	15	22S2	8	Filler plate	Steel	.5 in. thick.
2	GG8DA	15	22S2	8	Angles	do	2. in. x 2. in. x .25 in. x 650.
2	GG8EA	15	22S2	8	do	do	2. in. x 2. in. x .25 in. x 499.
					TRANSOM NO. 2.		
2	GG9A	15	22S2	9	Plates	Steel	560. x .5 in. x 1243.
4	GG9B	15	22S2	9	Angles, right	do	4. in. x 4. in. x .5 in. x 560.
4	GG9C	15	22S2	9	Angles, left	do	4. in. x 4. in. x .5 in. x 560.
2	GG9D	15	22S2	9	Plates	do	200. x .312 ($\frac{5}{16}$) in. x 336.
2	GG9E	15	22S2	9	Angles, upper, right	do	4. in. x 4. in. x .5 in. x 1030.
2	GG9F	15	22S2	9	Angles, upper, left	do	4. in. x 4. in. x .5 in. x 1030.
2	GG9G	15	22S2	9	Angles, lower, right	do	4. in. x 4. in. x .5 in. x 1030.
2	GG9H	15	22S2	9	Angles, lower, left	do	4. in. x 4. in. x .5 in. x 1030.

[3] Provided with crown nuts

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					PLATFORM.		
2	GG9K	15	22S2	9	Checkered plates	Steel	785. x .312 ($\frac{5}{16}$) in. x 1090.
2	GG9L	15	22S2	9	Angles	do	2. in. x 2. in. x .25 in. x 450.
24	GG9X	15	22S2	9	Bolts[3]	do	20. x 66.
					FULCRUM SUPPORT.		
2	GG9M	15	22S2	9	Plate	Steel	190. x .5 in. x 513.5.
2	GG9N	15	22S2	9	Angles	do	3.5 in. x 3.5 in. x .5 in. x 732. Approx.
2	GG9P	15	22S2	9	do	do	3.5 in. x 3.5 in. x .5 in. x 650 Approx.
2	GG9Q	15	22S2	9	Filler plate	do	.5 in. thick.
2	GG9R	15	22S2	9	do	do	.5 in. thick.
2	GG9S	15	22S2	9	do	do	.5 in. thick.
					FULCRUM SUPPORT TIE.		
2	GG9T	15	22S2	9	Plates	Steel	341. x .625 in. x 1236.
2	GG9U	15	22S2	9	Angles, right	do	5. in. x 4. in. x .5 in. x 418.
2	GG9W	15	22S2	9	Angles, left	do	5. in. x 4. in. x .5 in. x 418.
					TRANSOM NO. 3.		
2	GG10A	15	22S2	10	Plates	Steel	766. x .5 in. x 1243.
8	GG10B	15	22S2	10	do	do	101.6 x .5 in. x 122.
4	GG10C	15	22S2	10	Angles, right	do	4. in. x 4. in. x .5 in. x 772.5.
4	GG10D	15	22S2	10	Angles, left	do	4. in. x 4. in. x .5 in. x 772.5.
4	GG10E	15	22S2	10	Angles, right	do	4. in. x 4. in. x .5 in. x 466.
4	GG10F	15	22S2	10	Angles, left	do	4. in. x 4. in. x .5 in. x 466.
8	GG10G	15	22S2	10	Angles	do	4. in. x 4. in. x .5 in. x 285.
8	GG10H	15	22S2	10	do	do	4. in. x 4. in. x .5 in. x 1030.
2	GG10K	15	22S2	10	Transom No. 3 cover plate	do	.5 in. thick.
					PINTLE BEARING SUPPORT, 2 RIGHT AND 2 LEFT.		
4	GG10L	15	22S2	10	Plates	Steel	300. x .5 in. x 550.
8	GG10M	15	22S2	10	do	do	98. x .5 in. x 182.
4	GG10N	15	22S2	10	Angles, right	do	4. in. x 4. in. x .5 in. x 280.
4	GG10P	15	22S2	10	Angles, left	do	4. in. x 4. in. x .5 in. x 280.
4	GG10Q	15	22S2	10	Angles	do	4. in. x 4. in. x .5 in. x 550.
2	GG10R	15	22S2	10	Angles, right	do	4. in. x 4. in. x .5 in. x 340.
2	GG10S	15	22S2	10	Angles, left	do	4. in. x 4. in. x .5 in. x 340.

[3] Provided with crown nuts.

					LONGITUDINAL TRANSOM, CENTER, 2 RIGHT AND 2 LEFT.		
4	GG10T	15	22S2	10	Plates	Steel	294. x .5 in. x 2750.
2	GG10U	15	22S2	10	Angles, top, left	do	4. in. x 4. in. x .5 in. x 1195.
2	GG10W	15	22S2	10	Angles, top, right	do	4. in. x 4. in. x .5 in. x 1195.
2	GG10X	15	22S2	10	Angles, bottom, left	do	4. in. x 4. in. x .5 in. x 1195.
2	GG10Z	15	22S2	10	Angles, bottom, right	do	4. in. x 4. in. x .5 in. x 1195.
8	GG10AA	15	22S2	10	Angles, front, left	do	4. in. x 4. in. x .5 in. x 276.5.
8	GG10BA	15	22S2	10	Angles, front, right	do	4. in. x 4. in. x .5 in. x 276.5.
2	GG10EA	15	22S2	10	Angles, top, left	do	4. in. x 4. in. x .5 in. x 1105.
2	GG10FA	15	22S2	10	Angles, top, right	do	4. in. x 4. in. x .5 in. x 1105.
2	GG10GA	15	22S2	10	Angles, bottom, left	do	4. in. x 4. in. x .5 in. x 1195.
2	GG10HA	15	22S2	10	Angles, bottom, right	do	4. in. x 4. in. x .5 in. x 1195.
					TRANSOM NO. 4.		
8	GG11A	15	22S2	11	Filler plate	do	.5 in. thick.
2	GG11B	15	22S2	11	Plates	Steel	766. x .5 in. x 1243.
4	GG11C	15	22S2	11	Angles	do	4. in. x 4. in. x .5 in. x 1030.
4	GG11D	15	22S2	11	do	do	4. in. x 4. in. x .5 in. x 1030.
4	GG11E	15	22S2	11	do	do	4. in. x 4. in. x .5 in. x 766.
2	GG11F	15	22S2	11	Angles, right	do	4. in. x 4. in. x .5 in. x 766.
2	GG11G	15	22S2	11	Angles, left	do	4. in. x 4. in. x .5 in. x 766.
					LONGITUDINAL TRANSOM, REAR, 2 RIGHT AND 2 LEFT.		
2	GG11H	15	22S2	11	Plate	Steel	294. x .5 in. x 1295.
2	GG11K	15	22S2	11	do	do	294. x .5 in. x 1295.
2	GG11L	15	22S2	11	Angle, upper, left	do	4. in. x 4. in. x .5 in. x 1093.
2	GG11M	15	22S2	11	Angle, lower, left	do	4. in. x 4. in. x .5 in. x 1093.
2	GG11N	15	22S2	11	Angle, upper, right	do	4. in. x 4. in. x .5 in. x 1093.
2	GG11P	15	22S2	11	Angle, lower, right	do	4. in. x 4. in. x .5 in. x 1093.
6	GG11Q	15	22S2	11	Angle, right	do	4. in. x 4. in. x .5 in. x 276.5.
6	GG11R	15	22S2	11	Angle, left	do	4. in. x 4. in. x .5 in. x 276.5.
4	GG11S	15	22S2	11	Filler plates	do	101.6 x .5 in. x 190.
					REAR END PLATE.		
2	GG11W	15	22S2	11	Plates	Steel	773 x .5 in. x 1520.
2	GG11X	15	22S2	11	Angle	do	4. in. x 4. in. x .5 in. x 1036.
2	GG11Z	15	22S2	11	Rear end cover plate	do	.5 in. thick.
					M. C. B. COUPLER AND DRAFT GEAR.		
2	GG49X	15	22S2	49	Draft gear housing	C. S	
12	GG49B	15	22S2	49	Pipe separators		1.5 in. x 11.812 ($11\frac{13}{16}$) in.
4	GG49C	15	22S2	49	do		1.5 in. x 10.312 ($10\frac{5}{16}$) in.
16	GG49D	15	22S2	49	Bolts [5]	Steel	1.25 in. x 16.5 in.
4	GG49E	15	22S2	49	do [5]	do	1.25 in. x 4.5. in.
12	GG49F	15	22S2	49	do [5]	do	1.25 in. x 4.125 in.
4	GG49G	15	22S2	49	do [5]	do	1.25 in. x 3.625 in.
4	GG49H	15	22S2	49	do [5]	do	.875 in. x 3.25 in.
2	GG49K	15	22S2	49	Uncoupling lever	W. I	

[5] Provided with nuts and lock washers.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					M. C. B. COUPLER AND DRAFT GEAR—continued.		
2	GG49P	15	22S2	49	Uncoupling lever bracket, inner	Steel	.5 in. thick.
2	GG49Q	15	22S2	49	Bolts [5]	do	.875 in. x 2.625 in.
2	GG49R	15	22S2	49	do.[5]	do	.875 in. x 2.25 in.
2	GG49S	15	22S2	49	Uncoupling lever bracket, outer	do	.5 in. thick.
4	GG49T	15	22S2	49	Bolts [5]	do	.875 in. x 2.75 in.
2	GG50A	15	22S2	50	Plates, right	do	12.25 in. x .5 in. x 20.5 in.
2	GG50B	15	22S2	50	Plates, left	do	12.25 in. x .5 in. x 20.5 in.
4	GG50C	15	22S2	50	Filler plates	do	4.5 in. x .375 in. x 9.75 in.
4	GG50D	15	22S2	50	do	do	2.75 in. x .375 in. x 4.5 in.
4	GG50E	15	22S2	50	do	do	3. in. x .375 in. x 5.25 in.
4	GG50F	15	22S2	50	Angles	do	3. in. x 3. in. x .375 in. x 9.5 in.
2	GG50G	15	22S2	50	Angles, right	do	2.5 in. x 2.5 in. x .375 in. x 11.5 in.
2	GG50H	15	22S2	50	Angles, left	do	2.5 in. x 2.5 in. x .375 in. x 11.5 in.
					GOULD COUPLER CO.'S DRAFT GEAR F. D. G. 316.		
2	Y384	15	22S2	48	Pivot pin	Steel	
2	LE326	15	22S2	48	Cover plate	C. S.	
2	LE327	15	22S2	48	Wedge	do	
4	LE328	15	22S2	48	Wedge plate	do	
2	3547	15	22S2	48	Yoke with F. D. G. 300	F. S.	
2	LE332	15	22S2	48	Follower	Steel	
4	3544	15	22S2	48	Cover plate	C. S.	
8		15	22S2	48	Spring cover plate cap screws	Steel	.625 in. x 1.75 in.
4		15	22S2	48	Cover plate cap screws	do	.5 in. x 1.75 in.
2	LE416	15	22S2	48	Wear plate	do	
80	X141A	15	22S2	48	Leaf springs		
2	LC143	15	22S2	48	Coupler complete with 6.5 in. chain		
					TRUCK AND CAR CENTER PLATES.		
2	GG14K	15	22S2	14	Truck center plate	C. S. No. 2	
8	GG14L	15	22S2	14	Countersunk head bolts [5]	Steel	1. in. x 3.625 in.
16	GG14M	15	22S2	14	Bolts [5]	do	1. in. x 3.625 in.
40	GG14N	15	22S2	14	do.[5]	do	1. in. x 3.375 in.
2	GG14P	15	22S2	14	Car center plate	C. S. No. 2	
16	GG14Q	15	22S2	14	Countersunk head bolts [5]	Steel	1.25 in. x 4.062 ($4\frac{1}{16}$) in.
8	GG14R	15	22S2	14	Bolts [5]	do	1.25 in. x 4.062 ($4\frac{1}{16}$) in.
12	GG14S	15	22S2	14	do.[5]	do	1.25 in. x 3.562 ($3\frac{9}{16}$) in.

[5] Provided with nuts and lock washers.

4	GG15B	15	22S2	15	Friction-shoe oil pipe	Copper	
4	GG15E	15	22S2	15	Truck-bearing oil-cup support	Steel	.25 in. thick, with oil cups.
8	GG15D	15	22S2	15	Bolts [3]		10. x 31.
4	GG15G	15	22S2	15	Truck bearing	C. S. No. 2	
8	GG15H	15	22S2	15	Bolts [3]		24. x 86.
8	GG15K	15	22S2	15	....do.[3]		24. x 92.
4	GG15L	15	22S2	15	Gland	F. S.	
8	GG15M	15	22S2	15	8 studs [3]		
4	GG15N	15	22S2	15	Washer	Leather	
					WHEEL AND AXLE.		
16	GG16A	15	22S2	16	Wheel	Steel	
6	GG16D	15	22S2	16	Axle	F. S. No. 2	
2	GG16E	15	22S2	16	....do	....do	
					JOURNAL BOX.		
8	GG18A	15	22S2	18	Journal box, right	Bronze	
8	GG18B	15	22S2	18	Journal box, left	....do	
16	GG19B	15	22S2	19	Journal-box bearing	Bronze No. 2	Lined with babbett.
32	GG19A	15	22S2	19	Oil pipe	Copper	
16	GG19C	15	22S2	19	Journal-box support	C. S. No. 2	
96	GG19D	15	22S2	19	10 studs		With 10. crown nuts.
16	GG19E	15	22S2	19	Journal-box support pin	F. S.	With 32-.203 ($\frac{13}{64}$) in. x 1.5 in. split pins.
					UPPER DUST GUARD.		
16	GG20A	15	22S2	20	Leather	Leather	118.5 x 4. x 208.
16	GG20B	15	22S2	20	....do	....do	98.5 5 4. x 208.
16	GG20C	15	22S2	20	Felt	Felt	98.5 x 4. x 208.
16	GG20D	15	22S2	20	Plate	Steel	39. x 130. x 16. gauge.
16	GG20E	15	22S2	20	Spring	Spring steel	12. x .062 ($\frac{1}{16}$) in. x 120.
					LOWER DUST GUARD.		
16	GG20F	15	22S2	20	Leather	Leather	129.5 x 4. x 208.
16	GG20G	15	22S2	20	....do	....do	109.5 x 4. x 208.
16	GG20H	15	22S2	20	Felt	Felt	109.5 x 4. x 208.
16	GG20K	15	22S2	20	Plates	Steel	39. x 208. x 16 gauge.
16	GG20L	15	22S2	20	Lower spring	Spring steel	
16	GG20M	15	22S2	20	Round-head screws	Steel	5. x 12.
8	GG20N	15	22S2	20	Cover plate, right	....do	.125 in. thick.
8	GG20P	15	22S2	20	Cover plate, left	....do	.125 in. thick.
128	GG20Q	15	22S2	20	Countersunk-head screws	....do	6. x 12., thread 8. long.
16	GG20R	15	22S2	20	Cover-plate joint	Leather	2. thick.
16	GG20S	15	22S2	20	....do	....do	2. thick.
16	GG20T	15	22S2	20	Journal-box cover	Bronze	
16	GG20U	15	22S2	20	Journal-box cover joint	Leather	3. thick.
16	GG21A	15	22S2	21	Lubricating-pad support	Steel	.125 in. thick.
16	GG21K	15	22S2	21	Pads	Wool	
64	GG21B	15	22S2	21	Support spring	Spring steel	

[3] Provided with crown nuts.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					LOWER DUST GUARD—continued.		
16	GG21C	15	22S2	21	Spout lids	Malleable iron	
16	GG21D	15	22S2	21	Plates	Steel	34. x 42. x 14. gauge.
16	GG21E	15	22S2	21	Cover-plate oil plug	F. S.	
16	GG21F	15	22S2	21	Journal-box oil plug	do	
16	GG21G	15	22S2	21	Spout spring lid	Spring steel	
16	GG21H	15	22S2	21	Spout-lid pin	F. S.	With 16-.093 ($\frac{3}{32}$) in. x 1. in. split pins.
16	GG21L	15	22S2	21	Oil-plug gasket	Leather	
					SPRING AND PEDESTAL.		
16	GG23A	15	22S2	23	Spring (26 plates 100 by 7)	Spring steel	With .312 ($\frac{5}{16}$) in. x 204. steel rivet.
32	GG23B	15	22S2	23	Spring bearing	F. S. No. 0.	
32	GG23C	15	22S2	23	Suspension-rod support	F. S. No. 2.	
32	GG23D	15	22S2	23	Upper support bearing	F. S. No. 0.	
32	GG23E	15	22S2	23	Lower support bearing	do	
32	GG23F	15	22S2	23	Collar	F. S.	With 64-.312 ($\frac{5}{16}$) in. x 67. steel pins, driven.
32	GG23G	15	22S2	23	Suspension rod	F. S. No. 0.	With .375 in. x 2.75 in. split pins and 44. nuts.
32	GG23H	15	22S2	23	Nuts		44. x 30. thick.
32	GG24A	15	22S2	24	Pedestal bushing	Bronze No. 2.	
128	GG24B	15	22S2	24	Countersunk-head screws	Bronze	10. x 25.
16	GG24C	15	22S2	24	Spring-band guide	C. S. No. 2.	
32	GG24D	15	22S2	24	Bolts [2]		Thread 40. long.
32	GG24E	15	22S2	24	Nuts		20. x 12. thick.
16	GG24F	15	22S2	24	Spring band	W. I.	
16	GG24G	15	22S2	24	Pedestal, right	C. S. No. 2.	
16	GG24H	15	22S2	24	Pedestal, left	do	
					WARPING MECHANISM.		
2	GG26A	15	22S2	26	Handwheel, hub	C. S. No. 2.	
12	GG26B	15	22S2	26	Handwheel, arm	Steel	.5 in. thick.
2	GG26C	15	22S2	26	Handwheel, plate	do	.312 ($\frac{5}{16}$) in. thick.
					SPROCKET COVER.		
2	GG26D	15	22S2	26	Plate	Steel	170. x .125 in. x 404.
4	GG26E	15	22S2	26	do	do	104. x .125 in. x 166.
8	GG26F	15	22S2	26	Tap bolts		8. x 20., thread 18. long.
4	GG26G	15	22S2	26	Oil pipes	Copper	8. x 61.

[2] Provided with nuts.

4	GG26H	15	22S2	26	Oil plug	Hardwood	
1	GG26K	15	22S2	26	Direction plate	Bronze	
2	GG26L	15	22S2	26	Countersunk head screws	Steel	6. x 13.
1	GG26M	15	22S2	26	Direction plate	Bronze	
2	GG26N	15	22S2	26	Countersunk head screws	Steel	6. x 13.
2	GG27A	15	22S2	27	Handwheel shaft bearing	Bronze o. 2	
2	GG27B	15	22S2	27	....do	....do	
8	GG27C	15	22S2	27	Bolts[3]		16. x 66.
2	GG27D	15	22S2	27	Upper sprocket	C. S. No. 2	
2	GG27E	15	22S2	27	Handwheel shaft	F. S. No. 2	With 2-15. x 9. x 58. steel keys.
2	GG27F	15	22S2	27	Washer	F. S.	
2	GG27G	15	22S2	27	Countersunk head screws	Steel	10. x 19.
2	GG27H	15	22S2	27	Auxiliary handle	F. S.	
8	GG28A	15	22S2	28	Adjusting plate	Steel	.125 in. thick.
2	GG28B	15	22S2	28	Handwheel shaft support	C. S. No. 2	With 2-6. x 7. x 29. steel keys.
8	GG28C	15	22S2	28	Bolts[3]		24. x 63.
2	GG28D	15	22S2	28	Adjusting screw	F. S.	
4	GG28E	15	22S2	28	Nuts		28. x 20.
2	GG28F	15	22S2	28	Adjusting roller pin	F. S.	With 2-.125 in. x .75 in. split pins.
2	GG28G	15	22S2	28	Washer	....do	
2	GG28H	15	22S2	28	Adjusting roller	Steel	
2	GG29A	15	22S2	29	Lower sprocket	C. S. No. 2	
2	GG29B	15	22S2	29	Sprocket chain	Nickel steel	
4	GG29C	15	22S2	29	Sprocket shaft bearing	Bronze	
16	GG29D	15	22S2	29	Bolts[3]		14. x 45.
2	GG29E	15	22S2	29	Pinion gib key	F. S.	
2	GG29F	15	22S2	29	Sprocket shaft	F. S. No. 2	
2	GG29G	15	22S2	29	Sprocket gib key	F. S.	
2	GG29H	15	22S2	29	Sprocket shaft pinion	F. S. No. 2	
2	GG30A	15	22S2	30	Quadrant	Steel	
4	GG30B	15	22S2	30	Bolts[3]		16. x 56.
4	GG30C	15	22S2	30	....do[3]		20. x 56.
4	GG30D	15	22S2	30	Quadrant ring bolts	F. S.	
4	GG30E	15	22S2	30	Quadrant filler piece	Steel	.75 in. thick.
2	GG30F	15	22S2	30	Direction plate	Bronze	
4	GG30G	15	22S2	30	Countersunk head screws	Steel	6. x 13.
2	GG30H	15	22S2	30	Direction plate	Bronze	
4	GG30K	15	22S2	30	Countersunk head screws	Steel	6. x 13.
2	GG30L	15	22S2	30	Quadrant back plate	....do	.312 ($\frac{5}{16}$) in. thick.
4	GG30M	15	22S2	30	Washer	F. S.	
2	GG31A	15	22S2	31	Clutch fork	....do	With 4-5. x 40. steel pins.
2	GG31G	15	22S2	31	Bearing	C. S. No. 2	
8	GG31B	15	22S2	31	Bolts[3]		16. x 46.
4	GG31C	15	22S2	31	Clutch pin	F. S.	
4	GG31D	15	22S2	31	Clutch slide	Bronze	
4	GG31E	15	22S2	31	Washer	F. S.	
2	GG31F	15	22S2	31	Lever shaft	F. S. No. 2	With 4-18. crown nuts.
2	GG32A	15	22S2	32	Clutch lever	F. S.	
2	GG32B	15	22S2	32	Latch	....do	With 2-7. x 23. steel pins.
2	GG32C	15	22S2	32	Latch trigger	....do	With 2-7. x 40. steel pins.
2	GG32D	15	22S2	32	Lever box	....do	

[3] Provided with crown nuts.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					SPROCKET COVER—continued.		
4	GG32E	15	22S2	32	Bolts[3]		14. x 48.
2	GG32F	15	22S2	32	Lever ring bolt	F. S	
2	GG32G	15	22S2	32	2-inch Yale lock No. 850 or equal		With duplicate keys.
2	GG32H	15	22S2	32	Latch trigger spring	Spring steel	With 4-4. x 12. steel pins.
2	GG32K	15	22S2	32	Latch guide	F. S	
4	GG32L	15	22S2	32	Countersunk head screws	Steel	8. x 35.
2	GG33A	15	22S2	33	Clutch shaft gear	C. S. No. 2	
4	GG33B	15	22S2	33	Clutch shaft bearing	Bronze No. 2	
16	GG33C	15	22S2	33	Bolts[3]		16. x 49.
2	GG33D	15	22S2	33	Clutch key	F. S	Staked.
2	GG33E	15	22S2	33	do	do	Staked.
10	GG33F	15	22S2	33	Countersunk head screws	Steel	8. x 17.
2	GG33G	15	22S2	33	Clutch shaft	F. S. No. 2	
2	GG33H	15	22S2	33	Gear gib key	F. S	
2	GG34A	15	22S2	34	Clutch pinion	C. S. No. 2	
4	GG34B	15	22S2	34	Driving gear	do	
4	GG34C	15	22S2	34	Angle, right	do	
4	GG34D	15	22S2	34	Angle, left	do	
16	GG34H	15	22S2	34	22 studs[3]		
4	GG34E	15	22S2	34	Angle, right	C. S. No. 2	
4	GG34F	15	22S2	34	Angle, left	do	
4	GG34G	15	22S2	34	Key	F. S	
					BRAKES.		
2	XC2F	34	O	2	Hand brake wheel	Malleable iron	
2	XC2B	34	O	2	Brake ratchet wheel	Cast iron	
2	XC2E	34	O	2	Brake pawl	do	
2	GG36A	15	22S2	36	Brake mast step	Steel	.75 in. thick.
4	GG36B	15	22S2	36	Bolts[3]		20. x 57.
4	GG36C	15	22S2	36	do		20. x 64.
2	GG36D	15	22S2	36	Hand brake chain	Wrought iron	With 2-14. crown nuts.
2	GG36E	15	22S2	36	Hand brake rod	F. S	
2	GG36F	15	22S2	36	Turnbuckles		1. in std.
2	GG36G	15	22S2	36	Lock nuts, right-hand thread		1. in. x .5 in. thick.
2	GG36H	15	22S2	36	Lock nuts, left-hand thread		1. in. x .5 in. thick.
2	GG36K	15	22S2	36	Hand brake rod support	Steel	.5 in. thick.
4	GG36L	15	22S2	36	Rod bearing	Wood	50.8 x 101.6 x 151.
8	GG36M	15	22S2	36	Bolts[5]		12. x 84.
2	GG36N	15	22S2	36	Brake pawl carrier	Malleable iron	

[3] Provided with crown nuts.

[5] Provided with nuts and lockwashers.

4	GG36P	15	22S2	36	Bolts[3]		14. x 44.
2	GG36Q	15	22S2	36	do.[3]		14. x 82, with 2-14. washers.
2	GG36R	15	22S2	36	Brake mast	F. S.	With 2-22 crown nuts, 2-.25 in. x 2. in. split pins, and 2-.25 in. x 1.75 in. split pins.
2	GG36S	15	22S2	36	Brake mast collar	Steel	
2	GG37A	15	22S2	37	Hand brake rod	F. S.	
2	GG37B	15	22S2	37	Hand brake lever	do	
2	GG37C	15	22S2	37	Hand brake lever fulcrum	Steel	5. in. x 4. in. x .5 in. x 210.
2	GG37D	15	22S2	37	do	do	.5 in. thick.
2	GG37E	15	22S2	37	Hand brake rod	F. S.	
2	GG38A	15	22S2	38	Cylinder lever	do	
2	GG38B	15	22S2	38	Plates	Steel	4. in. x .75 in. x 600. Approx.
2	GG38L	15	22S2	38	do	do	4. in. x .75 in. x 700. Apporx.
8	GG38C	15	22S2	38	Bolts[3]		22. x 78.
2	GG38D	15	22S2	38	Cylinder support	Steel	.75 in. thick.
8	GG38E	15	22S2	38	Bolts[3]		22. x 71.5.
12	GG38F	15	22S2	38	do		22. x 73.
2	GG38G	15	22S2	38	Cylinder support plate	Steel	1. in. thick.
6	GG38H	15	22S2	38	Bolts[5]		22. x 65.
8	GG38M	15	22S2	38	Tap bolts[3]	Steel	1.125 in. x 2. in.
2	GG38K	15	22S2	38	Countersunk head bolts[3]	do	22. by 65.
2	GG39A	15	22S2	39	Intermediate rod	F. S.	
2	GG39G	15	22S2	39	do	do	
2	GG39H	15	22S2	39	Turnbuckle		1.75 in. std.
2	GG39B	15	22S2	39	Equalizer rod	C. S. No. 2	
2	GG39C	15	22S2	39	Intermediate lever fulcrum	do	
8	GG39D	15	22S2	39	Bolts[3]		22. x 101.
4	GG39E	15	22S2	39	do.[3]		22. x 88.
2	GG39F	15	22S2	39	Intermediate lever	F. S.	
4	GG40A	15	22S2	40	Release spring	Spring steel	
2	GG40B	15	22S2	40	Release spring clevis	Wrought iron	
2	GG40C	15	22S2	40	do	do	
8	GG40D	15	22S2	40	Release spring eye rod	Steel	
8	GG40E	15	22S2	40	Release spring end	Malleable iron	
2	GG40F	15	22S2	40	Eye bolt for release spring clevis	Wrought iron	With 4-1. in. nuts
2	GG40G	15	22S2	40	Release spring clevis	do	
2	GG40H	15	22S2	40	do	do	
2	GG41A	15	22S2	41	Equalizer, large	F. S.	
2	GG41B	15	22S2	41	Release spring clevis pin	do	
2	GG41C	15	22S2	41	Hand brake lever fulcrum pin	do	
4	GG41D	15	22S2	41	Hand brake rod pin	do	
2	GG41E	15	22S2	41	Release spring clevis pin	do	
2	GG41F	15	22S2	41	Hand brake rod pin	do	
4	GG41G	15	22S2	41	Tension rod pin	do	
4	GG41H	15	22S2	41	do	do	
8	GG41L	15	22S2	41	do	do	
2	GG41N	15	22S2	41	Cylinder lever fulcrum pin	do	
4	GG41P	15	22S2	41	Intermediate rod pin	do	
2	GG41Q	15	22S2	41	Equalizer rod pin	do	
2	GG41R	15	22S2	41	do	do	
2	GG41S	15	22S2	41	Intermediate lever fulcrum pin	do	

[1] Provided with lock washers.

[3] Provided with crown nuts.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					BRAKES—continued.		
4	GG41T	15	22S2	41	Intermediate equalizer	F. S.	
8	GG41U	15	22S2	41	Intermediate link	Steel	.625 in. thick.
8	GG41W	15	22S2	41	Intermediate equalizer link	do	.625 in. thick.
16	GG41X	15	22S2	41	Shoulder bolt	F. S.	With 16–1 in. crown nuts.
8	GG41Z	15	22S2	41	do	do	With 8–1.25 in. crown nuts.
4	GG41AA	15	22S2	41	Release spring clevis pin	do	
4	GG42A	15	22S2	42	Tension rod	do	
4	GG42G	15	22S2	42	Turnbuckle		1.625 in. std.
4	GG42B	15	22S2	42	Lock nuts, right-hand threads		1.625 in. x .812 ($1\frac{13}{16}$) in. thick.
4	GG42C	15	22S2	42	Lock nuts, left-hand threads		1.625 in. x .812 ($1\frac{13}{16}$) in. thick.
4	GG42D	15	22S2	42	Tension rod	F. S.	
4	GG42E	15	22S2	42	Small equalizer	do	
8	GG42F	15	22S2	42	Small equalizer link	Steel	.625 in. thick.
4	GG43A	15	22S2	43	Tension rod	F. S.	
4	GG43B	15	22S2	43	Turnbuckle		1.25 in. std.
4	GG43C	15	22S2	43	Lock nuts, right-hand threads		1.25 in. x .625 in. thick.
4	GG43D	15	22S2	43	Lock nuts, left-hand threads		1.25 in. x .625 in. thick.
4	GG43E	15	22S2	43	Tension rod	F. S.	
4	GG43F	15	2S22	43	Brake beam	do	With 8–30 crown nuts.
12	GG43G	15	22S2	43	Washer	Steel	
2	GG43H	15	22S2	43	Brake beam	F. S.	With 4–30 crown nuts.
4	GG44A	15	22S2	44	Brake hanger support	C. S. No. 2	
4	GG44B	15	22S2	44	do	do	
4	GG44C	15	22S2	44	do	do	
6	GG44D	15	22S2	44	Brake shoe, right	do	
6	GG44E	15	22S2	44	Brake shoe, left	do	
12	GG44F	15	22S2	44	Washer	Steel	
12	GG44G	15	22S2	44	Brake shoe pin	F. S.	With 12–.312 ($\frac{5}{16}$) in. x 2.5 in. split pins.
6	GG44H	15	22S2	44	Brake hanger, right	C. S. No. 2	
6	GG44K	15	22S2	44	Brake hanger, left	do	
12	GG44L	15	22S2	44	Collar	Steel	With 12–.312 ($\frac{5}{16}$) in. x 4. in. split pins.
2	GG45A	15	22S2	45	Reservoir straps	do	.5 in. thick.
2	GG45B	15	22S2	45	Bolts [3]		16. x 46.
2	GG45C	15	22S2	45	do.[3]		16. x 59.
2	GG45D	15	22S2	45	Reservoir straps	Steel	.5 in. thick.
4	GG45E	15	22S2	45	Bolts [3]		16. x 46.
4	GG45F	15	22S2	45	U bolt	Wrought iron	With 12–8. crown nuts.
2	GG45G	15	22S2	45	do	do	With 4–8 crown nuts.
4	GG45H	15	22S2	45	do	do	With 8–8. crown nuts.
4	GG45K	15	22S2	45	do	Wrought iron	With 8–8. crown nuts.

[3] Provided with crown nuts.

4	GG45L	15	22S2	45	do	do	With 8-8. crown nuts.
4	GG45M	15	22S2	45	Air pipe clamp	Steel	.375 in. thick.
2	GG45N	15	22S2	45	Bolts [3]		10. x 34.
4	GG45P	15	22S2	45	Tap bolts		12. x 23.
2	GG45Q	15	22S2	45	Air pipe clamp	Steel	.375 in. thick.
4	GG45R	15	22S2	45	Tap bolts [1]		10. x 35.
4	GG45S	15	22S2	45	Air pipe support	Steel	2. in. x 2. in. x .25 in. x 101. angle.
2	GG45T	15	22S2	45	do	do	2. in. x 2. in. x .25 in. x 101. angle.
4	GG45U	15	22S2	45	do	do	2. in. x 2. in. x .25 in. x 101. angle.
2	GG45W	15	22S2	45	do	do	.375 in. thick.
4	GG45X	15	22S2	45	Bolts [3]		12. x 39.
2	GG45Z	15	22S2	45	U bolts	Wrought iron	With 2-8. crown nuts.
2	GG46A	15	22S2	46	Pipe support	Steel	.375 in. thick.
4	GG46B	15	22S2	46	Bolts [3]		12. x 39.
2	GG46C	15	22S2	46	Release valve pipe hanger	Steel	.375 in. thick.
2	GG46D	15	22S2	46	Tap bolts [1]		12. x 35.
2	GG46E	15	22S2	46	Triple valve bracket	Steel	5. in. x 4. in. x .5 in. x 150.
4	GG46F	15	22S2	46	Bolts [3]		14. x 51.
2	GG46G	15	22S2	46	Release valve pull rod	Wrought iron	With 2-.25 in. x 1.25 in. split pins.
2	GG46H	15	22S2	46	Air pipe clamp	Steel	.375 thick.
4	GG46R	15	22S2	46	Tap bolts [1]	do	10. x 35.
4	GG12K	15	22S2	12	Tap bolts [1]		.375 in. x .875 in.
2	XC30A	34	O	30	Air brake hose guard	Malleable iron	
2		15	22S2	35	Brake pipe		1.25 in.
2		15	22S2	35	Pipe		1. in.
4		15	22S2	35	Coupling		.5 in.
4		15	22S2	35	45° elbow		1. in.
4		15	22S2	35	90° elbow		1. in.
8		15	22S2	35	do		.75 in.
16		15	22S2	35	Pipe		.75 in.
8		15	22S2	35	do		.5 in.
4		15	22S2	35	90° elbow		.75 in. x .5 in.
2		15	22S2	35	Tee		.75 in.
2		15	22S2	35	Type 42C, 14 by 12 inch cylinder		
2		15	22S2	35	14 by 33 inch reservoir		With .25 in. cocks.
4		15	22S2	35	Hose and coupling with 1.25-inch nipple		1.375 in. x 24. in.
4		15	22S2	35	Angle cock		1.25 in.
4		15	22S2	35	90° street ell		1.25 in.
10		15	22S2	35	90° elbow		1.25 in.
2		15	22S2	35	Release valve		
6		15	22S2	35	90° elbow		.5 in.
2		15	22S2	35	Branch pipe tee		1.25 in. x 1.25 in. x 1. in.
2		15	22S2	35	Cut-out cock		1. in.
2		15	22S2	35	Drain cock		.5 in.
2		15	22S2	35	Centrifugal dirt collector		1. in.
2		15	22S2	35	Triple valve		
2		15	22S2	35	Triple valve bracket		
2		15	22S2	35	Triple valve gasket		
4		15	22S2	35	Union		.75 in.
2		15	22S2	35	Drain cock		.25 in.
		15	22S2	35	Union		1. in.

[1] Provided with lock washers.

[3] Provided with crown nuts.

GROUND PLATFORM CAR.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					SIDE SILL.		
1	6AB	34	17	6	Beam, right	Steel	15. in. x 60 $\frac{1}{16}$ x 12,960.
1	6BB	34	17	6	Beam, left	do	15. in. x 60 $\frac{1}{16}$ x 12,960.
4	6CB	34	17	6	Angles	do	6. in. x 4. in. x .375 in. x 254.
4	6DB	34	17	6	do	do	6. in. x 2.7 in. x .375 in. x 254.
2	6EB	34	17	6	Plate	do	6. in. x .5 in. x 6100.
32	6FB	34	17	6	Rings	do	.5 in. x 2. in.
32	6HB	34	17	6	Clips	do	.5 in.
					BUFFER STRUT.		
2	7AB	34	17	7	Beam, right, milled 1 end	Steel	10 in. x 25 $\frac{1}{16}$ x 2370.
2	7BB	34	17	7	Beam, left, milled 1 end	do	10 in. x 25 $\frac{1}{16}$ x 2370.
16	7CB	34	17	7	Angle	do	6. in. x 4. in. x .375 in. x 182.
8	7DB	34	17	7	Angle finish	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 212.88.
8	7EB	34	17	7	do	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 212.88.
3	7FB	34	17	7	Angle	do	6. in. x 4. in. x .375 in. x 200.
4	7GB	34	17	7	Plates	do	457.2 (18. in.) x .375 in. x 412.74.
4	7HB	34	17	7	do	do	63.5 (2.5 in.) x .375 in. x 412.74.
4	7KB	34	17	7	Angles	do	6. in. x 3.5 in. x .375 in. x 412.74.
					END SILL.		
1	7MB	34	17	7	Channel	Steel	15. in. x 33 $\frac{1}{16}$ x 2712.4.
1	7PB	34	17	7	do	do	15. in. x 33 $\frac{1}{16}$ x 2712.4.
2	7NB	34	17	7	Plates	do	50.8 (2. in.) x .625 in. x 1143.
					DRAFT SILL, 2 RIGHT AND 2 LEFT.		
2	8AB	34	17	8	Channels, right	Steel	10. in. x 15 $\frac{1}{16}$ x 2360.
2	8BB	34	17	8	Channels, left	do	10 in. x 15 $\frac{1}{16}$ x 2360.
8	8CB	34	17	8	Angles	do	6. in. x 3.5 in. x .375 in. x 182.
4	8DB	34	17	8	do	do	6. in. x 4. in. x .375 in. x 182.
2	8EB	34	17	8	Angles, right	do	6. in. x 3.5 in. x .375 in. x 309.
2	8FB	34	17	8	Angles, left	do	6. in. x 3.5 in. x .375 in. x 309.
2	8GB	34	17	8	Bent plates, right	do	406.4 (16. in.) x .375 in. x 824.
2	8HB	34	17	8	Bent plates, left	do	406.4 (16. in.) x .375 in. x 824.

					UNDER TIE.		
2	8KB	34	17	8	Channels	Steel	7. in. x 9.75 # x 2530.
4	8MB	34	17	8	Angles	do	6. in. x 4. in. x .375 in. x 140.
					CONNECTION ANGLE.		
2	8NB	34	17	8	Angle	Steel	6. in. x 4. in. x .375 in. x 140.
2	8LB	34	17	8	do	do	6. in. x 3.5 in. x .375 in. x 561.1.
					BOLSTER.		
2	9AB	34	17	9	Channels	Steel	15. in. x 33 # x 2536.
2	9BB	34	17	9	do	do	15. in. x 33 # x 2536.
2	9CB	34	17	9	Plates	do	381. (15 in.) x .375 in. x 2712.4.
4	9DB	34	17	9	do	do	203.2 (8 in.) x .437 ($\frac{7}{16}$) in. x 317.
16	9EB	34	17	9	Angles	do	6. in. x 4. in. x .375 in. x 254.
8	9FB	34	17	9	Angles, right	do	4. in. x 3. in. x .375 in. x 317.
8	9GB	34	17	9	Angles, left	do	4. in. x 3. in. x .375 in. x 317.
8	9HB	34	17	9	Angles, right	do	3. in. x 3. in. x .375 in. x 317.
8	9KB	34	17	9	Angles, left	do	3. in. x 3. in. x .375 in. x 317.
4	9MB	34	17	9	Plates	do	8. in. x .375 in. x 317.
16	9NB	34	17	9	Bolts [3]		.75 in. x 3. in.
14	9PB	34	17	9	do.[3]		.75 in. x 2.75 in.
2	9QB	34	17	9	do.[3]		.75 in. x 3.5 in.
32	9RB	34	17	9	Bevel washers	F. S	
					CROSS SUPPORT.		
1	10AB	34	17	10	Channel	Steel	7. in. x 14.75 # x 2525.
1	10BB	34	17	10	do	do	7. in. x 14.75 # x 2525.
1	10CB	34	17	10	do	do	7. in. x 14.75 # x 2525.
1	10DB	34	17	10	do	do	7. in. x 14.75 # x 2525.
16	10EB	34	17	10	Angles	do	6. in. x 4. in. x .375 in. x 123.
					CROSS SUPPORT, 1 RIGHT AND 1 LEFT.		
1	10FB	34	17	10	Channel, right	Steel	7. in. x 14.75 # x 2525.
1	10GB	34	17	10	Channel, left	do	7. in. x 14.75 # x 2525.
8	10EB	34	17	10	Angles	do	6. in. x 4. in. x .375 in. x 123.
					CENTER SILL, 1 RIGHT AND 1 LEFT.		
1	10HB	34	17	10	Channel, right	Steel	7. in. x 12.25 # x 7760.
1	10KB	34	17	10	Channel, left	do	7. in. x 12.25 # x 7760.
4	10MB	34	17	10	Angle	do	6. in. x 2.75 in. x .375 in. x 123.
4	10NB	34	17	10	do	do	6. in. x 3.5 in. x .375 in. x 123.
2	10PB	34	17	10	Angle, right	do	5. in. x 5. in. x .375 in. x 323.53.
2	10TB	34	17	10	Angle, left	do	5. in. x 5. in. x .375 in. x 323.53.
8	10QB	34	17	10	Plates	do	203.2 (8. in.) x .312 ($\frac{5}{16}$) in. x 203.2.
4	10SB	34	17	10	do	do	203.2 (8. in.) x .312 ($\frac{5}{16}$) in. x 129.6.

[3] Provided with crown nuts.

112166—19——11

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					AIR BRAKE SUPPORT CHANNEL.		
1	11AB	34	17	11	Channel, right	Steel	7. in. x 9.75 $\frac{1}{16}$ x 1676.
1	11BB	34	17	11	Channel, left	do	7. in. x 9.75 $\frac{1}{16}$ x 1676.
4	11CB	34	17	11	Angles	do	6. in. x 4. in. x .375 in. x 123.
2	11DB	34	17	11	Plates	do	203.2 (8. in.) x .312 ($\frac{5}{16}$) in. x 129.6.
1	11PB	34	17	11	Air-brake lever support	do	63.5 (2.5 in.) x .5 in. x 1047. approx. bar.
1	11MB	34	17	11	Release rod	Wrought iron	With .25 in. x 1.25 in. split pin.
1	11LB	34	17	11	do	do	With .25 in. x 1.25 in. split pin.
1	11GB	34	17	11	Air reservoir support	Steel	76.2 (3. in.) x .625 in. x 1570. bar.
1	11NB	34	17	11	Air-brake lever support	Wrought iron	
1	11QB	34	17	11	Brake pin	O. H. S	With 1–.375 in. x 2.25 in. split pin.
2	11RB	34	17	11	do	do	With 2–.375 in. x 2.25 in. split pin.
7	11SB	34	17	11	do	do	With 7–.375 in. x 2.25 in. split pin.
1	11EB	34	17	11	Brake cylinder plate	Steel	257.17 (10.125 in.) x .625 in. x 468.
1	11FB	34	17	11	Air-brake lever support	do	63.5 (2.5 in.) x .5 in. x 1205. approx. bar.
2	11TB	34	17	11	Bolts[3]	do	.625 in. x 2.312 (2 $\frac{5}{16}$) in.
6	11UB	34	17	11	do.[3]	do	.625 in. x 2. in.
					BRAKE LEVER FULCRUM.		
1	11HB	34	17	11	Bar	Steel	4. in. x .5 in. x 758.
1	11KB	34	17	11	do	do	4. in. x 5. in. x 700.
					FLOOR PLATE, REAR.		
1	12GB	34	17	12	Plate	Steel	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
1	12BB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 392.
2	12CB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 534.
2	12DB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 273.
1	12MB	34	17	12	do	do	4. in. x .312 ($\frac{5}{16}$) in. x 180.
					FLOOR PLATE, INTERMEDIATE.		
1	12NB	34	17	12	Plate	Steel	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
1	12BB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 392.
2	12CB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 534.
2	12DB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 273.
2	12FB	34	17	12	do	do	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
4	12HB	34	17	12	Angles	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 790.
2	12KB	34	17	12	do	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 692.
1	12EB	34	17	12	Plate	do	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.

[3] Provided with crown nuts.

1	12BB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 392.
2	12CB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 534.
2	12DB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 273.
					FLOOR PLATE, FRONT.		
1	12AB	34	17	12	Plate	Steel	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
1	12BB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 392.
2	12CB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 534.
2	12DB	34	17	12	do	do	5. in. x .312 ($\frac{5}{16}$) in. x 273.
1	12MB	34	17	12	do	do	4. in. x .312 ($\frac{5}{16}$) in. x 180.
1	12PB	34	17	12	Stop angle, right	do	4. in. x 4. in. x .375 in. x 400.
1	12QB	34	17	12	Stop angle, left	do	4. in. x 4. in. x .375 in. x 400.
					FLOOR PLATE, CENTER.		
1	13AB	34	17	13	Plate	Steel	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
1	12MB	34	17	13	do	do	4. in. x .312 ($\frac{5}{16}$) in. x 180.
					FLOOR PLATE, INTERMEDIATE.		
4	13BB	34	17	13	Plates	Steel	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
8	13CB	34	17	13	Angles	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 790.
2	13DB	34	17	13	do	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 692.
2	13KB	34	17	13	do	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 692.
8	13FB	34	17	13	Plates	do	6. in. x .375 in. x 380.
1	13GB	34	17	13	Plate, right	do	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
1	13HB	34	17	13	Plate, left	do	36. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
4	13CB	34	17	13	Angles	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 790.
2	13DB	34	17	13	do	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 692.
4	13FB	34	17	13	Plate	do	6. in. x .375 in. x 380.
1	12MB	34	17	13	do	do	4. in. x .312 ($\frac{5}{16}$) in. x 180.
2	13MB	34	17	13	do	do	20. in. x .312 ($\frac{5}{16}$) in. x 2712.4.
4	13CB	34	17	13	Angles	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 790.
2	13DB	34	17	13	do	do	5. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 692.
2	14AB	34	17	14	Bolster filler casting	C. S. No. 2	
4	14BB	34	17	14	Spring block guide	do	
2	14CB	34	17	14	Draft casting	do	
2	14DB	34	17	14	King-pin	F. S	
					SAND BINS, 1 RIGHT AND 1 LEFT.		
2	17AB	34	17	17	Plate	Steel	30.375 in. x .187 ($\frac{3}{16}$) in. x 3080.
1	17BB	34	17	17	Plate, bent	do	36. in. x .187 ($\frac{3}{16}$) in. x 3080.
1	17CB	34	17	17	do	do	36. in. x .187 ($\frac{3}{16}$) in. x 3080.
4	17DB	34	17	17	Plate	do	640. x .187 ($\frac{3}{16}$) in. x 1185.
4	17EB	34	17	17	do	do	24. in. x .187 ($\frac{3}{16}$) in. x 1185.
2	17FB	34	17	17	Angle, bent	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 3080.
2	17GB	34	17	17	Angle B	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 3080.
1	17HB	34	17	17	Angle, right	do	3. in. x 3. in. x .25 in. x 3624.
1	17KB	34	17	17	Angle, left	do	3. in. x 3. in. x .25 in. x 3624.
8	17MB	34	17	17	Angle	do	3. in. x 3. in. x .25 in. x 130.
6	17NB	34	17	17	Angle, crimped, right	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 760.
6	17PB	34	17	17	Angle, crimped, left	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 760.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Division.	Number.	Name of part.	Material.	Remarks.
					SAND BINS, 1 RIGHT AND 1 LEFT—continued.		
6	17QB	34	17	17	Angle, right	Steel	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 197.
6	17SB	34	17	17	Angle, left	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 197.
6	17TB	34	17	17	Angle, crimped, right	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 811.2.
6	17UB	34	17	17	Angle, crimped, left	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 811.2.
4	17WB	34	17	17	Angle, right	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 1100.
4	17XB	34	17	17	Angle, left	do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 1100.
4	17ZB	34	17	17	Angle, right	do	3.5 in. x 2.5 in. x .25 in. x 152.4.
4	17AAB	34	17	17	Angle, left	do	3.5 in. x 2.5 in. x .26 in. x 152.4.
12	17BAB	34	17	17	Bars	do	1.875 in. x .25 in. x 356.
12	17CAB	34	17	17	Fillers	do	1.25 in. x .25 in. x 356.
6	17DAB	34	17	17	Plate	do	1.5 in. x .625 in. x 80.
12	17EAB	34	17	17	do	do	2. in. x .25 in. x 163. approx.
					SAND BIN DOOR.		
6	18AB	34	17	18	Plates	Steel	8.5 in. x .187 ($\frac{3}{16}$) in. x 1000.
12	18GB	34	17	18	Hinge leaves	do	4 in. x .312 ($\frac{5}{16}$) in. x 125.
12	18HB	34	17	18	Hinge pin, rivetcd	do	.312 ($\frac{5}{16}$) in. x 110. approx.
12	18KB	34	17	18	Hinge straps	do	40. x .25 in. x 156.
					SAND BIN SLIDE.		
6	18BB	34	17	18	Angles	Steel	1.5 in. x 1.5 in. x .187 ($\frac{3}{16}$) in. x 460.
6	18CB	34	17	18	Plates	do	210. x .187 ($\frac{3}{16}$) in. x 520.
12	18EB	34	17	18	Handles	do	With 24–.5 in. nuts.
6	18FB	34	17	18	Eyes	do	With 6–.375 in. nuts.
					SLIDE HOOK.		
6	18LB	34	17	18	Hooks	F. S.	
6	18MB	34	17	18	Blank bolts with .5-inch washers		With 6–.187 ($\frac{3}{16}$) in. x 1. in. split pins.
					BRAKES.		
2		34	17	19	Unions		1.25 in.
1		34	17	19	Branch-pipe T		1.25 in. x 1.25 in. x 1 in.
1		34	17	19	Cut-out cock		1. in.
1		34	17	19	Centrifugal dirt collector		1. in.
1		34	17	19	K1 quick-action triple valve		

		34	17	19	Pipe		1.25 in.
2		34	17	19	Angle cocks		1.25 in.
2		34	17	19	Hose and coupling with 1.25-inch nipple		1.375 in. x 24. in.
9		34	17	19	U bolts [2]		.5 in.
1		34	17	19	Release valve		
1		34	17	19	Drain cock		.5 in.
1		34	17	19	Type C, freight brake cylinder and reservoir combined.		8. in. x 12. in.
1	20AB	34	17	20	Bell-crank fulcrum	C. S.	.75 in. x 2.562 ($2\frac{9}{16}$.) in.
4	20EB	34	17	20	Bolts [3]		
2	20FB	34	17	20	....do. [3]		.75 in. x 2.625 in.
1	20BB	34	17	20	Hand brake shaft bracket	C. S.	
2	20DB	34	17	20	Bolts [3]		.75 in. x 2.25 in.
1	20CB	34	17	20	Brake shaft	O. H. S.	With 1-.75 in. nut and 1-.187 ($\frac{3}{16}$) in. x 1.5 in. split pin.
6	20HB	34	17	20	Bevel washer	Steel	.75 in.
2	20GB	34	17	20	Bolts [3]		.75 in. x 3. in.
1	21AB	34	17	21	Brake rod	Wrought iron	
1	21BB	34	17	21	Lever connection rod	....do	
1	21CB	34	17	21	Brake rod	....do	
1	21DB	34	17	21	Hand brake rod	....do	
2	21EB	34	17	21	Brake lever	....do	
					ARCH FRAME, FRONT.		
2	22AB	34	17	22	Angles, right	Steel	3.5 in. x 2.5 in. x .375 in. x 4053.8.
2	22BB	34	17	22	Angles, left	....do	3.5 in. x 2.5 in. x .375 in. x 4053.8.
1	22CB	34	17	22	Angles, right	....do	3.5 in. x 2.5 in. x .375 in. x 3478.8.
1	22DB	34	17	22	Angles, left	....do	3.5 in. x 2.5 in. x .375 in. x 3478.8.
1	22EB	34	17	22	Angles, right	....do	3.5 in. x 2.5 in. x .375 in. x 3478.8.
1	22FB	34	17	22	Angles, left	....do	3.5 in. x 2.5 in. x .375 in. x 3478.8.
2	22GB	34	17	22	Splice angles	....do	3. in. x 2. in. x .25 in. x 610.
2	22HB	34	17	22	Splice angles, bent	....do	3. in. x 2. in. x .25 in. x 1047.
2	22KB	34	17	22	Angles, right	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 270.
2	22MB	34	17	22	Angles, left	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 270.
2	22NB	34	17	22	Angles, right	....do	3.5 in. x 3. in. x .375 in. x 602.
2	22PB	34	17	22	Angles, left	....do	3.5 in. x 3. in. x .375 in. x 602.
2	22QB	34	17	22	Angles, right	....do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 440.
2	22SB	34	17	22	Angles, left	....do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 440.
2	22TB	34	17	22	Angles	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 223.1.
2	22UB	34	17	22	....do	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 173.1.
1	22WB	34	17	22	Angles, right	....do	3. in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 185.
1	22XB	34	17	22	Angles, left	....do	3. in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 185.
1	22ZB	34	17	22	Angles, right	....do	3.25 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 185.
1	22AAB	34	17	22	Angles, left	....do	3.25 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 185.
1	22BAB	34	17	22	Angles, right	....do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 450.
1	22CAB	34	17	22	Angles, left	....do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 450.
1	22DAB	34	17	22	Angle, right	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 528.
1	22EAB	34	17	22	Angle, left	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 528.
1	22FAB	34	17	22	Angle, right	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 266.58.
1	22GAB	34	17	22	Angle, left	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 266.58.
1	22HAB	34	17	22	Angle	....do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 190.5.
4	22KAB	34	17	22	....do	....do	5.75 in. x 3.5 in. x .375 in. x 298.

[2] Provided with nuts.

[3] Provided with crown nuts.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					ARCH FRAME, FRONT—continued.		
2	22MAB	34	17	22	Web plates	Steel	5. in. x .437 ($\frac{7}{16}$) in. x 1822.
2	22NAB	34	17	22	do	do	5. in. x .437 ($\frac{7}{16}$) in. x 1418.3.
1	22PAB	34	17	22	Gusset	do	18. in. x .437 ($\frac{7}{16}$) in. x 1376.8.
4	22QAB	34	17	22	Splice plates	do	116. x .375 in. x 340.
4	22SAB	34	17	22	do	do	116. x .375 in. x 340.
1	22TAB	34	17	22	Cover plate	do	9. in. x .375 in. x 8107.6.
1	22UAB	34	17	22	do	do	9. in. x .375 in. x 2810.
1	22WAB	34	17	22	do	do	9. in. x .375 in. x 2810.
1	22XAB	34	17	22	Splice plate	do	9. in. x .375 in. x 610.
4	22ZAB	34	17	22	Fillers	do	3. in. x .375 in. x 200.
2	22ABB	34	17	22	do	do	3. in. x .437 ($\frac{7}{16}$) x 300.
4	22BBB	34	17	22	do	do	3.5 in. x .375 in. x 295.
1	22CBB	34	17	22	Gusset	do	7. in. x .437 ($\frac{7}{16}$) in. x 245.
1	22DBB	34	17	22	do	do	9. in. x .437 ($\frac{7}{16}$) in. x 440.
1	22EBB	34	17	22	Filler	do	3. in. x .437 ($\frac{7}{16}$) in. x 190.
2	22FBB	34	17	22	Fillers	do	3. in. x .312 ($\frac{5}{16}$) in. x 156.
2	22GBB	34	17	22	do	do	3. in. x .312 ($\frac{5}{16}$) in. x 106.
2	22HBB	34	17	22	Gussets	do	10. in. x .312 ($\frac{5}{16}$) in. x 350.
2	22KBB	34	17	22	Fillers	do	7.5 in. x .312 ($\frac{5}{16}$) in. x 180.
1	22MBB	34	17	22	Gusset bent, right	do	20. in. x .312 ($\frac{5}{16}$) in. x 388.
1	22NBB	34	17	22	Gusset bent, left	do	20. in. x .312 ($\frac{5}{16}$) in. x 388.
1	22PBB	34	17	22	Filler	do	7.5 in. x .312 ($\frac{5}{16}$) in. x 242.
2	22QBB	34	17	22	Fillers	do	3. in. x .312 ($\frac{5}{16}$) in. x 130.
4	22SBB	34	17	22	do	do	2.75 in. x .562 ($\frac{9}{16}$) in. x 298.
2	22TBB	34	17	22	do	do	3. in. x .312 ($\frac{5}{16}$) in. x 160.
1	22UBB	34	17	22	Plate	do	11. in. x .437 ($\frac{7}{16}$) in. x 450.
2	22WBB	34	17	22	Fillers	do	5. in. x .375 in. x 190.
2	22XBB	34	17	22	do	do	5. in. x .375 in. x 170.
					ARCH FRAME.		
8	23AB	34	17	23	Angles, right	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 4053.
8	23BB	34	17	23	Angles, left	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 4053.
3	23CB	34	17	23	Angles, right	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.
3	23DB	34	17	23	Angles, left	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.
1	23EB	34	17	23	Angles, right	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.
1	23FB	34	17	23	Angles, left	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.

3	23GB	34	17	23	Angles, right	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.
3	23HB	34	17	23	Angles, left	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.
1	23KB	34	17	23	Angle, right	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.
1	23MB	34	17	23	Angle, left	do	3.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 3478.8.
8	23NB	34	17	23	Splice angles	do	3. in. x 2. in. x .25 in. x 616.
8	23PB	34	17	23	do	do	3. in. x 2. in. x .25 in. x 616.
8	23QB	34	17	23	Angles, right	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 620.
8	23RB	34	17	23	Angles, left	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 620.
8	23SB	34	17	23	Angles, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 285.
8	23TB	34	17	23	Angles, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 285.
8	23UB	34	17	23	Angles, right	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 440.
8	23WB	34	17	23	Angles, left	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 440.
4	23XB	34	17	23	Angles, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 185.
4	23YB	34	17	23	Angles, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 185.
4	23ZB	34	17	23	Angles, right	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 185.
4	23AAB	34	17	23	Angles, left	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 185.
8	23BAB	34	17	23	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 181.
8	23CAB	34	17	23	do	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 231.1.
4	23DAB	34	17	23	do	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 190.5.
4	23EAB	34	17	23	Angles, right	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 450.
4	23FAB	34	17	23	Angles, left	do	3.5 in. x 3. in. x .312 ($\frac{5}{16}$) in. x 450.
4	23GAB	34	17	23	Angles, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 528.
4	23HAB	34	17	23	Angles, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 528.
4	23KAB	34	17	23	Angles, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 275.
4	23MAB	34	17	23	Angles, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 275.
16	23NAB	34	17	23	Angles	do	5.75 in. x 3.5 in. x .375 in. x 298.
8	22MAB	34	17	23	Web plates	do	5. in. x .437 ($\frac{7}{16}$) in. x 1822.
8	22NAB	34	17	23	do	do	5. in. x .437 ($\frac{7}{16}$) in. x 1418.3.
4	23PAB	34	17	23	Gusset	do	18. in. x .437 ($\frac{7}{16}$) in. x 1376.8.
32	23QAB	34	17	23	Splice plates	do	116. x .375 in. x 340.
4	23RAB	34	17	23	do	do	7.5 in. x .312 ($\frac{5}{16}$) in. x 616.
3	23SAB	34	17	23	Plates	do	12. in. x .312 ($\frac{5}{16}$) in. x 616.
16	23TAB	34	17	23	Fillers	do	3. in. x .312 ($\frac{5}{16}$) in. x 225.
8	23UAB	34	17	23	do	do	3. in. x .437 ($\frac{7}{16}$) in. x 300.
4	23WAB	34	17	23	Gussets	do	7.5 in. x .437 ($\frac{7}{16}$) in. x 245.
4	23XAB	34	17	23	do	do	9.5 in. x .437 ($\frac{7}{16}$) in. x 440.
8	23YAB	34	17	23	Fillers	do	3. in. x .312 ($\frac{5}{16}$) in. x 165.
8	23ZAB	34	17	23	do	do	3. in. x .312 ($\frac{5}{16}$) in. x 115.
4	23ABB	34	17	23	do	do	3. in. x .437 ($\frac{7}{16}$) in. x 190.
6	23BBB	34	17	23	Gussets	do	10. in. x .312 ($\frac{5}{16}$) in. x 508.
2	23CBB	34	17	23	do	do	10. in. x .312 ($\frac{5}{16}$) in. x 350.
8	23DBB	34	17	23	Fillers	do	7.5 in. x .312 ($\frac{5}{16}$) in. x 180.
6	23EBB	34	17	23	Gussets, bent	do	20. in. x .312 ($\frac{5}{16}$) in. x 398. Approx.
1	23FBB	34	17	23	Gussets, bent, right	do	20. in. x .312 ($\frac{5}{16}$) in. x 398. Approx.
1	23GBB	34	17	23	Gussets, bent, left	do	20. in. x .312 ($\frac{5}{16}$) in. x 398. Approx.
4	23HBB	34	17	23	Fillers	do	7.5 in. x .312 ($\frac{5}{16}$) in. x 242.
4	23KBB	34	17	23	Plate	do	11. in. x .437 ($\frac{7}{16}$) in. x 450.
8	22TBB	34	17	23	Fillers	do	3. in. x .312 ($\frac{5}{16}$) in. x 160.
4	23MBB	34	17	23	do	do	6. in. x .312 ($\frac{5}{16}$) in. x 190.
16	23NBB	34	17	23	do	do	2.75 in. x 5. in. x 298.
8	23PBB	34	17	23	do	do	3. in. x .312 ($\frac{5}{16}$) in. x 140.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					WINCH SUPPORT BEAM.		
1	24AB	34	17	24	Angle, right	Steel	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2370.
1	24BB	34	17	24	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2370.
1	24CB	34	17	24	Angle, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2525.
1	24DB	34	17	24	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2525.
1	24EB	34	17	24	Plate	do	7. in. x .437 ($\frac{7}{16}$) in. x 2525.
2	24FB	34	17	24	Angles, right	do	3.5 in. x 3.5 in. x .312 ($\frac{5}{16}$) in. x 165.
2	24GB	34	17	24	Angles, left	do	3.5 in. x 3.5 in. x .312 ($\frac{5}{16}$) in. x 165.
2	24HB	34	17	24	Angles	do	3.5 in. x 3.5 in. x .312 ($\frac{5}{16}$) in. x 179.
1	24KB	34	17	24	do	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 610.42.
1	24MB	34	17	24	Plate	do	10.5 in. x .437 ($\frac{7}{16}$) in. x 393.7.
2	24NB	34	17	24	do	do	6.25 in. x .437 ($\frac{7}{16}$) in. x 155.
2	24PB	34	17	24	Angles	do	3. in. x 3.5 in. x .312 ($\frac{5}{16}$) in. x 170.
2	24QB	34	17	24	do	do	3. in. x 3.5 in. x .312 ($\frac{5}{16}$) in. x 150.
1	24SB	34	17	24	Angle, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 155.
2	24TB	34	17	24	Plates	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 70.
1	24UB	34	17	24	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 155.
					ARCH BRACING, FRONT, LEFT.		
1	25AB	34	17	25	Angle	Steel	3. in. x 3. in. x .25 in. x 2758.
1	25BB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 1494.
1	25CB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 1494.
1	25DB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 3140.
1	25EB	34	17	25	Plate	do	5.5 in. x .312 ($\frac{5}{16}$) in. x 400.
					ARCH BRACING, FRONT, RIGHT.		
1	25FB	34	17	25	Angle	Steel	3. in. x 3. in. x .25 in. x 2758.
1	25GB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 1494.
1	25CB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 1494.
1	25HB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 3140.
1	25EB	34	17	25	Plate	do	5.5 in. x .312 ($\frac{5}{16}$) in. x 400.
					ARCH BRACING, CENTER AND REAR.		
6	25CB	34	17	25	Angles	Steel	3. in. x 3. in. x .25 in. x 1494.
3	25GB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 1494.
3	25HB	34	17	25	do	do	3. in. x 3. in. x .25 in. x 3140.

6	25KB	34	17	25	....do	....do	3. in. x 3. in. x .25 in. x 2778.
3	25DB	34	17	25	....do	....do	3. in. x 3. in. x .25 in. x 3140.
3	25BB	34	17	25	....do	....do	3. in. x 3. in. x .25 in. x 1494.
6	25EB	34	17	25	Plates	....do	5.5 in. x .312 ($\frac{5}{16}$) in. x 400.
					LADDER, FRONT, 1 RIGHT AND 1 LEFT.		
2	26AB	34	17	26	Angles, right	Steel	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 3929. Approx.
2	26BB	34	17	26	Angles, left	....do	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 3929. Approx.
4	26CB	34	17	26	Angles, right	....do	2.5 in. x 2.5 in. x .25 in. x 72.
4	26DB	34	17	26	Angles, left	....do	2.5 in. x 2.5 in. x .25 in. x 72.
1	26EB	34	17	26	Angles, right	....do	3. in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 574.
1	26FB	34	17	26	Angles, left	....do	3. in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 574.
2	26GB	34	17	26	Angles, right	....do	5. in. x 2. in. x .312 ($\frac{5}{16}$) in. x 107.
2	26HB	34	17	26	Angles, left	....do	5. in. x 2. in. x .312 ($\frac{5}{16}$) in. x 107.
32	26KB	34	17	26	Rungs	....do	.875 in. x 317. rods.
2	26MB	34	17	26	Grab bar	F. S	.75 in. x 625. rod.
					LADDER, REAR.		
2	26NB	34	17	26	Angles, right	Steel	2. in. x 2. in. x .187 ($\frac{3}{16}$) in. x 570. Approx.
2	26PB	34	17	26	Angles, left	....do	2, in. x 2. in. x .187 ($\frac{3}{16}$) in. x 570. Approx.
4	26QB	34	17	26	Gussets	....do	5. in. x .25 in x 155.
4	26KB	34	17	26	Rungs	....do	.875 in. x 317. rods.
					UPPER FRONT PLATFORM SHELF, RIGHT.		
1	27AB	34	17	27	Plate	Steel	7.5 in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27BB	34	17	27	Angle	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27CB	34	17	27	....do	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27DB	34	17	27	Angle, right	....do	3.5 in. x 2.5 in. x .375 in. x 248.
1	27EB	34	17	27	Angle, left	....do	3.5 in. x 2.5 in. x .375 in. x 248.
1	27FB	34	17	27	Bar, right	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 122.
1	27GB	34	17	27	Bar, left	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 122.
					UPPER FRONT PLATFORM SHELF, LEFT.		
1	27AB	34	17	27	Plate	Steel	7.5 in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27KB	34	17	27	Angle	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27MB	34	17	27	....do	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27NB	34	17	27	Angle, right	....do	3.5 in. x 2.5 in. x .375 in. x 198.
1	27PB	34	17	27	Angle, left	....do	3.5 in. x 2.5 in. x .375 in. x 198.
1	27FB	34	17	27	Bar, right	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 122.
1	27GB	34	17	27	Bar, left	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 122.
					UPPER REAR PLATFORM SHELF, 1 RIGHT AND 1 LEFT.		
2	27QB	34	17	27	Plates	Steel	7.5 in. x .312 ($\frac{5}{16}$) in. x 3087.
2	27SB	34	17	27	Filler plates	....do	4. in. x .312 ($\frac{5}{16}$) in. x 106.
2	27TB	34	17	27	Angles	....do	4. in. x 4. in. x .437 ($\frac{7}{16}$) in. x 168.
1	27UB	34	17	27	Angle, right	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27WB	34	17	27	Angle, left	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27XB	34	17	27	Angle, right	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.
1	27ZB	34	17	27	Angle, left	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3087.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing.			Name of part.	Material.	Remarks.
		Class.	Division.	Number.			
					UPPER CENTER PLATFORM SHELVES, RIGHT AND LEFT.		
4	27AAB	34	17	27	Plates	Steel	7.5 in. x .312 ($\frac{5}{16}$) in. x 2984.
4	27BAB	34	17	27	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2984.
4	27CAB	34	17	27	do	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2984.
2	27DAB	34	17	27	Stop	C. S.	
2	27EAB	34	17	27	Stop pin	F. S.	With 2.25 in. x 1.75 in. split pins.
					LOWER FRONT PLATFORM SHELF, LEFT.		
1	28AB	34	17	27	Plate	Steel	10.875 in. x .312 ($\frac{5}{16}$) in. x 3062.
1	28BB	34	17	27	Angle	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3062.
1	28CB	34	17	27	do	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3062.
1	28DB	34	17	27	Block	Hardwood	40. x 65. x 180.
2	28QB	34	17	27	Bolts		.625 in. x 51. with 2-.625 in. x 1.5 in. washers.
					LOWER FRONT PLATFORM SHELF, RIGHT.		
1	28EB	34	17	27	Angle	Steel	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3097.
1	28DB	34	17	27	Block	Hardwood	40. x 65. x 180.
2	28QB	34	17	27	Bolts		.625 in. x 51. with 2-.625 in. x 1.5 in. washers.
					LOWER REAR PLATFORM SHELF, LEFT.		
1	28AB	34	17	28	Plate	Steel	10.875 in. x .312 ($\frac{5}{16}$) in. x 3062.
1	28FB	34	17	28	Angle	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3062.
1	28GB	34	17	28	do	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3062.
1	28DB	34	17	28	Block	Hardwood	40. x 65. x 180.
2	28QB	34	17	28	Bolts		.625 in. x 51. with 2-.625 in. x 1.5 in. washers.
					LOWER REAR PLATFORM SHELF, RIGHT.		
1	28HB	34	17	28	Angle	Steel	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 3072.
1	28DB	34	17	28	Block	Hardwood	40. x 65. x 180.
2	28QB	34	17	28	Bolts		.625 in. x 51. with 2-.625 in. x 1.5 in. washers.
					LOWER CENTER PLATFORM SHELF, LEFT.		
2	28KB	34	17	28	Plates	Steel	10.875 in. x .312 ($\frac{5}{16}$) in. x 2984.
2	28MB	34	17	28	Angles	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2984.

2	28NB	34	17	28	....do	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2984.
2	28PB	34	17	28	Lower center platform shelf, right	....do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 2984.
					HOIST RUNWAY, FRONT SECTION.		
1	29AB	34	17	29	Plate	Steel	26. in. x .312 ($\frac{5}{16}$) in. x 2432.
1	29BB	34	17	29	Plate, right	....do	12.5 in. x .375 in. x 6900. Approx.
1	29CB	34	17	29	Plate, left	....do	12.5 in. x .375 in. x 6900. Approx.
1	29DB	34	17	29	Plate, right	....do	12.5 in. x .312 ($\frac{5}{16}$) in. x 2927. Approx.
1	29EB	34	17	29	Plate, left	....do	12.5 in. x .312 ($\frac{5}{16}$) in. x 2927. Approx.
1	29FB	34	17	29	Plate, right	....do	12.5 in. x .25 in. x 1959. Approx.
1	29GB	34	17	29	Plate, left	....do	12.5 in. x .25 in. x 1959. Approx.
1	29HB	34	17	29	Plate, right	....do	6. in. x .375 in. x 4015. Approx.
1	29KB	34	17	29	Plate, left	....do	6. in. x .375 in. x 4015. Approx.
4	29MB	34	17	29	Filler plates	....do	7. in. x .375 in. x 254.
2	29NB	34	17	29	....do	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 968.
4	29PB	34	17	29	Bars	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 855.
4	29CBB	34	17	29	....do	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 855.
1	29QB	34	17	29	Angle	....do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 480.
4	29DBB	34	17	29	....do	....do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 616.
1	29SB	34	17	29	....do	....do	2.25 in. x 2.25 in. x .375 in. x 6902. Approx.
1	29TB	34	17	29	....do	....do	2.25 in. x 2.25 in. x .375 in. x 6902. Approx.
1	29UB	34	17	29	Angle, right	....do	2.25 in. x 2.25 in. x .375 in. x 6688. Approx.
1	29WB	34	17	29	Angle, left	....do	2.25 in. x 2.25 in. x .375 in. x 6688. Approx.
1	29XB	34	17	29	Angle, right	....do	2.5 in. x 2.5 in. x .375 in. x 6088.
1	29ZB	34	17	29	Angle, left	....do	2.5 in. x 2.5 in. x .375 in. x 6088.
					HOIST RUNWAY, CENTER SECTION.		
2	30AB	34	17	30	Angles	Steel	2.25 in. x 2.25 in. x .375 in. x 2990.
2	30BB	34	17	30	....do	....do	2.25 in. x 2.25 in. x .375 in. x 2990.
2	30CB	34	17	30	....do	....do	2.5 in. x 2.5 in. x .375 in. x 2990.
2	30DB	34	17	30	Plates	....do	12.5 in. x .375 in. x 2990.
1	30MB	34	17	30	Plate	....do	10. in. x .375 in. x 462.
1	30NB	34	17	30	....do	....do	10. in. x .375 in. x 462.
2	30XB	34	17	30	Plates	....do	5.5 in. x .375 in. x 534.
3	30DAB	34	17	30	Angles	....do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 61"
4	30CAB	34	17	30	Bars	....do	2.5 in. x .312 ($\frac{5}{16}$) in. x 855.
					HOIST RUNWAY, REAR SECTION.		
1	31AB	34	17	31	Angle	Steel	2.25 in. x 2.25 in. x .375 in. x 3287.
1	31BB	34	17	31	....do	....do	2.25 in. x 2.25 in. x .375 in. x 3287.
1	31CB	34	17	31	....do	....do	2.25 in. x 2.25 in. x .375 in. x 3287.
1	31DB	34	17	31	....do	....do	2.25 in. x 2.25 in. x .375 in. x 3287.
1	31EB	34	17	31	....do	....do	2.5 in. x 2.5 in. x .375 in. x 3287.
1	31FB	34	17	31	....do	....do	2.5 in. x 2.5 in. x .375 in. x 3287.
1	31GB	34	17	31	Plate	....do	12.5 in. x .375 in. x 3287.
1	31HB	34	17	31	....do	....do	12.5 in. x .375 in. x 3287.
1	31KB	34	17	31	....do	....do	8. in. x .375 in. x 762.
1	30MB	34	17	31	....do	....do	10. in. x .375 in. x 462.
1	30NB	34	17	31	....do	....do	10. in. x .375 in. x 462.
1	31PB	34	17	31	Angle	....do	3. in. x 3. in. x .375 in. x 506.4.
1	31QB	34	17	31	....do	....do	3. in. x 3. in. x .375 in. x 506.4.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					HOIST RUNWAY, REAR SECTION—continued.		
2	31SB	34	17	31	Angles	Steel	3. in. x 3. in. x .375 in. x 762.
2	31TB	34	17	31	do	do	2.25 in. x 2.25 in. x .375 in. x 310.
1	31UB	34	17	31	Angle	do	3. in. x 3. in. x .375 in. x 490.
1	31WB	34	17	31	do	do	3. in. x 3. in. x .375 in. x 616.
2	30XB	34	17	31	Plates	do	5.5 in. x .375 in. x 534.
2	31ZB	34	17	31	do	do	10. in. x .375 in. x 314.
1	31AAB	34	17	31	do	do	16. in. x .375 in. x 616.
1	31BAB	34	17	31	do	do	18. in. x .312 ($\frac{5}{16}$) in. x 616.
4	30CAB	34	17	31	Bars	do	2.5 in. x .312 ($\frac{5}{16}$) in. x 855.
3	30DAB	34	17	31	Angles	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 616.
1	33AB	34	17	34	Plate	do	26. in. x .312 ($\frac{5}{16}$) in. x 1878.
1	33BB	34	17	34	Plate, right	do	12.5 in. x .312 ($\frac{5}{16}$) in. x 2161.
1	33CB	34	17	34	Plate, left	do	12.5 in. x .312 ($\frac{5}{16}$) in. x 2161.
2	33DB	34	17	34	Plates	do	12.5 in. x .562 ($\frac{9}{16}$) in. x 1127.
1	33EB	34	17	34	Plate, right	do	16.5 in. x .5 in. x 1117.
1	33FB	34	17	34	Plate, left	do	16.5 in. x .5 in. x 1117.
1	33GB	34	17	34	Plate, right	do	3. in. x .375 in. x 1008.
1	33HB	34	17	34	Plate, left	do	3. in. x .375 in. x 1008.
4	33KB	34	17	34	Plates	do	3. in. x .375 in. x 250.
1	33MB	34	17	34	Angle, right	do	2.25 in. x 2.25 in. x .375 in. x 1940.
1	33NB	34	17	34	Angle, left	do	2.25 in. x 2.25 in. x .375 in. x 1940.
1	33PB	34	17	34	Angle, right	do	2.25 in. x 2.25 in. x .375 in. x 2153.
1	33QB	34	17	34	Angle, left	do	2.25 in. x 2.25 in. x .375 in. x 2153.
1	33SB	34	17	34	Angle, right	do	2.25 in. x 2.25 in. x .375 in. x 1590.
1	33TB	34	17	34	Angle, left	do	2.25 in. x 2.25 in. x .375 in. x 1590.
1	33UB	34	17	34	Angle, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1040. Approx.
1	33WB	34	17	34	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1040. Approx.
1	33XB	34	17	34	Angle, right	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1130. Approx.
1	33ZB	34	17	34	Angle, left	do	3. in. x 3. in. x .312 ($\frac{5}{16}$) in. x 1130. Approx.
1	33AAB	34	17	34	Angle	do	2.5 in. x 2.5 in. x .375 in. x 480.
2	33BAB	34	17	34	Angles	do	5. in. x 3. in. x .375 in. x 908.
2	33CAB	34	17	34	Angles, right	do	5. in. x 3. in. x .375 in. 448.
2	33DAB	34	17	34	Angles, left	do	5. in. x 3. in. x .375 in. x 448.
8	33EAB	34	17	34	Angles	do	3. in. x 3. in. x .375 in. x 120.
1	35AB	34	17	35	Coupling, male, right	C. S. No. 2	

1	35BB	34	17	35	Coupling, male, left	do	
2	35CB	34	17	35	Countersunk head bolts [3]		16. x 61.
6	35DB	34	17	35	Countersunk head screw		16. x 40., thread 25. long.
1	36AB	34	17	36	Hoist runway coupling, female, right	C. S. No. 2	
1	36BB	34	17	36	Hoist runway coupling, female, left	do	
22	36CB	34	17	36	Countersunk head bolts [3]		16. x 106.
18	36DB	34	17	36	do. [3]		16. x 88.
6	36EB	34	17	36	do. [3]		16. x 66.
4	36FB	34	17	36	do. [3]		16. x 75.
2	36GB	34	17	36	do. [3]		16. x 62.
2	36HB	34	17	36	do. [3]		16. x 38.
					HINGE AND DETAILS.		
4	37AB	34	17	37	Eye rivet	F. S	
					FASTENING CHAIN.		
12	37BB	34	17	37	Rings	Steel	
6	37CB	34	17	37	Chain	do	Std. Chain Co's. No. 3 or equal.
4	37DB	34	17	37	Coupling pin	F. S	
4	37EB	34	17	37	Split key	do	
2	37FB	34	17	37	Link bracket	C. S. No. 2	
4	37GB	34	17	37	Bolts [3]		16. x 62.
4	37KB	34	17	37	Hinge and link pin collar	F. S	With set screw.
1	37HB	34	17	37	Link pin	do	With 1-30. crown nut.
1	37LB	34	17	37	Hinge, right	C. S. No. 2	
1	37MB	34	17	37	Hinge, left	do	
1	37NB	34	17	37	Hinge pin	F. S	With 1-30. crown nut.
4	37PB	34	17	37	Coupling pin washer	do	
2	37QB	34	17	37	Pin washer	do	
					STRUT LEVER YOKE AND DETAILS, RAISING LINK.		
2	38AB	34	17	38	Male ends	F. S	
2	38BB	34	17	38	Female ends	do	
4	38CB	34	17	38	Bars	do	2.5 in. x .312 ($\frac{5}{16}$) in. x 2220.
6	38DB	34	17	38	Spacers	do	
1	38EB	34	17	38	Strut lever yoke	do	With 2-24. crown nuts.
2	38FB	34	17	38	Strut lever	do	
1	38GB	34	17	38	Pin washer	do	
1	38HB	34	17	38	Yoke shackle pin	do	With 1-.25 in. x 1.5 in. split pin.
2	38KB	34	17	38	Yoke washer	do	
					EXTENSION ARM TRAVELING LOCK AND DETAILS.		
					Traveling locks, 1 right and 1 left.		
2	39AB	34	17	39	Angles, right	Steel	4. in. x 4 in. x .375 in. x 155.6.
2	39BB	34	17	39	Angles, left	do	4. in. x 4 in. x .375 in. x 155.6.
2	39CB	34	17	39	Fillers	do	2. in. x .625 in. x 70.
2	39HB	34	17	39	Tap bolts [3]		20. x 50.
2	39KB	34	17	39	Bolts		20. x 64.

[3] Provided with crown nuts.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					EXTENSION ARM TRAVELING LOCK AND DETAILS—con.		
					Lock angles, 1 right and 1 left.		
1	39DB	34	17	39	Angle, right	Steel	3. in. x 2.5 in. x .375 in. x 192.
1	39EB	34	17	39	Angle, left	do	3. in. x 2.5 in. x .375 in. x 192.
1	39FB	34	17	39	Angle, right	do	3.5 in. x 3. in. x .375 in. x 132.
1	39GB	34	17	39	Angle, left	do	3.5 in. x 3. in. x .375 in. x 132.
6	39MB	34	17	39	Countersunk head bolts [3]		16. x 42.
2	39NB	34	17	39	Lock pin	F. S.	
2	39PB	34	17	39	Headless screws		6. x 16.
1	39QB	34	17	39	Buffer block	Oak	147. x 70. x 960.
4	39SB	34	17	39	Bolts [2]		.75 in. x 4. in. with 4-.75 in. washers.
					WINCH—WINCH FRAME.		
1	41AB	34	17	41	Angle, right	Steel	4. in. x 4. in. x .437 ($\frac{7}{16}$) in. x 2051.
1	41BB	34	17	41	Angle, left	do	4. in. x 4. in. x .437 ($\frac{7}{16}$) in. x 2051.
1	41CB	34	17	41	Angle, right	do	4. in. x 4. in. x .437 ($\frac{7}{16}$) in. x 2051.
1	41DB	34	17	41	Angle, left	do	4. in. x 4. in. x .437 ($\frac{7}{16}$) in. x 2051.
1	41EB	34	17	41	Angle	do	4. in. 4. in. x .437 ($\frac{7}{16}$) in. x 965.42.
1	41FB	34	17	41	do	do	3. in. x 3. in. x .375 in. x 965.42.
2	41GB	34	17	41	Plates	do	8. in. x .437 ($\frac{7}{16}$) in. x 2051.
1	41HB	34	17	41	Plate	do	24. in. x .437 ($\frac{7}{16}$) in. x 965.42.
1	41KB	34	17	41	do	do	24. in. x .437 ($\frac{7}{16}$) in. x 965.42.
1	41MB	34	17	41	do	do	13. in. x .437 ($\frac{7}{16}$) in. x 610.42.
1	41NB	34	17	41	do	do	13. in. x .437 ($\frac{7}{16}$) in. x 610.42.
1	41PB	34	17	41	Plate, right	do	4. in. x .375 in. x 490.
1	41QB	34	17	41	Plate, left	do	4. in. x .375 in. x 490.
1	41SB	34	17	41	Plate, right	do	4. in. x .375 in. x 937.2.
1	41TB	34	17	41	Plate, left	do	4. in. x .375 in. x 937.2.
1	41UB	34	17	41	Plate	do	3. in. x .75 in. x 965.42.
1	41WB	34	17	41	Plate, right	do	4. in. x .75 in. x 285.
1	41XB	34	17	41	Plate, left	do	4. in. x .75 in. x 285.
1	42AB	34	17	42	Drum	C. S. No. 2	
1	42BB	34	17	42	Fillister head screw	Steel	10. x 18., thread full length.
1	42CB	34	17	42	Ratchet wheel	F. S. No. 0	

[2] Provided with nuts.

[3] Provided with crown nuts.

1	42DB	34	17	42	Pawl	do	
1	42EB	34	17	42	Pawl hook	Steel wire	
1	42FB	34	17	42	Eye rivet	F. S.	
					CABLE GUARD.		
1	42GB	34	17	42	Side	Steel	
1	42HB	34	17	42	Cover	do	
3	42KB	34	17	42	Guard plates	do	
5	42LB	34	17	42	Fillister head screws	do	8. x 15., thread full length.
1	42MB	34	17	42	Pawl hook plate	do	
1	42NB	34	17	42	Cable	Crucible steel	.625 in. dia. x 59 ft.
2	42SB	34	17	42	Clamps	Wire rope	Amer. Steel & Wire Co's. or equal.
1	42PB	34	17	42	Yoke shackle	C. S. No. 2	
5	42QB	34	17	42	Set screw	F. S.	
6	42RB	34	17	42	do	do	
1	43AB	34	17	43	Drum shaft	F. S. No. 2	
1	43BB	34	17	43	Key, staked	Steel	22. x 12. x 287.
1	43CB	34	17	43	Intermediate shaft	F. S. No. 2	
1	43DB	34	17	43	Key, staked	Steel	15. x 7. x 80.
1	43EB	34	17	43	do	do	15. x 7. x 140.
1	43FB	34	17	43	Intermediate shaft spacer	do	
2	43GB	34	17	43	Crank shaft washer	F. S.	
3	43HB	34	17	43	Shaft collar	F. S.	With set screw.
1	43KB	34	17	43	Pawl shaft	F. S. No. 2	With 2–26, crown nuts and 2–26, washers.
1	43LB	34	17	43	Crank shaft	do	With 2–22, crown nuts.
1	43MB	34	17	43	Key, staked	Steel	12. x 7. x 75.
1	43NB	34	17	43	do	do	12. x 7. x 75.
2	43PB	34	17	43	Crank	F. S.	
2	A122E	15	OK	122	Handle sleeve	Brass	
2	A122F	15	OK	122	Handle	F. S. No. 2	
4	A122G	15	OK	122	Handle washer	F. S.	
1	44AB	34	17	44	Intermediate shaft gear	C. S. No. 2	
1	44BB	34	17	44	Crank shaft pinion	do	With set screw.
1	44CB	34	17	44	Intermediate shaft pinion	do	
1	44DB	34	17	44	Drum shaft gear	do	
2	45AB	34	17	45	Crank shaft bracket	do	
3	45BB	34	17	45	Bolts [3]		20. x 70.
1	45CB	34	17	45	do [3]		20. x 75.
2	45DB	34	17	45	Crank shaft bushing	Bronze No. 2	
1	45EB	34	17	45	Drum shaft bracket	C. S. No. 2	
1	45FB	34	17	45	do	do	
12	45NB	34	17	45	Bolts [3]		20. x 70.
1	45GB	34	17	45	Cable guard bracket	C. S.	
2	45HB	34	17	45	16 studs [3]		
2	45KB	34	17	45	Drum shaft bracket key	F. S.	
2	45LB	34	17	45	Intermediate shaft bushing	Bronze No. 2	
2	45MB	34	17	45	Drum shaft bushing	do	

[3] Provided with crown nuts.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					REAR SHEAVE BRACKET.		
1	46AB	34	17	46	Angle, right	Steel	3. in. x 3. in. x .437 ($\frac{7}{16}$) in. x 409.2.
1	46BB	34	17	46	Angle, left	do	3. in. x 3. in. x .437 ($\frac{7}{16}$) in. x 409.2.
1	46CB	34	17	46	Side plate, right	do	
1	46DB	34	17	46	Side plate, left	do	
1	46EB	34	17	46	Plate, right	do	168. dia. x .5 in.
1	46FB	34	17	46	Plate, left	do	168. dia. x .5 in.
1	46GB	34	17	46	Cover	do	
3	46HB	34	17	46	Plates	Brass	18. x .187 ($\frac{3}{16}$) in. x 35.
8	46KB	34	17	46	Bolts [3]		20. x 55.
1	46LB	34	17	46	Sheave, rear	C. S. No. 2	
1	46RB	34	17	46	Sheave, traverse	do	
2	46QB	34	17	46	Sheave bushing	Bronze No. 2	
1	46MB	34	17	46	Washer	F. S	
1	46NB	34	17	46	Rear sheave pin	do	With 1–.375 in. x 2.25 in. split pin.
1	46PB	34	17	46	Screw		6. x 14., thread 10. long.
1	46SB	34	17	46	Traverse sheave pin	F. S	With 1–.375 in. x 2.25 in. split pin.
1	46PB	34	17	46	Screw		6. x 14., thread 10. long.
					TROLLEY HOIST—TROLLEY HOIST FRAME.		
1	50AB	34	17	51	Angle	Steel	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 2380.
1	51BB	34	17	51	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 2380.
1	51CB	34	17	51	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 2375.
1	50DB	34	17	51	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 2375.
1	50EB	34	17	51	Plate	do	11.75 in. x .5 in. x 1085.
1	51FB	34	17	51	do	do	11.75 in. x .5 in. x 1085.
1	50GB	34	17	51	do	do	6.75 in. x .437 ($\frac{7}{16}$) in. x 1085.
1	51HB	34	17	51	do	do	6.75 in. x .437 ($\frac{7}{16}$) in. x 1085.
1	50KB	34	17	51	do	do	17. in. x .312 ($\frac{5}{16}$) in. x 337.
1	50MB	34	17	51	do	do	17. in. x .312 ($\frac{5}{16}$) in. x 400.
1	50NB	34	17	51	do	do	17. in. x .312 ($\frac{5}{16}$) in. x 380.
1	50PB	34	17	51	do	do	4.75 in. x .312 ($\frac{5}{16}$) in. x 432.
1	50QB	34	17	51	do	do	17. in. x .312 ($\frac{5}{16}$) in. x 400.
1	50SB	34	17	51	do	do	11. in. x .312 ($\frac{5}{16}$) in. x 300.
1	50TB	34	17	51	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 300.
1	50UB	34	17	51	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 300.

[3] Provided with crown nuts.

1	50WB	34	17	51	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 300.
1	51XB	34	17	51	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 300.
1	50ZB	34	17	51	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 260.
2	50AAB	34	17	51	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 175. Approx.
1	50BAB	34	17	51	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 238.2.
1	51CAB	34	17	51	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 238.2.
1	51DAB	34	17	51	Plate	do	9.25 in. x .312 ($\frac{5}{16}$) in. x 240.
1	50EAB	34	17	51	Plate, right	do	6. in. x .75 in. x 300.
1	51FAB	34	17	51	Plate, left	do	6. in. x .75 in. x 300.
1	50GAB	34	17	51	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 280.
1	50HAB	34	17	51	Bar	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 150.
1	51KAB	34	17	51	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 300.
1	51MAB	34	17	51	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 300.
1	50NAB	34	17	51	Angle, right	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 240.
1	50PAB	34	17	51	Angle, left	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 240.
1	51QAB	34	17	51	Plate	do	8. in. x .312 ($\frac{5}{16}$) in. x 275.
1	50SAB	34	17	51	Bar	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 150.
1	50TAB	34	17	51	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 260.
1	50UAB	34	17	51	Plate	do	6. in. x .312 ($\frac{5}{16}$) in. x 432.
1	50WAB	34	17	51	do	do	7.75 in. x .312 ($\frac{5}{16}$) in. x 285.
1	50XAB	34	17	51	Bar	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 156.
1	50ZAB	34	17	51	Angle	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 194.
1	50ABB	34	17	51	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 194.
1	50BBB	34	17	51	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 156.
1	50CBB	34	17	51	do	do	2.5 in. x 2.5 in. x .312 ($\frac{5}{16}$) in. x 268.
2	50DBB	34	17	51	Bars	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 432.
1	50EBB	34	17	51	Bar	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 432.
4	50FBB	34	17	51	Bars	do	2. in. x .312 ($\frac{5}{16}$) in. x 570. Approx.
2	50GBB	34	17	51	do	do	2. in. x .312 ($\frac{5}{16}$) in. x 404. Approx.
2	50HBB	34	17	51	do	do	2. in. x .312 ($\frac{5}{16}$) in. x 364. Approx.
2	50KBB	34	17	51	do	do	2. in. x .312 ($\frac{5}{16}$) in. x 342. Approx.
2	50MBB	34	17	51	do	do	2. in. x .312 ($\frac{5}{16}$) in. x 650. Approx.
2	50NBB	34	17	51	do	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 272. Approx.
2	50PBB	34	17	51	do	do	2.25 in. x .312 ($\frac{5}{16}$) in. x 246. Approx
2	50QBB	34	17	51	Plate	do	8.5 in. x .312 ($\frac{5}{16}$) in. x 356. Approx.
1	50SBB	34	17	51	do	do	6.25 in. x .312 ($\frac{5}{16}$) in. x 375. Approx.
1	50TBB	34	17	51	Angle	do	3.5 in. x 3.5 in. x .625 in. x 102. Approx.
2	50UBB	34	17	51	Bars, right	do	3. in. x .75 in. x 270.
2	50WBB	34	17	51	Bars, left	do	3. in. x .75 in. x 270.
6	50XBB	34	17	51	Tap bolts		16. x 16., thread 12. long.
4	52AB	34	17	52	Trolley wheel	C. S. No. 2	
2	52BB	34	17	52	Axle	F. S. No. 2	
4	52CB	34	17	52	Nuts		44. x 24. thick.
4	52DB	34	17	52	Keys, staked	Steel	15. x 6. x 50.
4	52EB	34	17	52	Axle bushing	Bronze No. 2	
4	52FB	34	17	52	Headless screws	Steel	6. x 8.
4	52GB	34	17	52	Axle bearing	C. S. No. 2	
16	52HB	34	17	52	Bolts [3]		16. x 64.
1	53AB	34	17	53	Worm wheel	Phosphor bronze	
1	53BB	34	17	53	Worm shaft gear	F. S. No. 2	With set screw.
1	53CB	34	17	53	Operating shaft pinion	do	

[3] Provided with crown nuts.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Division.	Number.	Name of part.	Material.	Remarks.
					TROLLEY HOIST—TROLLEY HOIST FRAME—contd.		
1	53DB	34	17	53	Worm shaft	F. S. No. 3	
1	53EB	34	17	53	Key, staked	Steel	15. x 7. x 75.
2	53FB	34	17	53	Adjusting nut	F. S. No. 2	
2	53GB	34	17	53	Centering plug bearing	F. S. No. 0	
2	53HB	34	17	53	Centering plug	do	
1	54AB	34	17	54	Worm shaft bearing	C. S. No. 2	
1	54BB	34	17	54	do	do	
2	54CB	34	17	54	Worm shaft bushing	Bronze No. 2	
2	54DB	34	17	54	Headless screws with flat point	Steel	6. x 10.
8	54EB	34	17	54	Collar bolt	F. S.	With 16-16. crown nuts.
2	54FB	34	17	54	Lock washer	Steel	
8	54GB	34	17	54	8 studs [3]		
2	54HB	34	17	54	Worm wheel shaft bearing	C. S. No. 2	
8	54KB	34	17	54	Countersunk head bolts [1]		16. x 60.
1	54LB	34	17	54	Worm wheel shaft bushing	Bronze No. 2	
1	54MB	34	17	54	do	do	
2	54NB	34	17	54	Headless screws with flat points	Steel	6. x 8.
1	54OB	34	17	54	Worm wheel shaft	F. S. No. 2	
1	54QB	34	17	54	Collar nut	F. S.	With 1-.25 in. x 2.75 in. split pin.
1	54RB	34	17	54	Washer	do	
1	55AB	34	17	55	Worm wheel shaft sprocket	F. S. No. 2	
1	55BB	34	17	55	Shackle sprocket	do	
1	55CB	34	17	55	Chain clevis	F. S.	
1	55DB	34	17	55	Clevis cross bar	do	
1	55EB	34	17	55	Chain guide wheel	F. S. No. 2	
1	55FB	34	17	55	Chain	Nickel steel	
1	55HB	34	17	55	Chain bolt	F. S.	With 1-20. washer and 1-20. crown nut.
1	55KB	34	17	55	Clevis bolt [3]	F. S.	
1	55LB	34	17	55	Chain clip	Steel	
2	55MB	34	17	55	Bolts [3]		8. x 24.5.
1	56AB	34	17	56	Cover	C. S. No. 2	
2	56BB	34	17	56	Tap bolts [1]	Steel	16. x 35. thread 25. lon .
1	56DB	34	17	56	Sprocket gear case	C. S. No. 2	

[1] Provided with lock washers.

[3] Provided with crown nuts.

4	56CB	34	17	56	Tap bolts [1]		16. x 42., thread 32. long.
1	56EB	34	17	56	....do. [1]		16. x 58., thread 22. long.
1	57AB	34	17	57	Operating shaft bearing, front	C. S. No. 2	
1	57BB	34	17	57	Bolt [3]		16. x 46.
1	57CB	34	17	57	....do. [3]		16. x 54.
2	57DB	34	17	57	Operating shaft collar	Steel	With set screw.
1	57EB	34	17	57	Operating shaft bearing, rear	C. S. No. 2	
2	57FB	34	17	57	Bolts [3]		18. x 52.
1	57GB	34	17	57	Operating shaft bushing	Bronze No. 2	
1	57MB	34	17	57	....do	....do	
1	57HB	34	17	57	Operating shaft	F. S. No. 2	
1	57KB	34	17	57	Key, staked	Steel	12. x 7. x 70.
1	57LB	34	17	57	....do	....do	12. x 7. x 50.
1	58AB	34	17	58	Chain wheel	C. S. No. 2	
					CHAIN WHEEL GUARD.		
1	58BB	34	17	58	Bracket, right	F. S	
1	58PB	34	17	58	Bracket, left	....do	
1	58CB	34	17	58	Cover plate		
1	58DB	34	17	58	Bolt [3]		16. x 44.
1	58EB	34	17	58	....do. [3]		16. x 36.
1	58FB	34	17	58	Chain wheel bracket	C. S. No. 2	
1	58GB	34	17	58	....do	....do	
2	58HB	34	17	58	Bolts [3]		16. x 43.
2	58KB	34	17	58	Countersunk head bolts [3]		16. x 43.
1	58LB	34	17	58	Chain wheel pin	F. S	With 1-.25 in. x 1.75 in. split pin.
1	58MB	34	17	58	Chain wheel pin washer	....do	
1	58NB	34	17	58	Hand chain	Wrought iron	
1	59AB	34	17	59	Swivel yoke	F. S	
1	59BB	34	17	59	Yoke nut	....do	With 1-.375 in. x 3.25 in. split pin.
1	59CB	34	17	59	Swivel trunnion	....do	
1	59LB	34	17	59	Ball thrust bearing		Hess Bright No. 1110 or equal.
2	59DB	34	17	59	Trunnion nut	F. S	
1	59EB	34	17	59	Yoke pin	....do	
1	59HB	34	17	59	Headless screw		10. x 14.
1	59FB	34	17	59	Yoke pin nut	F. S	
1	59GB	34	17	59	Shackle pin	....do	
1	59HB	34	17	59	Headless screw		10. x 14.
2	59KB	34	17	59	Shackle link	....do	
					CHAIN TUBE.		
1	60CB	34	17	60	Top	Steel	
1	60DB	34	17	60	Bottom	....do	
2	60EB	34	17	60	Bolts [3]		8. x 42.
2	60FB	34	17	60	....do. [3]		8. x 38.
2	60GB	34	17	60	....do. [3]		8. x 22.
16	60HB	34	17	60	....do. [3]		8. x 16.
1	60AB	34	17	60	Tube support	F. S	
1	60BB	34	17	60	....do	....do	

[1] Provided with lock washers.

[3] Provided with crown nuts.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					WORM OIL RETAINER.		
1	60KB	34	17	60	Bracket	F. S.	
1	60LB	34	17	60	Retainer	do	
2	60MB	34	17	60	Tap bolts		10. x 14., thread 10. long.
1	60NB	34	17	60	Worm wheel cover	Steel	
4	60PB	34	17	60	Tap bolts		8. x 10., thread 8. long.
2	60QB	34	17	60	Hook	F. S.	With 2–16. crown nuts.
1	60RB	34	17	60	Rope	Manila	.625 in. dia. x 125 ft. long.
2	61AB	34	17	61	Worm shaft oil pipe	Copper	
1	61BB	34	17	61	Worm oil pipe	do	
1	61CB	34	17	61	Worm wheel shaft oil pipe, right	do	
1	61DB	34	17	61	Worm wheel shaft oil pipe, left	do	
2	61EB	34	17	61	Trolley axle oil pipe, right	do	
2	61FB	34	17	61	Trolley axle oil pipe, left	do	
6	61GB	34	17	61	Oil pipe clamp spacer	F. S.	
2	61HB	34	17	61	do	do	
8	61KB	34	17	61	Oil pipe clamp cover	do	
12	61LB	34	17	61	Countersunk head screws	Steel	6. x 38., thread 14. long.
4	61MB	34	17	61	do	do	6. x 34., thread 14. long.
1	A3B	15	OK	3	Name plate (No. 2)	Bronze	
					M. C. B. COUPLER AND DRAFT GEAR.		
2	63AB	34	17	63	Coupler pocket	Cast steel	
8	63BB	34	17	63	Bolts.[5]	Steel	1.25 x 3.5.
4	63CB	34	17	63	do.[5]	do	1.25 x 3.875.
8	63DB	34	17	63	do.[5]	do	.75 x 3.375.
12	63EB	34	17	63	do.[5]	do	.875 x 3.875.
16	63FB	34	17	63	do.[5]	do	.875 x 3. 375.
12	63GB	34	17	63	Bevel washers	do	
2	63HB	34	17	63	do	do	
6	63KB	34	17	63	Open link	Wrought iron	
4	63LB	34	17	63	Lever support	do	With 8–.75 nuts.
2	63MB	34	17	63	Uncoupling lever	do	
2	63NB	34	17	63	Hook bolt [5]	do	With 2–.625 nuts.
4	63PB	34	17	63	Roping staple	do	
2	63QB	34	17	63	Coupler pivot pin	F. S.	

[5] Provided with nuts and lock washers.

4	63SB	34	17	63	End grab handle	Steel or w. i	
2	63RB	34	17	63	Locomotive pivoted type coupler, M. C. B. head	C. S	
					TRUCK.		
4	BG3A	15	22S1	3	Suspension spring clamp	Malleable iron	
4	BG3B	15	22S1	3	Column post, right	do	
4	BG3C	15	22S1	3	Column post, left	do	
4	BG3D	15	22S1	3	Column post base	do	
2	BG4A	15	22S1	4	Spring plank	Steel	13. in. x 32 pounds x 87.5 in.
4	BG4B	15	22S1	4	Brake beam safety angle	do	2.25 in. x 2.25 in. x .25 in.
4	BG4C	15	22S1	4	Suspension spring hanger	F. S	
4	BG4D	15	22S1	4	Brake beam fulcrum pin washer	Steel	
4	BG4E	15	22S1	4	Brake beam suspension spring	Spring steel	
2	BG4F	15	22S1	4	Dead lever guide	Steel	
16	BG4G	15	22S1	4	Nut lock for column post bolts	do	
30	BG4H	15	22S1	4	Nut lock for journal box bolts	do	
4	BG4K	15	22S1	4	Column post tie	do	
2	BG4L	15	22S1	4	Card holder bracket	do	
4	BG4M	15	22S1	4	Safety angle bolt [2]	do	With 4–.187 ($\frac{3}{16}$) in. x 1.5 in split pin.
4	BG5A	15	22S1	5	Truck lever	O. H. steel	
8	BG5B	15	22S1	5	Brake beam hanger pin	do	With 8–.187 ($\frac{3}{16}$) in. x .625 in. split keys.
8	BG5C	15	22S1	5	Brake beam hanger washers	do	2.5 in. x .125 in.
8	BG5D	15	22S1	5	Brake beam hanger	do	
					ARCH BARS.		
4	BG5E	15	22S1	5	Top arch bar	O. H. steel	
4	BG5F	15	22S1	5	Bottom arch bar	do	
4	BG5G	15	22S1	5	Bottom tie bar	do	
2	BG5H	15	22S1	5	Truck lever connection	do	
8	BG5K	15	22S1	5	Column post bolt	do	With 8–1.5 in. nuts.
16	BG5L	15	22S1	5	Journal box bolt	do	With 16–1.125 in. nuts.
4	BG5M	15	22S1	5	Suspension spring hanger pin	do	With 4–.25 in. x 1.5 in. cotters and 4–.75 in. washers.
4	BG5N	15	22S1	5	Brake pin	do	With 4–.375 in. x 2.25 in. cotters.
4	BG5P	15	22S1	5	Brake beam fulcrum pin	do	With 4–.437 ($\frac{7}{16}$) in. x 2. in cotters.
4	BG5Q	15	22S1	5	Brake pin	do	With 4–.375 in. x 2.25 in. cotters.
					TRUCK SPRING, M. C. B., CLASS B.		
16	CG1A	15	22	1	Bars	Steel	1.187 ($1\frac{3}{16}$) in. dia. 73.75 long, tapered to 80.375.
8	CG1B	15	22	1	Spring caps	do	11.25 in. x .125 in. x 11.25 in.
4	CG1C	15	22	1	Flat head bolts	do	.375 in. x 6.5 in. x with square nuts.
8	CG1D	15	22	1	Journal bearing wedge	Drop forged	4.25 in. x 8. in. M. C. B.
8	CG1E	15	22	1	Journal bearing	Brass, lead lined	4.25 in. x 8. in. M. C. B.
4	CG1F	15	22	1	Axle	Steel	4.25 in. x 8. in. M. C. B.
8	CG2A	15	22	2	Wheel	C. I	M. C. B.
2	CG3A	15	22	3	8-ounce canvas	Canvas	7.75 in. x 9.25 in.
2	CG3B	15	22	3	Body	Galvanized steel	7.687 ($7\frac{11}{16}$) in. x .039 in. 11.062 ($11\frac{1}{16}$) in
2	CG3C	15	22	3	Cover	do	3.187 ($3\frac{3}{16}$) in. x .039 in. x 5.437 ($5\frac{7}{16}$) in
2	CG3D	15	22	3	Wire	do	.125 in. x 4.75 in.
2	CG3E	15	22	3	do	do	.062 ($\frac{1}{16}$) in. x 7. in.

[2] Provided with nuts.

GROUND PLATFORM CAR—Continued.

Number for one carriage.	Piece mark.	Drawing. Class.	Drawing. Division.	Drawing. Number.	Name of part.	Material.	Remarks.
					TRUCK SPRING, M. C. B., CLASS B—continued.		
2	CG4A	15	22	4	Truck bolster	C. S.	
8	CG8A	15	22	8	Brake shoe	C. I.	M. C. B.
8	CG8B	15	22	8	Dust guard wedge	Oak	
8	CG8C	15	22	8	Dust guard		National No. 1 or equal.
8	CG8D	15	22	8	Brake shoe key	Wrought iron	M. C. B.
4	CG9A	15	22	9	Brake beam, M. C. B., No. 2		Drexel or equal.
8	CG10A	15	22	10	Journal box	Malleable iron	4.25 in. x 8. in. M. C. B.
8	CG11A	15	22	11	Journal box lid	do	4.25 in. x 8. in. "Acme" or equal
2	XC20A	34	O	20	Brake-shaft washer	Steel	
1	XC20B	34	O	20	Brake-shaft ring	do	
1	XC20D	34	O	20	Brake-shaft pivot	O. H. S	
1	XC20E	34	O	20	Brake-shaft key	Steel	
1	XC20F	34	O	20	Brake-shaft nut	O. H. S	
2	XC20G	34	O	20	Bell-crank link	Steel	
1	XC20H	34	O	20	Bell crank and link pin	do	With 1-.25 in. x 2. in. cotter.
1	XC20N	34	O	20	Hexagonal nut		1. in. x .625 in. thick.
1	XC20K	34	O	20	Bell crank fulcrum pin	Steel	With 1-.5 in. x 3. in. cotter.
1	XC20P	34	O	20	Washer	do	
1	XC22B	34	O	22	Hand-brake wheel	Malleable iron	
1	XC22C	34	O	22	Bell crank	Cast steel	
1	XC28D	34	O	28	Push rod	Wrought iron	
1	XC28L	34	O	28	Clevis	do	
4	XC31A	34	O	31	Body side bearing	Malleable iron	
2	XC31B	34	O	31	Body center plate	C. S.	

PART VI.

LIST OF OIL HOLES, OIL PLUGS, OIL CUPS AND HANDY OILERS.

Name.	Oil holes.	Oil plugs.	Oil cups.	Handy oilers.
12-INCH GUN RAILWAY CARRIAGE.				
Cradle		6		
Elevating mechanism:				
Gear cases	4		2	
Gear-case covers	2		4	
Removable bearings	2			
Brackets (front side)	4			
Bracket (front center)	1			
Traversing mechanism:				
Gear-case cover	1			
Traversing-rack support			2	
Intermediate bracket	2			
Outer bearings	2			
Upper sprockets	2			
Trunnions:				
Trunnion-bearing caps		2		
Antitrunnion levers		2		
Pintle (carriage)	2		1	
Loading crane:				
Mast	1			
Right side plate	1			
Left side plate	1			
Cover	1			
Elevation quadrant				2
Panoramic sight	4			2
2 trucks:				
Pintle and truck bearings			6	
Journal boxes	16	16		
Warping mechanism for 2 trucks:				
Sprocket covers		4		
Sprocket-shaft bearings	4			
Lever-shaft bearings	4			
Clutch-shaft bearings	4			
Clutch pinions	6			
Brake mechanism for 2 trucks:				
Brake hangers	24			
GROUND PLATFORM CAR.				
Winch:				
Drum-shaft brackets	4			
Crank-shaft brackets	2			
Sheave (rear)	2			
Traveling hoist:				
Axle bearings	4			
Worm-shaft bearings	2			
Worm-wheel shaft bearings	2			
Operating-shaft bearings	2			
Sheave (traversing)	1			

PART VII.

LIST OF TOTAL EQUIPMENT FOR 12-INCH GUN RAILWAY CARRIAGE, MODEL OF 1918.

[Organization: 1 battery—4 guns; 1 battalion—2 batteries, 8 guns; 1 regiment—3 battalions, 6 batteries, 24 guns.]

Name.	Class.	Division.	Drawing.	Specification.	Number required with—				Number per regiment at depot, replacement parts.	Total number per regiment.
					Battery, active.	Battery, spares.	Battalion.	Regiment.		
12-inch gun, model of 1895	60	13	1	445	4	.....	8	24	.....	24
12-inch gun, model of 1895, M1	60	20	1	445	4	.....	8	24	.....	24
Spare parts for 12-inch gun, model of 1895	60	13	101	445	1	.....	2	6	1	7
Spare parts for 12-inch gun, model of 1895, M1	60	13	101	445	1	.....	2	6	1	7
Tools and accessories for 12-inch gun, model of 1895	60	13	105	445	1	.....	2	6	1	7
Tools and accessories for 12-inch gun, model of 1895, M1	60	13	105	445	1	.....	2	6	1	7
12-inch gun railway carriage, model of 1918	10	23	1	3080	4	.....	8	24	.....	24
Spare parts for 12-inch gun railway carriage, model 1918	27	52	8	3080	.....	.....	.....	.....	.....	1
Do	27	52	9	3080	.....	.....	.....	.....	.....	1
Do	27	52	10	3080	.....	.....	.....	.....	.....	1
Do	27	52	11	3080	.....	.....	.....	.....	.....	1
Tools and accessories for 12-inch gun railway carriage, model 1918	27	51	4	3080	.....	.....	.....	.....	.....	1
Do	27	51	5	3080	.....	.....	.....	.....	.....	1
Ground platform car	34	17	1	3080	8	.....	16	48	.....	48
Spare parts for ground platform car	27	46	6	3080	.....	.....	.....	.....	.....	1
Do	27	46	7	3080	.....	.....	.....	.....	.....	1
Ammunition car for railway batteries	34	7	1	3038	12	.....	24	72	.....	72
Spare parts for ammunition car	27	46	9	3038	.....	.....	.....	.....	.....	.....
Artillery repair truck, tools, accessories, and supplies	31	18	1	.....	.....	.....	.....	3	.....	3
Spare parts for repair truck and spare tools	31	18	1	.....	.....	.....	.....	.....	.....	3
Artillery supply truck and accessories	31	16	1	.....	.....	.....	.....	3	.....	3
Spare parts for supply trucks	31	16	1	.....	.....	.....	.....	.....	.....	3
Fire control equipment	27	42	2	.....	.....	.....	.....	.....	.....	1
Bore sights for 12-inch guns, models of 1895 and 1895, M1	15	2A	11	.....	4	.....	8	24	12	36
Panoramic sight, type E, for railway mounts	15	2A37	1	3030	4	2	12	36	12	48
Panoramic telescope, 4 and 10 power, for railway mounts	15	2A28	1	3030	4	2	12	36	12	48
Elevation quadrant, Model of 1917	15	12F	1	3030	4	2	12	36	12	48
List of miscellaneous tools, accessories, and stores for 12-inch gun railway carriage	27	48	13	.....	.....	.....	.....	.....	.....	1
Test tools for 12-inch gun railway carriage	29	90	1	.....	.....	.....	.....	.....	.....	(1)

[1] One set required for project.

PART VIII.

DATA TABLE.

12-INCH GUN RAILWAY CARRIAGE, MODEL OF 1918.

Angle of elevation	degrees	38
Angle of depression	do	5
Total weight on trucks, without gun (approximately)	pounds	137,188
Total weight on trucks, including gun (approximately)	do	257,044
Length (between pulling faces of couplers)	inches	797
Distance between truck centers	do	536.62
Number of trucks		2
Type of trucks		French.
Number of wheels per truck		8
Diameter of wheels	inches	36.22
Journals	do	6.693 by 12.2
Weight of truck (approximately)	pounds	32,500
Total weight on track (approximately)	do	322,044
Average wheel load on track, per axle (approximately)	do	40,255

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, March 29, 1919.

Form 2020.
Ed. Mar. 29, 1919—2000.

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