SERVICE HANDBOOK

OF THE

6-INCH BARBETTE CARRIAGE

MODEL OF 1910

FOR

6-INCH GUNS

MODEL OF 1908 MII

PREPARED IN THE OFFICE OF
THE CHIEF OF ORDNANCE

May, 1921

WASHINGTON
GOVERNMENT PRINTING OFFICE
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The following publication, entitled "Service Handbook of the 6-inch Barbette Carriage, Model of 1910 for 6-inch Guns, Model of 1908 MII," is published for the information and guidance of all concerned.

[062.1, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

PEYTON C. MARCH,
Major General, Chief of Staff.

OFFICIAL:

P. C. HARRIS,
The Adjutant General.

TABLE OF CONTENTS.

	Page.
List of plates	6
General description	7
Emplacement	7
The carriage	7
Principal parts	7
Pedestal	7
Pivot yoke	8
Cradle	8
Recoil and counterrecoil system	9
Gunner's platforms	10
Elevating mechanism	10
Range disk	10
Traversing mechanism	11
Sight	12
Shield and supports	12
Gas-ejector system	12
Electrical fittings, cables, and wiring	13
Lighting circuits	14
The firing circuits	15
Shot trucks	15
Shot barrows	16
Instructions for assembling the carriage	16
Care of the carriage	19
General instructions	19
Oil holes	19
To pack a stuffing box	20
Instructions for cleaning recoil cylinders	20
Approximate weight of principal parts of carriage	21
List of articles packed in armament chest	22
List of parts	23

LIST OF PLATES.

Plate No.		Drawing No.
I.	Platform plate (for casemate emplacement)	7–16–1
II.	Platform plate (barbette emplacement)	7–16–1A
III.	Right and left side elevations	7–16–2
IV.	Plan and rear elevation	7–16–3
V.	Cradle	7–16–7
VI.	Cradle details	7–16–8
VII.	Gas-ejector, assembled views	7–16–22
VIII.	Gas-ejector, piping and details	7–16–21
IX.	Wiring diagram and list of electrical equipment	14–6–147
X.	Arrangement of lighting and firing circuits	14–6–148

SERVICE HANDBOOK OF THE 6-INCH BARBETTE CARRIAGE, MODEL OF 1910, FOR 6-INCH GUN, MODEL OF 1908 MII.

[The parts in *italics* are of particular importance or concern the safety of the carriage and should be specially noted.]

GENERAL DESCRIPTION.

EMPLACEMENT.—Emplacements for carriages 1 to 4, inclusive, are casemate emplacements; those for carriages 5 and 6 are barbette emplacements. In the casemate emplacement the carriage may be traversed through a field of fire of 127°, being limited to this angle by traversing stops bolted to the shield. However, as the sight hole in the shield is about 23 inches to the left of the axis of the gun, the target becomes obscured if the carriage is traversed through an angle of more than 120° from its extreme right position. In the barbette emplacement the field of fire is limited by traversing stops bolted to the pedestal and a stop bracket which is bolted to the right front of the pivot yoke. After the carriage is set in the emplacement the traversing stops are located to suit the emplacement conditions. The 16 anchor bolts are set in the concrete as the emplacement is constructed, the depressions for the pedestal base and thrustplates being also provided.

THE CARRIAGE.—The carriage is of the pedestal mount type, and mounts 6-inch guns, model of 1908 MII. Carriages 1 to 4, inclusive, being mounted in casemate emplacements, are provided with a gas-ejector system and a shield that protects the carriage and personnel from shell or fragments entering the port in the casemate. Carriages 5 and 6 are not provided with a gas-ejector system, and have a hooded shield which, together with the concrete parapet in the barbette emplacement, protect the carriage and personnel.

PRINCIPAL PARTS.—The carriage consists of the following principal parts, viz, pedestal, pivot yoke, cradle, gunner's platforms, traversing and elevating mechanism, shield and shield supports, telescopic sight, firing magneto, electrical attachments, and (in carriages 1 to 4, inclusive) gas-ejector air valve, piping, and attachments.

PEDESTAL.—The pedestal is made of cast steel No. 1. In general form it is cylindrical. Approximately the upper 6 inches is reduced in diameter, and to it is pinned the bronze upper sleeve, which forms

the pintle for the pivot yoke. To the lower part of the cylinder is pinned the bronze lower sleeve, over which the bottom of the pivot yoke fits with just sufficient clearance to permit of easy traversing. The base of the pedestal is formed by a flange, in which are drilled holes for the 16 foundation bolts and 4 leveling screws. On the upper surface of the base is a vertical annular flange, 38.5 inches in diameter, to the top surface of which is screwed the brass azimuth circle. The outer surface of the flange is machined and forms the seat for the traversing worm wheel. A shoulder near the top of the pedestal provides the lower path for the conical traversing rollers. Three drain holes are provided which drain the pocket formed by the annular flange and body of pedestal.

PIVOT YOKE.—The pivot yoke, of cast steel No. 2, has a cored cylindrical stem from which rise two vertical cheeks. In the latter are trunnion beds for the cradle, which are fitted with cast-steel No. 2 dovetailed cap squares bolted to the cheeks. The beds are provided with bronze No. 4 liners fastened in place by bronze countersunk screws. Finished seats are formed on the outer faces of the cheeks, to which the shield supports are bolted. On the left front of the yoke, near the bottom, is a boss having a finished seat to which the traversing gear bracket is bolted. A seat for the sight bracket is provided on the left cheek just forward of the trunnion bed. A seat for the upper bearing and disk bracket is finished on the right cheek of the yoke in rear of the trunnion bed. A boss formed on the rear of the cylindrical portion of the yoke, below the cheeks, provides a seat for the elevating gear bracket. The two platforms are attached by bolts to seats on the right and left of the yoke. The upper and lower sleeves, roller path, and roller bearings are oiled through oil tubes which are closed by oil plugs. A micrometer azimuth pointer is attached to the left side of the yoke by two tap bolts. Elongated bolt holes permit of lateral adjustment of the pointer. A flange ring is bolted to the top of the cylindrical portion of the yoke inside the cheeks. A cover plate is bolted to the flange ring, completely covering the opening through the cylindrical portion of the yoke and providing conduits for the lighting circuits. In carriages 1 to 4, inclusive, the cover plate and flange ring differ materially in design from those on carriages 5 and 6, due to the gas-ejector system installed on carriages 1 to 4.

CRADLE.—The cradle of cast steel No. 2 is bored out and bushed with two bronze No. 3 liners to receive the gun. Oil grooves formed in the bushings and connected with oil holes in the cradle insure proper lubrication of the bearing surfaces. Near the front end are trunnions for supporting the cradle and gun in the pivot yoke and on which the cradle and gun rotate when the latter is elevated or depressed. The cored holes in the trunnions are closed with cover

plates which are fastened to the trunnions by special countersunk screws. In front of the recoil cylinder a stop on each side limits the elevation to 12° by striking stops on the pivot yoke. Stops on the forward end of the cradle similarly limit the depression to 3°.

On the top of the cradle and forming a part of the cradle casting is an eye by which the gun and cradle can be removed from or assembled to the pivot yoke. Underneath the rear portion and forming part of the cradle is the recoil cylinder. Two spring cases are attached by countersunk bolts to lugs on the rear of the cradle and in each is a forged steel No. 3 spring rod, the rear end of which is attached by forged steel No. 3 nuts to a yoke secured to the recoil band. The head of each spring rod rests on a pile of two-nested springs in three sections each. Each two springs of the same diameter are held apart by a spring separator.

The length of the spring rods should be adjusted so as to return the gun into battery at the maximum angle of elevation without shock, but in no case should the head of the rod protrude from the front end of the case which is open. The recoil cylinder holds 3 gallons of oil. It has a forged steel No. 3 liner in two pieces, the front head being screwed to the cylindrical portion. Three throttling grooves are cut in the cylindrical portion.

A counter-recoil buffer made of Tobin bronze passes through the front end of the recoil cylinder, and is screwed in the front liner head. The rear end of the cylinder is closed with a forged steel No. 2 head in which are filling and drain holes closed with screw plugs, and a stuffing box with its gland and follower. The stuffing box is packed with 5 rings of 0.75-inch square waterproof hydraulic packing. The piston is made integral with the piston rod, which is attached by a special forged steel No. 3 nut and check nut to the recoil band. The spring yoke rests on the piston rod and is secure between the rear nut and band. On the piston is a bronze No. 4 liner, and in the end of the piston rod there is an axial hole for the counter-recoil buffer.

The gun is not provided with trunnions, but has a key or feather on its top which fits in a keyway cut in the top of the cradle liner and which prevents rotation of the gun in the cradle during recoil or counterrecoil. A recoil band is shrunk on and keyed to the gun to which the recoil piston and spring yoke are attached.

Recoil and Counterrecoil System.—The action of the gun is as follows: When fired the gun recoils to the rear about 15 inches in the cradle, carrying with it the recoil piston and spring rods, thereby compressing the counterrecoil springs. A small portion of the energy of recoil is taken up in compressing the springs, but the greater portion by the resistance the liquid offers to being forced through the orifices formed by the throttling grooves. The width of the grooves is uniform, but their depth is proportioned so that the

areas of the orifices, varying with the position of the piston during recoil, will be such as to give, with the aid of the counterrecoil springs, a constant resistance throughout the length of recoil. The pressure in the cylinder is therefore a uniformly decreasing one. The counterrecoil buffer is tapered so that the escape of the oil during counterrecoil through the varying diametral clearances between the buffer and the walls of the buffer hole in the piston rod will offer such resistance as will control the motion of the gun during its return and finally bring it to rest when the recoil piston reaches the front end of the cylinder.

GUNNERS' PLATFORMS.—On each side of the gun is a platform which is bolted to the pivot yoke and on which the gunner stands when laying the piece.

ELEVATING MECHANISM.—An elevating bracket of cast steel No. 2, bolted to the rear of the pivot yoke, provides bronze bushed beds for the trunnions of the elevating nut. Dove tailed cap squares are bolted to the trunnion beds. The gear case of cast iron in two pieces and lower bearing of cast steel are bolted to the right side of the bracket. The upper bearing is bolted to its seat on the right cheek of the pivot yoke. By means of the elevating handwheel, its shaft, the handwheel shaft gears, the intermediate elevating gears, the elevating nut shaft, the intermediate elevating shaft, the elevating pinion, the elevating gear, the elevating nut, and the outer and inner elevating screws, motion is communicated to the cradle. The upper end of the inner elevating screw forms an eye which is hinged between two flanges on the cradle beneath the recoil cylinder by the elevating pin.

To reduce the power required to elevate or depress the gun to a minimum, the cradle trunnions are so located that the center of gravity of the gun, with the projectile and charge in place, the cradle and all parts attached to them lie on the axis of the trunnions; for the same reason the center of gravity of all parts moving in azimuth lies approximately on the vertical axis of rotation of the pivot yoke.

RANGE DISK.—The range disk, consisting of an inner disk and an outer disk of hard brass and a German silver range scale, is assembled to the disk bracket. The bracket provides bearings for the gear shaft and disk shaft, on which are assembled the steel intermediate pinion, bronze intermediate gear, and steel disk pinion. The seat for the disk shaft is bronze bushed. A spiral spring takes up the back lash in the gears. At the top of the disk bracket is a seat for the pointer base, with elongated bolt holes to permit of lateral adjustment. A tongue on the pointer slides in a groove in the base, and lateral adjustment of the pointer is made by means of a correction screw seating in the pointer base, and meshing with teeth machined on the arc of the pointer. A clamping screw secures it in position.

A bronze gear segment bolted to the right side of the cradle below the maneuvering ring meshes with the intermediate pinion. Any motion of the gun in elevation or depression is communicated through the gear segment, intermediate pinion, intermediate gear, and disk pinion to the range disk. The disk is graduated in intervals of 20 yards. The inner circumference of the disk is graduated for subcaliber ranges and the outer circumference for service ranges. The range scale is graduated after piece is mounted in emplacement from data furnished by the Ordnance Department.

Traversing Mechanism.—The pivot yoke rests and is traversed upon a circle of 36 forged steel No. 2 conical rollers held in proper relative position by a bronze roller cage. The upper roller path of forged steel fits into the shoulder of the pivot yoke and is held in position on the rollers by a flange on its outer circumference. The lower roller path is machined on a shoulder of the pedestal. The traversing mechanism consists of a cast-steel traversing-gear bracket with bronze cover plate and oil pan, a cast-iron handwheel bracket, a handwheel and shaft, the upper traversing gears, the intermediate shaft, the lower traversing gears, the worm shaft, the worm, and two ball-thrust bearings. The traversing-gear bracket is bolted to its seat on the pivot yoke. A bronze No. 3 bearing for the worm shaft is screwed into its forward end, having a notched head permitting of its being latched in adjustment by the worm-bearing latch, which is secured in the proper notch by a split pin. The other end of the worm shaft is supported in a bronze bushed bearing. The worm is keyed to the worm shaft, and ball-thrust bearings on the worm shaft at each end of the worm take up the thrust in traversing. The traversing worm wheel is seated on the outside of the annular vertical flange on the base of the pedestal, with a diametrical clearance of 0.005 inch, and is retained in position by a shoulder on the pedestal and the brass azimuth circle secured by 16 countersunk screws to the top of the flange. Beneath the teeth on the worm wheel is a seat for the friction band, which is made in halves united and attached to a boss on the rear of the pedestal by a stud bolt, thereby preventing rotation of the band with the pivot yoke. The forward ends of the halves of the band are joined by a bolt having a helical spring interposed between a shoulder on the band and the bolt head. A special bronze nut is provided for adjusting the tension on the friction spring and is held in proper adjustment by means of a split pin. This nut should be tightened to produce only sufficient friction between the band and the worm wheel to enable the gun to be traversed without slipping and yet permit slipping in case undue strain is brought on the teeth of the worm wheel. The spring serves to regulate and keep uniform during rotation the pressure of the band on the worm wheel.

The handwheel bracket is bolted to the top of the standard, forming the rear part of the traversing-gear bracket. The intermediate shaft is incased in this standard. Bronze bushed bearings are provided in the standard and in the handwheel bracket for the intermediate and handwheel shafts. The handwheel bracket provides a slotted seat for the firing magneto, and a drilled boss to which the shoulder rest is bolted.

SIGHT.—A sight bracket is bolted to the left cheek of the pivot yoke. Carriages Nos. 1 to 4, inclusive, are equipped with 3-inch telescopic sight, model of 1910, a full description of which is contained in Ordnance Office Pamphlet No. 1960. Carriages Nos. 5 and 6 are equipped with 3-inch telescopic sight, model of 1912, a full description of which is contained in Ordnance Office Pamphlet No. 1959.

SHIELD AND SUPPORTS.—The shield for carriages 1 to 4, inclusive, is cylindrical in shape, the axis being vertical. It is made of special cast steel 5.3 inches thick and is pierced with a port for the gun and sighting hole. The shield is attached to the cheeks of the pivot by two front and two rear shield supports.

The shield for carriages Nos. 5 and 6 is of special cast steel, approximately semielliptical in shape, and is hooded, the top being an integral part of the shield. The elements of the sides of the shield are vertical, and the hood has an upward slope to the rear. The front of the shield is 5.3 inches thick, tapering from the shoulders to a thickness of 2 inches at the rear. The hood tapers from $2\frac{1}{2}$ inches at the front end to 1.75 inches at the rear. The shield is pierced with a port for the gun and sighting hole. It is attached to the cheeks of the pivot yoke by two front and two rear shield supports.

GAS-EJECTOR SYSTEM.—A gas-ejector system is provided for carriages 1 to 4, inclusive. It consists of a compressed air tank, furnished by the Engineer Department, an air valve on the breech of the gun with air passages leading into the breech recess, and the necessary piping, flexible tubing, pipe and hose supports, shut-off valve, etc., to connect the tank and the air valve. The tank is furnished and installed by the Engineer Department. From this tank a brass air-supply pipe leads to the air swivel, which is screwed into the stirrup on the flange ring. The air swivel permits of traversing the carriage; this is accomplished by means of a packing box, consisting of the packing-box nut, the gland, and hydraulic packing. An elbow on the air swivel comes up through a hole in left side of the cover plate, flush with its top. The piping is carried from there through a hole in the left cheek of the pivot yoke. Here a shut-off valve is provided for cutting off the compressed air. At this point another elbow and connection carry the pipe to the rear of the left cheek of the yoke, just below the rear shield support, where it is held rigidly by a strap

bolted to the yoke. Here connection is made to flexible tubing, which is carried back to the flexible hose support attached to the spring yoke. The breech connecting pipe, secured to the breech, connects the rear end of the flexible hose to an air valve. The air valve is attached to the breech of the gun near the top and communicates with an air passage to an annular groove in the breech bushing. From four equidistant points in the circumference of this groove pairs of $\frac{3}{8}$-inch drilled holes communicate with the breech recess, opening into the recess approximately halfway to its forward end.

The principal parts of the air valve are the valve body, the valve body cap, the check valve, the valve spring, the trip plunger, the plunger spring, and the trip lever. The valve body is attached to the face of the breech by four screws. Just below the valve body the cam block is screwed to the block carrier, and on this is pivoted the cam. A cam stop is also driven in the cam block, and the cam is held against this stop by a spiral spring. The check valve is held in its seat in the valve body by the valve spring. The valve stem passes through and extends below the valve body. An annular groove around the stem provides an oil packing to insure air-tightness. Just above this groove there is a second groove into which the trip plunger drops upon raising the valve stem. The trip plunger lever is pivoted at its center on a lug on the front of the valve body. The lower end is attached to the end of the trip plunger. The trip plunger spring forces the plunger against the valve stem. The action of the valve is as follows: When the block is translated in opening the breech, the cam attached to the cam block on the block carrier pushes the valve stem upward, raising the valve from its seat, until the trip plunger drops into the annular groove on the stem. The valve is thus held open until released by pressing on the upper end of the trip lever. Upon closing the breech the rear face of the cam strikes the valve stem and swings out on its pivot till it passes the stem, when the cam spring causes it to spring back against the cam stop.

Electrical Fittings, Cables, and Wiring.—A 3-inch conduit installed by the Engineer Department carries the lighting leads through a horizontal passage in the platform and a vertical passage in the concrete beneath the pedestal to a clamp on the beveled interior surface of the pedestal near the top. The leads as furnished by the Engineer Department are for the lighting circuit only and are lead covered. Twin conductor leaded and armored cable is used for the firing circuit which is lead directly from the firing magneto on the handwheel bracket along the left side of the gun and carriage to the breech.

LIGHTING CIRCUITS.—At the clamp which is bolted to the front of the inside of the pedestal, the leads of a twin conductor leaded and armored cable having sufficient slack to permit of traversing the carriage within its field of fire, is connected to the leads furnished by the Engineer Department and carried to an outlet at the front of the cover plate. A terminal tube which screws into a tapped hole in the front of the cover plate furnishes a water-tight connection through which the armored cable passes to a four-way junction box located on the front of the pivot yoke. From the lower outlet of the four-way junction box, one twin conductor armored cable leads to a 5-ampere switch located on the right of the pivot yoke near the front. From this switch the cable is carried to the front end of a lamp resistance box which is bolted in a horizontal position on the right side of the pivot yoke just below the cradle trunnion. From the rear end of the resistance box, two armored cables are lead. One cable leads to the range disk lamp fitting which is fastened to its bracket at the range disk on the right side of the carriage, the other cable is lead downward on the right side of the pivot yoke, passing across the front of the yoke to a lamp junction box at the azimuth pointer on the left of the carriage. Two 8-candlepower lamps illuminate the range and azimuth pointers.

From the right-hand opening in the four-way junction box, a twin conductor armored cable leads to the engineer's plug box which is furnished by the Engineer Department and is located on the right cheek of the pivot yoke and from which is plugged a 16-candlepower portable lamp, provided by the Engineer Department for each carriage, having sufficient cable to reach to any part of the carriage. The cable furnished for the portable lamp is of the twin conductor slicked reinforced type, and is not leaded or armored.

From the left-hand opening in the four-way junction box a twin conductor armored cable leads to the lower end of a lamp resistance box which is bolted in a vertical position to its bracket on the left side of the pivot yoke and elevating gear bracket. From the top opening in this lamp resistance box a triple conductor leaded and armored cable is lead along the left side of the pivot yoke to a receptacle plug box located near the seat for the left forward shield support. From this plug box the cable is carried to the sight where two 2-candlepower lamps furnish illumination for the deflection scale and cross wires of the sight. A receptacle plug is provided for insertion in the plug box, which permits breaking the circuit on this lead. The 5-ampere switch on the leads to the range disk and azimuth pointer lamps serves a similar purpose. All lamps are provided with reflectors so as to illuminate only the parts intended. All lamps are arranged in parallel. The 2-candlepower lamps and 3-candlepower lamps are of the bayonet base type, operating at

approximately 16 volts. A wound tube resistance unit mounted in the lamp resistance box is inserted in series with each lamp which provides the necessary drop in voltage from either 110 or 220 volts, so that the voltage at the lamp terminals is 16 volts. Each lamp with its resistance unit is in parallel on the circuit in order that the failure of any lamp or its resistance unit will not affect any other lamp. After the lamps are in operation for some time, the lamp resistance box will become heated but the box is so designed that a temperature injurious to the unit will not develop. The openings provided for the cables in all plug, receptacle, junction, and resistance boxes and the five-ampere switch are furnished with watertight terminal tubes.

The Firing Circuit.—The firing circuit for these carriages obtains its current from a hand-operated alternating current magneto, type GA as described in Ordnance Office Pamphlet No. 1814, mounted on the handwheel bracket by means of a dove-tailed key or feather on the magneto which fits into a slotted seat provided for it in the handwheel bracket. From the magneto, twin conductor leaded and armored cable is lead to the rear along the left side of the carriage to a recoil firing contactor made in two sections, one of which is attached by brackets to the gun band, the other to the cradle, in a plane parallel to the movement of the gun in recoil.

The recoil firing contactor is constructed on the principle of a knife switch except that contact is made or broken by the movement of the gun in recoiling from or returning to battery position. It is provided with a telescopic cover to protect the interior parts from the elements. Contact is made when the gun is approximately 2½ inches from the counterrecoil stop. The function of the contactor is to break the firing circuit when the gun is sufficiently out of firing position to render its accidental discharge dangerous to the mechanisms of the carriage. It also eliminates the necessity of a loop in the firing cable to provide for recoil of the gun. From the contactor the armored cable is lead to the breech of the gun. At the breech one lead is grounded directly to the gun and one is connected to the gun portion of the circuit breaker, which completes the circuit to the primer when the gun is in battery and the breechblock is rotated home and locked.

A method of finishing ends of firing cable where divided for contact at the breech and also terminals in small boxes in the form of soldered eyelets will be found on drawings of electrical equipment, 14–5–85 and 14–6–97.

Shot Trucks.—The projectiles are wheeled to the breech of the gun on shot trucks. The frame of the truck is built up mainly of steel angles, riveted. The shot supports are two steel angles running the length of the truck and curved upward at their ends to provide stops for the projectiles and attachment of the handle. The truck

is supported by four wheels, two in the center, of large diameter, on either side of the truck, and one small wheel at each end, all of which are either rubber or rope tired. It is handled by one man at the handle. The projectiles are placed across the truck on the shot supports, which are of sufficient length to accommodate six projectiles. For carriages 1 to 4, inclusive, four trucks are provided for each carriage. For carriages 5 and 6 two trucks per carriage are provided. The trucks for carriages 5 and 6 differ materially from those used with carriages 1 to 4, inclusive, being several inches higher and having truck wheels of correspondingly larger diameter. Trucks for carriages 5 and 6 are also provided with a 0.25 thick reinforced plate riveted to the shot supports.

SHOT BARROWS.—To facilitate the handling of projectiles, shot barrows are supplied. These barrows are provided with a tray on which the projectile is laid. It is then lifted by two men and its forward end inserted in the powder chamber of the gun. The projectile is then rammed home. The forward end of the barrow is provided with a metal shield in the form of a cylinder which fits loosely into the powder chamber of the gun and affords protection to the interior of the chamber while the projectile is being inserted. Two handles riveted to the tray and located so as to maintain equilibrium of the barrow while the projectile is being lifted furnish a means of raising the projectile to loading position.

INSTRUCTIONS FOR ASSEMBLING THE CARRIAGE.

TO ASSEMBLE THE CARRIAGE.

The following description refers particularly to the order in which the parts are assembled rather than to a complete enumeration of the details of each operation:

In assembling the parts, see that all match figures on parts correspond with each other. All numbers on the bolts should correspond with the numbers beside the holes in which they fit.

All machined parts, including the joints, keys, bolts, bolt holes, and working parts, should be thoroughly cleaned *with fine emery cloth if necessary* and oiled before assembling.

On the arrival of a carriage at a fortification, the emplacement will have been prepared for the carriage by the setting of a bed of concrete with the foundation bolts in place. The pedestal with the leveling thrust plates in position is set on the concrete bed with the stamped side to the front, and with the use of the thrust plates and leveling screws is leveled accurately to a sensitive spirit level placed across the finished top of the pedestal, leveling it in all directions. After the pedestal is properly leveled, the foundation bolts are tightened, and it is fixed in place by grouting of neat Portland cement, the leveling screws backed off, and the air-supply pipes placed in position.

THE TRAVERSING WORM WHEEL, with the friction band on it, is dropped over the lower part of the pedestal so that the hinge stud passes through the hole in the band. The spring bolt nut and friction spring are then assembled. The azimuth scale is secured by screws to its seat on the upper surface of the annular flange on the pedestal. The traversing rollers, 36 in number, are assembled in the roller cage on the lower roller path machined on the shoulder of the pedestal.

THE PIVOT YOKE is then prepared for being placed over the pedestal by being properly cleaned and all burrs removed. The bearing parts should be well lubricated and the yoke then lowered into position on the pedestal. The upper roller path, being a force fit in the yoke, remains in place.

THE GUNNER'S PLATFORMS are bolted in place and the azimuth pointer bolted to its seat on the left side of the yoke.

THE ELEVATING GEAR BRACKET is bolted and keyed to its seat on the pivot yoke. The elevating nut and shaft, the inner and outer elevating screws, the elevating gears, and the elevating gear cover are then assembled to the elevating gear bracket. The elevating gear bracket caps are then bolted to the bracket. The lower bearing for the elevating intermediate shaft is then fastened to elevating gear by two bolts. The intermediate elevating shaft nut with one bronze gear is then assembled to lower bracket, the gear meshing with the gear on the elevating nut shaft. The upper bearing is then placed on intermediate shaft and bolted to pivot yoke. The pinion is then assembled to the intermediate elevating shaft. The elevating handwheel shaft, gear and elevating handwheel are then located in place with gears in mesh. The gear case and cover plate are then bolted in place.

THE TRAVERSING GEAR BRACKET is next bolted to the pivot yoke. The traversing mechanism is then assembled in the bracket.

The air-supply pipe is then fixed in position with pipe support, flange ring and cover plate, air swivel, packing box nut, packing box gland, elbow union, two pieces of hydraulic packing, elbow union plug, lock nut, union plug, swivel, connecting pipe.

The front liner head, with copper gasket, counterrecoil buffer, piston and rod, rear liner head, with copper gasket and five rings of 0.75-inch square waterproof hydraulic packing, one gland, the filling and emptying plugs, and adjusting nut are assembled on the recoil cylinder. The adjusting nut is screwed on the piston rod to its approximate position. The piston rod is then pushed forward till the piston brings up against the front liner head.

The two spring cylinders are now bolted to the cradle, and in them are assembled the recoil springs, consisting of six outer and six inner springs and four spring separators. The two spring rods with spring

rod heads attached are then passed into the spring cylinders from the rear. The recoil springs are then placed in the cylinders and the spring cylinder heads screwed on the spring cylinders. Two spring compressor nuts are then screwed into place on spring rods, passing through holes in the cylinder heads, until bringing up against shoulder on spring rod. When gun is finally balanced there should be approximately 1 inch clearance between spring cylinder head and shoulder on spring compressor nut; the assembled height of the spring is 48.5 inches.

Before placing the cradle on the gun, carefully examine the gun and cradle bearings, removing with emery cloth all rust that may have accumulated, also any burrs that may have formed on these surfaces should be removed with a fine file or scraper. Lubricate well the bearing surfaces on the gun and cradle. Unless it has been recently examined, the recoil cylinder should be cleaned and the packing examined.

THE CRADLE is now placed on the gun, the piston rod passing through the hole in the recoil band provided for that purpose. The spring rod yoke is assembled to piston and spring rods; the key on the spring rod yoke passes into the recess in the recoil band. Three take-up nuts are then screwed up against the spring yoke, one on the piston rod and one on each spring rod. The gun is now in its approximate position in the cradle. All oil holes should be cleaned and oil plugs put in place. The gear segment is now bolted to the cradle.

THE SHIELD SUPPORTS and for the casemate mount the shield strut, as well as the two traversing stops, are bolted in place. The shield is then lowered over the pivot yoke till the bolt holes in the supports are opposite the corresponding bolt holes in the yoke. The supports are then bolted to the yoke. The shield strut is now removed to permit of placing the gun and cradle on the yoke, after which it is replaced.

The gun and cradle are now placed on the yoke, the muzzle of the gun passing through the port in the shield, and the trunnion caps bolted in place. The recoil cylinder is filled with hydroline oil, and a projectile and powder charge placed in the gun, in order to balance the gun on the cradle trunnions. This is done by setting up or backing of the nuts on the piston rod and spring rods.

The inner elevating screw is now assembled to the lugs on the cradle by means of the elevating pin.

The disk bracket is bolted to its seat on the pivot yoke, and to it is assembled the range-disk mechanism. Approximately two turns tension should be given to the spiral spring.

The gun is now placed at its maximum elevation, and the gear segment and pinion meshed so that the marks on each correspond.

Assemble the sight bracket to its seat on the left cheek of the pivot yoke, and the sight to the bracket.

The firing magneto and shoulder rest and bracket are assembled to the traversing handwheel bracket.

The remainder of the gas-ejector system and the electrical connections and fittings can now be assembled.

CARE OF THE CARRIAGE.

GENERAL INSTRUCTIONS.

Carriages should be traversed from time to time throughout their entire allowed movement. It is especially important that all parts of the carriage be kept free from rust *at all times*. If rust be allowed to accumulate, its removal from all bearing parts, and especially the piston rod, requires particular attention in order that clearances shall not be unduly increased. The use of sandpaper for this purpose is forbidden, and emery cloth No. 1, being coarse enough for any ordinary rusting, should be used, the rust being softened, if necessary, by kerosene.

If any leakage occurs from the hydraulic recoil system it should be immediately remedied.

The repacking of stuffing boxes may be done, when necessary, by trained enlisted men under the supervision of an officer.

The copper gaskets between the recoil cylinder liner and its heads should be in good condition, and consequently should be replaced whenever necessary in order to prevent leakage.

Recoil cylinders should be emptied at least every three months and thoroughly cleaned every six months. Experience has indicated that oil should not be removed from the recoil cylinders when carriages are to remain unused for a considerable period, as the walls of the cylinders soon become dry and then rust.

Oil Holes.—Oil holes, where provided, must be cleaned out frequently to keep them free from sand and grit, and *will habitually be kept closed by the oil plugs provided, except when in the act of oiling. Before oiling any hole, wipe off carefully any dirt or grit near the opening that might be carried down into the bearing by the oil.*

All parts where oil holes are provided should be lubricated at frequent intervals whether the carriage be maneuvered or not, and it is essential for the proper preservation and working of the carriage that on every day on which it is maneuvered for any purpose all bearings should be well lubricated immediately before such maneuvering.

When carriages are in use for daily drills, a thorough lubrication twice each week should be sufficient for all but the most severely used parts.

To Pack a Stuffing Box.—Draw the oil from the cylinder, remove the gland and all the packing in the box. Examine the old packing and discard any unfit for use. If any of the old packing be used, it should be put in after the new.

To repack, put on the piston rod one ring of 0.75-inch waterproof hydraulic packing and force it well to the bottom of the stuffing box by a wooden stick and mallet. Treat each layer of packing in a similar manner, being careful to break joints, until five rings of new packing have been inserted, or an equal amount of new and old when any of the latter is used. Screw the gland in the box and set up tight. *No more force than that of one man should be applied to tighten up the gland, using the wrench supplied for that purpose.* The addition of a pipe to the end of the wrench will not be permitted. The gland should be tightened from time to time. If the gland be screwed into the stuffing box too tightly, an unnecessary amount of friction will be produced on the rod. When the gland is screwed in till the flange strikes the box, another ring of packing should be inserted. It is expected that a slight amount of oil will soak through and drip from the boxes of carriages when not in use. This should be caught and not permitted to render the carriages unsightly. Also, when tightening the glands, a slight amount of oil will be squeezed out of the saturated packing.

For further information regarding paints, oils, cleaning materials, and methods of using same, see Ordnance Department pamphlet, Form 1869.

Instructions for Cleaning Recoil Cylinders.—A plumber's hand force pump is issued by the Ordnance Department to each artillery post for this purpose. The cleaning should be done by enlisted men, under the direction of an officer, in the following manner:

Elevate the gun about 10° and remove the oil in the recoil cylinder through drain hole, removing drain, and filling plugs. Then depress gun about 5°. Knot a stout cable tightly around the breech of the gun immediately in rear of band, passing the end along the top of the gun and through the eyebolt on top of cradle and lash it to one of the shield supports, leaving as little slack in cable as possible.

Slowly unscrew the rear nut on each spring rod until the spring compressor nut comes in contact with spring cylinder head, then remove the rear spring rod nuts.

Remove the rear nut from the recoil piston rod and the spring yoke, and remove set screw from front piston-rod nut.

Place gun at 5° elevation, release the end of the cable by a small amount, and by pushing on the muzzle move the gun rearward; repeat this operation until the distance between front face of piston-rod lug and the rear end of the piston rod is sufficient to permit of the removal of front piston-rod nut.

Unscrew the gland about three turns to relieve pressure on packing and move the piston to the rear until rear liner head comes in contact with recoil lug.

Thoroughly clean the cylinder with kerosene oil forced into its rear end with the hand pump, then wipe the interior dry with clean cotton waste. The piston rod, piston, and rear liner head should then be cleaned. The counterrecoil buffer will not be removed.

The piston rod and rear liner head should then be moved forward into place, and the front nut assembled on the piston rod, screwing set screw into its seat on piston rod.

Screw the rear liner head into its seat, taking care that it is firmly seated. Force piston rod forward until the piston is against the front liner head, then tighten the gland. Place a jack under the breech and remove elevating pin. Depress gun about 1°, assemble elevating pin, release jack, and by pushing on the breech the gun moves slowly and gently into the firing position, against the front piston rod nut. Then assemble spring yoke, rear piston-rod nut, and two spring rod nuts. The nuts on spring rods should be tightened until there is 1 inch space between shoulder on spring compressor nut and spring cylinder head. Screw the emptying plug into place and fill cylinder with hydroline oil. Allow escape of air, refill, and screw filling plug into place.

Approximate weight of principal parts of the carriage.

	Pounds.
Pivot yoke	5,520
Pedestal	4,810
Shield with front and rear braces (carriages 1 to 4)	15,855
Shield with front and rear braces (carriages 5 and 6)	12,100
Traversing gear	480
Elevating gear	538
Recoil cylinder and piston	625
Cradle with spring cylinders and springs	4,600
Worm wheel	675
Azimuth circle	84
Range disk and bracket	95
Telescopic sight and bracket	75
Friction band	57
Right platform	175
Left platform	175
Total approximate weight of carriages 1 to 4	33,746
Total approximate weight of carriages 5 and 6	29,991
Total approximate weight of 6-inch gun, Model 1908 Mii	12,500
Total approximate weight of carriages 1 to 4 with gun	46,246
Total approximate weight of carriages 5 and 6 with gun	42,491

List of articles packed in the armament chest for 6-inch gun, model of 1908 Mii, and 6-inch barbette carriage, model of 1910.

FOR GUN.

No.	Drawing.	Price mark.	Articles.
*1	.....	.....	Box for firing mechanism.
3	15–5–47..	U47Z.....	Brushes, cleaning for primer seat (in F. M. box).
1	15–5–47..	U47BC.....	Cloth, emery, No. 00, 1 quire.
1	15–5–47..	U47AC.....	Drift, bronze, large.
1	15–5–47..	U47AB.....	Drift, bronze, small.
1	15–5–47..	U47W.....	Drill, gunner's.
3	15–5–47..	U47AW.....	Files, pillar, No. 6, 6-inch.
3	15–5–47..	U47AV.....	Files, three-cornered, No. 4, 6-inch.
3	15–5–47..	U47AT.....	Files, round, smooth, 8-inch.
3	15–5–47..	U47AU.....	Files, half-round, smooth, 8-inch.
			For use on bruised breech blocks; no other files to be used thereon.
1	15–5–47..	U47AR.....	File, flat, dead smooth, 8-inch.
1	15–5–47..	U47AS.....	File, round, second cut, 8-inch.
*1	15–5–47..	U47AU.....	File, half-round, smooth, 8-inch.
1	15–5–47..	U47BH.....	File, three-cornered, 8-inch.
1	15–5–48..	U48F.....	Hammer, machinist's, ball-peen, 2 pounds, commercial.
1	15–5–47..	U47AG.....	Hammer, copper.
*1	15–5–196.	U196D.....	Lanyard, gunner's.
1	15–5–47..	U47AN.....	Mallet, hand.
1	15–5–47..	U47AP.....	Mallet, long handle.
1	15–5–47..	U47AQ.....	Pliers, cutting, 7-inch.
*1	15–5–233.	.....	Pouch, gunner's.
1	15–5–47..	U47T.....	Punch, gunner's.
1	15–5–47..	U47AF.....	Punch, pin.
1	15–5–47..	U47AA.....	Reamer, cleaning, for primer seat (in F. M. box).
1	15–5–47..	U47AE.....	Scraper, metal.
*1	20–2–17..	.....	Sleeves, gunner's, 1 pair.
*3	15–5–47..	U47AX.....	Sponges, wagon.
*4	15–5–47..	U47AY.....	Twine, assorted balls.
*10	15–5–47..	U47AZ.....	Waste, cotton, pounds.
*2	15–5–47..	U47BA.....	Wire, copper, No. 12, pounds.
*2	15–5–47..	U47BB.....	Wire, copper, No. 16, pounds.
1	15–5–45..	U45G.....	Wrench, monkey, 12-inch.
1	15–5–45..	U45H.....	Wrench, monkey, 15-inch.
1	15–5–44..	U44Z.....	Wrench, tit, for obturator.
1	15–5–45..	U45W.....	Screw driver, bar, for spindle key.
	.....	.....	Gear segment screws, etc.

FOR CARRIAGE.

1	15–5–46..	U46Q.....	Funnel, filling.
1	15–5–46..	U46J.....	Oiler, half-pint.
*1	15–5–46..	U46LI.....	Oiler, locomotive, one-quart.
1	15–5–45..	U45AN.....	Screw driver, commercial, 3-inch blade.
1	15–5–45..	U45AF.....	Screw driver, steel.
1	15–5–44..	U44SA.....	Wrench, box, 0.5 nut.
1	15–5–43..	U43C.....	Wrench, double, 0.375 and 0.5 nuts.
1	15–5–43..	U43F.....	Wrench, double, 0.625 and 0.75 nuts.
1	15–5–43..	U43G.....	Wrench, double, 0.875 and 1 inch nuts.
1	15–5–43..	U43K.....	Wrench, double, 2 and 1.5 nuts.
1	15–5–43..	U43AB.....	Wrench, single, piston-rod nuts and gland.
1	15–5–43..	U43V.....	Wrench, single, 1.75 nuts.
1	15–5–43..	U43BB.....	Wrench, single, 1.375 nut.
1	15–5–43..	U43S.....	Wrench, single, 1.25 nut.
1	15–5–55..	U55M.....	Wrench, spanner, recoil cylinder liner.
1	15–5–44..	U44KA.....	Wrench, spanner, traversing worm bearing.
1	.....	.....	File card (commercial).

* Indicates articles carried loose in chest.

Name of parts of the 6-inch barbette carriage, Model of 1910, their piece marks and drawings on which the parts are ordered.

The parts are grouped and listed alphabetically under the following headings: Pedestal and yoke; cradle and recoiling parts; shields; traversing mechanism; elevating mechanism; range disk; azimuth pointer; gas-ejector parts; electrical equipment; shot trucks; shot barrows.

When referring to a part, always mention its piece mark where given on the list.

Carriages 1, 2, 3, 4, mounted in casemate emplacements, are fitted with gas-ejector system.

Carriages 5 and 6 are mounted in barbette emplacements and are not fitted with the gas-ejector system.

PEDESTAL AND YOKE.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
13G1	1	7	16	13	Azimuth scale	
9L	12	7	16	9	Bolts, tap	Carriage 1 to 4.
4B	4	7	16	4	do	Leveling screw.
5E	4	7	16	5	do	Special.
15R	6	7	16	15	do	Carriage 5 and 6.
15B	4	7	16	15	do	Do.
5C1	2	7	16	5	Caps	
15S	1	7	16	15	Cover plate	Do.
15T	1	7	16	15	Flange ring	Do.
	8	7	16	13	Handy oilers	Commercial.
A3A1	1	15	OK	3	Name plate, No. 1	
Q3J	19	7	16	5	Oil plugs, 0.5	
	8	7	16	5	Oil tubes	Forced.
4G3	1	7	16	4	Pedestal	
	8	7	16	4	Pins, 0.5 by 1.5	Driven.
	6	7	16	4	Pins, 0.75 by 1.75	Do.
5B3	1	7	16	5	Pivot yoke	
9K	2	7	16	9	Platforms	Carriage 1 to 4.
37A	1	7	16	37	Platform, right	Carriage 5 and 6.
37B	1	7	16	37	Platform, left	Do.
5A	1	7	16	5	Roller path	
	2	15	OK	3	Screws, 0.25 by 0.5	
	20	7	16	5	Screws, countersunk, 0.5 by 1.25.	
13H	16	7	16	13	Screws, countersunk	
4E1	1	7	16	4	Sleeve, lower	
4D1	1	7	16	4	Sleeve, upper	
4H	1	7	16	4	Stud, special	
4A	4	7	16	4	Thrust plates	
5D	2	7	16	5	Trunnion bed liners	In halves.

CRADLE AND RECOILING PARTS.

7K	12	7	16	7	Bolts	Special.
8A	1	7	16	8	Counterrecoil buffer	
7A	2	7	16	7	Cover plates	
7N2	1	7	16	7	Cradle	
7L	12	7	16	7	Crown nuts	
	3	7	16	8	Gaskets, cylinder	
	4	7	16	8	Gaskets, plug	
8K	1	7	16	8	Gland	
8W	1	7	16	8	Instruction plate	
7E	1	7	16	7	Liner, front	
7B1	1	7	16	7	Liner, rear	

CRADLE AND RECOILING PARTS—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
8G3	1	7	16	8	Liner	
8Z	4	7	16	8	Liners	
8F1	1	7	16	8	Liner head, front	
8L1	1	7	16	8	Liner head, rear	
8M	2	7	16	8	Nuts	
8B	1	7	16	8	Nut	
8C	1	7	16	8	do	
Q3J	10	7	16	7	Oil plugs, 0.5	
	5	7	16	8	Packing rings	
8H	1	7	16	8	Piston liner	
8J	1	7	16	8	Piston rod	
8V	4	7	16	8	Plugs, filling and drain	2 extra.
	28	7	16	7	Rivets, countersunk, 0.875	
	4	7	16	8	Rivets, countersunk, 0.25	
8X	2	7	16	8	Screws	Riveted over.
7M	31	7	16	7	Screws, special	
8E	1	7	16	8	Set screw	
	12	7	16	7	Split pins, 0.203 by 2	
	1	7	16	7	Split pin, 0.25 by 2.75	
8Q	6	7	16	8	Springs, inner	
8P	6	7	16	8	Springs, outer	
8U2	2	7	16	8	Spring compressor nuts	
7J	2	7	16	7	Spring cylinders	Tubing.
8R1	2	7	16	8	Spring cylinder heads	
8D2	2	7	16	8	Spring rods	
8N	2	7	16	8	Spring rod heads	
8T1	4	7	16	8	Spring separators	
8S	1	7	16	8	Spring yoke	

TRAVERSING MECHANISM.

	20	15	7K	26	Balls, 0.5 diameter	
H26M	2	15	7K	26	Ball thrust bearings	Two pieces.
H26W	1	15	7K	26	Bolt	
38B	6	7	16	38	Bolts, tap	Carriages 5 and 6.
38D	4	7	16	38	do	Do.
11G	3	7	16	11	do	
11D	4	7	16	11	do	
11N	4	7	16	11	do	
11F	4	7	16	11	do	
H26GA	8	15	7K	26	do	
13C	1	7	16	13	Bolt spring, with nut	
11A	2	7	16	11	Bolts	
11B	1	7	16	11	Bushing	
11C	1	7	16	11	do	
11H	1	7	16	11	do	
11L	1	7	16	11	do	
11P	1	7	16	11	do	
11K	1	7	16	11	Cover	
11E	1	7	16	11	Cover plate	
	2	7	16	11	Crown nuts, 1	
H26B	1	15	7K	26	Crown nut, 0.75	
H26D	1	15	7K	26	do	
H26U	1	15	7K	26	Crown nut, 1.25	
	2	7	16	11	Dowel pins, 0.375 by 1	

TRAVERSING MECHANISM—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
	1	7	16	11	Dowel pin, 0.187	
13J	1	7	16	13	Friction band	In halves.
H26X	1	15	7K	26	Gear, traversing, lower	
H26Z	1	15	7K	26	.....do	
H26AA	1	15	7K	26	Gear, traversing, upper	
H26AB	1	15	7K	26	.....do	
H26GA	1	15	7K	26	Gear key, upper	
H26K	1	15	7K	26	Handwheel	
11J1	1	7	16	11	Handwheel bracket	
H26H	1	15	7K	26	Handwheel shaft	
H26EA	2	15	7K	26	Hose	
H26A	1	15	7K	26	Intermediate shaft	Trav. details.
H26S	1	15	7K	26	Latch worm bearing	
H26FA	2	15	7K	26	Nut strips	
11M	1	7	16	11	Oil pan	
Q3J	4	7	16	11	Oil plugs, 0.5	
		15	7K	26		
Q3C	10	7	16	11	Oil plugs, 0.375	
		7	16	13		
	2	7	16	11	Pins, 0.25 by 1	
	2	7	16	11	Pins, 0.25 by 1.25	
	2	7	16	11	.....do	
	1	7	16	11	Pin, 0.25 by 2	
	2	7	16	11	Pins, 0.25 by 0.875	
	2	7	16	11	Pins, 0.187	
H26N	2	15	7K	26	Retaining rings	
4C1	1	7	16	4	Roller cage	
4F	36	7	16	4	Rollers, traversing	
H26DA	2	15	7K	26	Shoulder brackets	
H26T	1	15	7K	26	Shoulder rest	
H26P	1	15	7K	26	Sleeve	
	2	15	7K	26	Split pins, 0.25 by 1.75	
	1	7	16	13	Split pin, 0.203	
	3	15	7K	26	Split pins, 0.156 by 1.5	
	1	15	7K	26	Split pin, 0.203 by 2.25	
13E	1	7	16	13	Spring, friction	
13B	1	7	16	13	Spring nut	
H26R	1	15	7K	26	Stem	
38C	2	7	16	38	Stops, traversing	
38A	1	7	16	38	Stop, traversing, horn	
	2	15	7K	26	Taper pins, 0.208 by 2.875	
11Q	1	7	16	11	Traversing gear bracket	
6K	2	7	16	6	Traversing stops	Carriages 1 to 4.
H26G	1	15	7K	26	Traversing worm	
13A2	1	7	16	13	Traversing worm wheel	
	6	7	16	38	Washers, lock, 0.875	
	4	7	16	38	Washers, lock, 1.25	
H26Q	1	15	7K	26	Washer	
13D	1	7	16	13	.....do	
H26E	1	15	7K	26	Worm bearing	
H26C	1	15	7K	26	Worm shaft	
H26F	1	15	7K	26	Worm key	

ELEVATING MECHANISM.

Piece mark.	No.	Class.	Division.	Drawing	Name of part.	Remarks.
9E	2	7	16	9	Bolts	
10L	4	7	16	10	Bolts, tap	
9C	2	7	16	9	do	
9F1	1	7	16	9	Bolt, tap	
9V	3	7	16	9	Bolts, tap	
9W	3	7	16	9	do	
9N	8	7	16	9	do	
9R	4	7	16	9	do	
9P1	1	7	16	9	Bracket cap, left	
9Q1	1	7	16	9	Bracket cap, right	
9A	1	7	16	9	Bushing	
9H	1	7	16	9	do	
9J	1	7	16	9	do	
9S	1	7	16	9	do	
9X	2	7	16	9	Bushings	In halves.
10K1	1	7	16	10	Cover	
9U	1	7	16	9	Cover plate	
10B	3	7	16	10	Crown nuts, 0.75	
7D	1	7	16	7	Crown nut	Special.
	1	7	16	10	Dowel pin, 0.375 by 1.5	
9M1	1	7	16	9	Elevating gear bracket	
10W	1	7	16	10	Elevating handwheel shaft	
10H2	1	7	16	10	Elevating nut	
10A	1	7	16	10	Elevating nut shaft	
7C	1	7	16	7	Elevating pin	
10R1	1	7	16	10	Elevating screw, inner	
10U	1	7	16	10	Elevating screw, outer	
10M	1	7	16	10	Elevating shaft	
10T1	1	7	16	10	Gear, elevating	
10D1	1	7	16	10	do	
10E1	1	7	16	10	do	
10G1	1	7	16	10	do	
9D	1	7	16	9	Gear case	
10V	1	7	16	10	Handwheel	
10C	2	7	16	10	Keys	
9B	1	7	16	9	Lower bearing	
Q3J	3	7	16	9	Oil plugs, 0.5	
		7	16	10		
Q3C	2	7	16	9	Oil plugs, 0.375	
10S	1	7	16	10	Pinion	
10F	1	7	16	10	do	
9Y	16	7	16	9	Pins	Driven.
	2	7	16	9	Pins, 0.125 by 0.812	Do.
	1	7	16	9	Pin, 0.125 by 1.187	Do.
	1	7	16	9	Pin, 0.125 by 0.937	Do.
	2	7	16	9	Pins, 0.125 by 0.75	Do.
	2	7	16	9	Pins, 0.125 by 1.062	Do.
9G	4	7	16	9	Plugs, drain, 0.625	
10N	1	7	16	10	Sleeve	
	7	7	16	10	Split pins, 0.156 by 1.5	
	3	7	16	9	Split pins, 0.125 by 1.25	
10P	1	7	16	10	Stem	
	1	7	16	10	Taper pin, 0.162 by 2.375	
	1	7	16	10	Taper pin, 0.162 by 1.812	
9T	1	7	16	9	Upper bearing	Elevating gear parts.
10Q	1	7	16	10	Washer	

SHIELDS.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
6E	36	7	16	6	Bolts, tap	
6G	28	7	16	6	....do	Carriages 1 to 4.
6G1	28	7	16	6	....do	Carriages 5 and 6.
6B	8	7	16	6	Bolts, special	Carriages 1 to 4.
28A	1	7	16	28	Shield	Carriages 5 and 6.
17A	1	7	16	17	....do	Carriages 1 to 4.
6H	1	7	16	6	Shield strut	Do.
6D1	2	7	16	6	Shield supports, front	Do.
6F1	2	7	16	6	Shield supports, rear	Do.
36B	1	7	16	36	Shield support, front, right	Carriages 5 and 6.
36C	1	7	16	36	Shield support, front, left	Do.
36A	2	7	16	36	Shield supports, rear	Do.

RANGE DISK.

14P	3	7	16	14	Bolts, tap	
14M	3	7	16	14	....do	
14Y	2	7	16	14	....do	
14Q	1	7	16	14	Bushing	
14U	1	7	16	14	Clamping screw	
14T	1	7	16	14	Collar	
14V	1	7	16	14	Correction screw	
14W	1	7	16	14	Correction screw collar	
14B	2	7	16	14	Crown nuts, 1	
14F	1	7	16	14	Crown nut, 1.25	
14N2	1	7	16	14	Disk bracket	
	1	7	16	14	Disk hub	
	1	7	16	14	Disk, inner	
	1	7	16	14	Disk, outer	
14S1	1	7	16	14	Disk pinion	
14A	1	7	16	14	Disk shaft	
14L2	1	7	16	14	Gear segment	
14E1	1	7	16	14	Gear shaft	
14K3	1	7	16	14	Intermediate gear	
14R	1	7	16	14	Intermediate pinion	
	2	7	16	14	Keys	
Q3C	3	7	16	14	Oil plugs, 0.375	
	2	7	16	14	Pins, 0.25 by 0.625	
14J	1	7	16	14	Pin	
	1	7	16	14	....do	Soldered.
	2	7	16	14	Pins, 0.25 by 0.625	
14C1	1	7	16	14	Pointer, elevating	
14X	1	7	16	14	Pointer, base	
14H2	1	7	16	14	Range disk	
	1	7	16	14	Range scale	
	1	7	16	14	Screw, 0.25 by 0.875	
14BA	40	7	16	14	Screws, fillister head, 0.164 by 0.21.	
14AA	32	7	16	14	Screws, 0.312 by 0.21	
	1	7	16	14	Split pin, 0.093	
	3	7	16	14	Split pin, 0.203	
14G1	1	7	16	14	Spring, spiral	
	2	7	16	14	Strips	Index marks.
	1	7	16	14	Taper pin, 0.208	
	1	7	16	14	Taper pin, 0.093	
	1	7	16	14	Taper pin, 0.135	
14Z	1	7	16	14	Washer	

AZIMUTH POINTER.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
39A	1	7	16	39	Body, indicator	
39B	2	7	16	39	Bolts, tap	
39F	1	7	16	39	Collar	
	1	7	16	39	Crown nut	
39M	1	7	16	39	Index	
39G	1	7	16	39	Nut	
39D	1	7	16	39	Pin, 0.093 by 1 inch	
39H	1	7	16	39	Screw, fillister head	
39C	1	7	16	39	Screw	
39L	1	7	16	39	Sleeve	
39E	1	7	16	39	Slide	
	1	7	16	39	Split pin	
39K	1	7	16	39	Spring washer	
	2	7	16	39	Washers, lock	Tempered.

ELECTRICAL EQUIPMENT.

E108C	1	14	4	108	Adaptor	
E106U	8	14	4	106	Bars, terminal, connecting	
E21F	1	14	4	21	Base	
E24F1	1	14	4	24	do	
E22L	2	14	4	22	Bases	
E105H	1	14	4	105	Base	
E106B	2	14	4	106	Bases, resistance	
E110D	4	14	4	110	Bayonet sockets	Commercial.
P88L	2	14	5	88	Blades	
T96PA	14	14	6	96	Bodies	
T96H	2	14	6	96	do	
T96BB	2	14	6	96	do	
E105CA	1	14	4	105	Body plug	
P88E	8	14	5	88	Bolts, special	
E107C	2	14	4	107	Bolts, tap	
E26B	2	14	4	26	do	
V130B	4	14	0	130	do	
V130H	2	14	0	130	do	
V130K	2	14	0	130	do	
V130D	7	14	0	130	do	
E20C	2	14	4	20	do	
E20F	2	14	4	20	do	
E105F	2	14	4	105	do	
T91R	9	14	6	91	do	
P68V	4	14	5	68	do	
T91CB	14	14	6	91	do	
E36B	1	14	4	36	Box cover	
E106N	2	14	4	106	Boxes, lamp resistance	
E105E	1	14	4	105	Box, receptacle	
E24Y2	1	14	4	24	Box, 5-ampere water-tight switch.	
V130A	1	14	0	130	Bracket, contact case firing	Blade end.
V130G	1	14	0	130	do	Clip end.
E105R	1	14	4	105	Bushing	
	1	14	6	147		
	1	14	6	147		
	1	14	6	147		
	1	14	6	147		
	1	14	6	147	Cable A [1]	Azimuth lamp; range disk lamp.
	1	14	6	147		
	1	14	6	147		
	1	14	6	147		
	1	14	6	147		

[1] For items bracketed, see tabulation on drawing 14-6-147.

ELECTRICAL EQUIPMENT—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
	1	14	6	147	Cable B	
	1	14	6	147	Cable C	
	2	14	6	147	Cables D	
T91Z	4	14	6	91	Cable straps	
T91BB	12	14	6	91	do	
V37G	1	14	0	37	do	
T91F	5	14	6	91	do	
E24P1	1	14	4	24	Cam	
E24R	1	14	4	24	Cam shaft	
E105LA	1	14	4	105	Cap, plug	
E105M	1	14	4	105	Cap, receptacle	
E105N	1	14	4	105	Chain	
P68F	2	14	5	68	Clamps	In halves.
P88H	2	14	5	88	Clips	
E105U	3	14	4	105	Clips, terminal	
	1	14	4	107	Conductor, flexible, portable, plain.	
E21K	2	14	4	21	Connector strips	
E21M	2	14	4	21	do	
E24J1	2	14	4	24	Contact strips	
E22AB	1	14	4	22	Coupling	
E27W	1	14	4	27	do	
E26C	2	14	4	26	Covers	
E105C	1	14	4	105	Cover	
E21D	1	14	4	21	do	
E106R	2	14	4	106	Covers, resistance box	
E105G	1	14	4	105	Dowel pin	
P88C	1	14	5	88	Firing contact case	
P88D	1	14	5	88	do	
P88A	2	14	5	88	Firing contact case covers	
E21C1	1	14	4	21	Gasket	
E26E	2	14	4	26	Gaskets	
E105T	1	14	4	105	Gasket, cap	
P89H	2	14	5	89	Gasket, case cover	
E105S	1	14	4	105	Gasket, cover	
E106W	2	14	4	106	Gaskets, cover	
E36D	1	14	4	36	Gasket, cover	
E107E1	1	14	4	107	Gasket, lamp-socket holder	
E107F	1	14	4	107	do	
E105EA	1	14	4	105	Gasket, plug	
E21Y1	2	14	4	21	Glands	
E105DA	1	14	4	105	Gland	
E24U	1	14	4	24	do	
T96RA	14	14	6	96	Gland nuts	
T96QA	14	14	6	96	Gland rings	
T96P	2	14	6	96	do	
E21X	2	14	4	21	do	
T96EB	2	14	6	96	do	
P89A	1	14	5	89	Guard, front	
P89C	1	14	5	89	Guard, rear	
E24S	1	14	4	24	Handle	
E109B	2	14	4	109	Holders, lamp	
E107D	1	14	4	107	Holder, lamp	
E108E	1	14	4	108	Holder, lamp socket	
E109A	2	14	4	109	Housings, contact	
E24BA1	1	14	4	24	Indicator plate	Soldered in place.
E106M	2	14	4	106	Insulations	
P88F	2	14	5	88	do	

ELECTRICAL EQUIPMENT—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
E21H	1	14	4	21	Insulation	
E24G	1	14	4	24	do	
E105Q	1	14	4	105	do	
E22BA	2	14	4	22	Insulations, base	
E21A2	1	14	4	21	Junction box	
E20A	1	14	4	20	Lamp, portable	Furnished by Engineer Department.
E110C	2	14	4	110	Lamps, electric, 8-candle-power.	Frosted.
E110A	2	14	4	110	Lamps, electric, 2-candle-power.	
E20E	1	14	4	20	Lamp hook	
E107B1	1	14	4	107	Lamp junction box	
V130C	1	14	0	130	Lamp resistance-box bracket, top.	
V130E	1	14	0	130	Lamp resistance-box bracket, bottom.	
	8	14	4	106	Nuts, 0.375	
	8	14	5	95	Nuts, 0.312 (5/16)	
E21S	16	14	4	21	Nuts	
E22G	8	14	4	22	do	
E105AA	3	14	4	105	Nuts, hexagonal	
E106Q	8	14	4	106	Nuts, round	
E106K	24	14	4	106	Nuts, clip and term	
E109E	2	14	4	109	Nuts, gland	
T96V	2	14	6	96	do	
T96FB	2	14	6	96	do	
	1	14	4	105	Packing	
	1	14	4	36	do	
	2	14	4	109	Packings	
	14	14	6	96	do	Ter. tubing T96NA.
	2	14	4	21	do	
	2	14	6	96	do	Ter. tubing T96B.
	2	14	6	96	do	Ter. tubing T96CB.
	1	14	4	24	Pin, 0.093 by 0.5	
E109G	4	14	4	109	Pins	
	2	14	4	107	Pins, holder lamp socket	
	2	14	4	108	Pins, 0.078 by 0.238	
V23B	5	14	0	23	Pipe plugs, 0.75	
E105HA	3	14	4	105	Plates, contact	
E106T	8	14	4	106	Plates, washer	
E20B	1	14	4	20	Plug box	Furnished by Engineer Department.
E21E	1	14	4	21	Plumber's chain	
	1	14	4	108	Portable conductor	8 inches long.
	1	14	4	20	Portable conductor, plain	Furnished by Engineer Department.
V130L1	1	14	0	130	Range lamp junction box bracket.	
E26A	1	14	4	26	Receptacle box	
E12PA	1	14	4	12	Reflector	
T85K	1	14	6	85	do	
E40F	2	14	4	40	Resistance tubes	
E40G	2	14	4	40	do	
E40H	2	14	4	40	do	
E40K	2	14	4	40	do	

ELECTRICAL EQUIPMENT—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
P88G	2	14	5	88	Retaining rings	
E105FA	1	14	4	105	Ring, gland	
E109D	2	14	4	109	Rings, gland	
E21B	2	14	4	21	Screws	
E21G	2	14	4	21	do	
E21AA	2	14	4	21	do	
E24B1	2	14	4	24	do	
E105D	6	14	4	105	do	
E26D	4	14	4	26	do	
E22M	4	14	4	22	do	
P88B1	8	14	5	88	Screws, fillister head, 0.25	
P89B	8	14	5	89	Screws, round head, 0.25 by 0.312.	
E106C	16	14	4	106	Screws, base	
E24Z2	2	14	4	24	do	
E105K	3	14	4	105	do	
E24T	1	14	4	24	Screw, cam securing	
E105P	1	14	4	105	Screw, chain	
E26D	8	14	4	26	Screws, cover	
E106S	24	14	4	106	do	
E36C	6	14	4	36	do	
E24L2	4	14	4	24	Screws, contact strip	
E106G	16	14	4	106	Screws, clip and short terminal.	
E105X	3	14	4	105	Screws, clip	
E22F	4	14	4	22	Screws, terminal	
E105KA	3	14	4	105	do	
E105Z	3	14	4	105	do	
E109C	4	14	4	109	Screws, housing lock	
E21P	6	14	4	21	Screws, terminal, 0.75 long	
E21Q	2	14	4	21	Screws, terminal, 0.875 long	
T97W	1	14	6	97	Screw, terminal	Furnished by Watertown.
E24M2	4	14	4	24	Screws, terminal	
E106H	4	14	4	106	Screws, terminal, long	
E9G1	2	14	4	9	Springs	
E106F	2	14	4	106	Strips, connecting (short)	
E106E	2	14	4	106	Strips, connecting (long)	
E105W	3	14	4	105	Strips, connector	
E106P	8	14	4	106	Studs	
T97R	4	14	6	97	Terminals	
T97S	2	14	6	97	do	
T97U	11	14	6	97	do	
T97Z	3	14	6	97	do	
T97T	2	14	6	97	do	
E105GA	1	14	4	105	Terminal contact	
E24H1	2	14	4	24	Terminal springs	
E24K1	2	14	4	24	Terminal strips	
	2	14	4	24	Terminal stuffing tubes	To be in accordance with requirements for each carriage.
E21W	2	14	4	21	Terminal tubes	
P85A	2	14	5	85	Tubes, terminal, insulating	
P88K1	8	14	5	88	Washers	
E21R	8	14	4	21	do	
E105BA	9	14	4	105	do	
E22H	4	14	4	22	do	

ELECTRICAL EQUIPMENT—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
E106D	12	14	4	106	Washers, base	
E105L	3	14	4	105	do	
E24Q	2	14	4	24	Washers, cam	
E106L	28	14	4	106	Washers, clip and terminal	
	8	14	0	130	Washers, lock	

SHOT TRUCKS, TYPE 6A, AND SHOT TRUCKS, TYPE 6BB.

AD7X	6	15	9A	7	Bolts	Carriages 1 to 6.
AD7A	10	15	9A	7	do	Do.
FE1X	4	15	9EA	1	do	Do.
FE1R	2	15	9EA	1	Braces, right, lower	Carriages 1 to 4.
GE2G	2	15	9FA	2	do	Carriages 5 and 6.
FE1S	2	15	9EA	1	Braces, left lower	Carriages 1 to 4.
GE2H	2	15	9FA	2	do	Carriages 5 and 6.
FE1L	2	15	9EA	1	Braces, upper	Carriages 1 to 4.
GE1D	2	15	9FA	1	do	Carriages 5 and 6.
AD7K	2	15	9A	7	Bushings	Carriages 1 to 6.
AD7V	2	15	9A	7	do	Carriages 1 to 4.
AD7BA	2	15	9A	7	do	Carriages 5 and 6.
AD7E	2	15	9A	7	Caster wheels	Carriages 1 to 4.
AD7D	2	15	9A	7	do	Carriages 5 and 6.
FE1F	2	15	9EA	1	Caster-wheel pins	Carriages 1 to 4.
GE2F	2	15	9FA	2	do	Carriages 5 and 6.
	16	15	9A	7	Crown nuts, 0.5	
	2	15	9EA	1	Crown nuts, 0.75	Carriages 1 to 4.
	2	15	9FA	2	Crown nuts, 1	Carriages 5 and 6.
AD7L	2	15	9A	7	Detachable rims	Carriages 1 to 4.
AD7AA	2	15	9A	7	do	Carriages 5 and 6.
AD7C	2	15	9A	7	do	Carriages 1 to 4.
AD7EA	2	15	9A	7	do	Carriages 5 and 6.
FE1T	2	15	9EA	1	End braces, top	Carriages 1 to 4.
GE1E	2	15	9FA	1	do	Carriages 5 and 6.
FE1U	2	15	9EA	1	End braces, bottom	Carriages 1 to 4.
GE1H	2	15	9FA	1	do	Carriages 5 and 6.
FE1Q	1	15	9EA	1	Handle	Carriages 1 to 6.
AD7T	2	15	9A	7	Main wheels	Carriages 1 to 4.
AD7Z	2	15	9A	7	do	Carriages 5 and 6.
FE1C	1	15	9EA	1	Main-wheel axle	Carriages 1 to 4.
GE2A	1	15	9FA	2	do	Carriages 5 and 6.
FE1P	2	15	9EA	1	Main-axle brackets	Carriages 1 to 4.
GE2C	2	15	9FA	2	do	Carriages 5 and 6.
	1	15	OK	3	Name plate No. 3	Carriages 1 to 6.
Q3C	4	15	9A	7	Oil plugs	Do.
	4	15	9A	7	Pins	Do.
	2	15	9EA	1	Rivets (special), handle	Do.
	4	15	9EA	1	Rivets, round head, 0.5	Do.
		15	9FA	1		
	28	15	9EA	1	Rivets, 0.375	Carriages 1 to 4.
	44	15	9FA	1	do	Carriages 5 and 6.
	2	15	9FA	2	Split pins, 0.093 by 0.5	Carriages 1 to 6.
		15	9EA	1		
	16	15	9A	7	Split pins, 0.125 by 1.25	Do.
	2	15	9FA	2	Split pins, 0.156 by 1	Do.
		15	9EA	1		
	2	15	9EA	1	Split pins, 0.156 by 1.5	Carriages 1 to 4.

SHOT TRUCKS, TYPE 6A, AND SHOT TRUCKS, TYPE 6BB—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
	2	15	9FA	2	Split pins, 0.203 by 2	Carriages 5 and 6.
GE1A	1	15	9FA	1	Shot plate	Do.
FE1G	1	15	9EA	1	Shot support, right	Carriages 1 to 4.
GE1B	1	15	9FA	1	do	Carriages 5 and 6.
FE1H	1	15	9EA	1	Shot support, left	Carriages 1 to 4.
GE1C	1	15	9FA	1	do	Carriages 5 and 6.
FE1M	1	15	9EA	1	Stop, right	Do.
FE1N	1	15	9EA	1	Stop, left	Do.
	2	15	OK	3	Screws, name plate	Carriages 1 to 6.
FE1J	2	15	9EA	1	Standards, right	Carriages 1 to 4.
GE1F	2	15	9FA	1	do	Carriages 5 and 6.
FE1K	2	15	9EA	1	Standards, left	Carriages 1 to 4.
GE1G	2	15	9FA	1	do	Carriages 5 and 6.
	2	15	9EA	1	Taper pins, 0.279 by 3.125	Carriages 1 to 6.
		15	9FA	2		
AD7M	2	15	9A	7	Tires	Carriages 1 to 4.
AD7FA	2	15	9A	7	do	Carriages 5 and 6.
AD7W	2	15	9A	7	do	Carriages 1 to 4.
AD7CA	2	15	9A	7	do	Carriages 5 and 6.
	2	15	9EA	1	Washers	Carriages 1 to 4.
GE2B	2	15	9FA	2	do	Carriages 5 and 6.

SHOT BARROWS.

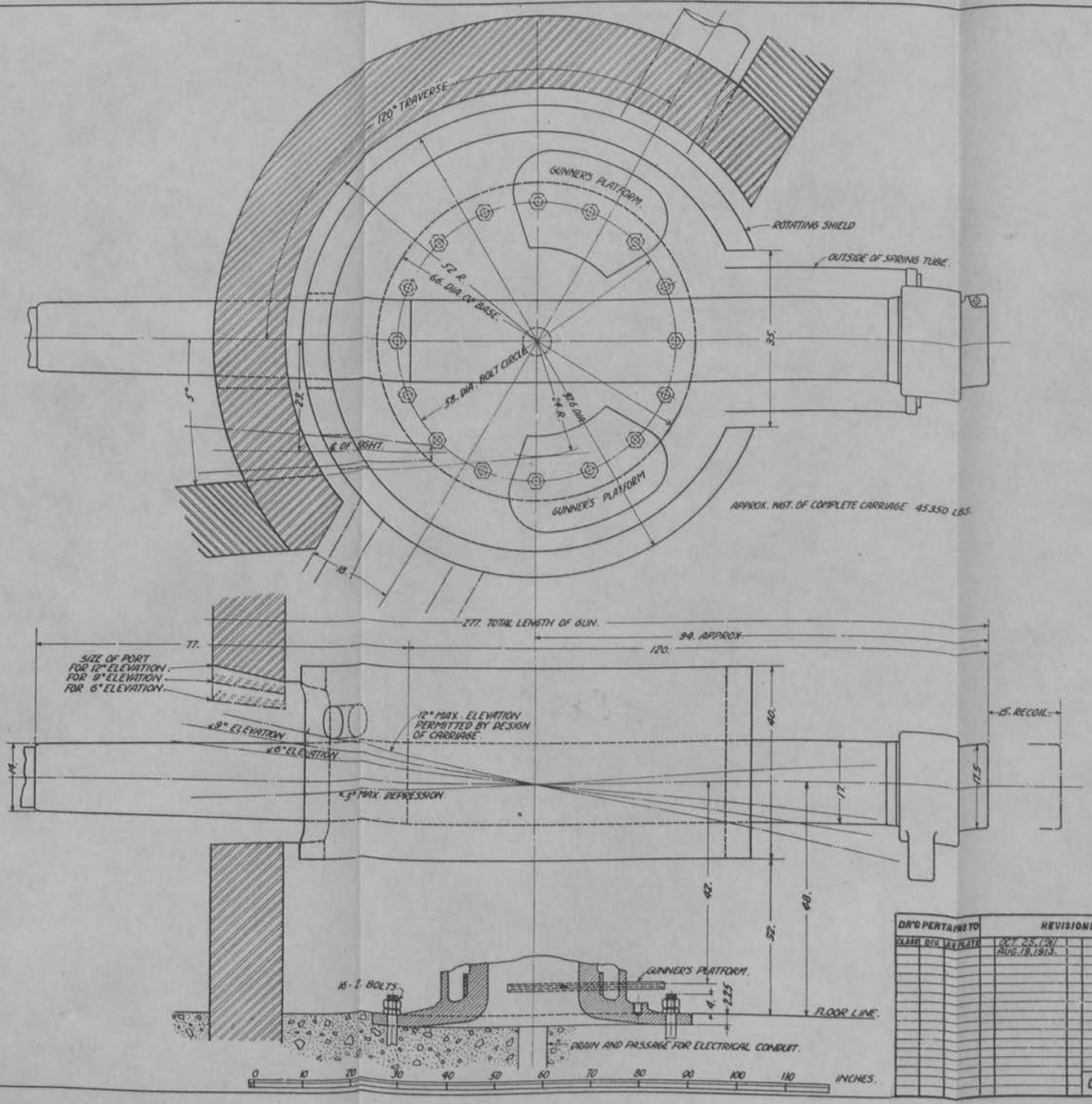
NC22C	3	15	9	22	Guard supports, top and side	
NC22D	1	15	9	22	Guard support, lower	
NC23A	2	15	9	23	Handle supports	
NC23E	4	15	9	23	Handle blades	
NC22G	1	15	9	22	Joint strap	
NC22F	1	15	9	22	Lower guard support web	
	1	15	9	23	Nut	
NC22E	1	15	9	22	Reinforce ring	
	30	15	9	22	Rivets, 0.25	
	16	15	9	22	Rivets, 0.187	Guard supports.
	8	15	9	22	do	Support web.
	14	15	9	22	Rivets, 0.25	
	16	15	9	23	Rivets, 0.187	
	12	15	9	23	Rivets, handle	
NC22B	1	15	9	22	Screw box guard	
	1	15	9	23	Split pin, 0.062	
NC23F	4	15	9	23	Split handles	In halves.
NC23B	1	15	9	23	Stop	
NC23C	1	15	9	23	Stop bolt	
NC23D	1	15	9	23	Stop-bolt washer	
NC22A	1	15	9	22	Tray	

GAS EJECTOR SYSTEM CARRIAGES 1 TO 4 ONLY.

19G	1	7	16	19	Air swivel	
20C	1	7	16	20	Angle valve, 0.75	Commercial.
19B	4	7	16	19	Bolts, tap	
19D	6	7	16	19	do	
20N	2	7	16	20	do	
20K	2	7	16	20	do	
20R	2	7	16	20	do	

GAS EJECTOR SYSTEM CARRIAGES 1 TO 4 ONLY—Continued.

Piece mark.	No.	Class.	Division.	Drawing.	Name of part.	Remarks.
20H	4	7	16	20	Bolts, tap	
20E	4	7	16	20	Bolts	
21B	2	7	16	21	Bolts and nuts	
18L	1	7	16	18	Cam	
18M	1	7	16	18	Cam block	
18A	1	7	16	18	Cam screw	
18S1	1	7	16	18	Cam spring	
18V	1	7	16	18	Cam stop	
18E	1	7	16	18	Check valve	
21G	1	7	16	21	Coupling	Furnished by Engineer Department.
19C	1	7	16	19	Cover plate	
19A	1	7	16	19	Flange ring	
20M	1	7	16	20	Flexible hose support (rear)	
	1	7	16	22	Flexible metallic tubing	
20D	1	7	16	20	Flexible tubing clamp	
20G	1	7	16	20	Flexible tubing support	
18W	1	7	16	18	Gasket	
18X	1	7	16	18	.....do	
19L	1	7	16	19	Lock nut	
20F	4	7	16	20	Nuts	
20S	1	7	16	20	Pipe support	
20Q	1	7	16	20	Pipe support clamp	
18J	1	7	16	18	Plunger guide	
19H1	1	7	16	19	Packing	
19F	1	7	16	19	Packing-box gland	
19E	1	7	16	19	Packing-box nut	
19M	1	7	16	19	Pipe, swivel, connection, 0.75.	
20B	1	7	16	20	Pipe, valve connection, 0.75.	
20A	1	7	16	20	Pipe, breech connection, 0.75.	
21C1	1	7	16	21	Pipe air supply	
21F	1	7	16	21	.....do	Do.
21H	1	7	16	21	.....do	Do.
21E	1	7	16	21	Pipe support	
20L	1	7	16	20	.....do	
21D	1	7	16	21	Pipe-support clamp	
20J	1	7	16	20	.....do	
21A	2	7	16	21	Pipe supports	
18G	4	7	16	18	Screws, countersunk, 0.375	
18N	3	7	16	18	Screws, flat fillister	
18Q	4	7	16	18	Screws, valve body	
	4	7	16	20	Split pins, 0.093 by 1	
18D	1	7	16	18	Spring, plunger	
18B	1	7	16	18	Spring, valve	
18K	1	7	16	18	Trip plunger	
18P	1	7	16	18	Trip-plunger pivot	
18R	1	7	16	18	Trip-plunger pivot pin	
18C	1	7	16	18	Trip lever	
18T	1	7	16	18	Trip-lever pivot	
18U	1	7	16	18	Trip-lever pivot pin	
19K	1	7	16	19	Union plug	
19J	1	7	16	19	Union-plug elbow	
20T	3	7	16	20	Union nuts	
20P	3	7	16	20	Union sleeves	
18F	1	7	16	18	Valve body	
18H	1	7	16	18	Valve-body cap	
19N	1	7	16	19	Washer	



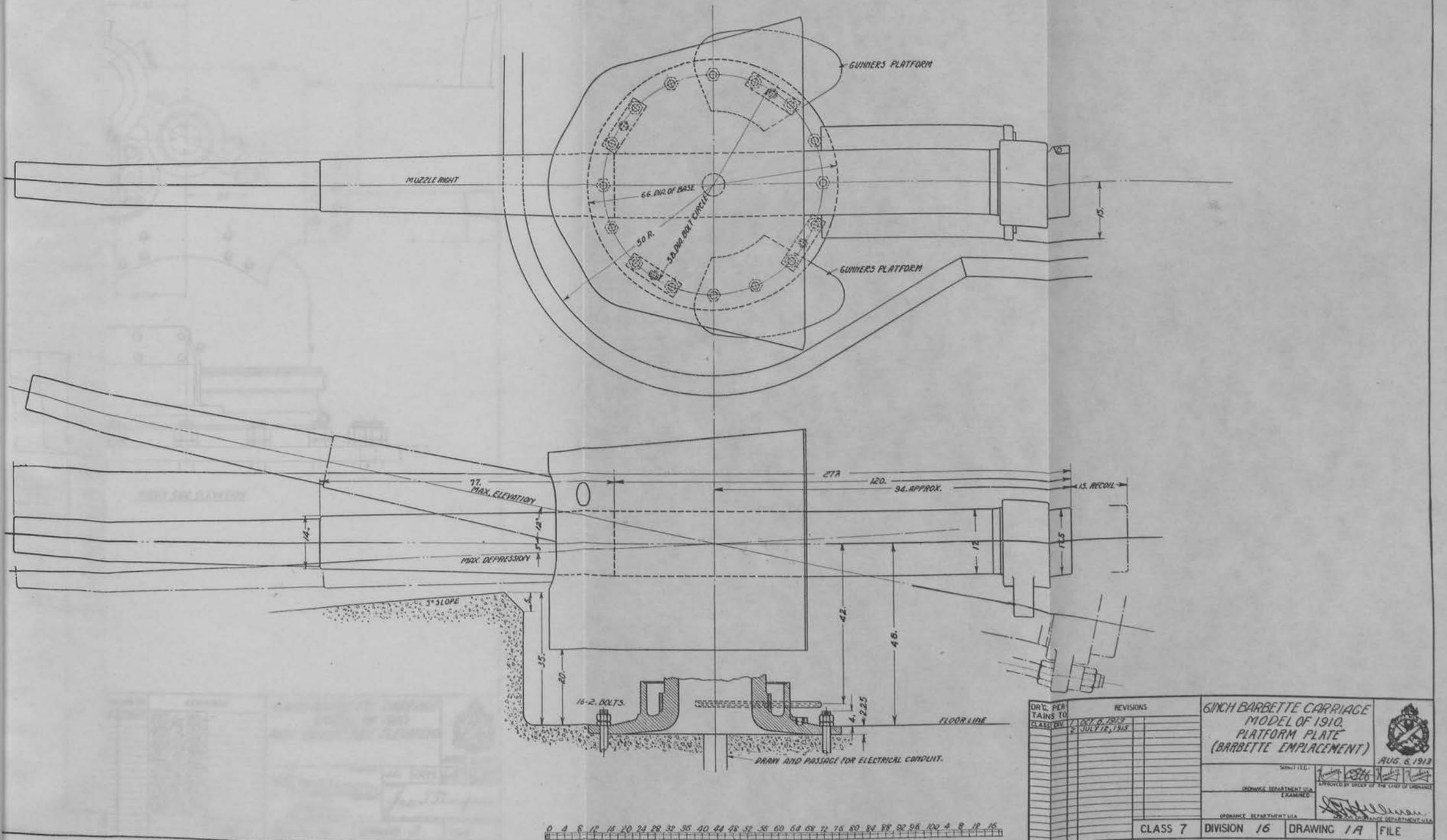
DR'G PERTAINS TO			REVISIONS	
CLASS	DIV.	SUB-PLATE	OCT. 25, 1911.	
			AUG. 19, 1913.	

6 INCH BARBETTE CARRIAGE, MODEL OF 1910. PLATFORM PLATE. (FOR CASEMATE EMPLACEMENT)

FEB. 8, 1911.

SUBMITTED: Capt. Ordnance Department, U.S.A. — Approved: Jno. T. Thompson, Lt. Col., Ord. Dept., Acting Chief of Ordnance

CLASS 7	DIVISION 16	DRAWING 1	FILE



DR'G. PERTAINS TO CLASS DIV.	REVISIONS	
	DEC. 6, 1912	
	JULY 12, 1913	

6 INCH BARBETTE CARRIAGE
MODEL OF 1910.
PLATFORM PLATE
(BARBETTE EMPLACEMENT)

AUG. 6, 1913

SUBMITTED: Lenker, Cobb, Lenker, Lenker

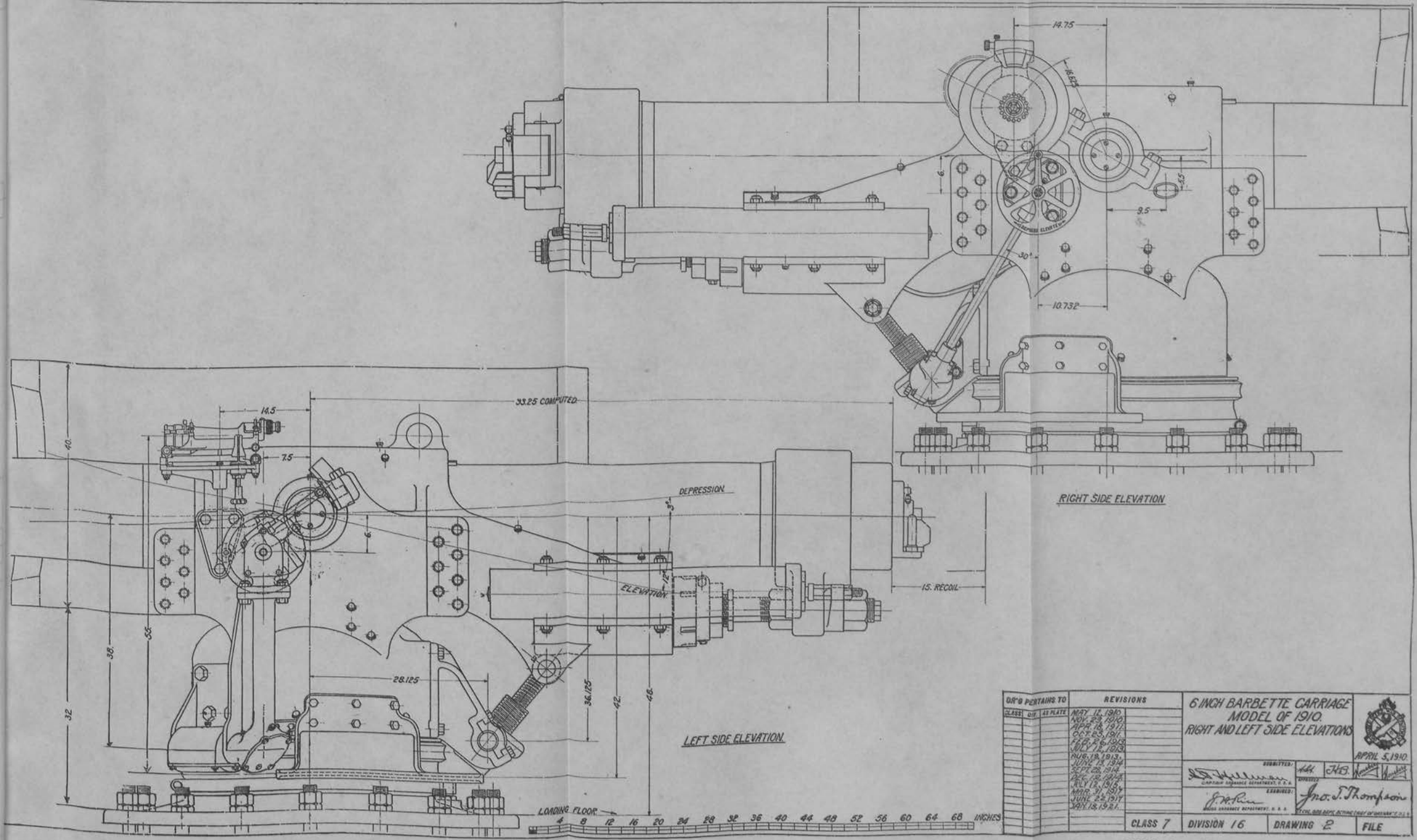
ORDNANCE DEPARTMENT U.S.A. EXAMINED

APPROVED BY ORDER OF THE CHIEF OF ORDNANCE

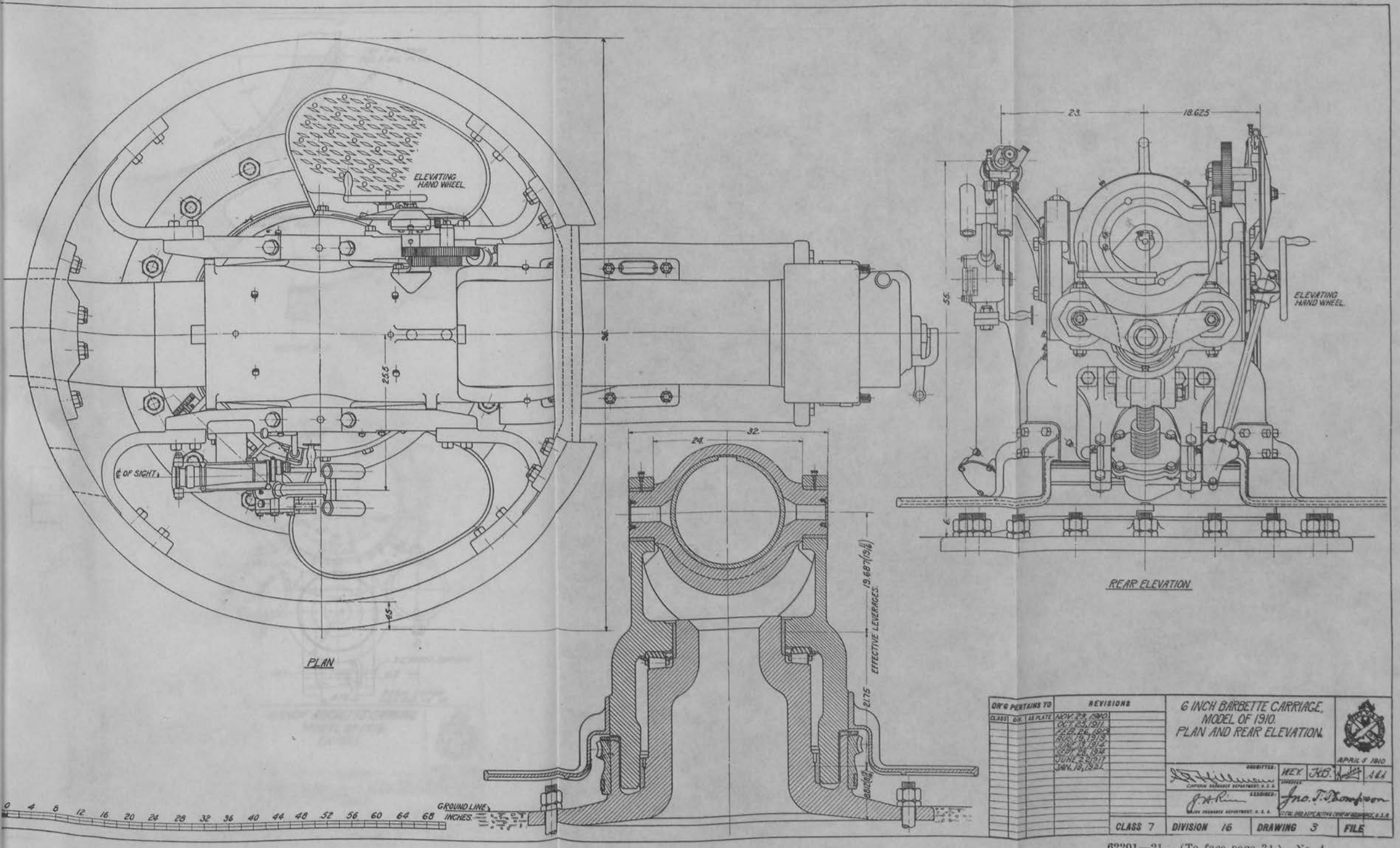
ORDNANCE DEPARTMENT U.S.A.

CHIEF OF ORDNANCE DEPARTMENT U.S.A.

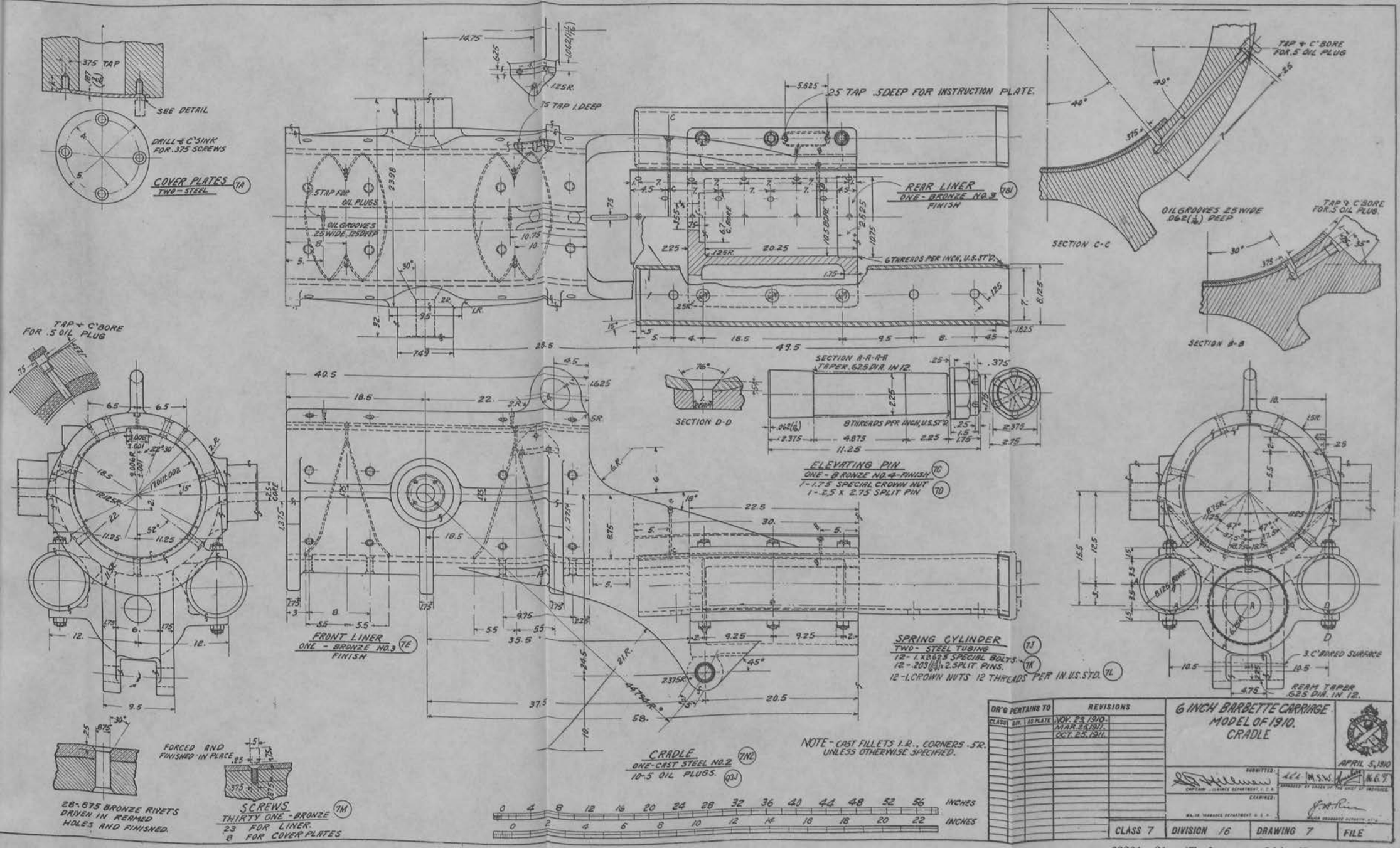
CLASS 7 | DIVISION 16 | DRAWING 1A | FILE



DR'G PERTAINS TO			REVISIONS		6 INCH BARBETTE CARRIAGE MODEL OF 1910. RIGHT AND LEFT SIDE ELEVATIONS	
CLASS	DIV.	AS PLATE	MAY 12, 1910.			APRIL 5, 1910.
			NOV. 29, 1910.		SUBMITTED:	
			APR. 18, 1911.		CAPTAIN ORDNANCE DEPARTMENT, U.S.A.	
			OCT. 23, 1911.		144. JHB.	
			FEB. 26, 1913.		APPROVED:	
			JULY 12, 1913.		Jno. J. Thompson	
			AUG. 19, 1913.		EXAMINED:	
			JUNE 13, 1914.		COL. ORD. DEPT. ACTING CHIEF OF ORDNANCE, U.S.A.	
			SEPT. 28, 1914.			
			DEC. 28, 1914.			
			JULY 12, 1915.			
			MAR. 31, 1917.			
			JUNE 23, 1917.			
			JAN. 18, 1921.			
			CLASS 7		DIVISION 16	DRAWING 2	FILE



DR'G PERTAINS TO			REVISIONS	6 INCH BARBETTE CARRIAGE, MODEL OF 1910. PLAN AND REAR ELEVATION.	
CLASS	DIV.	AS PLATE	NOV. 29, 1910 OCT. 23, 1911 FEB. 26, 1913 AUG. 19, 1913 JUNE 11, 1914 SEPT. 28, 1918 JUNE 22, 1917 JAN. 18, 1922	APRIL 5 1910	
				SUBMITTED: WEK JKD	
				APPROVED: Jno. T. Thompson	
			CLASS 7	DIVISION 16	DRAWING 3 FILE



DR'G PERTAINS TO			REVISIONS
CLASS	DIV.	AS PLATE	NOV. 23 1910.
			MAR. 2 1911.
			OCT. 25 1911.

6 INCH BARBETTE CARRIAGE
MODEL OF 1910.
CRADLE

APRIL 5, 1910

SUBMITTED: A.L.I. M.S.W. No. 6.7

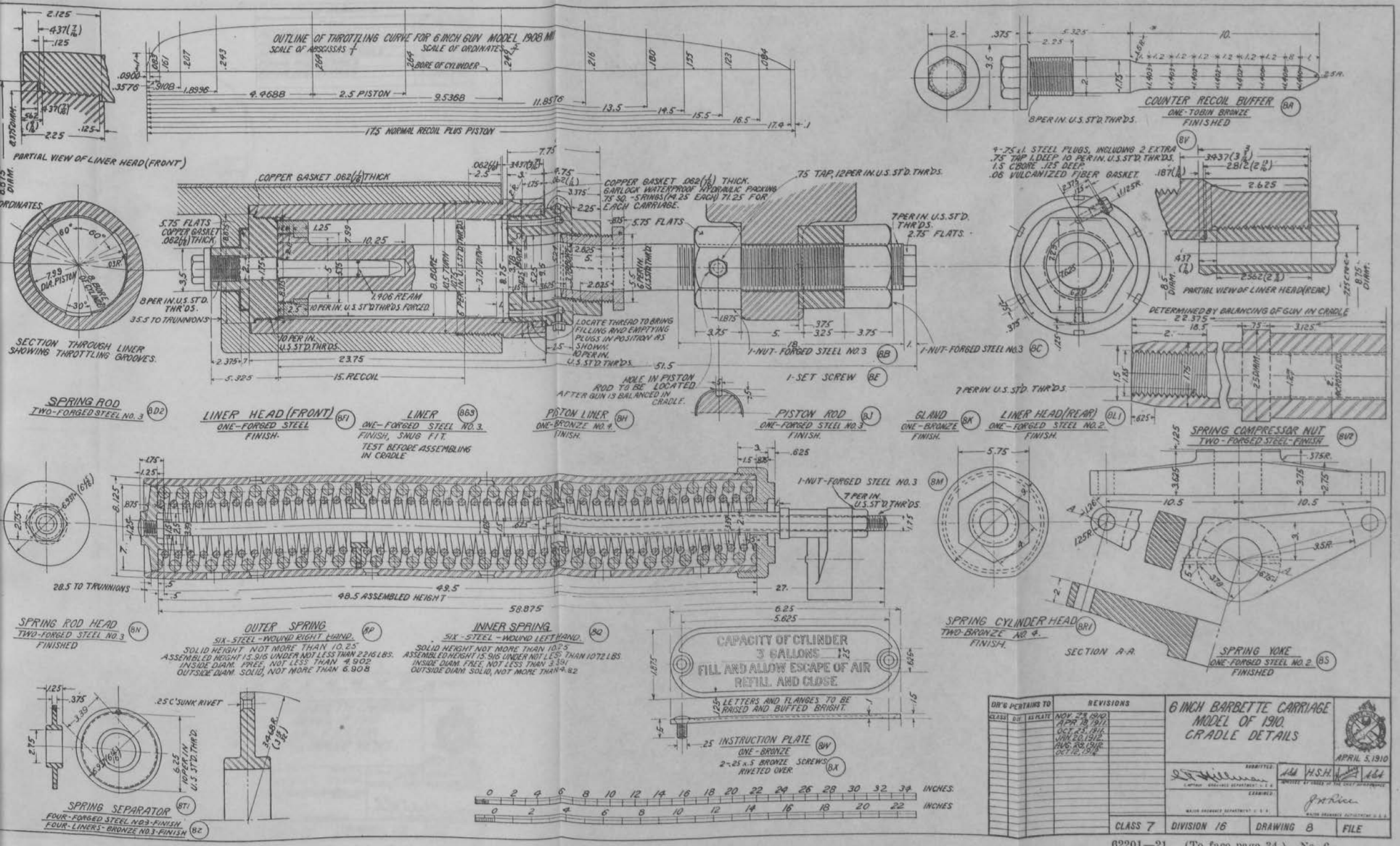
CAPTAIN ORDNANCE DEPARTMENT, U.S.A.

APPROVED BY ORDER OF THE CHIEF OF ORDNANCE.

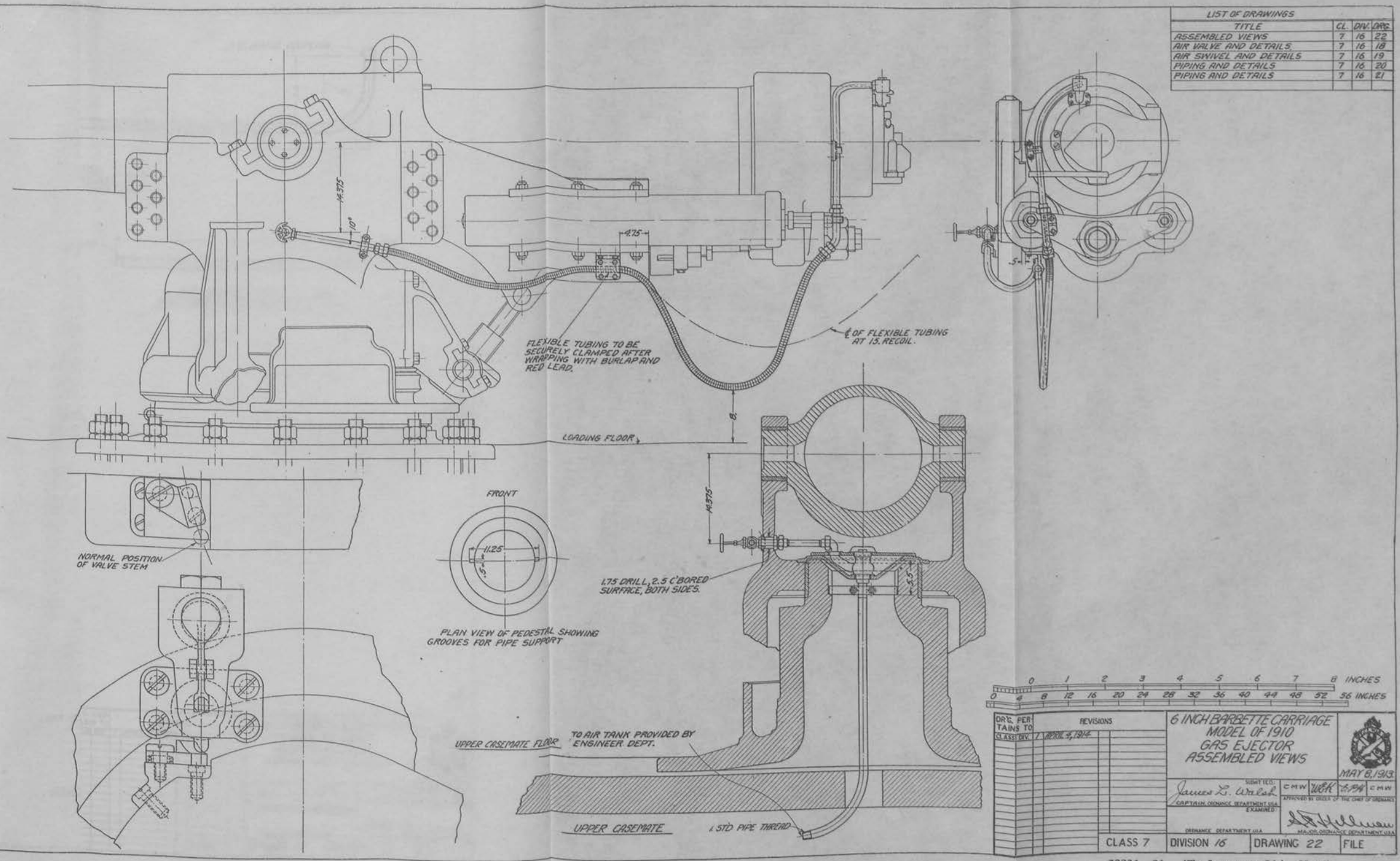
EXAMINED:

MAJOR ORDNANCE DEPARTMENT, U.S.A.

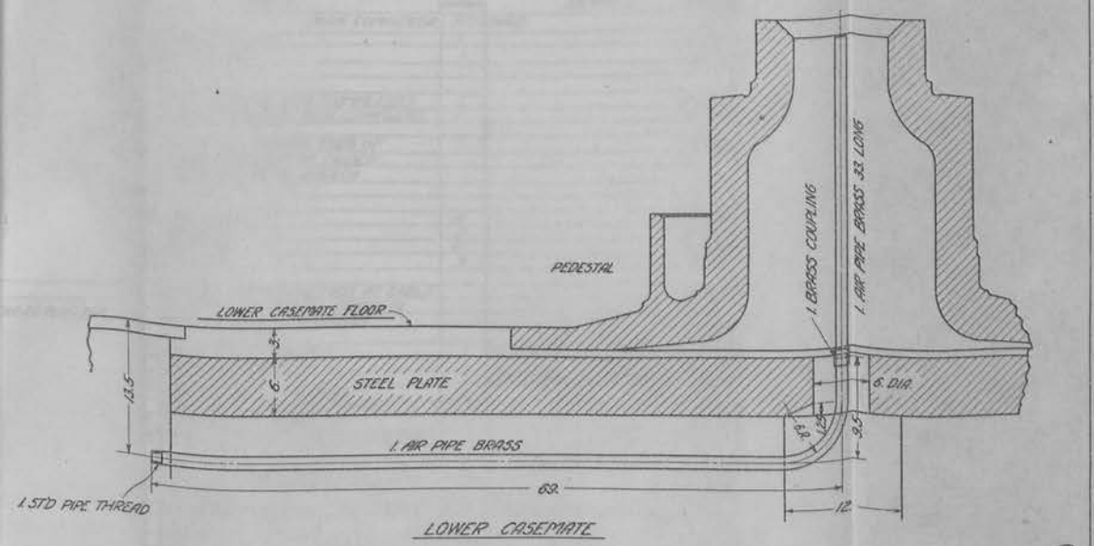
CLASS 7	DIVISION 16	DRAWING 7	FILE



DR'G PERTAINS TO			REVISIONS	6 INCH BARBETTE CARRIAGE MODEL OF 1910. CRADLE DETAILS	APRIL 5, 1910
CLASS	SUB	AS PLATE	NOV. 27, 1910 APR. 18, 1911 OCT. 23, 1912 JAN. 20, 1912 AUG. 28, 1912 OCT. 12, 1915	SUBMITTED: H.S.H. 184 APPROVED BY ORDER OF THE CHIEF OF ORDNANCE EXAMINED:	
				CLASS 7	DIVISION 16	DRAWING 8	FILE



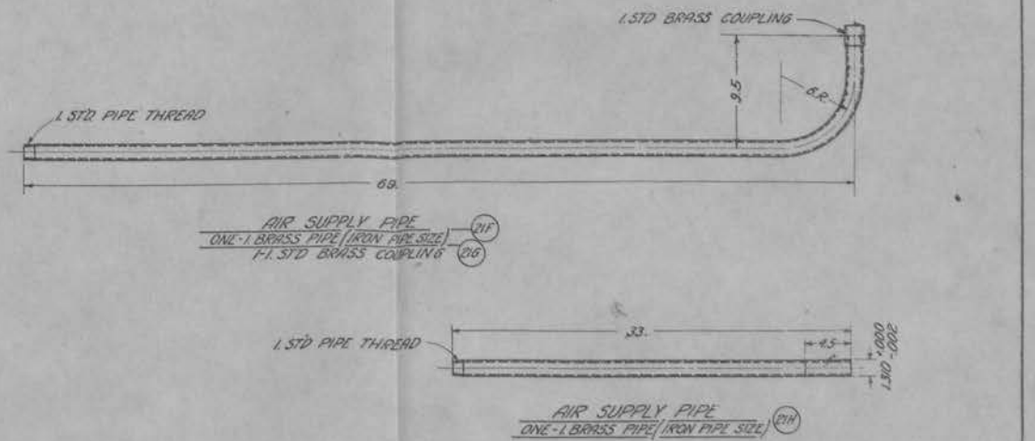
62201—21. (To face page 34.) No. 7



LOWER CASEMATE

C

6 IN. B.C., M. OF 1910, 7-16-21, MAY 8, 1913, REVISIONS, 1,

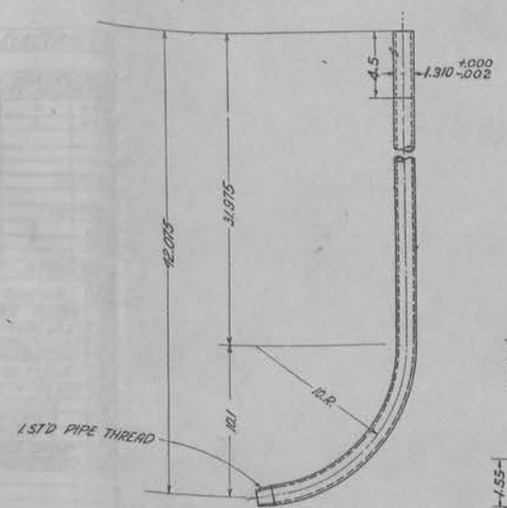


AIR SUPPLY PIPE
ONE - 1. BRASS PIPE (IRON PIPE SIZE) (21F)
1-1. STD BRASS COUPLING (21G)

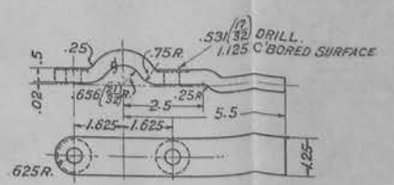
AIR SUPPLY PIPE
ONE - 1. BRASS PIPE (IRON PIPE SIZE) (21H)

B

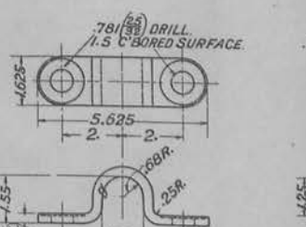
6 IN. B.C., M. OF 1910, 7-16-21, MAY 8, 1913, REVISIONS, 1,



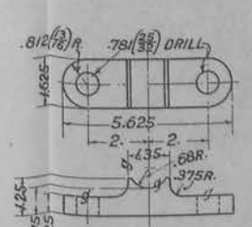
AIR SUPPLY PIPE.
ONE - 1. BRASS PIPE (IRON PIPE SIZE) (21K)



PIPE SUPPORT.
TWO - FORGED STEEL.
2-.5 X 1.625 BOLTS. (21B)
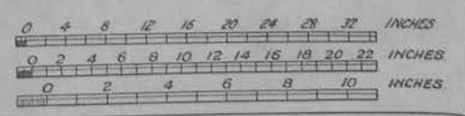


PIPE SUPPORT CLAMP.
ONE - BRONZE. (21D)



PIPE SUPPORT.
ONE - BRONZE. (21E)

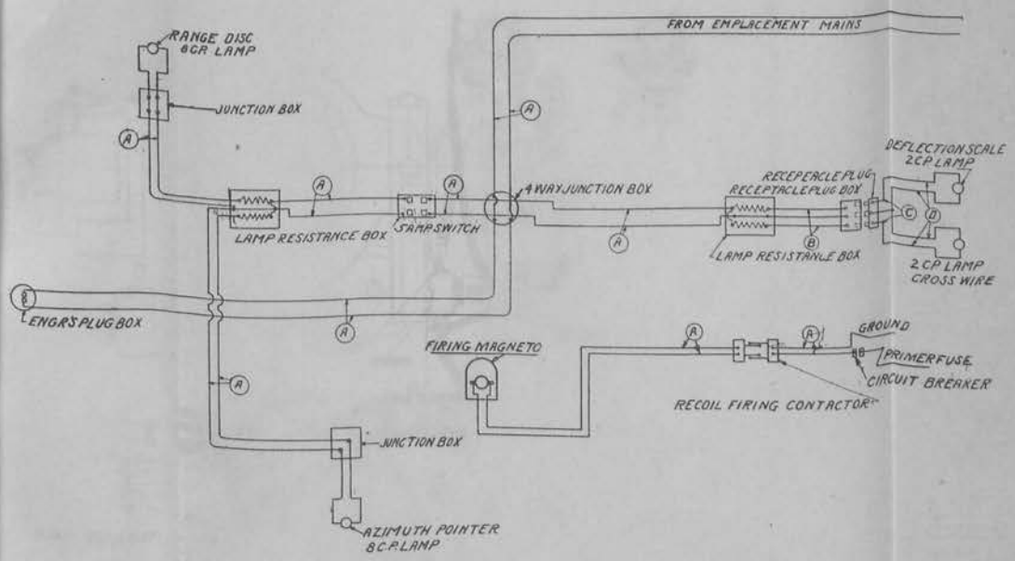
D

6 IN. B.C., M. OF 1910, 7-16-21, MAY 8, 1913, REVISIONS, 1,



A

DRG. PERTAINS TO CLASS DIV.	REVISIONS	6 INCH BARBETTE CARRIAGE. MODEL OF 1910. GAS EJECTOR. PIPING AND DETAILS.	
	1 APRIL 1, 1918		MAY 8, 1913.
		SUBMITTED: James L. Walker, CAPTAIN, ORDNANCE DEPARTMENT U.S.A. EXAMINED: ORDNANCE DEPARTMENT U.S.A.	CHIEF OF ORDNANCE. APPROVED BY ORDER OF THE SECRETARY OF WAR. MAJOR, ORDNANCE DEPARTMENT, U.S.A.
CLASS 7	DIVISION 16	DRAWING 21	FILE



ELECTRIC CABLES FOR LIGHTING AND FIRING CIRCUITS

"LEADED AND ARMORED" CABLES

CABLE SYMBOL	CONDUCTORS PER CABLE	C.M.S. AREA PER CONDUCTOR	NO. OF STRANDS PER CONDUCTOR	DIA. OF EACH STRAND	OUT DIA OF CABLE	IRON PIPE SIZE TUBE	PIECE MARK OF TERMINAL	APPROX. LENGTH
(A)	2	4494	7	.025	.718	.75"	T-9GNA	ABT 5 FT-0 IN.
(B)	3	4494	7	.025	.75	.75	T-96CB	5 FT-0 IN.
		"PORTABLE" CONDUCTOR - PLAIN						
		"PORTABLE" CONDUCTOR-ARMORED						
(C)	3	2525	25	.010	.475			3 FT-0 IN.
(D)	2	2325	25	.010	.425			4 FT-0 IN.

ARRANGEMENT OF ELECTRIC CIRCUITS

KIND OF CIRCUIT		CABLE SYMBOL	NO. OF CABLES	LEADING FROM	CONNECTING TO
LIGHTING CIRCUIT	BRANCH FEEDER	A	1	4 WAY JUNCTION BOX	SAMP SWITCH
	RESISTANCE BOX	A	1	SAMP SWITCH	LAMP RESISTANCE BOX
	BC PANORAMIC LAMP	A	1	LAMP RESISTANCE BOX	LAMP JUNCTION BOX
	BC RANGE DISC LAMP	A	1	LAMP RESISTANCE BOX	LAMP JUNCTION BOX
	PORTABLE LAMP	A	1	4 WAY JUNCTION BOX	ENGINEER PLUG BOX
	BRANCH FEEDERS	A	1	4 WAY JUNCTION BOX	RESISTANCE BOX
	SIGHT LIGHTS	B	1	LAMP RESISTANCE BOX	3 WIRE RECEPTACLE BOX
	2 CP LAMPS	C	1	LAMP RECEPTACLE PLUG	3 WIRE JUNCTION
	2 CP LAMPS	D	2	3 WIRE JUNCTION	SIGHT LAMP HOLDERS
GUN FIRING	FIRING CIRCUIT	A	1	FIRING MAGNETO	RECOIL FIRING CONTACTOR
	FIRING CIRCUIT	A	1	RECOIL FIR. CONTACTOR	CIRCUIT BREAKER

NOTE:- ALL CABLES FOR ELECTRICAL CIRCUITS SHALL BE TWIN AND TRIPLE CONDUCTORS OF THE TYPES SPECIFIED. EACH CONDUCTOR AND CABLE TO BE MADE UP AND TESTED AS PRESCRIBED BY SPECIFICATIONS FORM 518 DATED JULY 14, 1914, FOR STANDARD ELECTRICAL CONDUCTORS.

LIST OF ELECTRICAL EQUIPMENT

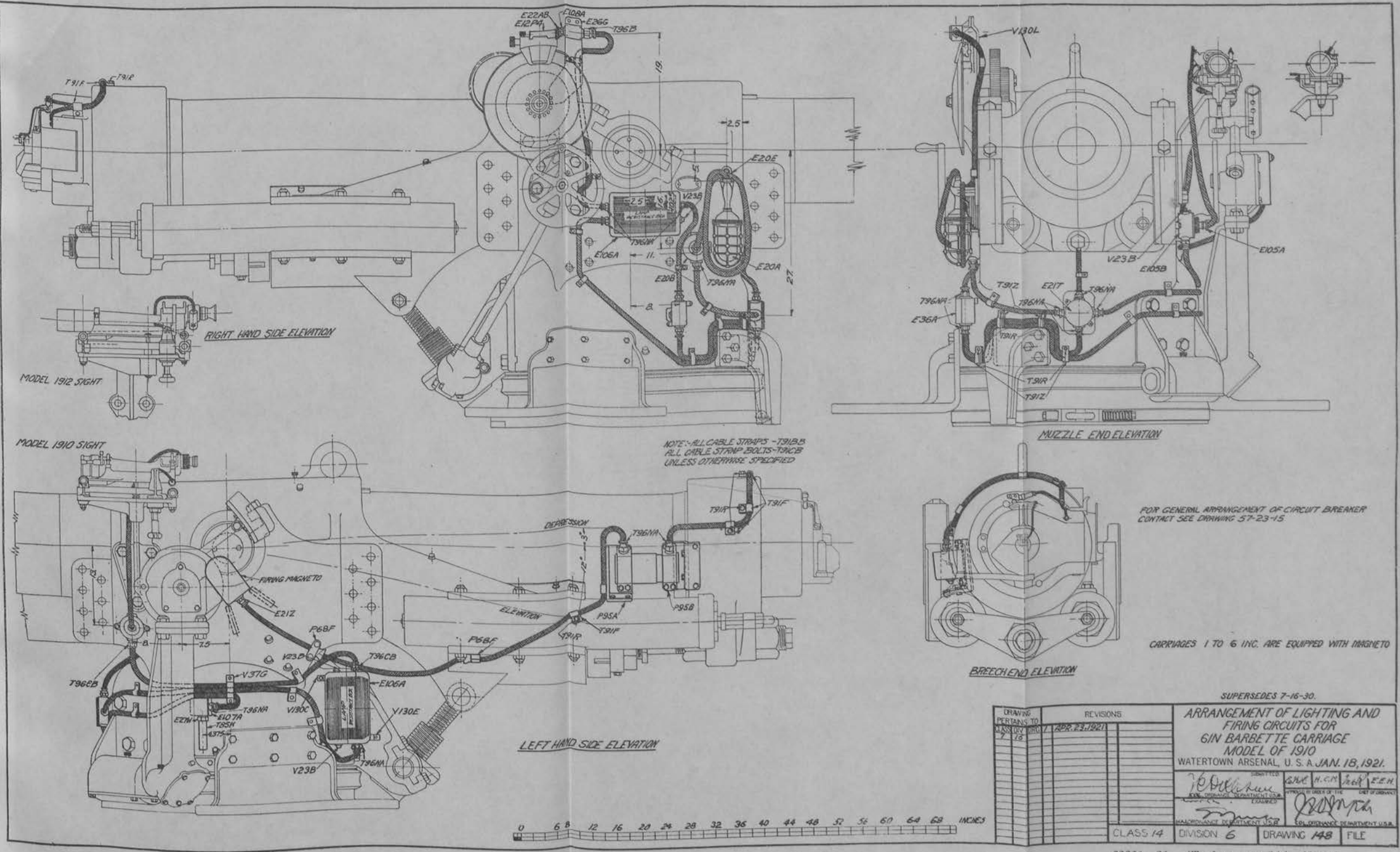
NO OF LINE	1 PIECE MARK	2 PARTS	3. NUMBER	4 REMARKS	5 DRAWG.
		NON COMMERCIAL FITTINGS.			
1		MAGNETO TYPE G.A.	1		14-5-66
2	P66G	MAGNETO BASE	1		14-5-66
3					
4					
5	P95A	CLIP TERMINAL BOX (COMPLETE)	1		14-5-95
6	P95B	BLADE TERMINAL BOX (COMPLETE)	1		14-5-95
7					
8		METHOD OF FINISHING ENDS OF			14-5-85
9		FIRING CABLE WHERE DIVIDED			
10		FOR CONTACT AT THE BREECH			
11					
12					
13	T97R	TERMINAL	4		14-6-97
14	T97S	TERMINAL	2		14-6-97
15	T97U	TERMINAL	11		14-6-97
16	T97Z	TERMINAL	3		14-6-97
17					
18		METHOD OF FINISHING ENDS OF CABLE			14-6-87
19		AT TERMINALS IN SMALL BOXES IN			
20		FORM OF SOLDERED EYELET			
21					
22	AW4A	CONTACT CIRCUIT BREAKER	1	TO BE SUPPLIED BY WATERVLIET	150R414
23	T97T	CABLE TERMINALS	2		14-6-97
24	T97W	TERMINAL SCREW	1	TO BE SUPPLIED AT WATERVLIET	14-6-97
25	P85A	TUBE, TERMINAL INSULATING	2		14-5-85
26	E21T	4 WAY JUNCTION BOX (COMPLETE)	1		14-4-21
27	E36A	SAMP SWITCH (COMPLETE)	1		14-4-36
28	E106A	LAMP RESISTANCE BOX (COMPLETE)	2		14-4-106
29					
30	E107A	LAMP JUNCTION BOX (COMPLETE)	1		14-4-107
31	E20B	PLUG BOX (FURNISHED BY ENG. DEPT.)	1		14-4-20
32	E20C	TAP BOLTS	2		14-4-20
33	E20A	3 WIRE CABLE (FURNISHED BY ENG. DEPT.)	1	CABLE LENGTH 12 FEET	14-4-20
34	E20E	LAMP HOOK	1		14-4-20
35	E20F	TAP BOLTS	2		14-4-20
36	E105B	RECEPTACLE PLUG BOX (COMPLETE)	1	3 WIRE 3 AMP. W.T.	14-4-105
37	E105A	RECEPTACLE PLUG (COMPLETE)	1	3 WIRE 3 AMP. W.T.	14-4-105
38		DETAIL OF ELECTRIC CABLE FOR			
39		SIGHT LIGHTING			14-4-106
40					
41	E103T	LAMP HOLDER (COMPLETE)	2		14-4-103
42	T91Z	CABLE STRAP	4	4 TAP BOLTS T91R	14-6-91
43	T91Z	CABLE STRAP	6	6 TAP BOLTS T91R	14-6-91
44	P68F	CLAMP	2	4 TAP BOLTS P68V	14-5-68
45	E12P4	REFLECTOR	1		14-4-12
46	T85X	REFLECTOR	1		14-6-85
47	E27W	COUPLING	1		14-4-27
48	T96M	TERMINAL TUBE	14		14-6-96
49	E21Z	TERMINAL TUBE	1		14-4-21
50	T91B	CABLE STRAP	12	12 TAP BOLTS T91CB	14-6-91
51	V37G	CABLE STRAP	1	2 TAP BOLTS T91CB	14-0-37
52	T96B	TERMINAL TUBE	2		14-6-96
53	T96CB	TERMINAL TUBE	2		14-6-96
54	E26G	LAMP JUNCTION BOX (COMPLETE)	1		14-4-26
55	E22RB	COUPLING	1		14-4-22
56	E108X	LAMP FITTING (COMPLETE)	1		14-4-108
57	V130C	LAMP RESISTANCE BOX TOP BRACKET	1	2-TAP BOLTS V130.0	14-0-130
58	V130E	LAMP RESISTANCE BOX BOTTOM BRACKET	1	2-TAP BOLTS V130.0	14-0-130
59	V130L	RANGE LAMP JUNCTION BOX BRACKET	1	3-TAP BOLTS V130.0	14-0-130
60		COMMERCIAL FITTINGS			
61	V23B	.75 PIPE PLUGS	4		14-0-23
62	E110C	ELECTRIC LAMP 8 C.P. (FROSTED)	2	12-16 VOLTS	14-4-110
63	E110A	ELECTRIC LAMP 2 C.P.	2	12-16 VOLTS	14-4-110
64	E40F	RESISTANCE TUBE	2	4 OHMS. 2 C.P. 110 VOLTS	14-4-40
65	E40B	RESISTANCE TUBE	2	88.9 OHMS. 2 C.P. 220 VOLTS	14-4-40
66	E40H	RESISTANCE TUBE	2	12.4 OHMS. 8 C.P. 110 VOLTS	14-4-40
67	E40K	RESISTANCE TUBE	2	269 OHMS. 8 C.P. 220 VOLTS	14-4-40
68					
69					

DRAWING PERTAINS TO			REVISIONS
CLASS	DIV.	DRWG.	APR. 29, 1921
7	18		

WIRING DIAGRAM AND LIST OF ELECTRICAL EQUIPMENT FOR 6 IN. BARBETTE CARRIAGE MODEL OF 1910

WATERTOWN ARSENAL, U. S. A. JAN. 18, 1921

CLASS 14	DIVISION 6	DRAWING 147	FILE



SUPERSEDES 7-16-30.

DRAWING PERTAINS TO	REVISIONS	ARRANGEMENT OF LIGHTING AND FIRING CIRCUITS FOR 6IN BARBETTE CARRIAGE MODEL OF 1910
MASS DEV. PROJ. 7-18	APR. 23 1921	WATERTOWN ARSENAL, U. S. A. JAN. 18, 1921.

SUBMITTED — C.W.C. H.C.M. E.E.H.
APPROVED BY ORDER OF THE CHIEF OF ORDNANCE
ORDNANCE DEPARTMENT U.S.A.
EXAMINED
ORDNANCE DEPARTMENT U.S.A.

CLASS 14 | DIVISION 6 | DRAWING 148 | FILE

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