No. 1678

Nº 1817

SAFETY FEATURES

OF

FIRING AND BREECH MECHANISMS

OF

FIELD, SIEGE, AND SEACOAST CANNON

(31 PLATES)

MAY 28, 1915

WASHINGTON
GOVERNMENT PRINTING OFFICE
1915

Lieut. A. F. Brandstetter,
Ordnance Department.

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WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, May 28, 1915.

1. The following instructions, bearing on safety features of breechblocks and mechanisms, are published for the information and guidance of the Regular Army and Organized Militia of the United States.

2. These instructions should be carefully studied by all resident and armament machinists, who are expected to familiarize themselves in detail with all the mechanical features, including the safety features outlined herein, of all guns and carriages, of the types and models to which their work pertains.

The instructions of resident and armament machinists will be under the supervision of the armament officer, and in his absence under the supervision of the coast defense ordnance officers of the various coast defenses. The coast defense ordnance officer will be responsible that no machinist is assigned to work on any firing mechanism or other safety feature of guns or carriages, unless that machinist is thoroughly familiar with that model of gun or carriage.

3. At the semiannual inspection by the armament officer he will assure himself that the resident and armament machinists under his charge are familiar with all such features of the guns and carriages to which the work in his district pertains.

By order of the Secretary of War:

WILLIAM CROZIER,
Brigadier General, Chief of Ordnance.

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SAFETY FEATURES OF FIRING AND BREECH MECHANISMS OF FIELD, SIEGE, AND SEACOAST CANNON.

1.457-INCH MAXIM QUICK-FIRE GUN, 1-POUNDER. (PAMPHLET NO. 1762.)

[Plate I.]

The gun may be considered as divided into two portions, the non-recoiling and the recoiling. It is worked automatically by three forces; the explosion of the charge which forces the recoiling portion backward, and two strong springs (called the barrel spring and the "clock" spring), which carry it forward.

The breech casing consists of two outside plates and the buffer block, the whole being closed by a cover.

The outside plates are dovetailed into the water jacket and, together with the cover, are secured by means of the cover-joint pin and a taper pin. On the outside of the right-hand plate there are the following fittings: A roller and a dead stop, both of which pivot on a stud; the latter is kept in its proper position by means of the former, which works outside it and which in turn is secured by a nut and taper pin; there are also on this plate two studs and an indicator lever; by means of the latter the gun can be set to fire as required.

The outside plates are connected at the rear end by the buffer block, into which they dovetail and to which they are secured by a taper pin (this piece is fitted with a pistol grip with trigger), also a socket for receiving the tangent sight, which is graduated up to 3,000 yards. The trigger is connected to the trigger bar by means of an arrangement which enables the gun to be set so that either—

(*a*) It can not be fired at all;

(*b*) It will fire single shot only; or

(*c*) It will fire automatically.

This arrangement is actuated by the indicator lever referred to above.

The cover is fitted with a block to insure the carrier dropping on recoil and also to keep the lock down when back.

The recoil plates are each provided with a hole to receive the barrel trunnions and also guides in which the flanges of the lock move; in addition each has a bearing through which the crank passes, thus connecting the latter with the barrel; these bearings move in slots in the

outside plates. The right recoil plate is fitted inside with a carrier holding-up spring near the barrel, the use of which is explained hereafter.

The crank is fitted on the right with a handle, the under surface of which is specially curved, and on the left with a hook to which is attached the "clock" spring; the remainder of the crank is inside the breech casing, while in the center there is a connecting rod which is free to revolve on the crank pin.

On the left of the breech casing there is a strong "clock" spring inclosed in a circular metal frame or box, to which the outer end of the spring is attached; the inner end has a hole by means of which it is attached to the hook at the end of the crank shaft; the box or frame is secured to the crank bearing on the left recoil plate by two fixing screws.

The revolution of the crank on recoil winds up the spring, thereby tightening it as the lock is drawn back; but as soon as the recoil is exhausted the action of the "clock" spring is to pull the crank back to the horizontal or firing position, thereby causing the crank handle to fly back and strike the dead stop, which is constructed so as to prevent it from rebounding.

The lock is attached to the connecting rod by a bayonet joint and when in the firing position closes the breech. In this position it is held by the side levers, the crank (which bears against stops on the recoil plates), and connecting rod (which is slightly above the horizontal to prevent the breech being opened at the moment of explosion). The lock has a backward and forward motion communicated to it by the rotation of the crank and is kept in position during its movement by means of flanges working in guides on the recoil plates and by the guide block underneath the cover.

The carrier is attached to the fore end of the lock casing by guide ribs, upon which it slides, and is fitted with tail spring, gib, gib spring, and shutter. The projections on the tail spring and gib, together with the cartridge grooves, form recesses, which retain the cartridges in position. There are on the front of the lock casing beveled grooves, in which move two lugs on the back of the gib and one on the back of the tail spring; the action of these is to lock the gib and tail spring when the carrier is at the lowest position, and thus prevent the possibility of a cartridge overriding the gib or an enpty case sliding over the tail spring when the lock is back.

The carrier is moved upward by means of side and lifting levers and when in its highest position is retained there by means of the carrier holding-up spring, which insures the hole for the firing pin being opposite the center of the base of the cartridge when the lock is home. The upward and downward movements of the carrier are regulated by

the guide ribs; there is also on the upper front part of the lock casing a stop to prevent the carrier being lifted too high.

Points to be attended to before firing:

(*a*) Examine the barrel and see that the bore is clear.

(*b*) See that the hydraulic buffer contains the proper amount of liquid (glycerin and water in equal parts); this can be tested by removing the filling plug at the upper side of the cylinder; the liquid should be up to the edge of the filling hole.

(*c*) See that the water jacket is filled with water.

(*d*) Work the mechanism several times by means of the crank handle, releasing the firing pin each time, and see that all parts work smoothly and correctly.

(*e*) Examine the ammunition and see that it is of the proper description; that the belts are correctly filled with it.

3-INCH SALUTING GUN. (PAMPHLET NO. 1768.)

[Plate 2.]

Nomenclature of breech mechanism.

1. Breechblock.
2. Trigger shaft.
3. Trigger-shaft detent.
4. Face plate.
5. Firing arm.
6. Firing pin.
7. Spring shoe.
8. Spring-shoe stop pin.
9. Firing spring.
10. Sear.
11. Operating shaft.
12. Operating-shaft handle.
13. Locking screw and set screw.
14. Operating-shaft stop.
15. Operating-shaft stop screw.
16. Extractor.
17. Extractor-guide groove.
18. Stop-bolt groove.
19. Locking-screw pallet.
20. Locking-screw pallet screw.
21. Extractor seat.
22. Stop bolt.

The breechblock is of steel, wedge shaped, and carries the firing mechanism.

This mechanism consists of the trigger shaft, firing pin, spring shoe, firing-pin spring, firing arm, and sear.

The trigger shaft consists of a handle with a hole in its end for a lanyard hook, and of a shaft, the end of which is squared for the firing arm. The shaft is held in its seat by a spring-detent ring, which engages corresponding grooves on the shaft and in the block.

The firing pin is a hollow cylinder, open at the rear to receive the spring shoe and firing-pin spring and drawn to a point at the front end. On its lower side is a small lug against which the sear engages, and in the rear of this lug is a longitudinal slot for the firing arm. On the upper surface of the firing pin, at its rear end, a slot is provided for the spring-shoe stop pin.

The sear is a small flat spring, one end terminating in a cylindrical lug which fits in a hole in the bottom of the firing-pin cavity in the

breechblock in front of the firing pin. The other end engages the lug on the bottom of the firing pin.

To fire the piece, the trigger-shaft handle is pulled to the rear by the lanyard. Rotation of the trigger shaft first compresses the firing spring, and then releases the sear by means of a shoulder on the hub of the firing arm coming in contact with the end of the sear spring. As soon as the trigger is released, after firing, the firing spring forces the firing pin to the rear by means of the firing arm reengaging the sear.

To assemble the mechanism, insert the spring in the firing pin, compress it by forcing in the spring shoe, entering the spring-shoe stop pin in the slot provided for it until the pin is opposite the transverse cut; then rotate the shoe until the locking pin is seated. Insert the arm of the firing arm through the slot in the firing pin so that it rests against the rear face of the spring shoe. Then place the sear in its proper position and insert the assembled firing pin into its recess in the rear of the block, so that the square hole in the firing arm registers accurately with the seat for the trigger shaft. Insert the trigger shaft with the detent ring in place and the trigger handle pointing down and slightly to the front into its seat, pressing it until the detent ring enters its groove in the block, taking care that the squared end of the shaft passes through the square hole in the firing arm.

MOUNTAIN, FIELD, AND SIEGE GUNS, AND HOWITZERS.

2.95-INCH MOUNTAIN GUN. (PAMPHLET NO. 1761.)

[Plate 3.]

The breech mechanism consists of the breechblock and cocking cam, carrier, hand lever, firing pin, mainspring, guide plate, extractor, locking bolt, trigger sear, and trigger.

Firing pin.—The firing pin is a hollow sleeve provided with two lugs which ride up on the cam surface of the cocking cam. A hook, which extends to the rear through recesses in the carrier and the guide plate, prevents the firing pin from turning when the breechblock is rotated and makes recocking possible without opening the breech. Near the rear end of the body of the firing pin the metal is cut away, forming a bend or notch into which an arm of the trigger sear drops. The firing-pin point is screwed into the firing pin and is replaceable.

Mainspring.—The mainspring is a helical spring which fits inside the hollow in the center of the firing pin and into a recess in the guide plate. The guide plate retains it in place.

The hand-lever axis pin passes through a hole in guide plate, thus retaining it in position. The guide plate is recessed to receive the

mainspring, and recesses on the side allow the recocking hook of the firing pin and the sear stud to pass through.

The trigger sear is pivoted to the carrier by means of a stud which fits in a groove in the center of the carrier and is secured there by the guide plate. Safety during loading is provided by means of the arm, which has a projection at its outer extremity which engages in the groove during the period when the breechblock is being locked. While this projection is in the outer groove, the firing pin is engaged by the sear, so that the firing pin can not move forward and strike the primer. The sear has also another arm, the outer end of which lies above the trigger lever when the breechblock is home. The arm has the sear spring attached to it which causes the sear to engage the firing pin in the cocked position.

A square shaft on the trigger passes through a square hole in the trigger lever and is held in place by a split pin. The trigger is fitted in the breech of the gun; the trigger lever terminates in a loop to which a lanyard can be attached. When this is pulled, the trigger revolves, causing the trigger to lift up the arm of the sear and so release the firing pin from the sear. The trigger is kept in its normal position by the small spring called the trigger spring.

Nomenclature for 2.95-inch V. M. mountain gun breech and firing mechanism.

1. Breechblock.
2. Carrier.
3. Hand lever.
4. Firing pin (with removable point).
5. Mainspring.
6. Guide plate.
7. Extractor.
8. Locking bolt (with spring).
9. Sear (with spring).
   - 9*a*. Sear stud.
   - 9*b*. Sear bent.
   - 9*c*. Sear safety arm.
   - 9*d*. Sear actuating arm.
   - 9*e*. Sear spring.
10. Trigger and spring with trigger level and split pin.
11. Gear segment of breechblock.
12. Hand-lever bevel pinion.
13. Cocking piece, showing cams.
14. Studs on firing pin.
15. Safety groove in breechblock.
16. Groove in breechblock in which projection on trigger-sear safety arm travels during unlocking.
17. Projection on trigger-sear safety arm.
18. Carrier axis pin (with split pin).
19. Hand-lever catch (lower portion).
20. Hand-lever axis-pin lugs.
21. Hand-lever axis pin (with split pin).
22. Hand-lever stop.
23. Hand-lever catch (with split pin).
24. Hand-lever catch spring.
25. Firing-pin recocking hook.
26. Firing-pin bent.
27. Extractor axis pin (with split pin).
28. Short arm of extractor.
29. Spring catches for piston rod (with screw, washer, and spring).

3-INCH FIELD GUN, MODEL OF 1902. (PAMPHLET NO. 1659.)

[Plate 4.]

The firing pin has guide lugs near its front end which run in slots in the breechblock bushing. The point of the firing pin projects through a hole in the center of the bushing when the gun is fired.

A cap having a square cross section is screwed on the rear end of the firing pin and passes through a square hole in the cover; its rear end terminates in a ring for recocking the firing mechanism by hand without opening the breech. A shoulder on the cap forms a catch for the sear.

The firing pin is eccentrically located in the block; in the firing position it is in alignment with the axis of the gun and in line with the percussion primer of the cartridge. As the block is rotated to open the breech the pin is moved to one side clear of the primer and remains in that relative position until the block is again rotated in closing the breech.

The cocking lever has a ball-and-socket bearing in the block carrier. The other end of the lever is U-shaped, the forks straddling the firing pin. The middle part of the cocking lever works on cam surfaces on the rear face of breechblock and on the front face of the cover.

The front face of the cocking lever has two lugs or ribs which support it on the cam of the block; its rear face is provided with a stud or pin which serves to prevent its improper assemblage.

The firing-pin spring is assembled around the firing pin with its rear end leaving the forks of the cocking lever but its front end against the guide on the pin.

The sear works in a slot in the breechblock and is held against the cap on the firing pin by a sear spring.

The trigger works in a slot in the block carrier and is urged upward by the trigger spring. As the block rotates in being closed the trigger engages with the sear, and by pulling on the trigger the gun is fired. When the block is unlocked, the trigger is disengaged from the sear and the gun can not be fired.

The trigger-arm sleeve is seated in a bearing in the right side of the recoil lug of the gun; it is provided with a central hole, the forward part of which is square and is flared and into which the rear end of the firing shaft attached to the cradle of the carriage enters when the gun is in battery. The trigger arm is mounted on the rear end of the sleeve and its full end engages a notch in the outer end of the trigger. Revolving the firing shaft rotates the sleeve, the trigger arms thus pulling the trigger and firing the piece.

3-INCH FIELD GUN, MODELS OF 1904 AND 1905. (PAMPHLET NO. 1659.)

[Plate 5.]

The firing device consists of a bracket (bolted to the cradle of the carriage), firing handle, handle return spring, shaft return spring, firing-handle shaft, pallet shank, pallet, tripping collar, and adjusting screw. The bracket has a cylindrical portion, the cylinder having a central diaphragm or partition.

In the rear portion of this cylinder is fitted the shaft-return spring which acts on the firing-handle shaft; that is, this spring causes the firing-handle shaft to return to its normal position after the sear has been tripped and the gun fired. The firing-handle shaft returns to its normal position, no matter whether the operator releases his tension on the firing handle or not. In the forward portion of the cylinder, the handle-return spring is fitted. This spring is employed to hold the firing handle in a horizontal position convenient for firing the gun.

The firing handle is mounted loosely on the forward end of the firing-handle shaft and is connected therewith by means of a tripping collar. By this means the firing handle is temporarily made fast to the firing-handle shaft. By a sufficient downward movement of the firing handle, the lower end of the trip-latch plunger is caused to come in contact with the adjusting screw which is suitably located in the firing bracket. This engagement between the lower end of the trip-latch plunger and the adjusting screw forces the plunger upward, thus releasing the trip-latch and allowing the firing-handle shaft to return to its original or normal position. The firing handle is arranged so that it can be folded back and out of the way for traveling purposes. The handle is hollow, and is provided with a plunger, coil spring, and an adjustment or tension plug which is screwed in or out by means of a screw driver until the desired tension on the spring is obtained. One end of the plunger bears against a flat surface on the firing-handle hub and the friction produced by this tension of the spring tends to hold the firing handle in either the folded or open position.

The rear end of the firing-handle shaft is square in cross section and tapered to a point at the end. This squared end projects far enough to the rear to pass through the pallet shank which is revolvably mounted in a projection on the recoil lug of the gun. On the rear end of the pallet shank is mounted the firing pallet which is held in place by a taper split pin. It has a projection which engages a projection on the lower end of trigger shaft, and by pressing downward on the firing handle, the following results follow:

The firing-handle shaft is rotated, the shaft-return spring is put under additional tension, the pallet shank rotates, with the firing pallet thereon; this in turn rotates the trigger shaft which, by means of the firing-spring sleeve and trigger fork, compresses the firing spring until such time that the front end of the firing-spring sleeve trips the sear and releases the firing pin.

The firing mechanism belongs to that type known as a continuous-pull mechanism; that is, no cocking of the mechanism is required other than a pull on the lanyard or a downward pressure of the firing

handle. This arrangement permits of repetition of the blow from the firing pin in case of misfire, as often as desired without the opening of the mechanism or recocking the firing pin.

The firing pin is mounted in the firing locking case, and near its front end is provided with a collar which serves to guide the pin axially and as a shoulder for the front end of the firing spring and also serves as a means for locking the firing pin by the sear till such time as the firing spring has been compressed by the action of the firing mechanism and the sear released. The rear end of the firing pin is rectangular in cross section and is provided with a double lug, against which the trigger forks engage at a point between its upper end and its axis. The engagement serves as a means of withdrawing the firing pin to its retracted or normal position, after the pin has been released and forced forward. Opposite the double lug for the trigger fork the firing pin is provided with another and smaller lug, which fits into a slot in the firing-spring sleeve and serves to hold the sleeve in its proper position.

The firing spring is threaded over the firing pin from the rear end of the pin, and over this is assembled the firing-pin sleeve in such a manner that when it is seated in its proper position, the firing spring is under an initial tension by being compressed between the collar on the front end of the firing pin and a shoulder or seat formed on the inside of the sleeve at its rear end. One end of the firing spring is turned up to fit into a hole in the firing-spring sleeve in order to hold the spring at all times in its proper position.

The sear, which is in the form of a leaf spring, is seated in a slot in the firing-lock case and is provided with a thickened forward end, into which is cut a notch, in which a hardened portion of the periphery of the collar on the firing pin engages. Just to the rear of this notch in the sear an inclined surface is provided, upon which the forward end of the firing-spring sleeve acts in its forward motion to compress the spring and fire the gun. After the sleeve has traveled the required distance forward to produce the proper compression of the firing spring the sear is forced outward, thus releasing the engagement between the sear and the collar on the firing pin. On the rear end of the sear a cylindrical projection is formed which fits into a hole drilled into the firing-lock case. This serves to hold the sear in place.

The trigger fork is seated in the rear end of the firing-lock case, and is constrained from displacement laterally by the walls of the case, and is mounted on the upper squared end of the trigger shaft. The trigger fork is bifurcated on the end which engages the firing pin and sleeve, and it is seated so that the flat sides of the firing pin pass between the bifurcated end of the fork, and the rear face of the bifurcated end bears against the front face of the double lug on the firing

pin at a point located between the end of the trigger fork and its axis. This point of contact between the firing pin and trigger fork is important, as it helps to maintain the proper operation of the firing pin in its return action after firing. The extreme bifurcated ends of the trigger fork are made in the form of a circle, and these ends bear against a flat surface on the rear end of the firing-spring sleeve perpendicular to the axis of the sleeve, and do not touch the sleeve at any other point. This is important, and is the main element which causes the firing pin to return to its normal position after firing. The firing spring is under tension at all times and exerts an equal pressure between the collar on the front end of the firing pin and its seat in the rear end of the firing-spring sleeve. These points of exerted pressure are in a direct line axially, and the pressures are equal; but the point of contact between the bifurcated end of the trigger fork and the rear end of the sleeve being placed at a point outside of the normal line of pressure of the firing spring, the leverage and movements being such that the spring acting on the sleeve, which in turn is acting on the trigger fork, forces the latter to the rear, which in turn carries the firing pin to the rear, through the medium of the double lug on its rear end against which the trigger fork bears. This action is due to the fact that the lever arm between the outer end of the trigger fork is greater than that between the spring and sleeve, and is simply a case of differential leverage. The firing pin assumes its normal position and is locked in place by the sear and is again ready for action.

The firing-lock case is designed to contain the complete firing gear, and if necessary the entire firing mechanism can be replaced in an instant. It contains the firing pin, firing spring, firing-spring sleeve, sear, trigger fork, and trigger shaft and detent. It is provided with four lugs, by which it is locked in place in the hub of the block carrier, and one lug which is forward of the other four, which engages behind a lug on the breechblock. The firing-lock case is held from displacement due to rotation by a locking bolt.

The safety features of the breechblocks and mechanisms of the 3.8-inch gun, 3.8-inch howitzer, 4.7-inch gun, 4.7-inch howitzer, and 6-inch howitzer are practically the same as that described for the 3-inch field gun, model of 1905.

3-INCH MOUNTAIN HOWITZER, MODEL OF 1911.

The 3-inch mountain howitzers, model of 1911, are fitted with an eccentric type of breech mechanism, similar in design to that used in 3-inch field gun, model of 1905. The firing mechanism is of the continuous-pull type, similar to that adopted for the 3-inch saluting gun shown in Plate 2.

3.2-INCH GUN, MODEL OF 1885. (PAMPHLET NO. 1660.)

[Plate 6.]

The vent cover is a sliding bolt, mounted under a protecting cover on top of the gun; it is operated by lugs on the lever head, so as to be thrust into a hole in the rear face of the vent-bushing head when the lever is raised, and to be withdrawn when the lever is depressed after the breech is closed and the block rotated to its locked position.

3.2-INCH FIELD GUN, MODEL OF 1897. (PAMPHLET NO. 1660.)

[Plate 7.]

The vent cover is an arm mounted in a guideway in the rear face of the block, with a dovetail housing secured by a screw over the guideway. A stud projecting from the upper front face of this arm travels in a slot in the rear face of the carrier ring. When the block is rotated into its unlocked position the vent cover hangs over the mouth of the vent, where it remains until, by the rotation of the block into its locked position, it is lifted from over the vent by the outward curvature of the slot.

3.6-INCH MORTAR, MODEL OF 1890. (PAMPHLET NO. 1714.)

[Plate 8.]

Safety devise consists of a vent cover which is mounted on the lock bolt for securing the block in its locked position during firing. The vent cover is operated by hand and is so arranged that when the block is in its unlocked position this vent cover shrouds the primer seat and prevents insertion of primer until block is in locked position, it is held there by the lock bolt.

3.6-INCH GUN, MODEL OF 1891. (NO PAMPHLET.)

[Plate 9.]

Safety device same as for 3.2-inch gun, model of 1897.

5-INCH SIEGE GUN, MODEL OF 1890. (PAMPHLET NO. 1661.)

[Plate 10.]

The vent cover consists of two parts—the cover proper and the vent-cover lever.

The latter is a straight piece with a stud at one end, a square thread terminating in a thread for a nut at the other, and a longitudinal slot near its middle point.

The cover is curved with a mortise in one end to fit on the tenon of the lever. The lever is assembled in a radial mortise cut through the breechblock just in front of the projecting flange on the rear of the block and is held in place by a pin screwed into the block from the rear and passing through the slot referred to above. A slot way in the carrier ring receives the stud on the lever and is so placed and

inclined to the radius that at the first movements of opening the breech the vent cover is moved in front of the vent; it is retained there by gravity and prevents the insertion of a primer until the breech is closed after firing.

By the last motions of closing the breech the vent cover is withdrawn from in front of the vent.

5-INCH SIEGE GUN, MODEL OF 1898. (PAMPHLET NO. 1661.)

[Plate 11.]

No description in pamphlet.

The firing leaf is provided with a projection on right side that projects downward and enters a groove cut in the upper face of the gear segment when the block is rotated to its unlocked position.

The groove in gear segment is so arranged that its rear surface acts as a stop to prevent rearward movement of the firing leaf if accidentally pulled to the rear when the block is in its unlocked position.

7-INCH SIEGE HOWITZER, MODEL OF 1890. (PAMPHLET NO. 1662.)

[Plate 12.]

The safety device same as described for 5-inch siege gun, model of 1890, paragraph 21.

7-INCH SIEGE HOWITZER, MODEL OF 1898. (PAMPHLET NO. 1662.)

[Plate 13.]

Two safety devices are provided by way of projections on the firing leaf. One is a lug on the lower left-hand corner of the firing leaf engaging with a projection on the slide housing preventing the leaf being operated till the slide is properly down in the firing position. The other is a lug projecting forward from the top end of the firing leaf over the circular hub on the gear segment.

When the breech is properly closed this lug will enter a notch in the gear segment, but when the breech block is not yet fully rotated to the closed and locked position the lug strikes the gear segment and prevents the operation of the firing leaf.

The gear segment is protected from wear where the lug strikes by the gear segment pallet.

7-INCH SIEGE MORTAR, MODEL OF 1892. (PAMPHLET NO. 1714.)

[Plate 14.]

The vent cover is mounted on the rear face of breechblock and is operated by a cam surface on the lock bolt. Before the block is unlocked the lock bolt must be turned by hand, a cam surface on the lock bolt operates the vent cover causing it to shroud or uncover the primer seat, thus preventing the insertion of a primer when the block is in its unlocked position.

RAPID FIRE AND LARGE CALIBER SEACOAST GUNS.

2.24-INCH (6-POUNDER) GUN, MODEL OF 1898. (PAMPHLET NO. 1763.)

[Plate 15.]

The principal parts of the breech mechanism are the block, the operating shaft, the cam sleeve, the locking spring, the extractor, the percussion firing lock, and the operating handle.

The block is drilled through transversely for the insertion of the operating cam sleeve and axial seat is formed in rear for the firing lug. The seat for the firing lug is cylindrical except at the forward end where it is shaped for the passage of the firing pin. A seat for the pin of the bracket-locking spring is cut in the rear face of the block.

The locking spring is a steel bar with two lugs on one side and a third at the outer end. The last secures the operating handle; the next one, in conjunction with the handle, operates the spring and locks the shaft to the jacket, while the third serves to lock the shaft in the gun.

The percussion firing lock is called a continuous pull firing mechanism; that is, one in which the pull on the lanyard first compresses the firing spring and then releases it, allowing the spring to drive the pin forward. It consists of the firing pin, the pawl, the firing spring, the bracket bearing, the trigger, the trigger spring, and the bracket locking spring.

A slot for assembling the firing pin to the bracket bearing is cut just forward of the flattened portion, a small hole is drilled in rear of the head of the firing pin to hold the end of the firing-pin spring, six (6) longitudinal grooves are cut in the head for gas vents, and two holes are drilled through the flattened section—one for the pivot to which the pawl is assembled and the other for the lanyard.

The pawl is slotted to fit the rear of the firing pin, and has a pivot hole and seat for a small pin. The firing spring abuts against the head of the firing pin in front and the bracket in rear, being held in the rear between the bracket and a shoulder in the counterbore in the block. The bracket-bearing screws into the block, closing the firing-pin cavity and serving as a support for the rear of the firing pin. It is provided with a pin, which, working in a longitudinal slot in the firing pin, prevents the latter from turning.

Nomenclature for 2.24-inch (6-pounder) gun, model of 1898.

1. Breechblock.
2. Operating shaft.
3. Cam sleeve.
4. Locking spring.
5. Extractor.
6. Operating handle.
7. Firing pin.
8. Firing spring.
9. Firing pawl.
10. Bracket spring.
11. Bracket locking spring.
12. Trigger.
13. Trigger spring.

2.24-INCH (6-POUNDER) GUN, MODEL OF 1900. (PAMPHLET NO. 1763.)

[Plate 16.]

The principal parts of this mechanism are the breechblock, the carrier plate and ring, operating lever, hinge pin, the lever pin, the firing mechanism, the locking bolt and spring and the extractor.

The firing mechanism consists of the firing pin and spring, the pawl, the trigger, the trigger shaft, and the lanyard button.

The firing pin consists of two parts, the body and the head. The body is mainly cylindrical except for a short distance near the center, where it is cut away on one side to clear the cocking toe on the trigger. At this point there is a lug formed on top of pin to which the pawl is pivoted. The rear cylindrical part has two longitudinal grooves as gas vents, and the end of the pin is provided with a lanyard eye. The head itself is cone shaped, the apex being drawn out and hardened to form the firing point. The base of the cone is grooved longitudinally to permit the escape of gas in case of a blow back. A circular recess is made in the side of the cone in which the end of the safety screw pin is seated when the block is closed and locked. At other times the rotation of the block has removed the screw from its position opposite its recess and it bears against the side of the firing-pin head, thus preventing the projection of the pin through the block and the resulting possibility of a premature discharge.

The front end of the firing-pin spring is bent to fit into a hole drilled in the body close to the head, while the rear end is brought forward over the coils parallel with the body and in its normal position abuts against a shoulder at the front of the block. At this position the firing pin is held retracted within the block, as a movement to the front would extend the firing spring.

Action in firing: Pulling the lanyard button causes the trigger to rotate around its pin. The cocking toe of the trigger catches the pawl and the firing pin is pulled to the rear against its spring until the short arm slides off the pawl, when the firing pin is released and is driven forward by the spring. Under the momentum of the firing pin, the latter is carried forward beyond its point of rest and against the action of the spring far enough to explode the primer. After firing, the trigger spring forces the trigger forward to engage the pawl again in readiness for the next shot.

Nomenclature for 2.24-inch (6-pounder) gun, model of 1900.

1. Breech block.
2. Safety-screw pin.
3. Carrier plate.
4. Carrier-plate ring.
5. Carrier-plate-ring screw.
6. Lever-catch plunger.
7. Lever-catch-plunger spring.
8. Plunger cotter pin.
9. Hinge pin.
10. Lever pin.
11. Lever-pin cotter pin.
12. Locking bolt.

13. Locking-bolt spring.
14. Operating lever.
15. Extractor.
16. Firing-pin body.
17. Firing-pin head.
18. Firing-pin-head securing pin.
19. Pawl.
20. Pawl pivot.
21. Firing spring.
22. Trigger.
23. Trigger spring.
24. Trigger pivot pin.
25. Lanyard button.

.2.24-INCH (6-POUNDER) GUN, DRIGGS-SCHROEDER, MARK III. (PAMPHLET NO. 1763.)

[Plate 17.]

The principal parts of the breech mechanism are the block, face plate, main-bolt cam, operating handle, lever lock, lever-detent spring, extractor, and firing mechanism. This latter consists of the firing pin, firing spring, the sear, and the sear spring. The firing pin consists of a cylindrical body carrying on the underside the full-cock stud and the cocking arm and terminating in an eye for the drill-washer support in the rear. On the upper side of front end of body is formed a lug, which is drilled and slotted to receive the split stem of the point. The firing-pin point is made in the form of a short spring split pin, the split end of which carries two locking shoulders. The lug on the firing-pin body is slotted to permit the passage of these shoulders, so that when the head is pressed home and partly rotated a bayonet point is formed. The spring effect tends to spread the locking shoulders and prevent accidental rotation of the head. The firing spring lies between the lug of the firing pin in front and a shoulder of the block in rear. The sear is a simple slide working in an undercut slot in the rear face of the block. Actuated by the sear spring, it presses up against the firing pin and engages the full-cock stud when the pin is retracted. Near its lower end a protecting lanyard eye is formed. The sear spring is a flat spring enlarged at both ends, the rear end being notched to engage the sear, while the front end is cylindrical and serves both as a fulcrum for the spring and as a retaining pin for the face plate.

In firing, a quick pull on the lanyard draws down the sear and releases the firing pin. For drill, a rubber ring, called drill washer, is slipped over rear end of firing pin and held in place by a washer support, which passes through eye on the end of pin. This washer acts as a buffer between the rear face of block and support, and thus lessens shock on firing pin.

Nomenclature for 2.24-inch (6-pounder) gun, Driggs-Schroeder, Mark III.

1. Breech block.
2. Face plate.
3. Cam.
4. Firing-pin body.
5. Firing-pin head.
6. Firing spring.
7. Sear.
8. Sear spring.
9. Drill washer.
10. Drill-washer support.

11. Main bolt.
12. Operating handle.
13. Lever lock.
14. Lever-lock pin.
15. Lever-detent spring.
16. Guide bolts (2).
17. Extractors (2).
18. Tray.
19. Tray screws (2).
20. Lever-stop pin.

3-INCH (15-POUNDER) GUN, MODEL OF 1898. (PAMPHLET NO. 1756.)

[Plates 18, 19, 20, and 21.]

The breech mechanism consists of block, carrier plate, carrier plate ring and its screws, locking bolt and spring, operating lever and pin, lever plunger spring and cotter pin, firing pin, firing pin head, firing spring, sear, sear spring, extractor, hinge pin, sear latch, sear latch pin and safety catch, pin and spring.

The firing pin and spring are assembled in their seat in the carrier plate, the front of the firing pin head, when released, passing through an aperture in the front of the block. The pin has at its rear end, a cocking lug, and a notch for engagement of the sear, and in front the firing pin head, a shoulder for the spring. The spring is coiled around the pin and abuts against the shoulder in front, formed by the firing pin head and the carrier plate in rear.

The sear is cylindrical in form and is seated in a hole drilled entirely through the carrier plate parallel to the breech face of the gun and at a right angle to the vertical axis of the gun. On right end of sear is assembled a sear spring, a seat for which is formed in the carrier plate by means of a counter bore. A short lever arm provided with an eye is formed on right end of sear; this serves as a means of attaching the lanyard. The sear is so shaped at its central section that it will engage with a notch cut in the upper surface of the firing pin. This engagement with the firing pin when in its cocked position is maintained by means of the sear and firing springs, the latter being assembled with considerable tension.

The firing pin is released from the sear by revolving the latter in an upward direction. The sear latch is mounted on the left end of the sear, and is so arranged that a safety catch, mounted in the carrier plate, comes into engagement with the notch cut into the sear latch at the moment the block starts to rotate to the unlocked position. This is for the purpose of locking the sear and holding it locked until the block has been brought to practically its fully locked position thus preventing premature firing of the gun.

The safety catch is mounted by means of a pin in a recess formed in the carrier plate, and is forced outward and into engagement with the sear latch by means of a coil spring, which is also mounted in the carrier plate. The safety latch is automatically released from the sear latch by means of a wedge, which is riveted to the upper surface of the operating lever near its outer end.

For drill purposes an empty cartridge case should be inserted in the chamber, as otherwise, unless care is taken that the operating lever is left firmly against the breech after closing, tripping the sear, and thus releasing the safety catch, the firing pin is liable to break the same or cocking cam on operating lever. The 3-inch (15-pounder) guns, models of 1898 and 1902, are being fitted with a modified type of breech mechanism, and they have been designated as 3-inch (15-pounder) guns, models of 1898 MI and 1902 MI, respectively. These new types of breech mechanisms are similar to and are provided with the same safety features to prevent premature firing as the 3-inch (15-pounder) guns, model of 1903.

Nomenclature for 3-inch (15-pounder) gun, model of 1898.

1. Breech block.
2. Carrier plate ring.
   2A. Carrier plate ring screws.
3. Carrier plate.
4. Operating lever.
5. Firing pin.
   5A. Operating lever pin.
6. Firing pin spring.
7. Sear.
8. Sear spring.
9. Hinge pin.
10. Lever catch plunger.
11. Cotter pin.
12. Plunger spring.
14. Extractor.
15. Locking bolt.
16. Locking bolt spring.
17. Safety catch.
18. Safety catch spring.
19. Releasing wedges.
20. Sear latch.

3-INCH (15-POUNDER) GUN, MODEL OF 1902. (PAMPHLET NO. 1766.)

[Plates 22 and 23.]

The breech mechanism consists principally of the block, carrier plate, latch, carrier hub, operating lever and link, extractor, and firing mechanism.

The firing mechanism is of the continuous pull percussion type. It consists principally of the following parts:

Firing pin.
Firing pin sleeve.
Firing pin guide and firing pin shoulder.
Firing pin spring.
Trigger and spring and trigger pin.
Cocking link and stud with spring.
Cocking stud block.

The firing pin sleeve surrounds the firing pin and is of square section in rear and round in front. At the forward end of the square section there are two lugs which run in grooves in the carrier hub. The part called the rear firing pin shoulder is assembled over the round part of the sleeve and bears against the shoulder formed by the square part and the lugs. The square part of the sleeve slides in a square axial slot in the rear part of the carrier hub. The slot

is grooved at the sides for the lugs of the firing pin sleeve. The grooves in the carrier hub are of different depths in order to guard against improper assemblage of the firing pin guide. The rear shoulders of the grooves form a stop for the firing pin sleeve and prevent the blowing out of the firing pin in case of a blowback. The firing pin guide fits over the firing pin sleeve, having the firing pin spring interposed between, and is held in position by a shoulder at its forward end and by the enlarged part of firing pin in front. The firing pin spring surrounds the sleeve between the guide and the shoulder.

The pin, sleeve, spring, and guide are locked together by a nut with taper pin at the rear end of the firing pin.

The firing pin guide slides longitudinally in the bore at the forward end of the carrier hub. When the block is closed this guide bears against a shoulder on the breechblock plug. When the block is rotated for opening a lug on this plug slides against an inclined surface of a lug on the firing pin guide, forcing the guide to the rear and thus retracting the point of the firing pin from the opening in the face of the breechblock and preventing it from again projecting until the block is closed.

The spring bears against the firing-pin guide in front and against the firing-pin shoulder in rear. The firing-pin shoulder in turn bears against a shoulder in the carrier hub. The firing-pin shoulder, therefore, remains stationary as the firing pin with sleeve and guide is pulled to the rear and the spring is compressed.

The trigger is a lever working in a slot in the carrier-hub head and having an arm extending into another slot at the left side of the carrier hub. It is hinged on a vertical pin near the right side of the carrier hub. A coiled spring around this pin always presses the trigger forward. An eye for the lanyard hook is provided at the left-hand end of the trigger. An arm near the left-hand end of the trigger extends into a slot in the carrier hub. When the block is closed and the gun is to be fired, this arm moves through a slot in the bore of the block. When the block is partly rotated, the trigger can not be pulled sufficiently to fire the gun.

The cocking link and stud makes connection between the trigger and the firing-pin sleeve. It consists of a link carrying a fixed stud engaging with a hole drilled in the trigger, and at the other end a cocking stud capable of a vertical motion but held by a spring so as to cause it to project through the under surface of the link. This movable stud, when pressed down by its spring, engages with an elongated hole drilled in the firing-pin sleeve. When the trigger is pulled, the cocking link has a motion of translation to the rear and a slight motion of rotation in a horizontal plane, but on account of the nature of its guides it can not move out of its plane.

The guides for the cocking stud are formed in a steel piece called the cocking-stud block, set into a slotted part of the carrier hub. The side walls of this block have cam surfaces on which slide the arms of the movable cocking stud referred to above. The rear ends of these surfaces are inclined upward. When the trigger is pulled, drawing the cocking link and firing pin with it, the movable cocking stud is lifted vertically from its seat in the firing-pin sleeve when its arms strike the inclined part of the cams. The firing pin then runs forward. As soon as the trigger is released, its own spring pulls it forward, and the movable stud again drops into its seat in the firing-pin sleeve.

Action of firing mechanism.—When the gun is loaded and block closed, the firing-pin guide is pressed forward by the firing-pin spring against the front firing-pin shoulder. For firing the trigger is pulled to the rear until the cocking stud is released from the firing-pin sleeve. In this movement the firing pin is pulled to the rear about 0.8 of an inch. When released the spring drives it forward until the firing-pin guides strike the breechblock plug. The inertia of the firing pin and sleeve then carries them 0.1 of an inch farther forward. The total projection of the firing pin in percussion firing is 0.15 of an inch.

The firing mechanism can be removed without opening breech by first removing the operating lever and link and then screwing the carrier hub from its seat in the block and carrier.

The following is a proposed modification of the firing mechanism of the above guns:

It is intended to so adjust the pin that it will not protrude through the face of the breechblock in the closed position.

Type mechanisms of the eccentric type have been ordered manufactured for the 3-inch (15-pounder) gun, model of 1898, 3-inch (15-pounder) gun, model of 1902, and the 4.7-inch Armstrong gun, it being contemplated to ultimately apply such mechanisms to the above guns and to the 6-inch Armstrong gun.

Nomenclature for 3-inch (15-pounder) gun, model of 1902.

1. Firing pin.
2. Firing-pin sleeve.
3. Firing-pin guide and shoulder.
4. Firing-pin spring.
5. Trigger and spring and trigger pin.
6. Cocking link and stud with spring.
7. Cocking-stud block.

3-INCH GUN (15-POUNDER), MODEL OF 1903. (PAMPHLET NO. 1772.)

[Plate 24.]

The breech mechanism consists principally of the breech block, block carrier, block latch, operating lever, operating bar, hinge pin, extractor, trigger shaft, and firing mechanism.

The trigger shaft is pivoted in a bearing on left-hand side of the block carrier, a detent spring engaging a groove in the bottom of

the bearing to prevent trigger shaft from working out to the side. A projecting arm extends down into the front and engages the flange on the breech block, thus preventing any movement of the trigger shaft until the breech block has been closed. The small bearing end of the trigger shaft is squared to fit the cocking lever.

The firing mechanism belongs to the type known as a continuous pull percussion type—that is, no cocking of the firing pin is required other than a pull on the lanyard or trigger shaft. This arrangement permits repeating the blow from the firing pin in case of a misfire as often as desired without the opening of the mechanism or recocking of the firing pin. It consists principally of the following parts: Firing case, firing pin, firing spring, firing-spring follower, sear, sear spring, and cocking lever.

The firing case is designed to contain the complete firing gear, and if necessary the entire firing mechanism can be replaced in an instant. It contains all parts of the firing mechanism. It is provided with three lugs by which it is locked in place in the hub of the block carrier. Another lug, which is forward of the other three, engages a spiral groove in the breech block, the four lugs locking the block and carrier together. The firing case is held from displacement by the trigger shaft. It can be removed from its seat in event of becoming tight by inserting the end of the trigger shaft in the hole drilled in the knurled portion of the case and revolving it to the left. Through the bottom of the firing case, near the center, a hole is bored and slotted through which the sear and sear spring is passed to its seat on opposite of firing case. To the rear of this seat is a rectangular slot cut through to the center, and which forms a clearance pocket and seat for the cocking lever to engage. The firing pin is mounted in the firing case, and has projecting surfaces on its exterior which serve to guide the pin axially. The forward end of the firing pin is reduced in diameter to provide a shoulder which engages bottom of the seat in block carrier, limiting the amount of travel forward when fired. It is bored out in the center to receive the firing spring and firing-spring follower. At the rear end a rectangular slot is cut through the firing pin, which provides a web against which the cocking lever engages, at a point between its lower end and its axis. This engagement serves as a means of withdrawing the firing pin to its retracted or normal position after the pin has been released and forced forward. Opposite to this slot is cut another narrow groove in which the projecting pin of the firing-spring follower travels and engages, serving to connect the firing pin, firing-pin spring, and firing-spring follower to facilitate assembling and disassembling. A little forward of this rectangular slot another opening is cut, which serves as a seat for the engagement of the sear.

The firing spring is made of such lengths that it will, when assembled inside of the firing pin and firing-spring follower, be under initial compression.

The firing-spring follower is made to slide inside the firing pin. It has a pin projecting from its surface, engaging a groove in the firing pin which serves to guide it. The closed end is slotted to receive the end of the cocking lever with which it engages.

The sear is so designed that one end engages the seat cut into the firing pin, thus holding the firing pin till released. At the other end of the sear a rectangular projection is formed, which the cocking lever engages during its rotation, releasing the firing pin after the spring has been compressed. The center is drilled out to receive the sear spring, which is so assembled as to cause the sear to always press against the firing pin.

The sear spring is a small coiled spring with a projection on one end which engages a small hole drilled in the sear, thus preventing the spring falling out of the sear while assembling.

The cocking lever is seated in the rear end of the firing case and is prevented from displacement laterally by the walls of the case. It is mounted on the square end of the trigger shaft. The cocking lever passes through the rectangular slot cut in the rear end of the firing pin, engaging the firing pin and firing-spring follower.

Action of the firing mechanism.—When the trigger shaft is rotated, it in turn rotates the cocking lever to which it is engaged. The circular-formed toe of the lever forces forward the firing-spring follower, thereby increasing the tension on the firing spring. The firing pin is prevented from moving forward due to the sear locking it and the case together. When the cocking lever is rotated a certain amount, the projecting lug engages the sear, raising it from its seat, thereby releasing the firing pin, which is stopped in its forward travel by its shoulder coming against its seat in the carrier. Immediately the firing-spring follower, actuated by the compressed firing spring, come to the rear. The end of the cocking lever, still resting against its rear end, is carried with it. This cocking lever also engages, at the point between the axis and toe, the lug or web on the firing pin, which engagement was made when the firing pin was released. Due to difference in lever arms (the pivot being on axis of trigger shaft), the force on the toe of the cocking lever is able to bring to the rear the firing pin until it is engaged again by the sear.

To dismantle the firing mechanism.—Take hold of the ends of the trigger-shaft detent under the trigger shaft bearing and press them together, at the same time pushing the trigger shaft to the left, removing it from its seat. Take hold of the knurled headed end of the firing case and revolve it to the left till it stops, then pull it gently to the rear. Then gently press on front end of firing pin,

forcing it back into the case. This will allow the cocking lever to be taken out. Then grasp the front end of the firing pin and turn it sufficiently to disengage the sear after which it can be removed from the case. Press the end of the firing-pin spring follower and revolve it sufficiently to disengage projecting pin on the follower from the firing pin.

Nomenclature for 3-inch (15-pounder) gun, model of 1903.

1. Jacket.
2. Tube.
3. Breech bushing.
4. Breech bushing screws.
5. Breech blocks.
6. Breech block flange.
7. Breech block operating pins.
8. Breech block vent hole.
9. Block latch.
10. Block latch pivot.
11. Block latch spring.
12. Vent bushing.
13. Block carrier.
14. Block carrier pallet.
15. Block carrier pallet screws.
16. Operating lever.
17. Operating lever pin.
18. Operating lever handle.
19. Operating bar.
20. Hinge pin.
21. Extractor.
22. Extractor trunnion.
23. Firing case.
24. Firing pin.
25. Firing spring.
26. Firing spring follower.
27. Firing spring follower pin.
28. Sear.
29. Sear spring.
30. Trigger shaft.
31. Trigger shaft detent.
32. Cocking lever.
33. Handy oiler for hinge pin.
34. Vent hole through bushing and gun.

4-INCH GUN, DRIGGS-SCHROEDER. (NO ORDNANCE PAMPHLET ISSUED.)

[Plate 25.]

The safety features of the breech block and mechanism are the same as explained above for 2.24-inch gun, Driggs-Schroeder, Mark III.

4.72 AND 6-INCH GUNS, ARMSTRONG. (PAMPHLETS NOS. 1749 AND 1752.)

[Plate 26.]

With the mechanisms used on these guns, it is impossible to fire the gun until the breech is completely locked. This is insured by means of a safety gear consisting of a safety lever pivoted to the block carrier. The safety lever engages a lug on the rear end of the firing pin and is actuated by a plunger. The safety lever prevents the firing pin from touching the primer while the operating lever is in the unlocked position.

The firing pin is secured in the carrier by the retaining nut and can be readily removed by slightly withdrawing it and turning the nut a quarter of a turn.

To assemble the firing pin, it is pushed into its place and the retaining nut turned to the right or left.

The upper end of the spindle is held in place by a screw countersunk in a housing. The spindle with its torsional spring and spline key locks the operating handle when closed, and should this spline

key be broken, it will interfere only with the function, but in no way affect the safety feature of the mechanism.

The safety lever which engages behind the retracting toe mounted on the rear end of the firing pin is fulcrumed at its outer end to the block carrier. The safety lever controls the motion of the firing pin during the opening and closing of the block and is operated by the intermediate safety lever plunger which passes through a hole in the block carrier and rests against the rear face of the breechblock. In opening the block, the safety plunger is forced outward and to the rear by the screw motion of the block; it slowly forces out the safety lever, at the same time retracting the firing pin. The safety lever plunger is made adjustable in length to provide for wear and control of the movement of the firing pin.

This adjustment is to be so made and maintained that in closing the block the firing pin will begin to protrude from the face of the block when the operating lever is closed to a position about one to three inches short of that where the toe of the spindle enters its groove in the operating lever.

The words "electric" and "percussion" with indicative arrows are stamped on the rear face of the carrier to show the position to which the retaining nut is to be turned for firing.

For percussion firing, the retaining nut is revolved so that the firing trigger is in a horizontal position on the right. The loop of the trigger engages upon a knob of the lanyard connecting rod, which has, at its outer end, a loop in which the lanyard is to be habitually hooked. The object of this arrangement is to prevent the trigger from being used on the left side for percussion firing where no safety notch is provided. The right hand position for percussion firing was selected in preference to the left hand position, it being deemed most convenient for the service of the piece to pull the lanyard from the right.

A half-cock notch has been made in the right side of the firing pin sleeve. In opening the block, the firing pin is retracted by the safety lever to such an extent that the half-cock notch is held out a little beyond the trigger. On closing the block, the firing pin is caught in the half-cock notch by the trigger and prevented from coming in contact with the primer. To fire the piece, the pin will be drawn to a full cock by the hand. This safety notch forms in itself a full safeguard against premature discharge for percussion firing.

For electric firing, the retaining nut is revolved so that the firing trigger is in a horizontal position on the left. A full-cock notch is made on the side of the firing pin sleeve, although not needed for electric firing. No half-cock notch is made as it would interfere with electric firing, necessitating release of the firing trigger, and freeing the firing pin after closing the block for every discharge. The full-

cock notch is made on both sides of the firing pin to avoid a possible accident, namely, the slipping of the firing pin from the hand if one attempted to cock it in the absence of any sear notch. By leaving the full-cock notch on this side, it will also be possible to fire the piece by percussion with the firing trigger on the left. This is not intended and should be avoided unless the space in the emplacement is such as to necessitate pulling the lanyard from the left side. In such cases, the safety features for half cock are lost and reliance must be placed on the safety lever. In closing the breech with the firing trigger to the left (where there is no half cock) the safety lever continues to restrain the firing pin with slow motion, until the operating-lever handle has nearly reached the closed position when the protruding firing pin comes in contact with the primer, after which the completion of the closure can cause no blow upon the primer.

The adjustment of the firing pin for point of first protrusion will be made with the firing trigger on the left and as follows:

The firing-pin sleeve nut must be screwed fully home in order to bring the opening in the sleeve opposite the firing cable point which is screwed upon the retracting toe piece and thus insures contact between the cable and the stem of the insulated firing pin. It is not permissible to adjust the protrusion of the firing pin by changing the position of the sleeve nut (brass), as this would destroy the cable contact. Next, keeping the breech open, revolve the block by the operating handle, at the same time placing a finger at the front of the firing pin. If the firing pin does not begin to protrude so that it will press against the primer, if in place when the operating handle has reached the position already indicated, then adjust the length of the safety-lever plunger to regulate the protrusion of the firing pin as required. The safety-lever plunger is made in two parts, with a screw shank and a locking nut for adjustment of length. The arm of the firing-pin sleeve cap can be used for turning the screw, while the safety lever itself, placed in the end slot of the pin, serves as a holder.

The electrical firing gear consists of the firing pistol, the battery box, cables, etc., a contact pin plug bracketed to the cradle, and an insulated firing pin which is part of the gun.

The firing pistol contains a buzzer which indicates by its sound when the circuit is closed. This is affected by the current running through the coils of an electromagnet, the resistance of which is so great as to reduce the current below that necessary to fire the primer. By pulling the trigger this resistance is cut out, and the current is then great enough to fire the primer.

An alternate electrical firing attachment is also provided. One terminal of battery is grounded on the carriage, the other terminal is directly connected with the firing pin through the alternate firing key

and cables. The alternate key consists of a tube into one end of which a cable end is coupled fast. The cable entering the other end is secured to a plunger which is held out by a coiled spring. When grasped in the hand with the thumb on the plunger end the cable ends may be pushed together, completing the circuit. To guard against premature discharge of the piece a split key is wired to this firing key to prevent forward movement of the plunger, and should be kept pushed across the plunger head until the piece is about to be fired.

Before connecting the alternate cable to the battery and firing pin, the other cables which may be connected to firing pin should be removed.

The percussion firing gear is fitted to the retaining nut and consists of a spring trigger, with a loop to receive the knob on the lanyard connecting rod.

To fire by percussion the firing pin or needle is pulled by hand to the rear until it is caught by the trigger, which retains it till the latter is displaced by a pull on the lanyard attached to the loop on the end of the lanyard connecting rod. This leaves the firing needle free to travel forward and strike the primer.

These mechanisms will probably be modified by adopting a continuous pull percussion firing mechanism similar to that used on 3-inch (15-pounder) gun, model of 1903 to the present type of breechblock. Ordnance Pamphlet No. 1749 will be revised to describe these changes when the design has been finally approved.

Nomenclature for 4-inch gun, Driggs-Schroeder.

1. Breechblock.
2. Faceplate.
3. Cam.
4. Firing-pin body.
5. Firing-pin head.
6. Firing spring.
7. Sear.
8. Sear spring.
9. Drill washer.
10. Drill-washer support.
11. Main bolt.
12. Operating handle.
13. Lever lock.
14. Lever-lock pin.
15. Lever-detent spring.
16. Guide bolts (2).
17. Extractors (2).
18. Tray.
19. Tray screws.
20. Lever stop pin.

5 AND 6 INCH GUNS, MODEL OF 1897. (PAMPHLET NO. 1765.)

[Plate 27.]

The firing mechanism consists of: Slide, slide housing, ejector, firing leaf, contact clip, firing cable, circuit breaker, and safety bar. It is intended for use with a combination electric and friction primer.

The housing is attached to the rear end of the spindle by means of an interrupted screw thread and is secured in place by a spline screw. The slide has a vertical movement in the guides which project from the rear portion of the housing, and its movement is limited by the

slide stop which has a horizontal movement in a slot cut in the housing, its inner end projecting in a groove in the side of the slide. The slide stop is pressed inward by a helical spring.

The firing leaf is pivoted at its upper end to the slide against which it lies flat when in its normal position.

A notch is caught through both the slide and the leaf so that when in its lowered position the slide supports the head of the primer against the pressure of the powder gases while allowing the primer wire to extend through the notch. When the leaf is swung to the rear its rear face catches a button at the end of the primer wire and explodes the primer.

The contact clip makes electrical connection with the primer by bearing against the button on the end of the primer wire when the slide is in its lowered position. The contact clip is held in a housing which is secured to the firing leaf by the housing nut and is insulated from the leaf by the housing insulation.

One end of the firing cable is attached to the clip housing by the firing cable terminal, consisting of a split pin with enlarged end held in place by a locking shoulder, the other end attached to a circuit-breaker contact piece. The circuit-breaker contact piece is secured to the outside of the gear segment by two screws and insulated therefor. When the block is rotated in closing, the circuit-breaker contact piece comes into contact with the circuit-breaker contact pin, making electrical connection with one of the firing leads.

The circuit-breaker contact pin and spring are inclosed in a housing which is attached to the block carrier by two screws and insulated therefrom. The pin is held against the contact piece by the pressure of its spring. The end of the firing lead is secured to the circuit-breaker housing by a fork. The firing lead is held in place by the cable clamp screwed to the block carrier.

The ejector consists of a horizontal and vertical branch with two trunnions near the angle. It is supported in the housing by these trunnions, and, in its normal position, the lower branch, which is in the form of a hook, hangs vertically over the mouth of the primer seat, engaging the rim of the primer on two sides. The horizontal branch projects to the rear into a recess cut into the front face of the slide. The lower end of this recess is a cam surface. When the slide is raised the cam surface forces the horizontal branch upward, ejecting the primer. When the slide is lowered the ejector drops into position against the mouth of the primer seat.

The safety bar is a lever pivoted in the slide housing and actuated by a stud on the gear segment working in a slot cut through the outer end of the safety bar. At the beginning of the rotation of the block in opening the breech, the inner end of the safety bar rotates

inward, entering a slot in the right side of the firing leaf, thus preventing any movement of the firing leaf except when the breech is fully closed.

To dismount the mechanism.—Open the breech, unscrew safety-bar pivot, and remove safety bar. Detach firing cable. To remove slide pull outward on slide stop and lift slide from housing. Unscrew housing spline screw and revolve housing 90° to the right when the housing may be drawn to the rear from the spindle. Unscrew the spindle nut and the spindle-key screw and remove the spindle key. Be careful not to remove spindle nut and spindle key before opening the breech, as in that case the split rings are liable to drop down and prevent the withdrawal of the block. The spindle, split rings, pads, etc., are then able to be removed from the block.

Nomenclature for 5-inch gun, model of 1897, and 6-inch gun, model of 1897 Mr, Stockett breech mechanism, fitted with combination electric friction firing attachment.

1. Block carrier.
2. Hinge pin.
   - 2a. Hinge-pin spring catch.
   - 2b. Hinge-pin oil-hole screw.
3. Spindle key.
4. Spindle-key screw.
5. Latch bolt.
6. Latch lever.
7. Latch-lever spring.
8. Latch-lever pivot.
9. Lever.
10. Pinion.
11. Pinion pivot.
12. Pinion-pivot nut.
    - 12a. Pinion-pivot pin.
13. Breechblock.
14. Breechblock oil-hole screw.
15. Gear segment.
16. Gear-segment screws.
17. Spindle.
18. Spindle nut.
19. Spindle-nut clamp screw.
20. Spindle pallet.
21. Spindle-pallet screws.
22. Spindle-ball washer.
23. Vent bushing (copper).
24. Exterior split ring (front).
25. Exterior split ring (rear).
26. Interior split ring.
27. Gas-check pad.
28. Filling-in disk.
29. Tripping stud.
30. Tripping-stud screws.
31. Latch-bolt seat.
32. Latch-bolt seat screws.
33. Guide cylinder.
34. Guide groove.
35. Guide flange.
36. Stop flange.
37. Locking recess.
    - 37a. Breechblock pallet.
    - 37b. Breechblock-pallet screw.
38. Housing.
39. Housing spline screw.
40. Slide.
41. Slide handle.
42. Slide catch.
    - 42a. Slide-catch spring.
43. Firing leaf.
44. Firing-leaf pivot.
    - 44a. Firing-leaf spring.
    - 44b. Firing-leaf spring screw.
45. Firing-leaf pivot pin.
46. Ejector.
47. Firing cable.
48. Cable clamp.
49. Cable-clamp screw.
50. Circuit-breaker contact piece.
51. Contact screws.
52. Contact clip.
53. Contact-clip insulation.
54. Contact clip nut.
55. Electric-cable terminal.
56. Contact clip plug.
57. Circuit-breaker housing.
58. Circuit-breaker housing screws.
59. Circuit-breaker contact pin.
60. Safety bar.
    - 60a. Safety-bar pivot.
61. Safety-bar operating stud.
62. Slide stop.
63. Split washer for contact clip.

5 AND 6 INCH GUNS, MODEL OF 1900. (PAMPHLET NO. 1765.)

[Plate 28.]

The firing mechanism is the same as that for 5-inch gun, model of 1897, with the following difference:

The housing of the mechanism is attached to the spindle by means of a yoke. The firing mechanism turns with the block during rotation. The safety lever lies in a groove in the surface of the guide cylinder. A projection on the front end of the safety lever rides in a groove cut in the block carrier. When the breech is fully closed, the projection enters a well cut at the end of the groove in the block carrier, allowing the hook on the rear end of the safety lever to drop and free the firing leaf. At the beginning of the rotation of the block, in opening the breech, the safety lever hook rises and prevents any movement of the firing leaf.

6-INCH GUN, ARMSTRONG. (PAMPHLET NO. 1752.)

[Plate 26.]

The safety features of the breech and firing mechanisms are practically the same as the 4.72-inch gun, Armstrong.

6-INCH GUN, MODEL OF 1897 MI. (PAMPHLET NO. 1765.)

[Plate 27.]

The breech and firing mechanisms of this gun are the same as for the 5-inch gun, model of 1897, except that the dimensions are slightly larger.

6-INCH GUN, MODEL OF 1900. (PAMPHLET NO. 1765.)

[Plate 28.]

The breech and firing mechanisms are the same as for 5-inch gun, model of 1900, except dimensions are larger, and also the loading tray pivot has a solid head and is screwed into the breech face of the gun and held in place by set screw.

6-INCH GUN, MODEL OF 1903. (PAMPHLET NO. 1765.)

[Plate 29.]

The principal parts of the firing mechanism are the housing, slide, firing leaf, ejector, contact clip, and firing cable. The housing is screwed on the rear of the obturator spindle and does not rotate with the block, due to the action of the spindle key. A groove on the rear face of the housing carries the slide, which has a horizontal motion on the right side of the axis of the gun limited by the slide stop. A notch on the under side of the slide receives the rack lock bolt. The left end of the slide is V-shaped with the point of the V to the right. The point of the V is extended to the right by a notch cut through the slide. When the slide is in position, breech closed, the stem of the

primer passes through the notch, the base of the primer being supported by the body of the slide. The firing leaf is a vertical lever pivoted to the slide by the firing-leaf pivot and pivot pin. A horizontal notch is cut into the left side of the lower arm of the firing leaf. The stem of the primer passes through the notch when the slide is in firing position. The contact clip is attached to the firing leaf by the clip housing and housing nut. The housing is insulated from the slide by the clip housing insulation. When the slide is in firing position, the clip embraces the button on the end of the primer stem, forming electrical connection with the primer. The firing cable is connected to the clip housing by the firing cable terminal, consisting of a split pin with enlarged end, held in place by friction. The other end of the firing cable is similarly attached to the firing-cable bracket on the breech of the gun. The lower arm of the firing lever lies against the upper arm of the firing leaf when the slide is in firing position. When the lanyard is drawn to the rear, the lower end of the firing lever presses the upper end of the firing leaf to the front, causing the lower end of the firing leaf to strike the button and draw it to the rear, exploding the primer.

When the rack moves to the right, in opening the breech, the rack lock carries with it the slide, leaving the primer free to be ejected and freeing the leaf from contact with the firing lever. In closing the breech, the leaf does not come in contact with the firing lever, nor does the contact clip embrace the primer button until the rotation of the block is practically completed. By drawing downward on the rack-lock handle, the slide is freed from the rack and may be moved independently, to permit the placing of a primer in the vent without opening the breech.

The ejector consists of a horizontal lever, pivoted to the housing of the firing mechanism. The right end lies in a groove cut in the end of the spindle. This end is forked, the fork practically surrounding the mouth of the vent and lying in front of the rim of the primer. The left end of the ejector is broadened to be struck with the hand. The ejector spring, acting on the left end of the ejector, holds the fork normally in its groove in the spindle. One side of this groove is beveled to allow the fork to ride out of the groove in dismounting the mechanism. When the left end of the ejector is struck, the fork acts on the rim of the primer, to throw the primer clear of the vent.

Nomenclature for 6-inch gun, model of 1903.

1. Hinge plate.
2. Hinge-plate screw.
3. Breechblock.
4. Block carrier.
5. Operating lever.
6. Lever-latch bolt.
7. Lever-latch bolt spring.
8. Lever-latch housing.
9. Lever-latch housing screws.
10. Lever-latch pallet.
11. Hinge pin.
12. Hinge-pin nut.

13. Operating spool.
14. Carrier bushing.
15. Hinge-lug bushing.
16. Latch groove.
17. Hinge-lug pallet.
18. Hinge-lug pallet screw.
19. Latch.
20. Latch retainer.
21. Latch-retainer spring.
22. Roller.
23. Roller axle.
24. Hub of block carrier.
25. Stem of breechblock.
26. Spindle key.
27. Spindle-key groove.
28. Obturator-spindle spring.
29. Breechblock oil-hole screw.
30. Rack.
31. Rack-lock bolt.
32. Rack-lock housing.
33. Rack-lock handle.
34. Rack-lock spring.
35. Slide stop.
36. Ejector.
37. Ejector pivot.
38. Ejector-pivot pin.
39. Housing.
40. Slide.
41. Firing leaf.
42. Firing-leaf pivot.
43. Firing-leaf pivot pin.
44. Firing-leaf spring.
45. Firing lever.
46. Lanyard loop.
47. Firing-lever pivot.
48. Firing-lever pivot pin.
49. Firing-lever spring.
50. Contact clip.
51. Contact-clip plug.
52. Contact-clip nut.
53. Firing cable.
54. Electric-cable terminal.
55. Firing-cable bracket.
56. Loading tray.
57. Loading-tray latch bolt.
58. Loading-tray latch-bolt spring.
59. Loading-tray latch-bolt nut.
60. Split washer for contact clip.

6-INCH GUN, MODEL OF 1905. (PAMPHLET NO. 1765.)

[Plate 30.]

The principal parts of the firing mechanism are the housing, slide, firing lever, firing leaf, safety plunger, ejector, and circuit breaker. The housing is screwed on the rear end of the obturator spindle. The housing does not rotate with the breechblock, due to the action of the spindle key. The slide has a horizontal movement in a groove in the housing, limited by the slide stop. The slide is operated entirely by hand and carries a handle for this purpose. The slide catch holds the slide in its firing position. The catch consists of a lever pivoted at the base of the handle. A hook on one end of the catch engages a shoulder on the housing. The hook is pressed forward by the slide-catch spring. The hook is disengaged from the shoulder by the pressure of the hand on the other arm of the catch in grasping the slide handle.

The firing lever, firing leaf, contact clip, and method of attachment of the firing cable are as described for 6-inch gun, model of 1903.

The safety plunger has a vertical movement in a slot cut in the spindle key and extended in the carrier. The upper end of the plunger carries a stud, which works in a groove in the spindle key to guide the plunger and limit its downward movement. The plunger is pressed downward by the plunger spring. When the breech is fully closed, the lower end of the plunger enters a notch cut in the surface of the gear segment. When rotation of the block in opening

the breech begins, the plunger is forced upward out of the notch. The upper end of the plunger now engages a shoulder on the firing lever, preventing any movement of the lever until the breech is again fully closed.

The circuit breaker housing is attached to the carrier by two screws. Two contact pins pass vertically through the housing and are held in place by the contact-pin nuts screwed on their lower ends. The lower ends of the pins are rounded. The firing cable is attached to contact pin "B" by a split pin with enlarged end and leads to the contact clip. The firing lead is attached to the contact pin "A." Both contact pins are insulated from the housing. The contact-pin housing is attached to the operating lever by two screws. Two contact plungers with rounded heads are forced upward in the housing by the plunger springs. The lower ends of the springs are supported by the contact plunger detent, which consists of a plate attached to the underside of the housing by a screw. The upward movement of the plungers is limited by the shoulder on the plungers. The housing and the housing screws are insulated from the operating lever. When the breech is closed, the contact plungers are carried by the operating lever under the contact pins, thus completing the firing circuit only when the breech is fully closed.

The ejector is pivoted in the housing by two trunnions. The left end of the ejector normally lies against the end of the spindle and partially surrounds the mouth of the vent. The right end of the exterior extends into the ejector groove in the front face of the slide. When the slide is moved to the right, the right end of the ejector is forced forward by the cam-shaped end of the ejector groove, causing the left end of the ejector, acting on the rim of the primer, to throw the primer from the vent.

Nomenclature for 6-inch gun, model of 1905.

1. Hinge ring.
2. Hinge-ring screws.
3. Breech bushing.
   3a. Breech-bushing securing screw.
4. Breechblock.
5. Block carrier.
   5a. Carrier stop.
6. Hub of carrier.
7. Stem of block.
8. Spindle-key groove.
9. Spindle spring.
10. Spindle key.
11. Carrier-latch catch.
12. Carrier-latch catch screw.
13. Carrier latch.
14. Carrier-latch spring.
15. Carrier-latch detent.
16. Carrier-latch detent pins.
17. Hinge pin.
18. Hinge-pin nut.
19. Hinge-pin nut pin.
20. Operating lever.
21. Operating-lever handle.
22. Operating-lever handle sleeve.
23. Operating-lever handle washer.
24. Operating-lever pivot.
25. Operating-lever pivot key.
26. Lever-latch bolt.
27. Lever-latch bolt spring.
28. Lever-latch housing.
29. Lever-latch housing screw.
30. Lever-latch bolt seat.
31. Operating link.
32. Operating-link pivot.

33. Rack.
34. Gear segment.
35. Fire-mechanism housing.
36. Slide.
37. Ejector.
38. Firing lever.
    38a. Firing-lever spring.
    38b. Firing-lever spring screw.
39. Lanyard loop.
40. Firing-lever pivot.
41. Firing-lever pivot pin.
42. Firing leaf.
43. Firing-leaf spring.
44. Firing-leaf pivot.
45. Firing-leaf pivot pin.
46. Contact clip.
47. Contact-clip plug.
48. Contact-clip nut.
49. Firing cable.
50. Firing-cable terminal.
51. Circuit-breaker housing.
52. Circuit-breaker housing screw.
53. Contact pin A.
54. Contact pin B.
55. Contact-pin nut.
56. Contact housing.
57. Contact-housing screw.
58. Contact plungers.
59. Contact-plunger springs.
60. Slide stop.
61. Slide-catch pivot.
62. Slide-catch pivot pin.
63. Safety plunger.
64. Safety-plunger spring.
65. Loading tray.
66. Tray latch.
67. Tray-latch spring.
68. Tray-latch stop screw.
69. Split washer for contact clip.

FIRING MECHANISM, MODEL OF 1903. (PAMPHLET NO. 1665 FOR GUNS. PAMPHLET NO. 1820 FOR MORTARS.)

USED ON ALL 8, 10, 12, AND 14 INCH GUNS AND 12-INCH MORTARS.

[Plate 31.]

The principal parts of the firing mechanisms are hinged collar, housing slide, and firing leaf. The hinged collar incloses the rear end of the spindle, two ribs on its inner surface engaging in corresponding grooves in the spindle. The housing screws over the hinged collar, which is threaded to receive it, and a spring catch locks the collar to the housing when it is fully screwed home. The collar is thus prevented from opening and secures the housing to the spindle. A guide bar projects from the right side of the housing into a longitudinal groove cut in the block recess and causes the housing to rotate with the block. The slide travels vertically in grooves formed in the housing, and when in its lowest position holds the primer in place in the primer seat. Its motion is limited by the slide stop on the left side of the housing. The slide catch serves to lock it in place when lowered and to support it at the proper height to allow the primer to be inserted when raised.

The ejector is an L-shaped piece with trunnions, about which it swings. The lower arm of this extractor is fork-shaped and hangs over the mouth of the primer seat under the head of the primer. An upper horizontal arm projects to the rear into a recess in the slide, and when the latter is lifted this arm is carried upward and the ejector rotated about its trunnions so as to throw the upper horizontal arm to the front, thus ejecting the primer.

The firing leaf is pivoted to the slide at its upper end. It has a vertical slot cut in its lower end through which the wire of the primer projects when the slide is in the lower or locked position. At the right-hand lower corner of the leaf is an eye into which the lanyard is hooked for friction firing. When the leaf is drawn to the rear, it engages the button on the end of the primer wire and draws the wire out and fires the primer.

Electric connection with the primer is made through the two brass arms of the contact clip which embraces the head of the primer. The contact clip is held in place by a nut which bears against the front face of the firing leaf. The electric cable terminal is made of a brass plate held to the contact clip by a clamping screw.

A safety bar prevents accidental firing of the piece by the lanyard before the breech is locked; and a circuit breaker serves to prevent firing the piece by electricity before the block is closed. The first motion of rotation of the block to unlock the breech forces the safety bar inward and downward so as to engage the leaf and prevent its being drawn to the rear, while at the same time the electric circuit is broken by the same motion of rotation. A spring latch is used to insure engagement of the safety bar and leaf in all positions except when the stud on the safety bar is in the cam groove.

A safety bar on the right side of the housing engages a groove in firing leaf and prevents the latter from being drawn to the rear before the breech block is rotated to its locked position. The last part of the motion of lowering the slide makes connection with the primer. It will be seen from this that accidental firing of the piece is impossible until the breech is locked and the slide of the firing mechanism is in its lower or locked position.

The circuit breaker is bronze and consists of two principal pieces which are brought together when the block is rotated to its locked position. A plunger working under pressure of a spring serves to make electric contact between the two pieces. Both parts of the circuit breaker are insulated from the piece by vulcanized fiber. The electric cable is attached to the circuit breaker by a clamp screw.

Do not attempt to use mechanism until it is absolutely certain that the collar has been screwed entirely home and locked. Be sure that the slide is entirely down before attempting to fire the piece, otherwise the primer may be blown to the rear, endangering the lives of the detachment.

To dismount the mechanism:

(*a*) To remove the mechanism from the spindle, draw the collar catch to the rear and unscrew the hinged collar.

(*b*) To remove the slide from the housing, draw the slide stop out to the left as far as it will go. The slide may then be lifted from the housing.

(*c*) To remove the firing leaf and slide catch from the slide, start the split pin which passes through the leaf pivot by pressing it against the bench or other surface and then draw it out. The pivot is then free to be removed, and its removal frees the leaf and slide catch from the slide.

(*d*) The collar catch may be removed by unscrewing the screw at the lower edge of the housing.

(*e*) The slide stop may be removed by unscrewing it from the housing with the wrench provided for that purpose. The slide stop should not be removed except when necessary to repair it or to replace a broken spring.

(*f*) The contact clip may be removed by unscrewing the nut from the front face of the firing leaf.

Lanyard safety attachment.—This is to prevent the firing of the piece by a pull, accidental or otherwise, upon the lanyard before the gun has risen to a firing position, that is, before it has been raised to such a height that the projectile will clear the parapet. It consists of an encased reel attached to the elevating band upon which a short cable is automatically wound by a spiral spring and locked, except when the piece is in battery, by a ratchet and pawl. One end of a short lanyard is hooked to the primer and the other to end of this cable. A pull on the lanyard when the gun is out of battery can not unwind the cable, pull the short lanyard, or fire the primer. When gun rises in battery, a cam on the elevating band passes under the pawl, lifts it out of engagement with the reel, which can then be unwound, permitting the primer to be fired.

The initial tension of the spring should be sufficient only to wind up the cable with lanyard attached. It may be adjusted by loosening the nut on the spring shaft, and with wrench on squared end of shaft (projecting from the center of the case), withdraw the locking pin and wind up or unwind the spring, returning the locking pin to one of the quarter-turn positions and tightening nut.

Electric safety-firing attachment.—The carriage is arranged to permit electric firing either individually (by a key on the sighting platform or one on the working platform) or in salvo (by a key in battery commander's station). To arrange for firing by whichever of these methods is desired, a double-pole, double-break, double-throw switch in the Signal Corps' outlet box is turned to the proper (indicated) position. This connects with a source of electrical power two of the four wires from this switch to the carriage, namely, either the two wires tapped directly into the power mains in the emplacement (for individual or "gun" fire) or the two wires leading back through the battery commander's firing key to the power mains (for battery or salvo fire). The latter two wires are led without any interrupting

switch or key to the "safety firing switch" on the left chassis (connecting with the front lug of the top carriage).

The former two wires are broken at the two firing keys on the carriage in such manner that the closing of either key closes the circuit; they then go to the safety firing switch. The switch is designed to break the circuit automatically as soon as the top carriage has recoiled. The firing circuit can not be reclosed at this point until the top carriage returns to battery (within 2.5 inches of its prescribed firing position). The circuit is not even then closed automatically, but is to be closed by the intentional act of a cannoneer after the gun is laid and otherwise ready to fire. Thus the battery commander can not fire the gun before the gun commander has completed the laying, etc., and is ready.

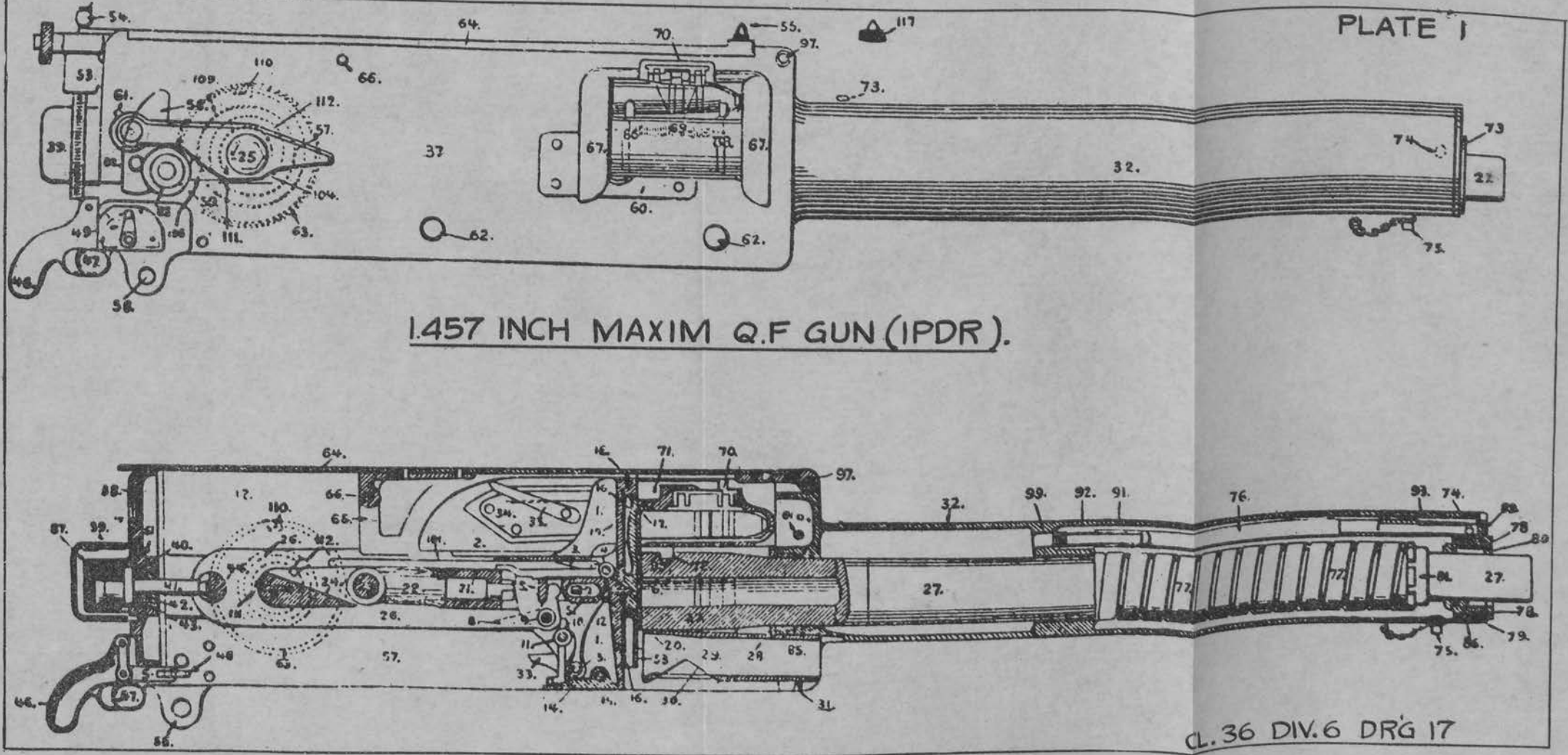
The safety firing switch is essentially a double-pole, single-break, single-throw knife switch, the body carrying the two knife blades being pivoted to the chassis and the double blades, or sockets for the knives to make contact with, being fastened to the lug of the top carriage. When the top carriage is in battery, the sockets are directly above the knife blades, and if the body is raised by hand until the blades engage in them the circuit will be closed at this point, and the spring grip of the sockets upon the blades will support the weight of the body and keep the contact made until the top carriage moves to the rear and releases the blades, when the body will swing downward upon its pivot on account of its own weight.

As long as the top carriage is not in battery, it is evident that contact can not be made, since the sockets are not within reach of the knife blades. Even when the top carriage returns to battery there is no tendency of the body to rise (against its own weight) and make contact so that it must be lifted by a man.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, May 28, 1915.

Form No. 1678.
Ed. May 28-15—2,500.

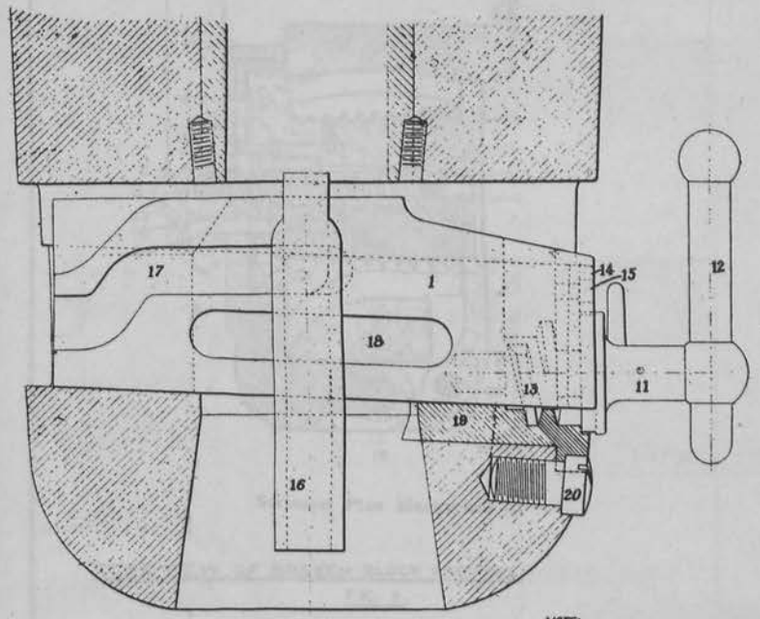
PLATE 1

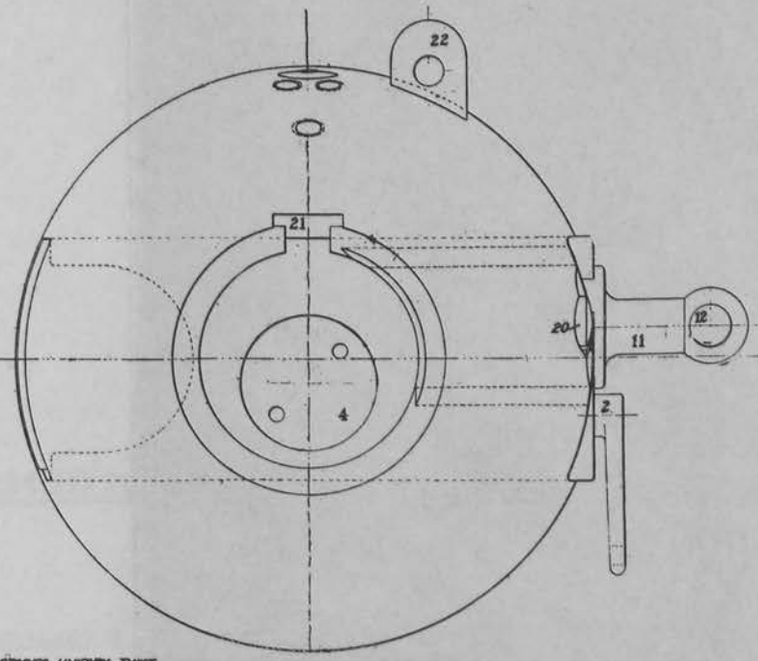


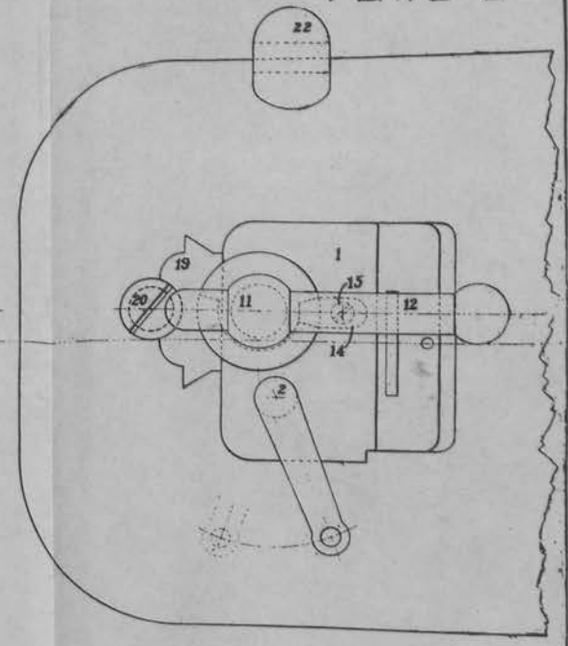
1.457 INCH MAXIM Q.F GUN (IPDR).

CL. 36 DIV. 6 DRG 17

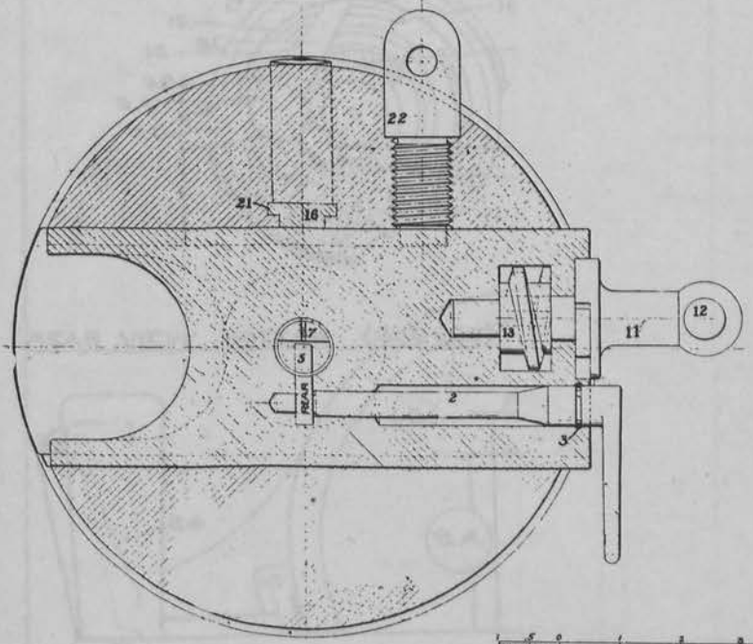
PLATE 2

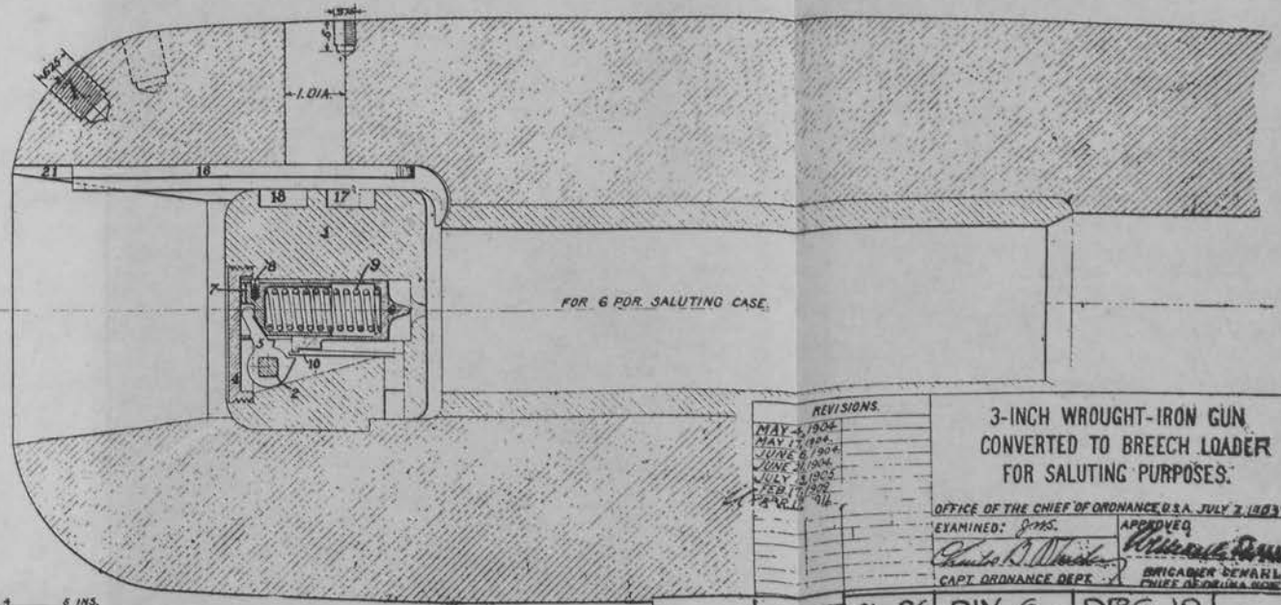






NOTE: THESE GUNS ARE RIFLED 7 GROOVES, UNIFORM TWIST, WIDTH OF GROOVES .5 INCH.







REVISIONS.
MAY 4, 1904
MAY 17, 1904
JUNE 6, 1904
JUNE 30, 1904
JULY 5, 1905
FEB. 1, 1909
MARCH, 1911

3-INCH WROUGHT-IRON GUN CONVERTED TO BREECH LOADER FOR SALUTING PURPOSES.

OFFICE OF THE CHIEF OF ORDNANCE U.S.A. JULY 2, 1903.

EXAMINED: [illegible]

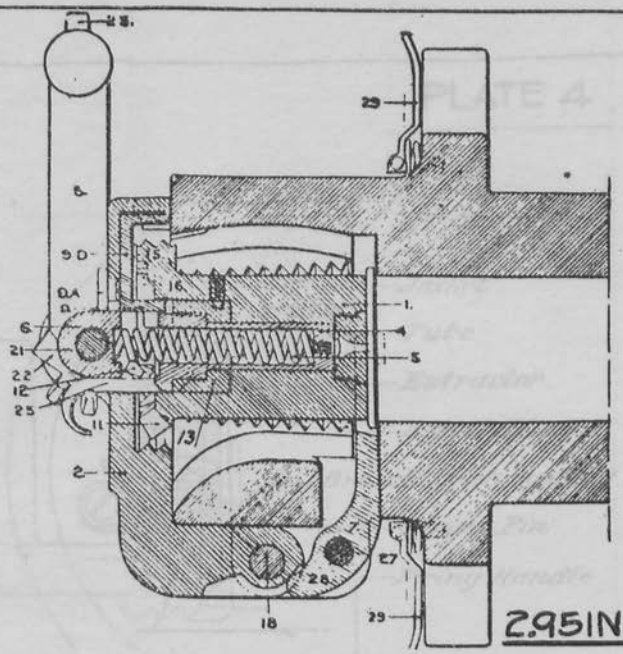
CAPT. ORDNANCE DEPT.

APPROVED

BRIGADIER GENERAL, CHIEF OF ORDNANCE.

CL. 36 | DIV. 6 | DRG 18

PLATE 3

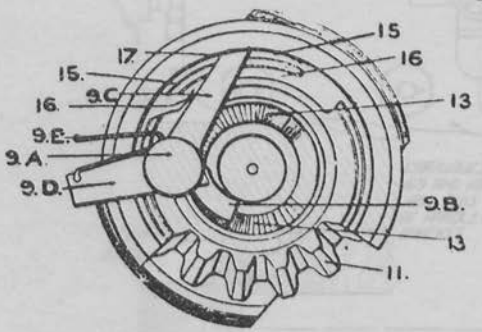


2.95IN. MOUNTAIN GUN

Sectional Plan Mechanism (closed).

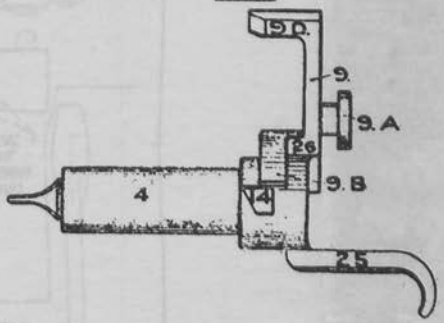
REAR VIEW OF BREECH BLOCK SHOWING SAFETY SEAR

FIG. 2

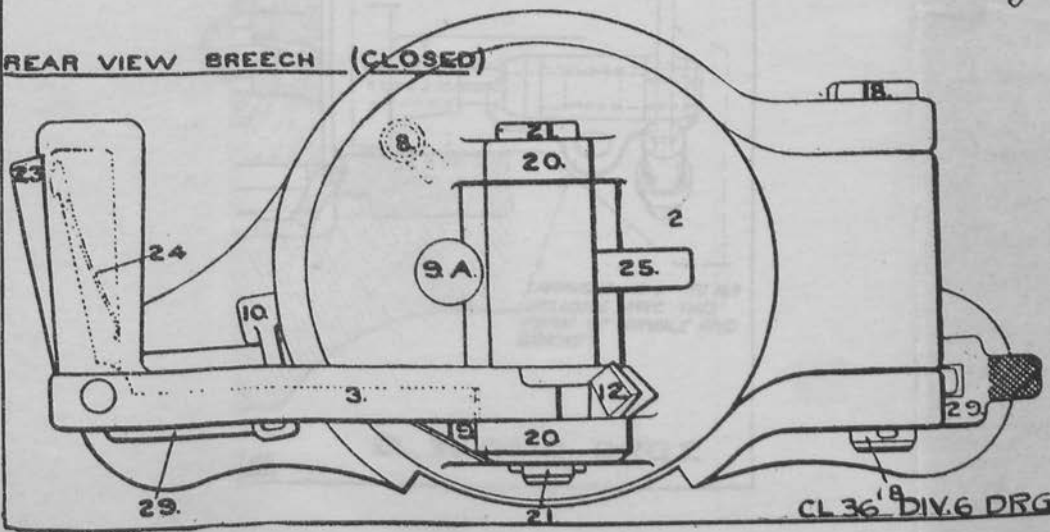


FIRING PIN AND SAFETY SEAR IN COCKED POSITION

FIG. 1



REAR VIEW BREECH (CLOSED)

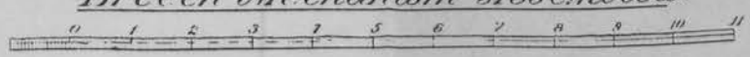


CL 36 DIV. 6 DRG 19

PLATE 4

3 Inch Field Gun, Model of 1902.

Breech Mechanism Assembled.

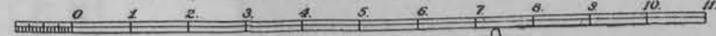


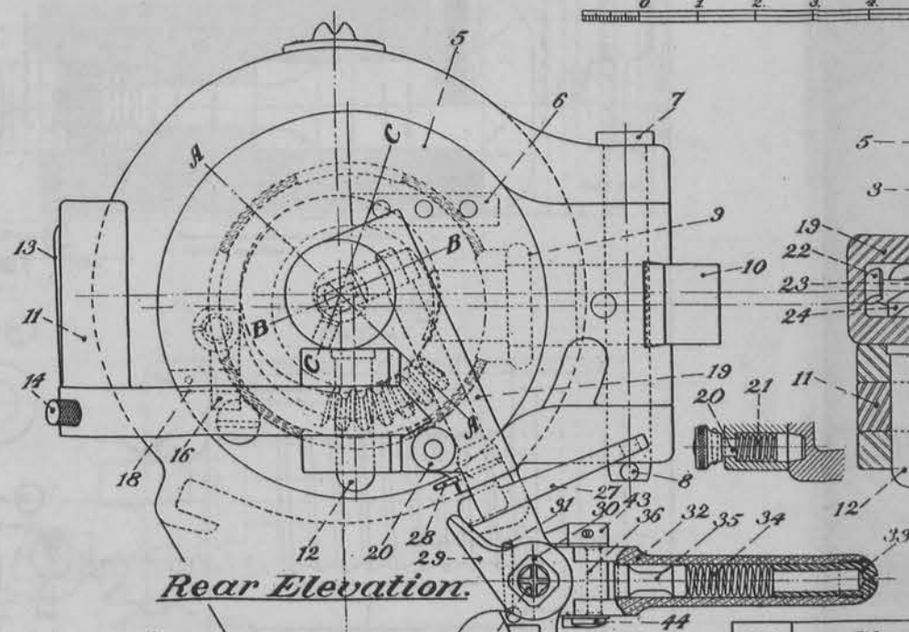
CL. 36 DIV. 2 DR'G 2

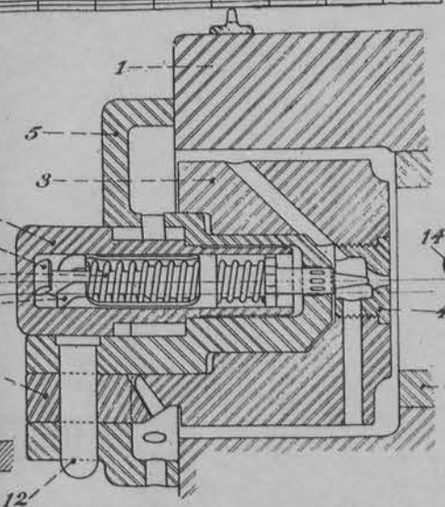
3 Inch Field Gun. Models of 1904 & 1905.

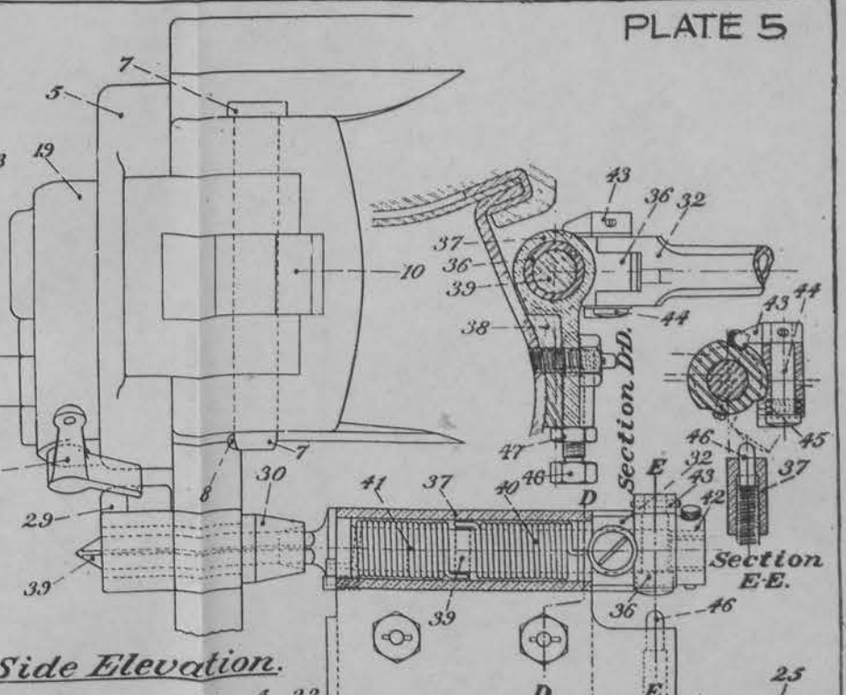
PLATE 5

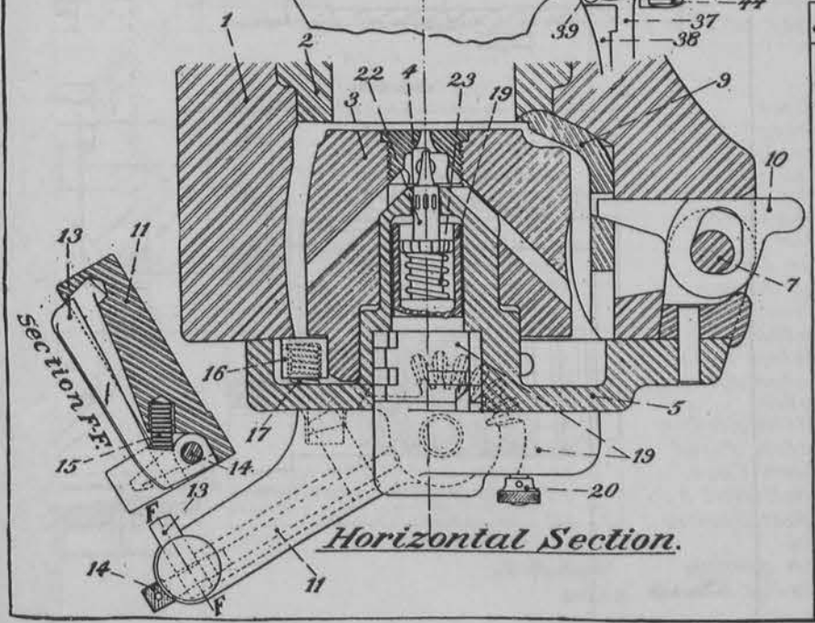
Breech Mechanism Assembled.



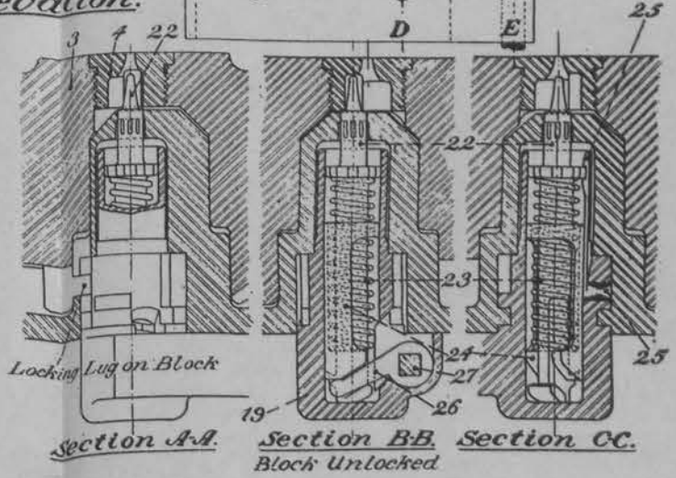








No.	Name of Part	No.	Name of Part
1	Jacket	26	Trigger Fork
2	Tube	27	Trigger Shaft
3	Breech Block	28	Trigger Shaft Detent
4	Vent Bushing	29	Firing Pallet
5	Block Carrier	30	Pallet Shank
6	Block Stop	31	Pallet Pin
7	Hinge Pin	32	Firing Handle
8	Hinge Pin Catch	33	Firing Handle Plug
9	Extractor	34	Firing Handle Spring
10	Extractor Lever	35	Firing Handle Plunger
11	Operating Lever	36	Firing Handle Hub
12	Lever Pivot	37	Firing Handle Bracket
13	Lever Latch	38	Bracket Seat
14	Lever Latch Pivot	39	Firing Handle Shaft
15	Lever Latch Spring	40	Handle Return Spring
16	Block Latch	41	Shaft Return Spring
17	Block Latch Spring	42	Tripping Collar
18	Block Latch Pivot	43	Trip Latch
19	Firing Lock Case	44	Trip Latch Plunger
20	Locking Bolt Nut & Pin	45	Trip Latch Spring
21	Locking Bolt Spring	46	Adjusting Screw
22	Firing Pin	47	Check Nut
23	Firing Pin Spring		
24	Firing Spring Sleeve		
25	Sear		



CL. 36. DIV. 2. DRS. 15.

Watervliet Arsenal, May 29th 1889.
REVISED FEB. 27, 1906

PLATE 6

3.2 INCH B.L. STEEL FIELD RIFLE.
MODEL OF 1885.

Breech Mechanism.
With the De Bange Gas Check
SECTIONAL ELEVATION.

Rear View.

Rear Sight Socket. (4A)

Section on "a a".

Latch Pin (4H)

Latch Cover (4J)

Carrier Ring (4M)

Rear View.

Front View.

Edges "a" of Carrier Ring rounded with a radius of 0.05 up to points marked "b"

Lever Handle (4K)
NOTE: FOR HANDLES USED ON GUNS HAVING AUTOMATIC VENT CLOSURES SEE DRG. DATED W.A. JAN. 4-1906. (52-37-10)

Rear View.

Screw for Bronze Handle. (4Q)

Gas Check Cups to be ground to seat.

Gas Check Cups Double Size
One Front (4B1) One Rear (4C1)

Obturator. (4D)

Spline Screw. (4E)

Obturator Spring (4F)

Lever Handle Pin. (4L)

Breech Block. (4S)
Top View.

Side View.

Section through Locking Hole.

Scale

For the Board
Charles Shaler

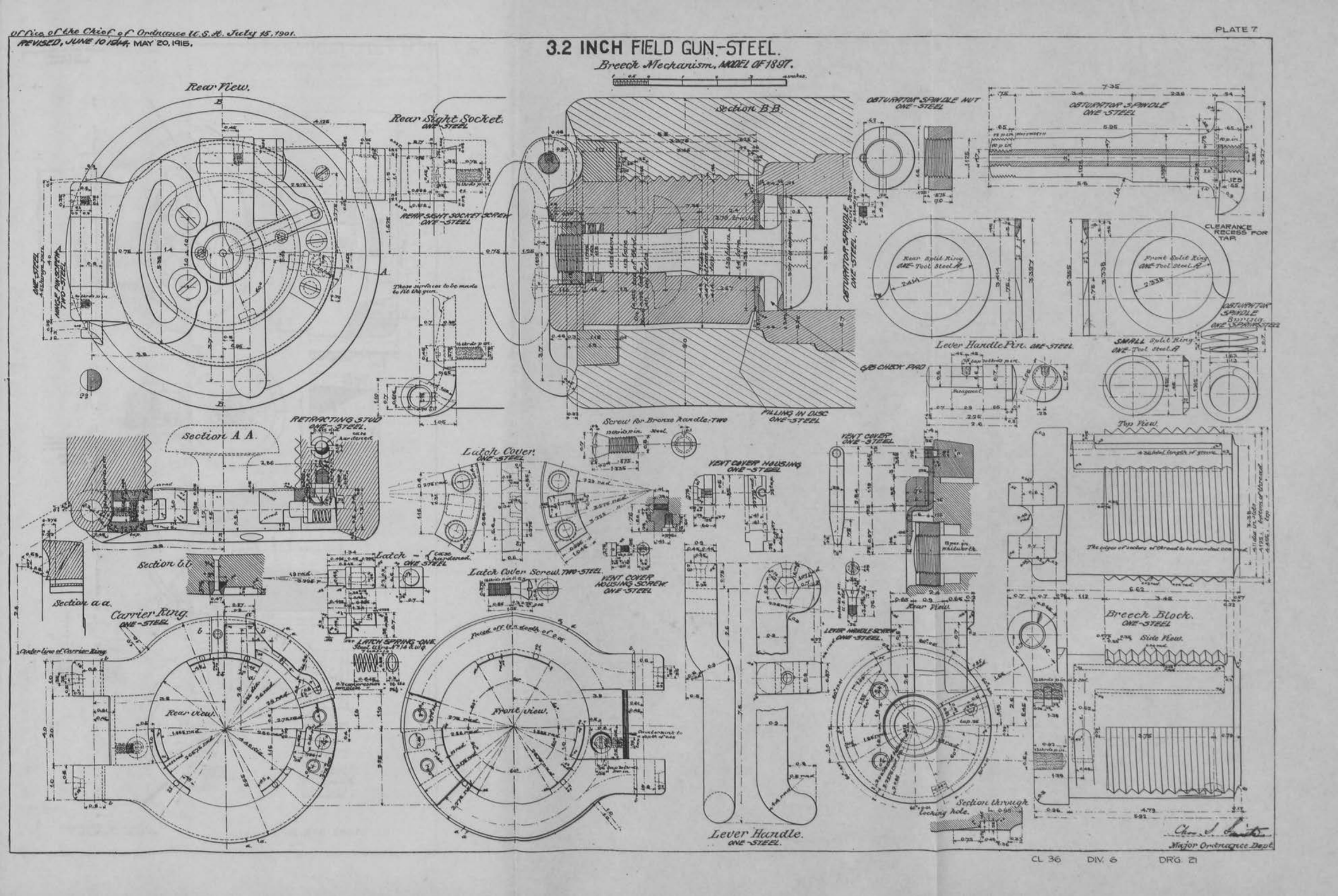
CL 36 DIV 6 DR'G 20

Office of the Chief of Ordnance U.S.A. July 15, 1901.
REVISED, JUNE 10 1914. MAY 20, 1915.

PLATE 7

3.2 INCH FIELD GUN.-STEEL.

Breech Mechanism, MODEL OF 1897.



Chas. J. Crozier
Major Ordnance Dept.

CL 36 DIV. 6 DRG. 21

Watervliet Arsenal Aug. 7th 1896.

PLATE 8

Revised. May 15, 1899. Item for main rod.
May 3, 1902.
June 8 1904

3.6 INCH FIELD MORTAR, STEEL – 245 LBS

Breech-Mechanism. Steel

MODEL 1890

Section A-B

YENT COVER WASHER TWO-STEEL

YENT COVER ONE-STEEL

OBTURATOR SPINDLE NUT ONE-STEEL

OBTURATOR SPINDLE ONE-STEEL

OBTURATOR SPINDLE SPLINE SCREW ONE-STEEL

Gas-check, RING ENLARGED ONE-STEEL

This surface to be finished so as to form a stop for the swing of Carrier ring as shown on Sheet 1.

CHAMFER RING ONE-RING

LOCK BOLT-CAST STEEL ONE-HARDENED

YENT COVER HANDLE ONE-STEEL

LOCK BOLT SET SCREW TWO-STEEL

BREECH BLOCK ONE-STEEL

LATCH COVER ONE-STEEL

STOP ONE-STEEL

PAWL ET-STEEL, hardened.

HINGE ONE-STEEL

YENT COVER SCREW TWO-STEEL

OBTURATOR SPINDLE SPRING SPRING STEEL-SPRING TEMPER ONE

Latch and Stud to be case hardened

BLOCK HANDLE TWO-STEEL

BLOCK HANDLE COVER TWO-STEEL

HINGE PIN SCREW TWO-STEEL

LATCH ONE-STEEL

HINGE SCREW TWO-STEEL

LATCH SPRING ONE

RETRACTING STUD ONE-STEEL

Approved

Brigadier General,
Chief of Ordnance.

CL 36 DIV 6 DRG 22

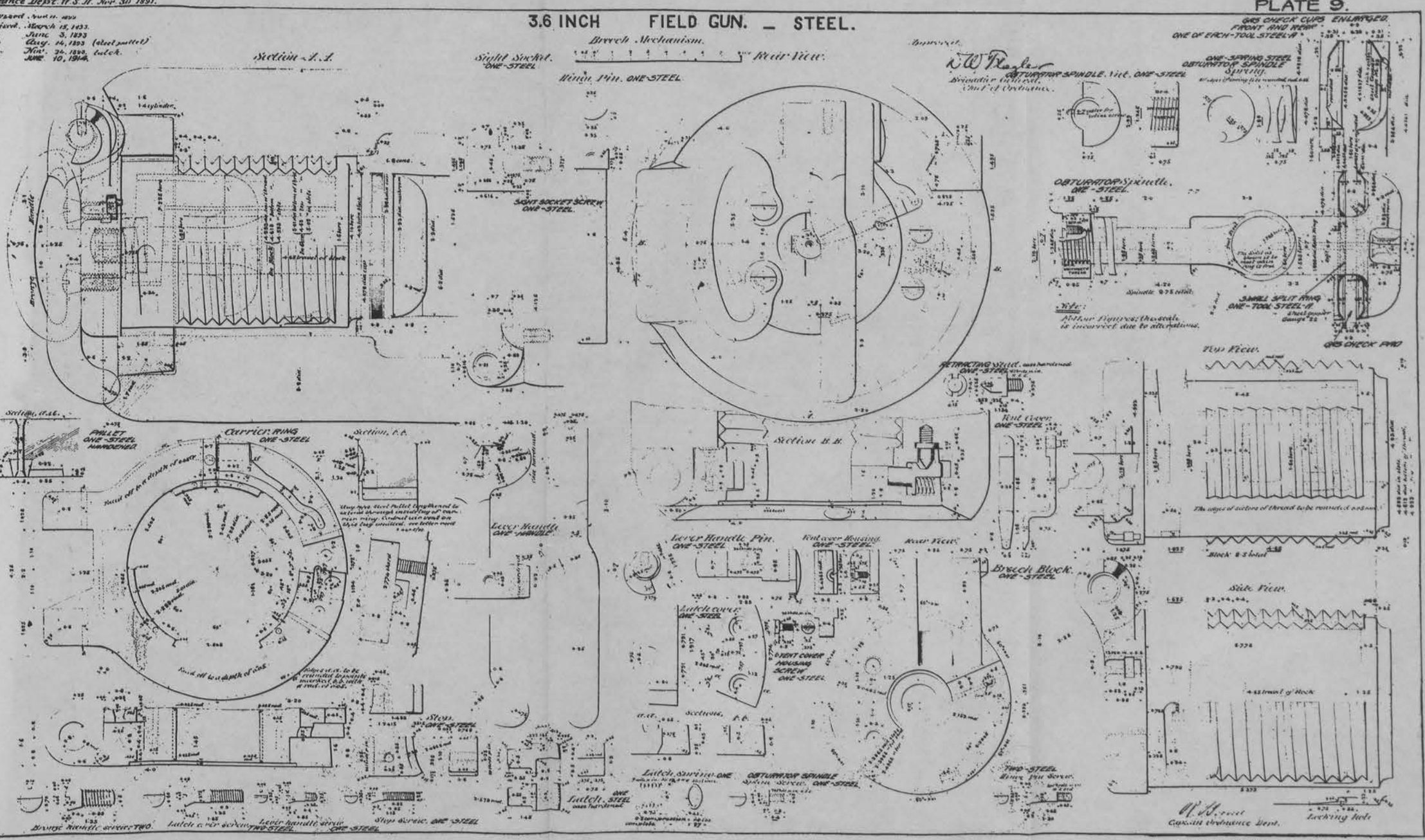
54 1 Fig 3

Bureau Dept. U.S.A. Nov. 30 1891.

PLATE 9.

3.6 INCH FIELD GUN. — STEEL.

Issued. June 11, 1892.
Revised. March 15, 1893.
" June 3, 1893
" Aug. 14, 1893 (steel pallet)
" Nov. 26, 1895. Lock.
" JUNE 10, 1914.



CL 36 DIV. 6 DRG 23

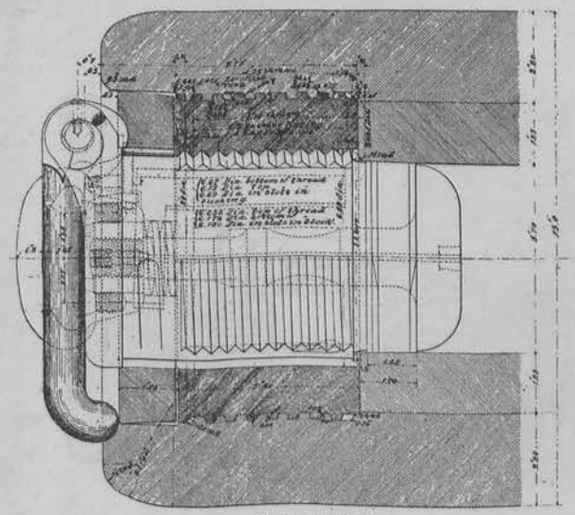
Watervliet Arsenal, Aug. 14, 1896.
REVISED SEPT. 1, 1903.
" APRIL 10, 1910.
" JUNE 11, 1914.

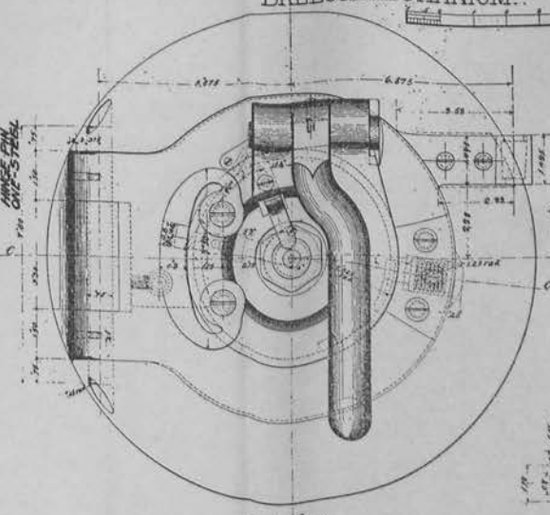
PLATE 10

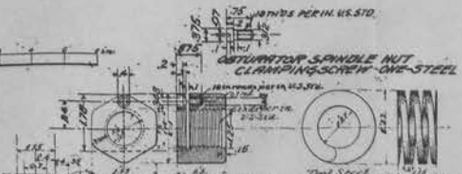
5 INCH B.L. SIEGE GUN

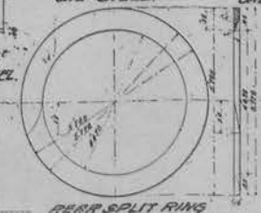
MODEL 1890.

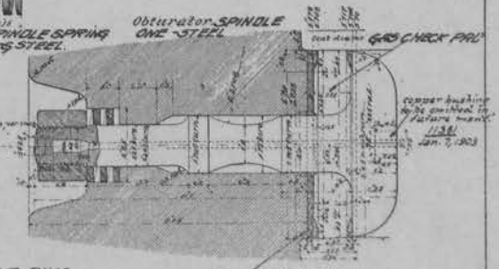
BREECH MECHANISM.

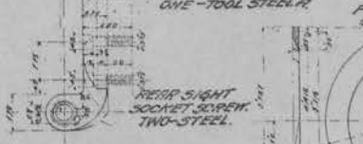


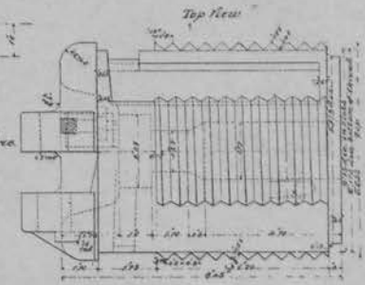


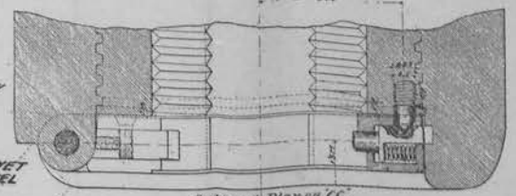


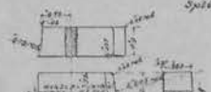




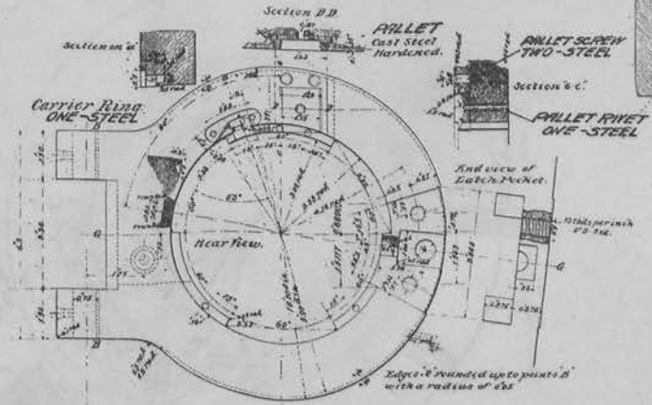


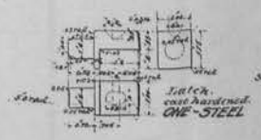


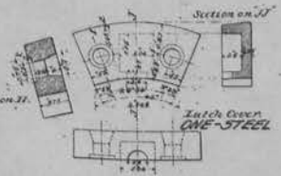


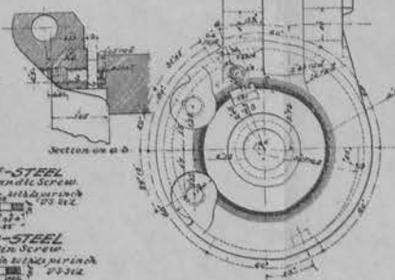


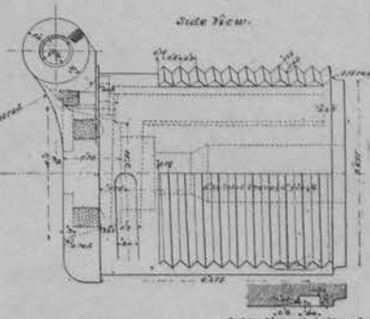


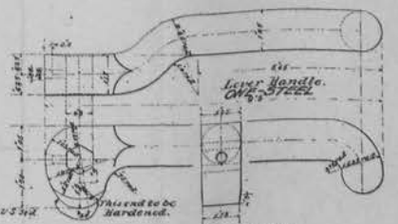


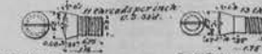


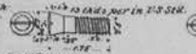






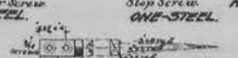


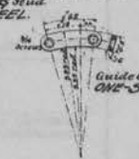






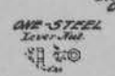


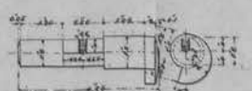


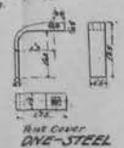




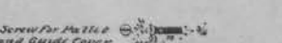












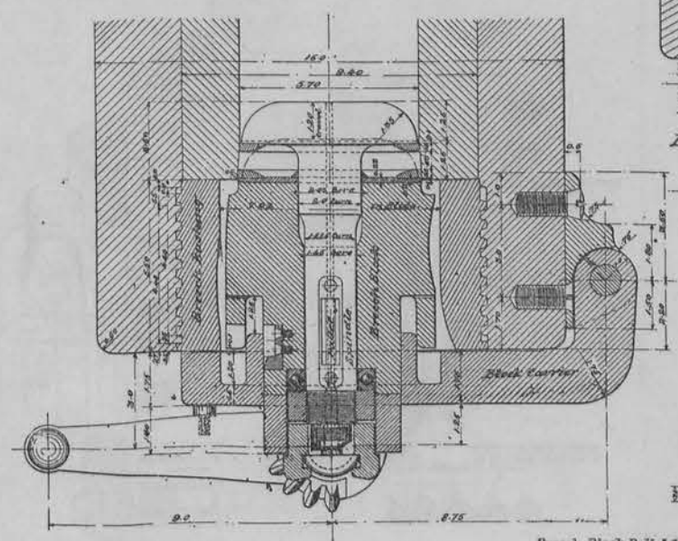
Approved:

Brigadier General,
Chief of Ordnance.

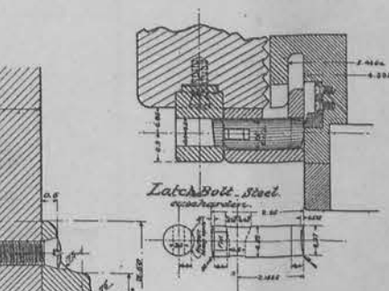
Major Ordnance Dep't, U.S.A.
Commanding.

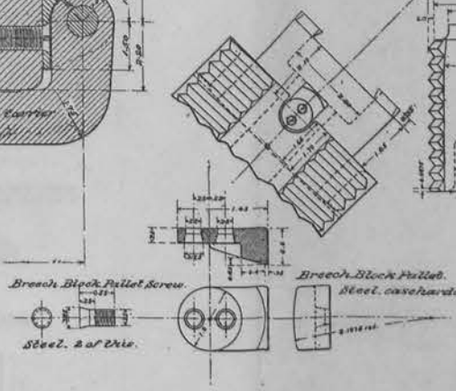
CL. 36 DIV 6 DR'G 24

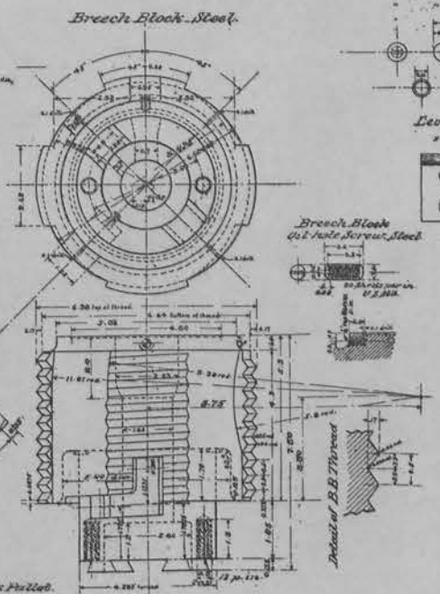
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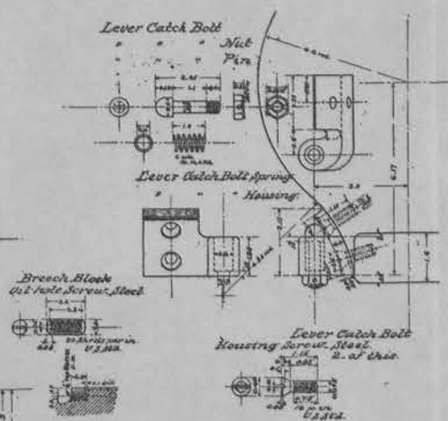


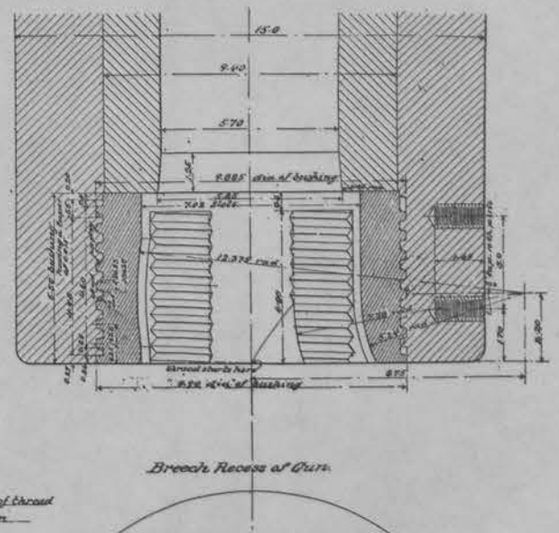
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(translation) = 1.1375
total = 1.20

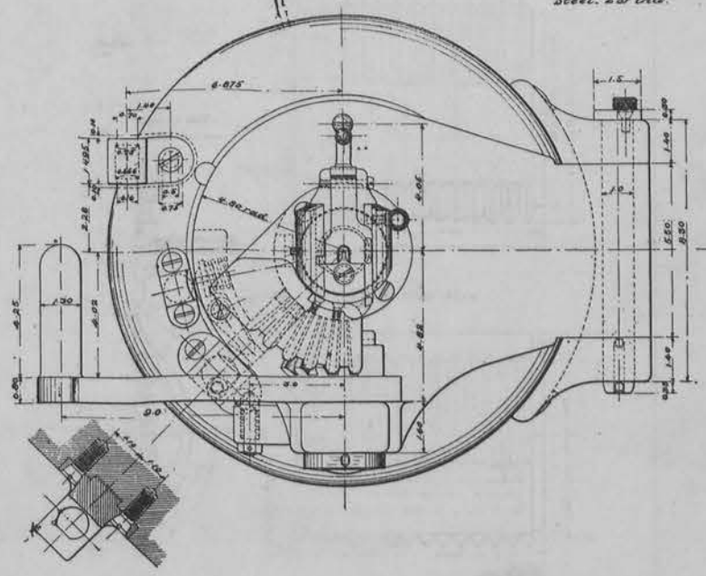


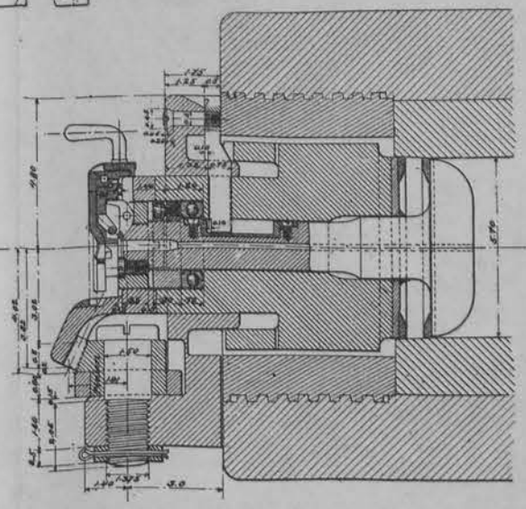


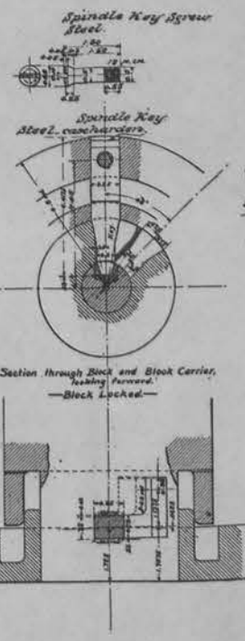


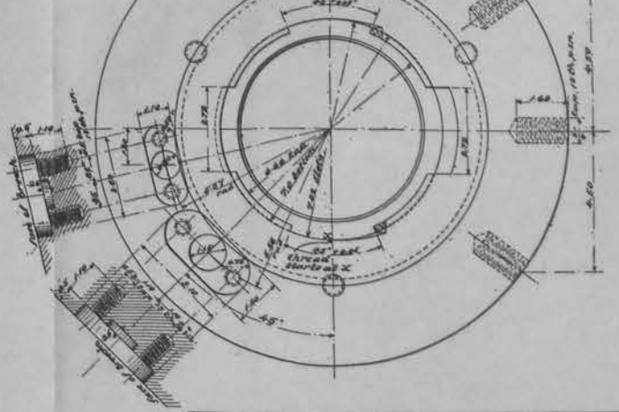












Revisions
Dec. 6. 1902
JAN. 7. 1903
May 20. 1903
July 28, 1903 35524-20

5 INCH B. L. SIEGE RIFLE MODEL 1898.

Stockett Breech Mechanism.

Watervliet Arsenal U.S.A. Mar. 4th 1902.

Examined F.A. — Approved:

Colonel, Ordnance Dept., Commanding. — Brigadier General, Chief of Ordnance.

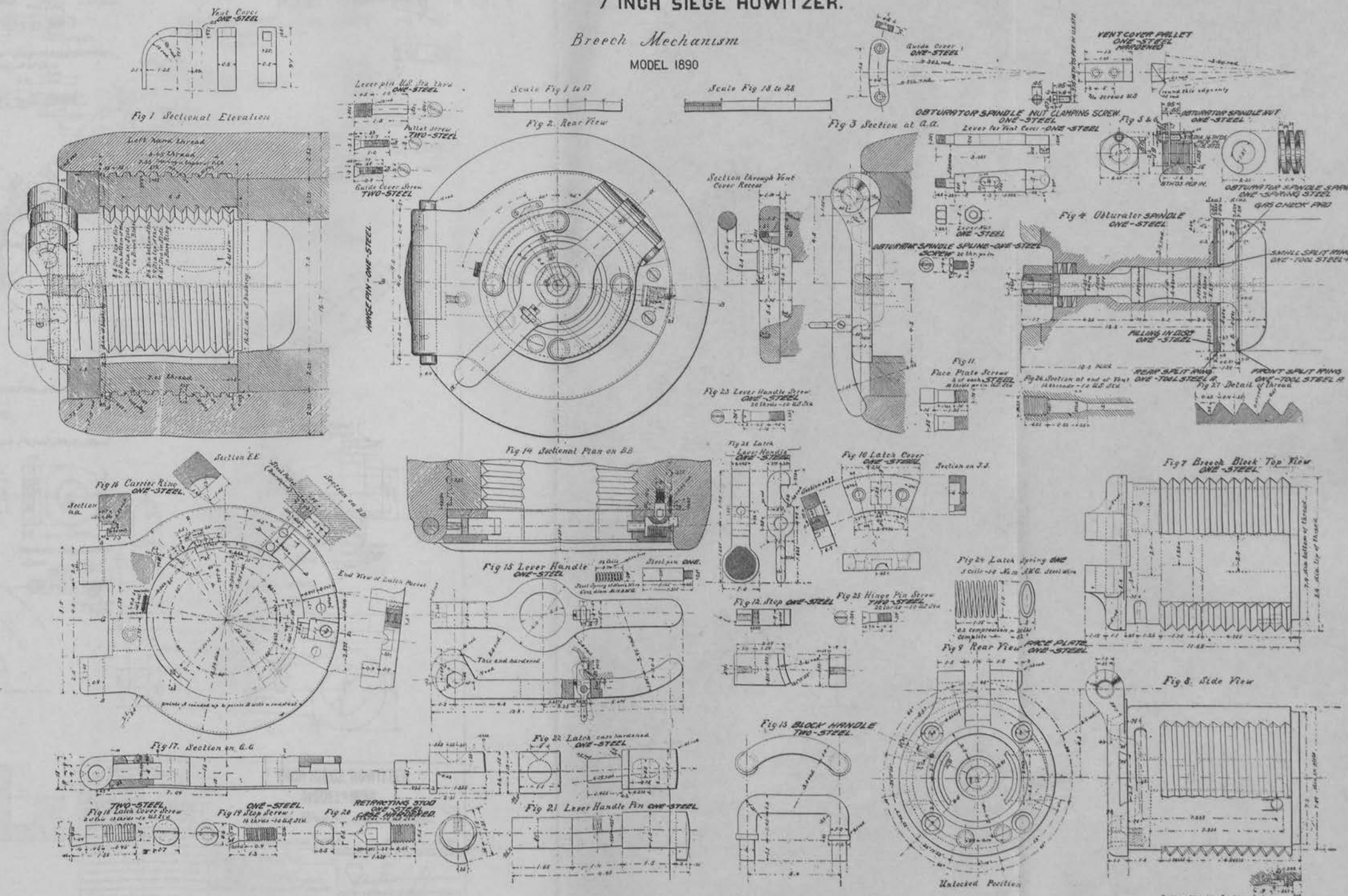
CL. 36 DIV. 6 DRG. 25

Watervliet Arsenal Aug 20, 1896
REVISED APR. 26, 1910.
REVISED, JUNE 10, 1910.

7 INCH SIEGE HOWITZER.

Breech Mechanism

MODEL 1890



Brigadier General,
Chief of Ordnance.

Class	Revision	Drawing	Page

Breech Block. Steel.

Firing Leaf Stop Steel. Case harden.

Firing Leaf Stop Screw Steel. 2 of this.

Gear Segment Screw Steel. 2 of this.

Gear Segment. Forged Steel C. 40 teeth in complete gear. Involute.

Gear Segment Pallet Steel. Case harden.

Gear Segment Pallet Screw. Steel. 2 of this.

Lock-bolt. Steel. case harden.

Breech Block Oil hole Screw. Steel.

Breech Block Pallet. Steel. Case harden.

Breech Block Pallet Screw. Steel. 2 of this.

Pinion Pivot Split Pin. Steel.

Pinion Pivot. Steel.

Pinion Pivot Nut. Steel.

Pinion. Forged Steel C. 20 teeth in complete gear.

Top view. Unlocked position.

Spindle Key. Steel.

Spindle Key Screw. Steel.

Lever. Steel.

Lever Stop. Steel.

Travel of Block (rotation) = 90° - 00' 25"
" " (translation) = 53° 1.56875"
total 1.65"

Revisions
DEC. 8. 1902.
JAN. 7. 1903.
Mar. 30. 1903.
July 29. 1903. 35529-30
NOV. 11. 1909.
JUNE 18. 1910.

7 INCH SIEGE HOWITZER MODEL 1898

Stockett Breech Mechanism.

Watervliet Arsenal, U.S.A. May 3. 1902.

Examined F.L.

Colonel, Ordnance Dep't. Commanding.

APPROVED BY ORDER OF THE CHIEF OF ORDNANCE

CHIEF OF ORDNANCE DEPARTMENT U.S.A.

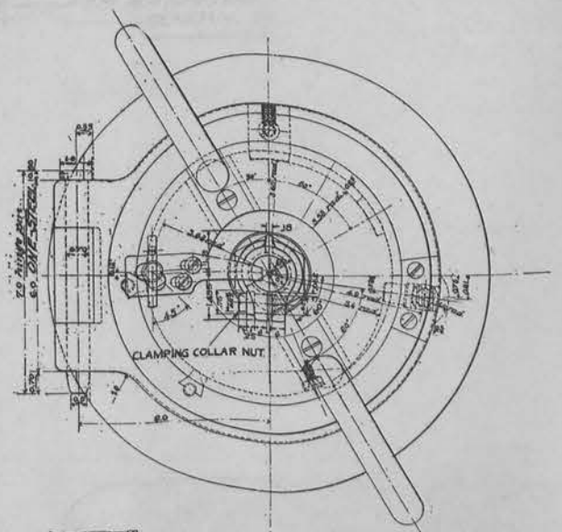
CL. 36 DIV. 6 DR'G. 27

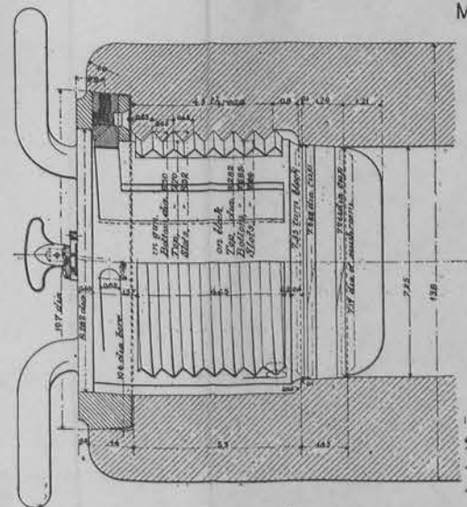
Watervliet Arsenal, Aug. 11th 1896 7 MA 4
Revised Nov. 15th 98 - 17586/43 Exact pattern sheet.
Revised March 20, 1900 - 17586/46 3rd Ed.
" Nov. 3. 1903. Verif
" JUNE 8 1914.
" OCT. 12, 1914.
" MAR. 13, 1915.

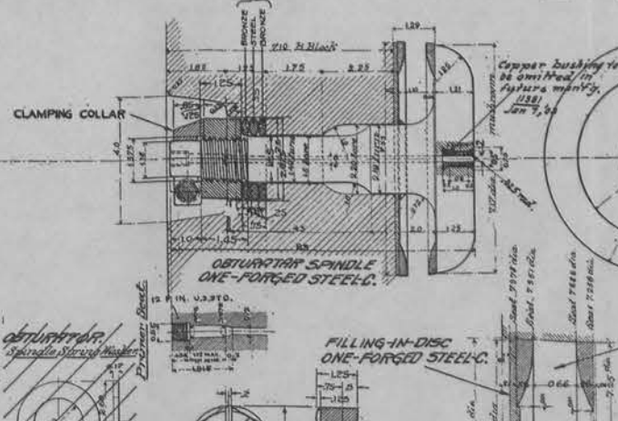
7 INCH SIEGE MORTAR.—STEEL.

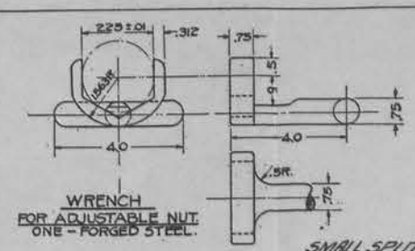
Breech Mechanism.

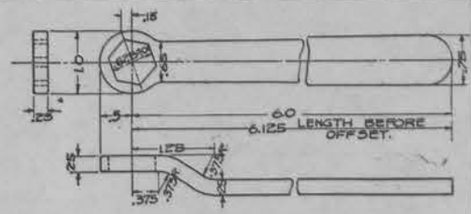
MODEL 1892

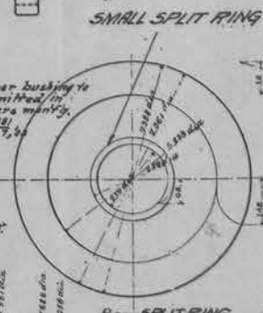


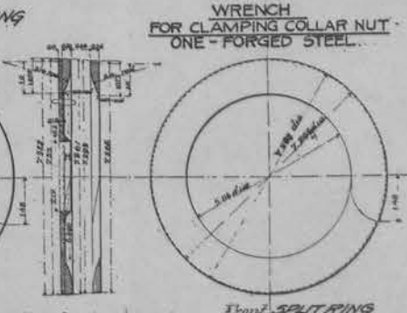




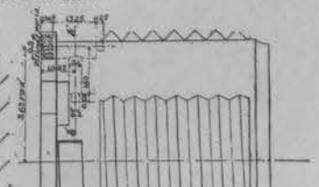


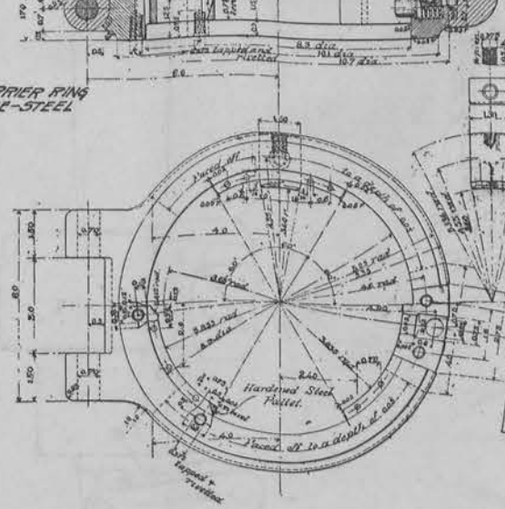


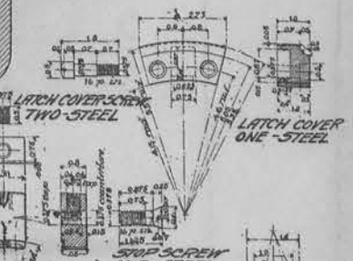


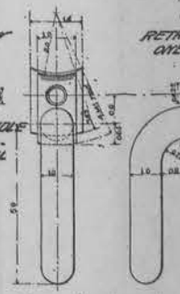


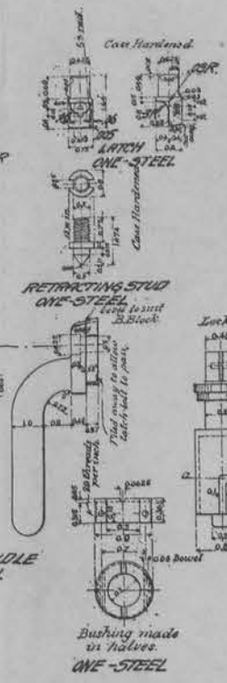


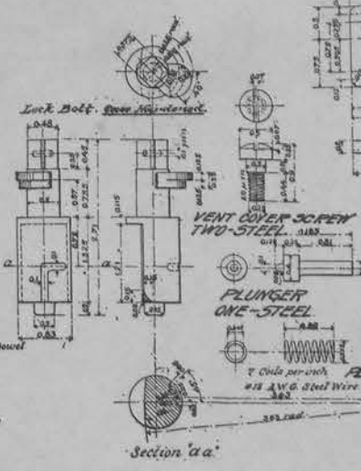


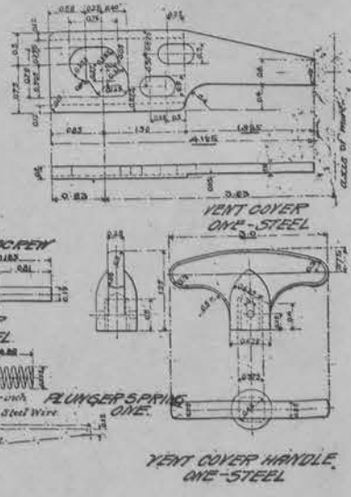


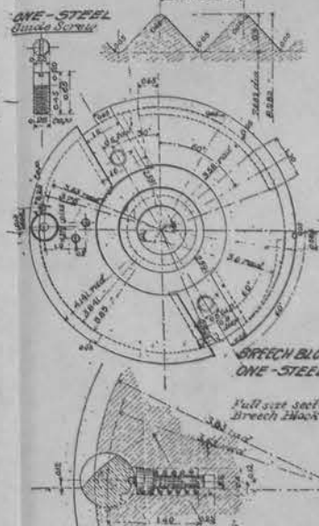












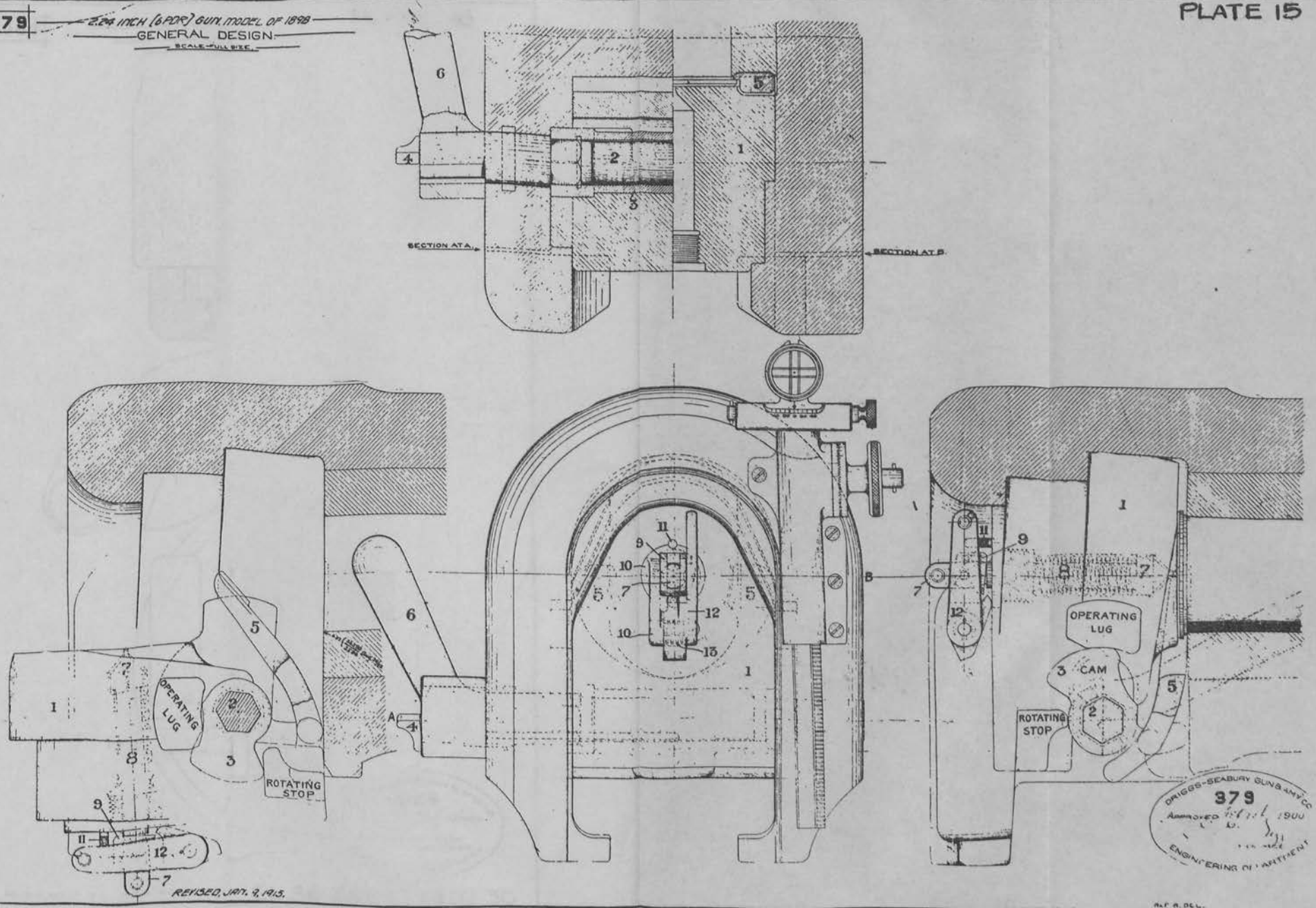
Approved:
D. W. Ryder
Brigadier General,
Chief of Ordnance.

Lucius Ashley
Major Ordnance Dept. U.S.A.
Commanding

CL.38 DIV.6 DRG 28

379 — 2.24 INCH (6 PDR) GUN MODEL OF 1898 — GENERAL DESIGN — SCALE—FULL SIZE.

PLATE 15



CL 36 DIV. 6 DR'G 29

PLATE 16

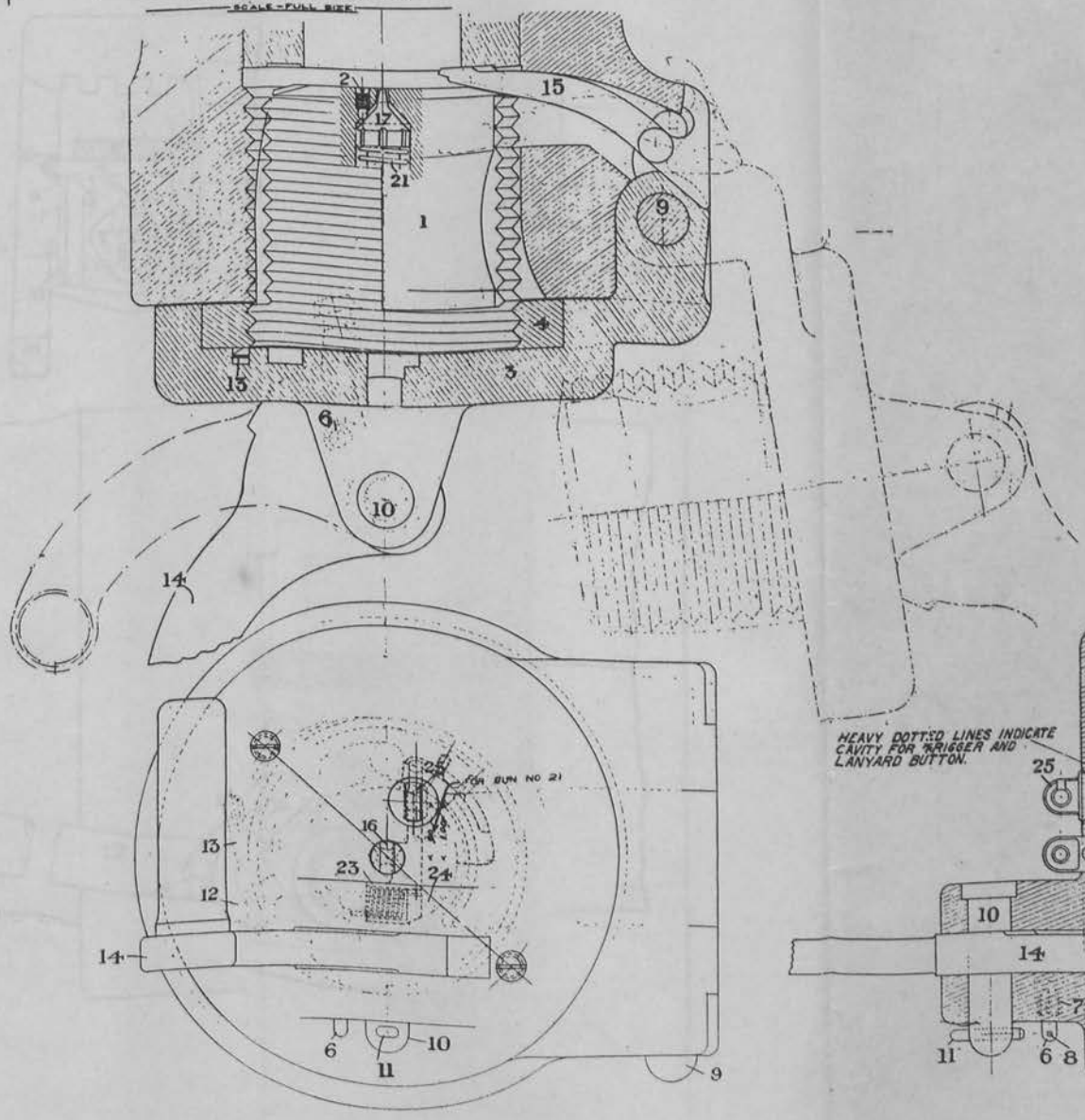
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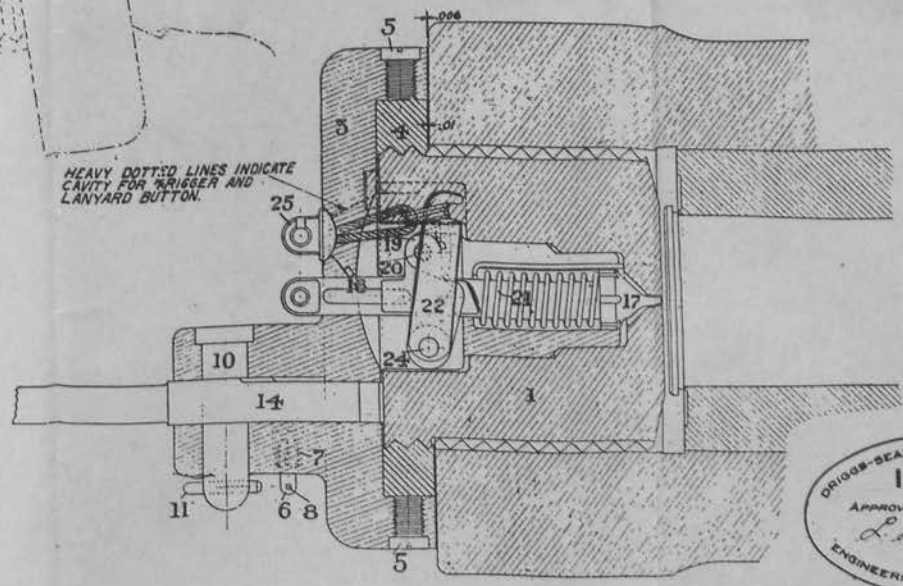
2.24 INCH (6 PDR) GUN, MODEL OF 1900.

BREECH MECHANISM.

SCALE - FULL SIZE.

FOR GUNS NO 21 TO 60 INC





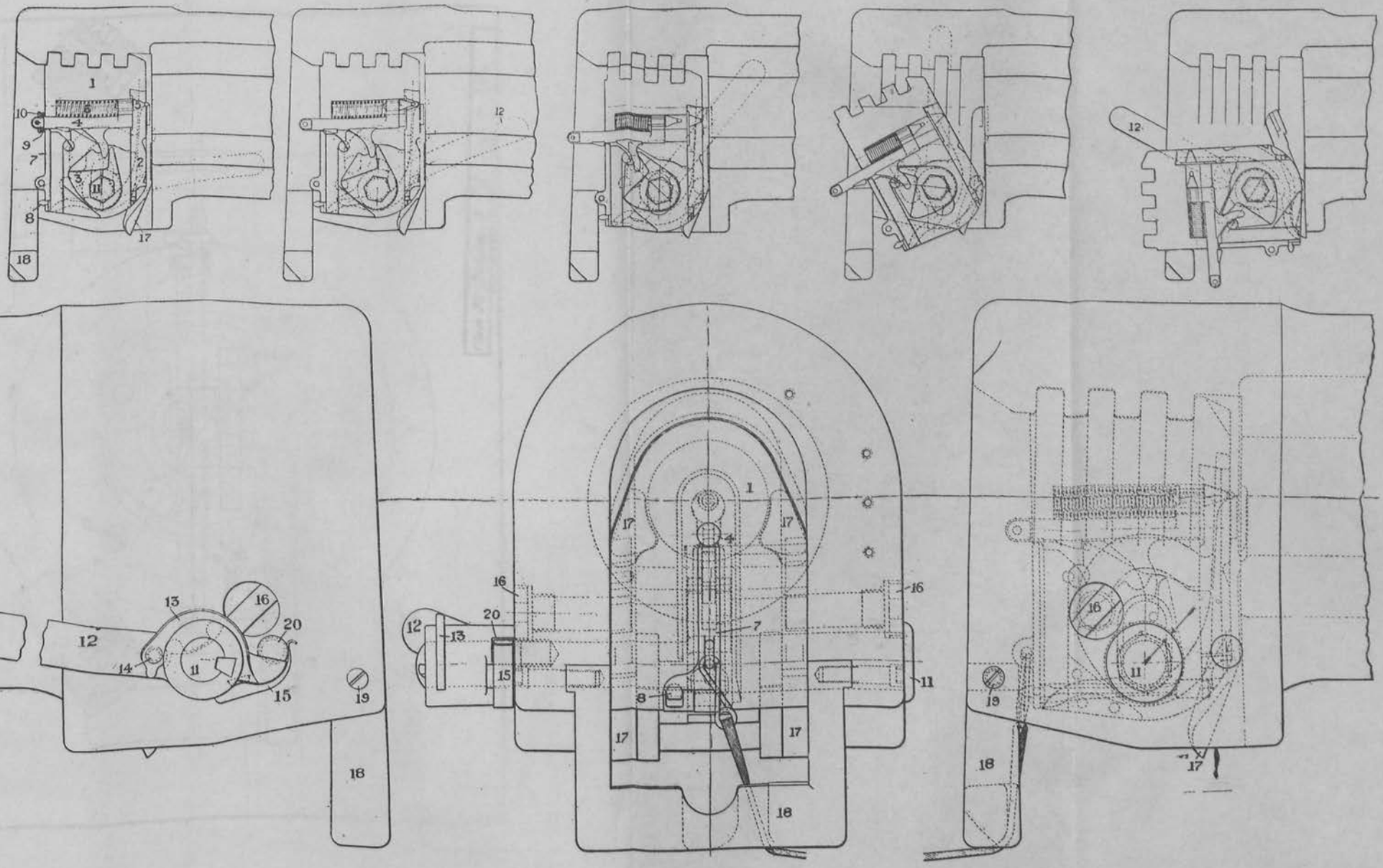
DRIGGS-SEABURY GUN & ARM CO.
1066
APPROVED, Mch 6th 1901.
L. L. Driggs
VICE PRES'T.
ENGINEERING DEPARTMENT.

REVISED DEC 10 1903 - JUNE 4, 1931 JUNE 13 1901, JAN 5, 1906 - MAR 19, 19.. - MAY 5, 1906 - DEC 4, 1906. APR 2 1914. JAN. 9, 1915.

CL 36 DIV. 6 DRG 30

2.24 INCH (6PDR) GUN MK III

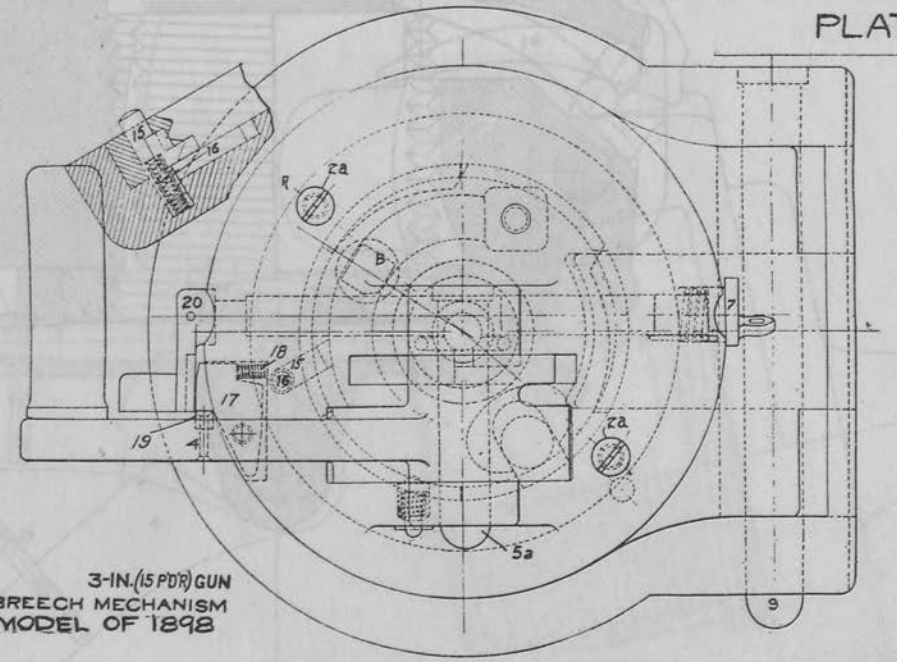
PLATE·17



REVISED JAN. 9 1915.

CL. 36 DIV. 6 DRG 31

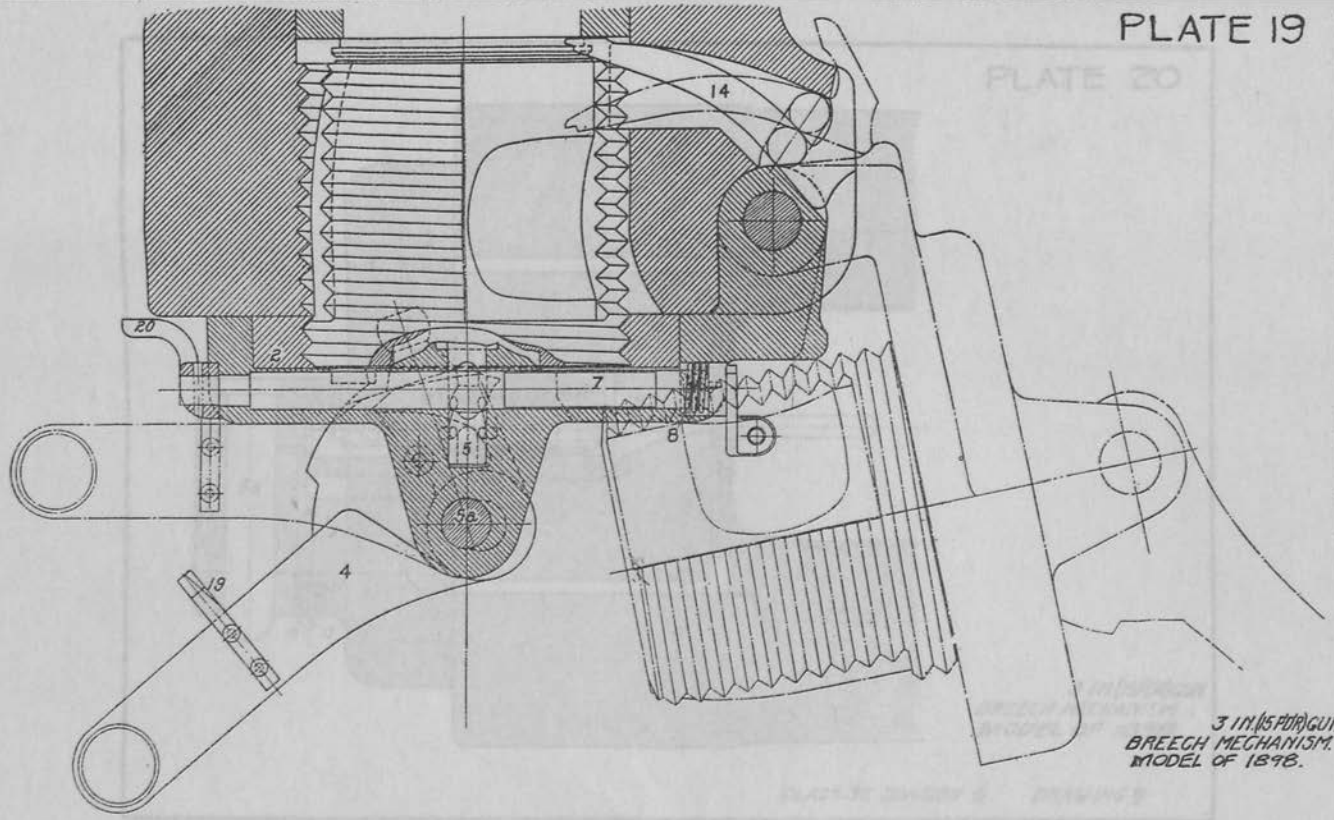
PLATE 18



3-IN. (15 PDR) GUN
BREECH MECHANISM
MODEL OF 1898

Class 36 | Division 6 [illegible] | Drawing 7 | File

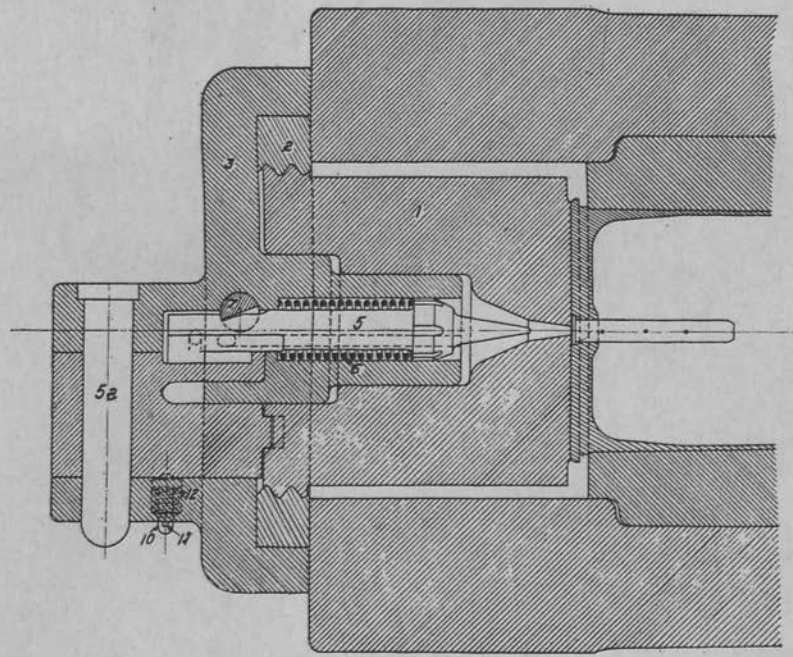
PLATE 19



3 IN. (15 PDR) GUN
BREECH MECHANISM.
MODEL OF 1898.

CLASS 36 DIVISION 6 DRAWING 9

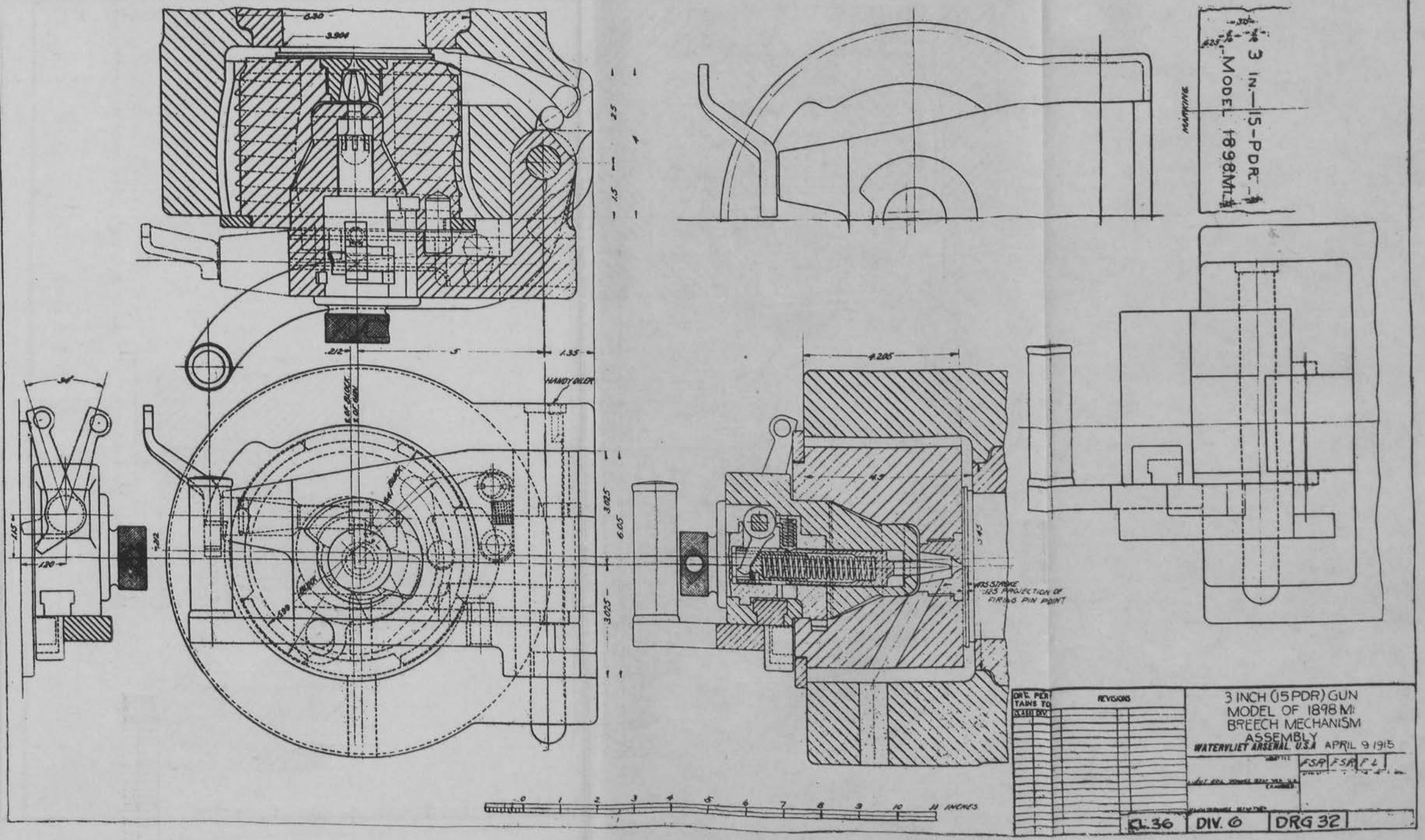
PLATE 20



3 IN. (15 PDR) GUN
BREECH MECHANISM
MODEL OF 1898.

CLASS 36 DIVISION 6 DRAWING 8

PLATE 21



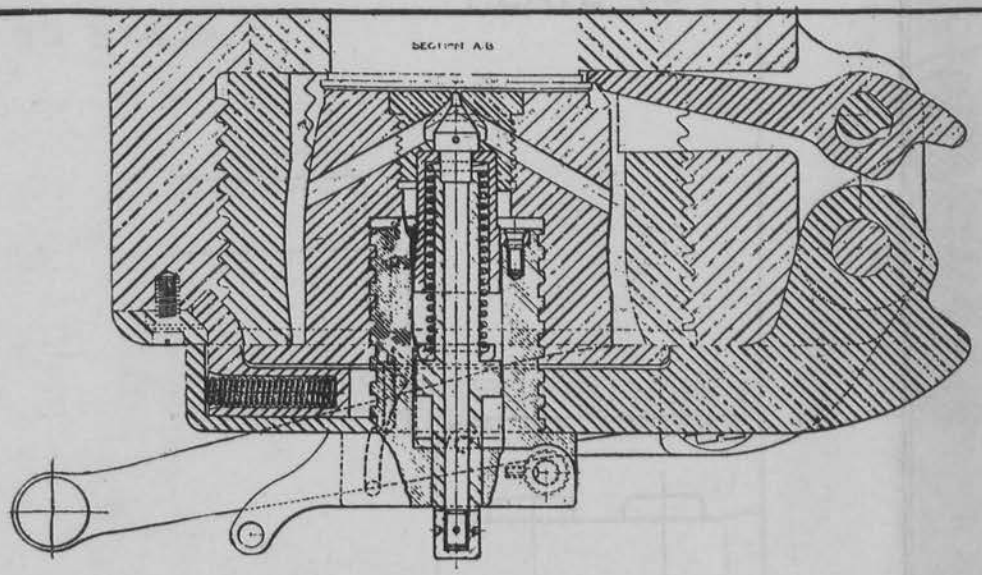
REVISIONS

3 INCH (15 PDR) GUN
MODEL OF 1898 M1
BREECH MECHANISM
ASSEMBLY
WATERVLIET ARSENAL, U.S.A. APRIL 9 1915

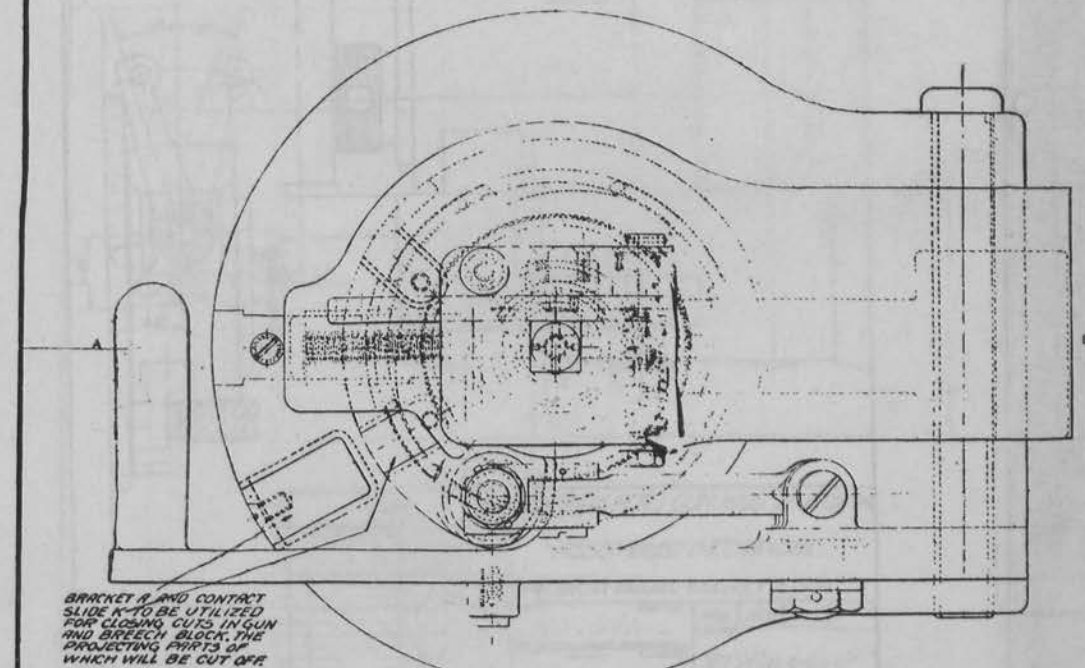
FSR FSR F L

EL 36 | DIV. 6 | DRG 32

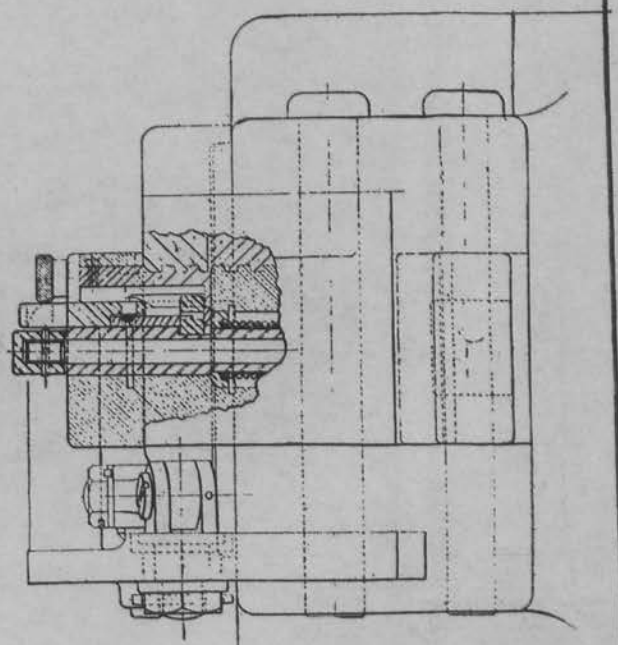
PLATE 22



3 INCH (15 PDR) GUN
MODEL OF 1902

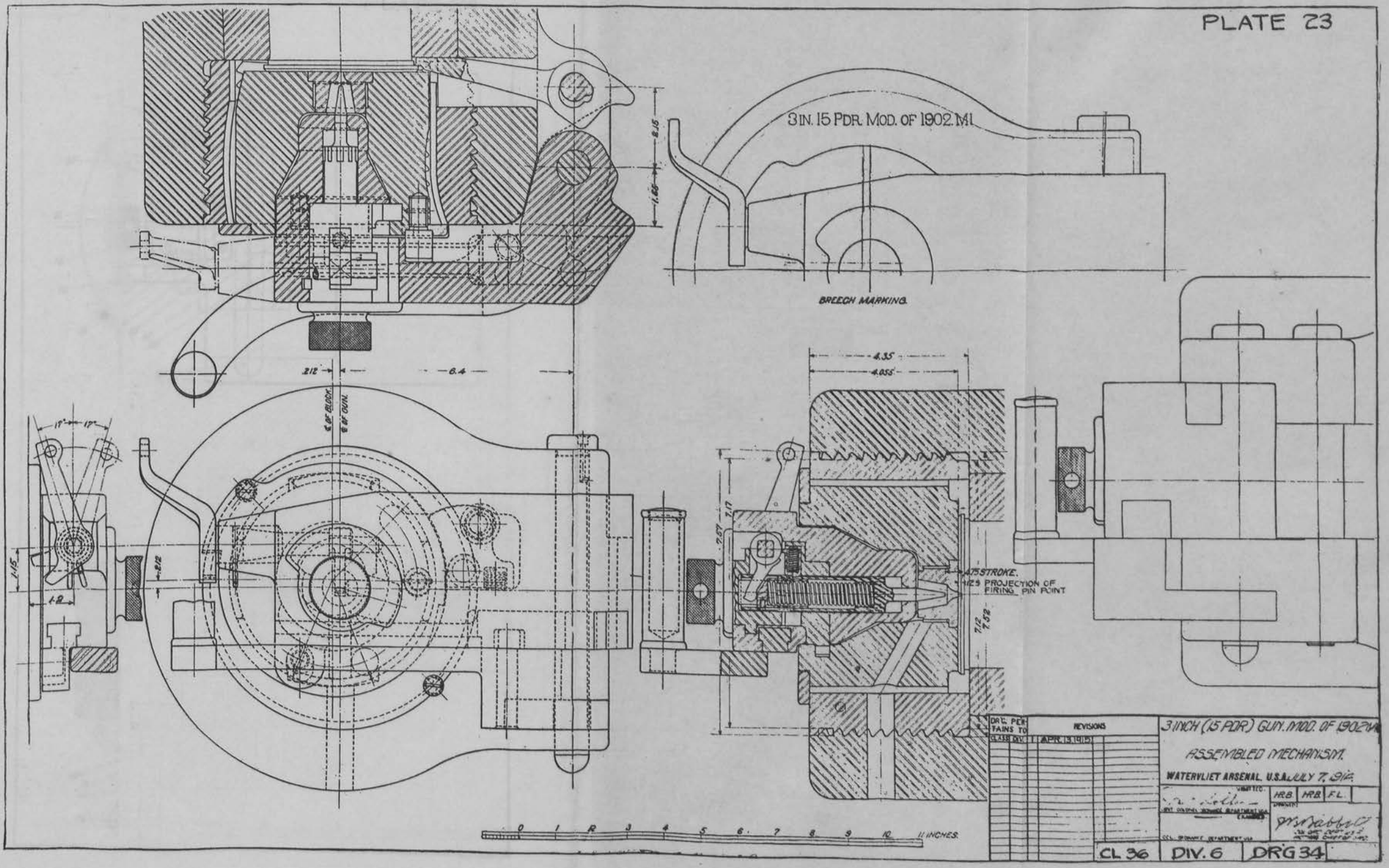


BRACKET A AND CONTACT SLIDE K TO BE UTILIZED FOR CLOSING CUTS IN GUN AND BREECH BLOCK, THE PROJECTING PARTS OF WHICH WILL BE CUT OFF.



CL. 36 DIV. 6 DR'G 33

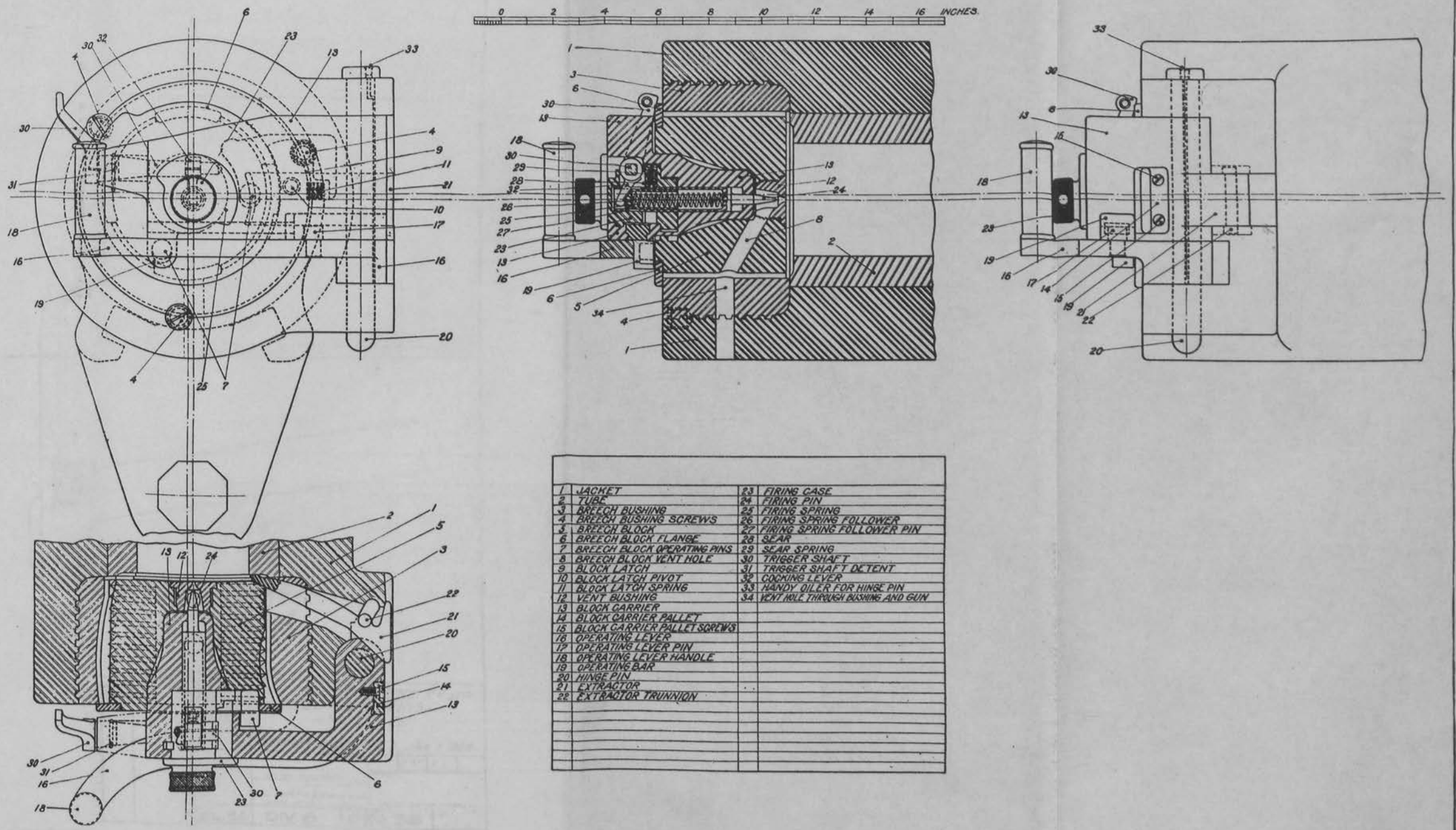
PLATE 23



DRG. PERTAINS TO CLASS DIV.	REVISIONS	3 INCH (15 PDR) GUN. MOD. OF 1902 M1
	APR. 13 1915	ASSEMBLED MECHANISM.
		WATERVLIET ARSENAL, U.S.A. JULY 7, 1914.
		DRAWN: HRB / TRACED: HRB / CHECKED: FL
		CL 36 / DIV. 6 / DRG 34

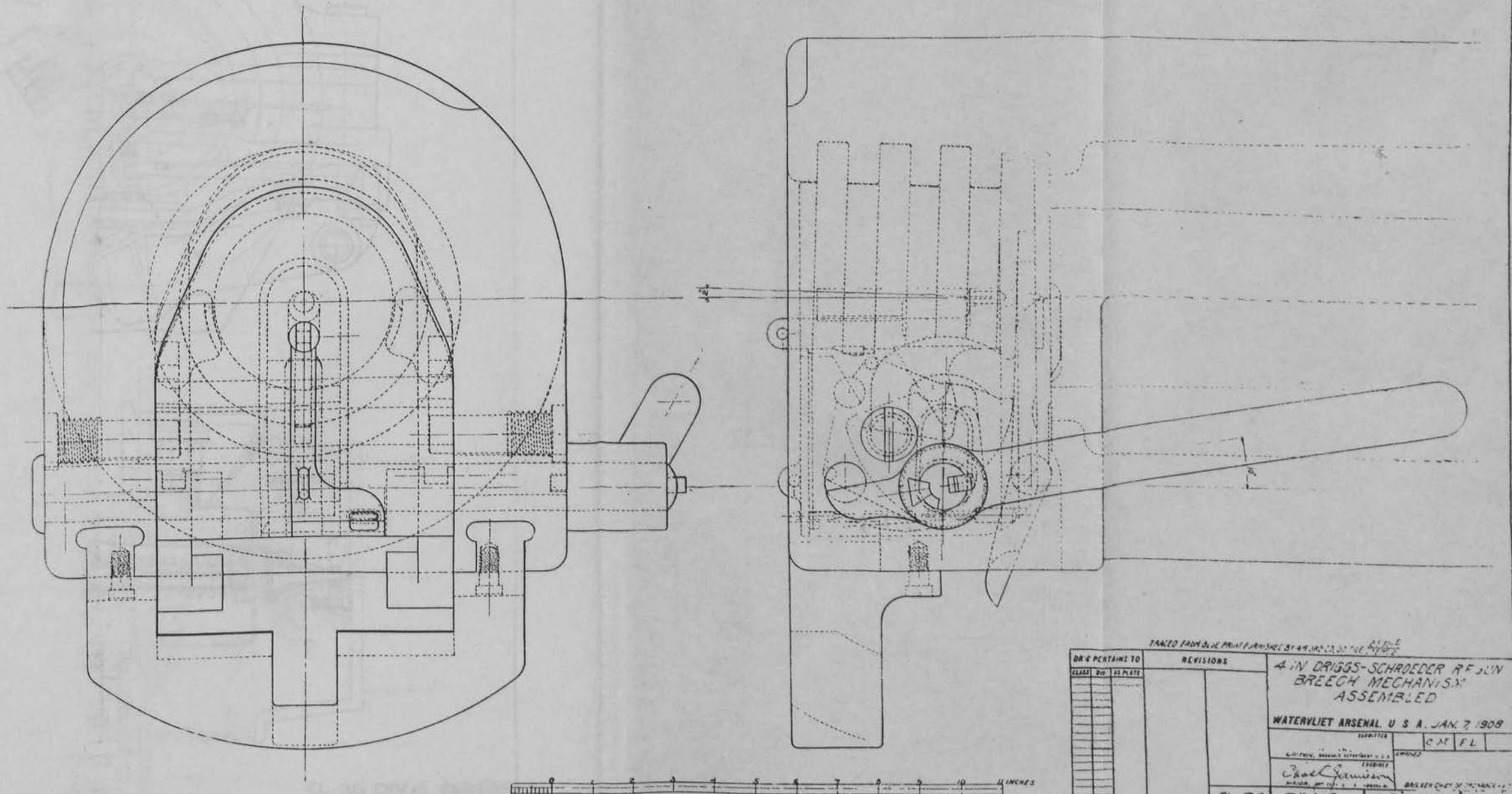
PLATE 24

3 INCH (15 PDR.) GUN, MODEL OF 1903.
BREECH MECHANISM, ASSEMBLED.



1	JACKET	23	FIRING CASE
2	TUBE	24	FIRING PIN
3	BREECH BUSHING	25	FIRING SPRING
4	BREECH BUSHING SCREWS	26	FIRING SPRING FOLLOWER
5	BREECH BLOCK	27	FIRING SPRING FOLLOWER PIN
6	BREECH BLOCK FLANGE	28	SEAR
7	BREECH BLOCK OPERATING PINS	29	SEAR SPRING
8	BREECH BLOCK VENT HOLE	30	TRIGGER SHAFT
9	BLOCK LATCH	31	TRIGGER SHAFT DETENT
10	BLOCK LATCH PIVOT	32	COCKING LEVER
11	BLOCK LATCH SPRING	33	HANDY OILER FOR HINGE PIN
12	VENT BUSHING	34	VENT HOLE THROUGH BUSHING AND GUN
13	BLOCK CARRIER		
14	BLOCK CARRIER PALLET		
15	BLOCK CARRIER PALLET SCREWS		
16	OPERATING LEVER		
17	OPERATING LEVER PIN		
18	OPERATING LEVER HANDLE		
19	OPERATING BAR		
20	HINGE PIN		
21	EXTRACTOR		
22	EXTRACTOR TRUNNION		

PLATE 25



TRACED FROM BLUE PRINT FURNISHED BY THE BUREAU

DRG PERTAINS TO			REVISIONS
CLASS	DIV	AS PLATE	

4 IN DRIGGS-SCHROEDER RF GUN
BREECH MECHANISM
ASSEMBLED

WATERVLIET ARSENAL U S A. JAN. 7, 1908

SUBMITTED C M F L

APPROVED

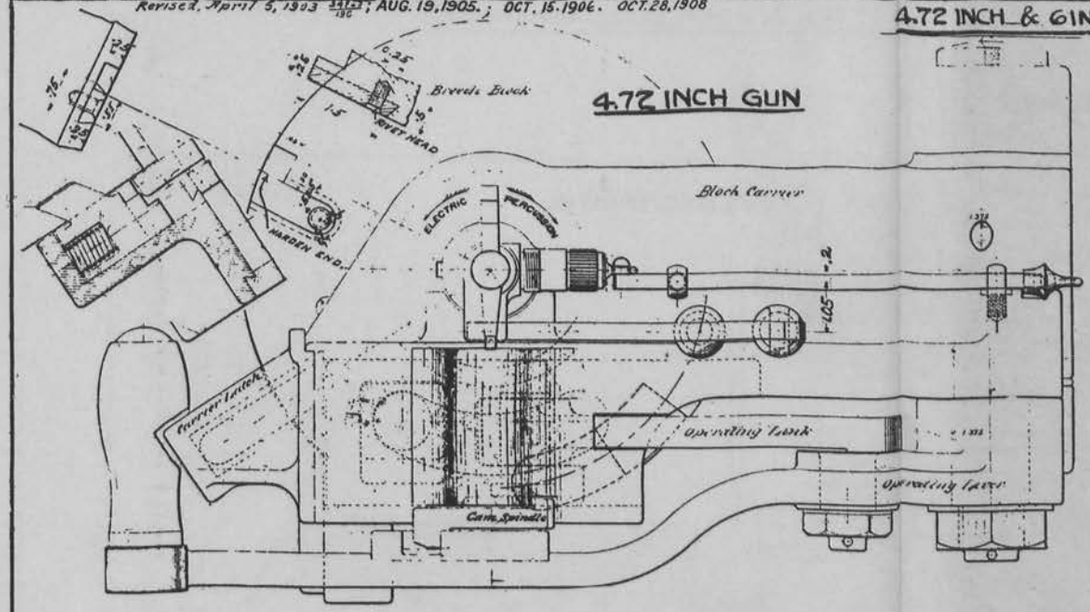
CL. 36 DIV. 6 DRG 35

Watervliet Arsenal, Mar 26th 1901
Revised, April 5, 1903 ; AUG. 19, 1905. ; OCT. 15. 1906. OCT. 28, 1908

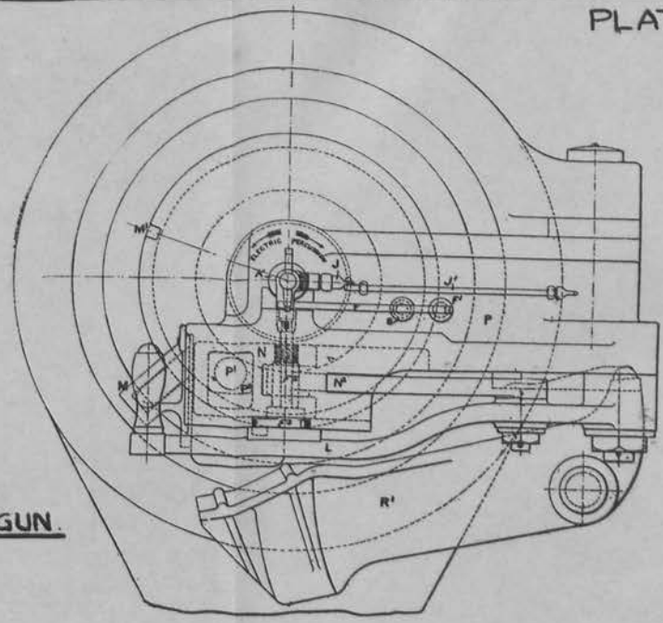
4.72 INCH & 6 INCH GUNS (ARMSTRONG)

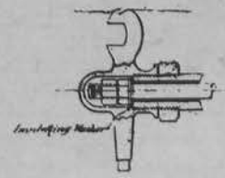
PLATE 26

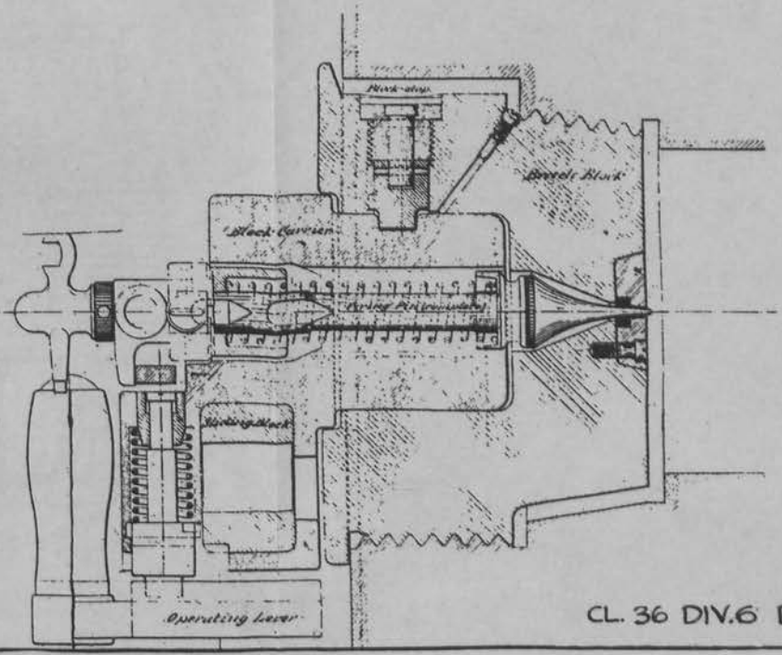
4.72 INCH GUN



6 INCH GUN.







CL. 36 DIV. 6 DRG 36

PLATE 27

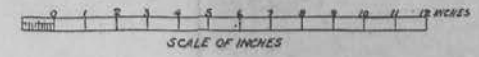
5 INCH R. F. GUN MODEL OF 1897–6 INCH R. F. GUN MODEL OF 1897 MI.

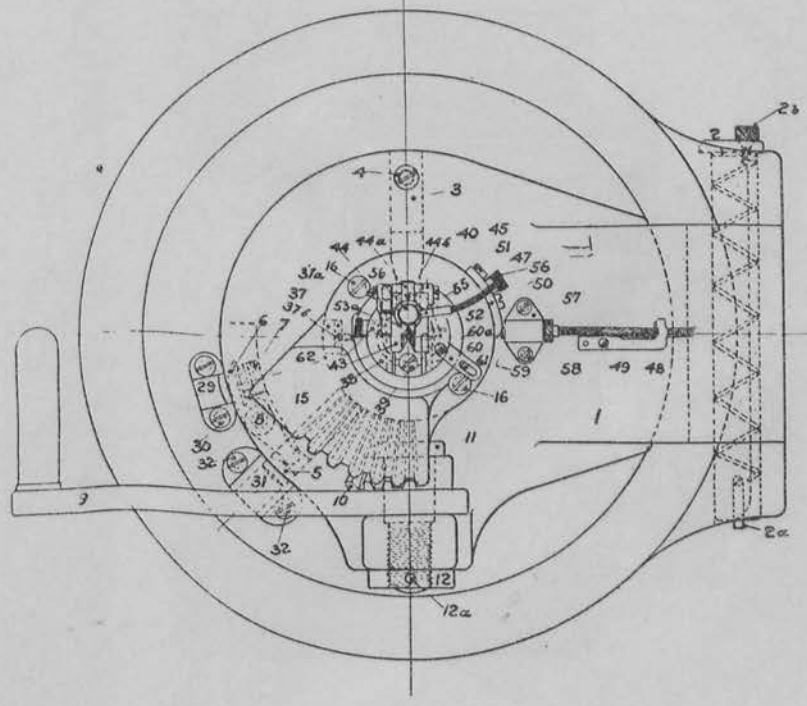
STOCKETT BREECH MECHANISM

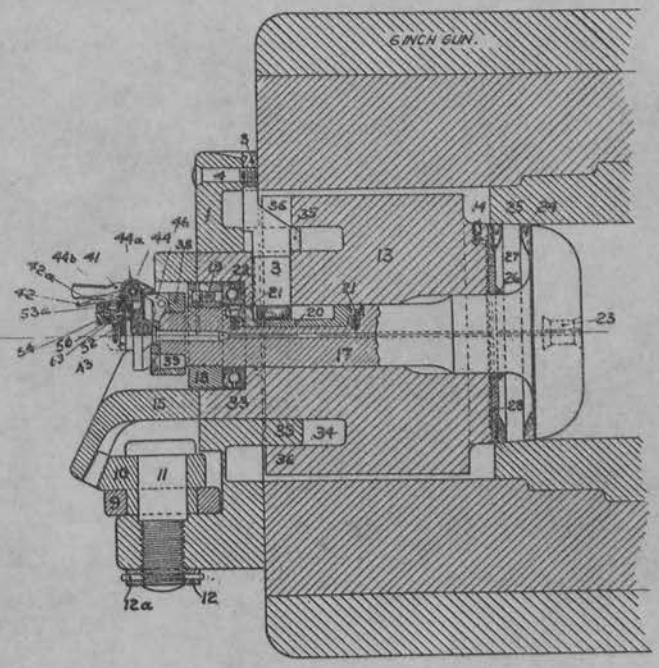
FITTED WITH

COMBINATION ELECTRIC–FRICTION

FIRING ATTACHMENT.







CLASS 36	DIVISION 6	DRAWING 3	FILE

PLATE 28

5 INCH R. F. GUN MODEL OF 1900–6 INCH R. F. GUN MODEL OF 1900

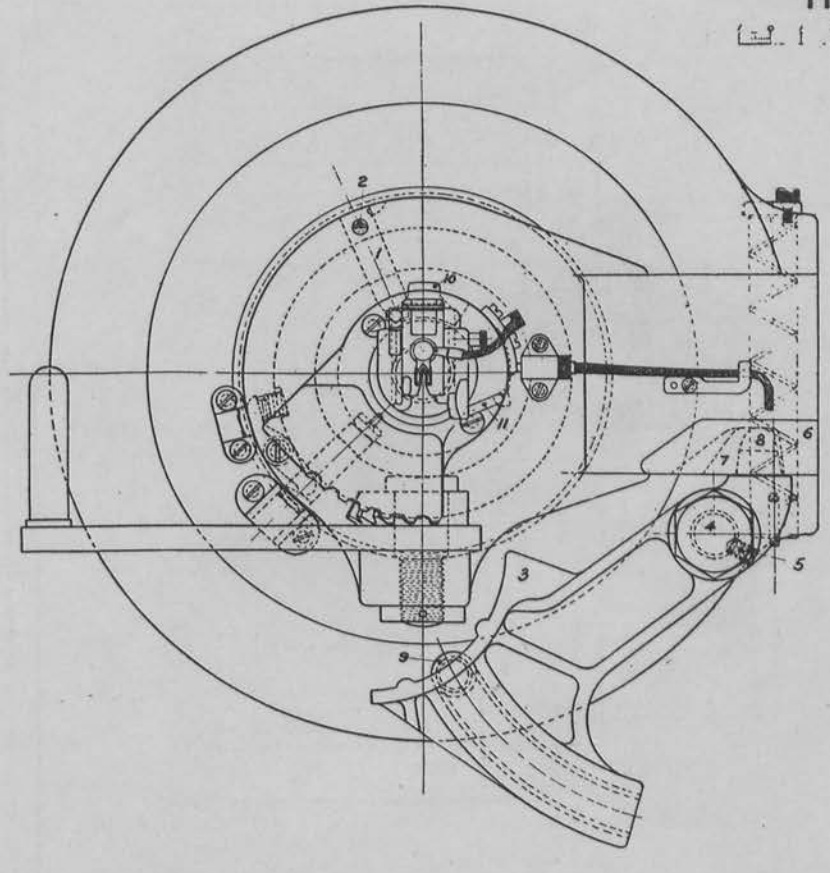
STOCKETT BREECH MECHANISM

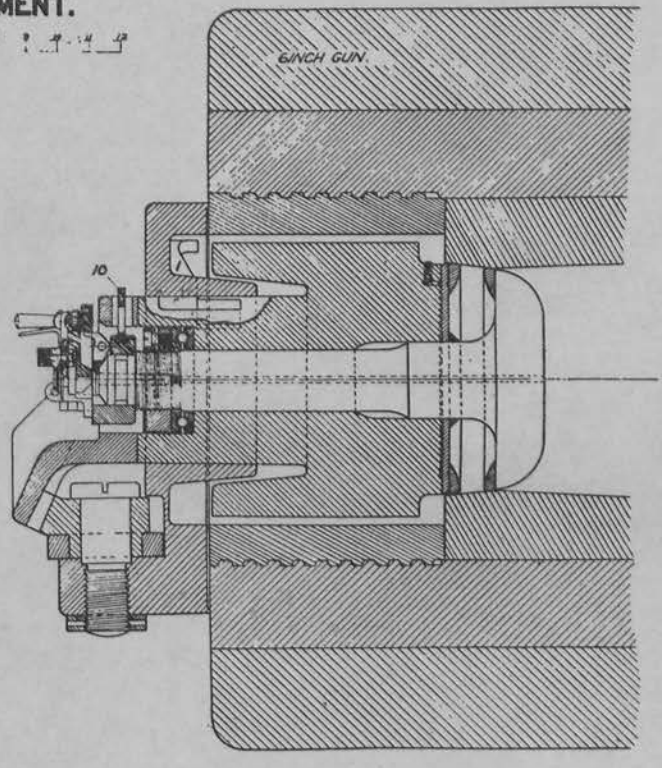
FITTED WITH

COMBINATION ELECTRIC–FRICTION

FIRING ATTACHMENT.

SCALE OF INCHES





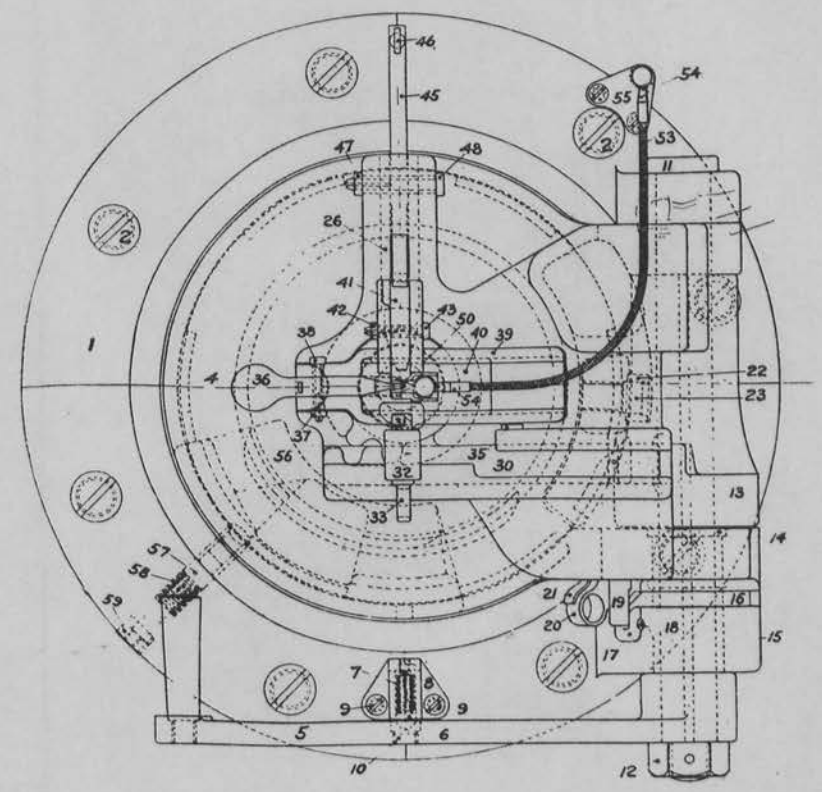
CLASS 36	DIVISION 6	DRAWING 4	FILE

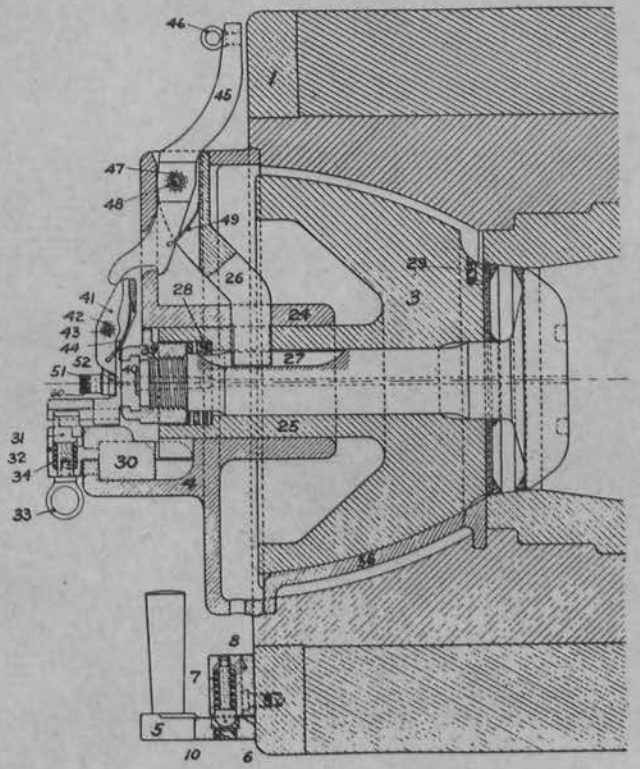
6 INCH R.F. GUN MODEL OF 1903

BREECH MECHANISM.

PLATE 29

SCALE OF INCHES





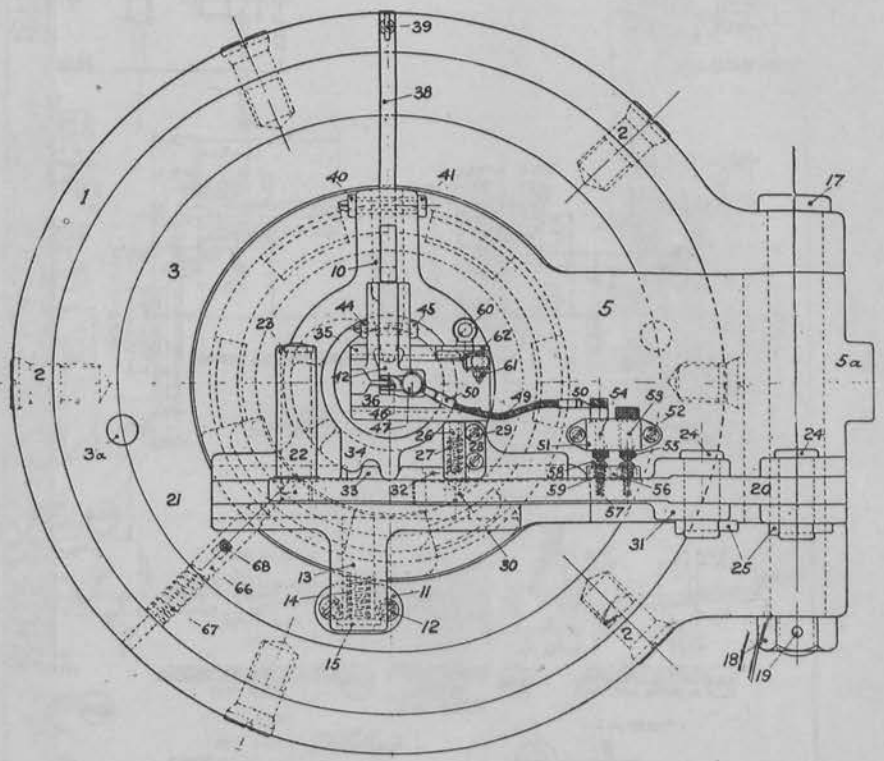
CLASS 36	DIVISION 6	DRAWING 5	FILE

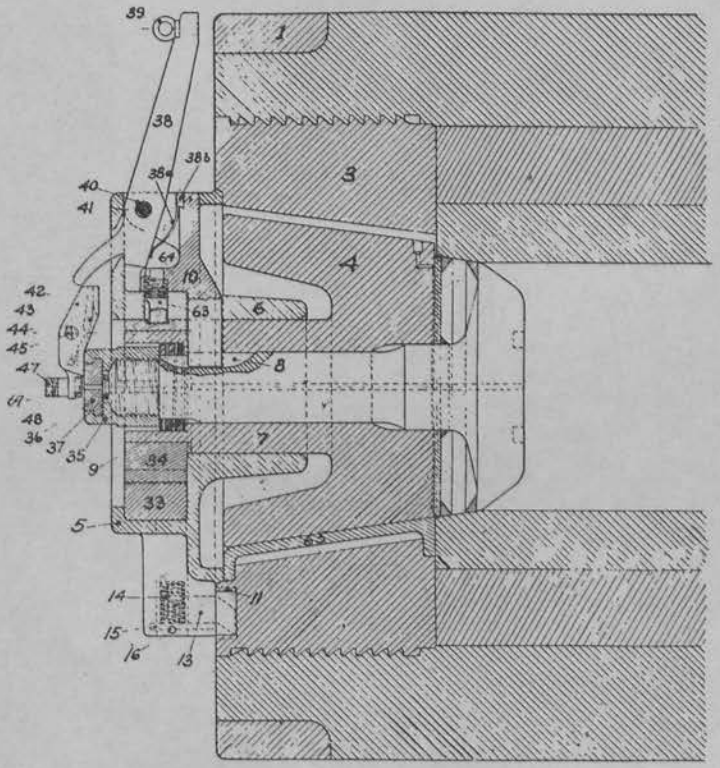
6 INCH R. F. GUN MODEL OF 1905

BREECH MECHANISM.

PLATE 30

SCALE OF INCHES





CLASS 36	DIVISION 6	DRAWING 6	FILE

GUN	A	DETAIL NO.
12 IN. GUN MODEL OF 1895	10.25	A13AH
12 IN GUN MODEL OF 1888	9.312	A13AJ
12 IN " " " 1897 & 1900	9.5	A13AK
10 IN " " " 1888	7.875 + 1900	A13AL
8 IN " " " 1891 & 1900	6.5	A13AM
6 IN " " 1897, 1900, 1903 & 1905		
12 IN MORTAR " 1886		
12 IN " " 1886		
12 IN " " 1908 & 1912		
15 IN GUN " 1895		

GUN	M. OF	KIO	DETAIL NO.
14 IN GUN	M. OF	KIO	A13AH
12 "	"	1895	A13AJ
12 "	"	KIOO	A13AK
10 "	"	1895 & 1900	A13AL
8 IN + MORTAR		1908	A13AM

FIRING CABLE

HABIRSHAW RED CORE WIRE, CARRYING CAPACITY B.&S. WIRE NO. 18. 7 STRANDS OF NO. 21 WIRE

CABLE TO BE SOLDERED IN PLACE BY DROPPING SOLDER IN EACH END OF HOLE.

FOR 8, 10, 12, 14, AND 16 INCH GUNS AND 12 INCH MORTARS MOR. QR. RODS A13D2 AND A13E

FIRING LEAF
ONE-TOOL STEEL A. A13L

CIRCUIT BREAKER CONTACT PIN
TOBIN BRONZE

SPLIT WASHER
FOR CIRCUIT BREAKER HOUSING
ONE-SPRING STEEL
SPRING TEMPER A13Q8

CONTACT CLIP INSULATION
ONE-VULCANIZED FIBER A13HA

CONTACT CLIP INSULATION
ONE-VULCANIZED FIBER A13JA

CIRCUIT BREAKER HOUSING PLUG
ONE-TOBIN BRONZE A13TC

CONTACT FORK
ONE-HARD BRASS A13HB

COLLAR OPERATING PIN
ONE-TOOL STEEL-A.
SPRING TEMPER A13WA

CIRCUIT BREAKER HOUSING
ONE-HARD BRONZE. A13HB

SLIDE STOP
ONE-TOOL STEEL-A A13LA

WRENCH AND SCREW DRIVER
ONE-TOOL STEEL-A. A13TH

HINGED COLLAR
ONE-FORGED STEEL-B. A13G

FIRING LEAF PIVOT
ONE-TOOL STEEL-A. A13M

FIRING LEAF PIVOT PIN
ONE-TOOL STEEL-A.
SPRING TEMPER. A13P

SAFETY BAR
ONE-TOOL STEEL-A A13F

CIRCUIT BREAKER SCREW INSULATION
TWO-VULCANIZED FIBER A13AA

SLIDE STOP SPRING
ONE-MUSIC WIRE. A13NB

SLIDE STOP NUT
ONE-STEEL A13NA

SLIDE STOP HOUSING
ONE-STEEL. A13PA

CONTACT CLIP
ONE-BRONZE NO. 4. A13Q A4

COLLAR HINGE
ONE-STEEL. A13R

HOUSING
ONE-FORGED STEEL-B. A13H

SLIDE CATCH
ONE-FORGED STEEL-B. A13N

CONTACT CLIP
ONE-TOOL STEEL-A. A13CH

CONTACT CLIP HOUSING
ONE-TOOL STEEL-A. A13CG

WASHER
ONE-COLD ROLLED STEEL
PUNCHED A13JN

CIRCUIT BREAKER CONTACT SPRING
ONE-NO. 24 MUSIC WIRE. A13BA

CIRCUIT BREAKER HOUSING INSULATION
ONE-VULCANIZED FIBER A13CA

COLLAR CATCH SPRING
ONE-MUSIC WIRE. A13QB

CONTACT FORK SPRING
ONE-SPRING STEEL A13KA

SLIDE CATCH SPRING
ONE-SPRING STEEL A13S

FIRING LEAF SPRING
ONE-SPRING STEEL
SPRING TEMPER. A13QA

FIRING LEAF SPRING SCREW
ONE-STEEL A13SA

EJECTOR
ONE-FORGED STEEL-A A13J

SLIDE
ONE-FORGED STEEL-B. A13K

CIRCUIT BREAKER SCREW
TWO-STEEL A13EA

COLLAR CATCH SCREW
ONE STEEL A13TA

COLLAR CATCH
ONE-TOOL STEEL-A. A13CH

CONTACT CLIP PLUG
TOBIN BRONZE A13ANI

SPLIT WASHER
FOR CONTACT CLIP
ONE-SPRING STEEL
SPRING TEMPER A13Q81

GAS ESCAPE HOLE.

NOTE: FOR DETAILS OF STEEL SPINDLE PLUGS AND OF GUIDE BARS SEE SEPARATE DRAWINGS SHOWING ATTACHMENT OF FIRING MECHANISM TO GUNS OF DIFFERENT MODELS AND CALIBERS.

0 1 2 3 4 5 6 7 8 9 10 11 INCHES.

DR'G FEATURES TO				REVISIONS	
CLASS	DIV.	CLASS	DIV.		
59	6	60	6	AUG. 23 1904	APR 16 1908
59	15	61	6	OCT. 8 1904	JUNE 8 1912
60	2	61	6	NOV. 23 1904	JULY 1 1912
60	3	60	1	FEB 15 1905	OCT. 11 1912
60	5	60	3	JUNE 21 1905	JUNE 20 1913
60	6	60	9	OCT 17 1905	OCT 17 1913
60	8	60	13	DEC 12 1905	DEC 15 1914
58	9	60	15	FEB 27 1906	APR 10 1915
58	9	60	9	MAY 18 1906	JUNE 1 1915
58	11	57	23	JUNE 8 1906	
57	6	57	24	AUG. 14 1906	
57	7	61	2	SEPT 7 1906	
60	4			OCT 26 1906	
59	5			DEC. 8 1906	
60	10			APR 8 1907	
58	8			MARCH 18 1908	
58	10			JUNE 16 1908	

SEACOAST FIRING MECHANISM
MODEL OF 1903.

JUNE 15, 1904

SUBMITTED: G.W.R. C.W.N. J.M.S. V.M.I.
MAJOR ORDNANCE DEPARTMENT, U. S. A.
APPROVED: BY ORDER OF THE CHIEF OF ORDNANCE
JAN 6 1909
MAJOR ORDNANCE DEPARTMENT, U. S. A.

CL. 36 DIV. 6 DRG 37

THIS TRACING WITH 15-10K-15, 57-8-11 & 57-17-12 SUPERSEDES 15-0K-62.