

THE DASHIELL BREECH MECHANISM.

The breech-closing mechanism used for guns of the main battery type in the United States navy is universally constructed on the interrupted or slotted screw pattern. In the rear of the gun, back of the powder chamber, is a chamber a few inches long and of slightly larger diameter than the former. This is threaded internally. It is termed the screw-box. Three or more equal portions of the thread are cut away. In the gun illustrated there are four such divisions. A cylindrical breech plug is threaded externally so as to screw into the breech. Its thread is cut away to correspond with the slotting in the screw box. It is now obvious that such a plug could by direct translation be pushed nearly home, and that a turn of 45 degrees would screw it into place.

The distinctive breech mechanism includes far more than this, as the block has to be manipulated. In the smaller guns a rapid opening and closing breech mechanism is employed. We illustrate the Dashiell mechanism as applied to a 4-inch breech-loading rifle. The cuts show the slotted thread on the breech block and in the screw box. To the left of the gun is seen the rising and depressing rack, and beneath it are seen the recoil cylinders. The gun rests in a trunnion ring and in action slides back under the recoil some inches through the trunnion ring, and is at once drawn back to its forward position by the springs. A brass jacket is screwed upon the portion of the gun which works back and forth through the trunnion ring, or brass bearings are provided in the trunnion ring.

A massive shelf-like piece of steel, the combined collar and tray, is hinged to the right-hand side of the breech. This is curved in shape and represents a continuation of the lower segment of the screw box when swung against the face of the breech. When in this

This disengages the screws from each other. Secondly, a motion of translation or of movement in the line of the bore must be given it. This is about four inches in extent in the gun described. The withdrawal leaves it on the tray. Thirdly, the tray with the plug resting upon it is swung off to the right and the breech is completely open and unobstructed. The reverse order of move-

plug. To this bar, termed the translating arm, the hand lever is pivoted. The pivot bolt can be seen in the cut. Now the second motion begins. The hand lever is swung still further to the right, and now the second lever moves or swings with it and draws the breech plug out of the screw box and upon the tray. The end of this lever is shown in one of the cuts cross-

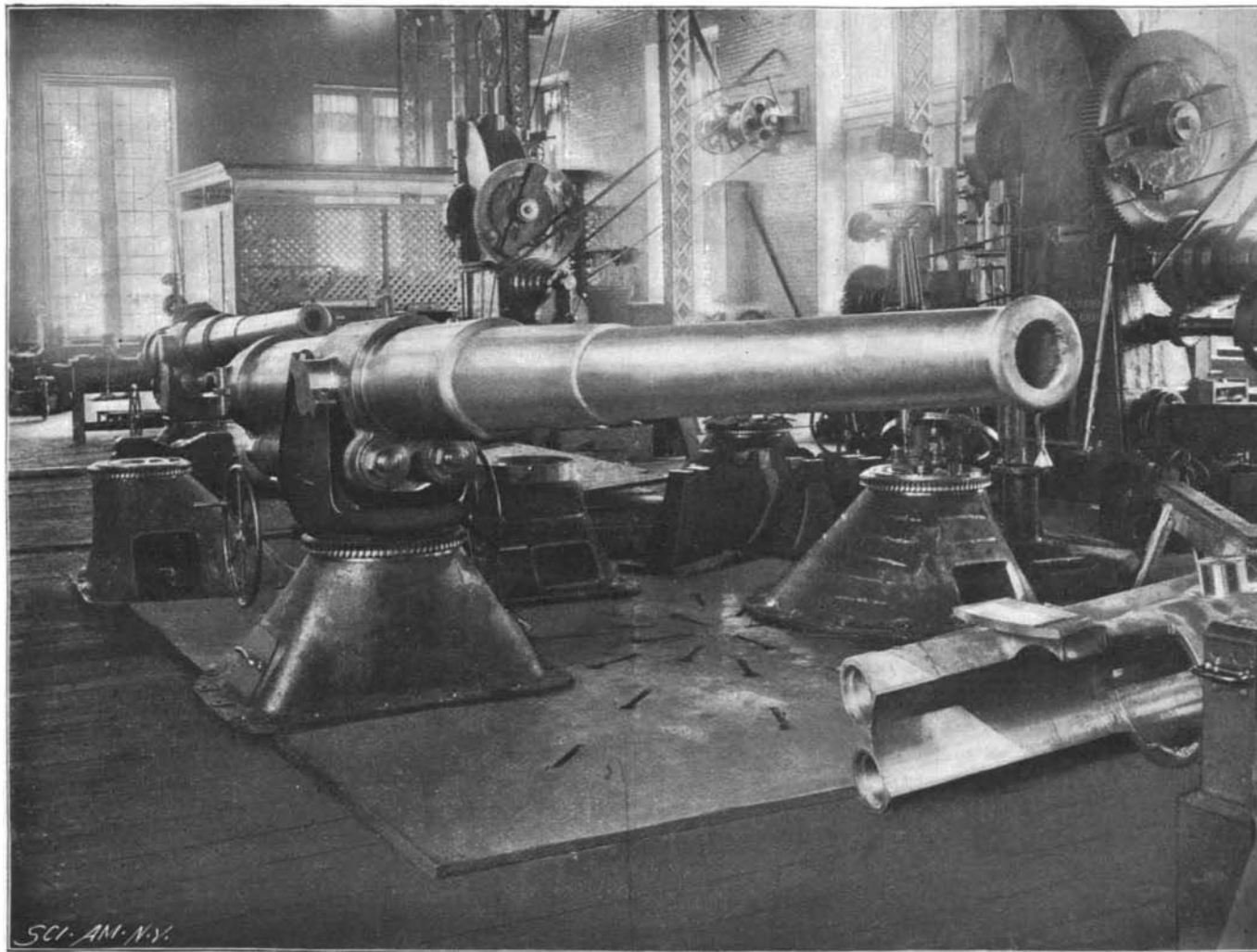
ing the hand lever and resting on it. As the breech block comes back it strikes the cart-ridge extracting hook and carries it back with it. This gives a hammer blow to start the shell and then the hook draws it quietly back.

Hitherto a spring latch has held the tray in position against the face of the breech. This latch is now tripped or released and the third phase begins. The hand lever continues on its right hand swing, the tray swings with it, carrying the breech plug off to right, and the breech is opened. Our cuts show the breech open and the final phase of operations completed.

The reverse sequence closes the breech. Although for convenience divided into three phases, there is no

break in the movement. The hand lever swings with unbroken sweep from left to right. The shell is drawn almost out. The gunners have to effect the final withdrawal by hand.

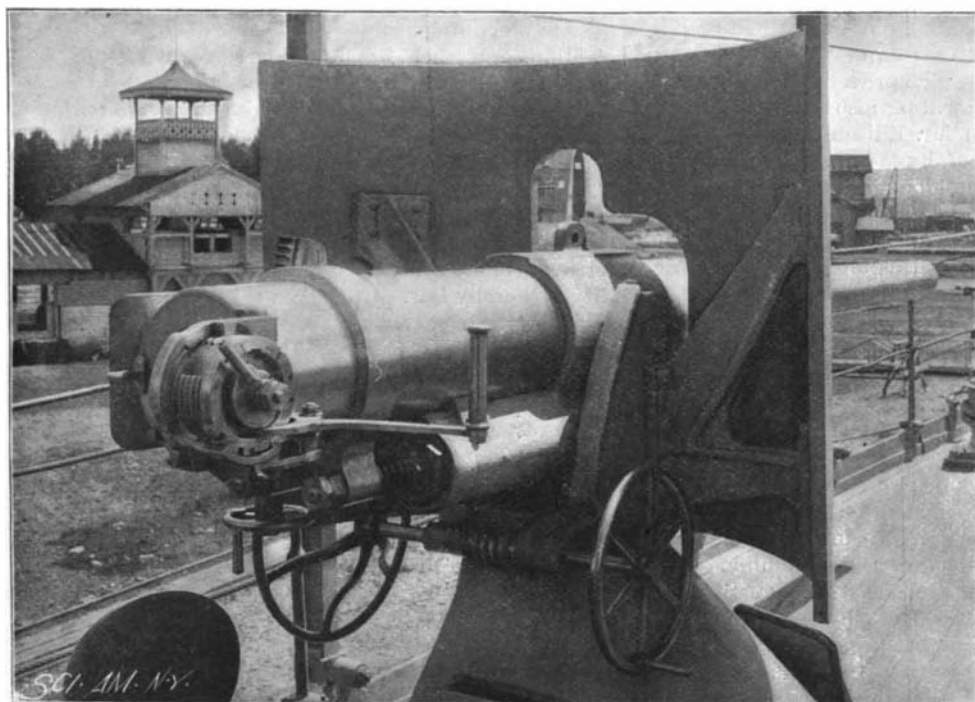
On reference to the cut, a cylindrical tube will be seen extending obliquely upward from the center of the breech plug. This operates in connection with the electric firing device. Within it a bar works back and forth, being forced outward by a stiff spring. As the breech plug is rotated this rotates with it and in the closing operation it is swung down to a horizontal position, and the projecting end of the small bar, striking an oblique abutment piece on the breech, is driven inward and held so. This closes a gap in the electric circuit. By closing the circuit by hand the primer is



NAVAL 6-INCH RAPID FIRE GUN IN WASHINGTON GUN SHOP.

ments closes the breech. The series is executed by a single sweep of the handle seen extending to the left of the piece. We will assume the breech to be closed and describe the opening operations.

A series of teeth are cut on the lower part of the rear of the breech plug, forming a toothed arc. Along the bottom of the tray a horizontal groove is cut, and in this a rack bar operates, whose teeth engage the teeth on the breech plug. A second toothed arc is part of the rear prolongation of the hand lever, and engages a second set of teeth on the rack bar in the groove in the tray. When the breech is closed this hand lever is swung over to the left. When the gunner wishes to open the breech he pulls the hand lever back, which in the first portion of its swing drives the rotating rack



4-INCH RAPID-FIRE GUN, SHOWING DASHIELL BREECH MECHANISM.

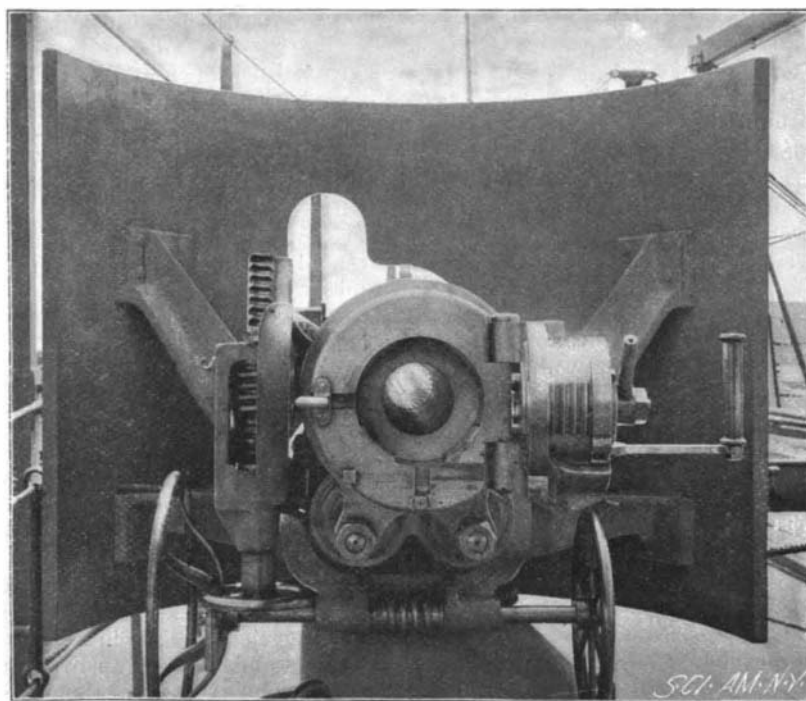
position the breech plug, which, when extracted, rests upon it, can be pressed into or withdrawn from the screw box, as the tray supports it in alignment with the axis of the gun.

To open the breech, three operations are necessary. The plug must first be rotated through a segment of a circle; in the 4-inch gun through an arc of 45 degrees,

to the left, thereby rotating the breech plug through a 45 degrees angle. When the proper travel is accomplished the end of the rotating rack brings up against a stop and the plug can be rotated no more.

From the left of the tray a second lever extends, which carries a projection at its end which goes into an under-cut groove on the center extension of the

SAME GUN WITH BREECH OPEN.



caused to operate and the gun is discharged. But if the breech plug has not been fully rotated, the bar will not be forced in and the electric primer will not operate. The illustrations of the 4-inch gun were taken by our artist on board the gunboat "Helena."

THE average rate of wages in Corea is 7 pence a day.