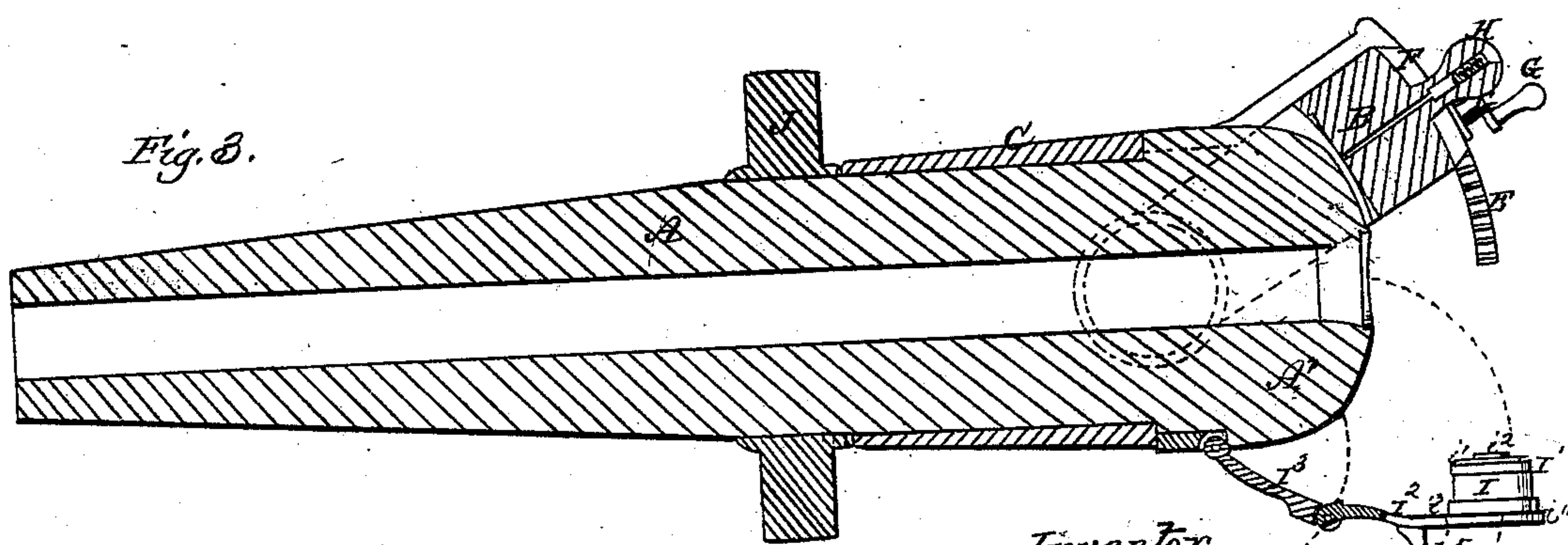
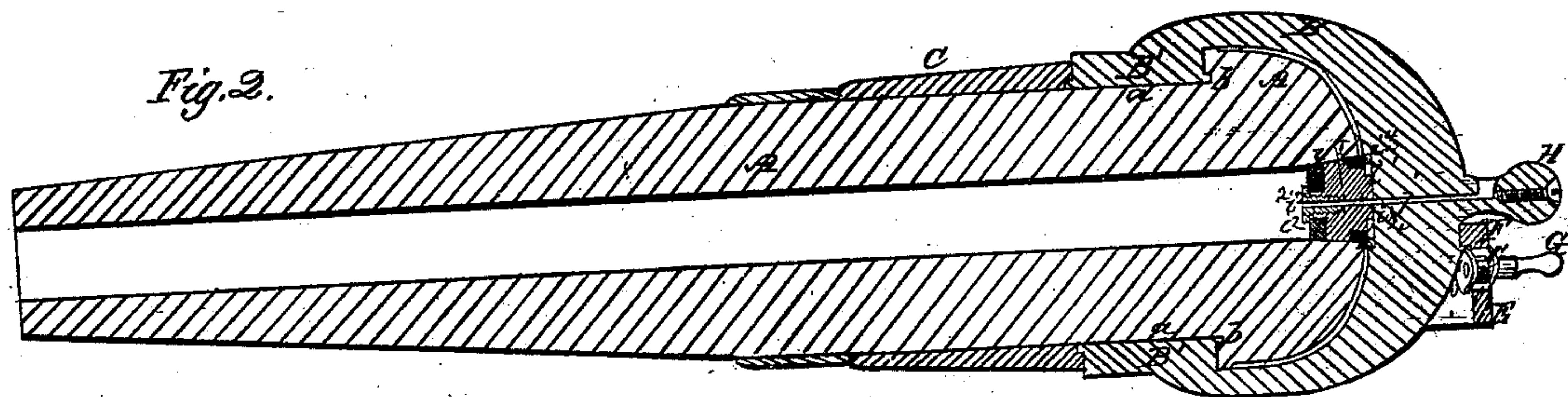
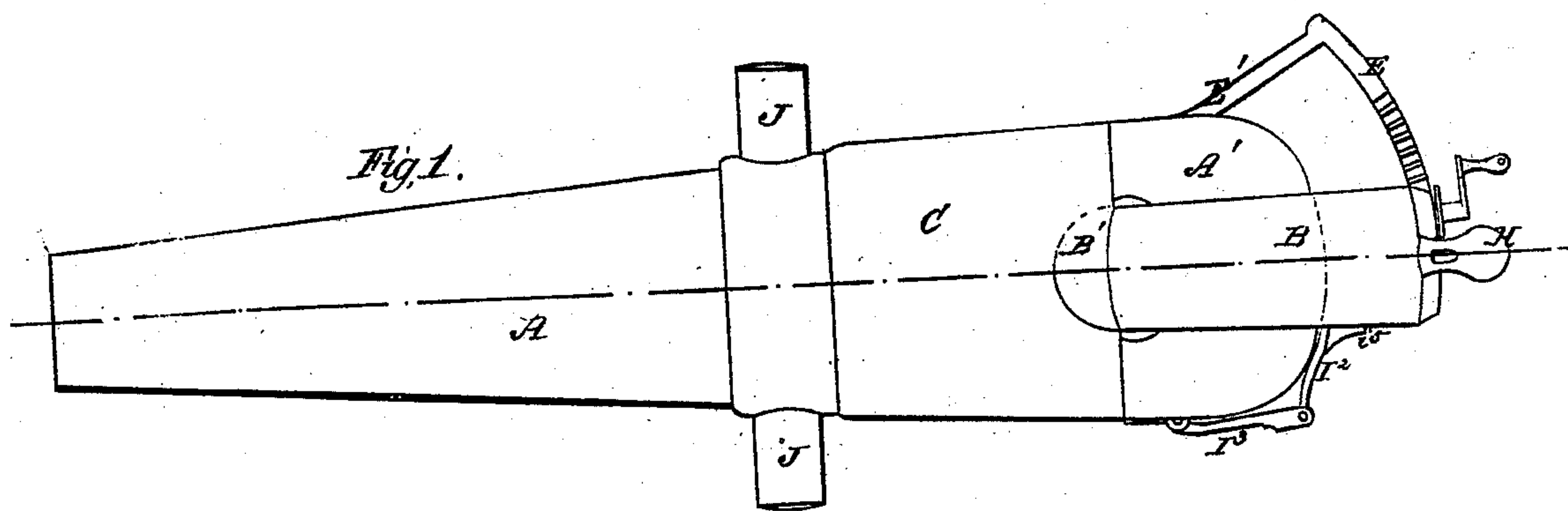


W. F. GOODWIN.
Breech-Loading Ordnance.

No 43,110.

Patented June 14, 1864.



Witnesses

Charles, D. Smith
R. H. Mayhew.

Inventor.

Wm F. Goodwin

UNITED STATES PATENT OFFICE.

WILLIAM F. GOODWIN, OF POWHATAN, OHIO.

IMPROVEMENT IN BREECH-LOADING ORDNANCE.

Specification forming part of Letters Patent No. 43,110, dated June 14, 1864

To all whom it may concern:

Be it known that I, WILLIAM F. GOODWIN, of Powhatan, in the county of Belmont and State of Ohio, have invented certain new and useful Improvements in Breech-Loading Ordnance; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of a cannon illustrating my invention. Fig. 2 is a vertical longitudinal section of the same in the line $x x$, Fig. 1. Fig. 3 is a horizontal section, showing the parts in position for loading.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates, first, to a swinging yoke or breech-piece of novel and improved construction; second, to a gun so formed as to adapt a swinging yoke or breech-piece formed in one piece to be applied and secured without employing trunnions as a means of attachment; third, to a breech-plug of peculiar construction, and to a novel device for adapting the same to be more readily inserted or removed.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

In the accompanying drawings, A may represent a gun formed or cast at its breech with an enlargement, A'.

B represents a yoke or breech-piece adapted to be turned in a horizontal plane at the rear of the gun, in order to cover and secure the breech-plug in position when the gun is to be fired, or permit the breech-plug to be removed when the gun is to be loaded. This yoke B is constructed in one piece of solid wrought-iron, in form substantially as shown in Fig. 2. On its ends are formed circular flanged cheeks B' B', each of which occupies a corresponding countersink, a , which countersinks are formed partially in the enlargement A' and partially in a re-enforce, C, and when the cheeks B' are in their respective countersinks they are prevented from displacement by means of flanges $b b$, which fit in corresponding grooves in the countersinks.

From the above description it will be seen

by my invention no difficulty whatever will be involved in applying and screwing the yoke to the gun, as in doing this it is only necessary to insert the cheeks B' B' into the semi-countersinks in the enlargement A' previously to the application of the re-enforce C, and then shrink on the re-enforce in customary manner.

Another advantage gained in thus attaching the yoke is that the latter may be formed in one solid piece of the smallest dimensions which strength will permit, without necessitating the employment of an additional pair of trunnions or making the arms of the yoke long enough to reach from the rear of the breech to the trunnions J, upon which the gun is mounted.

E represents a rigid segmental rack, extending inward from an arm, E', which latter is rigidly secured to the enlargement A'.

Between the rack E and a rack, F, on the rear end of the yoke B works a loose pinion, G, which may be turned so as to change the position of the yoke B by means of a crank-handle, G'. The pinion G' may be adapted to require but half a turn to move the yoke from one position to the other, and it is designed to so arrange the crank G' that it will be unnecessary to bring it in close proximity with the cascade H, in order to impart the requisite movement to the pinion G.

I represents a breech-plug, which is made in tapering form, and adapted to fit within a corresponding receptacle or chamber in the breech and be securely retained therein by the yoke B, which presses snugly against the rear end of said plug when the parts are in position for firing.

I' represents a ring formed of vulcanized india-rubber or other elastic material, which fits over a stem, i , formed upon the breech-plug I, and is secured in proper position and preserved from contact with the fire by means of a disk, i' , which may be pressed with the requisite firmness against the elastic ring I' by a screw, i^2 , which fits within a corresponding screw-threaded aperture in the stem i .

Upon the rear end of the plug I is formed a flange, i^4 , between which and the face of the chamber in which the plug I rests is interposed an elastic spring, i^3 , which may be of sufficient strength to either loosen or entirely expel the breech-plug when the yoke B is

moved out of contact with the rear end thereof. It will be seen that by this arrangement the escape of gas at the rear of the gun is effectually prevented by the backward force of the explosion, which, taking effect upon the disk i' , expands the ring I' , and forms a perfectly gas-tight joint.

I^2 represents an arm securely attached at one end to the plug I , and at its other end hinged to an arm, I^3 , which in turn may be hinged to the enlargement A' . These arms are designed to support the breech-plug I when withdrawn, and expedite as well as facilitate the insertion or removal of the same.

j' represents the vent, which, as shown, is partially constituted by an aperture through the screw i^2 , and communicates with corresponding apertures in the yoke B and casabel H , in the latter of which the primer is inserted. Should the perforated screw i^2 become injured by contact with the fire or otherwise, it may of course be replaced.

$j'j^2$ represent key-holes, into which is inserted the key, which may be employed for withdrawing the plug I .

i^3 may represent a projection upon the arm I^2 , which constitutes a stop to arrest the turning of the yoke B , when it reaches the proper position to securely retain the breech-plug.

If preferred, the yoke B may be used independently of or without a re-enforce, and for the enlargement A' may be substituted separate bosses or projections, in which may be

made the countersinks for the reception of the ends of the yoke, instead of having the projecting metal extend completely around the gun, as described.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A swinging yoke or breech-piece constructed, substantially as described, with cheeks B' , by which it is secured to the gun without requiring the employment of trunnions, screws, or bolts.

2. In combination with the above, a cannon formed with an enlargement, A' , and recesses or countersinks a , receiving and securing the ends of the yoke and constituting the bearings on which it is oscillated, substantially as explained.

3. The doubly-jointed swinging arms $I^2 I^3$, for carrying the breech-plug I , and permitting the ready insertion and withdrawal of the same, substantially in the manner specified.

4. The spring i^3 , employed in the manner described, to close the joint at the rear of the breech-plug, and loosen or expel the latter when the yoke is turned back.

5. The combination of the racks $E F$, and loose pinion G , for operating the swinging breech-yoke B , in the manner explained.

WM. F. GOODWIN.

Witnesses:

CHARLES DU BOIS,
CHARLES D. SMITH.