

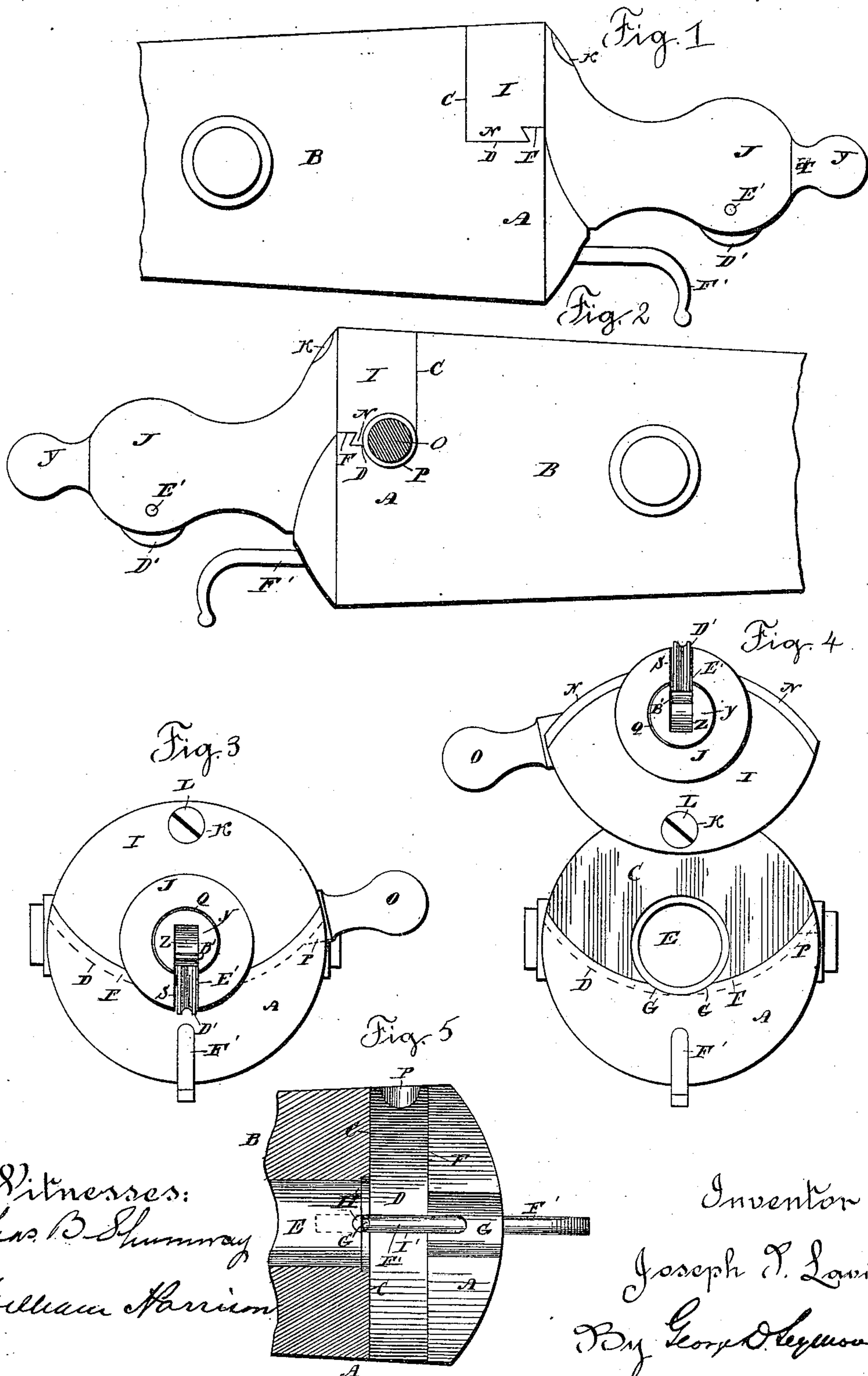
(No. Model.)

2 Sheets—Sheet 1.

J. P. LAVIGNE.
BREECH LOADING ORDNANCE.

No. 405,844.

Patented June 25, 1889.



Witnesses:
Chas. B. Shumway
William Harrison

Inventor
Joseph P. Lavigne
By George O. Seymour.
Atty.

(No Model.)

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Fig. 6

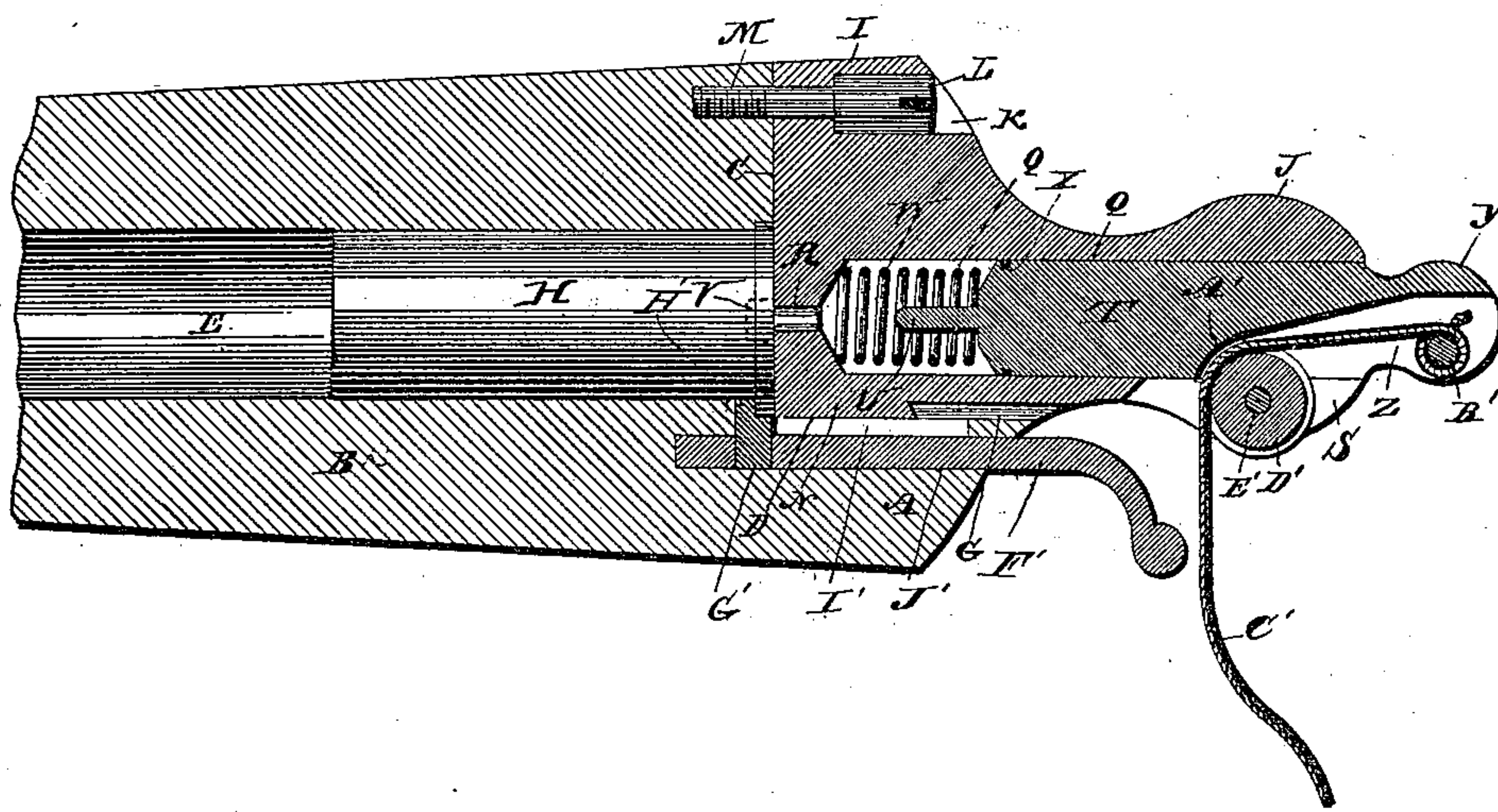
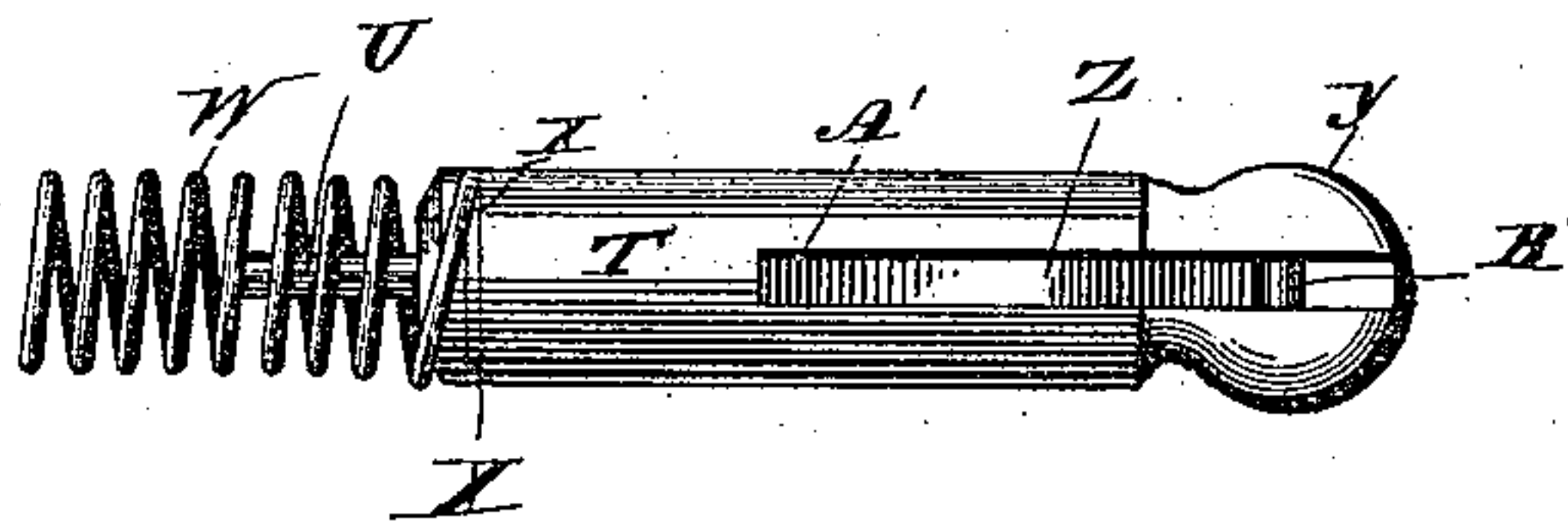


Fig. 7



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UNITED STATES PATENT OFFICE.

JOSEPH P. LAVIGNE, OF NEW HAVEN, CONNECTICUT.

BREECH-LOADING ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 405,844, dated June 25, 1889.

Application filed September 10, 1888. Serial No. 285,020. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. LAVIGNE, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Breech-Loading Ordnance; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to breech-loading ordnance, the object being to produce a gun of simple construction and few parts and of safe, reliable, and easy action.

With these ends in view my invention consists in a breech-piece combining the breech-block and breech-knob of a breech-loading gun pivoted in a transverse mortise in the breech, so as to virtually balance therein, in a mortise having a low outer wall, and a breech-piece having its lower edge provided with a wide shoulder to fit between such wall and the forward wall of the mortise, in a directly-thrown firing-hammer, and in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a broken view, in side elevation, of a cannon embodying my invention. Fig. 2 is a similar view of the other side of the gun with the handle of the breech-piece in section. Fig. 3 is a view of the gun in rear elevation. Fig. 4 is a similar view, with the breech-piece swung open. Fig. 5 is a broken view of the gun in horizontal section, with the breech-piece removed. Fig. 6 is a broken view of the gun in vertical longitudinal section, and Fig. 7 is a detached reverse plan view of the firing-hammer.

As herein shown, the breech A of the gun B is provided with a transverse mortise having a straight inner wall C, a curved floor D, extending at its lowest point just below the bore E of the gun and at its ends up nearly to the level of the upper edge of such bore, and a low undercut outer wall F, which is itself centrally cut down, as at G, to secure a straight passage for the introduction of the cartridge H into the bore of the gun and its removal therefrom. The breech-piece, combining the breech-block I and breech-knob J,

conforms to and completes the exterior lines of the breech. The breech-block is elliptiform and provided above its center and between its ends with a pivot-hole K, receiving a screw-pivot L, entering a screw-hole M, formed in the wall C of the mortise in the vertical line through the axis of the bore of the gun, whereby the breech-piece is virtually balanced in the mortise, the curved floor whereof, by being extended at its ends up to nearly the level of the upper edge of the bore of the gun, supports the block admirably and effectually resists any tendency it may have to rock. The lower edge of the breech-block is cut away, so as to form a wide shoulder N, which fits snugly between the low outer wall F of the mortise and the high inner wall C thereof. By preference, and as herein shown, the inner face of the said outer wall and the outer edge of such shoulder are undercut, so as to fit together and virtually form a dovetail joint between them. A handle O, located at the right-hand end of the block, fits, when the same is closed, into a curved slot P, formed in the corresponding end of the mortise. This handle has the double function of providing for the operation of the breech-piece in swinging the breech-block out of and into the mortise and of stopping and holding the breech-piece when closed in exactly its right relation to the bore of the gun. A hammer-chamber Q, of uniform diameter, leads from the rear end of the firing-knob forward into the breech-block, where it terminates in a pin-passage R, extending through the same. A slot S, formed in the center of the lower edge of the outer end of the knob and extending longitudinally therewith, intersects the said chamber on a line coinciding with its vertical axis. A firing-hammer T, constructed to be entirely received into such chamber, is provided at its forward end with a firing-pin U, adapted to pass through the pin-passage and strike a blow upon the cap V in the head of the cartridge H when the hammer is thrown forward. A spiral rebounding spring W, interposed between the forward end of the hammer and the forward end of the chamber, serves to retract the hammer after the pin has struck the percussion-cap, and so get the pin out of the way and hold the hammer in its normal position of readiness to be operated. The rear

coil of this spring is let into a groove X, formed in the forward end of the hammer. The rear end of the said hammer is shaped to form a button Y, and provided in its lower edge with a long slot Z, the floor whereof is curved at its forward end, as at A', to form a stop for coupling the hammer with the breech-piece. A horizontal tie-pin B', extending transversely across the rear end of this slot, is provided for the attachment to the hammer of one end of the lanyard C', by which the gun is fired. From this pin the lanyard is carried forward in the said slot and in front of and down over a small anti-friction roll D', located in the slot S of the breech-knob at a point forward of the normal position of the tie-pin B' aforesaid, mounted upon a removable pin E', extending transversely across the slot S, and extending upward into the slot Z of the hammer. This roll has the threefold function of reducing the friction of the lanyard, for which it forms a fulcrum or point of operation, of preventing the hammer from turning, which it does by extending up into the slot thereof, and of coupling the hammer to the breech-piece, which it does by standing in front of the stop A', formed at the forward end of the slot in the hammer. The pin E' is made removable, so that the roll may be readily taken out and replaced to permit the hammer to be uncoupled from the breech-piece and to be recoupled therewith.

As herein shown, the gun is provided with an extractor consisting of a hand-piece F' and a stud G' set into the upper face thereof and cut away at its upper end to form a semi-circular lug H', the straight face of which is faced to the rear for engagement with the flanged heads of the shells. This stud plays in a slot I', having curved ends extending transversely across the mortise at the lowest point thereof and opening downward into a chamber J', which receives the forward end of the hand-piece.

Having described my improved gun in detail, I will now set forth the mode of its operation.

To load the gun, the handle of the breech-block is grasped and the breech-piece rotated on its pivot until the breech-block entirely clears the bore of the gun, as shown by Fig. 4 of the drawings. The cartridge is now slipped into the bore and pushed home, after which the breech-piece is swung back to its normal position, in which it forms a solid wall behind the cartridge. The lanyard attached to the hammer is now given a sudden jerk or twitch, under which the hammer leaps forward until its whole length is virtually received in the chamber in the breech-piece. Under this impulse the tension of the rebounding spring is overcome and the firing-pin smartly projected against the percussion-cap of the cartridge, which then explodes. The rebounding spring now operates to push the hammer back to its normal position, in which its firing-pin is cleared from the car-

tridge and protected against injury. The breech-piece is now swung open, the shell extracted, and the gun is ready for reloading. It is obvious, however, that, if desired, the gun may be fired without recourse to the lanyard by simply delivering a sharp blow upon the hammer with the hand or foot, or with any other means convenient and suitable.

By making the breech-piece and firing-knob in one piece and pivoting them in the vertical line through the axis of the bore of the gun, as described, extreme simplicity of construction, great facility in handling, and perfect safety against accident from the blowing open of the block are secured. Then by making the outer wall of the mortise low and adapting the inner edge of the block to fit between it and the inner wall of the mortise the block is so firmly secured in place that were the pivot broken or removed the gun might safely be fired.

The improved firing-hammer is very simple of construction and not liable to get out of order. Being operated in its effective stroke directly instead of by a spring, it is positive and reliable in its action, whereas spring-thrown hammers are unreliable, because they necessitate an increased number of and more delicate adjuncts, raising the liability of breakage and of deterioration from corrosion under the action of the salt air when the guns are used at sea.

It is apparent that in carrying out my invention and adapting the gun to the different uses to which it is applicable some changes in the form herein shown and described may be made. I would therefore have it understood that I do not limit myself to such form, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A cannon having a transverse mortise in its breech, and a breech-piece combining a breech-block and a breech-knob and pivoted in such mortise on a pivot located in the vertical line through the axis of the bore of the gun, whereby the said breech-piece is virtually balanced in the mortise, substantially as set forth.

2. A cannon having in its breech a transverse mortise provided with a low outer wall and with a curved floor extending at its lowest point just below the bore of the gun and rising at its ends, and a breech-piece combining the breech-piece and breech-knob and pivoted in such mortise in the vertical line through the axis of the bore of the gun, the block having its lower edge cut away to form a wide shoulder adapted to fit between such low wall and the inner wall of the mortise, substantially as set forth.

3. A cannon having in its breech a transverse mortise provided with a low outer wall and with a curved floor extending at its

lowest point just below the bore of the gun and rising at its ends, and a breech-piece combining the breech-block and breech-knob and pivoted in such mortise in the vertical line through the axis of the bore of the gun, the block having its lower edge cut away to form a wide shoulder to fit between such low wall and the inner wall of the mortise, and the adjacent faces of the said low wall and the shoulder being undercut to form a dove-tail joint, substantially as set forth.

4. A cannon having a breech-block and a breech-knob and a firing-hammer combined with such block and knob and adapted to be operated directly in its effective stroke, substantially as set forth.

5. A cannon having a breech-block and a breech-knob, a firing-hammer mounted in such block and knob so as to move endwise therein, a lanyard attached to the rear end of the hammer and passed over a point of purchase located in front of the point of its attachment to the hammer, and a rebounding spring located in front of the hammer, the lanyard constituting the sole means of giving the hammer its effective stroke, substantially as set forth.

6. A cannon having a breech-piece combining a breech-block and a breech-knob provided with a longitudinal chamber, and with

a slot located in the central lower edge of the knob and intersecting such chamber, a firing-hammer located in such chamber and having its lower face slotted, an anti-friction roll located in the slot in the knob and extending upward into the slot in the hammer, and a lanyard secured to the rear end of the hammer and passing forward over the said roll, substantially as set forth.

7. A cannon having a breech-knob, a firing-hammer having a slot, the forward end whereof forms a stop, and a movable stop mounted in the knob and extending into the slot in the hammer for coupling the same with the knob, substantially as set forth.

8. A cannon having a slotted breech-knob, a firing-hammer having a slot, the forward end whereof is curved to form a stop, an anti-friction roll mounted in the slot in the knob on a removable pin and extending up into the slot of the hammer, which it holds in place by the engagement of the said stop thereof with it, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH P. LAVIGNE.

Witnesses:

CHAS. B. SHUMWAY,
WILLIAM HARRISON.