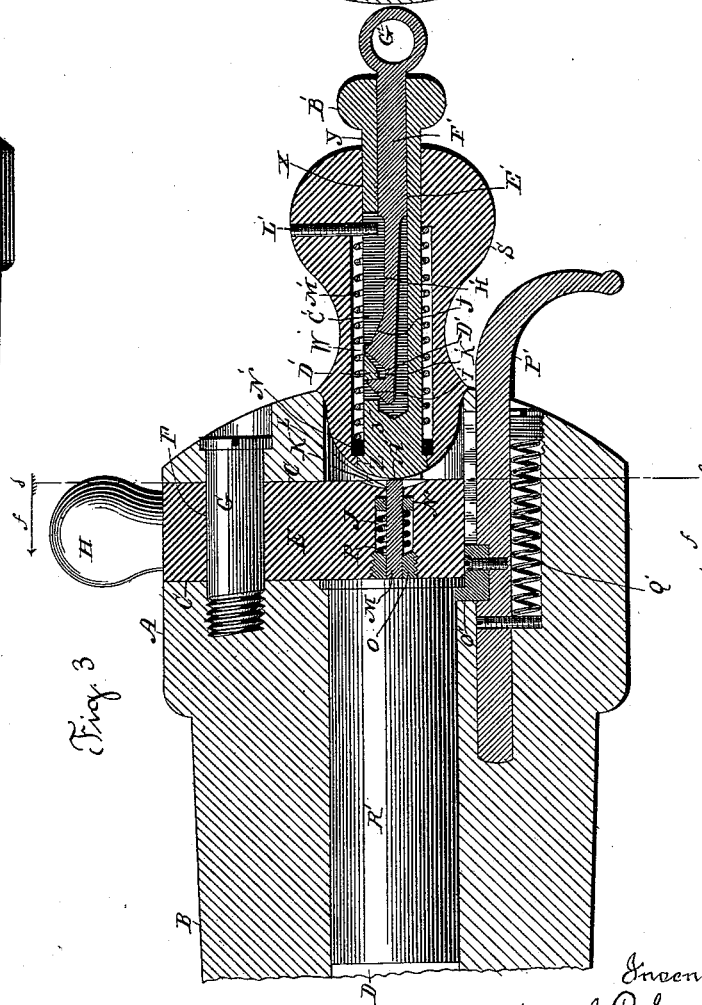
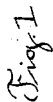
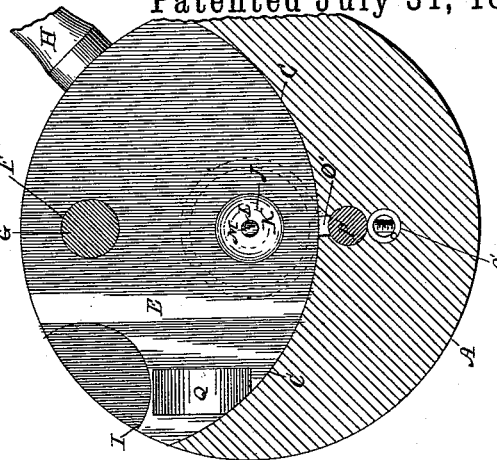


3 Sheets—Sheet 1.

No. 386,995.

Patented July 31, 1888.

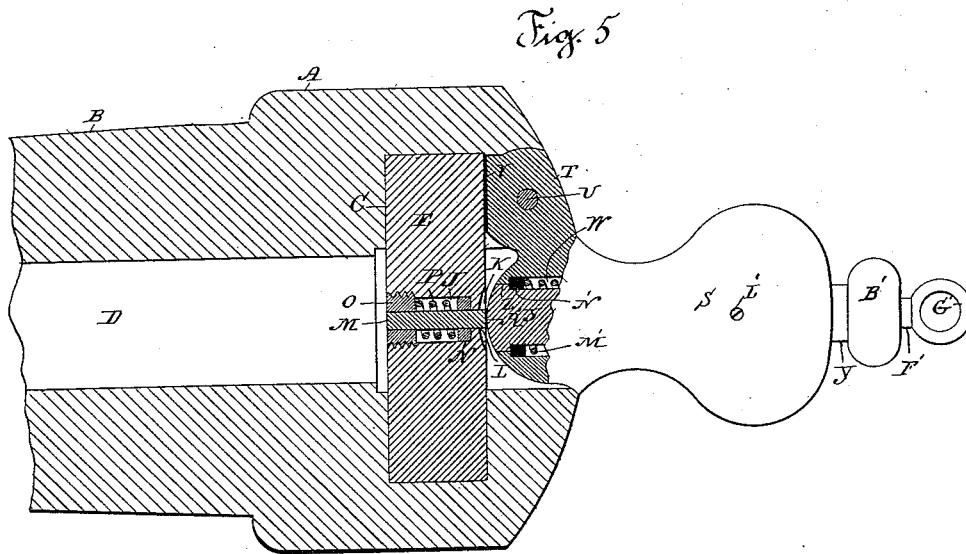


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3 Sheets—Sheet 2.

No. 386,995.

Patented July 31, 1888.



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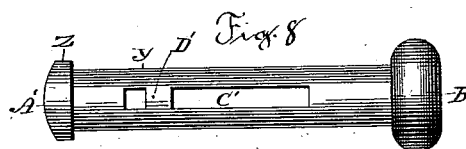
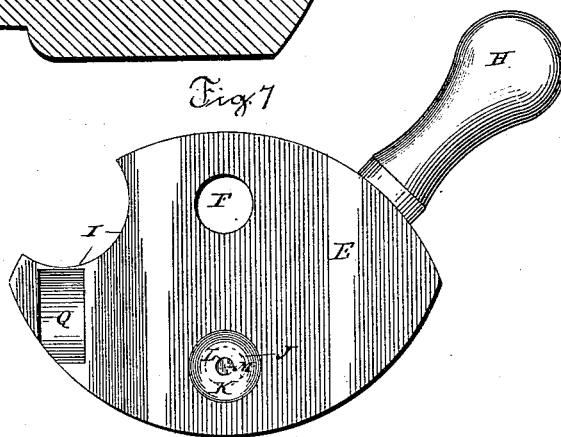
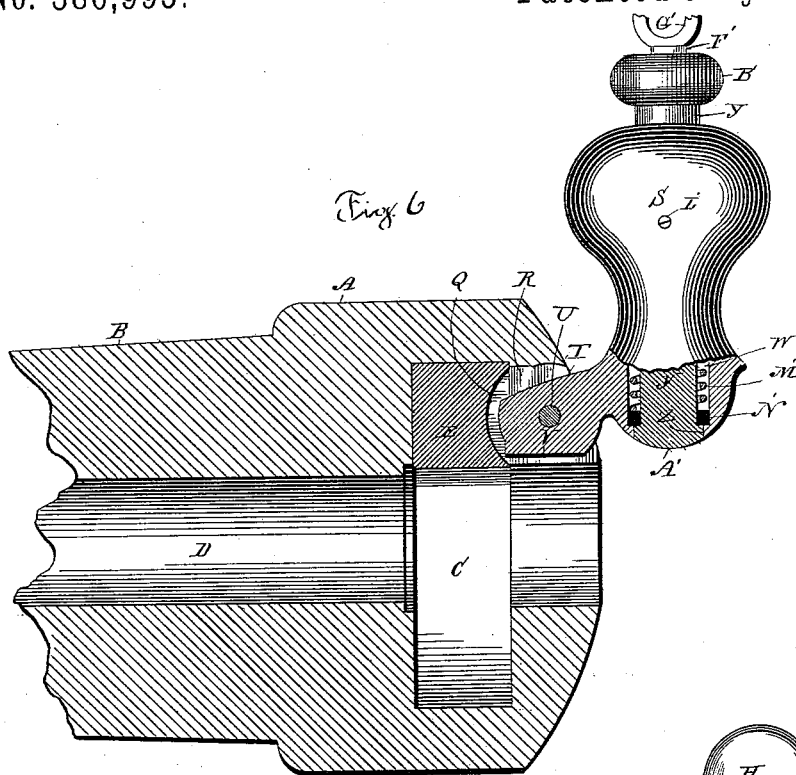
(No Model.)

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J. P. LAVIGNE.
BREECH LOADING ORDNANCE.

No. 386,995.

Patented July 31, 1888.



Witnesses:
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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. 386,995, dated July 31, 1888.

Application filed January 25, 1888. Serial No. 261,839. (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 Cannons; 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 an improvement in breech-loading cannons, the object being to produce a simple, safe, easily operated, and reliable gun.

My invention further consists in a cannon having a transverse mortise in its breech and a breech-block located in such mortise and pivoted about midway between its ends.

My invention further consists in a cannon having a transverse mortise in its breech, a breech-block located in such mortise, and an independent movable firing-knob.

My invention further consists in a cannon having a firing-hammer and a pull-pin located in such hammer.

My invention further consists 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 view in side elevation of a cannon embodying my invention, the muzzle of the gun being broken away. Fig. 2 is a view of the gun in rear elevation. Fig. 3 is an enlarged broken view, in vertical longitudinal section, through the breech of the gun, taken on the line *a b* of Fig. 2, and looking in the direction of the arrows *c c* on that figure. Fig. 4 is a view of the breech of the gun in vertical transverse section, taken on the line *d e* of Fig. 3, and looking in the direction of the arrows *f f* thereon. Fig. 5 is a view of the breech of the gun, partly in plan and partly in central horizontal section, showing the firing-knob locked in its normal position by the breech-block. Fig. 6 is a similar view showing the breech-block lifted to unlock the firing-knob and such knob swung open and away from the bore of the gun. Fig. 7 is a detached view, in rear elevation, of the breech-block. Fig. 8 is a detached plan view of the firing-hammer, and Fig. 9 is a similar view of the pull-pin.

As herein shown, the breech A of the gun B is provided with an open transverse mortise, C, having its floor curved and extended below the lower edge of the bore D of the gun, which it intersects at a right angle. An elliptical breech-block, E, having its inner edge conformed to the curve of the floor of the said mortise and above the bore of the gun, and its outer edge conformed to the exterior curve of the breech, and provided with a transverse pivot-hole, F, situated about midway between its ends and above its center, is hung in such mortise upon a threaded bolt, G, located directly above the bore of the gun, extending longitudinally into the breech from the rear end thereof and passing through the hole F, before mentioned. Under this construction the breech-block is virtually balanced in the mortise. An operating-handle, H, located in the outer edge and near one end of the block, is provided for manipulating the same. A curved slot, I, opening outward and extending transversely across the corresponding opposite edge of the block, is located so that when the block is lifted or open, it will register with the bore D of the gun and permit free access thereto for loading the gun and for extracting the spent cartridges from it.

The block is also provided with a chamber, J, located midway between its ends, below its center and extending inward from its outer face, with a circular depression, K, located in its rear face and in line with such chamber, and with a small passage, L, leading from the center of such depression into the said chamber. A firing-pin, M, having a collar, N, located near its rear end, projects rearward through the passage L into the depression K, and extends forward through the chamber, being supported at its rear end by the walls of the said passage and at its forward end by a centrally-perforated nut, O, screwed into the chamber from the outer or forward face of the block. A spiral spring, P, encircling the pin located in the said chamber and interposed between the collar M and the nut O, is provided for retracting the pin after it has been thrown forward in firing the gun and for cushioning the recoil of the pin. The breech-block is further provided with a curved slot, Q, opening outward, formed in its rear face,

extending longitudinally between the slot I and the adjacent inner edge of the block, and arranged so that when the block is lifted it will be brought into a horizontal position in front of a horizontal slot, R, formed in the end of the breech at one side of the bore D of the gun.

A firing-knob, S, having an arm, T, entering the slot R, is pivoted to the end of the breech by a vertical pin, U, passing through the said slot and arm, as shown by Figs. 2, 5, and 6 of the drawings. The said arm T has a flat locking-face, V, which normally bears against the flat rear face of the block, as shown by Fig. 5 of the drawings, and locks the knob in its normal or closed position.

The knob can be opened or closed only when the block is lifted so as to bring the slot Q into line with the slot R in the breech and thus permit the arm T to be swung round, as shown by Fig. 6 of the drawings. Under this construction the knob is held up to its firing position and locked there against the strain tending to pull it away when the gun is fired by the breech-block. On the other hand, the arm T, by its entrance into the slot Q when the knob is thrown open and the block is lifted, locks the block in its lifted position and so maintains it so long as the knob is thrown back, whereby the block is securely held out of the way for retracting the cartridges and loading the gun.

The knob is provided with a chamber, W, and a passage, X, together forming a central longitudinal opening through it. A firing-hammer, Y, located in such chamber and passage, is provided at its forward end with a shoulder, Z, and a rounded face, A', adapted to enter the depression K of the breech-block and at its rear end with a head, B', which limits its forward play by engaging with the end of the knob. The said hammer is also provided in its upper face with a deep longitudinal chamber or slot, C', bridged near its forward end by a lug, D', having a square forward and a beveled rear face. An opening, E', leads from the rear end of the said slot through the rear end of the hammer.

A pull-pin, F', located in the slot C' and opening E' of the hammer, is provided at its rear end with a ring, G', for the attachment of the cord by which it is operated, and at its forward end with a long elastic finger, H', provided upon its upper face with a beveled lug, I', and a beveled face, J', such lug and face being separated by an opening, K', adapted to receive the lug D' bridging the slot in the hammer. A screw, L', mounted in the knob and passing through the rear end of the chamber W thereof and into the slot C' of the hammer, is provided for engagement by the beveled face J' of the pull-pin, whereby the finger of the same is depressed and its lug I' disengaged from the lug D' of the hammer. A spiral spring, M', located in the chamber W of the knob and encircling the hammer, is interposed

between the rear wall of such chamber and a washer, N', located in the forward end thereof and seated against the shoulder Z of the hammer and the forward end wall of the chamber W of the knob.

As herein shown, also, the gun is provided with an extracting device consisting, essentially, of an extracting-block, O', hand-piece P', and a spring, Q', all of ordinary construction.

Having described my improved gun in detail, I will set forth the mode of operating it.

To load the gun, the breech-block is lifted by its handle, so as to register its slot I with the bore D of the gun and its slot Q with the slot R in the breech, whereby the block is cleared from the bore and the knob unlocked. The knob is now swung around, as shown by Fig. 5 of the drawings, and the shell R' introduced into the bore, as shown by Fig. 3 of the drawings. The knob is now swung back into its closed position, as shown by the said Fig. 3 of the drawings, and the breech-block turned back into its closed position, in which it locks the knob and forms a solid wall directly back of the head of the cartridge. To fire the gun, the firing-cord is pulled to retract the pull-pin, the lug I' whereof is engaged with the lug D' of the hammer, which is therefore also retracted against the spring M', which accumulates tension until the beveled face J' of the pull-pin is engaged with the screw L', which then depresses the elastic finger H' of the pin and disengages the lug I' thereof from the lug D' of the hammer. This being done, the spring, being now under a high tension, at once operates to throw the hammer forward with sufficient force to project it into the depression K of the breech-block, wherein it strikes the firing-pin and imparts part of its momentum thereto. The firing-pin in turn engages with the percussion-cap of the cartridge, which is thus exploded. The spring P, encircling the pin, cushions its recoil and also restores it to its normal position. When the hammer leaps forward under the action of its spring, it passes through the washer encircling it and located behind the shoulder Z at its forward end; but in its recoil the said shoulder engages with the washer, so that the hammer is cushioned by the spring, which presses against the rear face of the shoulder. The spring also operates to restore the hammer to its normal position, in which it is re-engaged by the pull-pin, which is manually pushed forward for the purpose.

It is to be particularly noted that the breech-block, being pivoted about midway between its ends, offers no purchase for being lifted and thrown open by any gas which may be forced backward in exploding the cartridge. In this feature of construction my invention entirely cuts off a source of great danger in cannon as now constructed, which are often blown open at the breech in firing. In my gun there can be no displacement of the breech-

block in firing it. Furthermore, in my gun the breech-block forms a solid wall behind the cartridge and constitutes an efficient protection against miscarriage in firing the gun and injury to its loading and firing mechanisms. The gun is also simple of construction, easy of operation, and reliable in action.

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 an open transverse mortise in its breech and a breech-block fulcrumed therein on a pivot situated in the vertical line through the axis of the bore and thereby virtually balanced, substantially as set forth.

2. A cannon having an open transverse mortise in its breech, a breech-block located therein, and a pivot for such block located directly above the bore of the gun, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

3. A cannon having a transverse mortise in its breech, and an elongated breech-block located in such mortise and pivoted about midway between the ends of its longer axis and directly above the bore of the gun, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

4. A cannon having an open transverse mortise in its breech, and an elliptical breech-block located in such mortise and fulcrumed about midway between the ends of its longer axis, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

5. A cannon having an open transverse mortise in its breech, and an elliptical breech-block located in such mortise having its inner and outer edges respectively conformed to the curved wall of the mortise and the exterior curve of the breech, and fulcrumed about midway between its ends above the bore of the gun, whereby the block is balanced against lateral throw on discharging the gun, substantially as set forth.

6. A cannon having an open transverse mortise in its breech, and a breech-block pivoted about midway between its ends and provided in its outer edge and near one of its ends with an open curved slot arranged to be registered with the bore of the gun when the block is lifted, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

7. A cannon having a transverse mortise in its breech, a breech-block pivoted in such mortise, and a knob made independent of the block

and carrying hammer mechanism for actuating the firing mechanism which is carried by the block, substantially as set forth.

8. A cannon having a transverse mortise formed in its breech, a breech-block pivoted in such mortise, and a knob pivoted to the breech at one side of the bore of the gun and carrying hammer mechanism actuating the firing mechanism carried by the said block, substantially as set forth.

9. A cannon having a transverse mortise in its breech, a breech-block located in such mortise, and a knob made movable independent of the block, by which it is locked in its normal or firing position, in which it closes the bore which extends through the breech, substantially as set forth.

10. A cannon having a transverse mortise in its breech, a breech-block located in such mortise and having a slot in its rear face, and a knob closing the rear end of the bore and having an arm pivoted in a slot in the breech, normally engaging with the rear face of the breech-block to lock the knob, which is movable only when the slot in the block is registered with its arm, substantially as set forth.

11. A cannon having a transverse mortise in its breech, a breech-block pivoted in such mortise, and carrying a firing-pin, and an independent knob carrying a hammer and pull-pin located behind the block in position for the engagement of the hammer with the firing-pin when such block and knob are in closed position, substantially as set forth.

12. A cannon having a transverse mortise in its breech, a breech-block located in such mortise, carrying a firing-pin and having its rear face depressed around such pin, and an independent knob carrying a hammer and a pull-pin, the hammer being adapted to enter the depression in the block in striking the pin, substantially as set forth.

13. In the firing mechanism of a cannon, the combination, with a firing-knob, of a longitudinally-movable firing-hammer, a pull-pin located in such hammer, longitudinally movable therein and normally coupled therewith, and a trip carried by the knob for disengaging the hammer and pull-pin, substantially as set forth.

14. A cannon having a chambered firing-knob, a chambered firing-hammer located therein and provided with a longitudinal slot bridged at its forward end by a lug, a pull-pin located within the hammer and provided with an elastic finger having a lug and a beveled face, a trip carried by the knob and engaging such beveled face for disengaging the lug of the finger from that of the hammer, and a spring for throwing the hammer forward and taking its recoil.

15. A cannon having a chambered firing-knob, a longitudinally-movable chambered firing-hammer located therein and shouldered at its forward end, a pull-pin located in the said hammer, a washer interposed between

the forward end of the spring, which is on one side of it, and the forward end wall of the knob-chamber and the shoulder of the hammer, which are on the other side of it, and an
5 independent spring-recovered firing-pin, 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,
HARRY HALL.