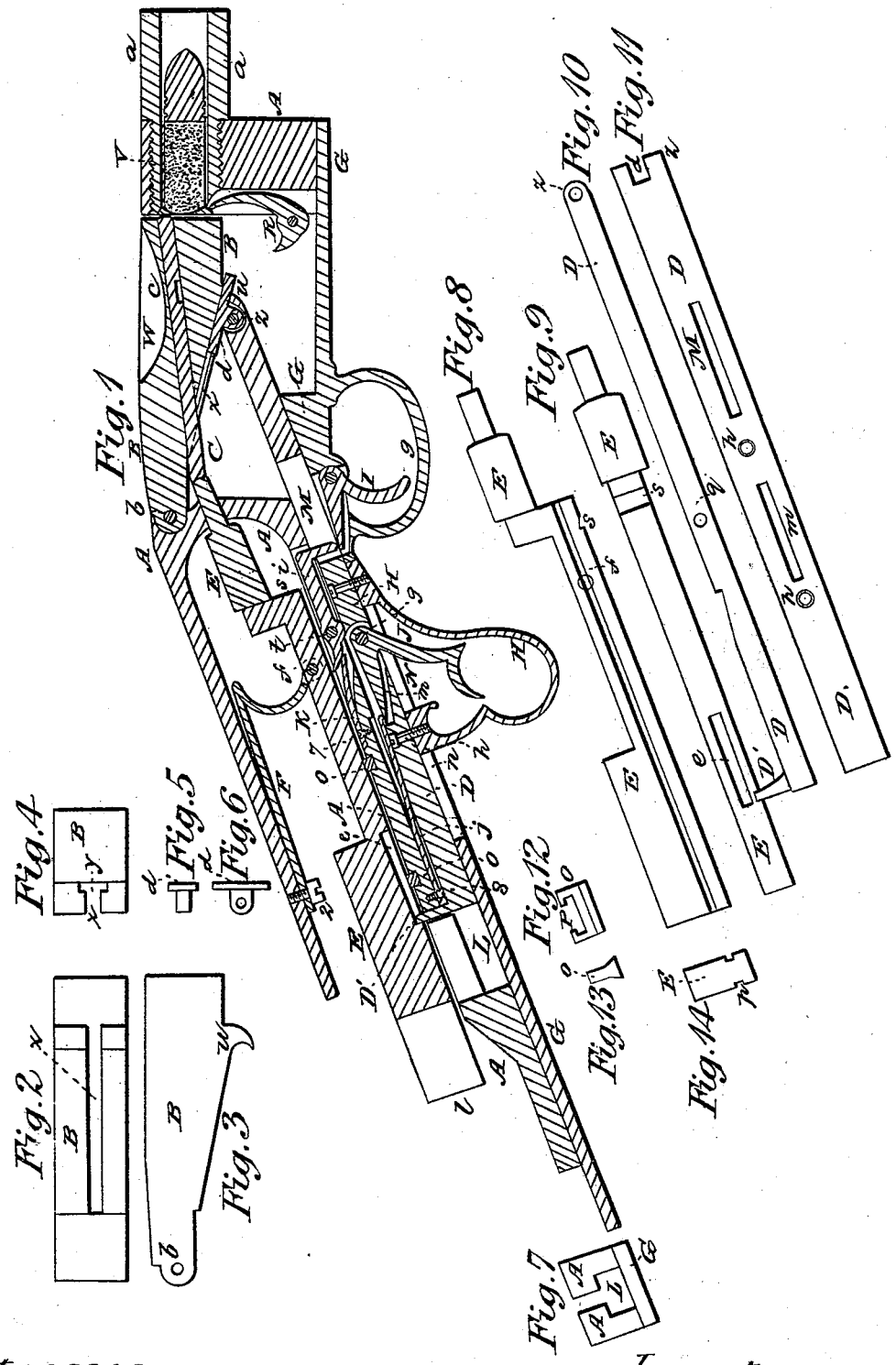
2 Sheets—Sheet 1.

A. L. VARNEY.

Breech-Loading Fire-Arm.

No. 95,395. Patented Sept. 28, 1869.



Witnesses:
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Inventor:
A. L. Varney
By Atty

2 Sheets—Sheet 2.

A. L. VARNEY.

Breech-Loading Fire-Arm.

No. 95,395. Patented Sept. 28, 1869.

Fig. 15

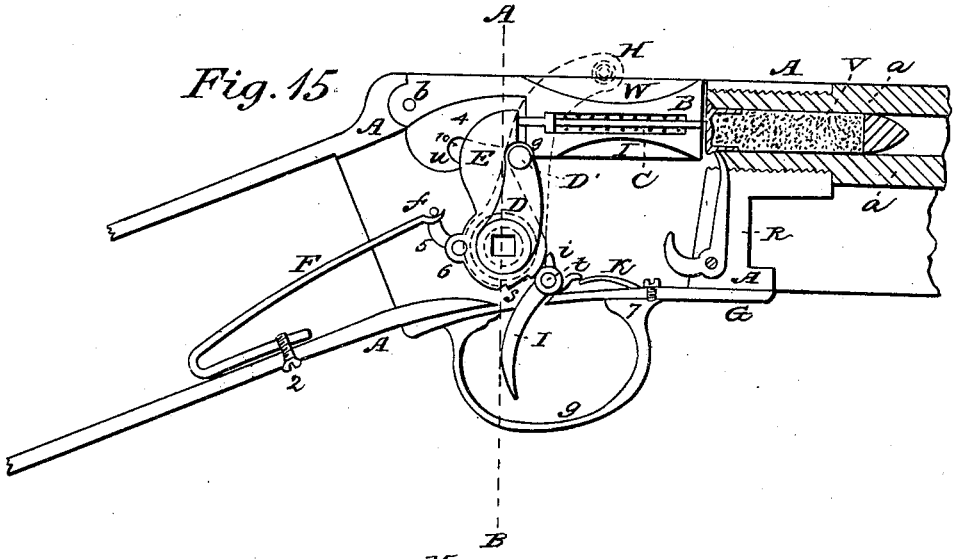


Fig. 16

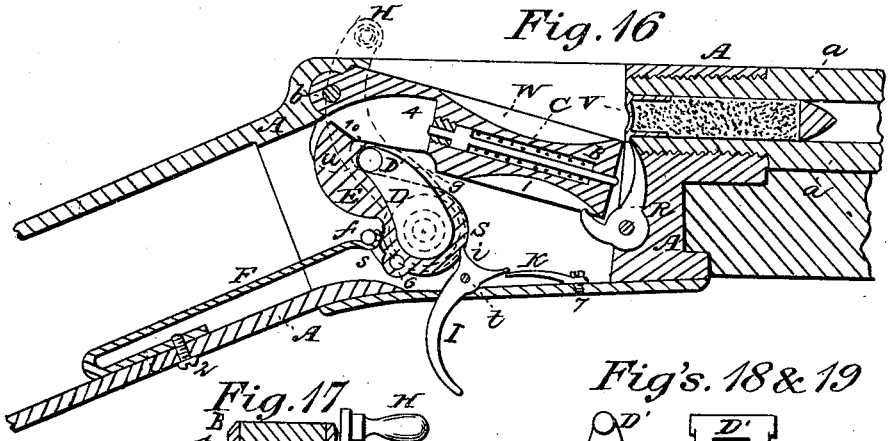
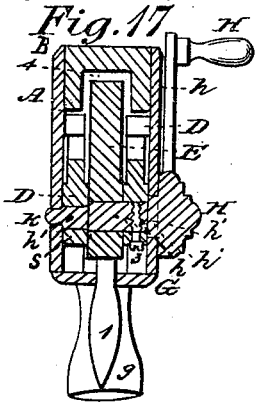
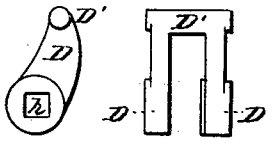


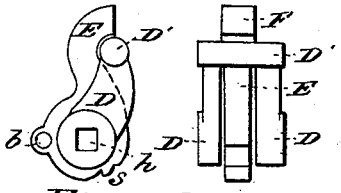
Fig. 17



Fig's. 18 & 19



Fig's. 20 & 21



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Letters Patent No. 95,395, *dated September* 28, 1869.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, A. L. VARNEY, of Watertown, Massachusetts, have invented certain new Improvements in Breech-Loading Fire-Arms, of which the following, with the accompanying drawings, is a full description.

Figure 1 is a section of the breech-parts of first form of the arm, on Sheet No. 1.

Figures 2, 3, and 4, are under-side, side, and end plans of breech-block.

Figures 5 and 6 are side and end plans of sliding eye.

Figure 7 is section of frame at rear end of operating-rod.

Figures 8, 9, and 14, are side, bottom, and end plans of hammer.

Figures 10 and 11 are side and bottom plans of operating-rod.

Figures 12 and 13 are side and end plans of brackets for hammer.

Figure 15 is a section of a modification of the arm, with hammer down, breech closed, and piece uncocked, on Sheet No. 2.

Figure 16 is a section of the same, with hammer raised, breech open, and piece cocked.

Figure 17 is a cross-section of same, from the rear.

Figures 18 and 19 are side and rear plans of opening and cocking-lever.

Figures 20 and 21 side and rear plans of hammer and cocking-lever.

My invention consists in a novel construction and arrangement of the parts, so that the same movement which opens the breech, expels the empty shell and cocks the piece, and in other and minor combinations, to be described.

In Sheet No. 1—

A A is the frame of metal.

a a, the barrel screwed into the frame.

B, the breech-block, pivoted at *b*.

C, the firing-pin, passing through the block, and having a small pin and recess at *c* to limit its movements.

D is the operating-rod, sliding back and forth in the frame, for depressing and raising the breech-block.

d is a sliding eye, with flanges sliding in a recess, *x y*, in the breech-block, and pivoted to the rod D at *z*.

U is a hooked projection on the under side of the block, against which the front end of rod D brings up to close the breech.

E is the hammer, parallel with rod D, and having a slot, *e*, in rear under side, into which projects a horn or pin, D′, from the rear top of rod D, to push back the hammer as D moves back.

L is the vacant space through which D moves back, and

l, that through which E moves back.

o is a bracket, fastened to the frame, its arms, P, taking into the recesses *p* of the hammer, and on which it slides.

F is the main-spring, fastened to the frame at 2, and to the hammer at *f*.

G is a metal plate along the bottom of the frame, slotted at N and *n*, and having a trigger-guard, *g*, attached to or a part of it.

H is a guard-handle fastened to the rod D at *h h*, by pulling and pushing which the rod D is moved back and forth.

I is the trigger;

i, the sere, pivoted at *t*; and

K, the sere-spring, fastened to frame at 7.

J is a finger-lever, pivoted to rod D at *q*, and

j, a spring fastened to frame at 8, with its end resting against a notch, *r*, in rod D, to hold it in place when pushed forward.

M *m* are slots in rod D for trigger I and lever J.

s is a notch in the hammer-rod, against which the sere strikes in cocking.

v is the cartridge.

w is an egg-shaped depression on top of breech-block, to facilitate the manipulation of the cartridge.

R is a lever, pivoted to the frame, the long arm of which has its point in front of the flange of the cartridge, and the short arm of which is struck by the front of the breech-block in coming down, for the purpose of extracting the empty shell.

The operation is as follows:

The fingers being placed within the guard H, the forefinger pressing on the lever J, releases the spring *j*, and enables the rod D to be drawn back through the space L.

This, by means of the horn D′, also draws back the hammer E through the space *l*, and the sere-spring *k* operating on the sere *i*, causes it to enter the notch *s* and hold the hammer back against the spring F, and the piece is cocked.

At the same time, in drawing back the rod D, the eye *d* moves along the channel *x y*, and the front end of the breech-block B is depressed, and the breech opened, so that a cartridge can be inserted into the barrel.

As the front end of the block descends, it strikes upon the short arm of the extractor R, and drives out the empty shell, if any.

The breech being opened, the piece cocked, and the cartridge inserted, the guard H and rod D are pushed back, the breech-block raised and locked by the spring *j*, and the breech closed, leaving the piece cocked;

then, on pulling the trigger I, the hammer D is released, and driven by the spring F against the firing-pin C, and the charge is exploded.

I first embodied my invention in this form.

It is obvious that a lever may be attached to the rod D, so as to move it back and forth, underneath, on top, or on the side of the arm, the hammer and other arrangements being the same, or essentially so.

But I subsequently modified and greatly simplified and improved the construction and arrangement of the parts, as I will now proceed to explain.

In Sheet No. 2—

A A is the metallic frame.

a, the barrel, screwed into the frame.

B, the tumbling breech-block, pivoted at *b*.

C is the firing-pin, passing through the block, and surrounded by a spiral spring, to retract it when struck.

D is a forked or gallows-lever, having a cross-head, D′, and with its two legs attached firmly to an arbor, *h h*.

E is the hammer, the head of which is behind, and curves over the cross-head D′ of lever D, and the other end of which turns on the arbor *h*′.

F is the main-spring, attached to the frame at 2, and linked at *f* to a strap, 5, pivoted to the hammer at 6.

G is a plate, along the under side of the frame, and *g*, the guard.

H is a crank-handle or lever, on the side of the arm, attached to an axis or arbor, *h*, passing through from side to side.

The outer end *h*, of the arbor, to which the handle-lever H is attached, is square.

This arbor passes through the lower ends of lever D and hammer E.

The parts *h*′ *h*′ *h*′, which pass through the frame A A, and the hammer E, are round.

The parts which pass through the legs of the lever D are square.

I is the trigger, pivoted at *t*.

i is the sere, and

K, the sere-spring, fastened at 7.

R is the shell-ejector lever, the short arm of which is to be struck by the block B.

s are notches in the hammer, to hold it at half or full cock.

w is the egg-shaped depression on the upper side of the breech-block.

1 is a cutting away of the lower side of the breech-block to lighten it, and also to present a better surface for striking the shell-ejecting lever R.

4 is a recess or slot, cut in the rear of the breech-block, for the play of the head of the hammer.

The rear of the under side of the block, each side of slot 4, is provided with hooked projections *u*, and curved recesses 9 10.

When the block is raised and the breech closed, the cross-head D′ rests firmly against curve 9, and locks it in place.

When the cross-head moves back, it presses against curve 10 and projection *u*, and depresses the block and opens the breech.

v is the cartridge.

3 is a screw, for confining the arbor in place.

The operation is this:

Turning the handle-lever H back turns back the lever D. The cross-head D′ carries back the hammer till the sere enters the notch *s*. At the same time the lever D strikes against the projection *u*, on the breech-block, and throws down its front end and opens the breech. In doing this the front of the block strikes on the short arm of the extracting-lever R, and throws out the old shell, if any.

A new cartridge is inserted, and the handle-lever H is turned forward and the breech is closed, leaving the hammer cocked.

The levers D press firmly against the block B, at 9, and lock it against the explosive force of the cartridge.

The gun is then ready for firing, on the pulling of the trigger, which releases the sere, and causes the hammer, by the force of the spring F, to strike the firing-pin C, and explode the cartridge.

By holding the trigger with the finger when the lever H is brought forward, the hammer can be let down without a blow.

If the hammer fall at any time when the block is down and the breech open, it will at once, of itself, raise the block and close the breech.

The extractor may be forked, and the long arms so extended as to strike the flange of the cartridge on both sides and with a longer sweep.

The form of the handle-lever H and its arrangement will enable the soldier to support arms according to the present manual of exercise.

It may be made to rest against a pin or projection when at its forward position.

It is evident that the breech-block may be opened and closed by means of an opening-rod or link attached to a sliding trigger, pendent hooks, or lever, and that this combination may be used in connection with the ordinary musket-lock.

In this case the most convenient position for placing the sliding trigger, pendent hooks, or lever, projecting through and sliding along the under plate of the stock, will be in front of the ordinary trigger and guard, or the ordinary trigger and guard may be linked to the breech-block, so as to open and close it, by sliding back and forth upon the under stock-plate.

A spring may be attached to the bottom front of the breech-block, which, as the block descends, can be let go, so as to strike the short arm of the ejector and materially aid in flipping out the shell.

It will be seen that the lever H H, in figs. 15, 16, 17, need not be outside the stock of the arm, but that all but the projecting knob or handle may be within the lock-plate, or the handle H may be directly applied to the part D′, and project out through a slot in the lock-plate, so that nothing need appear outside the stock or frame but the knob on the side and the trigger and guard below, and even the knob H may be made removable at pleasure.

What I claim, is—

1. The construction and arrangement of the parts, substantially as described, by which the breech is opened, the shell extracted, and the hammer cocked by the same operation, substantially as set forth.

2. The swinging breech-block, and opening and closing-rod or lever, constructed, arranged, operated, and operating in combination with and in relation to each other, substantially as described.

3. The breech-block and hammer, constructed and arranged in relation to and in combination with each other, substantially as described.

4. The breech-block, opening and closing and cocking-rod or lever and hammer, constructed and arranged in relation to and in combination with each other, substantially as described.

5. The swinging breech-block, opening and closing-rod or lever, and extractor, constructed, arranged, operated, and operating in combination with and in relation to each other, substantially as described.

6. The combination and arrangement of handle, cocking-rod or lever, and hammer, substantially as and for the purposes described.

7. The breech-blocks, constructed as to their several parts, substantially as described, and arranged and operated substantially as set forth.

8. The hammers, constructed and arranged substantially as described, and manipulated substantially as set forth.

9. The combination of breech-block, firing-pin, opening, cocking, and closing-rod or lever, hammer, handle, and ejector, when the several parts are constructed and arranged, substantially as and for the purposes described.

10. The combination of sliding guard, pendent hook or lever, with swinging breech-block, substantially as and for the purposes described.

In testimony whereof, I have hereunto subscribed my name.

A. L. VARNEY.

Witnesses:
L. R. STREETER,
W. M. PARKER.