A. L. VARNEY.

Breech Loading Fire Arm.

No. 88,530. Patented March 30, 1869.

Fig. 1

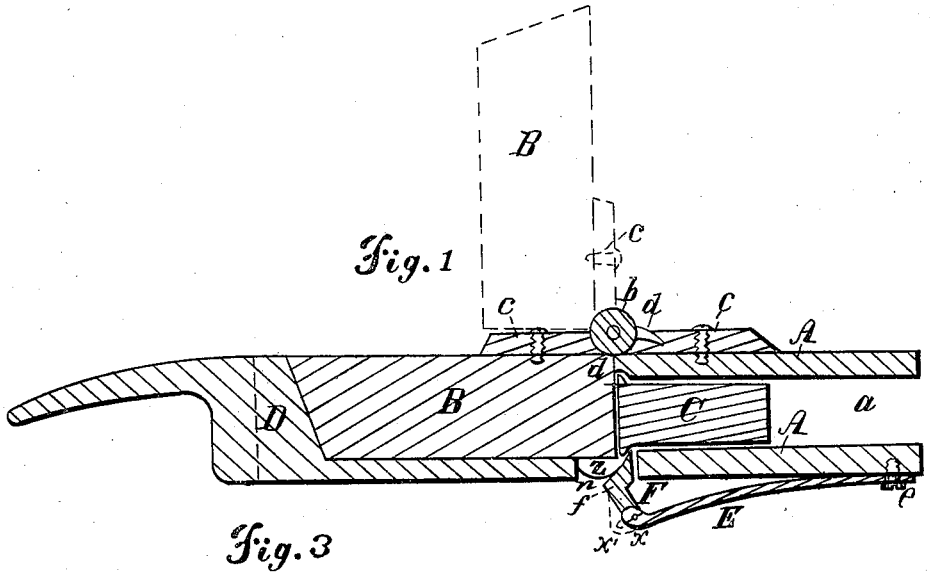

Fig. 3

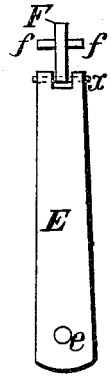

Fig. 2

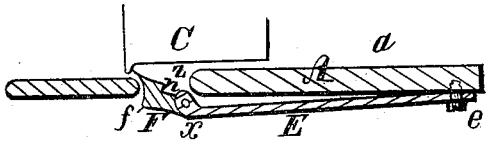

Fig. 4

Witnesses
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A. L. VARNEY, OF WATERTOWN, ASSIGNOR TO ALFRED B. ELY, OF NEWTON, MASSACHUSETTS.

Letters Patent No. 88,530, *dated March* 30, 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, in the State of Massachusetts, have invented certain new and useful Improvements in Breech-Loading Fire-Arms, of which the following, with the accompanying drawings, is a full description.

My invention has special reference to the ejection of the empty shell of a percussioned or metallic cartridge after the charge is fired; and consists, mainly, in the employment of a toggle-jointed spring and ejecting-finger; and in the drawings, I apply it to use in connection with the solid swinging breech-block, or plug, for which a patent was issued to A. B. Ely, assignee of J. W. Preston, February 5, 1867, and now in use in the alteration of muskets by the United States.

Figure 1 is a sectional view, with the breech-block down, the cartridge in its seat, and the ejector thrown forward, before action.

Figure 2 is a partial section, with the ejector thrown back, after action.

Figure 3 is a plan of the under side of the ejector.

Figure 4 will be described hereafter.

A represents a musket-barrel, and *a* the bore.

B is the solid plug, filling the enlarged part of the cavity of the barrel, or the receiver, in front of the tang-screw, or recoil-plate D, the bore of this cavity, or receiver being as much larger than the bore of the barrel as the flange of a cartridge is larger than the body of it, this size of bore extending enough beyond the front face of the plug to admit of the flange of the cartridge between such face and the rear shoulder of the bore of the barrel.

d is a small spur on the rear of the hinge *b*, upon which the plug turns, and the straps of which hinge are fastened to the barrel and plug, at *c c*. *d* projects sufficiently far to strike the cartridge-case in front of its flange when the plug is turned up, and to move, or force the shell backward, as the plug is turned further up and back, as is shown in red lines in fig. 1.

E is a flat spring, fastened, at *e*, to the bottom of the barrel, and extending backward as far as the bore *a* extends.

At the rear end of the spring E is attached a sharp-pointed, or edged finger, F, with cross-arms *f*, this finger being attached to E by a cross-axis, *x x*, forming a toggle-joint at X.

At Z is a slot through the bottom of the barrel, extending from the front of the flange of the shell, when in position, sufficiently far back to permit the spring to operate effectually.

n is the outline of the barrel, each side the slot Z.

The cross-arms *f f* extend each side the slot Z, resting on the outside the barrel, and upon the outline *n*, the under side of the barrel being filed away, to form such outline.

The operation is as follows:

The breech-block, or plug being thrown up and over, thus opening the cavity of the receiver, and the spring E extended, with the point *o*, of the finger F, projecting backward and upward, above the lower line of the bore of the receiver, as shown in fig. 2, the cartridge is introduced, its forward end penetrating the bore of the barrel *a*, until the flange strikes the projecting finger F.

The breech-block, or plug is then brought forward and shut down, and, as this is done, the front face of the plug, striking the rear of the cartridge, forces it inwards, and pressing the flange against the point *o* of the finger F, throws it forward, depressing the spring E to the position seen in fig. 1.

The front, or edge *o* of the finger F, is made sharp, so as to engage with the surface of the body of the shell before the flange, when pressed forward, as in fig. 1, and by its pressure against the shell, and the shell against the barrel, it is held it place till the shell is started backward; but, besides this, when the point *o* is pushed forward, the cross-arms *f*, of the finger F, ride forward, over the outline *n* of the barrel, to the right-hand position in fig. 4, and the finger is retained in place by the pressure of *f* against *n*.

When the charge is exploded, the plug is raised and turned over. As this is done, the spur *d* strikes the shell in front of the flange, and moves it back, and, in so doing, also moves back the point *o* of the finger F, and thus the spring E is let loose; the point of the finger is suddenly thrust back, as the spring straightens and expends its force, and the shell is struck, or flipped backward with force enough to discharge it from the barrel, and, indeed, from the receiver, the cross-arms *f* riding backward, along the outline *n*, to the left-hand position in fig. 4.

The spring E may be made a little longer, as shown by red lines in fig. 1, so that the centre of revolution of the toggle-joint X shall be slightly in rear of the position of the point *o*, in which case *o* will retain its upward and backward position till, by the backward pressure of the shell, or otherwise, the point *o* shall pass in rear of the centre X, when the spring will at once act, and the point be thrust back, and the shell ejected, as before.

What I claim, is—

The toggle-joint-spring ejector, substantially as described.

In testimony whereof, I have hereunto subscribed my name.

A. L. VARNEY.

Witnesses:

E. M. STEVENS,
W. M. PARKER.