

UNITED STATES PATENT OFFICE.

ETHAN ALLEN, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 30,033, dated September 18, 1860.

To all whom it may concern:

Be it known that I, ETHAN ALLEN, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Breech-Loading Fire-Arms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of a rifle with my improvements attached; Fig. 2, a longitudinal section through the same; Fig. 3, view of the discharger F detached.

My present invention refers to that class of breech-loading fire-arms in which a metal cartridge is inserted into the rear end of the barrel, and is covered by a sliding breech-piece; and my invention consists in a device for ejecting the empty metal cartridge-case from the barrel (after firing) by the operation of the parts which move the sliding breech-piece.

That others skilled in the art may understand and use my invention, I will proceed to describe the manner in which I have carried out the same.

In the said drawings, A is the barrel, B the stock, C the hammer, and D the sliding breech-piece, which is raised and lowered to cover or expose the rear end of the barrel. This is effected in the following manner: The forward portion, *a*, of the stock, to which the barrel A is attached, is of brass or other suitable metal, and is slotted down vertically, as shown at *d*, Fig. 2, to receive the sliding breech-piece D. This piece D is of steel and fits loosely in the cavity *d*, except at its rear end, which carries a tongue, *c*, projecting a short distance on each side and fitting snugly into corresponding grooves, 5, in the metal part of the stock. This insures for the piece D an accurate up-and-down movement without the necessity of tight or accurately fitting joints at its sides.

The lever E, which also serves as trigger-guard, is pivoted at *b* to the stock; and has upon its end *e*, which enters a recess in the stock, a hook which is caught and retained by the trigger *f*. When the parts are in the position shown in Fig. 2, the front end, *g*, of the guard plays in the recess *d* when the lever is vibrated. The breech-piece D is connected with the lever by the link *h*, which is pivoted at 3 to the lever E, and at 4 to the breech-

piece. The lever E is released by drawing the trigger *f* against the resistance of the spring *i*, and at the same time pressing down the curved part of the lever or guard at *k*. This carries down the breech-piece D, which is guided in the grooves 5, by which the rear end of the barrel is exposed, the barrel being bored entirely through from end to end. The metal portion *a* of the stock is cut down at *n* to give access to the end of the barrel when the piece D is drawn down, the barrel being secured to the remaining portion *o* of the stock. The rear part of the barrel is turned down at *p* and fits snugly in the portion *o* of the stock, where it is held by a steel key, 6. The portion *q* of the stock rises behind the notch *n*, and affords a long bearing, in which the tongue *c* of the piece D slides, (the grooves 5 being continued up to the top of it.) It also shields the lock from any dirt which may fall from the barrel after firing.

The hammer C (shown at half-cock in the drawings) has a punch-shaped head, *r*, which strikes through a hole, S, in the portion *q* of the stock when the hammer is thrown down by the mainspring G.

The breech-piece D is bored through lengthwise to accommodate the piston or striker *t*, which has a head, 7, against which the head *r* of the hammer can strike, and which is retracted when the hammer is raised from it by a spiral spring, 8, coiled round its lower end. The shank of the striker is smaller than the head end, and is rounded off at the point where it comes in contact with the metal cartridge *m*. As the hammer can only strike the rod *t* when the piece D is raised sufficiently high to cover the cartridge, there is no danger of an accidental discharge of the piece occurring from the fall of the hammer while the breech-piece is down, thus avoiding danger to the person using the gun.

The cartridge-case *m* is a copper cylinder, which fits accurately the bore of the barrel A, and contains the gunpowder *v*, and has the ball or slug *u* attached to it. The base 10 of the cartridge is of a rather greater diameter than the cylindrical part, and forms a rim which overlaps the end of the barrel. The fulminate is contained within this base, and is exploded by the concussion of the striker *t* when it receives the blow of the hammer. The front