



# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 44,991, dated November 8, 1864.

*To all whom it may concern:*

Be it known that I, ELI WHITNEY, of New Haven, county of New Haven, State of Connecticut, have invented a new and Improved Breech-Loading Fire-Arm; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of the main portion of my improved arm. Fig. 2 is a vertical longitudinal section through Fig. 1. Fig. 3 is a top view, showing the breech-piece and the retractor in position for discharging the cartridge-case. Fig. 4 is a bottom view of the movable breech-piece. Fig. 5 is a sectional view, showing the breech of the barrel, retractor, and the seat for the bead of the cartridge-case.

Similar letters of reference indicate corresponding parts in the several figures.

The main object of my invention is to so construct a breech-loading fire-arm that the breech of the barrel can be exposed for receiving the charge in it, and again tightly closed by giving a simple horizontal and lateral swinging movement to a breech-piece, as will be hereinafter described.

Another object of my invention is to so construct a fire-arm that the breech-closer shall, when in position for closing the breech of the barrel, constitute an upper part of the neck of the gun-stock, as will be hereinafter described.

Another object is to so apply the lock of the gun as to practically operate in conjunction with a laterally-swinging breech-closer.

Another object is to withdraw the shell of the cartridge in the act of exposing the breech of the barrel to receive a charge when a laterally-swinging breech-closer is employed, as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

Before entering into a description of my invention I will state that I propose to employ the cartridges which have an annular bead or flange formed on their rear ends for containing percussion-powder and receiving the blow of the hammer when it is desired to discharge the load. A cartridge of this character is

represented in position in the barrel of the gun, Fig. 2.

The barrel A is firmly seated and rigidly secured to the frame B, which is constructed with a flat surface, *a*, adapted for receiving the breech-piece C, a recess for receiving the trigger and trigger-spring, a recess for receiving the retractor-slide, and means by which the whole may receive and be secured to the stock D. That portion of the frame B which encompasses the rear end of barrel A has a lip, *a'*, projecting backward from its upper edge, so as to extend over and break joint with the breech-piece C, when this latter piece is in the position represented in Figs. 1 and 2. This lip not only gives a finish to the gun at this point, but it also closes the joint against the upward escape of gas. The rear end of the barrel is reamed out, so as to leave a depression for receiving the bead on the cartridge, and also for receiving the crescent-shaped vertical portion of the cartridge-retractor, which partially encompasses the cartridge forward of its bead, when it is in the position represented in Fig. 2, so that when this retractor is withdrawn from its seat the shell of the cartridge will be carried with it. The slide *b'* of the retractor *b* is recessed into the flat portion *a* of frame A, so that the surface of *b'* will be flush with that of *a*.

The vertical central slot through the frame A, which I have shown in Fig. 3, is adapted for receiving the trigger *c* and trigger-spring *c'*. The trigger *c* has an extension, *c''*, formed above and in rear of the pivot *e*, which extension strikes the hammer-check *d* when the breech-piece is in the position represented in Fig. 2, and releases the hammer, as will be further described. A hole is formed through the neck portion of the frame B for receiving a vertical pin, *f*, which operates upon a spring-latch, *e'*, that catches into a recess, *f'*, in the breech-piece, and holds this piece in the position for closing the breech of the barrel.

It will be seen by reference to Figs. 1, 2, 3 that the breech-piece C is of such form as to constitute the upper portion of the neck of the gun-stock. The bottom, *a''*, of this piece C is flat, and adapted to fit snugly on its corresponding supporting-surface, *a*, of the frame A. The forward end, *i*, of breech-piece C is curved and adapted to fit snugly in contact with the corre-

sponding vertical curved surface,  $v'$ , the curve of which is concentric to the axis of motion of said breech-piece, as shown in Fig. 3. The breech-piece is pivoted near its rear end to the frame B by means of a vertical pin,  $g$ , which allows the forward end of this piece to be moved off laterally, so as to expose the breech of the barrel, as represented in Fig. 2. The rear end of breech-piece C is curved; but this curve is not concentric to its axis of motion, as it is desired that when the breech-piece is closed the rear end will abut closely against the shoulder  $g'$ , and thus sustain it against recoil. The eccentricity of the rear end of the breech-piece should not be such as to give a forward or longitudinal movement to this piece in the act of closing the breech of the barrel, as I intend by my invention to avoid all end play, and close the breech of the barrel by a single swinging movement. The breech-piece C not only forms a part of the neck of the gun-stock, but when closed it also forms a continuation of the encompassing portion of the frame A, thus leaving no unnecessary projections on the piece. This breech-piece has a vertical slot through it for the reception of the hammer  $h$  and check-lever  $d$ . The hammer and check springs  $k k'$  extend back and fit in a suitable recess made for them, and are so arranged as to occupy very little space, and to be out of the way in operating the breech-piece. The check-lever is pivoted within the breech-piece in such relation to the tumbler of the hammer  $h$  and the trigger-extension as to hold the hammer at full and half cock, and release said hammer when the trigger is drawn back, as shown in Fig. 2. The bottom of the breech-piece has a curved slot,  $s$ , made in it, as shown in Figs. 3 and 4, and in this slot a vertical pin,  $y$ , enters, which pin is affixed to the slide  $v'$  of the retractor. The shape of slot  $s$  is such that when the breech-piece is moved to the position shown in black lines, Fig. 3, the retractor will be drawn back to its fullest extent to discharge the shell of the cartridge. When the breech-piece is moved to the position shown in red lines, Fig. 3, the retractor will return to its seat for the reception in the breech of the barrel of a new charge, after which the breech-piece is brought directly opposite and in a line with the barrel, and there caught and retained by the spring-latch  $e'$ . The upper portion of the forward and solid end of the breech-piece is notched, to allow the nose of the hammer  $h$  to strike the bead on the cartridge, as shown in Fig. 2.

The slot  $s$ , which gives the required movements to the retractor, is shown clearly in Figs. 4 and 2. It is necessary in making this slot to insert a piece of metal,  $t$ , into the recess formed in the breech-piece, C, for receiving the hammer and check-springs  $k k'$ . By this means the recesses in the breech-piece can be readily made and the slot  $s$  carried across the longitudinal slot by the insertion of a small piece, as above shown; otherwise the recesses

in the breech-piece would be very difficult to make.

If desirable, the stock of the gun may be provided with a tube extending from its butt to the nose  $m$ , for containing cartridges, by having a spring arranged in any suitable manner in said tube, so as to act upon the cartridges and force them toward said nose, and then, by making the latter removable in any convenient manner, the cartridges can be readily taken from the tube and inserted into the barrel of the gun without taking the gun from the shoulder. The nose  $m$  serves as a cap for retaining the cartridges within their tube, and by applying a spring to this nose, as represented in Fig. 3, it will close the opening immediately on removing the fingers.

It will be seen from the above description that the breech of the barrel is opened and closed by a simple lateral movement of a breech-piece, which piece forms a portion of the neck of the gun-stock. It will also be seen that the lock of the gun is divided, a portion being located in the movable breech-piece and another portion in the frame A. It will be further seen that I combine a cartridge-shell retractor with said laterally-swinging breech-piece in such manner as not to interfere in any manner with the loading and firing of the piece, all of which is effected in a very simple manner.

The operation of loading and firing is as follows: The forward end of the breech-piece is released by thrusting the thumb-pin  $d$  upward, after which this breech-piece is moved to one side of the barrel, as indicated in red lines, Fig. 3. The charge is now inserted and the breech-piece returned to its position in a line with the barrel. The piece having been discharged, the forward end of the breech-piece is moved to the position indicated in Fig. 3 in black lines, so as to withdraw the shell of the cartridge, which was left in the barrel. The piece can then be reloaded, as before described.

It is desirable to half-cock the hammer in opening or closing the breech-piece, and for this purpose a double-inclined plane or double-beveled surface is made at  $p$ , Figs. 5 and 6, against which the nose of the hammer abuts in opening or closing the breech-piece.

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

1. So constructing a breech-loading fire-arm that the breech of the barrel shall be exposed for receiving the charge and again tightly closed by giving a horizontal (or nearly so) lateral swinging movement to a pivoted breech-check which has no endwise play, substantially as described.

2. So applying a laterally-swinging breech-check to a breech-loading gun that when closed it constitutes the upper portion of the neck of the stock, substantially as described.

3. In a breech-loading arm having a hori-

zontal laterally-swinging breech-check, applying the hammer, hammer spring and check or their equivalents to said check, and operating these portions of the lock by means of a trigger applied to the frame B, substantially as described.

4. In a breech-loading arm having a horizontal laterally-swinging breech-check, the use of a cartridge-case retractor, arranged and operating substantially as described.

5. In a breech-loading arm having a horizontal laterally-swinging breech-check, the slot *s* in said piece, in combination with the slide *b'* and retractor *b*, substantially as described.

6. In a breech-loading arm having a horizontal laterally-swinging breech-check, C, the employment of a spring-latch, *ef*, or its equivalent, for locking said check in place, substantially as described.

7. Half-cocking the piece, both in the act of opening and closing the breech-piece C, by means of the double-beveled surface *p*, substantially as described.

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Witnesses:

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