

W. H. ELLIOT.
Breech-Loading Fire-Arm.

No. 163,646.

Patented May 25, 1875.

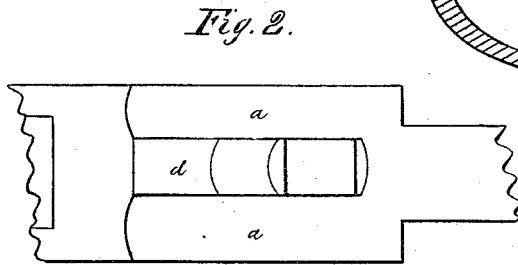
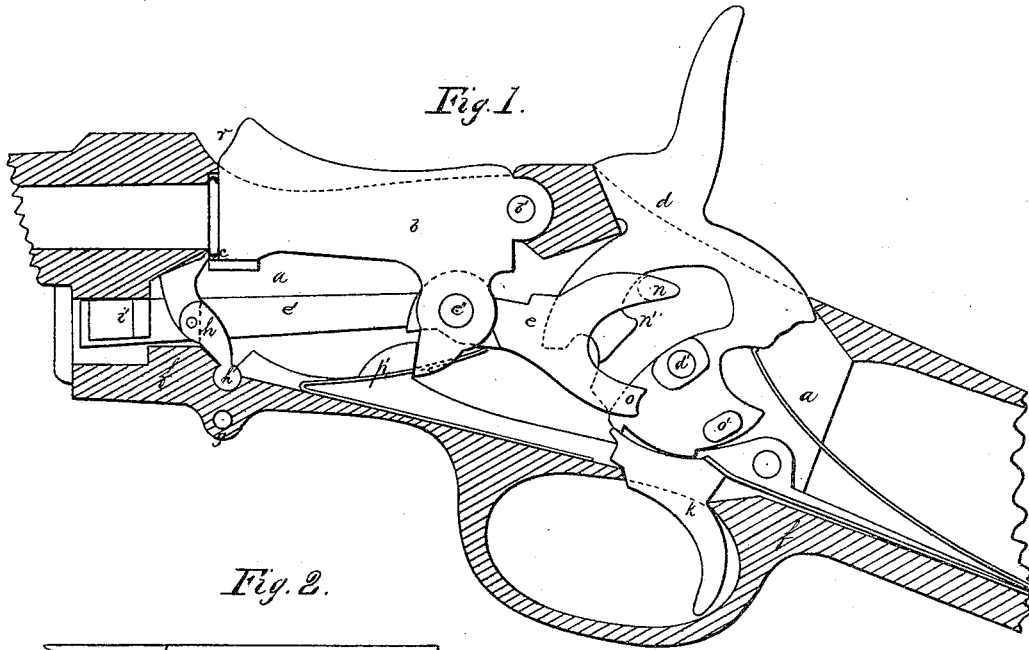


Fig. 3.

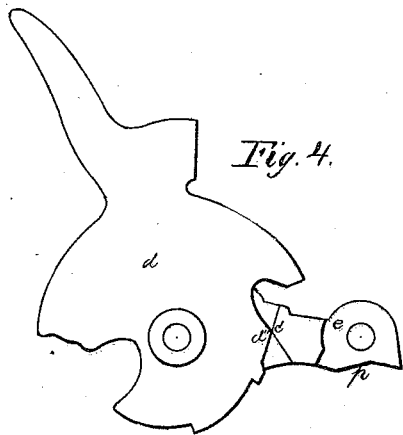
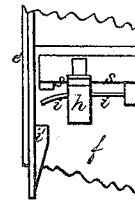
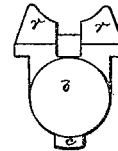


Fig. 5.



WITNESSES

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IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **163,646**, dated May 25, 1875; application filed May 17, 1875.

To all whom it may concern:

Be it known that I, WM. H. ELLIOT, of the city, county, and State of New York, have invented an Improved Fire-Arm, of which the following is a specification:

My improvements refer particularly to the arm invented by myself, and upon which several patents have been issued to me therefor, the first of which is dated December 13, 1870; and for the better understanding of this specification and drawing I make special reference to said patents.

The object of my invention is to provide for defects which have developed themselves during the trial and testing of the arm.

The nature of my invention consists in several novel features, the principal of which are, first, in placing the hammer nearer one side of the receiver or frame of the arm than the other, so as to provide room between it and the opposite side of the receiver for the double pawl without increasing the width of the receiver; second, in the arrangement of the retractor-spring between the retractor and the retracting or operating shoulder, which gives movement to the retractor through the medium of the hammer or operating-lever; third, in providing the hammer with a cam upon the front portion of it, which, when the chamber is open, comes in contact with the double pawl during the forward movement of the hammer, causing the breech-block to rise sufficiently to prevent the ball from coming in contact with the retractor when the cartridge is inserted; fourth, in giving to the spring-bearing on the under side of the double pawl such a form that while it serves to hold the breech-block in its several positions it at the same time facilitates the operation of the spring upon the double pawl, to throw it back and forth from one position to the other; fifth, in thinning the upper edge of a retractor, which has a body that serves to divide one part of the receiver from the other, so that when the chamber is open any sand or gravel falling into the arm will be directed forward of the retractor, and kept there out of the way of the moving parts within the receiver; sixth, in providing the forward end of the breech-block with a projection which, when the chamber is closed, fills completely the cut in the side of the counter-

bore for the retractor, to support the head of the cartridge at that point.

Figure 1 is a vertical section of my improved arm, showing the limb-work in elevation. Fig. 2 is a plan of the rear portion of the receiver, showing the position of the hammer in relation thereto. Fig. 3 is a plan of the forward end of the guard-strap, of the retractor, retractor-spring, and operating-shoulder, showing the arrangement of the spring between the said shoulder and the retractor, also the thin upper edge of the retractor. Fig. 4 is an elevation of the hammer and double pawl, showing the operation of the cam on the hammer upon the double pawl; also showing the shape of the spring-bearing on the double pawl. Fig. 5 is an elevation of the forward end of the breech-block, showing the projection.

a, receiver or frame of the arm; *b*, breech-block; *b'*, pivot of the same; *c*, projection for filling the retractor-cut when the chamber is closed; *c'*, points on the double pawl, upon which the cam *d''* acts; *d*, hammer; *d'*, pivot of the same; *e*, double pawl; *e'*, auxiliary pawl; *e''*, pivot joining the two pawls to the breech-block; *f*, guard-strap; *g*, swivel-base; *h*, retractor; *h'*, pivot or bearing of the same; *i*, retractor-spring; *i'*, operating-shoulder; *k*, trigger; *n*, catch or shoulder on the double pawl for opening the chamber; *n'*, notch in the side of the hammer for catch *n*; *o*, catch on the double pawl for closing the chamber; *o'*, notch or pin on the side of the hammer for catch *o*; *p*, spring-bearing on the double pawl; *p'*, spring of the same; *r*, bevel on the forward end of the breech-block for forcing the cartridge into the chamber; *s*, thin edge of the retractor.

The operation of my improved arm is as follows: Premising that it has just been fired, on the first backward movement of the hammer, which is the operating-lever, the catch *n* takes hold upon the notch *n'*, in the side of the hammer, carrying the double pawl back and the forward end of the breech-block down; also carrying the operating shoulder backward, and depressing spring *i* till the said shoulder takes hold on the retractor, when the movement of the retractor becomes positive, starting the cartridge-shell from the chamber and carrying it back against the bevel *r*, which

resists the backward movement of the shell till the forward end of the breech-block has fallen so low that the shell is released, when the spring suddenly assumes its normal position, throwing the retractor backward and the shell out of the arm. The hammer is then allowed to make its first forward movement, when the cam d'' comes in contact with the double pawl at e' , forcing it forward and raising the forward end of the breech-block up enough to protect the point of the retractor and prevent the ball of the next cartridge from catching against it in the act of loading. When the breech-block has been raised by the cam d'' the spring p' rests in the lowest point of the spring-bearing p , and holds the breech-block until the hammer comes down upon the double pawl, which prevents all parts from moving until the next cartridge is inserted. The arm is now ready to be loaded, and, as the cartridge is passed into the chamber, the ball passes smoothly over the point of the retractor, but the head, being larger than the ball, depresses the breech-block and catches the point of the retractor, carrying it forward and depressing the spring i till the cartridge-head passes over the end of the breech-block, when the spring i suddenly assumes its normal position, which raises the breech-block behind the cartridge and locks it in the chamber. While the chamber is open the spring p' bears on the double pawl in front of pivot e'' , and depresses the rear end of the double pawl so as to cause the catch o to take hold on notch or pin o' , by which means the chamber is closed, when the hammer makes its second backward movement to cock the arm. The closing of the chamber carries the double pawl forward, so that the spring p' bears in the rear of the pivot e'' , and when the hammer falls in the act of firing the rear end of the double pawl is raised, and the catch n carried into the notch n' , which will cause it to open the chamber on the next backward movement of the hammer.

By the arrangement of the hammer on one side of the center of the receiver, when employed with a double pawl, which acts only upon one side of the hammer, makes the draft of the hammer upon the breech-block, through the medium of the pawl, more direct and less liable to friction, while it provides the necessary room for such a pawl without widening the receiver for that purpose. The arrangement of the retractor-spring between the retractor and the operating shoulder relieves the spring of all strain, except at the moment when the cartridge-head passes over the forward end of the breech-block, either in going in or coming out of the chamber. It is the resistance of the forward end of the breech-block to the passage of the cartridge that depresses the spring. Opening and closing the chamber in the absence of a cartridge does not depress the retractor-spring at all. I place the operating-shoulder in this arm, for convenience, upon the auxiliary pawl or elongated head of the

pivot e'' . It may be placed upon any device which has a positive movement through the medium of the operating-lever of the arm, (in this case the hammer.)

The use of the cam d'' on the front of the hammer, so as to raise the breech-block a little after the shell has been thrown out, facilitates the operation of loading the arm by preventing the ball from catching upon the retractor-point as it passes into the chamber.

By reference to Fig. 4, it may be seen that the spring-bearing p on the double pawl is divided into three surfaces, angularly arranged in relation to each other, so as to form a prominence on the rear portion, and a depression on the front portion, of the bearing. The operation of the spring p' upon these surfaces is such that the breech-block is held more firmly in its several positions while the operation of the spring upon the double pawl is facilitated.

By thinning the upper edge of the retractor-body, cutting it away on the back so that the edge will rest against the end of the breech-block, any sand or gravel falling into the arm through the opening between the end of the breech-block and the end of the barrel when the chamber is open, will be directed into the receiver forward of the retractor, and retained there, so that it cannot interfere with the movements of the lock and other portions of the limb-work.

The counter-bore in the end of the chamber, for the reception of the head of the cartridge, in all arms, has to be cut away to make room for the retractor. The heads of thin shells are frequently blown out through this cut, as the head has no support at that point. To remedy this, I place projections e on the front end of the breech-block, which, when the chamber is closed, fills up the retractor-cut and supports the head of the cartridge at that point, and at the same time serves as a stop, through the medium of the cartridge-head, to the upward movement of the breech-block.

Having described my invention, what I desire to have secured to me by Letters Patent of the United States is—

1. In a fire-arm, the breech-block of which is operated through the medium of a hammer and double pawl, the arrangement of the hammer on one side of the center of the receiver, to make room for the double pawl without widening the receiver, and so that it may have the most direct action, substantially as set forth.

2. The combination of a retractor-spring, i , and retractor, when said spring is arranged between the retractor and the operating-shoulder, and a breech-block, which operates as a retainer of the shell after it has been started by the positive movements of the retractor, the combination and operation being substantially as described.

3. The hammer, provided with a cam, in combination with the double pawl e , provided with shoulder e' , whereby the breech-block is

raised so as to conceal the point of the retractor, as herein set forth.

4. The combination, with the double pawl, having the spring-bearing surfaces, as described, of a fixed spring, adapted to operate upon opposite sides of its center of movement, and to hold the breech-block in its several positions, as well as to operate the double pawl, substantially as herein specified.

5. In a breech-loading fire-arm, the front surface of whose breech-block has a movement substantially at right angles with the axis of the bore, a cartridge-retractor, having a body with a thin upper edge, which serves

as a partition to prevent the entrance of sand to the lock or limb work, substantially as herein set forth.

6. The breech-block, provided with projections *c* to fill the retractor, cut in the rear end of the barrel, for the purpose of affording a complete annular support for the head of the cartridge, and of forming a stop for the upward movement of the breech-block, as herein described.

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Witnesses:

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