B. B. HOTCHKISS.

BREECH-LOADING FIRE-ARMS.

No. 169,641. Patented Nov. 9, 1875.

Fig: 1.

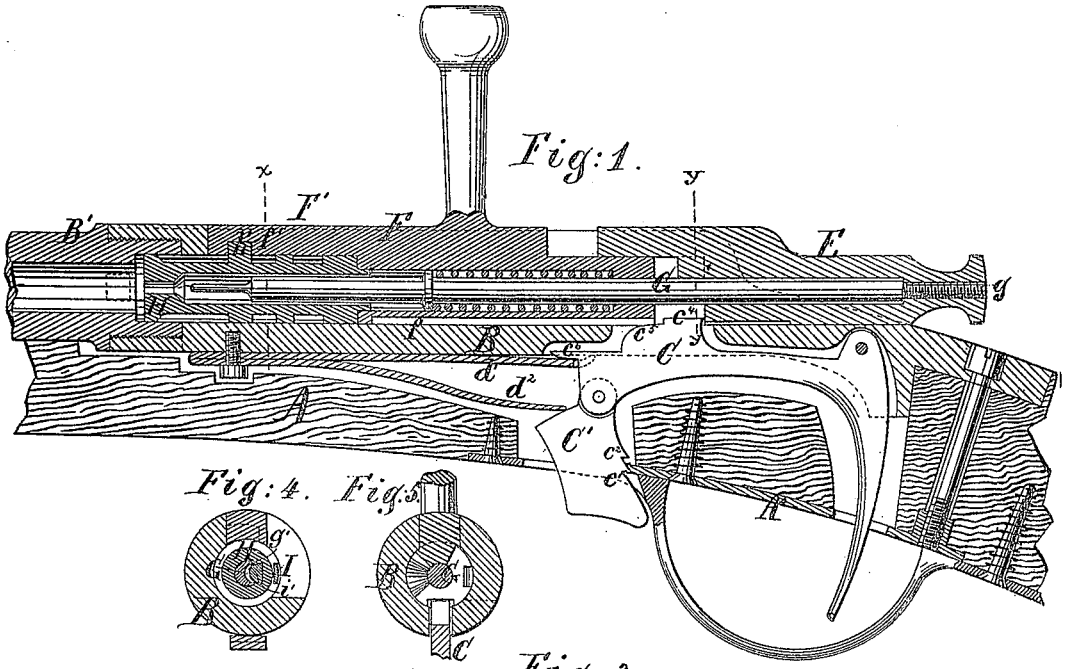


Fig: 4. Fig: 5

Fig: 2.

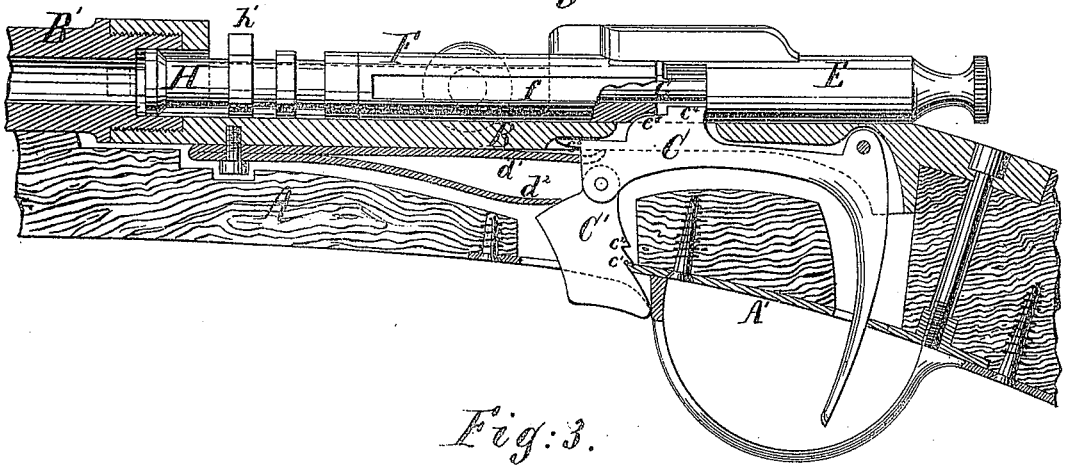
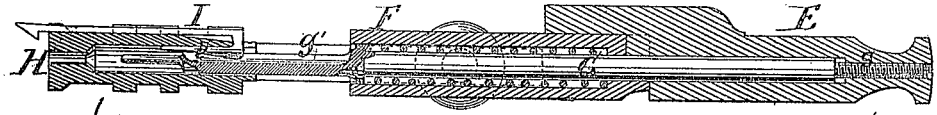


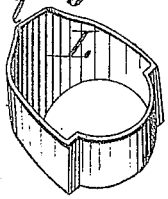
Fig: 3.



Witnesses:

Chas. C. Stetson

Fig: 6.



Inventor:

B. B. Hotchkiss

by his attorney

C. L. Stetson

UNITED STATES PATENT OFFICE.

BENJAMIN B. HOTCHKISS, OF NEW YORK, N. Y.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **169,641**, dated November 9, 1875; application filed July 23, 1875.

To all whom it may concern:

Be it known that I, BENJAMIN B. HOTCHKISS, of the city and State of New York, have invented certain new and useful Improvements in Fire-Arms, more particularly adapted to breech-loading small-arms, known as "bolt-guns;" and I do hereby declare that the following is a full and exact description thereof.

I have devised means for locking the mechanism, when the lock is cocked, by attaching to the trigger a small lever, which is worked by the operator as desired. The same lever also prevents the operator from accidentally withdrawing the system entirely from the shoe, but it allows of adjustment to enable the system to be withdrawn for cleaning it, or for any other reason when desired. The same lever, acting through the trigger, prevents the bolt from accidentally rotating when the mechanism is locked. I have also invented means for preventing the loose nose-piece from partaking of the rocking motion of the bolt, and for allowing it only to partake of the forward and backward movement of the bolt. I have also invented improvements in the mode of extracting the shell from the barrel.

It is important that the gun can be taken apart with as few tools as possible. In my arm some parts easily liberated are made to serve as tools by which the whole gun may be taken apart.

The accompanying drawings form a part of this specification.

Figures 1 and 2 are longitudinal vertical sections through the rear end of the barrel and the connected parts. Fig. 1 shows the breech system in the act of being closed. A turning of the handle down into the horizontal position will complete the closing of the breech, and leave the piece ready for firing. Fig. 2 represents the parts after the above-described movement has been made, and after the peculiar locking means have been operated to prevent the gun from being fired. Fig. 3 represents the breech system detached from the gun, and with its nose-piece in the act of serving as a wrench to remove the firing-pin from the hammer. Figs. 4 and 5 are cross-sections through the rear part of the arm in the position for firing. Fig. 4 is a section on the line *x x* in Fig. 1. Fig. 5 is a corresponding section on the line *y y* in Fig. 1. Fig. 6 is a perspective view of one of the bands which holds the barrel to the stock, and which, being detached, serves as a screw-driver.

Similar letters of reference indicate like parts in all the figures.

A is the wooden stock of the gun, formed as usual. B is the shoe at the rear of the barrel, and B′ is the barrel of the gun. To the trigger C is attached a lever, C′, which is formed with two notches, c^1 c^2. On this lever a pressure is exerted from the lower and weaker arm d^2 of the double spring shown. The other arm, d^1, of this spring presses the trigger constantly upward. It moves said trigger a little distance upward as soon as, in the action of cocking the gun, the proper shoulder of the hammer E has passed the projection c^4 of the trigger; but the ascent of the spring d^1 is soon stopped by reason of its end striking the shoe B.

When the gun is cocked for firing and the operator wants to lock it, he applies his finger to the lower end of the lever C′, and presses it forcibly upward and backward. This moves the trigger a little and sets the lever C′, so that the notch c^1 engages with the adjacent edge of the plate A′. This movement raises the projection c^4 higher than the spring d^1 could force it, and now the continuation c^5 of the projection c^4 enters a notch in the bolt F, (compare Fig. 2 with Fig. 1,) which, thus, is prevented from turning until the gun is unlocked again. The unlocking is done by pushing the lever C′ forward, so that the notch c^1 disengages from the edge of A′. Now, the spring d^2, acting on the lever C′, will press down said lever and the trigger until the projection c^6 strikes on the spring d^1, which spring, being stronger than spring d^2, holds the trigger in this position. The lever C′, having in front of its hinge a shoulder on which the spring d^2 acts, will be pressed constantly backward, and will always touch the edge of A′. (See Fig. 1.) The gun is now ready for firing. When the trigger is pulled the descent of the projection c^4 releases the hammer, in which the firing-pin G is firmly fixed. The spiral spring, encircling the pin G, drives the hammer and its attached pin against the back of the cartridge. The pulling of the trigger

is prevented from moving it too far by its being stopped by the notch c^2, which engages with the edge of A′ before the projection c^4 sinks altogether within the shoe B. A shallow slot in the lower side of the hammer E allows the hammer to traverse over the projection c^4 while in this position. A deeper slot, *f*, in the bolt F allows said bolt to traverse forward and backward; but the elevation of the projection c^4 above the inner surface of the shoe B prevents the system from being altogether withdrawn except by a special adjustment for the purpose. When this is to be done, the operator first makes the lever C′ of no effect by pushing it forward. This allows the trigger to be pulled farther than usual, so as to sink the projection c^4 entirely into the thickness of the shoe B, and now the system may be withdrawn. It is important that the nose-piece H shall never rotate around its axis with the bolt F, but that it shall share in the forward and backward motion of the latter. I produce on the top of the nose-piece a stud, *h*′, and in the bar F′, extending forward from the bolt F, produce a corresponding groove, *f*′, partly across. When the bolt F is turned, with its handle upward, for loading the gun, this groove *f*′ receives the stud *h*′, and, when it is pulled back for the insertion of a new cartridge, carries along the nose-piece. While thus moved, the nose-piece is held against turning by its stud *h*′ touching on the left side against the side of the opening in the shoe, and on the right side by touching the end of the cross-groove *f*′. When the cartridge is inserted and the whole system is pushed forward again, the forward end of the extractor is received in a recess of the barrel of the gun. When the bolt F is turned down again, the nose-piece cannot take part in the turning motion, because the recess in the barrel does not allow the extractor to turn.

I mount the extractor I on the right side of the nose-piece—that is to say, on the side to which the bolt-handle is turned. Only a little spring force is required to bring the hook of the extractor over the rim of the cartridge. (Not represented.) The groove in the nose-piece, in which the extractor lies, is beveled off at the rear. The extractor is U-shaped, as represented, and its shorter arm is received loosely in the hollow interior of the nose-piece. When the hook of the extractor slides over the rim of a cartridge, the extractor oscillates on the line where the beveling of the nose-piece commences. When a cartridge is in the barrel, and the system is pulled back, the hook of the extractor takes hold of the rim of the shell, and will pull it in a straight line backward as long as the other end of the cartridge is in the barrel; but as soon as it has moved backward so far that the whole shell or cartridge is free, the friction on that side which is opposite to the extractor will not allow the shell to be pulled back as fast as the extractor moves. This causes the shell to swing its free end, or front end, around where the shoe is open, and thus to be immediately set free and to fall down.

In practice it happens very often that an undischarged cartridge must be taken out of the barrel, and also the shells of the discharged cartridges represent a considerable value.

To enable the operator to preserve the cartridge or the shell, I mount the extractor on the right side of the nose-piece. If the operator desires to preserve the cartridge, he has simply to hold the fingers of the left hand in position to prevent the swinging entirely around of the cartridge, and the extractor will hold the cartridge or shell loosely in the shoe and allow its subsequent removal at leisure. I attach the firing-pin G to the hammer E without intervention of a nut or other separate means. For this purpose I cut a screw-thread, *g*, in the upper end of the firing-pin, and a corresponding screw-thread into the hammer. The front end of the firing-pin is formed with a deep longitudinal groove, *g*′. (See Figs. 3 and 4.) This groove receives the short arm *i*′ of the extractor. It follows that the firing-pin G may be rotated by the nose-piece, so that when the system is separated from the gun, the nose-piece H may be used as a wrench for screwing the firing-pin into the hammer, or unscrewing, when required. In operating the gun, this groove *g*′ in the pin, engaging with the extractor, prevents the pin from unscrewing from the hammer. I form on one end of the iron bands which connect the barrel of the gun to the stock a slightly-projecting and properly-flattened edge, adapted to serve as a screw-driver. L is the band; *l*, the sharp end and flattened projection when the band is detached, to allow it to so serve.

I claim as my invention—

1. A fire-arm the trigger of which is made to form means for locking the system, substantially as herein specified.

2. The trigger C, formed with a lever, C′, this lever having a notch, c^1, to prevent the gun from being accidentally fired.

3. On the lever C′, the notch c^1, in combination with the projection c^5, entering the bolt, as and for the purposes described.

4. In combination with the trigger C and locking-lever C′, the two springs d^1 d^2, acting respectively on the parts, as and for the purposes herein specified.

5. The notch c^2 on the lever C′, in combination with the projection c^4, arranged to control the holding and withdrawing of the system, as herein specified.

6. The forked extractor I *i i*′, in combination with the hollow nose-piece H, and adapted to hold therein, as herein set forth.

7. The groove in the nose-piece, beveled at the rear end, in combination with the forked extractor I *i i*′, to allow a rocking motion of the entire extractor, as and for the purposes herein set forth.

8. The nose-piece H, with a suitably-formed

extractor, I, mounted thereon, adapted to operate upon the firing-pin as a wrench.

9. The nose-piece H and bar F′, with the stud h' in one part, and the groove f' in the other part, in combination with each other, and with the extractor I, substantially as and for the purposes herein specified.

10. A spring-extractor mounted at the side of the piece, and pressing laterally against the shell of the cartridge, in combination with a shoe or extension of the barrel, having a side opening so arranged as to eject the shell by swinging it horizontally, as herein specified.

11. The firing-pin G, directly united to the hammer E without a necessity for separate confining means, in combination with the extractor I, serving as a stop to prevent its rotation, as herein specified.

12. The groove g' in the pin G, engaging with the shorter arm i' of the extractor, substantially as and for the purposes specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

B. B. HOTCHKISS.

Witnesses:
CHAS. C. STETSON,
J. K. C. OULAHAN.