2 Sheets—Sheet 1

J. M. WHITTEMORE.

Breech Loading Fire Arm.

No. 201,970. Patented April 2, 1878.

FIG. 1.

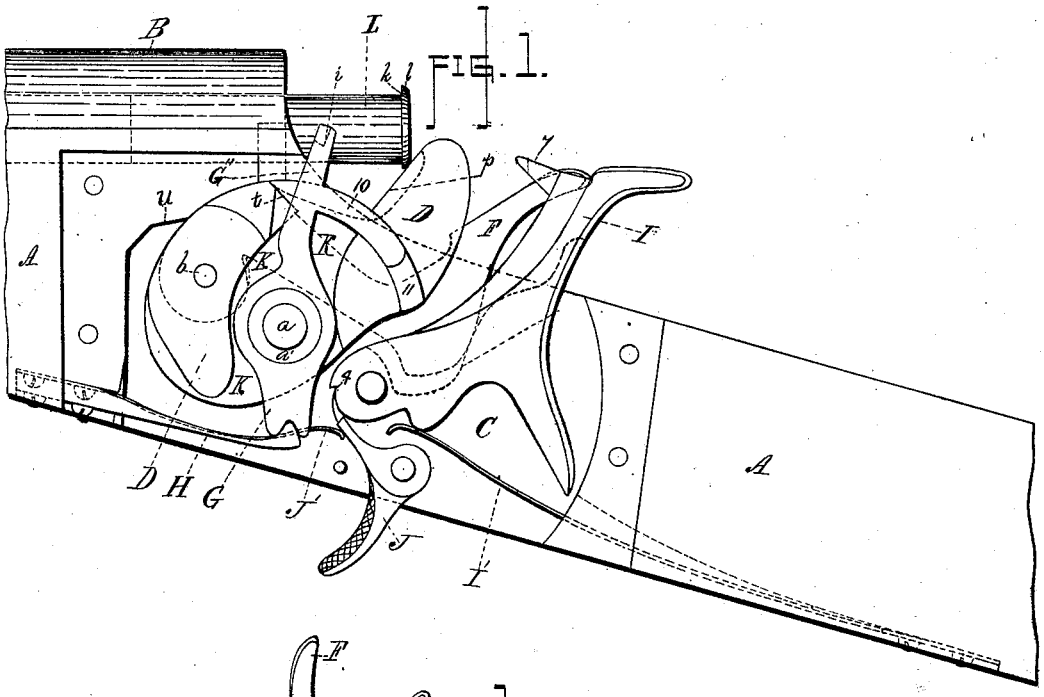
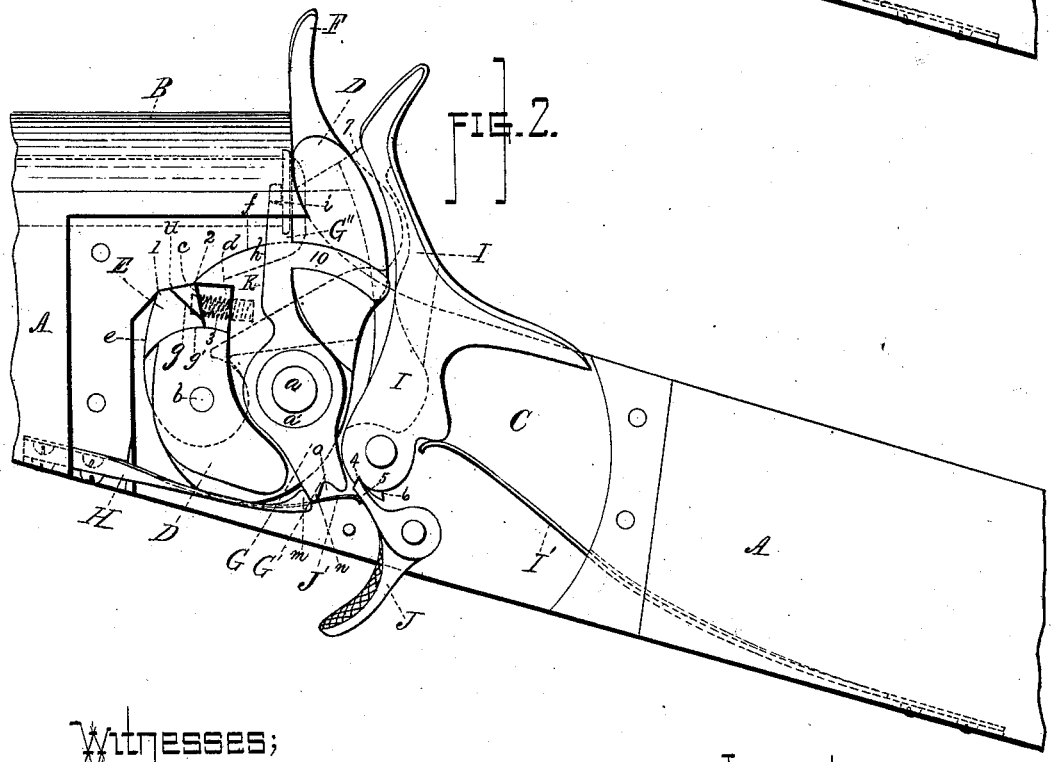


FIG. 2.



Witnesses;

Frank Heath,

Fabez H. Gill.

Inventor;

James M. Whittemore

2 Sheets—Sheet 2

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FIG. 3.

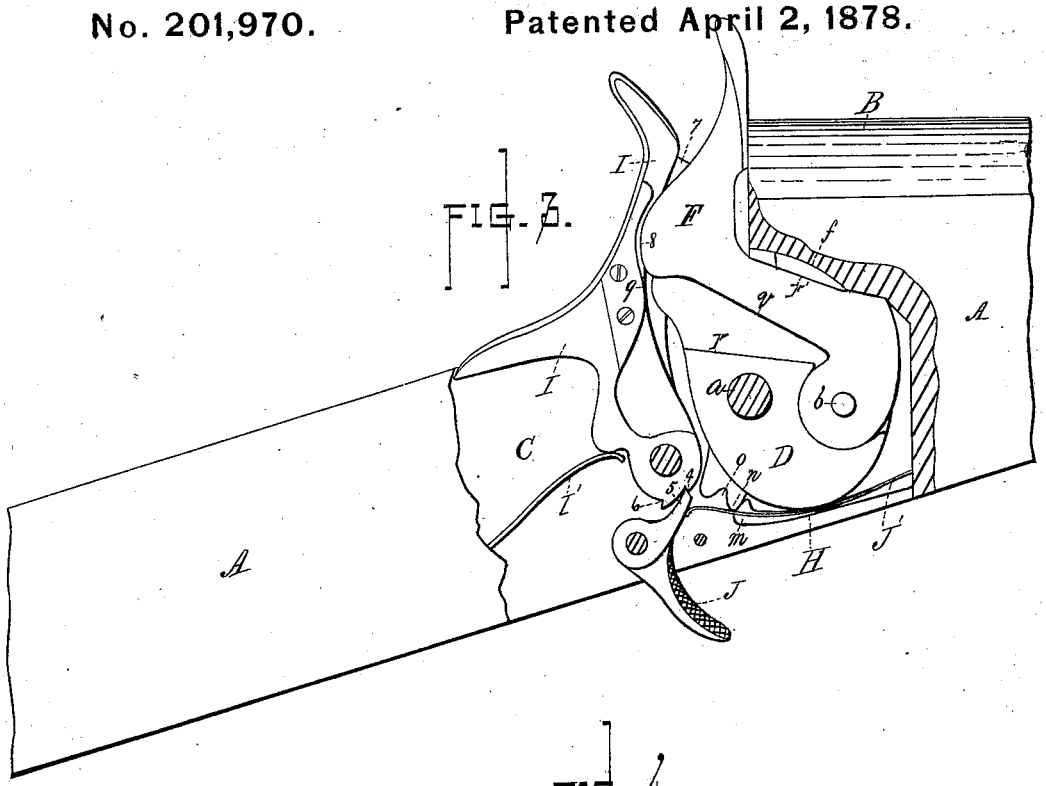
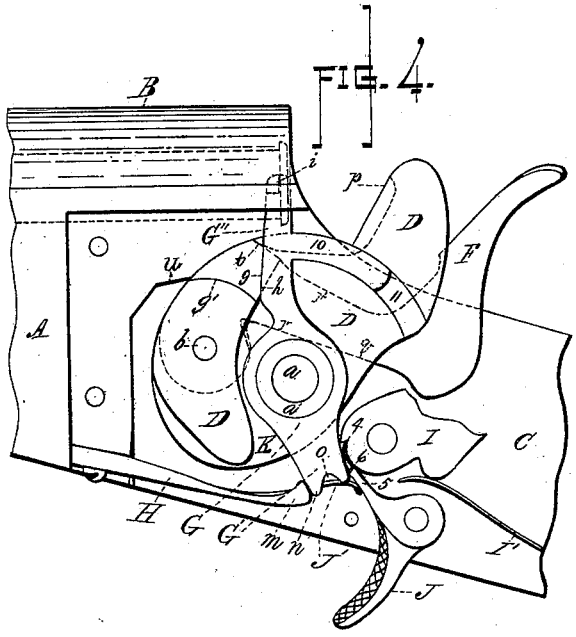


FIG. 4.



Witnesses;

Frank Read,
Sabez H. Gill

Inventor;

James M. Whittemore

UNITED STATES PATENT OFFICE.

JAMES M. WHITTEMORE, OF BRIDESBURG, PENNSYLVANIA.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **201,970**, dated April 2, 1878; application filed February 2, 1878.

To all whom it may concern:

Be it known that I, JAMES M. WHITTEMORE, of Bridesburg, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Breech-Loading Guns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a side view of so much of a breech-loading gun as is necessary to illustrate my present invention, showing it in position for applying a new cartridge or removing an empty cartridge-shell, as the case may be, the side plate being removed to show the relative positions of the operating parts of the arm more clearly. Fig. 2 represents a similar view of the gun with the operating parts in position for firing, with the exception of the hammer, which is upon the safety-notch, or half-cocked. Fig. 3 represents an opposite side view of the gun from that shown in Fig. 2, a section of the stock being cut away to represent the working parts more clearly, as seen from that side of the gun; and Fig. 4 represents a similar side view of the working parts of the gun as that shown in Fig. 2, but with the breech-block and extractor withdrawn to that point when the extractor commences to operate upon the cartridge-shell, the upper part of the locking-hammer being broken away to show the form of the cam-handle more fully, as will be hereinafter described.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, the part A represents the gun-stock; B, the rear part of the barrel, or that part which is fitted to receive the cartridge and its shell; C, the receiver; D, the breech-block; E, the locking-cam, and F its operating arm or handle; G, the cartridge-shell extractor-plate; H, the spring operating said extractor-plate; I, the hammer, and I′ its operating-spring; and J the trigger, and J′ its operating-spring.

Breech-block D is pivoted upon a pin, *a*, and the cartridge-extractor G turns upon and is supported by a circular hub, *a′*, formed on the breech-block, both being operated, and block D locked and unlocked as well as operated, by means of cam E, which, in turn, is operated by cam lever or arm F, forming a part of the same. Cam E is pivoted upon the breech-block at the point *b*, and is formed and operated in the following manner:

To unlock the breech-block, cam E is drawn back by its arm or handle F (which at the same time throws up the hammer, if the latter has not been previously raised) until the point 1 of the locking-cam E has passed the point 2 of the receiver or recoil-surface, and at the same time brought the side *c* of the cam to bear against the side *d* of the breech-block, thus bringing the outside circular surface *e* of the cam upon a line with the circular surface *f*, against which the breech-block bears in its forward and rearward swinging motion, thereby unlocking the breech-block, and allowing it to swing back with the further rearward motion of the cam.

As the arm of cam E is further drawn back (with the surface *c* bearing against the surface *d* of the breech-block) the latter is turned back, thereby bringing the straight surface *g* of the cam to bear against the side *h* of extractor G, (see Fig. 4 of the drawings,) the breech-block being cut away, as shown at K, to allow of a free action of the extractor.

The upper end of cartridge-extractor G, as will be observed by dotted lines in the drawings, is provided upon its inner side with a small hub or projection, *i*, which is adapted to bear against the side *k* of the flange *l* of cartridge-shell L. Thus, as the extractor is turned back by arm F, the cartridge-shell L is slightly retracted or drawn out, until, in the backward motion of the extractor, the lower notched portion G′ swings forward, bearing down the end *m* of extractor-spring H of the extractor, and as the end *m* of spring H passes over the point *n* it springs suddenly into notch *o*, thereby throwing the lower portion G′ of the extractor forward, and the upper end G″ back, and with a quick motion, which withdraws the cartridge-shell out of the barrel or housing into the position shown in Fig. 1 of the drawings, when it is removed and a loaded cartridge inserted, ready for firing.

By giving the breech-block a little more

motion rearward the cartridge or shell, as the case may be, is thrown clear of the barrel by the quick motion of the extractor-spring, and does not have to be removed by the fingers or tilting the barrel upward, thereby saving a motion and reducing the motions to a minimum—viz., cocking, inserting the cartridge, and pulling the trigger.

A loaded cartridge having been partially inserted, as aforesaid, the operation of completing the insertion of the cartridge, locking the breech-block, and firing the gun is as follows: The person operating said gun first takes hold of the end of arm or handle F and carries it forward, which operation turns the breech-block forward, thereby bringing the surface *p* against the base of the cartridge, which pushes it into the barrel, as represented in Fig. 2 of the drawings, and the cartridge is also shown in the same inserted position in Fig. 4. As the cartridge is pushed forward by the breech-block the edge *k* of flange *l* comes in contact with the projection *i* upon the upper end of extractor G, pushing the latter forward. As the upper portion of the extractor is pushed forward, as aforesaid, the lower portion G′ is swung back a sufficient distance to pass the head *m* of spring H out of notch *o* and over the point *n*, when the pressure of the spring then suddenly throws the lower portion G′ of the extractor back, and the upper portion forward, into the position represented by Fig. 2 of the drawings.

The pivot at *b* of cam E is relieved of all strain from shock of discharge by the cylindro-socket joint *g′* at junction of recoil-surface of cam E and breech-block D. The diameter of pivot-pin *a* of breech-block D depends upon the charge fired in the gun. The hub on breech-block D, upon which the extractor is swung, may be dispensed with, the extractor being swung directly upon pivot-pin *a* of breech-block D. Cam F may be differently pivoted, provided the locking-surfaces remain substantially the same.

During the forward revolution of the breech-block up to the point at which the surface *p* strikes the end of the housing or barrel B, both the breech-block and cam E are moving together, and their respective projecting edges *r* and *q* remain or are held in contact with each other, being kept in this position by the circular surface *e* of the cam bearing against the circular surface *f;* but as soon as the surface *p* strikes the end of said barrel, (which is at the same time that the point 1 upon the cam arrives at the point 2, and beyond the action of circular surface *f*,) arm F passes forward into the position shown in Fig. 3, which brings cam E into the position shown in Fig. 2, with the surface *t* of the cam bearing against the surface *u*, thereby securely locking the breech-block against the end of the barrel or housing.

The several parts are now in position for firing, hammer I having been thrown up in the operation of unlocking the breech-block and extracting the empty cartridge-shell, as before explained. The soldier or person operating the gun now applies his finger to the trigger J and discharges the piece; and the operation of loading and firing may be repeated as often as desired.

In the drawings, trigger J, its spring J′, extractor-spring H, and main spring I are represented as being secured to the stock; but in practice they may be arranged and secured upon the guard of the gun, and that, too, without changing the practical operation of the parts.

If preferred, a spring, 3, may be inserted in a recess or socket formed in the breech-block, as indicated in dotted lines, Fig. 2, so as to press against cam E, and thus exert a yielding force to hold cam E in the locked position shown in the same figure, said spring yielding and being forced into the receiving-sockets in cam E and breech-block K, when lever F is drawn back to bring surface *c* in contact with surface *d*, for the purpose of unlocking the breech-block.

After the arm has been loaded, as above described, if it is not to be immediately fired, hammer I is allowed to descend until safety-notch 4 is caught by the end 5 of trigger J, as indicated in Figs. 2 and 3 of the drawings. When the hammer stands at full cock the point 5 of trigger J catches into notch 6 of the hammer, as indicated in Figs. 1 and 4.

As represented in the drawings, the rearward motion of the extractor is limited by spring H; but a projection on the guard may be used for that purpose, and a friction-roller may also be used on the hammer for the main-spring I′ to rest against.

It will be furthermore observed that the hammer can be worked independently of the breech-block when necessary or desired. If preferred, a double extractor can be used, the ejector-spring working upon one of the extractors only, the second extractor being arranged upon the opposite side of the cartridge and gun, and otherwise arranged for operation like the first. Then, again, it will be noticed that the arm can be fired, opened, or closed with equal security, since it is impossible for the firing-pin 7, which is attached to the hammer, to reach the cartridge and explode it until after the breech-block has been locked by cam E. This is owing to the curved projection 8 on the cam arm or lever F bearing against the curved projection 9 of the hammer I, when the latter forces lever F forward, and vice versa. The extractor G is provided with a curved or circular guide-arm, 10, which works in a circular groove or recess, 11, in the breech-block D.

Those skilled in the art to which my invention belongs will readily perceive that the construction and operation of the parts are very simple, while at the same time the working parts are well protected, and are not exposed

or liable to become clogged by dirt or foreign substances, and all the motions are easy and natural.

It will be particularly noticed that the breech-locking device is so constructed and relatively arranged, as respects the hammer and rear of the barrel which receives the cartridge, that there is no liability of dirt or foreign substances being dropped, worked, or forced down by the action of the hammer upon the locking-surfaces, since they are all forward and well protected by the rear part of the barrel into which the cartridge is inserted.

Having described my improvements in breech-loading fire-arms, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the notched breech-block D, receiver C, and hammer I, of locking-cam E, said parts being constructed and relatively arranged as shown and described.

2. The combination, with breech-block D and hammer I, of locking-cam E and lever F, substantially as and for the purposes set forth.

3. The combination of the hinged cam E, provided with projection *g*, with the cartridge-extractor G and breech-block D, substantially as and for the purposes set forth.

4. The combination, with extractor G and breech-block D, of hinged cam-piece E, lever F, and spring H, substantially as and for the purposes set forth.

JAMES M. WHITTEMORE.

Witnesses:

FRANK HEATH,

JABEZ H. GILL.