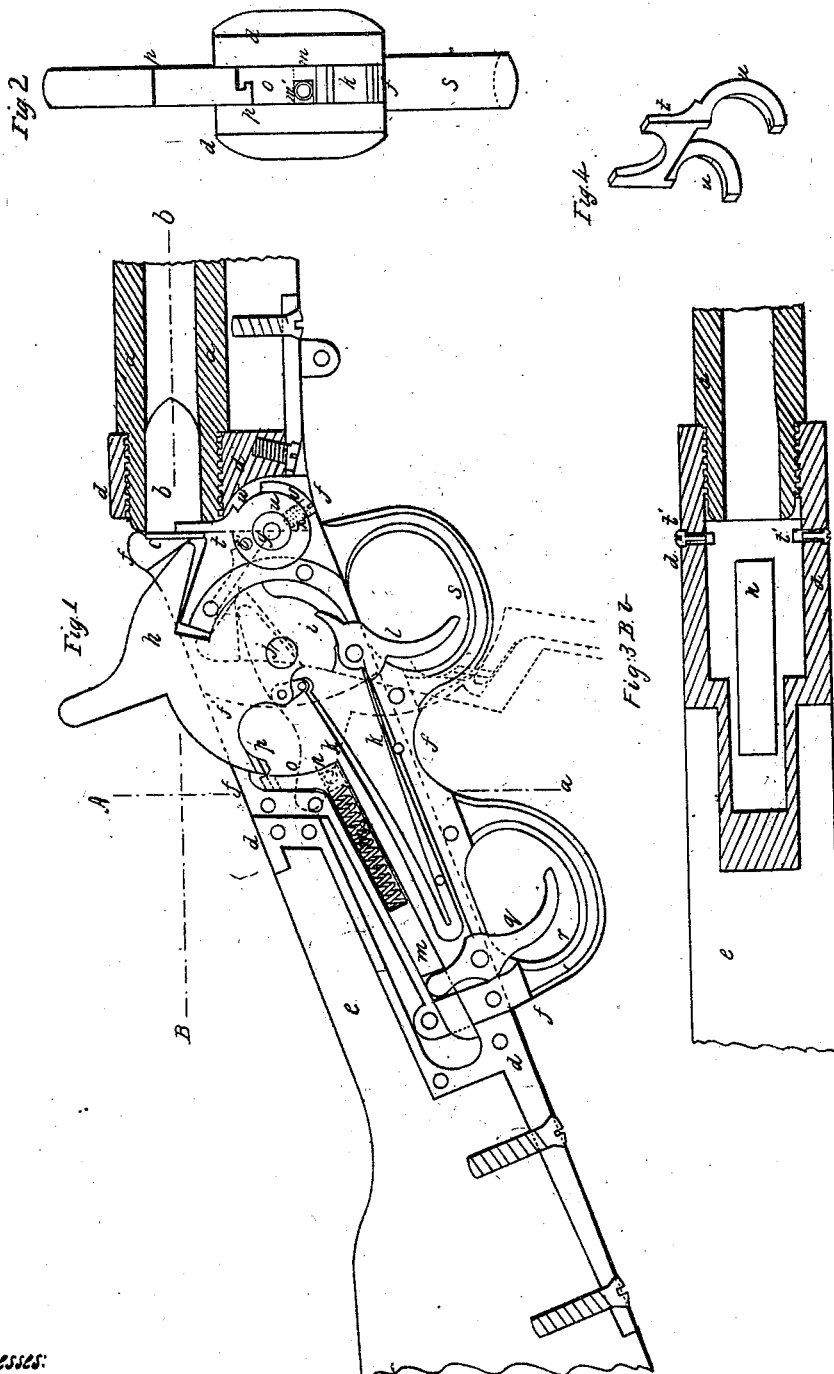


F. W. HOWE.
Breech-Loading Fire-Arm.

Patented Mar. 7, 1865.

No. 46,671.



Witnesses:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 46,671, dated March 7, 1865.

To all whom it may concern:

Be it known that I, F. W. HOWE, of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical section, giving a side elevation of the breech-piece with one of the lock-plates removed; Fig. 2, a cross-section taken at the line A a of Fig. 1, and Fig. 3 a longitudinal section taken at the line B b of Fig. 1.

The same letters indicate like parts in all the figures in which they appear.

My said improvements relate to that class of breech-loading fire-arms in which a metallic-cased cartridge is inserted into the rear open end of the barrel, and is there inclosed by a hinged breech-piece, which also carries the hammer for firing the charge by striking the rear part of the cartridge, which contains fulminate priming. In this class of arms provision has heretofore been made for preventing the hammer of the lock from accidentally operating to fire the charge before the breech-piece is in place and secured; but this is found not to be sufficient to render such arms secure against accidental discharge. As the face of the hammer, when thrown down by the force of the mainspring, projects sufficiently beyond the face of the breech-piece to strike the cartridge, there is danger of firing the charge in and by the act of closing the breech, for if the breech-piece be operated rapidly the face of the hammer thus projecting will be brought against the rear end of the cartridge which contains the fulminate priming, and by such rapid motion in striking, is liable to fire the charge before the arm is in a suitable condition.

The object of the first part of my said invention is to prevent such accidental firing of the charge in the act of closing the breech; and it consists in so combining the hammer of the lock with the latch which secures the hinged breech-piece when in place that the said latch-bolt cannot slide in to permit the breech-piece to be closed unless the hammer be placed at half-cock, or in an equivalent position, so that its striking-face shall be so far back as not to touch the cartridge in the act of closing the

breech. In such arms using metallic-cased cartridges, it is necessary after each fire and before reloading, to withdraw the case of the cartridge previously fired. Devices for this purpose have heretofore been applied and so combined with the lock as to act upon the flange of the cartridge in the act of opening the breech, and thereby draw out sufficiently to admit of readily removing it with the fingers.

The object of the second part of my said invention is to produce a more simple, cheap, and efficient device for partially withdrawing the cartridge-case than any heretofore employed for this purpose; and this part of my invention consists of a wing which embraces the lower half of the circumference of the cartridge, and which lies between the flange of the cartridge and the rear open end of the barrel, and which is mounted to turn on the fulcrum of the hinged breech-piece and let into circular sockets of the breech-piece, so that this latter, when operated to open the rear end of the barrel, shall move some distance without operating the wing, and then act upon it to cause it to draw out the cartridge-case sufficiently far to admit of readily reaching it with the fingers.

In the accompanying drawings, *a* represents the barrel with the rear end of the bore open to receive a metallic-cased cartridge, *b*, formed with a flange, *c*, at the rear end. The rear end of the barrel is threaded and screwed into or otherwise suitably secured to the front end of a metallic frame, *d*, to which the stock *e* is properly secured. The metallic frame *d* is mortised through to receive the breech-piece *f*, which turns on a fulcrum-pin at *g*, the axis of which is below and about in the plane of the rear end of the barrel. The front face of this breech-piece *f* is formed with a cavity to fit against and embrace the flange *c* of the cartridge, and when in the position represented to hold it in place in the barrel and resist the force of the recoil. This breech-piece extends some distance back, and is made hollow to receive the various parts of the lock, consisting of the hammer *h* and tumbler *i*, (which are formed of one piece, and which turn on a fulcrum-pin, *j*,) the mainspring *k*, and the trigger *l*, the sear of which takes into the tumbler to hold it at half and at full cock. In the drawings the hammer is represented as being held up at half-cock. This breech-piece is formed

at the forward end of about the thickness of the barrel, and extends back about one-third of its length, where the thickness is considerably reduced, leaving two shoulders, $f' f''$, one on each side, the faces of which are segments of a circle struck from the axis on which the breech-piece vibrates. The mortise in the metallic frame d is formed with corresponding shoulders. The dotted line f' in Fig. 1 represents the line of these shoulders. In this way I am enabled to make the rear part of this breech-piece very narrow and light, as its shoulders $f' f''$ rest against the corresponding shoulders formed in the mortise of the metallic frame, thus forming a strong and firm abutment to resist the force of the recoil.

Within the breech-piece there is mounted a longitudinally-sliding spring latch-bolt, m , to catch into the rear end of the frame d , to hold the breech-piece f in place after a cartridge has been inserted. This latch-bolt, for convenience, is made hollow for a distance to receive a helical spring, m' , the outer end of which bears against a stud, n , in the breech-piece, that its tension may tend constantly to force back the latch. At the front end the latch-bolt is bent up, as at o , to extend back of a projection, p , from the back of the hammer h , and both the projections o of the latch and p of the hammer are formed with a lateral recess and flange to fit each other, so that when the hammer is at half-cock the latch can be pushed forward to unlatch the breech-piece, that its rear end may be turned down, as represented by dotted lines, to admit of inserting a cartridge in the rear end of the barrel, and to admit of drawing it up to the position represented by full lines to inclose the cartridge; but when the hammer is not at half-cock the projection p of the hammer lies in front of the projection o of the latch-bolt, so that its rear end projects back of the rear end of the breech-piece f and prevents it from being drawn up to the required position for shutting up the rear end of the barrel.

It will be seen from the foregoing that by reason of the above arrangement, so long as the hammer is in the position which it assumes in firing a charge—that is, so that its striking-face would reach a cartridge if the breech were in the position represented by full lines—the breech cannot be closed, because the latch-bolt cannot be pushed in on account of the projection p of the hammer being in the way and acting as a stop, so that it is impossible to make the hammer strike the primed rear end of the cartridge in attempting to close the breech; but when the hammer is first brought to the half-cock, which draws back the face of the hammer, then the latch is free and the breech may be closed without danger of having the hammer strike the primed end of the cartridge. And it also follows from the foregoing that the hammer cannot be liberated so as to be made to strike the cartridge until after the breech has been closed, because the latch-bolt cannot slide back to its proper po-

sition to liberate the hammer until the piece has been brought to the required position.

For unlocking the breech-piece, there is a small finger-lever, g , that turns on a fulcrum-pin in the breech-piece. Its upper end is rounded and plays in a cross-groove in the latch-bolt, and its lower end, properly formed for the finger like a trigger, extends below the lower edge of the breech-piece and within a guard, r , like the trigger-guard s , both of which move with the breech-piece, and are best made of the same piece of metal with it.

The wing t for withdrawing the cartridges is represented separately in perspective at Fig. 4. It is a single piece of metal, with the upper edge cut out in the form of a semicircle to fit the lower half of the circumference of a cartridge. The lower part is cut out, leaving two parallel flange-like projections, $u u$, whose planes are at right angles to the plane of the wing, and each is in the form of a semi-annulus, the inner periphery of which fits and turns on the fulcrum-pin g of the breech-piece, and they are received in and fitted to turn to a limited extent in circular sockets v , one on each side of the breech-piece. The outer periphery of these sockets is cut out, as at w , to the extent of about a quarter of a circle, which admits of putting the wing in place on the breech-piece or taking it out while the fulcrum-pin g is out; but when that is in place the wing cannot be taken out; and the parts thus cut out admits of moving the breech to some extent without operating the wing, and shoulders are thus formed, which strike the wing and cause it to move, with the breech-piece, toward the end of its closing and of its opening motion.

To withdraw the cartridge, two screws, $t' t'$, that pass through the sides of the metallic frame d , act as stops to prevent the wing from being drawn back too far.

For the purpose of holding the fulcrum-pin in its place and to facilitate its being quickly removed, there is an adjusting-screw, x , in the breech-piece, which is turned to make its inner end bear against the fulcrum-pin. This screw is represented by dotted lines in Fig. 1.

It will be obvious from the foregoing that the form of the latch-bolt and of the co-operating projection on the hammer may be greatly changed without departing from this part of my invention, the novel and characteristic feature of which is that there shall be such a relation of these two parts that they shall act as a stop to prevent the breech from being closed, unless the hammer shall have been previously drawn back sufficiently to prevent it from striking the cartridge in the act of closing the breech.

What I claim as my invention, and desire to secure by Letters Patent, in combination with the hinged breech-piece, is—

1. So constructing the hammer and the latch-bolt, substantially as herein described, that they shall act as a stop to prevent the closing of the breech unless the hammer be

first drawn back, as set forth, and for the purpose specified.

2. The special construction of the wing for drawing out the cartridge-cases from the barrel, with its flanges fitted to sockets in and combined with the breech-piece, as herein described.

3. Making the hinged swinging breech-piece hollow to receive and contain the mechanism

of the lock, in combination with the abutting shoulders at the sides, to resist the recoil by abutting against corresponding shoulders in the mortise of the surrounding metallic case, as and for the purpose described.

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Witnesses:

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