

J. FARQUHARSON.  
BREECH-LOADING FIRE-ARMS.

No. 193,759.

Patented July 31, 1877.

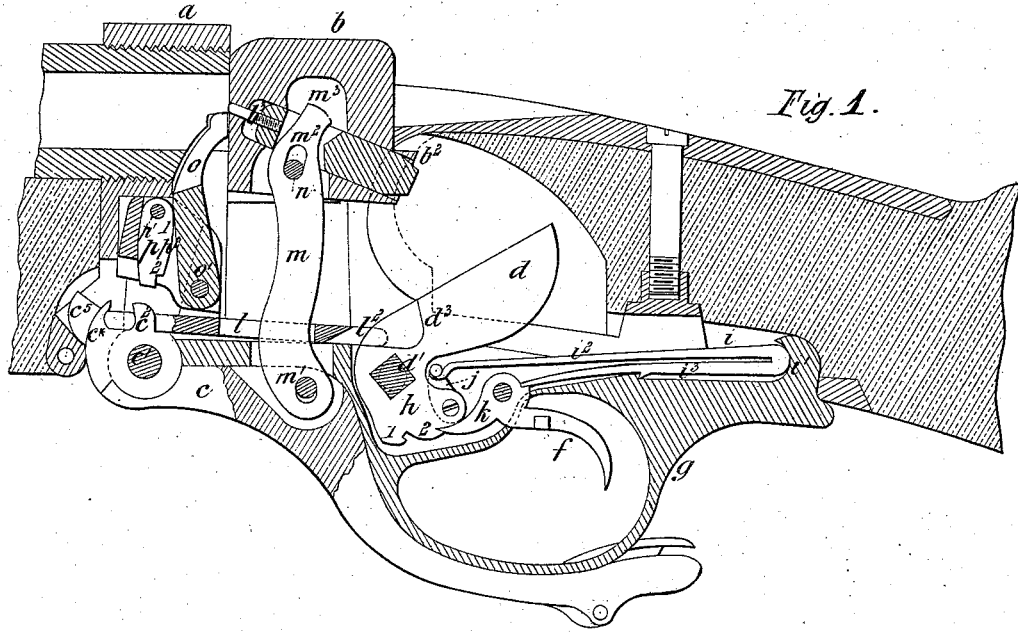


Fig. 1.

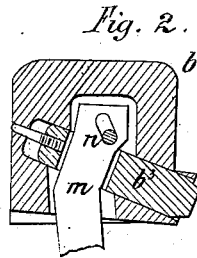


Fig. 2.

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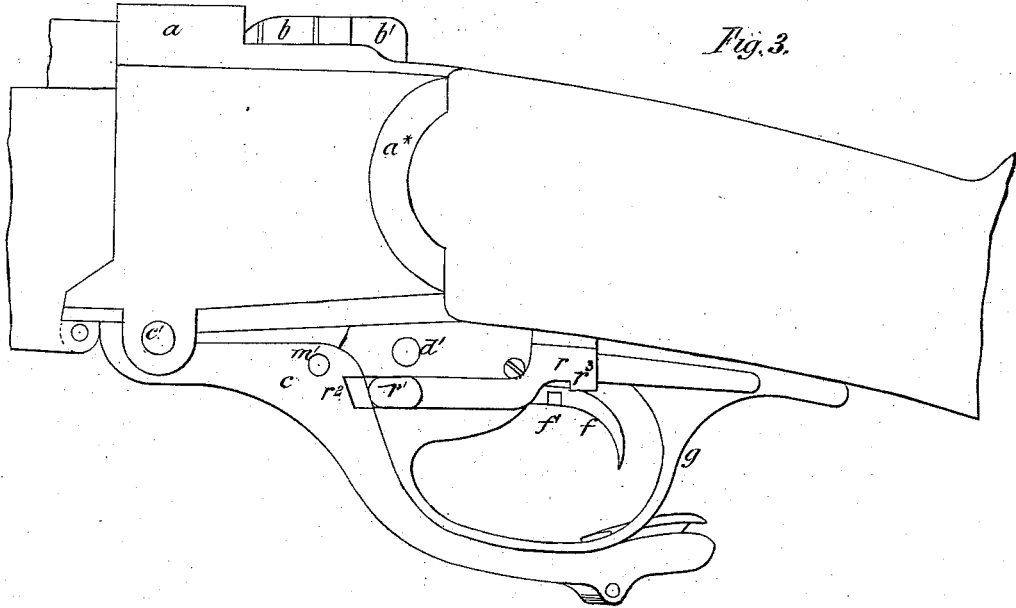


Fig. 3.

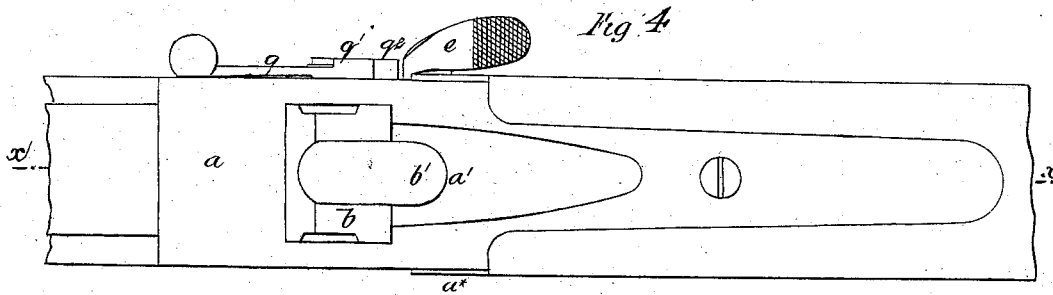


Fig. 4.

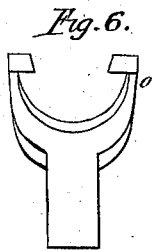


Fig. 6.

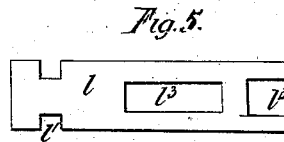


Fig. 5.

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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. **193,759**, dated July 31, 1877; application filed  
June 28, 1877.

*To all whom it may concern:*

Be it known that I, JOHN FARQUHARSON, of Blairgowrie, North Britain, have invented new and useful Improvements in Breech-Loading Fire-Arms, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

My said invention has reference to certain improvements in the construction and arrangement of the parts of the "action" of that class of breech-loading rifles or small fire-arms, which have the breech-block worked up and down in a central vertical slot in the breech case, box, or shoe by a hand-lever, fitting close, and brought close up to or pushed down from the under side of the trigger-guard.

The said improvements are designed to permit a greater and more uniform application of power to the working of the arm, with greater ease and comfort to the operator, and with greater certainty and efficiency of action than has heretofore been practicable with this class of breech-loading fire-arms.

In the accompanying drawings, Figure 1 represents a longitudinal sectional view; Fig. 2, a detached sectional view of the breech-block and the firing-pin; Fig. 3, a side elevation; Fig. 4, a top or plan view, and Figs. 5 and 6 detached views.

Like letters indicate the same parts throughout the drawings.

*a* is the breech shoe or box. *b* is the breech-block, which slides vertically in the slot in the said shoe. *c* is the main lever, and *c'* its fulcrum. *d* is the hammer. *e* is the lever of the same. *f* is the trigger, and *g* the trigger-plate.

The remaining parts are hereinafter described.

The trigger-plate *g* is secured in the breech-frame by the pin *e'* that forms the fulcrum of the main lever *c*. The hammer-spindle passes through the said trigger-plate, as shown at *d'*. The hammer *d*, the tumbler *h*, and mainspring *i* are fitted and work in a central longitudinal recess or cavity in the said trigger-plate.

The mainspring is secured at its rear end in the said trigger-plate, as shown at *i'*. Its

upper arm or limb *i''* is connected to the tumbler *h* by the stirrup *j*.

The said tumbler has cocking-notches formed in it at 1 2.

The lower limb or arm *i'''* of the said mainspring serves as a trigger-spring, and by acting on the trigger behind its fulcrum presses the rear nose *k* into the said cocking-notches; but, instead of this arrangement, I may use an independent trigger-spring if desired.

A central projection or feather, *b<sup>1</sup>*, is formed on the back of the breech-block *b*, and is fitted to work freely up and down in the vertical groove or channel *a'* in the breech-shoe *a*, so that the nipple *b<sup>2</sup>* and firing-pin or needle *b<sup>3</sup>* may be properly presented to the hammer *d*.

A very important feature of the said invention is the mechanism whereby the manipulation of the main lever is caused to effect the movement or action of the hammer, the firing-pin, the breech-block, and the cartridge-extractor in the peculiar manner hereinafter described—that is to say, by pulling down the said main lever. The commencement of the cocking or setting back of the said hammer and the retracting of the firing-pin takes place slightly in advance of the sliding down of the breech-block; but these movements, and the movement of the cartridge-extractor are effected by the same movement of the main lever *c*. The operation of the hammer by the said main lever is effected through the medium of the cocking-bar *l*, which is connected with the said lever at *c\**, and bears against the hammer at *l'*, as shown in Fig. 4, so that when the said lever is pulled down its part *c\** pushes the said cocking-bar and hammer backward. The connection of the cocking-bar *l* with the part *c\** of the lever *c* may be made by the notch *l'* and the hook or stud *c<sup>2</sup>*, or by a pin-joint. The end of the said cocking-bar which acts on the hammer is preferably forked, as shown at *l'*, Fig. 5, to embrace the reduced portion of the hammer below the shoulder *d<sup>3</sup>*, and the said cocking-bar has a longitudinal slot or aperture, *l<sup>2</sup>*, for the passage of the loose arm or link that operates the breech-block, as hereinafter described. If desirable or necessary, the end *l'* of the said cocking-bar may

be fitted to work through a suitable guide-slot fixed in the breech-frame.

The combination of this cocking-bar with the hammer and main lever may be adopted in fire-arms which have the hammer at one side instead of at the center of the lock. And it is obvious that the cocking-bar *l* may be connected with the said main lever and hammer below the pivots or fulcrums of the same, so that the said hammer will be drawn, instead of pushed back, by the said cocking-bar.

The connection of the breech-block *b* with the main lever *c* is made by means of the link *m*, which is pin-jointed at *m*<sup>1</sup> to the lever *c*, and projects up through a central slot in the breech-block *b*, as shown in Fig. 4. The said link has in it an oblique or inclined slot at *m*<sup>2</sup>, through which passes a pin, *n*, fixed in the sides of the block *b*. The said link *m* is also formed at its upper end with a tongue or extension at *m*<sup>3</sup>, which works in a slot in the firing-pin *b*<sup>3</sup>. By this peculiar formation and arrangement of the link *m*, pin *n*, and firing-pin *b*<sup>3</sup>, and their combination with the main lever *c*, the said link has a slight amount of lost motion (corresponding with the length of its slot) at the commencement of the pulling down or dropping of the main lever, so that before the top of the said slot begins to act on the pin *n* and pull down the breech-block, the hammer is slightly pushed back and the firing-pin *b*<sup>3</sup> is retracted or drawn back by the action of the tongue or projection *m*<sup>3</sup> on the said firing-pin. By this device I obviate the necessity for a spring for retracting the firing-pin. In Fig. 2 the form of the link *m*, and the arrangement of the pin *n* are slightly modified, but the action of these parts is substantially the same as above described.

Another peculiar feature of my said invention is the device for extracting or ejecting the empty or exploded cartridge-shells. The chief peculiarity of the action of this extractor is its differential movement—that is to say, its slow and powerful action, whereby it starts the exploded shell from the barrel when the breech-block is drawn down, and its quick action at the termination of its movement, whereby the said cartridge-shell is jerked or thrown from the arm, and it must be observed that the action of the said extractor is obtained without the use of springs.

To carry into effect this part of my said invention, I construct the extractor *o* with a forked upper end, as shown in Fig. 6 of the drawings, and of the proper form and size to take hold of a cartridge. This extractor *o* has its fulcrum on the pin *o*<sup>1</sup>, secured in the frame of the sole-plate, which carries the lock.

In combination with this extractor I arrange the small arm *p*, which is suspended and works freely on the pin *p*<sup>1</sup>, secured in the said sole trigger-plate at the front of the said extractor, as shown in Fig. 1. This arm *p* is arranged in the proper position for its free end to be pushed forward by the projection

or nose *c*<sup>5</sup> on the main lever *c*, at the moment when the breech-block is drawn down clear of the cartridge. The said arm *p* has its surface *p*<sup>2</sup>, which acts on the extractor, curved or beveled or notched, as shown in Fig. 4; and the said arm is so arranged in relation to the extractor that this curved surface *p*<sup>2</sup> first acts on the latter with its part 1, which, being a considerable distance from the fulcrum of the extractor, exerts thereon, for a brief space of time, a correspondingly slow and powerful action, which could not be resisted by a cartridge-shell, however tightly the latter might be bound in the barrel by the explosion; but the movement of the extractor by the change of the relative positions of the same, and the arm *p*, as the point 2 of the latter approaches the said extractor, is accelerated, and then terminates in a jerk, which effectually expels from the breech the already partly-withdrawn cartridge-shell.

By referring to the drawings, and to the above description of my invention, it will be obvious that, by pushing up the main lever into the position shown in Fig. 2, the breech-block *b* will be closed, while the hammer *d* is left at full cock; and the said hammer may also be cocked in usual manner by means of the hammer-lever *e*.

A lever, *q*, works on a screw-pin or other suitable fulcrum, at *q*<sup>1</sup>. The said lever has a projection or nose at *q*<sup>2</sup>, and this projection is so formed and arranged in relation to the lever *e* that when the lever *q* is turned it will act as a stop to the lever *e* and hammer *d*, so that the latter cannot possibly strike the firing-pin.

This locking-lever or snap device may, if desired, be modified to act directly upon the hammer by extending from the lever *q*, and through the breech-frame, a spindle with a square portion, whereon is fitted a tongue or arm in the proper position to be adjusted or set to meet the said hammer, and arrest its forward movement.

Another of my improvements consists in the employment of a safety sliding bolt, *r*, at the side of the breech, as shown in Fig. 3. This bolt is fitted to slide in a groove or channel formed in the side of the trigger-guard, and is provided with a knob or button, *r*<sup>1</sup>, for convenience of manipulation.

The main lever *c* has a small recess or socket at *r*<sup>2</sup>, and when the said bolt is pushed forward its extremity enters this socket, and thereby locks the main lever, so that it cannot be accidentally pulled down.

The trigger has on it a small stud or projection, *f*<sup>1</sup>, which, when the bolt *r* is in the above-described position, comes in contact with the part *r*<sup>3</sup> of the said bolt, and thereby locks and prevents the accidental pulling of the said trigger.

This device is chiefly designed for fire-arms to be used for sporting purposes.

It will be observed that the cheeks at the sides of the breech-shoe are so formed that

their edges  $a^*$  overlap the wood of the stock, and thereby compress or bind the same, and prevent its separation or flying apart from the effects of any gas that might enter the cavity of the stock or otherwise.

I claim as my invention—

1. The combination of parts consisting of the main lever  $c$ , connected to the breech-block  $b$  by a slotted lever,  $m$ , provided with a tongue or extension,  $m^3$ , on its upper end, working in a slot in the firing-pin, to retract the same after having been forced forward by the hammer, as set forth.

2. The combination of the parts comprising the main lever  $c$ , link  $m$ , breech-block  $b$ , firing-pin  $b^3$ , cocking-bar  $l$ , and hammer  $d$ , constructed and arranged relatively to each other, substantially as shown, and so that, by the pulling down of the lever  $c$ , the required movements, in the peculiar order specified,

are imparted to the hammer  $d$ , the firing-pin  $b^3$ , and the breech-block  $b$ , as above set forth.

3. The extractor  $o$ , and the suspended arm  $p$ , or its equivalent, formed, constructed, and arranged in combination with each other and with the projection or nose  $e^5$  on the main lever  $c$ , so that the action or movement of the said lever produces the peculiar movement of the said extractor for extracting the cartridges, substantially as above set forth.

4. The sliding safety-bolt  $r$ , arranged and operating in combination with the main lever  $c$  and with the trigger  $f$ , substantially as above set forth, and for the purposes specified.

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Witnesses:

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