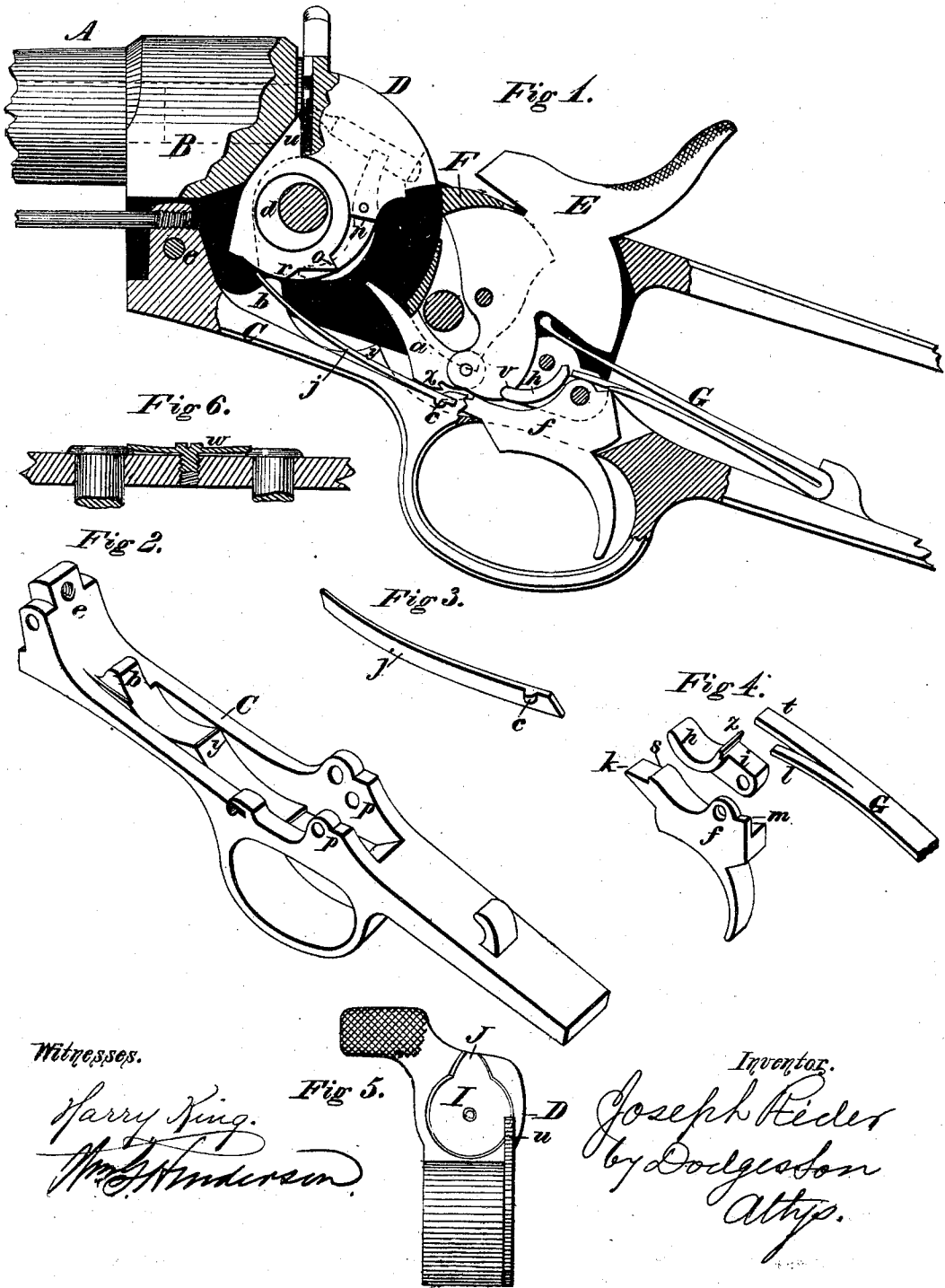


J. RIDER.

Breech-Loading Fire-Arms.

No. 141,383.

Patented July 29, 1873.



Witnesses.

Harry King.  
Wm. Anderson.

Fig. 5.

Inventor.

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# UNITED STATES PATENT OFFICE

JOSEPH RIDER, OF NEWARK, OHIO.

## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **141,383**, dated July 29, 1873; application filed March 15, 1873.

*To all whom it may concern:*

Be it known that I, JOSEPH RIDER, of Newark, in the county of Licking and State of Ohio, have invented certain Improvements in Breech-Loading Guns, of which the following is a specification:

My invention consists in various improvements upon the gun patented to me February 11, 1868, as hereinafter more fully described.

Figure 1 is a side elevation of the breech mechanism, with one side of the frame removed for the purpose of showing its construction. Fig. 2 is a perspective view of the guard-strap detached; Fig. 3, a perspective view of the extractor-spring; Fig. 4, perspective views of the trigger and fly with the end of the mainspring for operating them; Fig. 5, a front-face view of the breech-block; and Fig. 6, a view of the spring-button for holding the breech and hammer pins in place.

The general form and construction of my improved arm are the same as described in my patent above mentioned, it having a frame, B, swinging breech-piece D, and a hammer, E, with a locking-shoulder, F, the latter so arranged that the hammer shall swing on two different centers during its different movements, all as therein fully set forth.

My first improvement consists in constructing the extractor in the form of a plate, which fits into a suitable recess formed in the side of the breech-block D, as shown in Figs. 1 and 5, it being formed with a circular hole, which fits over an eccentric hub, *d*, on the side of the block, and with a V-shaped point, *u*, which fits in a corresponding slot cut in the side of the barrel, as shown in Fig. 1. It is also provided with a shoulder, *o*, on its rear edge, against which a shoulder, *n*, on the block strikes when opened, and an inclined shoulder, *r*, on its lower edge, upon which a spring, *j*, operates to impart to it an accelerated movement when the breech has been opened a certain distance, and thus throw the shell entirely out of its chamber. This spring *j*, as shown in Figs. 1 and 3, is constructed with a semi-circular projection on its under side, near its rear end, which fits into a corresponding recess formed for it in the side of the guard-strap, as shown in Figs. 1 and 2, the end of the spring fitting in a slot cut for it in the guard-

strap, as shown, it being thus held firmly in place and prevented from moving without screw or pin. The guard-strap C is made as shown in Fig. 2, and is so arranged that it can be detached from the frame by removing two screws, without dismounting the breech-block or hammer. At its front end I form a lug, *e*, into which the end of the ramrod is screwed; and just in rear of that I make another lug, *b*, upon which the firing-pin retracting-lever strikes when the breech is opened. Still another, but smaller, lug, *y*, is located on this strap in rear of the lug *b*, in such a position that the catch *a* will rest upon it when the latter is detached from the locking-dog F, and be held in the proper position to insure the point of the trigger engaging in it when the breech is closed, their relative positions being shown in Fig. 1. The guard-strap C is further provided with two shoulders, *p*, between which is pivoted, on the same pin, the trigger *f* and a fly, *h*, the form of these being shown in Fig. 4. The trigger, as there shown, is recessed on its side, so as to permit the fly to be pivoted by its side and have a movement independent of the latter, the fly being also cut away on one side, so that the two, at the point where pivoted, shall only be equal to the thickness of either at other points. The fly has its rear portion formed with a flat face, *i*, upon which the spring *l* is made to rest in such a manner as to bear upon it, at one time, in rear of its pivot, to throw its front end up and cause it to engage in a notch in the tumbler, as shown in Fig. 1, and at another time to press on it in front of its pivot, so as to throw its front end down and disengage it from the tumbler. The mainspring G is made double, or bent near its center, as shown in Fig. 1. Its lower front end is slit, as shown in Fig. 4, to form two separate springs, the shorter one, *l*, serving to operate on the trigger *f*, while the other one, *t*, acts upon the fly *h*, as before described, the spring G, as thus constructed, serving five different purposes—operating the hammer E, the locking-dog F, the catch *a*, the trigger *f*, and the fly *h*, the three former all being pivoted together. The catch *a* is provided on its under side with a notch, *x*, as shown in Fig. 1, into which the point of the trigger enters at certain times, and which serves as a safety-notch, and

prevents the gun from being discharged when thus arranged. This catch *a* is pivoted to the tumbler by a circular joint, as shown in Fig. 1. The trigger *f*, as shown in Fig. 4, is provided with two points, *k* and *s*, the former engaging in the safety-notch of catch *a*, and the latter in the full-cock notch *v* of the tumbler, when the gun is to be fired. The button for holding the pins in the frame, instead of being made of a rigid piece, as in my patent of February 11, 1858, is made of a flexible or spring piece, with a screw attached rigidly thereto, as represented in Fig. 6, so that, in order to release the pins, it is only necessary to spring the ends of the button *w* off of the pins enough to enable it to be turned around, thus avoiding the necessity of using a screw-driver.

The operation of the mechanism when thus constructed and properly put together is as follows: Supposing the breech to be closed and the hammer down, the latter is first drawn back, during which operation the catch *a* will engage with the lower end of the locking-dog F, and the latter will thereby be drawn from under the breech-block, leaving the latter free to be opened. As the latter is swung back, the eccentric *d* will force the point *u* of the extractor up the inclined slot, and cause it to act as a wedge and force out the cartridge shell with great power. As the breech-block continues its movement, its shoulder *n* strikes on the shoulder *o* of the extractor, and causes the latter to rotate with it until the shoulder *r* is carried past the point of the spring *j*, when the latter, acting on its inclined face, imparts a sudden motion to the extractor, which is thus made to throw the shell entirely out of the chamber, and just as this occurs the rear shoulder of the breech-block strikes upon the front end of catch *a* and disengages it from the locking-dog F, the firing-pin retractor-lever at the same time striking against the lug *b* on the guard-strap, and thereby drawing back the firing-pin. A cartridge being inserted, the breech is then closed, when the dog F springs in under or behind it and locks it fast.

It will be observed that when the hammer is drawn back, as in Fig. 1, the fly *h* engages in the full-cock notch *v*, and so remains until the catch *a* is released from dog F, and the latter swings in behind the breech-block, this movement causing the hammer to move with the

dog around the pivot of the latter, thereby causing the hammer to rise, carrying the point of the fly *h* upward with it, when its changed position causes the spring *t* to act on the front part of the face *i*, or causing its shoulder *z* to abut against the end of the spring, which, as soon as the point of the fly is released from the notch *v* by pulling the hammer back, causes the fly to drop down out of the way; the hammer being then either drawn back to a full-cock, when the point *s* engages the notch *v*, and the arm is ready to fire, or it can be let down, so that the point *k* will engage in the safety-notch *x*, in which position the gun cannot be fired until it is again set at full-cock.

It will thus be seen that, although there are numerous and complicated movements, the parts are few in number, simple of construction, and very strong.

Having thus described my invention, what I claim is—

1. The extractor *u*, in combination with the eccentric *d*, constructed and arranged to operate substantially as described.

2. In combination with the pivoted catch *a*, the projection *y* on the guard-strap, when arranged to operate as set forth.

3. The fly *h*, constructed and arranged to operate as described, whereby it holds the hammer while the arm is being loaded, and is disengaged therefrom when the hammer is set at full-cock.

4. The bent spring G, having its lower end split to form two springs of different lengths, and arranged as described, whereby it serves to operate the hammer with its locking-dog and catch, and also the trigger and fly, as set forth.

5. The combination of the breech-block D, provided with the shoulder *n* and eccentric *d*, the extractor provided with the shoulder *o*, incline *r*, and wedge-shaped point *u*, working in the inclined groove, and spring *j*, all constructed and arranged to operate substantially as herein described.

6. The spring-button *w*, having the screw that holds it in position formed thereon, or rigidly attached thereto, substantially as described.

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Witnesses:

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