

J. Rider.

Breech-Loading Fire-Arm.

N^o 74428

Patented Feb. 11, 1868

Fig. 1.

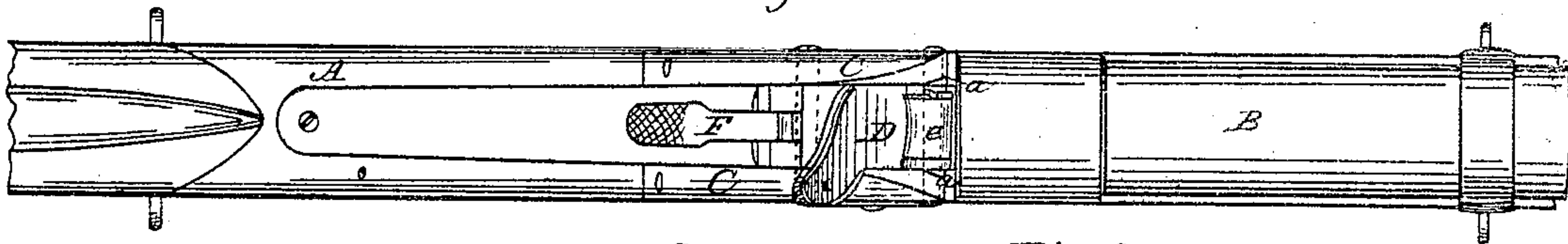


Fig. 2.

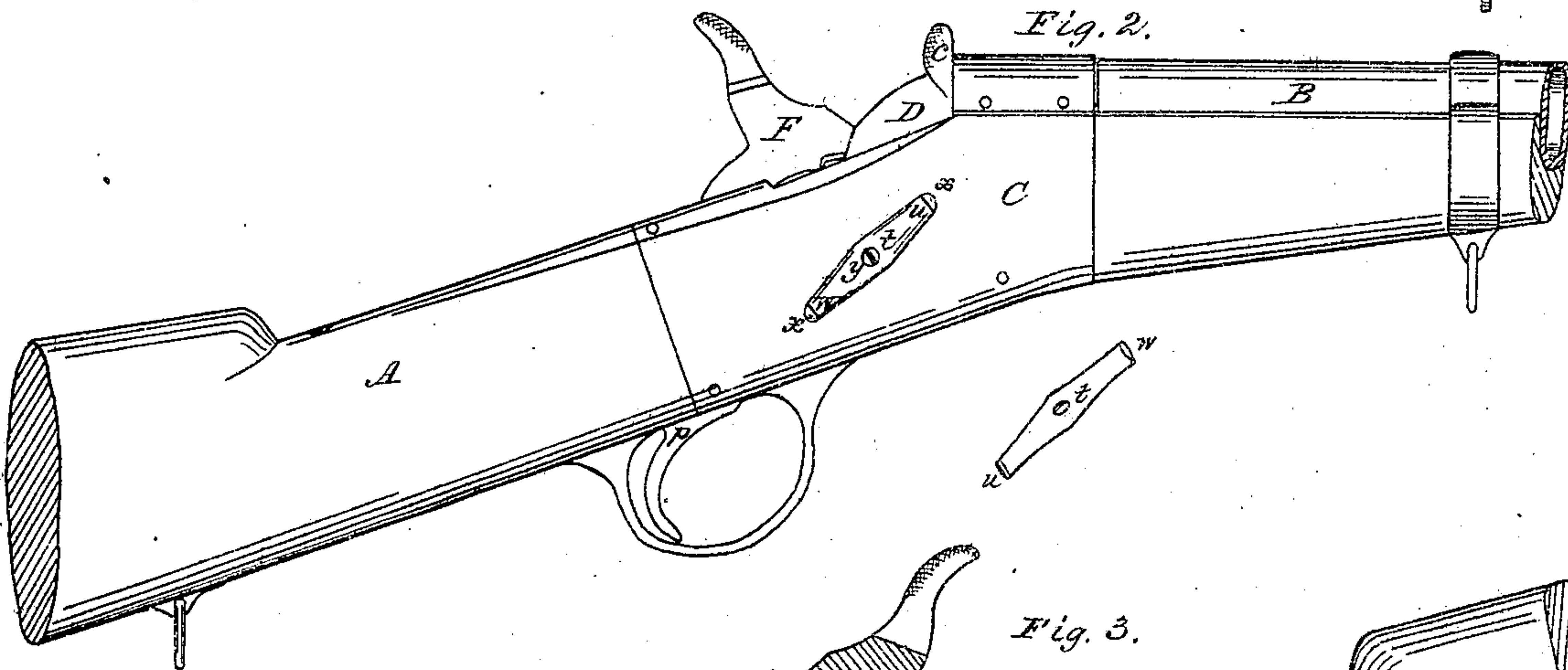


Fig. 3.

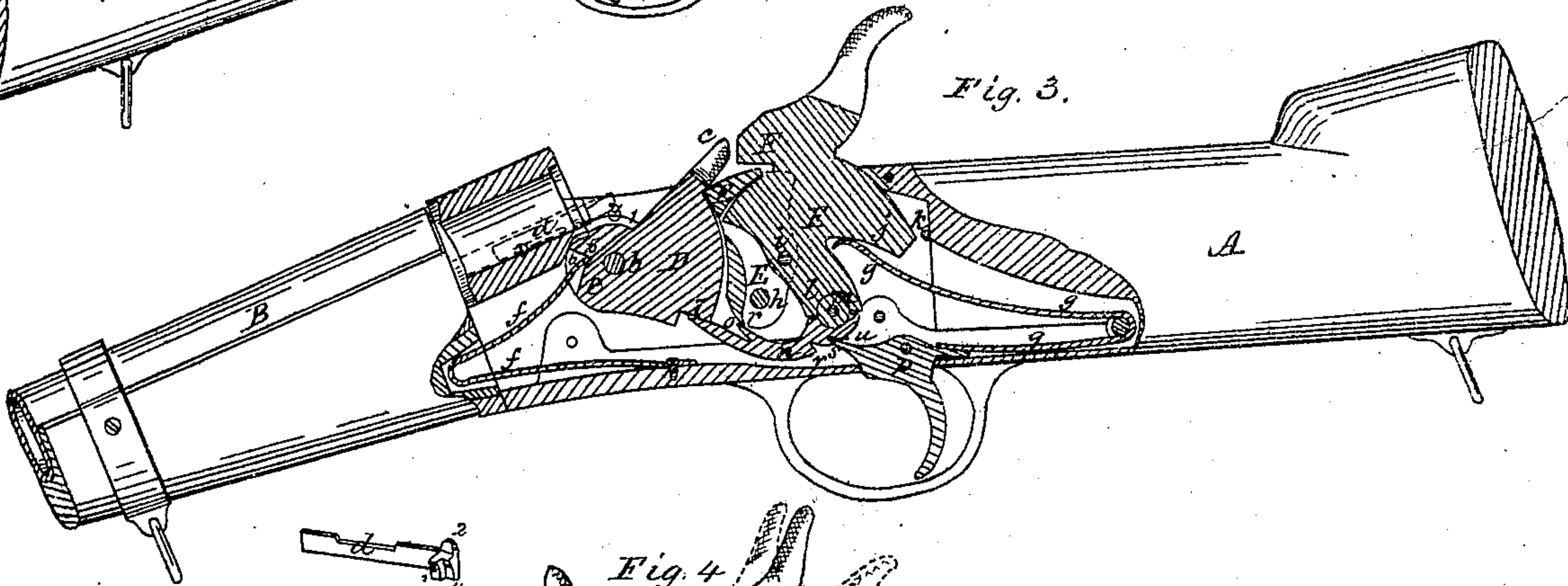
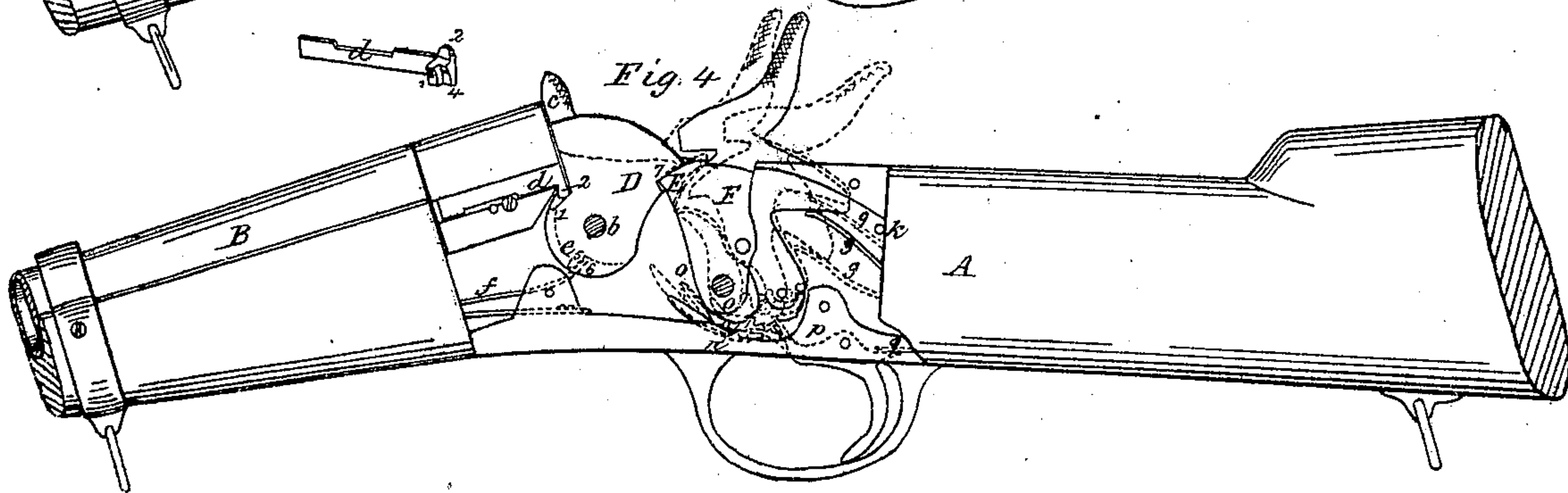


Fig. 4.



Witnesses

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Letters Patent No. 74,428, dated February 11, 1868.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

The Schedule referred to in these Letters Patent and making part of the same.

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 new and useful Improvements in Breech-Loading Fire-Arms; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a top plan of so much of a fire-arm as will illustrate my invention.

Figure 2 represents a view of one of the sides thereof.

Figure 3 represents a view from one of the sides, with a portion broken away, so as to show the interior.

Figure 4 represents a side view, with the plate removed, and showing the parts in three different positions, by black, blue, and red lines.

Similar letters of reference, where they occur in the several separate figures, denote like parts of the arm in all the drawings.

My invention consists, first, in a self-adjusting spring, in combination with a groove and abutment in the swinging breech-block, to throw open the breech when the brace is removed, and readily find its place when the breech is replaced after having been removed.

My invention further consists in hanging the hammer on two centres, and giving it its motions partially from one, and partially from the other.

My invention further consists in hanging the hammer to the brace that holds the breech-block closed, and at a point in rear of the centre of motion of said brace.

My invention further consists in the combination of the hinged tail-piece on the hammer with the brace and with the trigger, for moving and setting said parts.

My invention further consists in a button to hold the pivot-bolts of the hammer and breech-block in place.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents the stock, B the barrel, and C the frame of a fire-arm to which my several improvements are added, and which I shall refer to in the order in which they are enumerated as nearly as possible.

In breech-loading arms open at the rear of the barrel, there will be some gas escaping from the occasional bursting of the cartridge-head. To provide for this, I form gas-slots, *a a*, which incline outward from the rear under portion of the barrel, and thus make a passage for the gas, on both sides, laterally from the explosion-chamber.

The breech-block D is pivoted to the frame or arm at *b*, and has a lever, *c*, projecting upward, by which it may be closed, it being, in this case, made self-opening. On one side of this breech-block there is a groove and shoulder, 1, in which a projection, 2, on the cartridge-shell extractor extends, so that the breech-block may have some motion backward and rearward before the shoulder 1 takes against said projection 2, and then commences to move the ejector *z*, and throw out the empty shell. The ejector (as shown in the separate drawing of it below fig. 3) has two curved projections or shoulders, 3 4, upon it, one to catch against the barrel when it is moved clear up, and the other to receive the flange of the cartridge, and by which the cartridge-shell is afterwards thrown out. The cartridge is inserted by the fingers until its flange comes against the shoulder of the ejector, and then the closing of the breech-block carries both into their proper places. The hub *e* of the breech-block is rounded out, or made concave, so as to correspond with the rounded portion of the under part of the barrel, and serves as a guide for inserting the cartridge, which is thus more easily loaded, inasmuch as it opens out a clear loading-space, and brings said hub or guide close to the line of the bore of the arm.

In the concave or rounded portion *e* of the hub of the breech-block there is an abutment or stop, 5, against which the end, 6, of the spring *f* takes when the breech-block is closed up against the end of the barrel or cartridge-chamber, said closing up contracting said spring, as shown in fig. 4; and, when the brace that locks and holds the breech-block is drawn away from it, the recoil or reaction of the spring throws back the breech-block, and leaves the arm ready to be reloaded. This spring, *f*, I have called a self-adjusting spring, for the reason that, when the pivot-bolt is taken out, and the breech-block removed, for cleaning, or any other purpose, and put back again in its place, the spring finds its position and place in the groove or rounded portion of the hub, and the stop or abutment 5 will catch properly against it, when the breech-block is moved on its pin, without any attention or manipulation on the part of the user, or person cleansing or repairing the arm.

E is the brace for locking and unlocking the breech-piece D, said brace being thrown under the breech-block, and into or against the shoulder 7, therein or thereon, by the action of the main-spring *g*, as will be hereafter explained. The brace is pivoted to the frame by the pivot-bolt *h*, and the hammer F is pivoted to the

brace at *i*. Now, as the brace and hammer sometimes move together and sometimes independent of each other, the hammer swings or moves on two centres, viz, *h* and *i*, as follows: When the hammer and brace move together, then the pin *h* is the centre of motion of both; but, when they move independent of each other, then the pin *i* is the centre of motion of the hammer, and *h* always the centre of motion of the brace. The pin *i* is in rear of a vertical line drawn through pin *h*. The main-spring *g* bears underneath a rearward projection, *j*, on the hammer, and *k* is a main-spring stop, which prevents the free end 8 of the spring from moving beyond it when, for any purpose, the hammer and brace are removed from the arm. This holding of the end of the main-spring avoids the necessity of compressing it to get the hammer back in its place after it has been removed and is to be replaced; and, by thus using a main-spring stop, the hammer is readily taken out, and set back in its place, the pivot-bolt put in, and, in cocking the hammer, the spring comes of itself into action, without any care, attention, or manipulation of the user further than to draw back the hammer.

To a projecting portion, *l*, of the hammer there is pivoted, as at *m*, a dog, *n*, a notch or projection, *o*, on the upper side of which takes against a shoulder, *r*, on the under side of the brace at a certain stage of their action, so that, when in that condition, and the hammer is drawn back, this dog and its catch cause the brace to move back with the hammer; and, so soon as the brace clears the breech-block, the recoil of the spring *f* throws it back, and leaves the barrel open, the shell being thrown out by the flying back of the breech-block, and, at about the last of the rearward and downward motion of the breech-block, it strikes against the point of the dog *n*, and disconnects it from said brace. The several parts will remain in the position shown in fig. 3, which is the recharging-position, until the breech-block is swung shut by the fingers; and, the moment it is up against the barrel, the reaction of the main-spring *g*, through the hammer *E*, forces the brace *E* in, under, and against the breech-block, and locks it there. In this position, the dog *n* being still disconnected from the brace, the hammer is free to be drawn back until the point *s* of the trigger *p* takes into the full-cock notch *u* in the dog *n*. The trigger-spring *q* causes the trigger to bear up against the dog *n*, and this keeps the dog in position to catch against the brace at the proper time. When the hammer is let go or flies, and as it strikes the firing-pin or the fulminate, the trigger, or, rather, its point, *s*, takes into the notch *v* of the dog, and prevents it from coming any further back, and from allowing its projection, *o*, from taking into the notch *r*; and the hammer can swing then, on its centre, *i*, clear back to the full cock. When the trigger is pulled to let the hammer fly, a spring connected with the dog *n* throws it down, or it may drop by its own weight far enough to clear everything; and, when the hammer has fallen, and the trigger released, the dog again takes against the brace, so that the moving of the hammer backward again draws back the brace, and the breech-block again flies back or open. Two of the motions are made by the operator, and the other two are automatic, viz, the operator draws back the hammer, and brings up or forward the breech-block, the two springs *f g*, the latter being the main-spring, throw back the breech-block, and throw in the brace to lock it when moved up by hand.

To readily take out and replace the parts of the arm, I have already referred to devices which cause the two springs to go into place and action without any placing or care on the part of the user; and, to further facilitate this operation without tools inconvenient to carry, and not to risk the losing of the parts, I make and apply a button, *t*, the ends, *w w*, of which are slightly rounded out, concave, and under-cut, so that they will cover a small portion of the heads *x x* of the pivot-bolts *h i*, and prevent them from dropping out. This button is held in place by a screw, *y*, and, when the arm is to be dismembered, the screw is turned until the ends of the button will rise, and swing over the heads of the pivot-bolts, and clear them; and then these bolts can be taken out, and the breech-block, brace, and hammer lifted out, cleaned, and laid back, and the pins inserted, and the button turned, and the screw *y* run down, and the arm is again ready for use, each part finding its own position, and each spring coming into action without any care, attention, or extra manipulation.

The black lines in fig. 4 show the position of the hammer and brace, dog, and main-spring, when the arm has been charged, and the breech locked, closed, and the arm ready to be carried, the hammer standing at the half cock. The red lines show the position of the same parts when the hammer is on the full cock, and ready to be fired by the pulling of the trigger. The blue lines represent the positions of the same parts when the hammer has fallen, and the charge fired, and the connection made between the hammer and the brace, so that they will swing back together.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. In combination with the spring *f*, the groove and abutment 5 across the groove, so that, when the breech-block is replaced after having been taken out of the arm, said spring will find its place in connection with the breech-block, and go into action with it, without any care or attention on the part of the user, substantially as described.

2. I also claim hanging the hammer on the two centres *h* and *i*, so that it can move at times on one and at times on the other, as and for the purpose described.

3. I also claim the arranging of the pivot *i* in a line in rear of a vertical line drawn through the pivot-bolt *h*, so that the hammer can cause the brace to follow it in moving back without being rigidly connected to it, substantially as described.

4. I also claim, in combination with the hammer and the brace, the dog *n*, connected and acting therewith, substantially in the manner described.

5. I also claim the button *t*, made and operating in connection with the pivot-bolt heads, as and for the purpose described.

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Witnesses:

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