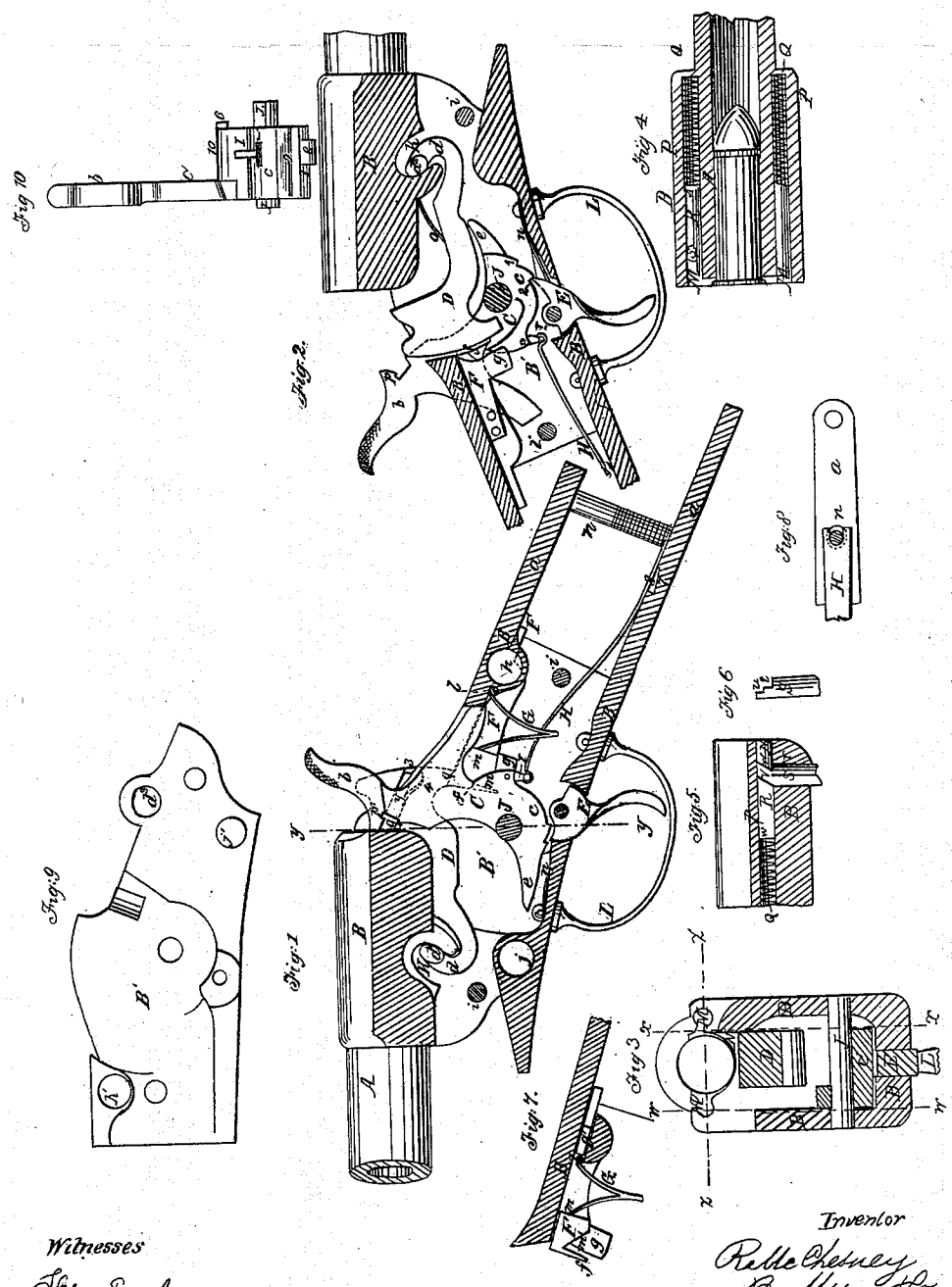
R. McCHESNEY.

Breech-Loading Fire-Arm.

No. 58,444. Patented Oct. 2, 1866.



Witnesses

Theo. Tusch

Wm. Treuri

Inventor

Rable Chesney

By Munn & Co

UNITED STATES PATENT OFFICE.

REUBEN McCHESNEY, OF ILION, NEW YORK.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **58,444**, dated October 2, 1866.

To all whom it may concern:

Be it known that I, R. McCHESNEY, of Ilion, in the county of Herkimer and State of New York, have invented a new and useful Improvement in Breech-Loading Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional elevation of so much of a breech-loading fire-arm as is necessary to show in order to illustrate my invention, the section being taken on the bent line W of Fig. 3. Fig. 2 is a sectional elevation, taken along the bent line *x* of Fig. 3. Fig. 3 is an elevation of a cross-section, taken on the vertical line *y* of Fig. 1. Fig. 4 is a horizontal section of that part of the receiver which incloses the breech A of the barrel, taken on the line *z* of Fig. 3. Figs. 5 and 6 are detailed views, illustrating the construction and operation of the shell-drawer. Fig. 7 is a detailed view of the device which locks the breech-piece. Fig. 8 shows the manner of securing the mainspring in place. Fig. 9 represents one of the removable sides of that part of the receiver which constitutes the lock-frame. Fig. 10 is a back view of the hammer-piece C.

Similar letters of reference indicate like parts.

A designates the breech of the barrel of a fire-arm inclosed within the forward part of the receiver B, as usual. The tangs *a a* of the receiver furnish means for securing the receiver to the stock, which is not shown in the drawings. The body of the receiver behind and below the breech is made hollow to constitute a lock-frame. Figs. 1, 2, and 3 show the form of the chamber thus made in the said receiver. The sides of this part of the receiver are designated by the letters B′ B′. They are fitted to the solid part of the receiver by means of bosses or projections *j′ h′*, which articulate with recesses *j h* in the fixed parts of the receiver.

The sides are held together by means of screws or bolts *i*. The tangs *a* are supported and strengthened by means of a screw, *n*, which also serves to connect them to the stock of a gun. It also serves as an abutment for the mainspring H, which fits in a groove made about it, the end of the spring being formed into a semicircle, so as to embrace the body of the screw. By this construction I am able to disconnect the mainspring from the rest of the lock and replace it with facility.

C is the hammer-piece, being composed of a hammer, *b*, and tumbler *c*, according to a mode of construction now common in fire-arms. It moves about a fulcrum, J, which is journaled in bearings made for it in the removable sides B′.

1 2 designate notches made in the tumbler to enable the trigger E to engage it for half-cock and full-cock.

The letter *e* designates a toe, which projects forward from the tumbler, and whose office is to raise the breech-piece D, as hereinafter explained. This toe in this example of my invention is made rigid, but in small-arms or in pieces where the space it is to move in is contracted it may be jointed so as to require less room to move in.

I is a stirrup, depending from the back part of the tumbler, and capable of swinging back and forth on its journals. (See Figs. 1 and 2 and 10.) It is connected by a T-joint to the forward end of the mainspring H in such a manner that it can be readily disconnected therefrom, the joint of the stirrup resting in an open-forked socket formed on the adjacent end of the said spring.

The shape of the mainspring H is seen in Fig. 1, its back end being clamped to the lower tang *a* by means of the screw-bolt *n*, whose position when in place is such that the semicircular end of the spring is clamped by that part of the thread of the screw which is next above the groove that receives the end of the spring. The spring is kept from lateral displacement, as well as from being moved forward away from the screw-pin *n* by means of a dog, 8, projecting downward from the shank of the spring into a recess, 7, made in the adjoining tang *a*.

L is the trigger-guard, and E is the trigger, the toe of the latter being forced constantly toward the tumbler by a spring, *n′*, so that the trigger may be able to engage the notches 1 and 2 of the tumbler *c*.

K is a socket made in the lower part of that portion of the receiver which contains the breech of the barrel, for the purpose of receiv-

ing the bent end *d* of the prolongation of the breech-piece, which is extended forward beneath the breech of the barrel. *d' d²* designate the journals upon which the breech-piece D vibrates. They are received in sockets *d³* made for them in the movable sides B' of the receiver, said sockets being of greater diameter than the said journals, to permit them to be moved horizontally therein, whereby the breech-piece is made to vibrate about a movable axis, the convexity of its bent part *d* being rolled into contact with the forward part of the socket K, and thus transferring the center of motion from the journals *d' d²* to the convexity of the bent part *d* of the breech. The effect of this construction is that the breech-piece, as it drops, vibrates about an axis which is movable in a horizontal line, and which, therefore, permits it to move horizontally forward as it uncovers the breech of the barrel. When the breech-piece is moved upward to its place before the breech of the barrel it is moved horizontally backward to enable it to clear that part of the receiver which lies directly beneath the said breech.

q y designate a firing-pin, which slides in a groove, 3, made for it in that side of the breech-piece along which the hammer moves. The part *y* thereof is flush with the side of the breech-piece, but the front part, *q*, is extended laterally from the side of the breech-piece in the path of the hammer. A small projection (not seen in the drawing) is made on its face, toward the breech of the barrel, which comes up against the flange of the cartridge when the pin is driven forward by the hammer in firing. The lower back part of the groove 3 is hollowed out to receive a spring, 4, attached to the lower side of the firing-pin. The office of the spring is to produce sufficient friction to hold the pin in whatever position it is left by the forward and backward movements of the hammer. The upper side of the part *q* of the pin has an elevation, *p'*, which is seized by a notch, *p*, on the hammer when the latter strikes against the firing-pin. When the hammer is drawn backward to cock it the notch *p* is enabled to retain its hold of the elevated part *p'* of the pin and draw the pin backward with it, because the groove 3, in which the pin slides, is tangential to the arc described by the hammer in its movements. The pull or force thus brought to bear upon the firing-pin by the backward movement of the hammer is communicated to the breech-piece, which is thereby started from its position next to the breech of the barrel and brought down toward its lowest position, so as to uncover the breech and permit the shell-drawer to remove the empty shell, and also to permit a fresh cartridge to be supplied.

F is a bolt, which is fitted to slide to and fro along the upper part of the receiver behind the breech-piece. The upper part of the bolt has a flange, *g'*, which is fitted to move in a way formed for it behind the socket *h*. By means of this flange and the way it moves in the bolt is sustained in its place against the upper part of the receiver. The forward part of the bolt widens at *m*, forming a shoulder, which is made to sustain one end of a two-leaved spring, whose other end is secured by a hinge-joint, *l*, to the fixed part of the receiver, the axis of the hinge being made to extend past the flange *g'* of the bolt, so as to prevent it from coming too far forward. The tendency of the spring is to keep the bolt continually out toward the left, (see Fig. 1,) so as to come beneath the part 9 of the breech-piece. The front part, *m*, of the bolt is sustained when in its furthest position toward the left, in Fig. 1, by the upper part, 10, of the hammer, (see Fig. 10,) which projects upward into an angular space, *m'*, made for it in the part *m* of the bolt, the formation of which space leaves a plate, *f*, to hang down before the part 10 of the hammer. *g g* designate a spring-plate fastened diagonally to the inner side of the front part of the bolt, its front edge being made to press against the side of the part 10 of the hammer, while its rear edge is inclined away from the path of the hammer.

The number 6 designates a dog, which projects from the right-hand upper side of the part 10 of the hammer, and which fits between the plate *f* and the front edge of the spring *g*. The shape of the dog 6 in side view resembles an ellipse, its upper and lower sides being curved, so as to enable the parts to move along and act upon each other with facility. It follows from this construction that when the hammer is pulled back the dog 6 acts on the front edge of the spring-plate *g*, and drives the bolt F backward from beneath the breech-piece, the spring G yielding to allow this movement of the bolt. The breech-piece is then free to drop down away from the breech of the barrel. The left-hand leaf of the spring G is locked in the inner surface of shoulder *m* by a hook, which takes into a suitably-formed slot in such a way as to secure them to each other. Therefore in all the movements of the bolt the spring G retains its hold thereof. When the bolt is carried back far enough to permit the breech-piece to drop to its lowest position, the said breech-piece will be in front of the plate *f*. When the bolt has been carried back so far, the dog 6 on the hammer will have passed under the spring-plate and become disengaged therefrom, and the toe *e* of the tumbler will have restored the breech-piece again to its highest position behind the breech of the barrel, and the bolt F will have also resumed its place beneath the part *q* of the breech-piece. Should the hammer be now released from the trigger, its dog 6 will crowd past the spring-plate *g*, which will yield to its pressure, and when the hammer has reached the position shown in Fig. 1 the dog 6 will be found again between the plate *f* and the front edge of the spring-plate, ready again to withdraw the bolt from beneath the breech-piece. It will be observed that, owing to the construction described of the front part of the bolt, the ham-

mer cannot discharge the piece prematurely before the breech-piece is in place, because the plate *f* will arrest the hammer if the bolt is not in its proper place beneath the breech-piece.

M N M designate the shell-drawer. The part N is semicircular in shape, and fits in a suitable groove made for it in the breech of the barrel, so that the flange of the cartridge will fit over it. The ends of the semicircular piece N are connected to rods M, which move in cylindrical grooves P P, made in the receiver, on either side of the barrel. These rods are pushed out from their grooves by means of springs Q, which rest against the ends W′ of the rods. One of the rods is cut away, as seen at R in Fig. 4, the front part of the rod having also a diagonal depression at the end of the space R, and which depression receives the angular end V of the slide S, which moves in another groove, *r*. The slide S may be operated from the prolongation of the breech-piece, or from some other moving part of the gun, and, since its angular end V lies against the angular face W of the rod M, it follows that if the slide S is drawn down, the rod M will be moved toward the right, and so soon as the shoulder *t* of the slide has retired from the diagonal groove of the rod M the spring Q will force the rod M toward the right, and cause the part N to draw the empty shell from the breech of the barrel. That part of the rod M which is cut away at R is free to move past the part O of the slide when the latter is sufficiently withdrawn from its path. The shell-drawer may be restored to its place in the receiver by hand, and the restoration of the slide S to the position seen in Fig. 5 will lock the rods M in place. Both rods M of the shell-drawer may be made in the way described, if thought desirable.

I do not claim placing the hammer and firing-pin upon the left-hand side of a swinging breech-piece, as this was first called to my attention by Col. Hiram Berdan; nor do I claim holding a breech-piece operated by other means than the hammer in position by means of a projection on the front side of the tumbler or brace when the hammer is at full-cock, as this also was first called to my attention by Col. Berdan; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Lifting a swinging breech-piece from an open to a close position entirely by the immediate action of the hammer, or of some projection thereof, without any intermediate device, substantially as herein specified.

2. The relative arrangement and combination of the breech-piece and hammer in such a manner that the breech-piece may descend by its own weight and open the breech before the hammer reaches half-cock, and be raised again to close the breech while the hammer is passing from half-cock to full-cock, substantially as and for the purpose herein set forth.

3. The combined arrangement of the breech-piece locking-bolt, or its equivalent, and the hammer in such a manner that the breech-piece shall be held locked independently of the hammer during the entire descent of the latter, then unlocked by the action of the hammer before the same reaches half-cock in ascending, and again locked, by the action thereof, at or before reaching full-cock.

4. The sliding firing-pin *q y*, arranged to slide in the side of the breech-piece, substantially as above described.

5. The dog *g* of the hammer-piece of the bolt F, substantially as and for the purpose above described.

6. The dog 6, in combination with the pendent plate *f* of the sliding bolt F, substantially as and for the purpose above described.

7. The hook *p* of the hammer, in combination with the firing-pin, constructed and operating substantially as and for the purpose above described.

8. The mode above described of securing the end of the mainspring, to wit, by fitting its end in a groove on the screw-pin *n*, in combination with the projection 8 and recess 7, substantially as above described.

REUBEN McCHESNEY.

Witnesses:

M. M. LIVINGSTON,

C. L. E. TOPLIFF.