

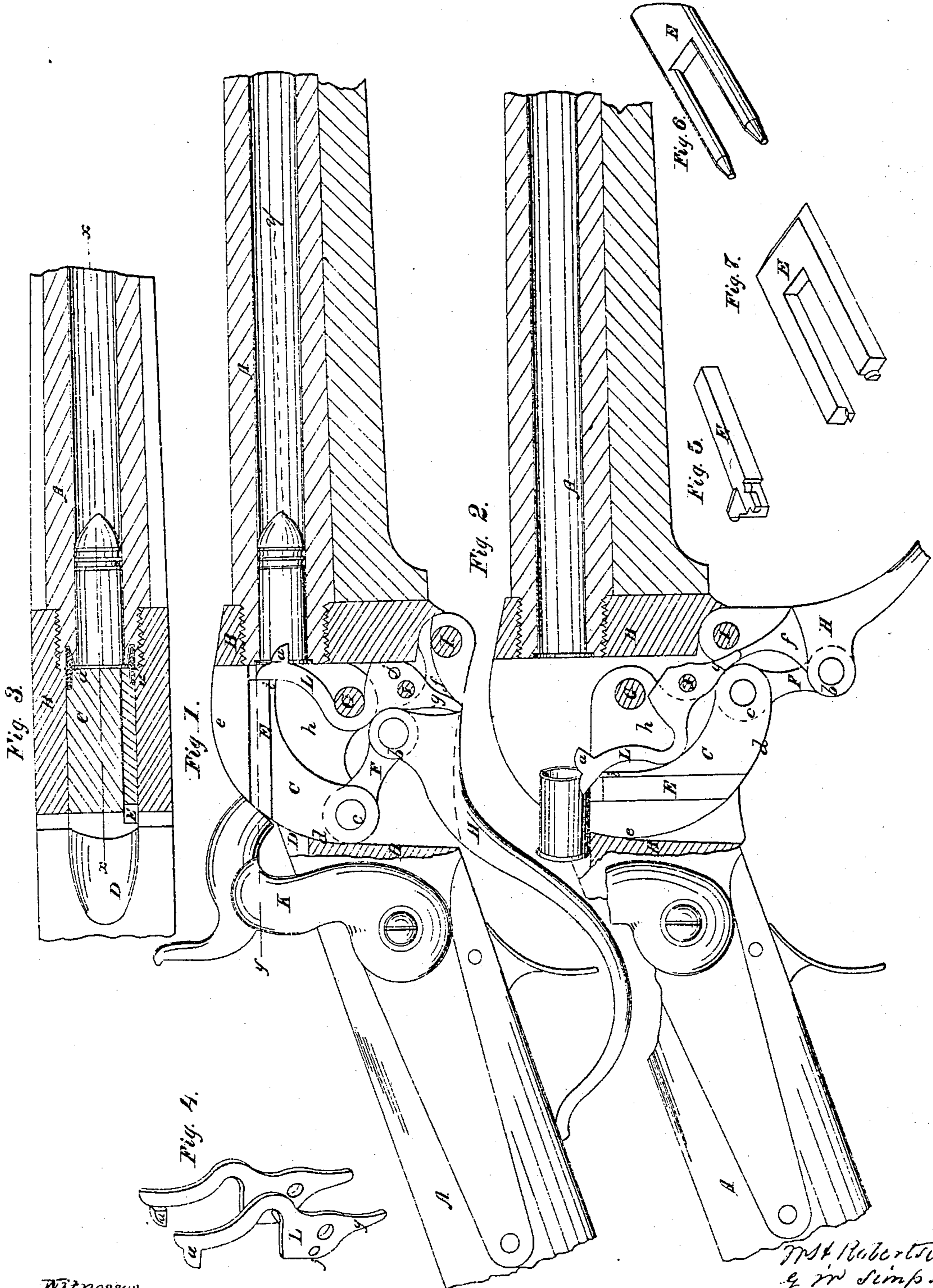
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Rearward & Downward,

# Robertson & Simpson, Breech Loader.

No 53187.

Patented Mar 13, 1866.



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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. 53,187, dated March 13, 1866.

*To all whom it may concern:*

Be it known that we, WILLIAM H. ROBERTSON and GEORGE W. SIMPSON, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Fire-Arms; and we 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 side view of a portion of a fire-arm made according to our invention, the near side of the receiver having been removed to show the breech-piece and its connections. Fig. 2 is an elevation of a section thereof, taken on the line *x* of Fig. 3. Fig. 3 is a plan of a section, taken on the bent line *y* of Fig. 1. Fig. 4 is a detailed view of the shell-drawer. Figs. 5, 6, and 7 show plungers of different forms.

Similar letters of reference indicate like parts.

The object of this invention is to simplify and improve the breech-loading fire-arm; and it consists in the mode of construction and operating the breech-piece and the shell-drawer.

The drawings show only that portion of a fire-arm which contains and is adjacent to the operating parts.

A designates the barrel, and A' the stock. B is the receiver. It incloses the breech of the barrel, and is secured to the stock in any proper manner.

C is the breech-piece. It moves within a recess made in the receiver, and is pivoted upon a pin, G, which is supported in the sides of the receiver. The breech-block, in side view, resembles a segment of a cylinder, its curved side or periphery being described from its center of motion G. The forward side of the breech-piece is straight and closes the breech of the barrel, while its rear side is hollowed out to make room for the play of the link F, and for the joint *b* of the lever which operates the breech-piece. The rear side of the recess in the receiver is in the upper part thereof cut away upon a curve described from the same point or center as the convex side of the breech-piece; but the lower part of the rear of said recess is cut away tangentially to such curve. Such lower part may, however, be formed upon a curved line of a greater radius than the up-

per part, the object being to allow the breech-piece to move through the lower part of the recess without coming in contact therewith.

Although the segment itself is described from its center of motion G, yet that part of its periphery which, when the breech is closed, is level with the barrel is more full than the upper part, *e*, the object in reducing the part *e* being to allow it to move easily past the rear wall of the recess in the receiver, while the part *d* fits snugly against the upper part of said rear wall when the breech-piece is in the position shown in Fig. 1.

The breech-piece is operated by means of a lever, H, which swings up against the under side of the stock, where it may be locked by a spring-bolt, and in which position it serves as a guard to the trigger. The fulcrum of the lever is at I beneath the breech of the gun and beneath or in the lower part of the receiver.

When the lever is swung up against the stock it closes the recess of the receiver on its lower side, and a hub, *b*, formed on the inner face of the lever, extends upward into the recess near to and below the pin or pivot about which the breech-piece has its motion.

F designates a link, one of whose ends is pivoted to the hub *b* of the breech-lever, and whose other end is pivoted to the rear end of the breech-piece at *c*.

L designates a shell-drawer, (seen detached in Fig. 4.) It consists in this example of a frame composed of two plates, irregular in form, as seen in side view, but set parallel with each other and connected together by a pin, *j*; but it is not necessary that the plates be connected so as to form a frame, nor is the shape here given to them an essential part of our invention. The shell-drawer is placed in the recess of the receiver, so that its lower part comes between the fulcrum of the breech-piece and the fulcrum of the breech-lever, and it is pivoted on a pin, J, which passes through the sides of the receiver.

The front edges of the plates of the shell-drawer in front of the pivot J are squared to come up to or against the receiver just beneath the breech of the barrel, and each of the plates is extended below the place of the said pivot J, so as to form triangular arms *g*, which vibrate in recesses made for them in the sides of the breech-lever. That part of each of the plates which extends above their pivot is bent

around the pivot of the breech-piece and is carried forward toward the breech of the barrel, the distance of the plates apart being equal to the diameter of the bore, and these parts of said plates vibrate in recesses *h*, made in the sides of the breech-piece, the shoulders of such recesses being brought into contact at certain times with said plates, so as to move them toward and away from the breech at the proper times.

*a a* designate projections extending from the plates in parallel lines, and whose thin ends are turned toward the breech, and whose bases are united to the front edges of the upper parts of the said plates, where they form shoulders, as seen in Fig. 4, in respect to one of them. Their inner faces are beveled, as shown in Fig. 3, and their bases extend inward from the sides of the plates of the shell-drawer, and their office is to take hold of the front side of the flange of the cartridge, so as to draw the shell out of the breech of the gun after firing.

Recesses are formed in the breech on each side of the bore to receive the hooks or projections *a a*, as seen in Fig. 3.

The shell-drawer is operated by means of the shoulders formed on the sides of the breech-piece at the edge of the sunken parts or recesses *h* at the points or parts *i* and *c*.

When the breech-piece is swung down to open the breech the hub *e* of the breech-piece strikes against the limbs *g* of the shell-drawer and causes the latter to be rotated on its pivot and its hooks *a a* to be drawn outward away from the breech. This action on the shell-drawer takes place after the breech-piece has nearly completed its backward movement, and when its straight face is nearly in a horizontal position, so that the way is clear to allow the empty shell to be thrown out of the recess of the receiver. The back part of the receiver on its upper side has a groove, *D*, the bottom of which is in the plane of the bottom of the bore of the gun, and the said groove is carried to the rear wall of the recess, or, in other words, opens into the recess.

When the breech-piece has been swung back to the position seen in Fig. 2, its straight side lies in or nearly in the plane of the bottom of the bore, and therefore there is an unobstructed space from the breech rearward clear of the breech-piece, and, by reason of the groove *D*, clear of the receiver also.

The construction of the shell-drawer is such as to cause the shell to be drawn out of the breech of the gun and carried backward with great energy and quickly, because the limbs on which the hooks *a a* are placed are longer than the limbs *g*, against which the power is applied, and so their extremities move with a speed proportionally greater than the extremities of the limbs *g*.

If the breech-piece is swung down with promptness the hooks will throw the empty shell away from and out of the receiver, so as to clear the gun. When the breech-piece has

been swung back to the position seen in Fig. 2, a fresh cartridge can be inserted in the barrel without difficulty and without interference from the hooks of the shell-drawer. When the breech-piece is swung upward against the breech, the shoulders or edges of the recesses *h* are brought up against the edges of the plates of the shell-drawer, which is therefore carried forward with the breech-piece, and the hooks are forced past the flange of the cartridge, so that their bases or shoulders lie forward of the flange, ready to draw the shell outward and backward when the breech-piece is next swung downward.

The plates or sides of the shell-drawer which carry the hooks are elastic, so as to give way laterally when the hooks strike the flange, and the recesses in the breech are made wide enough to allow them to yield laterally as they pass into the same.

When the breech-piece in going forward has reached about the position given to it in Fig. 2, the parts *i* of the sides of the breech-piece strike against the plates of the shell-drawer at points behind the hooks and drive them forward to their place beyond the flange of the cartridge, the force employed for this purpose being so applied as to obtain a powerful leverage.

*E* designates the plunger or needle, which is laid in the breech-piece and extends from that part of its face which is beneath or opposite the hammer *K* through to its front or straight side. Heretofore the plunger, as applied to cartridges which have their fulminate in a circumferential flange, has had only one prong or point of contact with the flange. With this old mode of making the plunger it is evident that there exists only one chance or opportunity of exploding the cartridge, and if, as sometimes happens, the part of the flange struck does not contain any of the fulminate, because the flange has been imperfectly filled or supplied, the blow of the hammer fails to explode the cartridge. Moreover, when the cartridge is exploded with a plunger having only one prong or needle, since the fulminate is reached only at one point, it follows that the charge will be burned only from one point and the ball be expelled before the whole charge has been burned, thereby causing a waste of powder. Our invention includes a remedy for this defect, which consists in giving two or more prongs or salient points to the plunger, as shown in Figs. 5, 6, and 7, which are detailed views of several modifications of this feature of our invention.

The plunger may be forked, the end of each fork carrying one or more prongs, or it may be of a single piece with two or more prongs. The prongs are so located as to come in contact with the flange of the cartridge at different points, and when a plunger of forked shape is placed in the breech-piece its forks may be so wide apart as to permit their prongs to reach the flange of the cartridge on opposite points of its circumference.

It will be observed that the heel of the receiver, in the construction here shown, gives a direct support to the breech-piece and sustains it against the force of the exploding cartridge.

The following is what we claim as new and desire to secure by Letters Patent:

The combination of the segmental breech-piece C, guard-lever H, link F, shell-drawer

L, and toe *g* thereon, all the said parts being constructed and arranged to operate together, as herein specified.

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