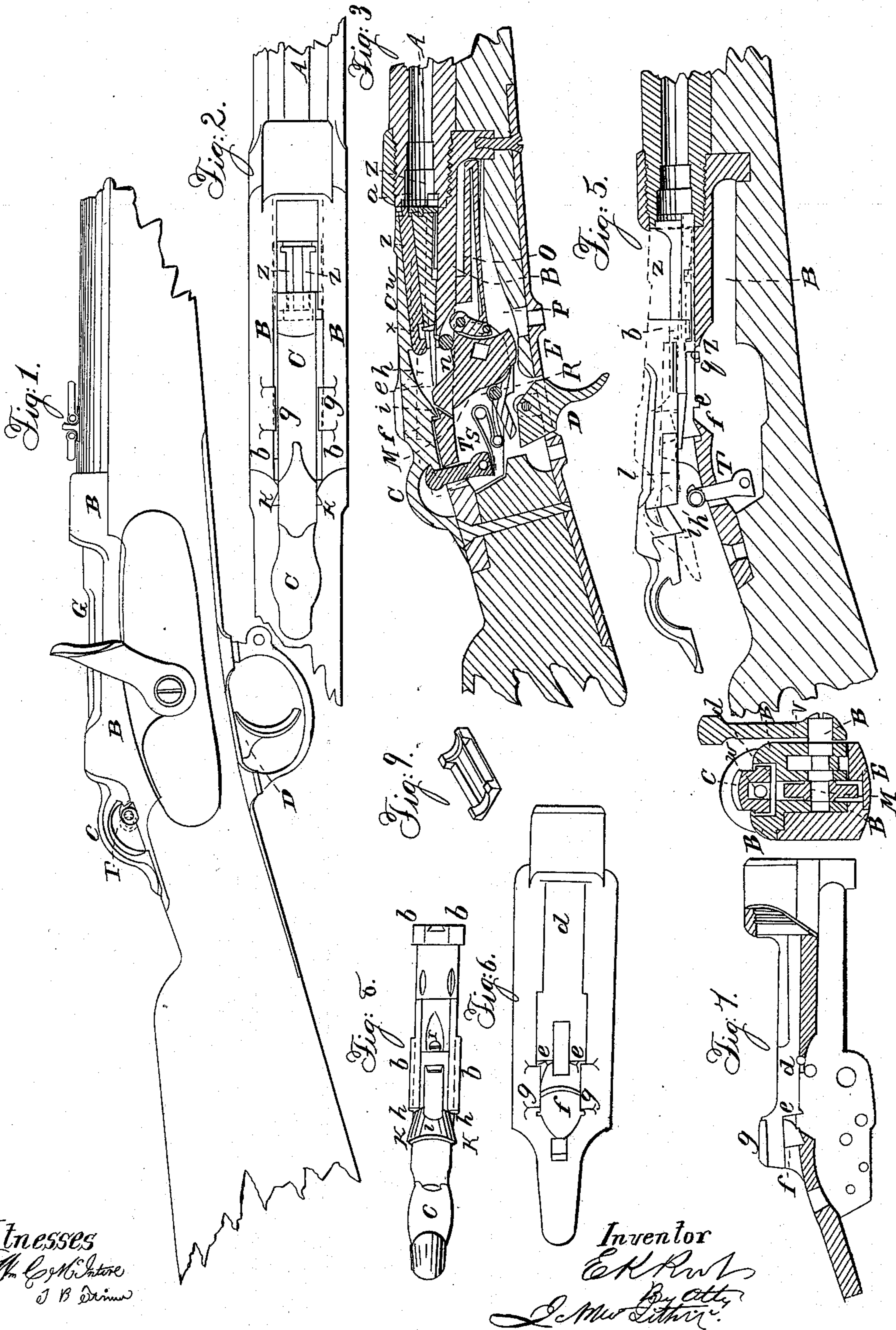


E. K. ROOT.

Breech-Loading Fire-Arm.

No. 65,509.

Patented June 4, 1867.



Witnesses
Wm. G. McIntosh
J. B. Drinnon

Inventor
E. K. Root
By Atty.
J. M. Luther

United States Patent Office.

MATILDA C. ROOT AND ELISHA COLT, OF HARTFORD, CONNECTICUT, AND HARRIS COLT,
OF NEW YORK, N. Y., EXECUTORS OF ELISHA K. ROOT, DECEASED.

Letters Patent No. 65,509, dated June 4, 1867.

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 E. K. Root, deceased, late of Hartford, and State of Connecticut, did, during his lifetime, invent a certain new and useful Improvement in Breech-Loading Fire-Arms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and the letters of reference being marked thereon.

Figure 1 represents a side view of the rear parts of a carbine embodying the improvement.

Figure 2 is a top view, and

Figure 3 a longitudinal section of the same.

Figure 4 is a cross-section at $x x$, and

Figure 5 a partial longitudinal section, showing different positions of the breech-piece.

Figures 6 and 7 show, respectively, a top view and a longitudinal section of the lock-frame.

Figure 8, a view of the bottom of the breech-piece, and

Figure 9 a perspective view of the extractor for drawing out the empty cartridge shells.

This invention relates to fire-arms in which fixed ammunition with metallic shells is used, and may be applied to muskets, carbines, or pistols. It has for its object to furnish a strong and simple apparatus for opening and closing the breech, for thrusting in the cartridge, and for extracting from the barrel the empty shells, which shall be effective and convenient and secure from accident; and to these ends this invention consists in a breech-loading gun, constructed and operating substantially as hereinafter described.

To enable those skilled in the art to fully comprehend this invention, we will proceed to describe the construction and operation of one of these improved guns, referring by letters to the accompanying drawings.

In the several figures of the drawings similar letters of reference denote the same part.

A represents the barrel, the rear end of which is screwed into the front part of a breech-frame, or, as we term it, the back-frame, B, which contains the removable breech-piece C, and all the lock work, except the trigger D, which is hung in the usual way to the guard-plate E. The breech-piece C lies, with its front end closing the breech, in a straight channel or recess d , formed in the upper part of the lock-frame B, which channel is, for the greater part of its length, wider at the bottom than the top; but near the rear end its walls are parallel at the width of the bottom. At the rear part of the channel d is a shoulder or abutment, e , which forms the principal resisting point to prevent the recoil of the breech-piece C when the charge is exploded. Behind this abutment e is a recess of conical form, the back f of which forms an abutment supplementary to e . Directly over this conical recess the back-frame is somewhat higher than the part in front of it, and its upper edges $g g$ hook inward to prevent the rear end of e being lifted too high. The shape of the breech-piece C is clearly indicated by the side and bottom views shown in figs. 5 and 8. The shoulder which rests against the abutment e is at h ; and the conical part i corresponds with the conical recess (at f) in the lock-frame. The corners $k k$ of this conical part i project beyond the sides of the breech-piece, the width of which is, for the greater part, equal to that of the top of the front part of the channel d in the lock-frame; but directly in front of, and forming part of, the shoulder h are, on either side, wings or ribs $l l$, which thus increase the width of the piece e to that of the widest part of the said channel. M is the hammer, which is in the interior of the lock-frame, and which is so shaped as to form also the tumbler. Its movements are limited by the check-pin n . O is the main-spring; P, the main-spring swivel; R, the sere, and S a peculiarly-shaped spring, one end of which serves as a sere-spring, and the other acts on a spring-latch or catch, T, which holds down the rear of the breech-piece. On the outer end of the arbor, on which the hammer is fixed, is a thumb-piece, V, for bringing the hammer to cock. The breech-piece C contains a loose pin or rod, w , against the rear end of which the hammer strikes to explode the charge, the breech-piece being cut away to allow access of the hammer to the pin. The front end of this pin w is sharpened, and is in the proper position to be driven into fulminate ring of the cartridge by a blow of the hammer M. A small plate on the front end of the breech-piece, perforated for the point of the pin, prevents the said pin from being thrown too far forward, and a small screw, x , keeps it from dropping out backward. As a further precaution to prevent the mutilation of the barrel by the pin w a recess, a , is cut in the barrel opposite to the point of the pin. The extreme rear end of the breech-piece C is formed into a

kind of bow, *c*, which furnishes a convenient place to grasp for the purpose of drawing out the breech-piece, and also forms a guard for the spring-catch *T*, which is located directly under it, and the end of which is so shaped that it may readily be pulled back by the fingers which grasp the bow of the breech-piece, and be unhooked by the same movement of the fingers which is required to lift the end of *C* preparatory to pulling the breech-piece back. *Z* is the extractor, the form of which is clearly shown by fig. 9. Its front part enters a recess cut in the barrel to receive it, and is curved out to correspond with the bore of the chamber. Its extreme front end partially encircles the cartridge shell just in front of the flange of the said shell. The extractor lies flat in the bottom of the channel *d* of the lock-frame, in which it can slide back and forth under the breech-piece *C*. At the front end of *C* are two short lugs or wings, *b*, projecting from its sides, which, when *C* is drawn back, strike the rear raised end of the extractor *Z* and draw it back. A shoulder on *C*, at *m*, pushes the extractor forward from behind. This shoulder is at such a distance behind the lugs *b* that the breech-piece may be moved back or forward some considerable distance without stirring the extractor. *q* is a check-pin or stop, against which the rear end of the extractor strikes, and limits the distance to which the breech can be drawn back. This stop-pin is flattened on one side, and is so located that, when it is turned partly around on its axis, from the position shown in the drawings, it ceases to form a stop, and permits the breech-piece and the extractor to be so far drawn back as to be taken out of the lock-frame. The length of the extractor is such that it projects a considerable distance, say, five-eighths of an inch, beyond the front end of the breech-piece when drawn back to the stop. The lugs *b*, on the front end of *C*, slide under the overhanging edges of the channel in the lock-frame, and keep the front end of the breech-piece from being lifted out of its place.

The fire-arm thus constructed is operated as follows: The hammer is first raised to half or full cock by the thumb-piece *V*. The bow *c* of the breech-piece is grasped by the fingers, and, at the same time, the spring-latch *T* is drawn back, and the rear end of the breech-piece raised into the position shown by red lines in fig. 5. The projecting corners *k*, catching under the hooks *g* on the lock-frame, prevent its being raised too high. This raising of the breech-piece *C* frees it from the abutments *e* and *f*, and permits it to be pulled back into the position in fig. 5, by the black lines. The ribs *l l*, sliding under the hooks *g g*, and on top of the abutments *e* and *f*, guide the piece *C* correctly. The operation opens the breech of the barrel, and a cartridge is now inserted by thrusting the end of ball into the chamber of the barrel, and dropping the cartridge into the channel *d*. The process requires no particular caution, because, on account of the considerable projection at this time of the extractor *Z* beyond the front end of the breech-piece, it does not matter whether the ball be thrust in far or little, nor whether the cartridge be, within practical limits, short or long. The flange of the shell will certainly fall within the extractor, that is to say, between the front end of the extractor and the breech-piece. The breech-piece is now thrust forward, thereby pushing the cartridge into the chamber of the barrel, the extractor *Z* being, at the same time, thrust into place ahead of the flange of the cartridge shell by the shoulder *m*. When the breech-piece is pushed so far forward as to close the breech behind the shell its rear end is pressed down until the spring-catch *T* latches over the projection on the breech-piece, by which it is held down. This breech-piece is now locked firmly into its place, the shoulders *e* and *f* forming secure and reliable abutments to resist the reaction of the discharge, and the piece may now be fired, after which, when it is desired to recharge the gun, the empty cartridge shell is drawn out by forcibly pulling back the breech-piece, the lugs *b* on the front end of which come into violent contact with the rear end of the extractor *Z*, and thus withdraw the shell from the chamber, and land it in the channel *d*, out of which it may be dropped by tipping the gun.

Having fully described the construction and operation of this breech-loading gun, what we claim therein as new, and desire to secure by Letters Patent, is—

1. The employment, in construction with the open breech-barrel and frame, of a sliding breech-piece, constructed and arranged to operate in the manner substantially as set forth.
2. We also claim the extractor-shoe or piece, in combination with the sliding breech-piece, and the frame in which both said parts work, arranged and operating substantially as set forth.
3. We also claim the double-acting spring *S*, in combination with the screw *R* and catch-bar *T*, the whole constructed to operate substantially as set forth.
4. We also claim the hammer *M*, constructed as described, in combination with the sliding-rod or bar *w* and check-pin *n*, substantially as described for the purpose set forth.

In testimony whereof we have hereunto set our hands and seals this 18th day of January, 1866.

MATILDA C. ROOT. [L. s.]

ELISHA COLT. [L. s.]

HARRIS COLT. [L. s.]

Executors of Elisha K. Root, deceased.

Witnesses:

C. N. SHIPMAN,

H. K. W. WELCH.