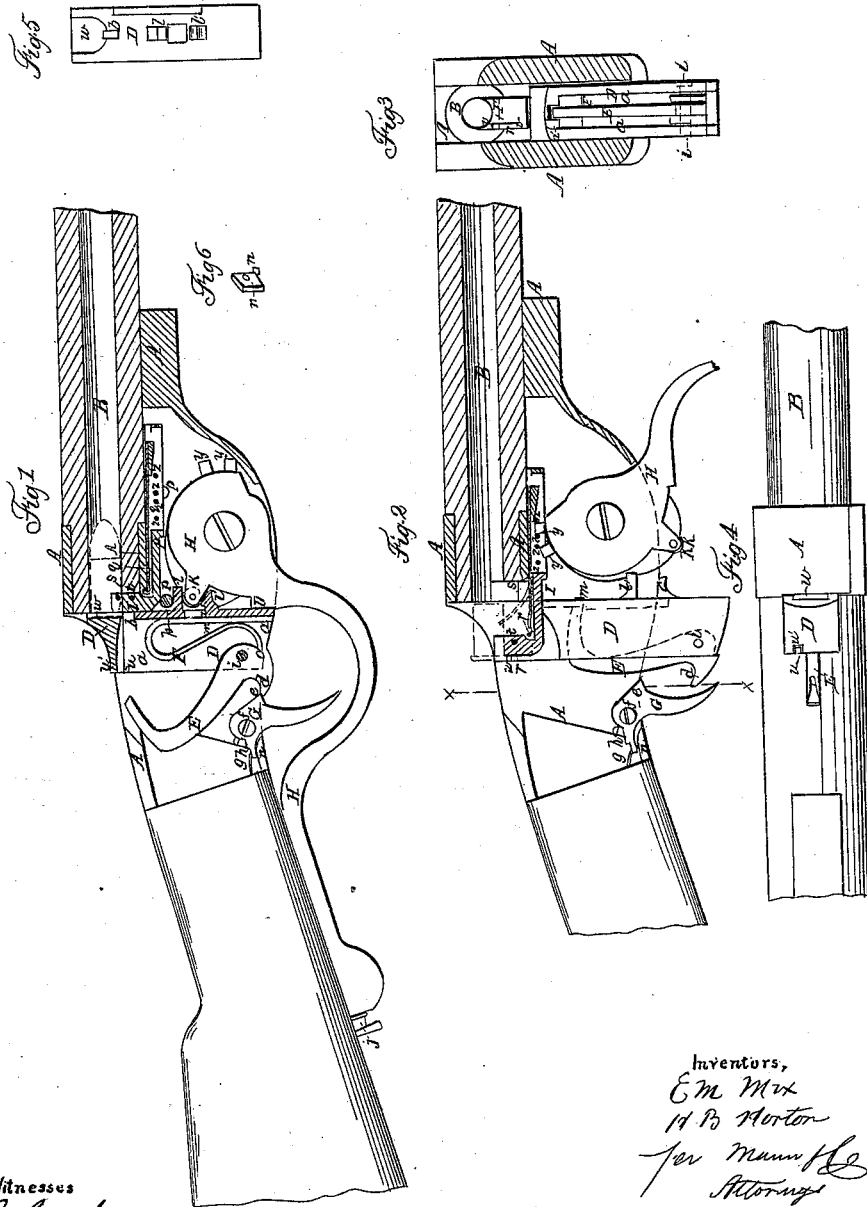


MIX & HORTON.
Breech-Loading Fire-Arm.

No. 41,343.

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Witnesses
W. Woodruff
G. O. Reed

Inventors,
 E. M. Mix
 H. P. Horton
 per *Mann & Co*
 Attorneys

UNITED STATES PATENT OFFICE.

EUGENE M. MIX AND HENRY B. HORTON, OF ITHACA, NEW YORK, ASSIGNORS TO THEMSELVES, JOHN GAUNTLETT, AND JOHN H. SELKREG, ALL OF SAME PLACE.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 41,343, dated January 19, 1864.

To all whom it may concern.

Be it known that we, EUGENE M. MIX and HENRY B. HORTON, both of Ithaca, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are vertical longitudinal sectional views of a breech-loading fire-arm with our improvements, representing the parts in different positions. Fig. 3 is a transverse section of the same in the plane indicated by the line *xx* in Fig. 2. Fig. 4 is a top view of the same. Fig. 5 is a front view of the sliding breech-block. Fig. 6 is a perspective view of part of the apparatus for throwing out the discharged cartridge-shells detached from the fire-arm.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists, first, in certain improved means of cocking the hammer by the act of closing the breech after loading. It consists, secondly, in an improvement in the shell extractor or device by which discharged metallic cartridge-shells are withdrawn from the chamber of the gun and thrown away after such withdrawal.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A is a metal frame, which connects the barrel B with the stock C, mortised out or otherwise having provision made within it for the reception and guidance of the sliding breech-block D, which is arranged to work up and down in contact with the rear end of the barrel. This block has a mortise, *a*, provided in its back for the reception of the hammer E and mainspring F, and a small opening, *b*, from the upper part of the said mortise to the front face, for the nose of the hammer to pass through to strike on the heads of metallic cartridges which contain their own fulminate priming; and the said block is grooved out in front, as shown at *w* in Figs. 1, 2, and 5, of a

width and depth for the reception of the heads of the metallic cartridges to be used in the gun. The pin *i*, on which the hammer works, is inserted transversely through and secured in the breech-block, and hence the hammer is attached to the breech-block. The mainspring F is placed between the hammer and the front of the mortise *a*, and acts in a notch, *c*, Fig. 1, in the lower part of the front of the butt or tumbler of the hammer, and this notch serves to keep it in place within the breech-block. The hammer-butt or tumbler is made with a heel, *d*, upon which the front *e* of the trigger G, which constitutes the sear of the lock, acts to cock the hammer. The trigger works upon a fixed pin, *f*, which attaches it to the frame A. Its form does not differ materially from that used in other fire-arms, except that its sear *e* is lower down, to enable it to act upon the heel *d* of the hammer. *g* is the trigger-spring applied to press down the heel *h* of the trigger, and so throw forward the finger-piece as far as is permitted by the portion *n* of the frame under the heel *h*, which constitutes a stop.

The sliding breech-block D is operated by means of a small roller, *k*, attached to the head of a trigger-guard lever, H, the said roller entering between two projections, *l l'*, on the front of the said block, and the lower projection, *l'*, being so much shortened as to allow the roller to pass clear of it in the downward and forward movement of the lever by which the rear end of the barrel is opened, as shown in Fig. 2, as soon as the block has been sufficiently depressed to effect such opening, thereby leaving the breech-block supported by a fixed stop, *m*, while the further movement of the lever operates the shell-extractor, as will be presently described. In the downward movement of the breech-block preparatory to loading, the hammer is held forward by the mainspring, as shown in Fig. 2, and its heel *d*, coming in contact with the sear *e*, presses the trigger back and passes it; but in the upward movement of the breech-block to close the rear end of the barrel, after the insertion of the cartridge, the heel *d* of the hammer, coming in contact with the sear *e*, cannot pass it, as the trigger is prevented from moving for-

ward by its heel *h* coming in contact with the stop *n*, and as the upward movement of the block continues the hammer is caused to be drawn back to the position of full-cock. When the lever has been drawn up close to the stock and secured by the spring-catch *j*, provided for the purpose, the hammer remains cocked by the trigger. The firing is performed by pulling the trigger in the usual manner, and so withdrawing the sear *e* from above the heel *h* of the hammer. If it is desired to raise the block and close the barrel without cocking the hammer, that may be done by holding back the trigger with the finger while the trigger-guard lever is drawn back to the stock.

I *I'* is the cartridge-shell extractor, made with a slide, *I*, to work under the barrel on two guide-pins, *p p*, within the frame *A*, and having its head *I* fitted to a recess, *s*, in the bottom of the rear portion of the barrel, as in many other breech-loading fire-arms which use metallic cartridges with flanged heads. On the top of the slide *I* there is fastened one end of a curved steel spring, *q*, the other end of which, next the head *I*, assumes its normal position, (shown in Fig. 2,) when the slide is drawn out for extracting the cartridge-shells, but is pressed down close, or nearly so, to the slide *I*, as shown in Fig. 1, by passing under the barrel when the slide is pushed forward preparatory to the closing of the rear end of the barrel. *r* is a catch-piece fitted into a recess, *v*, in the left side of the head *I'*, and working on a pin, *t*, which attaches it to the said head. This catch-piece has at the bottom of its front part a beveled tooth, *r'*, so arranged that the rear end of the spring *q* may pass under it, as shown in Fig. 1, and be held down by it.

u is a small fixed projection arranged opposite to the upper part upon the back of the mortise or cavity which is provided in the frame *A* for the breech-block *D* to work in. A groove, *u'*, is formed in the upper part of the back of the breech-block, to prevent this projection from interfering with the movement of the said block.

The cartridge-shell extractor is operated by two cogs, *y y*, on the head of the trigger-guard lever, acting between pins *z z* in the slide *I*, the said cogs not coming into operation during the downward or forward movement of the said lever until the breech-block has been removed from behind the bore of the barrel, and ceasing to operate in the return movement of the said lever before it commences to act up-

on the breech-block. When the gun is loaded and the rear end of the barrel closed, the rear end of the spring *q* is situated under the catch-tooth *r'*, and so remains until, after firing, the breech-block is removed from the barrel and the extractor has been drawn back far enough to withdraw the discharged cartridge-shell entirely from the barrel, the tooth *r'* being maintained in position by the lower rear part of the catch-piece *r* resting on the bottom of the recess *v* in the head of the extractor; but when the extractor has been drawn back far enough to withdraw the shell entirely from the barrel the upper part of the rear of the catch-piece *r* arrives in contact with the projection *u*, before mentioned, and the slightly continued backward movement permitted to the extractor causes the projection *u* to push forward the upper part of the catch-piece relatively to the head *I*, and so to depress the tooth *r'* sufficiently to make it pass the end of the spring *q*, which, being thus liberated, immediately springs up, as shown in Fig. 2, striking the cartridge-shell and throwing it suddenly upward from the head *I* and completely out of the gun. As the extractor is moved forward again to bring its head *I'* into the recess *s* of the barrel preparatory to reloading, the spring *q* is pressed down to the position shown in Fig. 1 by passing under the barrel, its point passing the catch-tooth *r'* by reason of the latter remaining depressed, as before described, until, by the upper front part of the catch-piece *r* coming in contact with the front end of the recess *s* in the barrel, the said tooth is moved forward over the end of the spring, and so made to secure it, as first described.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The hammer *E* and trigger *F*, constructed and applied in combination with each other and with the sliding breech-block *D*, substantially as herein described, whereby the cocking of the hammer is effected by the agency of the trigger in the closing movement of the breech-block, as herein set forth.

2. The spring *q* and catch-piece *r*, or its equivalent, applied in combination with each other and with the extractor *I I'*, to operate substantially as and for the purpose herein set forth.

EUGENE M. MIX.
HENRY B. HORTON.

Witnesses:

EDWARD STODDARD,
S. W. SMITH.