

UNITED STATES PATENT OFFICE.

ISAAC SMITH, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, CORNELIUS B. DEBAUN, AND JOHN B. MORRELL, OF SAME PLACE.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 42,542, dated April 26, 1864.

To all whom it may concern:

Be it known that I, ISAAC SMITH, of the city, county, and State of New York, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; and I 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—

Figure 1 is a central longitudinal vertical section of the principal parts of a fire-arm with my improvements. Fig. 2 is a horizontal section of the same. Fig. 3 is a transverse section of the same in the planes indicated by the lines *x x* in Figs. 1 and 2. Fig. 4 is a transverse section of the same in the planes indicated by the lines *y y* in Figs. 1 and 2. Fig. 5 is a plan of the cartridge-shell extractor and the hook attached to the breech-piece for operating it.

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

This invention consists in a novel mode of applying a safety-bolt in combination with the movable breech-piece of a breech-loading fire-arm, for the purpose of preventing the hammer from coming down and firing the cartridge while the breech-piece is open.

It also consists in a certain novel arrangement of an extractor for extracting discharged metallic cartridge-shells from the barrel of a breech-loading fire-arm, and certain novel and simple means of operating the same.

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

A is the frame of the arm, having the barrel B screwed into it in the usual manner, and having in its upper part, in rear of the barrel, a transverse groove or mortise, *a a*, for the reception of the movable breech-piece C, which opens and closes with a swinging movement about the axis of a horizontal pin, *b*, which is arranged parallel with the bore of the barrel in suitable bearings in the frame A at the left-hand side of the fire-arm. The breech-piece is firmly secured to the said pin *b*, so that the latter turns in its bearings as the breech-piece opens and closes. In rear of this pin, and in front of the hammer, is arranged the safety-bolt D, which works transversely to the ham-

mer against the flat rear face, *c c*, of the frame A, being attached to the said face by means of a screw, *d*, which passes through a horizontal slot, *d'*, in the bolt and screws into the frame. The said bolt is furnished with a tongue, 7, on its inner face to work in a groove, 8, in the face *c*, as shown in Fig. 1, for the purpose of guiding the bolt. The rear end of the pin *b* is flush with the face *c c*, and has secured in or formed upon it an eccentric-wrist, *f*, Figs. 2 and 4, which enters an upright slot, *f'*, in the safety-bolt. This wrist is so arranged that as the breech-piece is moved from the closed to the open position the said wrist moves the safety-bolt to the right and brings it under or in front of the hammer H, as shown in Fig. 2, where it remains while the breech is open, and that as the breech-piece is moved from the open to the closed position the said wrist moves back the said bolt to the position shown in Fig. 4, entirely on the left side of the hammer; where it will not interfere with movements of the latter. This arrangement of and mode of operating the safety-bolt is extremely simple, requiring no mechanism but the wrist *f*, and the bolt being applied without mortising or cutting away or otherwise weakening the frame A.

E is the cartridge-extractor, arranged to work in the lower part of the transverse groove or mortise *a a* of the frame upon a fixed screw-pin, *g*, and partly entering a transverse groove, *i*, which is formed in the portion of the frame in front of the grooves *a a* and below the barrel. The said extractor consists of a short finger having its end turned upward, as shown at *h* in Figs. 1, 2, and 3, for the purpose of entering a notch in the bottom of the barrel, and catching behind the flange of the metallic cartridge-shell, and having on its front side, nearly opposite the pin *g*, a tooth, *j*, which is operated upon by a hook, *k*, for the purpose of throwing back the finger and making it withdraw the shell from the barrel. The extractor is partly covered by a plate, *l*, which fits into the groove *a* and closes the right-hand end of the groove *i*, the said plate being kept in place by the screw-pin *g*. The hook *k*, above mentioned, is attached to or made in same piece with a slide,

F, which works in the groove *i*. This slide has in its rear face a recess, *m*, for the reception of a pin, *n*, attached to the breech-piece C, for producing the movement of the said slide transversely to the fire-arm, by which the hook *k* is made to operate the extractor. The recess *m* is of such length that the pin *n* may move some distance within it without moving the slide, whereby permitting the breech-piece to move out of the way of the cartridge-shell before the extractor begins to move. When the breech-piece is closed, the hook *k* of the slide F is in the position relatively to the tooth *j* of the extractor shown in Fig. 5 in black outline, and when in the opening movement of the breech-piece the pin *n* has arrived at the left hand of the recess *m* the continued movement of the breech-piece draws the slide F to the left and causes the hook to throw back the extractor, as shown in red outline in Fig. 5, very quickly, and make it pull or throw out the shell. As the extractor moves back, the tooth *j*, moving in a circle, gradually withdraws itself from the hook *k*, and finally escapes therefrom altogether, and the extractor is then thrown for-

ward under the barrel by means of a spring, *p*, applied behind it for the purpose. In the closing movement of the breech-piece the pin *n* comes against the right-hand end of the recess *m* and moves back the slide F to the right, and in this movement the hook *k*, coming in contact with the tooth *j*, is caused to slip over the said tooth by its being made sufficiently elastic for the purpose.

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

1. The safety-bolt D, arranged, as described, to work transversely to the hammer, and operated by means of an eccentric-wrist, *f*, on the rear end of the pin *b* of the breech-piece, substantially as herein specified.

2. The cartridge-extractor E, swinging horizontally about a pin, *g*, furnished with a tooth, *j*, and actuated by means of a hook, *k*, which is combined with a transversely-swinging breech-piece, the whole arranged and operating substantially as herein specified.

ISAAC SMITH.

Witnesses:

M. M. LIVINGSTON,
THEO. TUSCH.