

United States Patent Office.

WILLIAM H. AND GEORGE W. MILLER, OF WEST MERIDEN, CONNECTICUT.

Letters Patent No. 64,786, dated May 14, 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 we, WILLIAM H. MILLER and GEORGE W. MILLER, of West Meriden, in the county of New Haven, State of Connecticut, have invented certain new and useful Improvements in the Construction of Breech-Loading Fire-Arms; and that the following is a full and exact description of our said invention and improvements, reference being had to the drawings accompanying and making part of this our specification.

Figure I of the drawings represents a side elevation of the case containing the parts of the fire-arm to which our invention applies, and part of the barrel and stock.

Figure II represents a vertical longitudinal section of the same and of said parts through the centre.

Figure III represents a side and end elevation of the breech-piece in detail.

Figure IV represents a side and end view of a partially-toothed cylinder or pinion and pivot by which in part the breech-piece is operated.

Figure V represents a side and under face of the arm or lever and ratchet cylinder attached, by which motion is given to the pinion and breech-piece, and by which also the breech-piece is secured in position.

Figure VI is a side and edge view of the shell-extractor.

In all the figures the same letters represent the same parts. The drawings are of full size for ordinary rifle fire-arms.

The nature of our invention consists in the manner of constructing the breech-piece, and of vibrating, locking, and unlocking, and securing firmly to the end face of the chamber of the barrel the vibrating breech-piece, as will more fully appear in the description which follows.

A is the case, securing together the stock and barrel, and containing within its recess the operating parts. C is the breech-piece, hung upon the fixed pivot c' upon which it vibrates; its front face is a flat surface to cover the end of the barrel which receives the cartridge, and completely closes it when in the position shown in Fig. II. The breech-piece works upon the pivot c' by an elongated slot, c'' , in the breech-piece, which permits the breech-piece to rise or descend when required, as hereinafter described. The short axis of the slot is of the same diameter as that of pivot c' , so as to allow motion of the breech-piece in an upward and downward direction. D is a toothed cylinder, turning upon the fixed pivot d , its teeth gearing into corresponding teeth in the lower rounded face of the breech-piece. It is shown in end and face views in Fig. IV. E is a vibrating cylinder, toothed on a portion of its periphery so as to gear into the teeth of D; it turns upon the pivot e fixed in the case A. Connected with the toothed cylinder E, and fixed to it at one end, is the bent arm or lever F, and the other end of this lever is formed into a ring or finger-hole for convenience of handling, and into which a hook or latch, (shown at f ; Fig. I,) catches, for the purpose of making the breech-piece immovable in its place when so hooked or latched, as hereafter described. Upon the top of the breech-piece is the cross-head c''' , (shown in end and side views in Fig. III.) The front face of this cross-head is on the same plane with the front face of the breech-piece. Upon the upper edges of the side plates of case A are cut two mortises to fit exactly the projecting ends of the cross-head. The under surfaces of the ends of the cross-head are slightly concave, fitting the slightly convex surface of the bottom of the mortise; this concave under surface of the cross-head being fitted to the curved edges of the case A, shown from a^1 to a^2 , which also corresponds with the curve of the upper surface of the breech-piece. This mortise is so placed that whenever the cross-head is home within it, the breech-piece will always perfectly close the open end of the barrel where the cartridge is, and the front face of the breech-piece will be upon the base of the cartridge. H is a shell-extractor, (Fig. VI,) working on the central pivot h' of the breech-piece. It is shown in position by the red dotted lines in Fig. II. The sides of the breech-piece are recessed so as to receive the shell-extractors, one on each side of the breech-piece, and so that the exterior side surfaces of the breech-piece and of the shell-extractors are flush or on the same plane on either side; and the shell-extractors receive the required motion on the breech-piece, and with it, by the upper and lower parts h h' coming against the corresponding parts of the breech-piece as it is vibrated back or forward. The upper extremity of the shell-extractors is pointed and shaped like a bent finger, which takes hold of the flange of the cartridge-shell on each side thereof; this finger is shown at i . K is the cartridge, the shell of which is flanged in the usual manner, the end of the barrel being grooved to fit the flange. Within this flange is the fulminate.

The manner of operating is as follows: the lever F is moved downwards and forwards until it is brought to the position shown by the dotted lines in Fig. I. The teeth of E, (Fig. II,) being geared into D, D is thereby turned in a direction opposite to that of E. The teeth of D geared into the teeth upon the breech-piece, lift vertically the breech-piece until the cross-head is entirely free from the mortise; this is caused by the operation of the slotted centre c'' , and which slot also limits the upward motion of the breech-piece to the point required, as soon as the breech-piece has been lifted so as to bring the bottom of the slot in contact with central pivot c' , the breech-piece commencing to swing backward as soon as cleared from the mortise, and is swung back until it reaches the point where the cross-head is shown in dotted lines in Fig. I. By this operation the open end of the breech of the barrel is entirely exposed and a space left free for inserting the cartridge by hand. By the lifting of the breech-piece and the shell-extractors attached, the part h' of the shell-extractor is brought against the under side of the breech-piece, which, swinging backwards, causes the other end of the extractor h to vibrate in an opposite direction, and the points of the fingers on the upper ends of the extractors take hold of the flange of the shell of the cartridge and draw it out. The lever F is then drawn back, by which the operation is reversed, the breech-piece is closed upon the end of the barrel, and the cross-head brought down home to its place. When the lever is thus brought back to its place, its ring of the thumb-hole touches the under side of the case A, and being there caught and latched by the hook or catch f , it is there firmly held, and by this means the breech-piece geared to it, as described, is firmly and securely held in place, so that it cannot be moved by the jar of the hammer or recoil of the explosion. The firing is effected by a pin or bolt passing through the breech-piece so as to be driven upon the fulminate with force sufficient to discharge the cartridge, by means of a hammer arranged in the manner usual in firing the cartridge by a bolt; and which is not shown in the drawing or described, not being any part of our invention. The size and strength of centre-pin c' , combined with the bearing of the mortise for receiving the cross-head of the breech-piece, afford sufficient stability to the breech-piece to sustain the recoil of firing any amount or number of charges which may be required.

Having thus described our invention, and the manner of operating the same, what we claim as new therein, and for which we desire Letters Patent, is—

1. The construction of the breech-piece, with the central elongated slot, combined with the cross-head and mortise in the case, for the purposes and operating in the manner described.
2. The combination of the breech-piece, cylinder-pinion D, and cylinder E, toothed and geared together, and operating in the manner and for the purposes described by means of the lever or arm F.
3. The combination of the elongated slot with the mortise or recess in the shell of the case, whereby the exact amount of upward and downward movement of the breech-piece is regulated by the length of the slot so that the cross-head is brought home in the mortise or lifted out at the instant required.

WM. H. MILLER,
GEORGE W. MILLER.

Witnesses:

ORVILLE H. PLATT,
RATCLIFFE HICKS.