



# United States Patent Office.

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HERMAN FUNKE.

*Letters Patent No. 79,291, dated June 23, 1868.*

## 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 I, WILLIAM MORGENSTERN, of Hartford city, Hartford county, State of Connecticut, have invented new and useful "Improvements in Breech-Loading Fire-Arms;" and I do hereby declare the following to be an exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 represents a top view of the gun.

Figure 2 is a longitudinal section of the same at the line  $x x$ , fig. 1, showing in red lines the swinging breech-piece thrown up; and

Figure 3 is a cross-section at  $y y$ , showing the breech-piece swung up (in the position illustrated in red lines at fig. 2.)

In the several figures the same letters of reference designate the same part.

My invention relates to that class of breech-loading guns in which the breech-block is hinged at its upper forward portion, so as to swing up and over, and open the rear end of the barrel for the insertion of the cartridge, which is exploded by a firing-pin.

My invention has for its main objects the production of a breech-loading gun, which shall be much more simple in its construction than any heretofore made, while at the same time it shall be equally efficient and more durable and economic; and to these ends my invention consists,

First, in placing the hammer and lock-mechanism (except the trigger) in the swinging breech-piece, so that the working parts of the gun are all contained in (or attached to) and move with the swinging breech-block, as will be presently more fully explained.

Second, in making the hammer or cock and firing-pin all in one, and arranging it to slide longitudinally in the breech-block, provided with a suitable actuating-spring, all as will be hereinafter described.

Third, in having a housing formed on or attached to the frame in the rear of the breech-block, and the firing-pin or hammer so constructed and arranged, relatively with said housing, that while it is free to slide longitudinally in it, and to lift out of it when drawn back, it will securely lock the breech down to said housing, as will be presently more fully described.

Fourth, in the employment, in connection with the extractor and swinging breech, of a peculiarly-constructed and arranged ejector or flipper, for-throwing out the empty cartridge-case, as will presently be explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe the construction and operation of one of my improved breech-loading guns, referring to the figures of the drawings hereinbefore alluded to by letters of reference.

A represents the barrel, and B the frame of the gun; which are arranged together, as illustrated, the latter being cut away for the accommodation of the swinging breech-block D, which is hinged at its forward end to the frame by means of the pivot  $m$  passing through the ears or projecting lugs C C, (as clearly illustrated at figs. 1 and 2.)

K is the trigger, which is pivoted in the frame in the usual manner, and H is the ejector, which throws out the empty shell after it has been extracted or drawn out of the charge-chamber by means of the extractor J. The extractor J is formed on the forward end of the vibrating or swinging breech-block D, in the well known manner, and the ejector or "flipper" H is a sort of cam or eccentric, hung on a pivot in the frame B, and actuated by a spring, I, in a manner to be hereinafter described.

In the breech-block D are arranged the hammer and firing-pin F L, with its actuating or main-spring Q, the sere or spring-catch M, and the gas-plug S, as clearly seen at fig. 2.

P P' are the cock and half-cock notches of the firing-pin. The frame of the gun extends up behind the rear end of breech D, as shown at E E, in such manner, and is so cut away for the accommodation of the lifting-hammer pin L, and so slotted under at G G, that while it serves as an abutment to the rear end of breech D,

it also securely holds down the hammer-pin L, and consequently the breech-piece, when the latter is off of the cock-notch, so that the gun cannot be fired without the breech being first securely locked in position, as will be presently explained.

O is the hand-piece or dog, by means of which the firing-pin is drawn back, and the breech conveniently lifted and closed.

The general operation, and the working of the detail features, may be thus explained, so that any one skilled in the art of making and in the use of breech-loading guns, will fully understand my invention.

When the hammer and firing-pin is drawn back on to the cock-notch, as shown at figs. 1 and 3, (and in red at fig. 2,) the breech-piece D may be swung open or up, and the cartridge inserted in the usual manner, and then closed down again, when the gun will be ready to fire. By pulling on the trigger K, the spring-catch or sere M will be depressed, and relieved from the notch P, and the pin L will be forced forward by the spring Q, and its forward pointed end made to explode the cartridge, the parts assuming the relative positions seen at fig. 2.

To reload the gun, the hammer or firing-pin is drawn back, by means of the dog or hand-piece O, to cock-notch, and the breech swung open. As it is carried up and over, the extractor J takes hold of the flanch of the empty cartridge and forces it backward out of the rear end of the barrel A, (or charge-chamber,) until it strikes and carries along with it the top portion of flipper H, (turning the latter on its pivot, as illustrated in red at fig. 2.) The said flipper H then ejects or throws out the empty shell, when the gun may be recharged and fired, as just explained.

It will be seen that the moment the firing-pin has been released from the sere, and starts on its errand to effect the discharge, the projecting portions 1 2 of the hammer F enter into the slots, or cut-under portions G G of the housing, or portion E E of the frame, and that the breech is thus securely locked down, and since the hammer cannot start unless the breech is down to its seat, (so that said portions 1 2 can enter said slots G G,) it follows that no explosion can be effected unless the breech be in its seat, properly and securely locked there, which is a great desideratum, and which is secured in a simple and economic manner in my improved gun.

It will be understood that the "flipper" H is pointed at the lower end, where it is pressed upon by the spring I, and that the tendency of said spring is to throw and retain it in either the position shown in black or that shown in red, and that as soon as the cartridge-flanch (moved along by the extractor J) has carried the said cam-piece H past the dead-centre, (or that position in which the spring would press the point dead toward the pivot or axis,) it will be thrown to the other extreme position by the spring I, and in passing thus suddenly backward, its top notched end will jerk the cartridge-case, and throw it clear of the gun.

I have shown the firing-pin as tapering at its forward end, where it passes through the gas-check or plug S, and adapted to explode a central-fire cartridge, but it will be understood that the firing-pin may readily be modified at its forward end, so as to be adapted to either any central-fire, percussion, or flanch-fire or needle-cartridge.

It will be seen that the whole construction of my improved gun is one which renders it exceedingly simple and economic, while it is reliable, safe, and efficient.

The lock-mechanism, being arranged in the breech-block as shown and described, there is no cutting out of the frame or stock for it, and it is all enclosed and protected.

Having fully described my invention, so that those skilled in the art can make and use it, and wishing it to be understood that the details of construction may be varied without departing from the spirit of my invention, and that a portion of the characteristic features of my invention may be used to great advantage without using all, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a hinged breech-block, the firing-pin, main-spring, and sere, arranged within said block, substantially as described for the purpose set forth.
2. Making the firing-pin and dog, or handle, all in one piece, substantially as described for the purpose set forth.
3. In combination with a swinging breech and firing-pin or hammer, the projecting portion E, the whole arranged to accomplish the locking down of the breech, substantially as described.
4. The employment, in combination with an extractor, of an ejector, composed of a spring-cam or flipper, such as herein described.

In testimony whereof, I have hereunto set my hand, this 19th day of December, 1867.

WILLIAM MORGENSTERN.

Witnesses:

J. FRANKLIN REIGART,  
EDM. F. BROWN.