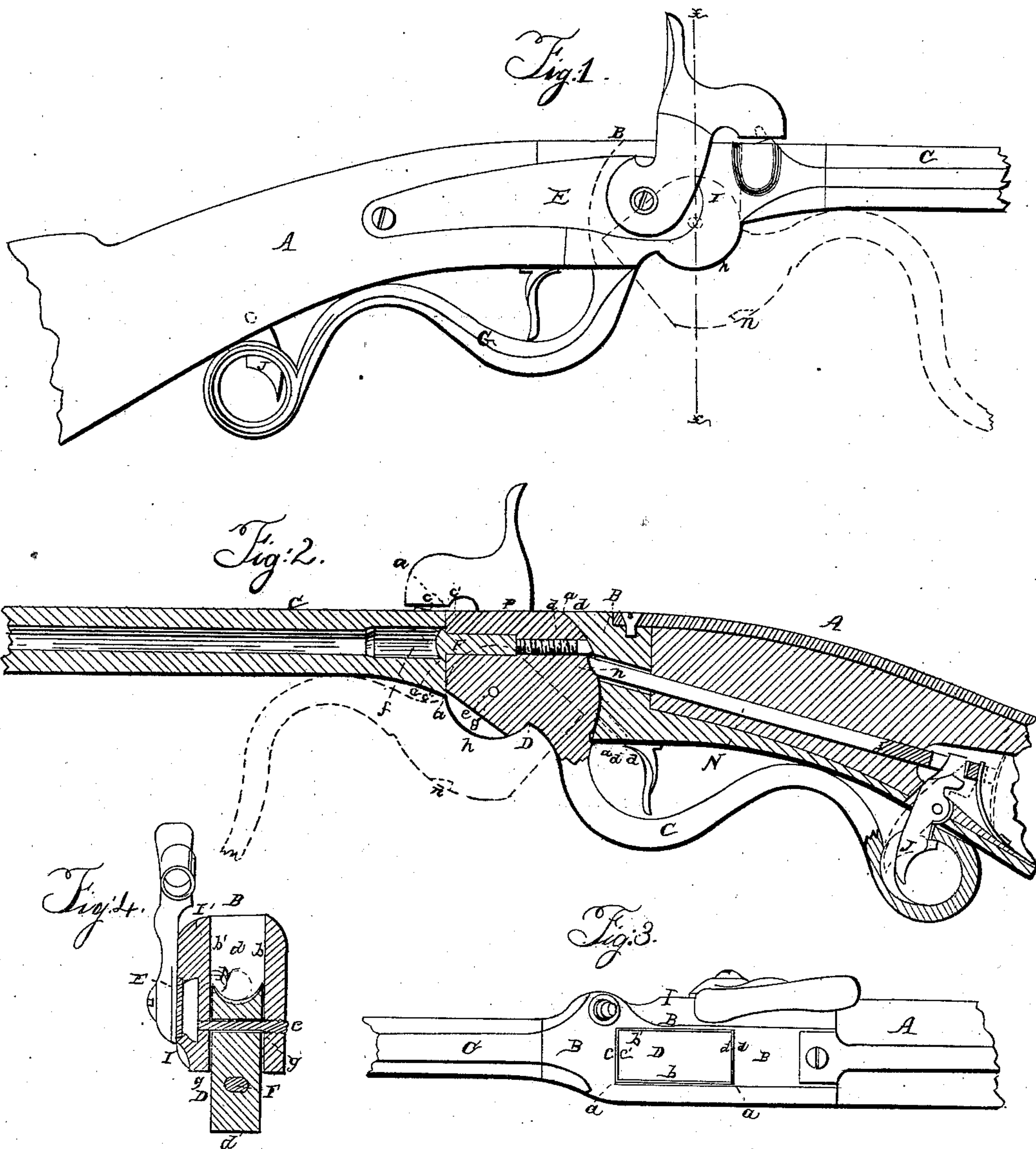


H. GROSS.

Breech-Loading Fire-Arm.

No. 39,646.

Patented Aug. 25, 1863.



WITNESSES.
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 39,646, dated August 25, 1863.

To all whom it may concern:

Be it known that I, HENRY GROSS, of Tiffin, in the county of Seneca and State of Ohio, have invented a new and Improved Breech-Loading Fire-Arm, No. 1; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of the arm, showing the right or lock side and the segment and lever in two positions. Fig. 2 is a longitudinal vertical section through Fig. 1, also showing the segment with its lever in two positions. Fig. 3 is a top view of Fig. 1. Fig. 4 is a transverse section through the lock and segment, taken in the plane indicated by red line *x x* in Fig. 1. When the hammer is drawn back, the breech is open and the segment in a position to receive and guide the charge into the barrel.

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

This invention relates to an improvement on that class of breech-loading fire-arms in which the breech of the barrel is opened or closed by means of a prominence on a single segmental block of metal working on a center and operated by a lever-guard for charging the piece at the breech, and in which the segment is confined within a vertical slot made in rear of the barrel.

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

In the accompanying drawings, A represents the wooden part of the stock; B, the metal portion, which contains and supports the barrel C, the segmental breech-piece D, and the lock E and its appendages. The segment D works within a vertical slot, *a*, the planes of the two longitudinal surfaces *b b'* of which are parallel to each other, while the forward end, *c*, is in a plane perpendicular to the surfaces *b b'*, and the rear end, *d*, is curved downward and backward, forming the arc of a circle which is slightly eccentric to the axis of the transverse segment-pin *e*. The bore of the gun-barrel C terminates at *c* in a concave depression, *f*, which is sufficiently flaring to receive and form the seat for the enlarged button-head breech-plug F. The short curve *f'*

forms the arc of a circle which is concentric with the axis of the pin *e* and the axis of the plug F; but when it is forced home into its seat *f* exactly coincides with the axis of the gun-barrel C, as shown in Fig. 2 of the drawings. The curve *f'* in the upper part of the seat *f* is made concentric with the axis of motion of the segment-block D, in order to allow the projecting portion of the breech-plug F to enter the seat *f* on an arc. Then, when the breech-plug has been brought up in line with the bore of the barrel, it can be closely seated or forced home.

It will be seen that when the breech-plug first enters the seat *f*, before it is forced forward, the center of its rounded end is slightly above the axis of the gun-barrel; or, in other words, the end of the breech-plug enters the seat *f* on the arc of a circle concentric with the circle described by the segment breech-piece, and therefore the upper surface, *f'*, of the entrance to the seat must necessarily correspond to such arc. In order, therefore, to force the plug F home in its seat, the oblong slot *g* allows the segment-piece D to move forward in a straight line a sufficient distance to effect this object, after the rounded head of the plug has entered the seat *f*, as described. The segment D is formed so that its sides and ends will fit tightly into the vertical slot above described. The rectangular end *c'* corresponds with the surface *c*, against which it abuts, and the opposite curved end, *d'*, corresponds somewhat with the curved surface *d*, against which it abuts. The bottom surface of this segment has a grooved enlargement, *h*, formed on its forward end, forward of the lever G, the groove in which is formed in such a relation with the bore of the barrel C that when the lever G is swung forward in the position, shown in red lines, Fig. 2, for charging the gun, this groove is in a plane with the bottom of the bore of the barrel, (or slightly inclined toward this barrel, as may be desired,) and in this position it forms a seat or guide for receiving and directing the cartridge into the barrel, which operation is performed with the fingers. The transverse hole *g* in the segment D, through which the pin *e* passes, is a little oblong, (shown in Fig. 2,) and this allows the segment a very slight forward movement at the instant the head of

the plug F enters the depression f in the breech of the barrel. This movement is given to the segment D by the curved (eccentric) surface d , above described, acting upon the rear curved end, d' , of the segment, as the lever or guard G is brought back to its place in the act of closing the breech. In this way and by this novel arrangement I am enabled to adapt a single pivoted breech-piece, when forming a part of the lever G, to a breech-loading arm, and to close the breech of the barrel tightly against "blowing" or the escape of gas, while at the same time I furnish the segment with a solid rear support, B. The longitudinal movement which the segment D receives is only sufficient to allow the arc d to force the head of the plug F firmly into its seat at the very last movement of the lever G, so that when this lever is latched the plug is home and the two surfaces d d' are close together. These surfaces d d' do not bind so tightly as to cause the lever G to work hard in opening the breech; but they gradually recede from each other as the segment is depressed out of its slot. The lever G is constructed and arranged to catch upon a shoulder on the back of a spring-latch, J, such latch answering for holding it in its place under the slot A when the piece is charged. To this spring-trigger I apply a long bolt, N, which, being suitably connected to the upper end of the trigger, projects forward through a hole made in the stock A and slightly through the surface d , as shown in Fig. 2. A notch, n , is made in the end of the segment D in such a position as to be caught by the nosing of the bolt N, when this segment, together with its lever G, is in the position shown in Fig. 2 in black lines. The bolt N being attached to the latch J, it will be seen that when the latch is forced forward to discharge the lever G it will also draw the bolt F back and at the same time release the segment. In this way I obtain a double security against the working loose of the segment D without increasing the number of triggers on the gun. The metal on one side of the slotted portion B is swelled out laterally at I, Figs. 2 and 4, and suitably recessed to receive the gun-lock E; and, although the extreme rear portion of the lock-plate is fitted into the wooden stock A, the main body of the lock is confined in the metallic portion B. By this arrangement I am enabled to secure the lock more rigidly in its place than has been done before in this kind of arm, and also to reduce the length of the cock K, making it very much shorter and consequently more easily operated, besides giving to it a neater appearance. It is not desired to increase the thickness of the metal on both sides of the slot a alike, as this would unnecessarily add to the weight of the piece.

The breech-plug F, Fig. 2, consists of a

head which is swelled out and rounded so as to conform to the concave seat ff' in the breech of the barrel C, and a stem which extends back and fits into a hole which is made into or through the segment D in a plane parallel with the upper plane surface of this segment. The stem of the plug F is allowed to have a longitudinal movement, which is imparted to it for the purpose of adjusting and setting it forward, by means of the fine-thread screw P, which is tapped through a hole made into the back of the segment in a line with the axis of the breech-plug F. By means of this screw the plug F can be set up so as to compensate for the wearing away of its rounded end, and in this way it can always be kept tightly in its seat.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The adaptation of a swinging breech-piece, which has a conical or curved protuberance on its front end and a lever-guard formed on its under side, to so operate that it will swing unchangingly on its axis within a given space, to a certain extent, and will then move forward so as to close the breech of the barrel with the protuberance and the metal around it, substantially in the manner described.

2. The segment breech-piece D, formed on the lever-guard G, and having a curved protuberance on its front end, when the curved surfaces d d' are formed on the segment D, and the solid metallic portion B of the stock, so as to be in the relation shown to the axis of the gun-barrel, and so that they, as the lever-guard G is drawn back to its place, will cause the breech-piece protuberance F to be forced in nearly a straight line and firmly locked in its seat ff' , without the aid of an auxiliary curved wedge or other auxiliary appliance, substantially as herein described.

3. The combination of the slot e , pin g , segment D, lever-guard G, curved protuberance F, curved seat ff' , and curved surfaces d d' , all applied and operating substantially as and for the purposes set forth.

4. The arrangement of the one spring-latch J with respect to the lever-guard G and the spring-bolt N, so that the one action of the hand to operate the guard will release both the guard and the bolt, substantially as described.

Witness my hand in the matter of my application for a patent for an improved breech-loading fire-arm, No. 1.

HENRY GROSS.

Witnesses:

JOSEPH SHORT,

ROBT. W. FENWICK.