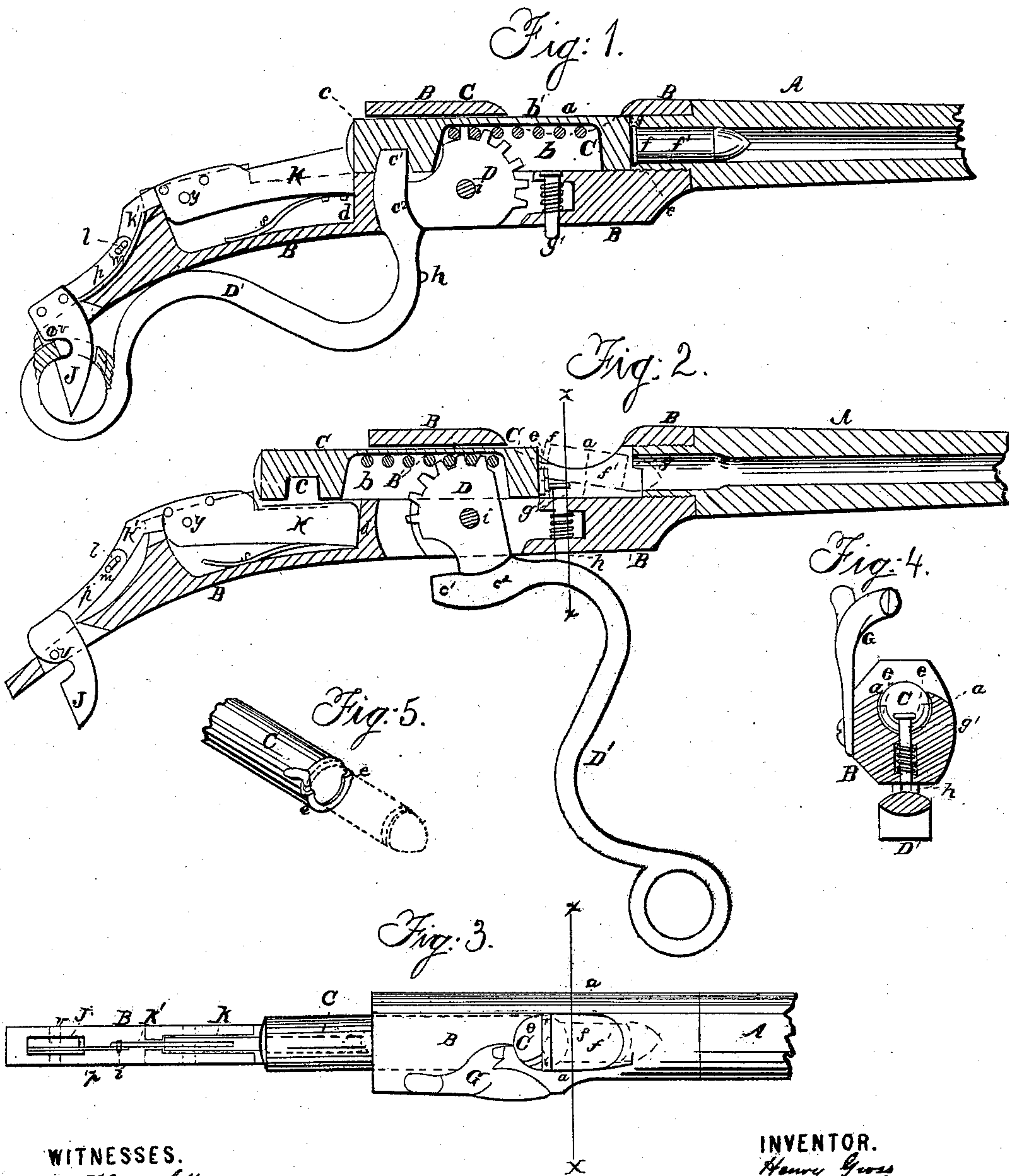


H. GROSS.

Breech-Loading Fire-Arm.

No. 42,941.

Patented May 31, 1864.



WITNESSES.

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IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 42,941, dated May 31, 1864.

To all whom it may concern:

Be it known that I, HENRY GROSS, of Tiffin, Seneca county, State of Ohio, have invented a new and Improved Breech-Loading Arm; 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 vertical longitudinal section through my improved breech-loading arm, showing the same loaded and ready for firing. Fig. 2 is a similar view representing the breech-plug drawn back and the lever in the act of throwing out the cartridge. Fig. 3 is a top view of the arm, showing the parts in the position of Fig. 1. Fig. 4 is a vertical transverse section through the arm, taken at the point indicated by red line *xy*, Figs. 2 and 3. Fig. 5 is a perspective view of the holding end of the breech-plug, showing in red a cartridge applied to the same.

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

This invention and improvement in breech-loading arms has for its object the retraction and throwing out of the cartridge-case after every discharge of the piece by a single movement of the lever, which operates the breech-plug, as will be hereinafter described.

It also has for its object a novel mode of locking the breech-plug in place when the piece is charged by means of the lever which operates said plug, as will be hereinafter described.

It finally has for its object the employment of an auxiliary locking device for the breech-plug, which is actuated by the movement of the lever-catch, as will be hereinafter shown.

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 I have represented only those portions of the arm which I deem necessary to illustrate the construction and operation of my invention.

The barrel *A* is screwed into the forward end of the metallic stock *B*, and at the termination of the breech of this barrel an enlarged open channel is formed in the upper side of the stock *B*, the sides of which channel *a* are curved out so as to expose a suffi-

cient space for the insertion of a ball-cartridge when the breech-plug is drawn back, as shown in Figs. 2 and 3. In rear of this open channel *a* is a closed recess whose axis is coincident with that of the barrel *A*, and in this recess I introduce the breech-plug *C*, which receives a reciprocating rectilinear movement from a toothed segment, *D*, that is formed on the pivoted end of the lever-guard *D'*. (Shown in Figs. 1 and 2.)

In order to render the piece as compact as possible, the toothed segment *D* is let into a slot, *b*, which is formed in the breech-plug *C*, and at or near the upper portion of this slot is the rack *b'*, into which the teeth of the segment *D* engage.

In rear of the slot *b*, and in the lower part of this breech-plug *C*, I form a recess, *c*, for the reception of a large tooth, *c'*, formed on the rear side of the segment *D*, when the parts are in the position shown in Fig. 1. This tooth *c'* moves with lever *D'* in the arc of a circle concentric with the axis *i*, and enters the recess in the rear part of the breech-plug, and serves as a rear support for the same during the firing of the piece. This tooth *c'*, together with its extended concentric portions *c''*, is somewhat wider (laterally) than the segmental portion *D*, on which it is formed, and hence I obtain a very wide support, which may be equal in width to the breech-plug itself. I thus obtain the requisite degree of strength to resist any recoil of the plug, and at the same time increase the width of bearing of this tooth against the solid metal portion *d* of the stock *B*. By this arrangement of an auxiliary tooth, *c'*, I relieve the teeth on *D* from concussion and transfer it to this tooth, which is capable of resisting it without danger of breaking.

On the forward end of the breech-plug *C*, I form in any suitable manner a semicircular grooved projection, *e*, adapted to receive the annular percussion flange or bead *f*, formed around the rear edge of the metallic cartridge-case *f'*, as shown in Figs. 1 and 5. This holding projection *e* is brought up snugly against the rear end of the barrel *A*, which is formed to receive it, while the upper portion of the end of the plug *C* fits tightly against the head *f* of the cartridge-case and forces the forward side of this head against the projecting portion *g* of the barrel, thus confining the car-

tridge firmly within the barrel in a position to be exploded by the hammer G. When the bead on the cartridge-case is inserted into the grooved holder *e*; the cartridge must move with the breech-plug either back or forward, and can only be moved or detached from the breech-plug by thrusting or lifting it upward, when the breech-plug is drawn back, as shown in Fig. 2. Therefore, after every discharge of the piece, the cartridge-case will be retracted with the breech-plug, as shown in Figs. 2 and 3.

It is desirable to detach the cartridge-case from the holding portion *e* as soon as the breech-plug C is drawn back, so that the case may be readily removed to be replaced by a full cartridge, and to this end I arrange in the bottom of the channel *a*, in a suitable position, a spring-pin, *g'*, having a head formed on its upper end. This pin *g'* passes down through the metal portion B and projects a short distance therefrom, as shown in Fig. 1.

On the forward side of the curved guard portion of the lever D' is a pin, *h*, applied in such a position thereon as to force up the spring-pin *g'* when the lever D' is thrown forward, as shown in Fig. 2. Then, when this lever is drawn back again or moved so as to release the pin *g'*, the spring which is applied to this pin draws it back in its place, so as to allow the breech-plug to move forward unobstructedly. When the lever D' strikes the pin *g'*, this pin thrusts the empty cartridge out of its seat, and, being thus loosened, it can be readily removed with the fingers if not entirely thrown out by the concussion.

It will be seen that the breech-plug C, tooth *e'*, and thrusting-pin *g'* are all operated by the single guard-lever D, and by simply vibrating this lever back and forth.

As an additional security against the recoil of the breech-plug C by the shock of the explosion, I apply a vibrating lever-catch, *k*, which is pivoted at *y* to an extension of the metal portion B. This catch *k* has an arm, *k'*,

projecting behind it, which arm is provided with a pin, *l*, that projects through a slot, *m*, in the arm *p*, which is affixed to the lever-catch J. This catch J is pivoted at *v*, and receives and holds the lever D' in the position represented in Fig. 1.

When it is desired to retract the breech-plug C, the catch J is forced forward by the finger, so as to release the lever D' and at the same time to throw down the lever-latch *k*, and thus release the breech-plug from it. The lever D' is now moved forward and the breech-plug backward until the projection *h* strikes and lifts the pin *g'* upward and thrusts out the cartridge-case.

When the lever D' is drawn back and latched, the spring *s* will thrust up the latch *k* behind the breech-plug, as shown in Fig. 1. Thus it will be seen that in the act of releasing the lever D' from the catch J the breech-plug is at the same time released from its latch *k*, and also from the segmental tooth *e'*.

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

1. Detaching or loosening the cartridge from a retractor formed on a breech-plug, C, through the back action or movement of the lever D, substantially as herein described.
2. The open channel *a*, in combination with the thrusting-pin *g'*, or its equivalent, substantially as and for the purposes described.
3. The lever-latch or guard-lever *k*, applied in rear of the breech-plug, and operated by the catch J of lever D' and spring *s*, substantially as and for the purposes described.

Witness my hand in matter of my application for a patent for an improved breech-loading fire-arm.

HENRY GROSS.

Witnesses:

HARRISON NOBLE,
N. L. BREWER.