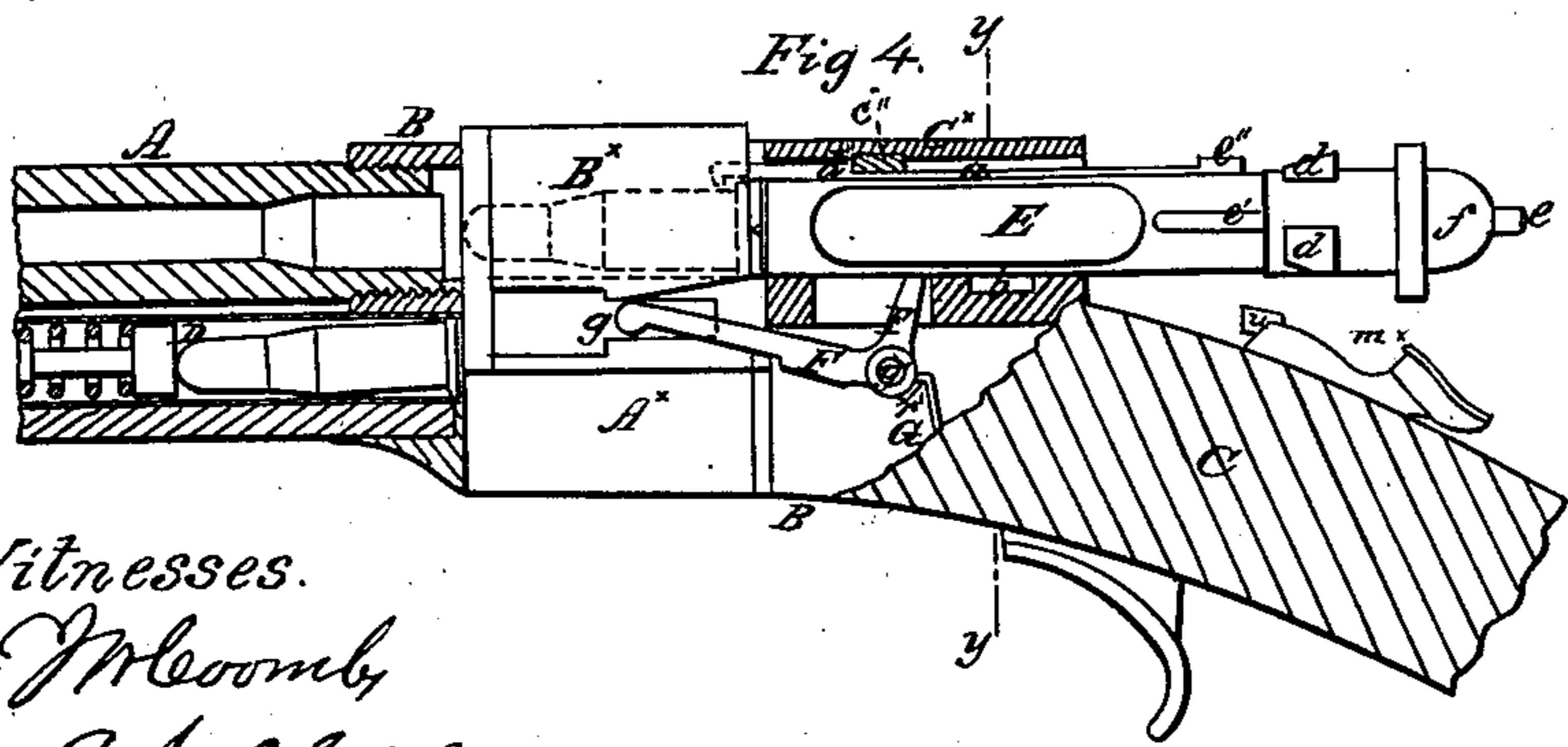
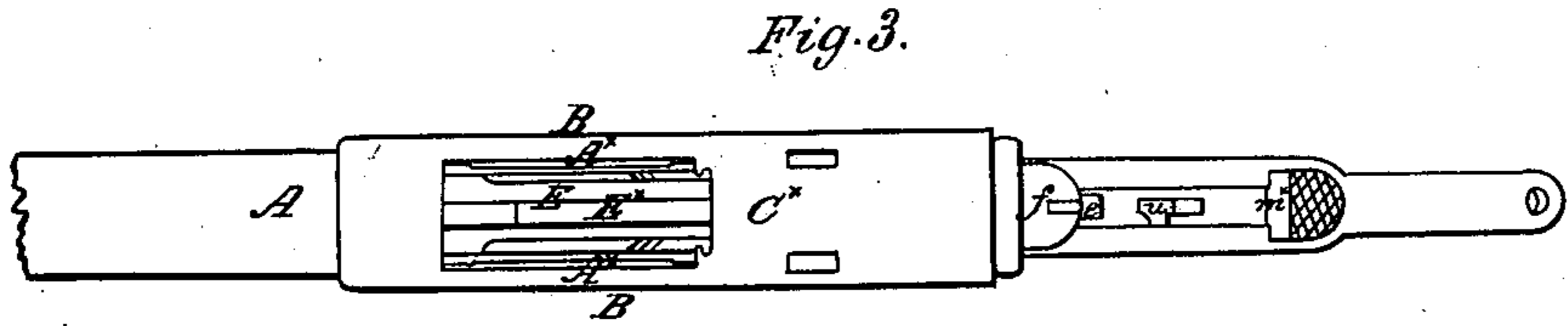
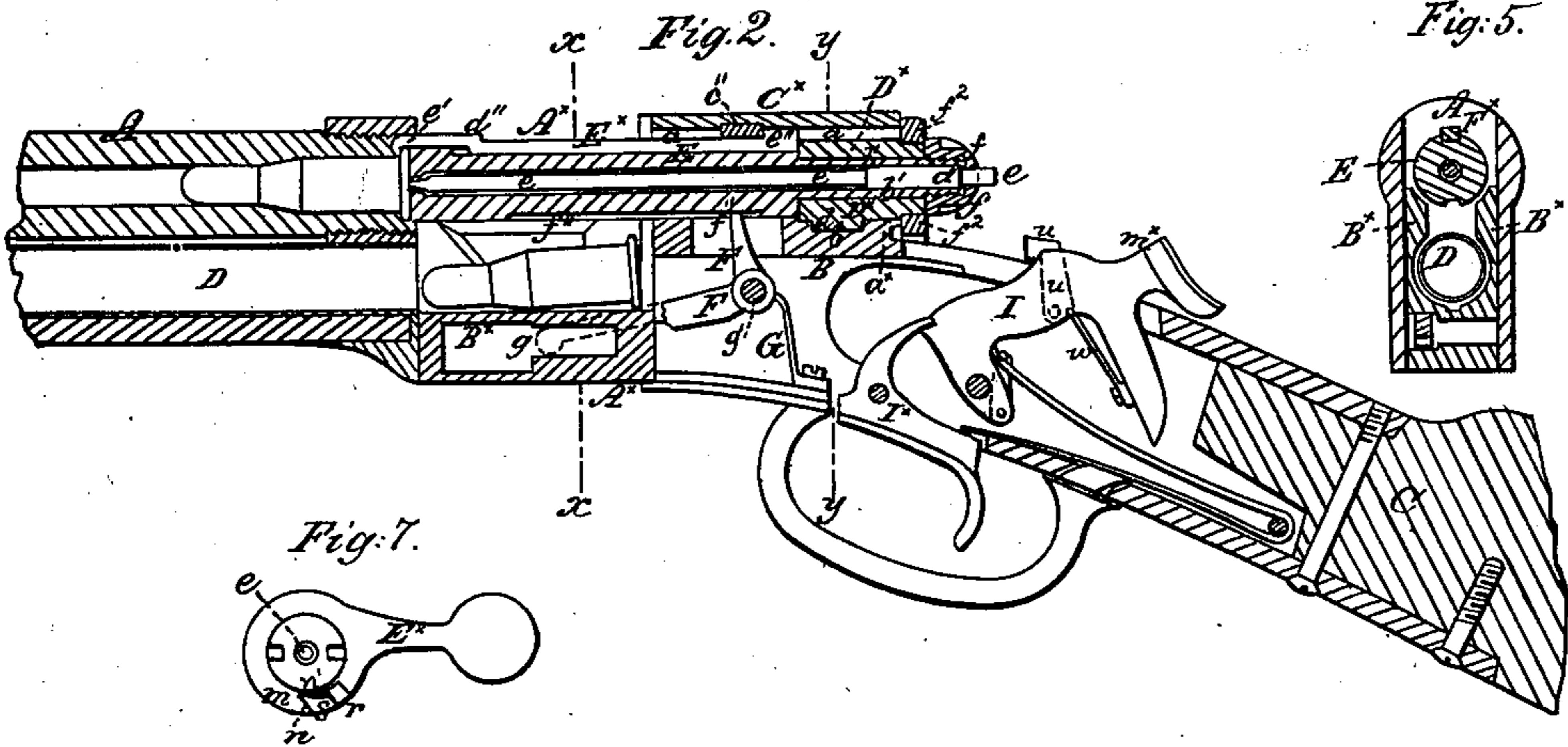
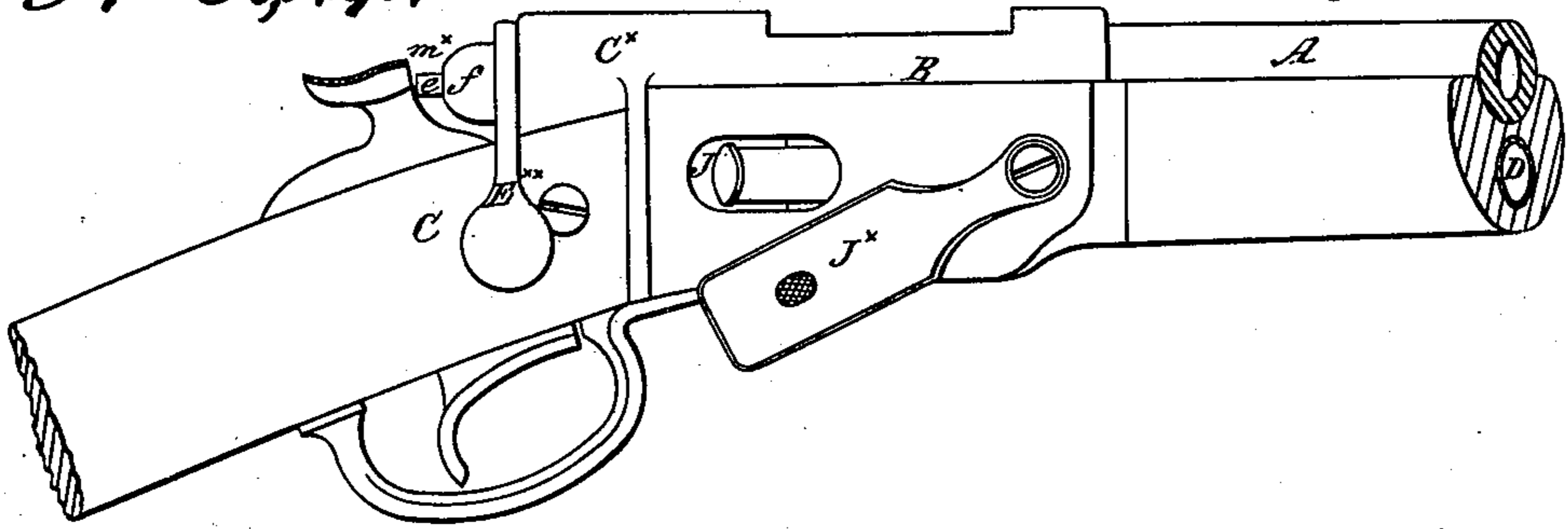


F. Vetterlin.
Magazine Fire-arm.
N^o 85,494. Patented Dec. 29, 1868.



Witnesses.
McComb
Attorney

Inventor.
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UNITED STATES PATENT OFFICE.

FREDERICK VETTERLIN, OF NEUHAUSEN, SWITZERLAND.

IMPROVEMENT IN MAGAZINE FIRE-ARMS.

Specification forming part of Letters Patent No. 85,494, dated December 29, 1868.

To all whom it may concern:

Be it known that I, FREDERICK VETTERLIN, of Neuhausen, in the canton of Schaffhausen, Switzerland, have invented certain new and useful Improvements in Magazine 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, making a portion of this specification, in which—

Figure 1 is a side view of a fire-arm made according to my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan view of the same. Fig. 4 is a side view and partial longitudinal section of the same, with the breech-closing mechanism drawn back as in the act of recharging the arm after firing. Fig. 5 is a transverse section of the same taken in the line *xx* of Fig. 2. Fig. 6 is a transverse section of the same taken in the line *yy* of Fig. 2. Fig. 7 is a detached view of a portion of the breech-closing mechanism.

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

In this invention a sliding breech bolt or block is employed, which is held in position to close the breech by a collar having a turning movement upon the rear end thereof, and furnished with radial lugs, which, being brought in front of fixed shoulders arranged within the breech-receiver, effectually support the bolt against the recoil of the charge in firing.

The invention consists in a pivoted dog and a spring carried upon the hammer of the arm, and so combined with a suitably-shaped recess, a shoulder, and a ledge furnished at the rear end of the collar—just mentioned as to guard against any firing of the charge when the breech-closing mechanism is not properly locked in position.

The invention further consists in a novel arrangement of parts, whereby provision is made for the extraction after firing of the cartridge-shells from the barrel.

To enable others to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

The barrel A of the arm is secured in the forward end of the metallic frame B, which, at its rear extremity, is attached in any suitable manner to the wooden stock C.

Arranged underneath the barrel, and parallel therewith, is the cartridge-magazine D; and formed vertically in the forward part of the frame B, immediately in rear of the barrel and magazine, is a rectangular chamber, A*, in which the cartridge-carrier B* has a vertical movement, as hereinafter fully set forth.

The breech-receiver C* is situated at the upper part of the frame B, and its cylindrical bore *a* is in line with that of the barrel. Formed within this breech-receiver, near the rear end thereof, is an annular groove, *b*, and extending back from this groove *b* to the rear end of the receiver are three (more or less) longitudinal grooves, *c*, between which are thus formed a corresponding number of studs or ears, *a**, the flat forward ends of which constitute fixed shoulders, the purpose of which will presently herein appear.

The breech-bolt E passes longitudinally through the breech-receiver, and may be of nearly or quite cylindrical form, and has its rearmost end *b'* reduced in size, in order that a collar, D*, may be fitted thereon in such manner as to be capable of a turning movement around the axis of the bolt. This collar is furnished with a laterally-extending lever, E**, whereby it may be thus turned, and is provided with radial lugs *a*, corresponding in number with the longitudinal grooves *c* of the breech-receiver.

By forcing forward the breech-bolt through the chamber A to close the breech, and then turning the collar by means of its lever E** to bring the flat rear ends of its lugs *d* in front of the shoulders or forward ends of the inwardly-projecting ears *a** of the breech-receiver, the breech-bolt will be supported in this position against the recoil of the charge in firing, while, by turning the collar to bring the lugs *d* opposite the grooves *c*, the collar, together with the bolt, may be readily drawn back to open the breech.

The firing-pin *e* is passed through the breech-bolt, as shown more fully in Fig. 2, and is provided near its rearmost extremity with a shoulder, *a''*, and the rearwardly-extending end of the breech-bolt has screwed upon it a cap, *f*, which not only serves to hold the firing-pin in its place, but also insures the retention in position of the collar D*.

Formed longitudinally in the upper side of

the breech-bolt is a groove or recess, which receives the extractor E^* , which has a limited longitudinal movement therein, and, furthermore, is capable of being slightly moved or tilted upward, the forward end of this extractor being furnished with a hook, e^1 , designed to catch over the rim or flange of the cartridge-shell to withdraw such shell when the bolt is drawn back, as just hereinbefore mentioned.

Projecting downward from the upper side of the breech-receiver is a stud, c'' , which, extending into the space between two stops, $d'' e''$, provided upon the extractor, while permitting the longitudinal movement of the breech-bolt, serves to limit or regulate that of the extractor with reference to such bolt.

In order that when the breech-bolt is drawn back, as just hereinbefore set forth, the collar D^* may not turn to bring the lugs d thereof out of line with the grooves c , a spring, e^1 , is attached longitudinally to one side of the breech-bolt, with its rear end extending underneath the adjacent edge of the collar, which has provided therein a rectangular notch, e^2 , into which the end of the spring is pressed when the bolt is thus drawn back, thus preventing the collar from turning, as just mentioned. When in this position the outer surface of the spring extends outward beyond that of the bolt, at a slight inclination thereto, so that when the same is pushed forward the spring will be pressed inward, by its contact with the side of the breech-receiver, thus releasing the collar, to permit the same to be turned, as required in locking the breech-bolt in position, as hereinbefore explained.

Provided in the under side of the breech-bolt is a shallow longitudinal recess, f'' , into which projects the upper end of an elbow-lever, F , pivoted in the frame B , as shown at g' , underneath the breech-receiver, and the lower arm of which is extended forward with its extremity fitted into a cavity, g , formed in one side of the carrier, at the lower part thereof, as represented more plainly in Figs. 2 and 4, in such manner that when the breech-bolt is forced forward to close the breech the rear end of the recess f'' provided therein, by striking the upper arm of the lever F , will operate the lever to depress the carrier, so that a cartridge may be fed back to or upon the same, in the ordinary or in any suitable manner, and when the breech-bolt is drawn back to open the breech, the forward end of the recess just mentioned, by striking the upper arm of the lever F , moves the same in an opposite direction, thus causing the carrier to rise and bring the cartridge thereon in line with the bore of the barrel, the elbow-lever and, consequently, the carrier, being held fixed in this position by a friction-spring, G , so applied that its end will catch over a small stud, r' , provided upon the lever, near the pivot thereof, until the return or forward movement of the breech-block operates the lever to lower the carrier, as just herein

explained, whereupon the spring G yields to permit the requisite movement of such lever F .

When the breech-bolt is pushed forward, the extractor E^* being capable of a slight upward movement, the hook at the forward end thereof slips over the flange or rim of the cartridge-shell in such a way that when the bolt is drawn back to open the breech the shell is drawn back from the barrel over the cartridge in the carrier, and when the latter is elevated is thrown out from the chamber by the cartridge underneath it in the carrier.

The rearmost end of face f^2 of the collar D^* , at which its lever E^{**} is affixed, has formed in the lower side thereof a notch, r , at one side of which is an inclined plane, s , having at its opposite edge or end a flat surface or shoulder, m , while at the inner edges of the notch and inclined plane just mentioned is a narrow ledge, n , all as shown more fully in Fig. 7.

The hammer I is pivoted in the frame B , back of and below the breech-receiver, in any suitable manner, and is tripped in firing by the trigger I^* , of ordinary form.

Pivoted in a suitable slot provided in the hammer, below the face m^* , is a dog, u , which is acted upon by a spring, w , also attached to the hammer, as shown in Fig. 2, in such manner as to depress the dog to the bottom of the slot in which it works.

When the breech-bolt is in position to close the breech and the lever E^{**} is turned downward to lock the same in place, the descent or forward motion of the hammer will bring the dog u into the notch r simultaneously with the striking of its face m^* upon the rear end of the firing-pin e to ignite or fire the charge, the dog preventing any casual or accidental turning of the collar when the hammer is thus down upon the firing-pin, at the same time that the inclined plane s , when the lever is designedly turned upward, preparatory to drawing back the bolt, is enabled to act upon the hammer, to throw back the same, until the bolt, being unlocked, is drawn back, whereupon the bolt, being drawn back, forces back the hammer to a cocked position.

If, from any cause, the descent of the hammer should occur before the breech-bolt is locked in place, the dog u , instead of passing into the notch r , will strike the shoulder m , and thus prevent the face of the hammer from coming in contact with the firing-pin. Furthermore, the dog, by thus striking the shoulder, is forced upward, so that it reaches nearer the axis of the bolt than when in the notch r , so that, even if the lever E^{**} of the collar D^* were then pushed downward to lock the bolt in position, the dog, instead of passing into the notch r , will ride upon the ledge n , thus retaining the hammer away from the firing-pin until again designedly brought back or cocked, so that by this means any accidental discharge of the arm when the breech is not properly closed is effectually provided against.

In order to supply the magazine with car-

tridges, an oblique opening, J, is provided in one side of the frame B in such a way that the cartridges may be introduced, through the same, to or upon the carrier, and thence pushed forward in succession to the magazine, this opening, when not in use, being covered by an external lid, J*, pivoted to the side of the frame.

If it should be desired to use the arm as a simple breech-loader, a pin may be inserted through one side of the magazine, near the rear extremity thereof, in such manner as to prevent the backward movement of the cartridges therein to the carrier, the cartridges in this case being introduced singly to the barrel, when the bolt is withdrawn and the carrier depressed, as hereinbefore fully set forth.

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

1. The combination of the pivoted dog *u* and spring *w*, arranged upon the hammer, with the recess *r*, inclined plane *s*, shoulder *m*, and ledge

n, provided at the rear end of the collar D* of the sliding breech-bolt, whereby the accidental discharge of the arm is provided against, substantially as herein set forth.

2. The arrangement of the sliding extractor E* in the upper side of the breech-bolt, and in relation with the locking-collar D*, furnished with the lateral lever E**, and the bore of the barrel, whereby provision is made for the withdrawal of the cartridge-shell by the backward movement of the collar and bolt, substantially as herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

Zurich, December 11, 1867.

FREDERICK VETTERLIN.

Witnesses:

WEBER PRÜNSCH,
JACOB BAUMANN.