(No Model.) 3 Sheets—Sheet 1.

C. O. ELLIS & E. W. WILKINSON.

EJECTOR MECHANISM FOR BREECH LOADING FIRE ARMS.

No. 394,843. Patented Dec. 18, 1888.

FIG. 1

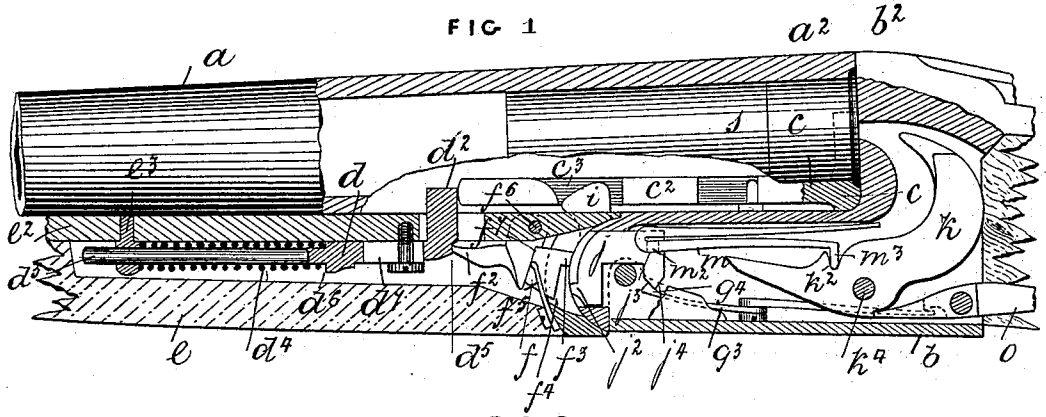


FIG. 2

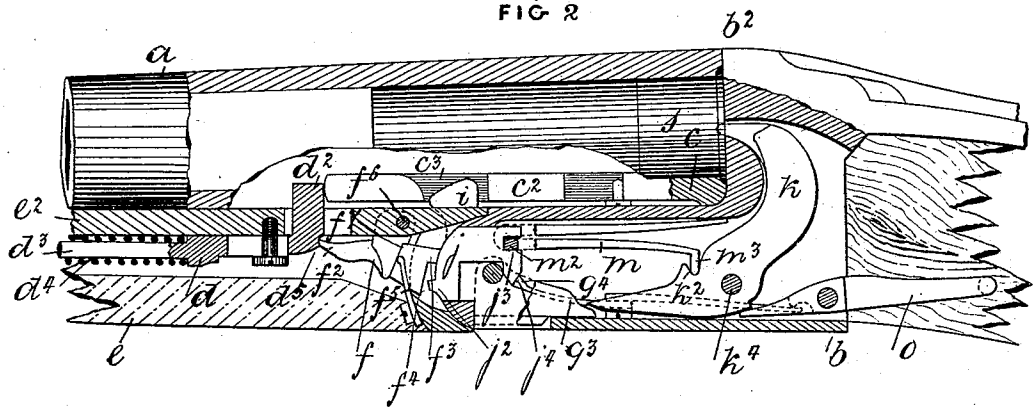


FIG. 5

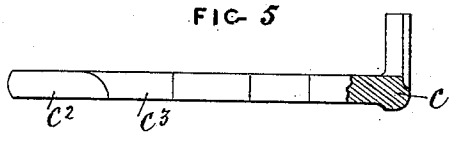


FIG. 6

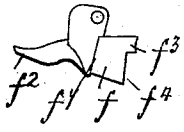


FIG. 9

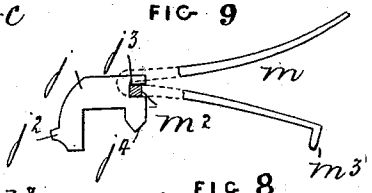


FIG. 7

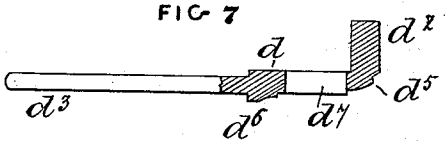
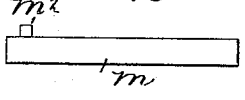


FIG. 8



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FIG 3

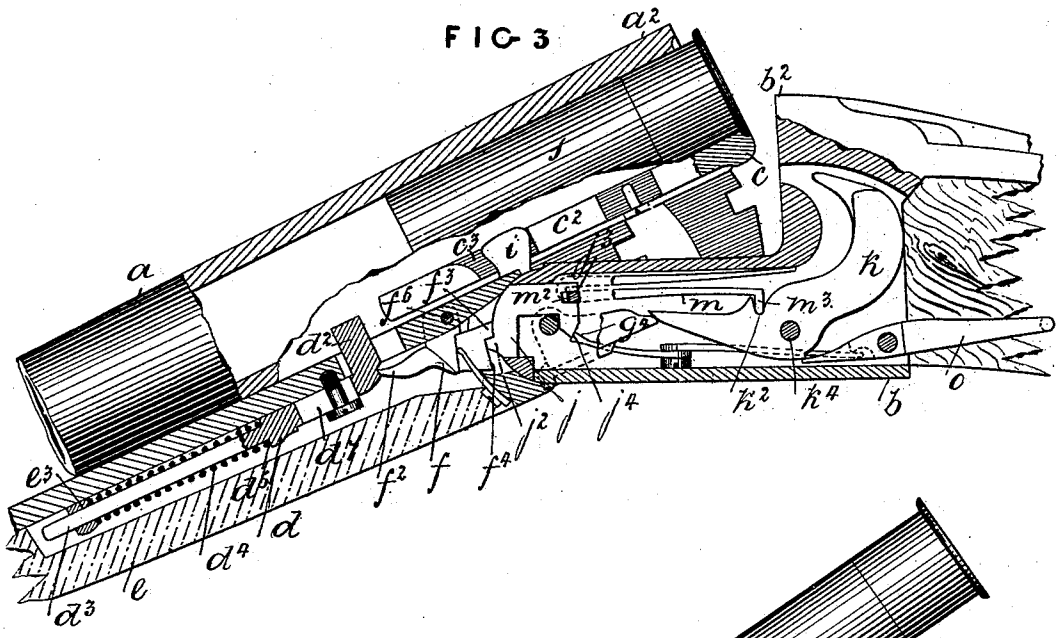
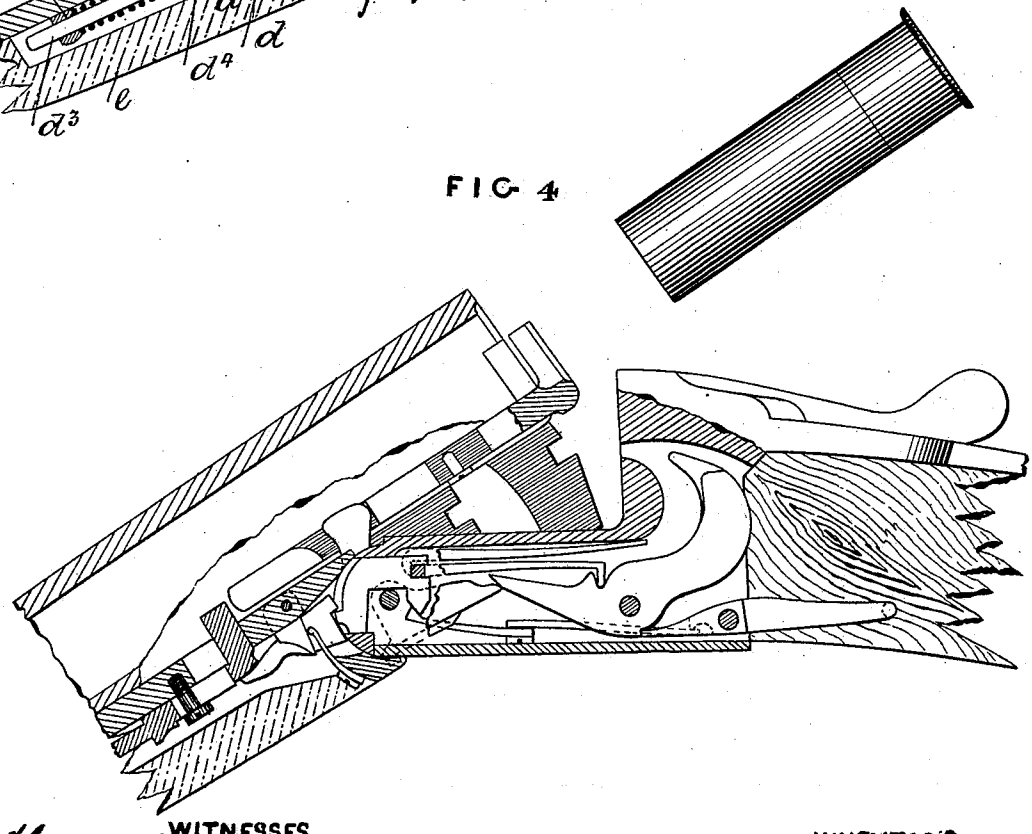


FIG 4



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FIG. 10

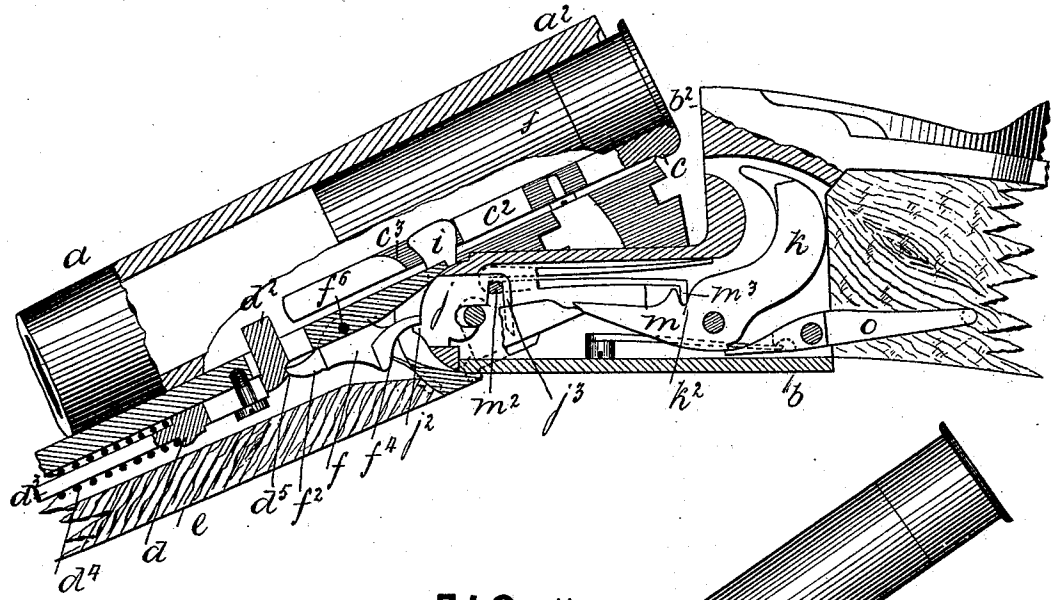
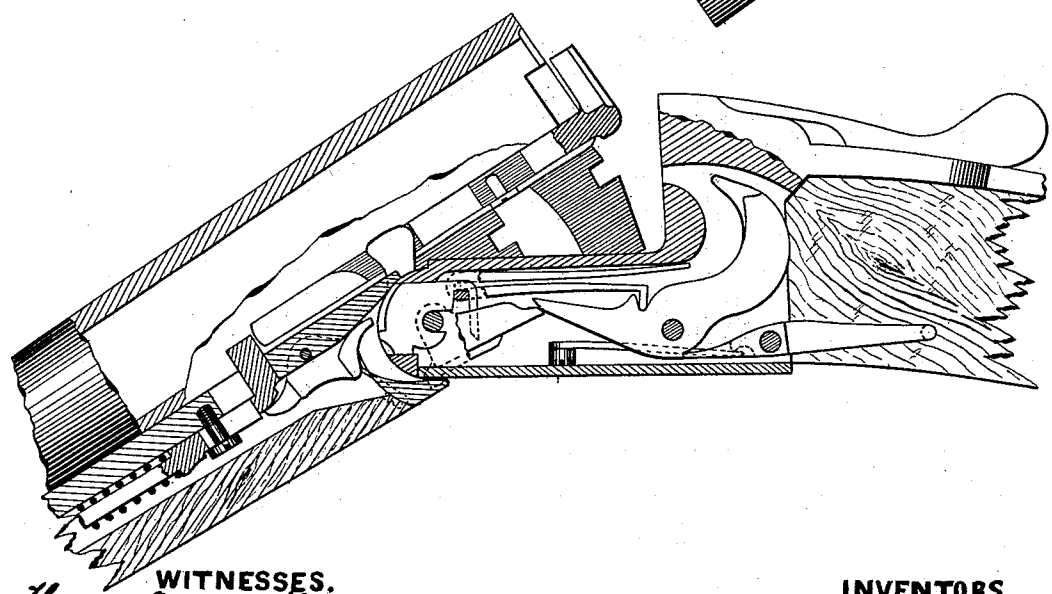


FIG. 11



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UNITED STATES PATENT OFFICE.

CHARLES OSBORNE ELLIS AND EDWARD WILLIAM WILKINSON, OF BIRMINGHAM, ENGLAND.

EJECTOR MECHANISM FOR BREECH-LOADING FIRE-ARMS.

SPECIFICATION forming part of Letters Patent No. 394,843, dated December 18, 1888.

Application filed January 27, 1888. Serial No. 262,173. (No model.) Patented in England May 18, 1887, No. 7,222.

To all whom it may concern:

Be it known that we, CHARLES OSBORNE ELLIS and EDWARD WILLIAM WILKINSON, gun-manufacturers, subjects of the Queen of Great Britain, residing at Birmingham, England, have invented certain new and useful Improvements in Ejector Mechanism for Breech-Loading Small-Arms, (for which we have applied for Letters Patent in Great Britain, numbered 7,222, dated May 18, 1887;) and we do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to improvements in ejector mechanism for hammerless breech-loading small-arms of the kind commonly called "drop-down guns."

Figure 1 represents, partly in vertical section and partly in elevation, a breech-loading drop-down hammerless gun provided with ejector mechanism constructed according to our said invention, and which said view represents the gun cocked and with the parts in the positions which they assume when the gun is ready to be discharged. Fig. 2 shows a like view as Fig. 1, but with the gun discharged. Fig. 3 represents the gun partially opened and just before the ejector-slide is liberated, and also before the tumbler is at full-cock. Fig. 4 represents a like view as Fig. 3, but with the barrels fully opened and the gun cocked. This said view, Fig. 4, also shows the ejector liberated and a cartridge-case in the act of being expelled from a barrel. Fig. 5 shows one-half of the split extractor and rod, partly in section. Fig. 6 is the ejector-sear. Fig. 7 is the ejector-slide with the rear part in section. Fig. 8 is a plan of the spring, showing the stud upon its side, which works a slide to and fro, on the said spring being lengthened or shortened, by compressing and opening out. Fig. 9 shows a side elevation of the said spring and slide. Fig. 10 is a central longitudinal section of a modified construction of the gun with the barrels partly opened. Fig. 11 is a sectional view of same modification, showing the barrels fully opened and a spent cartridge-case in the act of being flirted from one of them.

The same letters of reference indicate corresponding parts in Figs. 1 to 9, both inclusive, of the drawings.

a a are the barrels, and b is the body, of the gun.

b^2 is the face of the break-off, and a^2 are the breech ends of the barrels, fitted with divided or split extractor-rods c^2—that is, the rods c^2 are half-round or made from a rod divided longitudinally about its middle, and which said half-round rods are gapped at c^3, wherein the arm or snug i works for the sliding in and out of the extractor-halves. The said extractor-rods, which work through the solid metal on the under sides of the barrels, have their front ends exposed, and against which said front ends upwardly-extended rear ends, d^2, of ejector-slides d respectively take their bearings or abutments.

The ejector-slides d have guide-stems d^3, which work through holes in depending brackets e^3, carried upon the under side of the fore-end iron e^2 of the fore end e. The rear parts of these stems are slotted and shouldered at d^6 d^7, against the latter of which the back ends of coiled springs d^4, encircling the stems d^3, take their abutments, with their front ends pressing against the back of the hanging brackets e^3. The lower part of the back ends of the ejector-slides have bents or notches d^5, wherein the nose ends f^2 of swinging ejector-sears f engage respectively, and at the rear ends of these sears are overhanging step-like projections f^3, and when the sears are in the position as in Fig. 1 they respectively come in front of and above jutting-out extensions j^2 on the front curved faces of reciprocating slides j, which are moved to and fro, so as to bring the extension j^2 in front of the projection f^3 of the sear f through the intervention of the mainsprings m, whose fore parts carry snugs or studs m^2, which work within gaps j^3 in the slides j.

The free end m^3 of the stand side of the spring works within a seat, k^2, at the junction of the breast with the foot of the tumbler, so that as the tumbler oscillates upon its joint-center k^4 on being discharged or thrown forward the springs are made to slide forward and carry with them the slides j, but on the cocking of the hammer the springs are moved

in the reverse direction and leave behind them the slides, which are pressed back after the releasing of the ejector-sear by the rear part, f^4, of the swinging ejector-sear, which is hung upon the joint-pin f^6, coming against the extension j^2, as is represented in Figs. 3 and 4.

The ejector-sear is kept up to its work by springs f^5 acting upon side shoulders, f^7, while the slides are kept in their respective backward and forward positions by springs g^3 working upon the two opposite sides of the hanging V ends j^4, as it will be seen that the toes of the springs are inclined, so that on the slides being worked to and fro the springs are moved out of the way, and the said slides retained by the said toes of the springs coming upon the respective inclines of the part j^4.

o is the sear proper, and s is the cartridge-case lying within the chamber of the barrels.

The ejector mechanisms are operated as follows, and as they are in duplicate with the cocking mechanism we will only describe one of them.

On the firing of the arm, as in Fig. 1, the tumbler k in falling urges forward the spring m and presses the slide j into the position as represented in Fig. 2, and held there by the foot end g^4 of the spring g^5 coming against the back side of the hanging V part j^4. The moving forward of the slide is done by the stud m^2 on the fore part of the spring abutting against the solid metal at the back of the gapped hole j^3 in the said slide. By this change of position of the slide the extended shoulder part j^2 is brought under the projection f^3 at the rear of the hanging sear f, so that on the breaking of the barrels, as hereinafter described, the ejector-sear is automatically released. It must also be observed that prior to the discharge of the arm the ejector-slide d has been pushed back and the spring compressed, as in Figs. 1 and 2, by the movement forward of the extractor-rod c^2 of the extractor c on the closing of the arm, and which slide is held by the ejector-sear nose f^2 engaging with the bent d^5. To open the barrels, turn the lever aside, when the bolts are withdrawn and the barrels fall, as in Fig. 4. The falling of the barrels causes the projection f^3 of the sear to come against the extending shoulder j^2 of the slide, and so turn the nose of the said ejector-sear forward in the direction as indicated by the arrow, thereby suddenly taking the said sear-nose from out of the bent d^5 of the ejector-slide d, and so liberates the said slide, which strikes the front ends of the ejector-rod c^2 and shoots forward the extractor with considerable force and velocity. The shooting forward of the extractor and extractor-rod (which has been previously drawn out to its extracting position) flirts or expels a cartridge-case, s, from the barrel fired, leaving the other and undischarged cartridge within the other barrel. Thus the sudden release of the ejector-slide by the lifting of the rear of the ejector-sear takes the nose of the said sear from out of the bent or notch in the slide, which on being released exerts a sudden impetus upon one-half of the extractor, thereby expelling a cartridge-case from the barrel fired.

The arm is cocked in the usual manner.

Fig. 10 represents a modification of our invention, in which the slide j is reciprocated or moved to and fro entirely through the influence of the spring m. In this modified form of the slide the stud m^2 of the spring takes behind a fork, j^3, so that on the spring being reciprocated by the oscillation of the tumbler the slide is moved into and out of position, by means of which the ejector-sear is operated on the breaking of the barrels. The other parts are the same, and are indicated by corresponding letters of reference, as in the preceding figures.

In Fig. 10 the barrels are shown partly opened, while in Fig. 11 they are shown fully opened, and a spent-cartridge case shown in the act of being flirted from one of them.

Having thus described this invention, we claim as new and desire to secure by Letters Patent—

1. In a hammerless breech-loading gun, the combination, with the internal hammer, k, having notch k^2, spring m, and stud m^2, attached thereto, of slide j j^2 j^3 j^4, extractor-sear f, spring f^2, and slide d^3, having encircling spring d^4 and rod c^2, said slide being between the spring m and the sear f and below the extractor-rod c^2, substantially as shown and described.

2. The combination having the tumbler k, ejector-slide d, and extractor-rod c^2 of a hammerless gun, an ejector-sear-releasing slide, j, and swinging ejector-sear f between said tumbler and ejector, substantially as and for the purpose as set forth.

3. The combination, with the tumbler k, spring m, and shell-ejecting mechanism of a hammerless gun comprising an ejector-sear, ejector-slide, and extractor-rod, of the reciprocating slide j, with front extension, j^3, which engages the ejector-sear, and gap j^3, wherein the stud m^2 of a reciprocating mainspring, m, works, substantially as described and set forth.

4. The combination, with the discharging and shell-ejecting mechanism of a hammerless gun, of the slide j, having the depending end j^4, a spring, g^3, with a free end, g^4, which presses against the depending end j^4 and controls the movement of the slide j, slide d and ejector-sear f in front of the slide j, and spring m and tumbler k in the rear of the slide j, substantially as described.

5. In a hammerless gun, the combination, with the body b and barrels a, ejector-slide, extractor-rod, tumbler, tumbler-actuated spring, and sear-releasing slide engaging the ejector-sear and said spring, of the swinging ejector-sear f, having shoulders f^7, and the spring f^5, abutting against said shoulders to hold the sear in engagement with the ejector-slide, substantially as set forth.

6. In a hammerless breech-loading gun, the combination, with the drop-down barrels, the spring-actuated ejector-rod, the tumbler k, and the intermediate mechanism consisting of the sear-releasing slide f', the sear f, and the springs f^5 m g^3, for locking and releasing said ejector-rod, of the split extractor c c^2 c^3, substantially as set forth.

7. In a hammerless gun comprising the body b and barrels a, tumbler k, an ejector-sear, and appurtenant ejector mechanism, the liberating-slide j, having an open slot or fork, j^3, and the spring m, engaging with said slot and with said tumbler, whereby said slide is moved both forward and backward through the medium of said spring, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 13th day of December, 1887.

CHARLES OSBORNE ELLIS.
EDWARD WILLIAM WILKINSON.

Witnesses:
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MILES E. HUGHES,
Both of Birmingham.