No. 619,565. Patented Feb. 14, 1899.

A. E. GRIMES.

CARTRIDGE EJECTOR FOR FIREARMS.

(Application filed Dec. 7, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

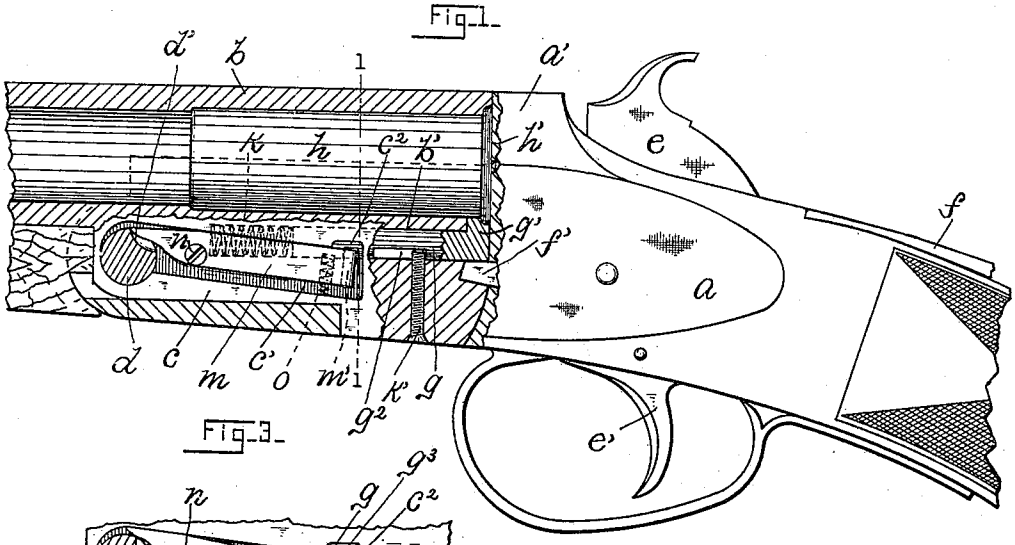


Fig. 3.

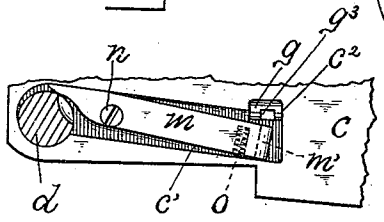
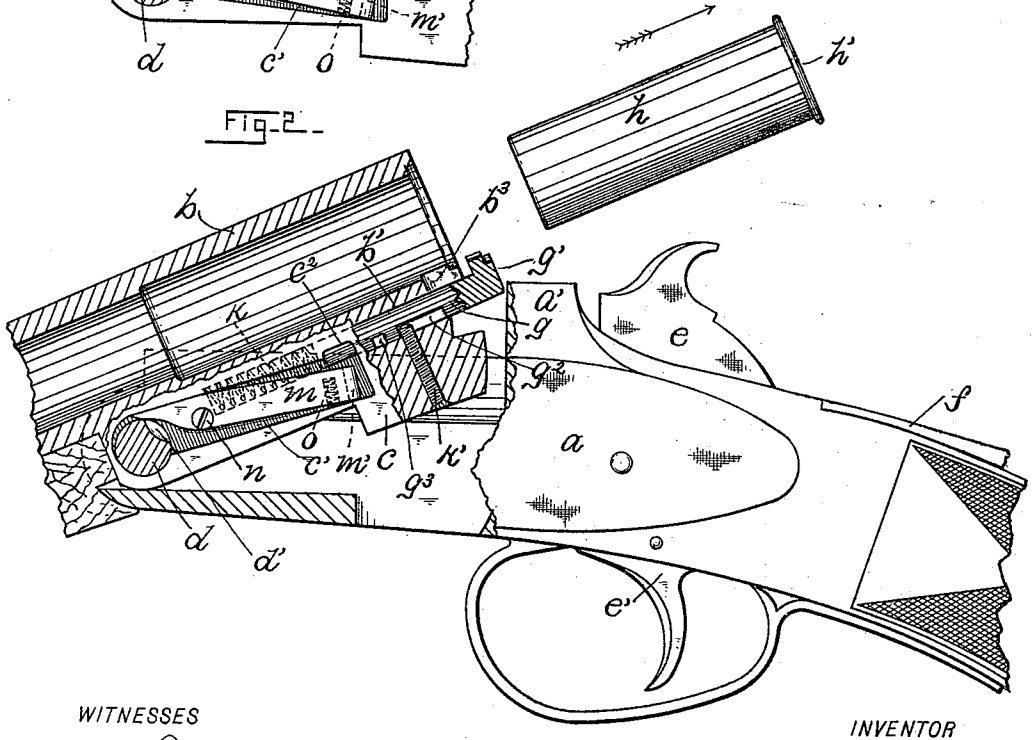


Fig. 2.



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Fig 4.

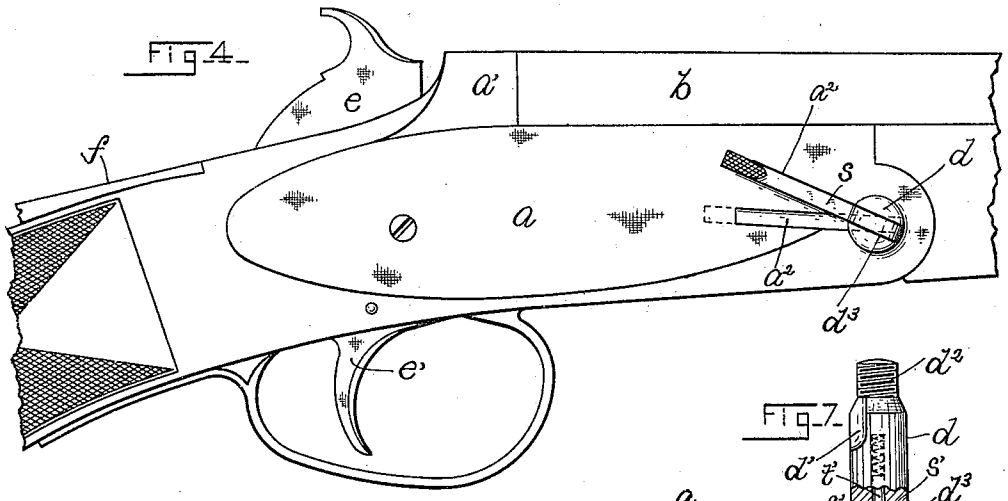


Fig 7.

Fig 5.

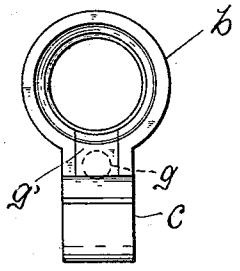


Fig 6.

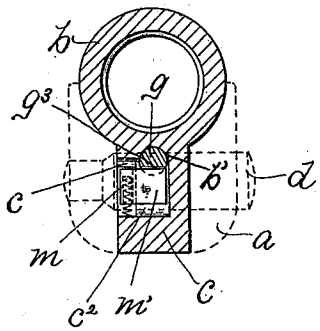
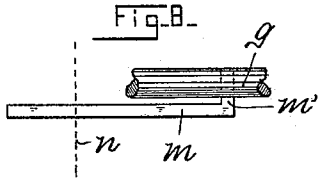


Fig 8.



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UNITED STATES PATENT OFFICE.

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CARTRIDGE-EJECTOR FOR FIREARMS.

SPECIFICATION forming part of Letters Patent No. 619,565, dated February 14, 1899.

Application filed December 7, 1898. Serial No. 698,575. (No model.)

To all whom it may concern:

Be it known that I, ALVAH E. GRIMES, a citizen of the United States, residing at Norwich, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Ejectors for Firearms, of which the following is a full, clear, and exact description.

This invention relates to the shell-ejecting mechanism of breakdown firearms, and has for its immediate object the provision of mechanism which may be controlled and actuated by the "breaking down" of the arm either to eject the shell forcibly and clear of the arm or may serve to simply start the shell sufficiently to allow it to be grasped and withdrawn by hand. Mechanism capable of operating in a double capacity, as just described, is particularly valuable, in that the first-named method of forcible ejection may be employed when paper shells are used, such shells being rarely reloaded and are therefore of no use after the first firing, or if reloadable metal shells be used the second method of extraction may be employed and the retention of the shell easily accomplished. The latter manner of extracting the shells is particularly desirable when using the arm where long grass, marsh, or underbrush abounds, as it avoids the loss of many shells which could not be found were they forcibly ejected in the first-named manner and saves much time that would otherwise be spent in searching for and gathering in said shells.

To assist in explaining my invention, I have provided the accompanying sheets of drawings, which serve to illustrate the same, as follows:

Figure 1 shows, partly in elevation and partly in central vertical section, an arm fitted up with my newly-invented improvements. Fig. 2 is a view similar to that of Fig. 1, illustrating the arm "broken down" and showing the operation of the ejector mechanism. Fig. 3 shows in side elevation a portion of the barrel-lug and the ejector mechanism mounted thereon. Fig. 4 shows in side elevation an arm fitted up with my newly-invented improvements, said view showing the reverse side of the arm to that shown in Figs. 1 and 2. Fig. 5 is an end view of the barrel and its lug. Fig. 6 is a cross-sectional view taken on the line 1 1 in Fig. 1. Fig. 7 illustrates, partly in plan and partly in section, the peculiarly-constructed hinge-pin of the arm. Fig. 8 illustrates in plan the relative positions of certain elements of my newly-invented mechanism.

Referring to the drawings, the letter a denotes the frame of the arm; b, the barrel; c, the barrel-lug, and d the hinge pin or pintle, by means of which the frame and barrel are secured together and on which the latter is adapted to rock.

The letter e denotes the hammer of the arm, e' the trigger, and f a lever located on the top of the frame and adapted to move the bolt f', that serves to lock the barrel against movement on the hinge-pin; but inasmuch as the operation and general arrangement of the several elements thus far mentioned are common and well understood no detailed description or illustration is deemed necessary.

Referring now to the shell-ejector mechanism, the letter g denotes the ejector-stem, located in a chamber b' in the breech end of the barrel-lug, beneath and parallel with the bore of the barrel. The rod g is adapted to travel reciprocally in the chamber b' and bears upon its outer end a head g', which when the rod is in its inner position forms a portion of the end of the barrel, said head g' being cut out or counterbored to receive the head h' of the shell h. Confined in the chamber b', between the inner end thereof and the confronting end of the rod g, is a spring k, which seeks constantly to force said rod outward; but the movement of the latter in either direction is limited by a screw k', located, as shown, in the lug c, with its upper end entering a slot g^2, provided in the rod g. When the arm is closed, the rod g is forced to its inner position (compressing spring k) by the recoil-block a', the head g' of said rod being received in the end of the barrel b, which latter is cut away, as at b^3, for that purpose. When the arm is broken down, however, as shown in Fig. 2, the spring k (if allowed to act) expands and forces outward the rod g, the movement of the latter being of course limited by the screw k'. It will be obvious that when the rod g travels outward, as just explained, its

head g', engaging the flange h' of the shell h, will force said head from its position in the barrel.

In connection with the ejector-rod g and the mechanism immediately related thereto I have provided mechanism that serves to lock the rod g and retain it in its inner position until just before the operation of breaking down the arm is completed, when said locking mechanism is released, thus allowing the spring k to shoot the rod g rearward with force sufficient to eject the shell clear of the arm. On the other hand, the said ejector-locking mechanism may be thrown out to allow the spring k to force the ejector rearward slowly, resulting in simply starting the shell from its home position in the barrel instead of shooting it clear of said barrel, as first explained. When thus arranged, to partially extract the shell the rear end of the extractor-head g' abuts the recoil-head a' and is allowed to gradually move rearward as the barrel is swung upward from the frame, resulting in drawing the shell slowly rearward to a position where it can be grasped and completely removed from said barrel. The said mechanism for locking the rod g in its closed position embodies as one of its elements a peculiarly-constructed hinge-pin d.

Pivotally supported in a recess c', cut in the side of the barrel-lug c, is a lever m, whose pivotal support is a screw n. The shorter arm of said lever lies adjacent to the hinge-pin d, and the longer arm bears a right-angular extension m'. To receive the said extension m', a recess c^2 is provided, leading from that end of the recess c' adjacent the end of the barrel b at right angles to and across the chamber b'. A small spiral spring o is located in a hole in the longer arm of the lever m, the opposite ends of which spring abut, respectively, the bottom of said hole and the lower wall of the recess c', said spring serving to rock the longer end of the lever m upward.

When the extractor mechanism is to act to eject a shell forcibly from the arm, as above explained, and the barrel is in its closed position, as shown in Fig. 1, the lever m is held in its normal (upward) position by the spring o and the extension m' enters a notch g^3 in the rod g. The end of the shorter arm of said lever then lies in a groove d' in the hinge-pin d. When the arm is broken down, the end of the said shorter arm of the lever m engages the side wall of the groove d', thereby rocking the longer end of the lever m and its extension m' downward. Such rocking of the lever m continues as the barrel swings upon the hinge-pin d until just before the arm is completely broken down the extension m' is withdrawn from the notch g^3, thus allowing the spring k to expand and shoot the rod g outward, the latter carrying with it the shell engaged by its head g' with sufficient force to throw the shell clear of the arm. After the release of the bolt g, which occurs at about the time the shorter arm of lever m travels from the groove d' to the circumference of the hinge-pin, continued rocking of the barrel causes the said shorter arm to simply ride upon said circumferential face of the pin d.

In the operation of reloading the arm a cartridge is inserted in the barrel until checked by the rearwardly-projecting ejector-head. The barrel is then swung to its closed position in the frame, the cartridge and ejector being meanwhile forced forward in the barrel by the recoil-head. Just as rod g reaches its inner position its notch g^3 comes coincident with the lever extension m', which extension at once enters said notch and again locks the rod against rearward movement, the shorter arm of the lever having then entered the groove d' in the pin d.

Should it be desired to simply start the shell from its seat instead of ejecting it as just described, the hinge-pin d should be rotated sufficiently to rock the end of the lever m, engaging said pin, out of the groove d' before the barrel is broken down, as shown in Fig. 3 of the drawings. Such action rocks the longer end of the lever downward and withdraws its extension m' from the notch g^3 of the rod g, thus leaving the rod free to ride gradually outward and upward on the face of the recoil-block a' as the arm is broken down and correspondingly withdrawing the shell, as above explained. Upon closing the arm rod g and the cartridge are forced forward by the recoil-block and are then retained in such closed position by the engagement of the ejector-head g' with the face of the recoil-block.

One end of the pin d is adapted to be screwed into the frame a and is screw-threaded, as at d^2. In order to readily rotate the pin d to entirely remove it from the frame, also to lock the same from rotation when in the proper positions to produce either a forcible or partial ejectment of the shell, the opposite end of the pin d is slotted, as at d^3, to receive the end of a radial arm or lever s, that is pivotally secured in said slot by a pin t. The pivoted end of the lever s is provided with two notches s', adapted to be engaged by a spring-pressed bolt t', whose end engaging said notches is beveled, as shown, to permit the rocking of the lever s to bring either of its notches s' into engagement with the said bolt t'. The notches s' are so located in the pivoted end of the lever that the bolt t' may serve to hold the lever s either in close contact with the face of frame a or in an outwardly-rocked position, as shown in dotted lines in the drawings. When said lever is rocked into close engagement with frame a, it (the lever) is received in one of two grooves a^2 to prevent the rotation of the pin d when in either of its operative positions. Should it be desired to change from one style of ejectment to the other, it will be readily understood from Figs. 4 and 7 that such change may be readily attained by simply rocking the lever outward

from the side of the frame a, after which the pin may be rotated as desired and the lever s then folded into the proper groove a^2.

My newly-invented improvements are of very simple construction, are readily assembled, easily operated, and improve greatly the general efficiency of the arm without adding greatly to its cost.

Having thus described my invention, I claim—

1. In a breakdown arm, in combination, a frame, a barrel, a grooved hinge-pin connecting said barrel and frame, a notched spring-pressed ejector-rod mounted in the barrel-lug, and a lever having one of its ends normally in engagement with the ejector-rod notch and its other end in engagement with the said hinge-pin.

2. In a breakdown arm, in combination, a barrel, a frame and a grooved connecting hinge-pin as set forth, a spring-pressed ejector-rod mounted in the barrel-lug, a lever coöperating with the ejector-rod and hinge-pin, and means for partially rotating the said hinge-pin for the purpose specified and for locking said pin against rotation.

Signed at Norwich, Connecticut, this 28th day of November, 1898.

ALVAH E. GRIMES.

Witnesses:

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FRANK H. ALLEN.