No. 615,958. Patented Dec. 13, 1898.

W. H. DAVENPORT.

EJECTING DEVICE FOR BREAKDOWN GUNS.

(Application filed Feb. 15, 1898.)

(No Model.) 2 Sheets—Sheet 1.

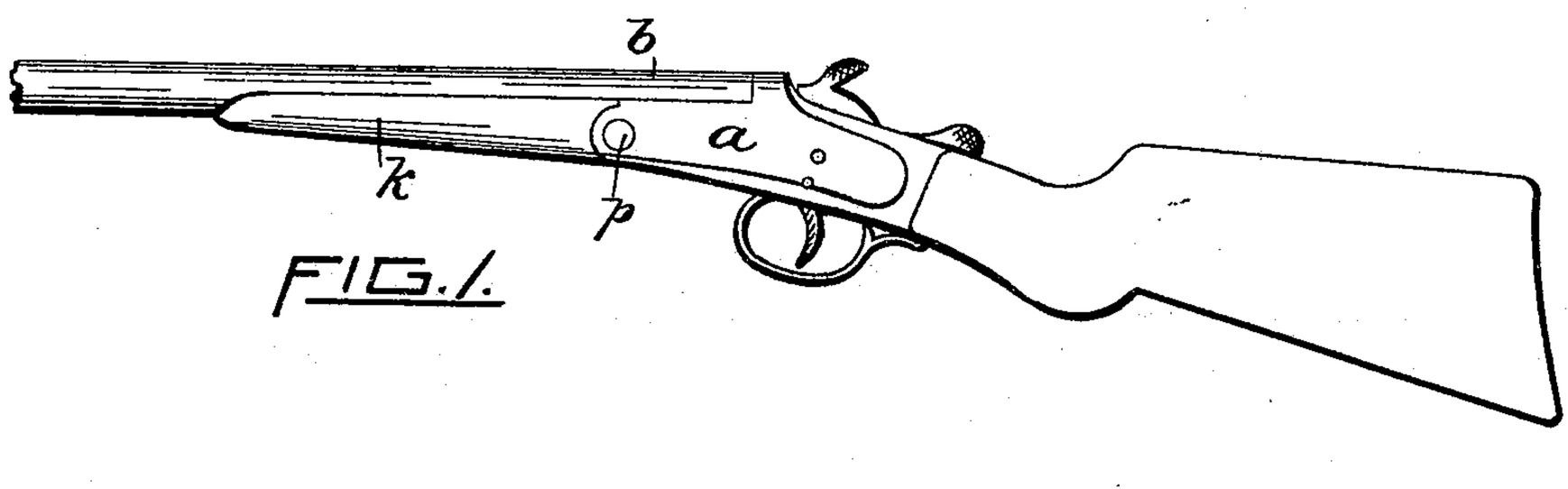

FIG. 1.

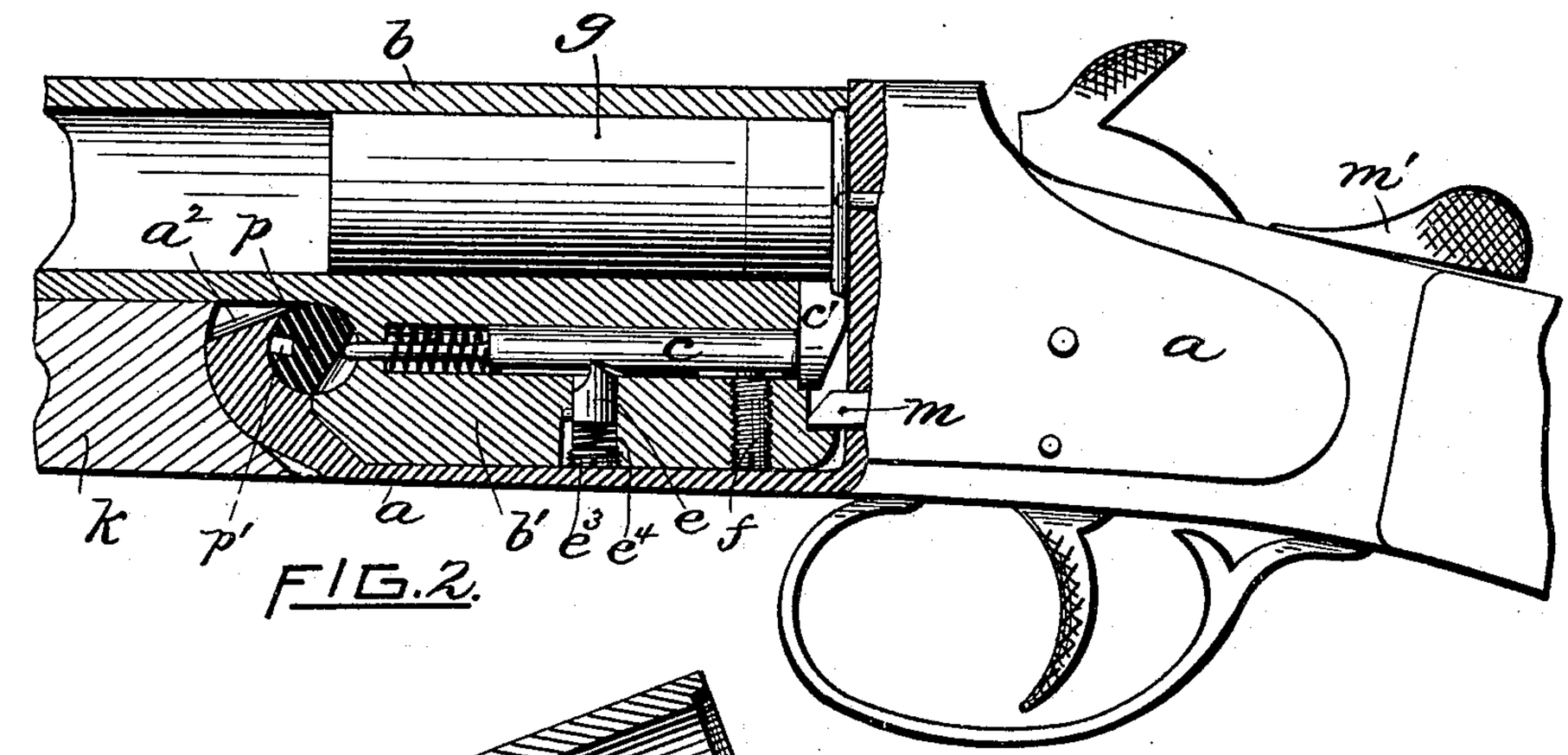

FIG. 2.

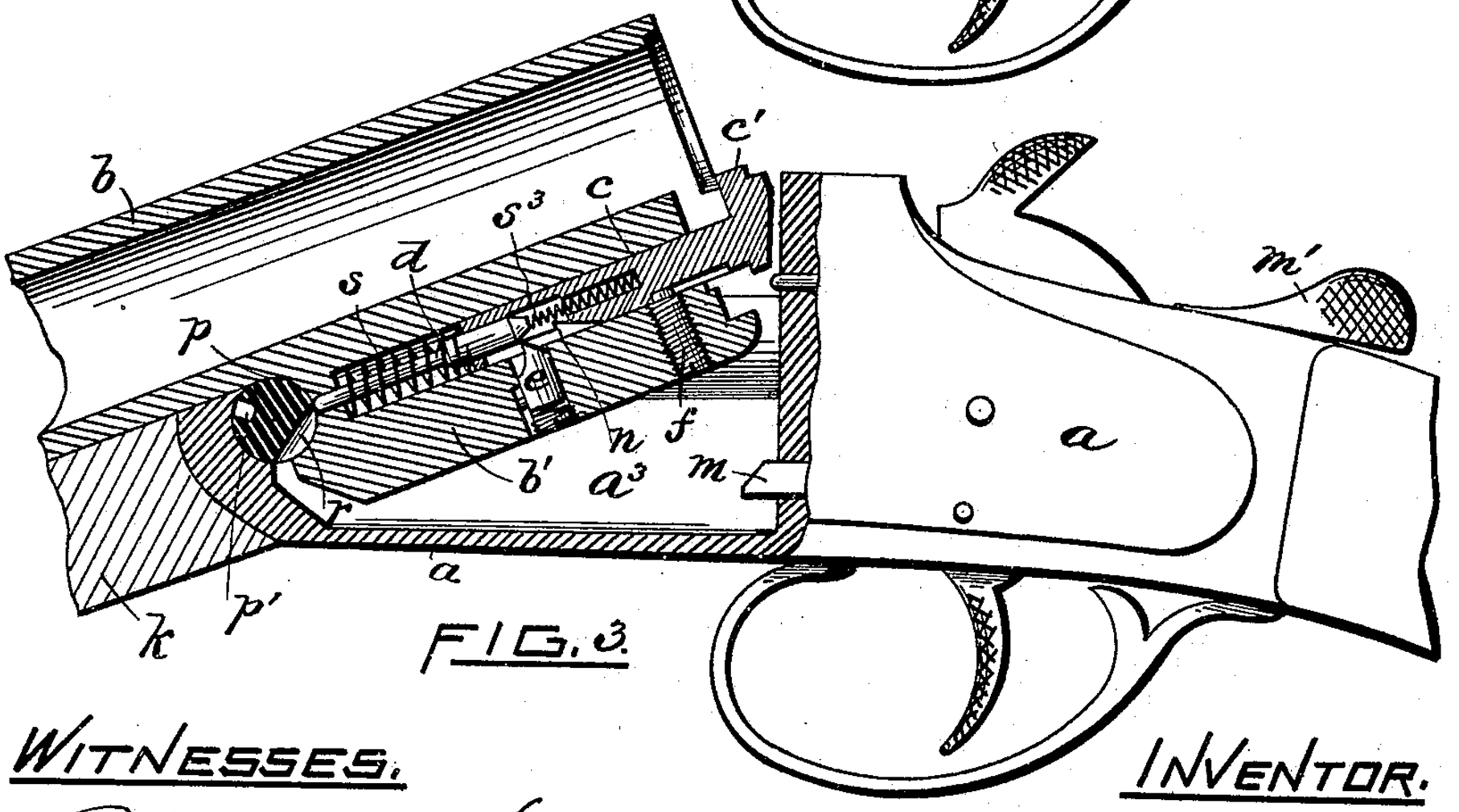

FIG. 3.

WITNESSES.

Charles T. Flannigan.

Chas. E. Pennington

INVENTOR.

William H. Davenport.

By Geo. H. Remington & Co.

Attys.

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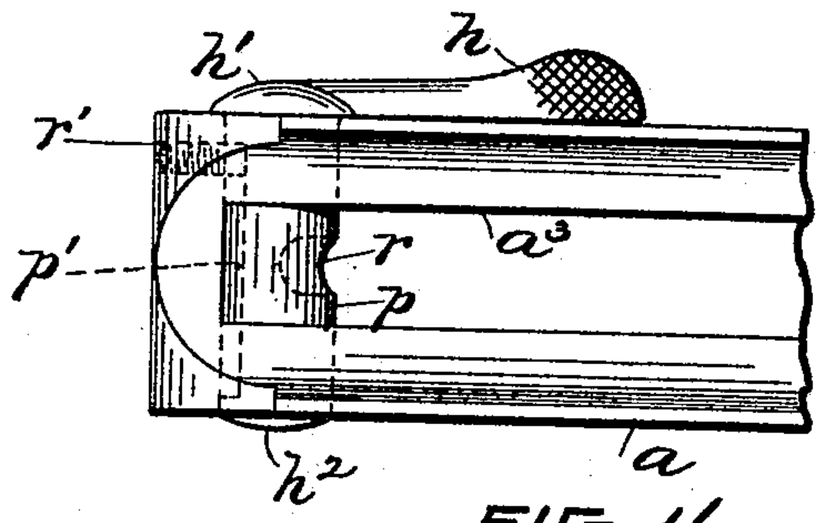

FIG. 4.

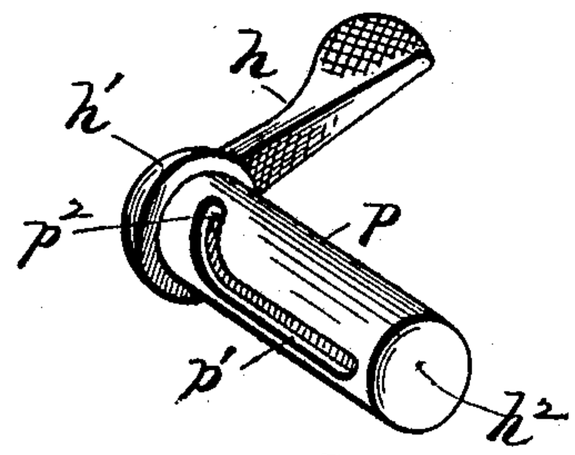

FIG. 5.

FIG. 10.

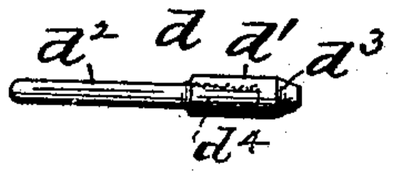

FIG. 9.

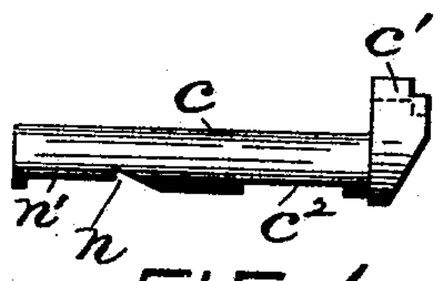

FIG. 6.

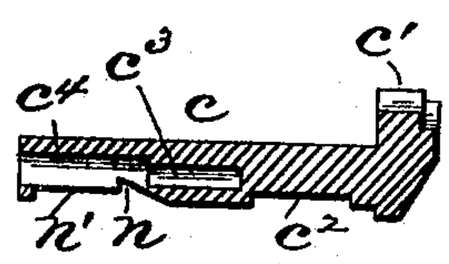

FIG. 7.

FIG. 11.

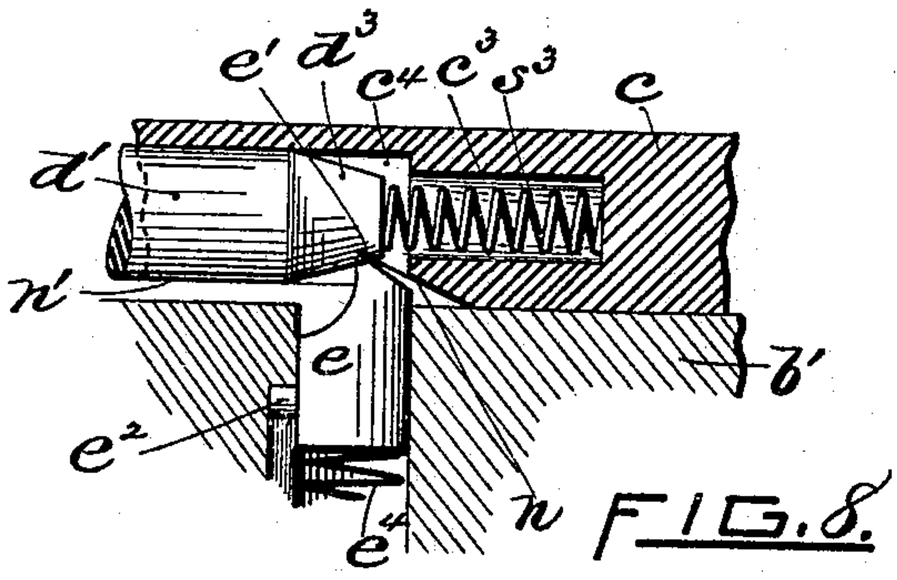

FIG. 8.

WITNESSES.

Charles T. Hannigan

Chas. E. Pennington

INVENTOR.

William H. Davenport,

by Geo. H. Remington & Co.

Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. DAVENPORT, OF NORWICH, CONNECTICUT.

EJECTING DEVICE FOR BREAKDOWN GUNS.

SPECIFICATION forming part of Letters Patent No. 615,958, dated December 13, 1898.

Application filed February 15, 1898. Serial No. 670,357. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DAVENPORT, a citizen of the United States of America, and a resident of Norwich, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Shell-Ejecting Devices for Breakdown Guns, of which the following is a specification, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

In my present shell-ejecting device the object I have had in view is to provide breakdown guns with a more efficient shell-ejecting mechanism in which the device is less liable to become inoperative, while the cost of the same is materially reduced as compared with shell-ejecting means heretofore devised.

To that end the invention consists in the novel features of construction hereinafter fully set forth and claimed.

Some of the specific advantages possessed by the invention forming the subject of my application for United States Letters Patent are as follows: The barrel-lug is not cut away, as common to many shell-ejecting devices, but is simply drilled to receive the various parts. The forward end of the frame is whole and forms a seat for the barrel. The hinge-joint pin is enlarged and provided with a longitudinal groove terminating in a short spiral groove, whereby, in connection with a fixed pin extending into the groove, the joint-pin may be forced into or from its seat. The joint-pin is also provided with a cam-shaped groove adapted upon breaking down the gun to trip the spring-pressed ejector, thereby releasing the latter and permitting it to forcibly throw the shell from the barrel, and owing to the novel construction of the frame, &c., the barrel may be readily detached from the gun without removing the fore-wood.

In the accompanying two sheets of drawings, Figure 1 is a side elevation, in reduced scale, of a breech-loading shotgun embodying my improvement. Fig. 2 is a side elevation, in partial longitudinal central section, enlarged, showing the construction of the rear part of the barrel and the corresponding portion of the frame, the parts being in the normal or closed position. Fig. 3 is a similar view showing the barrel tipped or open and the shell-ejecting device tripped or released. Fig. 4 is a plan view of the forward portion of the frame. Fig. 5 is a perspective view of the joint-pin. Fig. 6 is a side view of the ejector-spindle. Fig. 7 is a longitudinal central section of the same. Fig. 8 is a sectional view of the tripping device considerably enlarged. Fig. 9 is a side view of the tripping-pin. Fig. 10 is a similar view of the ejector-spring, and Fig. 11 shows the spring for retracting the tripping-pin.

In my present improved firearm the several principal members thereof, as well as the locking and firing devices, are or may be constructed substantially as usual, except in so far as they may be modified or adapted to the shell-ejecting mechanism forming the subject of this invention.

The barrel *b* is counterbored at its rear end to receive the shell or cartridge *g*. It is provided on its under side with the barrel-lug *b'*, in which is mounted the shell-ejecting device. The lug is also adapted to receive the forward end of the locking-bolt *m*, which in turn is arranged to be controlled by the top lever *m'*, &c., as usual.

The forward end portion of the frame member *a* is well rounded and whole—that is, it is not cut through longitudinally for the passage of the barrel-lug, &c., in order that the gun may be taken apart. The center of said end is drilled through transversely to receive the large joint-pin *p*, the arrangement being such that in the portion of the pin contiguous to the barrel-lug the latter is in engagement with the semicircumference of the pin. The joint-pin *p* has a longitudinally-extending groove *p'* therein, the same terminating at or near the head *h'* in a short spiral groove p^2. After the joint-pin is inserted in the frame the end of a small screw or pin *r'* is introduced into the groove, the pin itself being mounted in the frame, as shown in Fig. 4. As thus arranged the joint-pin cannot be wholly withdrawn from the frame, although it is adapted to slide endwise through the lug *b'* to permit the ready removal of the barrel from the frame. The head of the joint-pin is provided with a short external arm *h*, by means of which the pin is manipu-

lated. It also forms a convenient lever for axially turning the pin, as in forcing the latter to and from its seat, the spiral part of the groove in such case coacting with the pin r' in a manner analogous to a wedge action, thereby preventing the joint-pin from being accidentally unseated when in use. It will be seen that the inner or rear side of the joint-pin is cut away at r to form a cam-shaped surface, against which the forward end of the trip for the shell-ejecting device bears. The joint-pin, it may be stated, is normally stationary with the frame, the barrel being pivoted so as to swing on the pin.

The barrel-lug is drilled longitudinally at right angles to the axis of the joint-pin to receive the endwise-movable ejector-spindle c, &c. This spindle member is also drilled longitudinally at its forward end at c^4 to freely receive the movable tripping-pin d, the latter being pressed at its rear end by a small spring s^3, seated in the bottom of the hole c^3 formed in the spindle, the latter hole being a continuation of the hole c^4 just referred to. The forward portion d^2 of the tripping-pin d is reduced in diameter. It extends through the lug b' and is in continuous engagement with the side of the joint-pin, or, rather, the cam-shaped portion r of it. The opposite or rear end portion d' of the pin d is enlarged and beveled at d^3, the pin being kept in yielding contact with the member p by means of the spring s^3, before described.

The forward end of the ejector-spindle c bears against the ejector-spring s, seated in the barrel-lug and surrounding the corresponding part of the tripping-pin. This spring is employed to forcibly eject the shell g from the barrel b. The rear end of the member c has a head c' let into the barrel and lug and is adapted to receive the rim of the shell, as usual in devices of this class. The under side of the spindle c is flattened at c^2, thus forming end shoulders, which coact with the usual stop pin or screw f to limit the endwise movements of the spindle. At a point forward of the said flattened portion a notch n is formed in the member c, arranged to receive the beveled upper end of a vertically-movable latch e, the latter being maintained in yielding engagement with the spindle c by means of a light spring e^4, the whole kept in place by the short screw-plug e^3, mounted in the barrel-lug. In order to prevent the latch from turning axially, it is provided with a guide-pin e^2, adapted to slide freely in a vertical groove formed in the lug. (See Figs. 2, 3, and 8.)

The operation of the shell-ejecting device is substantially as follows: Assuming the several parts of the mechanism to be in the normal position shown in Fig. 2, the gun then being closed, it will be seen that the spring s is compressed, the latch e at the same time being in the holding-notch n of the spindle, while the forward end of the tripping-pin d extends through the barrel-lug and is in engagement with the cam-groove r of the joint-pin. In this position the ejector-spindle is locked and can be made operative only by first withdrawing or depressing the latch. This is effected as follows: The act of opening or breaking down the gun gradually elevates the rear end of the barrel, since it swings on the stationary pivot or joint pin p, thereby forcing the tripping-pin d rearwardly through the medium of the cam r. The construction and relative arrangement of the parts are such that at or about the instant the end of the barrel rises above the top of the frame a the beveled end d^3 of the pin d will slide over the end of the latch e, thereby forcing the latter from the notch n and tripping the spindle, at which instant, too, the thus suddenly-released spring s quickly forces the spindle rearwardly to its limit and ejects the empty shell from the barrel. Fig. 3 shows the corresponding or open position of the gun.

In my present invention the front end of the frame a is cut away slightly on top at a^2, Fig. 2, forward of the pivot, so as to allow the barrel to be tilted. The fore-wood k is fast to the barrel and need not be detached therefrom in order to remove the barrel from the frame. The joint-pin is operated by first pressing the lever h thereof downwardly an angular distance equal to the length of the spirally-grooved portion p^2, thereby forcing the pin outwardly a corresponding distance and forcing it from its seat, after which the joint-pin is easily moved endwise, guided by the small pin r', until its opposite end h^2 is substantially flush with the inner wall a^3 of the frame. In this position of the joint-pin the barrel may be readily introduced into or removed from the frame. In the latter case the barrel is simply moved forward a short distance, followed by lifting it bodily from the frame.

The tripping-pin d may consist of two parts, one being screwed into the other, as shown at d^4 in Fig. 9, thereby adapting the pin to be readily adjusted, if desired.

I claim as my invention—

1. In a breakdown gun, a normally-locked spring-pressed shell-ejector, a joint-pin extending transversely through the gun-frame, and having a cam formed upon one side, and a tripping device in engagement with said cam on the joint-pin, and which tripping device is moved upwardly over the side of the cam which remains stationary when the gun is broken down, substantially as shown.

2. In a breakdown gun, the frame having its forward end practically closed, the barrel member having a lug on its under side, and a joint-pin passing transversely through said frame, and bearing against the front end of the barrel-lug, combined with means for limiting the endwise movement of the joint-pin, whereby said pin can be drawn outwardly sufficiently far to allow the barrel to be removed and replaced without the removal of the pin, substantially as described.

3. In a breakdown gun, the combination with the frame and barrel members fitted to each other, of a suitably-headed joint-pin *p* passing transversely through the frame and forming a pivot for the barrel, the joint-pin being grooved longitudinally and ending in a spiral or inclined groove, and a fixed pin *r'* in engagement with said groove, whereby axial movement of the pin in the proper direction forces the pin to its seat or unseats it, substantially as described.

4. In a breakdown gun, the combination of the frame *a* having its forward end rounded and practically closed, the barrel *b* having a lug *b'* on its under side and contained within the frame, the fore-stock secured to the barrel and conforming to the said end of the frame, and the joint-pin *p* passing transversely through the center of the frame end and fitted to the forward end of the barrel-lug, the said pin being grooved longitudinally, combined with a stop-pin which catches in the groove, whereby upon withdrawing the joint-pin the barrel may be introduced into or removed from the frame without detaching the fore-stock from the barrel.

5. In a breakdown gun, the combination with the frame *a* having its forward end closed, of the barrel *b* having secured to its under side a lug *b'* and fore-stock *k*, and the joint-pin seated in said frame and lug and having an endwise movement, and means to limit this movement, whereby upon withdrawing the joint-pin the barrel may be readily introduced into or removed from the frame without detaching the fore-stock, substantially as described.

6. In a shell-ejecting device mounted in the barrel-lug of a breakdown gun, the combination with the normally stationary joint-pin provided with a cam-shaped portion or groove, *r*, of a tripping-pin, forming a part of the shell-ejecting mechanism, in engagement with said cam, whereby upon tilting the barrel the tripping-pin is forced rearwardly, substantially as described and for the purpose set forth.

7. A notched spring-pressed ejector-spindle, mounted in the barrel-lug and provided with notches or recesses in its under side, and having an opening in its front end, a spring placed in said opening and a tripping-pin which has its front end to enter said spindle, combined with a spring placed in the barrel-lug and which bears against the front end of the spindle, a joint-pin having a suitable cut-away portion, a cam formed therewith and against which the front end of the tripping-pin engages, and a latch for engaging with the spindle and which is operated by the pin, substantially as shown.

8. In a shell-ejecting device for breakdown guns, the combination of a spring-pressed spindle *c* provided with a notch *n*, a yielding latch normally engaging said notch for keeping the spindle in the retracted or closed position, a spring-pressed tripping-pin slidable in the spindle having its rear end normally forward of the spindle-notch, and means for forcing the tripping-pin rearwardly upon tilting the gun-barrel, whereby said latch is forced from the notch, thus releasing the spindle and ejecting the shell, substantially as described.

Signed by me, at Providence, Rhode Island, this 7th day of February, A. D. 1898.

WILLIAM H. DAVENPORT.

Witnesses:
GEO. H. REMINGTON,
CHAS. C. REMINGTON.