

No. 698,194.

Patented Apr. 22, 1902.

W. H. GATES.
BREAKDOWN GUN.

(Application filed Apr. 6, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.

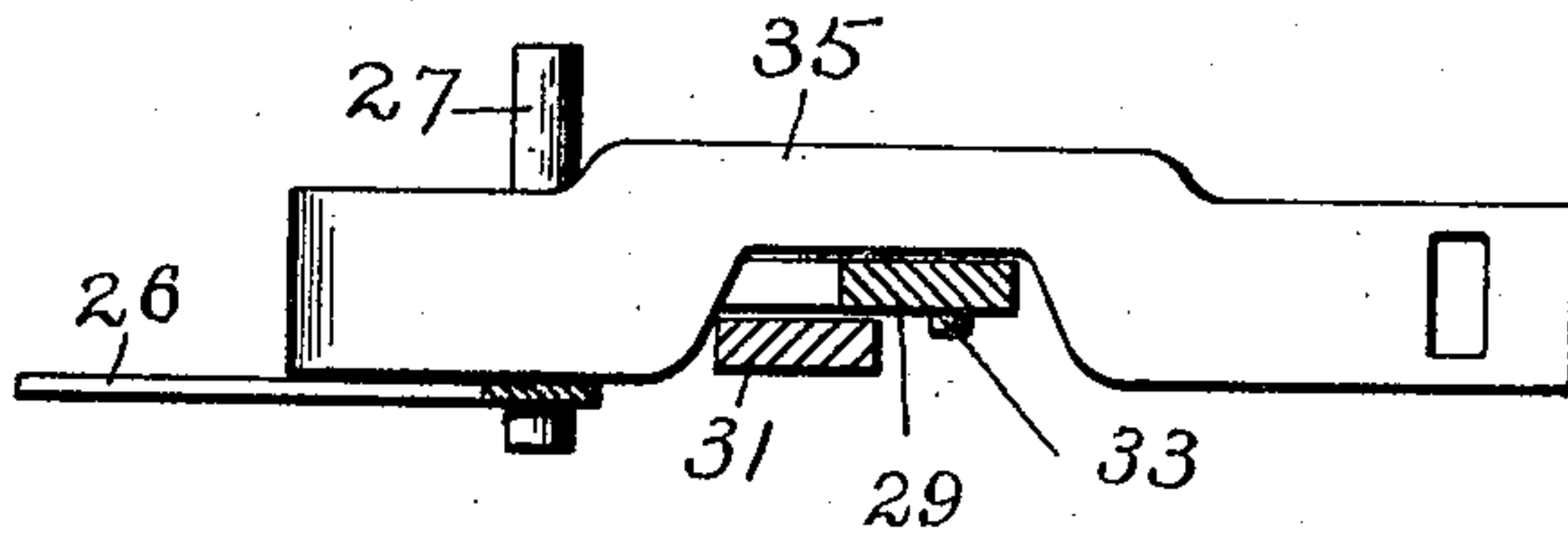


Fig. 4.

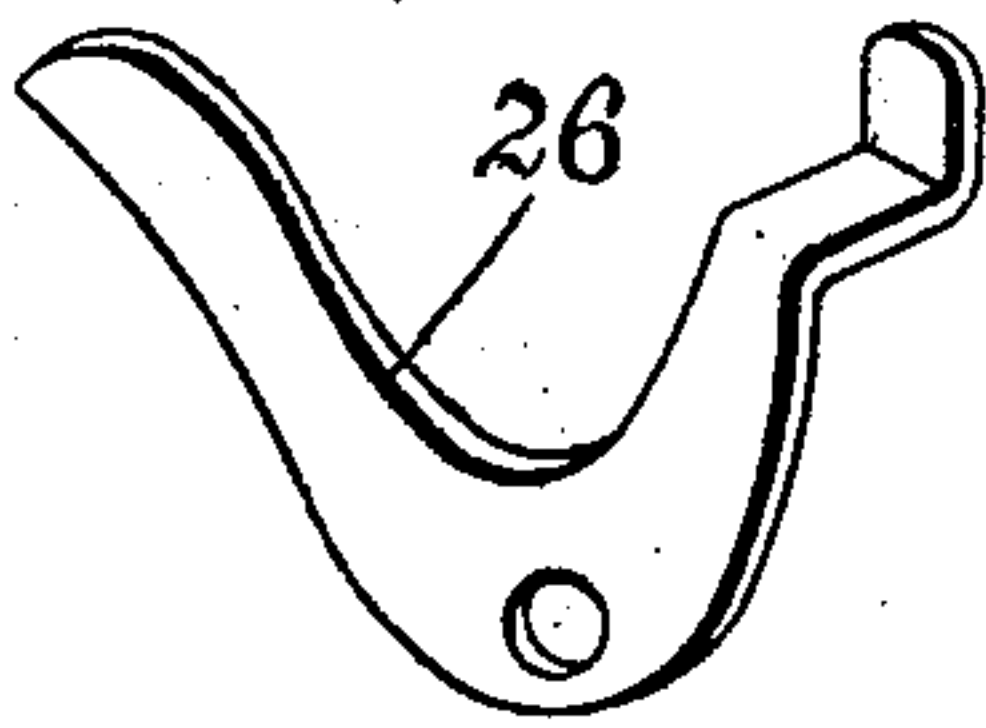


Fig. 5.

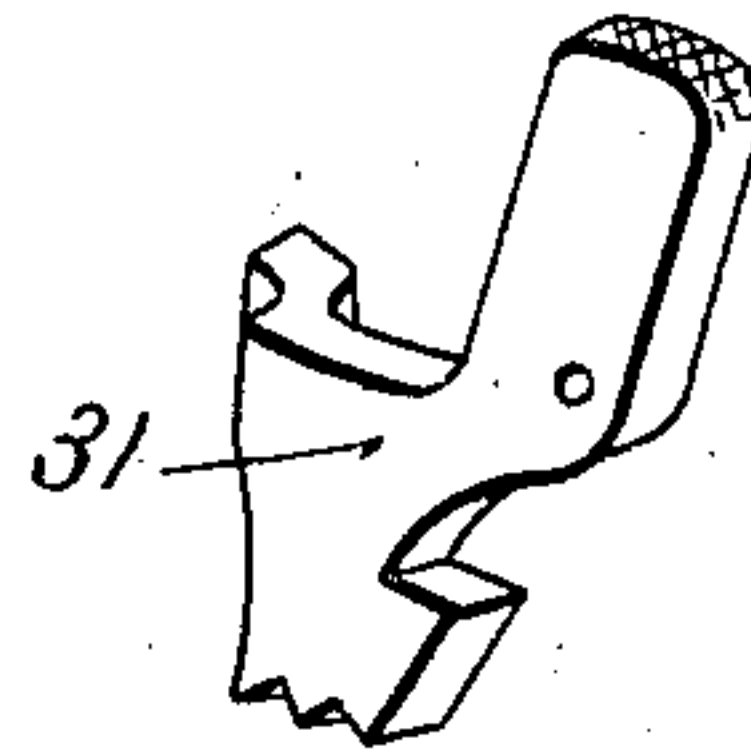


Fig. 6.

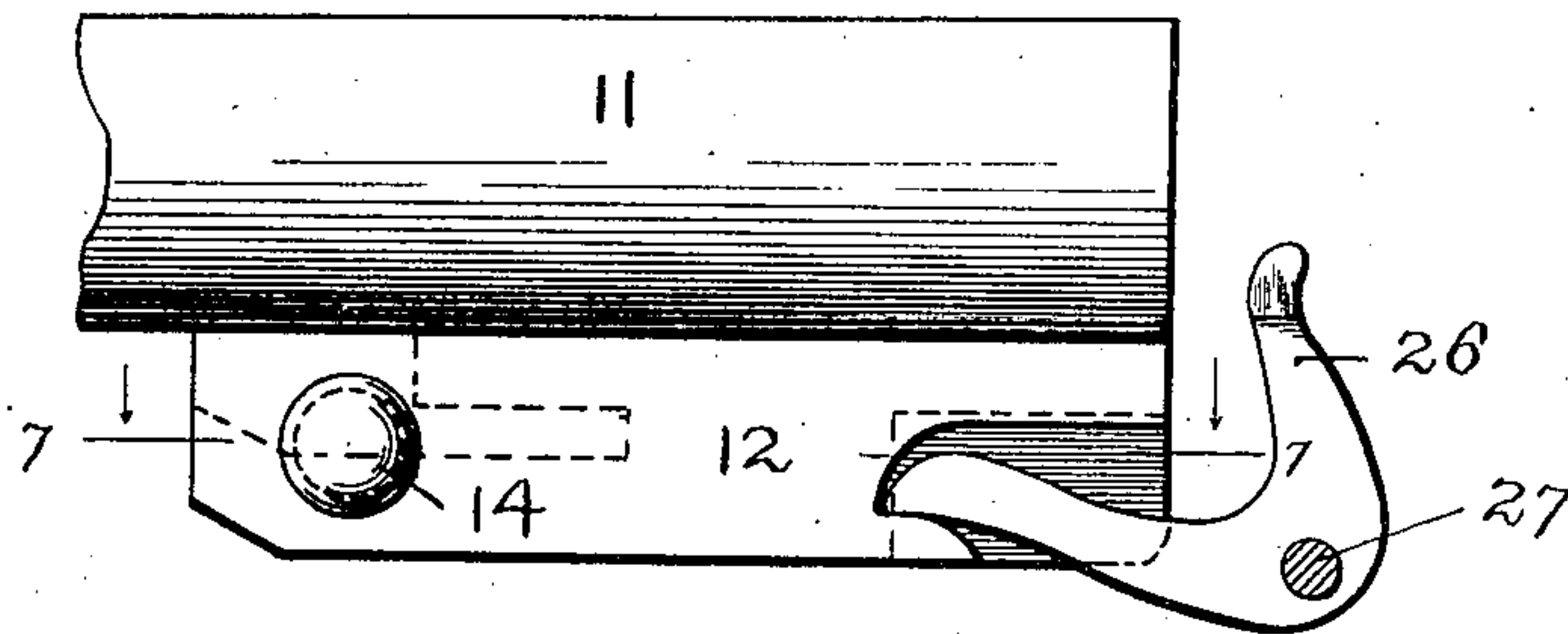
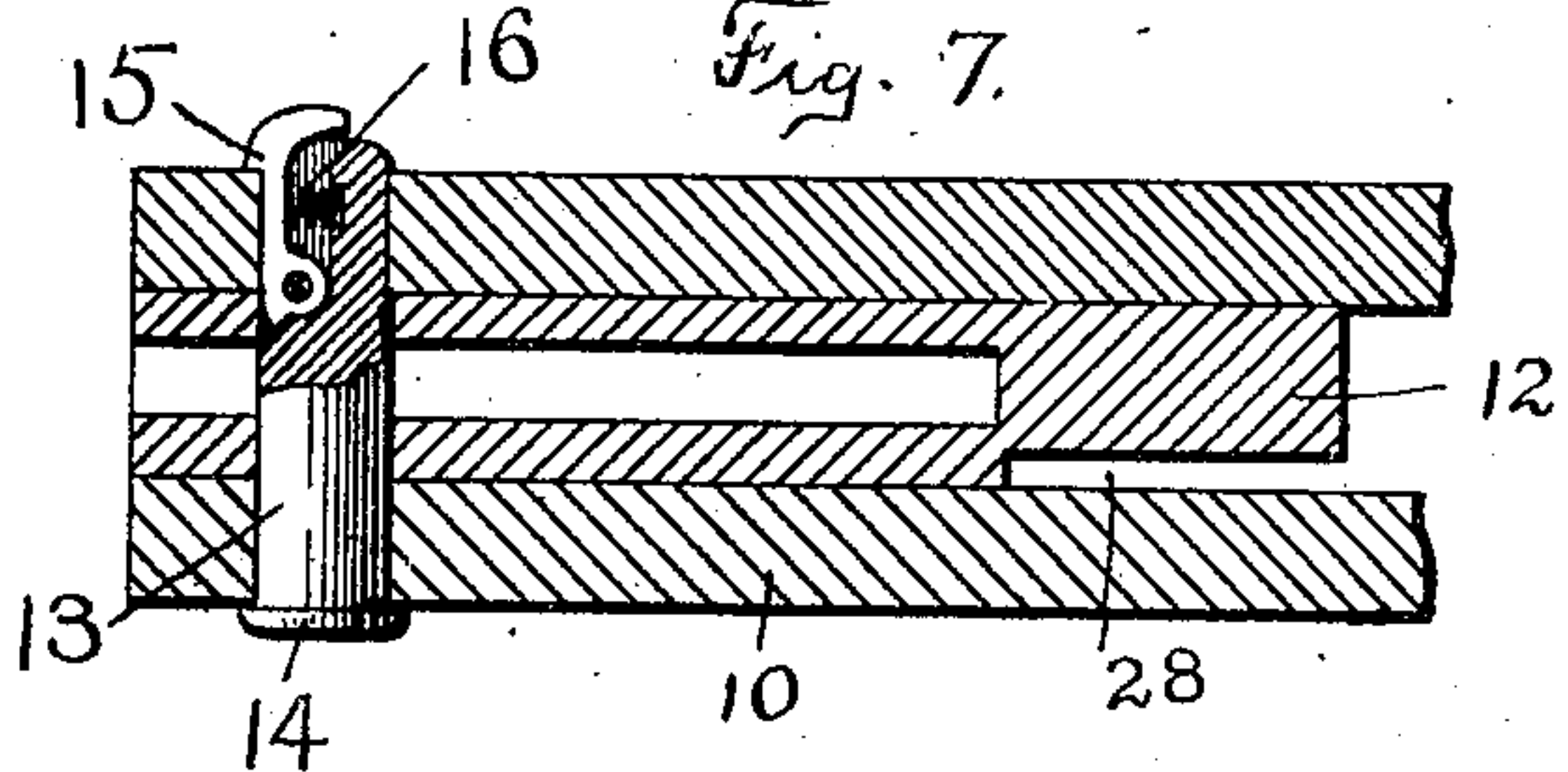


Fig. 7.



Witnesses.

W. J. Baldwin
M. E. Regan.

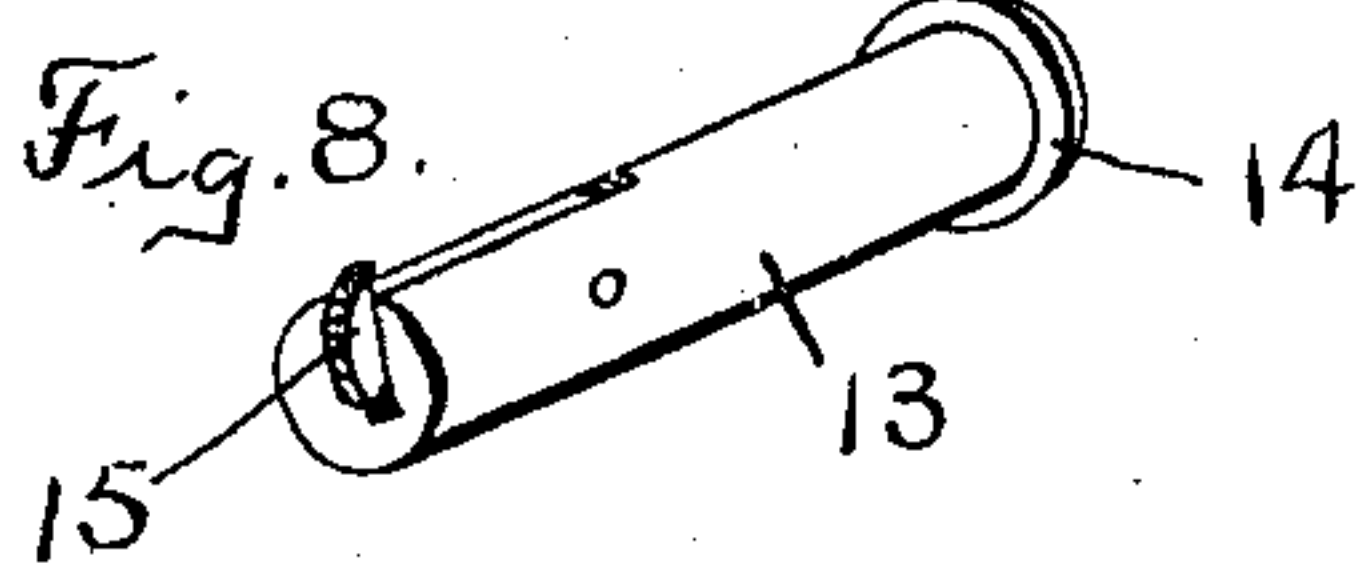


Fig. 8.

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UNITED STATES PATENT OFFICE.

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BREAKDOWN GUN.

SPECIFICATION forming part of Letters Patent No. 698,194, dated April 22, 1902.

Application filed April 6, 1900. Serial No. 11,788. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GATES, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Breakdown Gun, of which the following is a specification.

This invention relates to a breech-loading gun of that type which is opened by swinging down the forward end of the barrel—that is to say, this invention relates to what is known as a “breakdown breech-loading gun;” and the object of this invention is to provide a safe, efficient, and inexpensive hammerless breakdown gun which may be manufactured and placed on the market at an equally low cost as a gun having an outside hammer or hammers of the ordinary construction. To these ends I have provided a gun constructed according to my invention with an action comprising a longitudinally-movable firing bolt or pin, which is preferably held in its thrown-back or cocked position by direct engagement with a trigger and is moved to said thrown-back or cocked position by a cocking-lever actuated whenever the gun is opened. The locking-bolt is preferably recessed or offset to receive the trigger and the safety-catch for preventing an accidental discharge of the gun, and carried by the locking-bolt is a novel arrangement of springs, one of which acts as a locking-bolt spring and the other of which acts as a trigger-spring, said parts being preferably so arranged that the trigger-spring will be relaxed when the gun is opened and said parts being proportioned and arranged with respect to each other so that they may be easily adjusted and secured in position in the frame.

A further object of this invention is to provide a new, simple, and efficient form of combined extractor and ejector for the shell.

To these ends this invention consists of the gun and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a longitudinal sectional view showing sufficient parts of a gun to illustrate the application of my invention thereto, the

parts being shown in the positions assumed by them after the gun is fired. Fig. 2 is a similar view illustrating the position of the parts when the gun is opened. Fig. 3 is a detail plan view illustrating the locking-bolt, taken on the line 3 3 of Fig. 1. Fig. 4 is a perspective view of the cocking-lever. Fig. 5 is a perspective view of the safety-catch. Fig. 6 is a detail view illustrating the relation of the cocking-lever and the barrel. Fig. 7 is a sectional view taken on the line 7 7 of Fig. 6, and Fig. 8 is a detail perspective view of the hinge-pin.

One primary object of this invention is to arrange the parts constituting the action of a gun to cooperate with a longitudinally-sliding spring-pressed firing pin or bolt. This spring-pressed firing pin or bolt is located in a recess or chamber bored in the frame of the gun, which inclines downwardly toward the rear of the gun, and the trigger is preferably arranged to directly engage a notch in the firing-pin to hold the same in its retracted or cocked position.

The firing-pin socket is drilled in the gun-frame, and the firing-pin is secured therein by a threaded block or bushing, and cooperating with the firing-pin is a cocking-lever of an offset bell-crank lever form, the forward end of said cocking-lever engaging a notch in the side of the barrel-lug, so that when the gun is opened the cocking-lever will be turned to force back the spring-pressed firing pin or bolt.

The locking-bolt, which locks the parts of the gun in their closed or normal position, is offset or is provided with a recess for receiving the trigger and the safety-catch, which is employed for preventing an accidental discharge of the gun.

The arrangement of springs which is carried by the locking-bolt is preferably such that the trigger-spring will be relaxed as the gun is opened, this arrangement permitting the firing-pin to be more readily forced back and preventing unnecessary wear on the trigger-catch.

The parts which I preferably employ for forming a combined extractor and ejector for a gun constructed according to this invention are preferably designed to be located in a

notch or groove of the barrel-lug and preferably comprise a lever pivoted in the barrel-lug in front of the hinge-pin of the gun, which lever engages the frame at the rear of its pivot when the gun is opened and actuates a pusher which first imparts a positive motion to the spring-pressed ejector-bolt and then releases a detent, permitting the ejector-bolt to fly back when the gun is fully opened.

10 The hinge-pin, which pivotally connects the barrel and frame of the gun, instead of being threaded into place in the ordinary manner, is preferably provided with a spring-catch, which will permit the insertion or re-
15 moval of the hinge-pin for securing the parts together without requiring any special machine-work, threading, or boring out of the frame, except the drilling of a straight socket for receiving the hinge-pin.

20 Referring to the accompanying drawings and in detail, a gun constructed according to my invention, as herein illustrated, comprises a gun frame or casting 10 and a barrel 11, having a barrel-lug 12 fitting into the forward
25 part of the frame in the ordinary manner. Pivotaly connecting the barrel 11 and frame 10 is a hinge-pin 13. The construction of the hinge-pin 13 preferably employed is most clearly illustrated in Figs. 7 and 8. As shown
30 in these figures, the hinge-pin 13 is provided with an integral head 14 and is slotted near its opposite end to receive a catch 15, normally forced outwardly by a spring 16. In prior forms of breakdown guns the hinge-
35 pins which have been employed have usually been either threaded in place or have been of such construction as to require special machine-work or fitting to be done upon the gun-frame to enable the gun-frame to receive the
40 hinge-pin.

I regard the use of a hinge-pin of the construction illustrated in Figs. 7 and 8 of advantage, because hinge-pins of this construction may be made up and a quantity of them
45 kept in stock, and to secure such hinge-pins in place in a gun it is simply necessary to drill a transverse hole through the forward end of the gun-frame and through the barrel-lug, whereas in using prior forms of hinge-pins
50 the gun-frame itself had to be machined or fitted in various manners, a mistake in fitting the hinge-pin in the frame frequently destroying the value of the entire gun-frame.

To provide a simple and efficient combined
55 extractor and ejector mechanism for a gun constructed according to this invention, a barrel-lug is bored out longitudinally to receive an ejector-bolt 17, which is normally forced back by a coiled spring 18, the ejector-
60 bolt being secured in place, if desired, and the limits of its motion being determined by a stop-screw 47. The parts which control and actuate the spring-pressed ejector-bolt 17 are preferably of such construction that they can
65 be located in a central groove or slot of the barrel-lug 12. As shown herein, the mechanism for controlling the spring-pressed ejector-

bolt comprises an operating-lever 19, which is pivoted in the barrel-lug in front of the hinge-pin 13 in such a position as to engage
70 the forward end of the gun-frame when the gun is opened. The rear end of the lever 19 is socketed into a pivot-piece or pusher 21. The upper end of the pusher or pivot-piece 21 engages a shoulder at the front end of a
75 recess or notch in the under side of the ejector-bolt 17, and as the pusher or pivot-piece 21 is rocked or turned it first imparts a positive motion to the ejector-bolt 17 and then en-
80 gages and releases a spring-pressed detent 22, permitting the ejector-bolt to fly back to the limit of its travel, as illustrated in Fig. 2. As shown in Fig. 2, when the ejector-bolt is
85 thrown to the limit of its travel to the rear the shoulder which is engaged by the ejector-bolt spring does not pass the point or end of the pivoted starter-lever 21, and I regard this
90 as a point of advantage, as the starter-lever will always be in position to be moved back when the gun is closed and will not be allowed
95 to strike against or interfere with the ejector-bolt spring. By means of this construction I have provided a combined extractor and ejector action for the gun—that is to say, a
100 positive or extracting action is first imparted to the ejector-bolt, and the ejector-bolt is then restrained by the detent until the gun is opened nearly to its widest extent to permit the shell to be thrown completely out of
its chamber.

What I regard as one especial advantage in the use of the combined extractor and ejector mechanism constructed as herein illustrated arises from the fact that the actuating
105 parts of this mechanism may all be secured in a single longitudinal central slot or cut of the barrel-lug, and hence these parts may be put in place without greatly weakening or defacing the barrel-lug itself.

Fitting into a hole or socket which is bored
110 into the gun-frame so as to incline downwardly toward the rear of the gun is a firing-pin 23, which is normally thrown forward by a coiled spring 25 and is held in place by a
115 threaded bushing or barrel 24—that is to say, instead of employing an outside hammer for exploding the shell in a gun constructed according to my invention and instead of employing inside springing hammers or firing-
120 levers I preferably employ a longitudinally movable firing pin or bolt, and I regard the use of this firing pin or bolt as advantageous, as the firing pin or bolt occupies comparatively little vertical space, permitting me to
125 leave the shank or grip of the gun-frame of comparatively small diameter, making an easily-manipulated and nicely-hanging construction.

The firing-pin 23 is preferably held in its thrown-back or cocked position by the direct
130 action of the trigger, although, if preferred, a sear or catch forming a separate piece from the trigger may be used for this purpose, if desired. As herein illustrated, the trigger

29 is pivoted on a pin 30 and is provided with an integral catch for engaging a notch in the firing-pin. When released from the notch in the firing-pin 23, the trigger catch or detent is held down by the cylindrical part of the firing-pin of greatest diameter, preventing the trigger 29 from again moving forward after the gun is fired, as shown in Fig. 1.

Coöperating with the firing-pin 23 is a cocking-lever 26. The cocking-lever 26, as illustrated most clearly in Fig. 4, is of an offset bell-crank shape and is pivotally mounted on a pin 27, the forward end of said cocking-lever engaging a notch at the side of the barrel-lug 12, as shown most clearly in Fig. 6. A locking slide or bolt 35 is arranged to be moved longitudinally by a top snap 36. The top snap 36 preferably consists of a thumb-piece or lever and a shank formed in one integral piece. The shank of the top snap 36 is of comparatively large diameter, and threaded eccentrically into the shank of the top snap is a screw 85. By means of this construction the screw 85 may be employed not only to form a crank-pin connection between the shank of the top snap 36 and the locking-bolt 35, but in addition to this it serves to secure the top snap in place, so that instead of requiring several separate parts to be secured together the top snap may be simply formed by a single integral piece, the shank of which is first inserted down through its hole in the frame, so that by the insertion of the screw 85 the top snap will be connected to the locking-bolt and will also be removably held in place. The locking-bolt 35 is provided with a lug 37, and bearing on the lug 37 is a spring 38, normally throwing the locking-bolt forward. Also bearing on the lug 37 of the locking-bolt is a trigger-spring 39. By means of this construction when the locking-bolt is drawn back by the top snap 36, so as to permit the opening of the gun, the drawing back of said locking-bolt will relax or decrease the tension of the trigger-spring 39, and I regard this as advantageous, because in arranging the trigger-spring in this manner the resistance opposed by the trigger to the cocking of the gun will be diminished and the wearing on the catch or detent of the trigger will also be diminished. As shown most clearly in Fig. 3, the locking-bolt 35 is provided near its middle with an offset forming a recess, which receives the trigger 29. Pivotally mounted on a pin 32 at the side of the trigger 29 is a safety-catch 31. The safety-catch 31, as most clearly illustrated in Fig. 5, is provided with a recess for coöperating with a pin 33, extending from the side of the trigger. When the lower portion of the safety-catch is swung or moved back, the tooth or projection thereof will engage beneath the pin 33, so as to lock the trigger and prevent the same from being moved, as indicated by dotted lines in Fig. 2. When the lower portion of the safety-catch is thrown forward, however, as indicated by dotted lines in Fig. 1, the trigger

will then be free to be operated. The safety-catch as thus located is held in its thrown-back or locked position by the cocking-lever 70 so long as the gun remains opened, and the safety-catch can be released, so as to permit the firing of the gun, only when the gun is closed.

To release the safety-catch, so as to permit the firing of the gun, when the gun is closed, the upper end of the safety-catch 31 projects through the upper tang and will be pushed back with substantially the same motion as required to cock or pull back the hammer of an ordinary gun, the safety-catch being preferably held in either one of two positions by a spring engaging notches in the bottom of the safety-catch, as indicated by dotted lines in Figs. 1 and 2. After the gun has been fired and the parts have assumed the position illustrated in Fig. 1 the firing-pin 23 will serve to hold the trigger in its retracted or pulled-back position, so that it cannot be thrown forward again in position to have the safety-catch engage beneath the pin 33.

The operation of the several parts employed in a gun constructed according to my invention have been so fully explained in describing the construction thereof that a description of the operation of the gun as a whole is not believed to be necessary—that is to say, the operation of the gun as a whole is substantially the same as that of other breakdown hammerless breech-loading guns, the novelty of the invention residing in the simple and compact combinations of parts for effecting the functions required to be performed in the gun rather than residing in the novelty of result produced, and although the parts have been especially designed to constitute a single-barrel gun of hammerless type these parts may be used in double-barrel guns, if desired, and certain parts or features of the gun may be used in guns of still other types without departing from the scope of this invention as expressed in the claims. I do not desire, therefore, to be limited to the forms and arrangements herein shown and described; but

What is claimed, and sought to be secured by Letters Patent of the United States, is—

1. In a breakdown gun, the combination of the gun-frame, a barrel having a lug pivoted in the gun-frame, and an ejector mechanism comprising a spring-pressed ejector-bolt, an operating-lever pivoted in the barrel-lug in front of the hinge-pin to engage the gun-frame at the rear of the pivot of said lever when the gun is opened, a pusher actuated by the lever to impart a positive motion to the ejector-bolt, and a detent for the ejector-bolt arranged to be released by the pusher, substantially as described.

2. In a breakdown gun, the combination of the gun-frame, a barrel having a barrel-lug fitting therein, a hinge-pin pivotally connecting said parts, and an ejector mechanism com-

prising a spring-pressed ejector-bolt, an actuating mechanism for the ejector-bolt mounted in a longitudinal slot in the barrel-lug, and comprising an operating-lever pivoted in front of the hinge-pin in position to engage the gun-frame at the rear of its pivot when the gun is open, a pivoted swinging piece or pusher, the rear end of the actuating-lever being socketed in said pusher, and a spring-detent, the pusher being arranged to first engage and impart a positive motion to the extractor-bolt, and to then release the spring-detent, permitting the extractor-bolt to fly back to the end of its travel when the gun is substantially wide opened, substantially as described.

3. In a breakdown gun, the combination of a gun-frame, a barrel pivotally mounted at the forward end of the gun-frame, locking connections for holding the barrel in its normal position, a trigger controlling the action of the gun, a trigger-spring, and connections for diminishing the tension of the trigger-spring when the gun is unlocked or opened, substantially as described.

4. In a breakdown gun, the combination of a gun-frame, a barrel pivotally connected to the forward end of the gun-frame, and an action comprising a longitudinally-movable spring-pressed firing-pin, a trigger therefor, a safety-catch mounted at one side of the trigger for locking the same when desired, and a substantially bell-crank-shaped cocking-lever having one leg thereof extending forward to be operated by the barrel-lug, and the other leg thereof engaging and operating both the firing-pin and safety-catch, substantially as described.

5. In a gun, the combination of the gun-frame, a barrel pivotally mounted at the forward end thereof, a locking-bolt for holding the parts in their normal or closed position, a trigger controlling the action of the gun, a locking-bolt spring engaging one side of a lug on the locking-bolt, and a trigger-spring engaging the opposite side of said lug, substantially as described.

6. In a gun, the combination of the gun-

frame, a barrel pivotally mounted at the forward end thereof, a longitudinally-movable spring-pressed firing-pin mounted in the gun-frame, a trigger having a catch-section for directly engaging the firing-pin, a cocking-lever for forcing back the firing-pin, a locking-bolt for holding the gun in its shut or normal position, a locking-bolt spring engaging one side of a lug on the locking-bolt, and a trigger-spring engaging the opposite side of said lug, said parts being arranged so that the tension of the trigger-spring will be diminished whenever the gun is unlocked or opened, substantially as described.

7. In a shell-extracting mechanism for breakdown guns, the combination of an ejector-bolt, a pivoted pusher or starter lever therefor, and connections for actuating the starter-lever when the gun is opened to impart a positive initial motion to the ejector-bolt, the upper end of the starter-lever engaging a shoulder at the rear of a recess in the under side of the ejector-bolt, so that said starter-lever will always be in position to be moved forward when the gun is closed and cannot engage with or interfere with the ejector-bolt spring, substantially as described.

8. In a gun, the combination of a longitudinally-movable spring-pressed firing pin or bolt, a trigger having a catch or detent section for engaging a notch in the firing-pin, and a safety-catch pivoted at one side of the trigger in position to engage a pin or lug in the side thereof, said parts being arranged so that the firing-pin will hold the trigger in its retracted or pulled-back position after the gun is fired, and will prevent said trigger from being thrown forward in position to be engaged by the safety-catch, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM H. GATES.

Witnesses:

LOUIS W. SOUTHGATE,
PHILIP W. SOUTHGATE.