

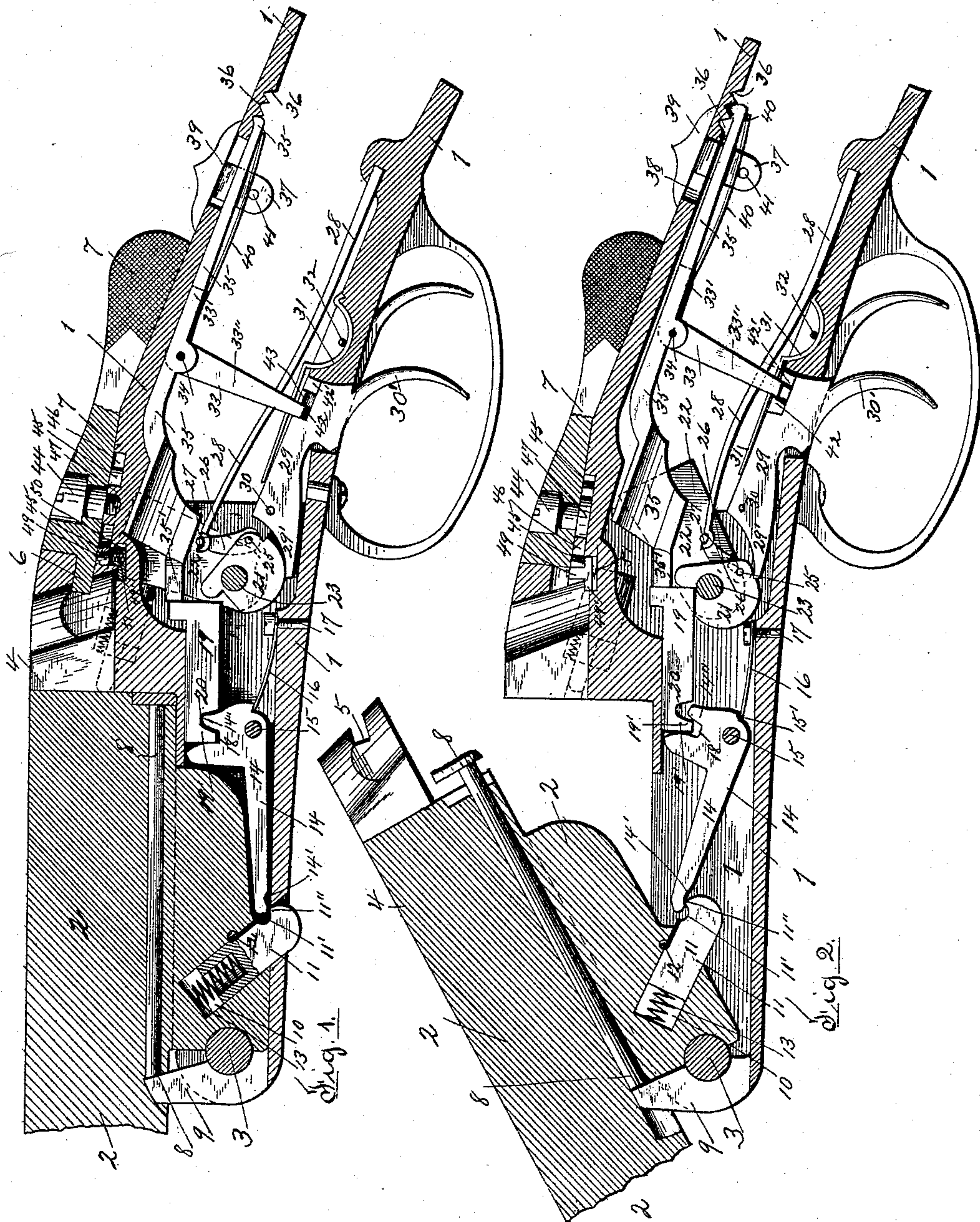
(No Model.)

2 Sheets—Sheet 1.

M. BYE.
BREECH LOADING GUN.

No. 441,395.

Patented Nov. 25, 1890.



Witnesses
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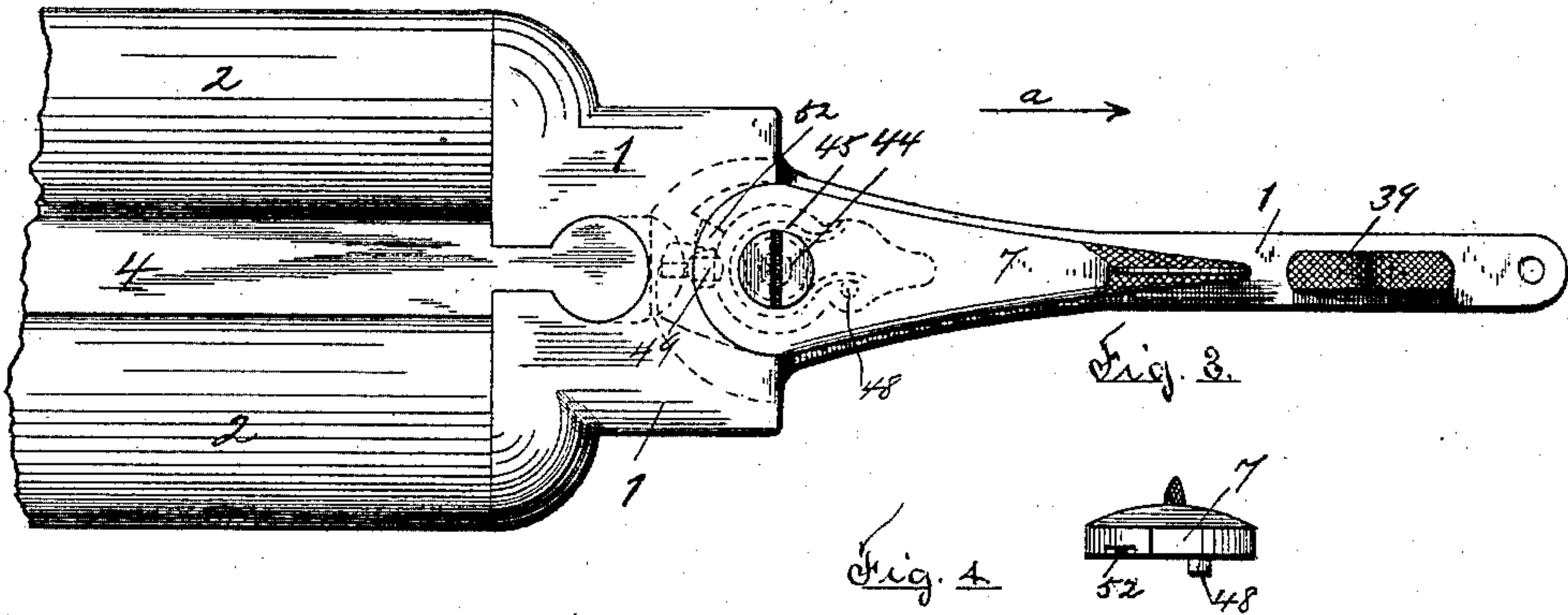


Fig. 3.

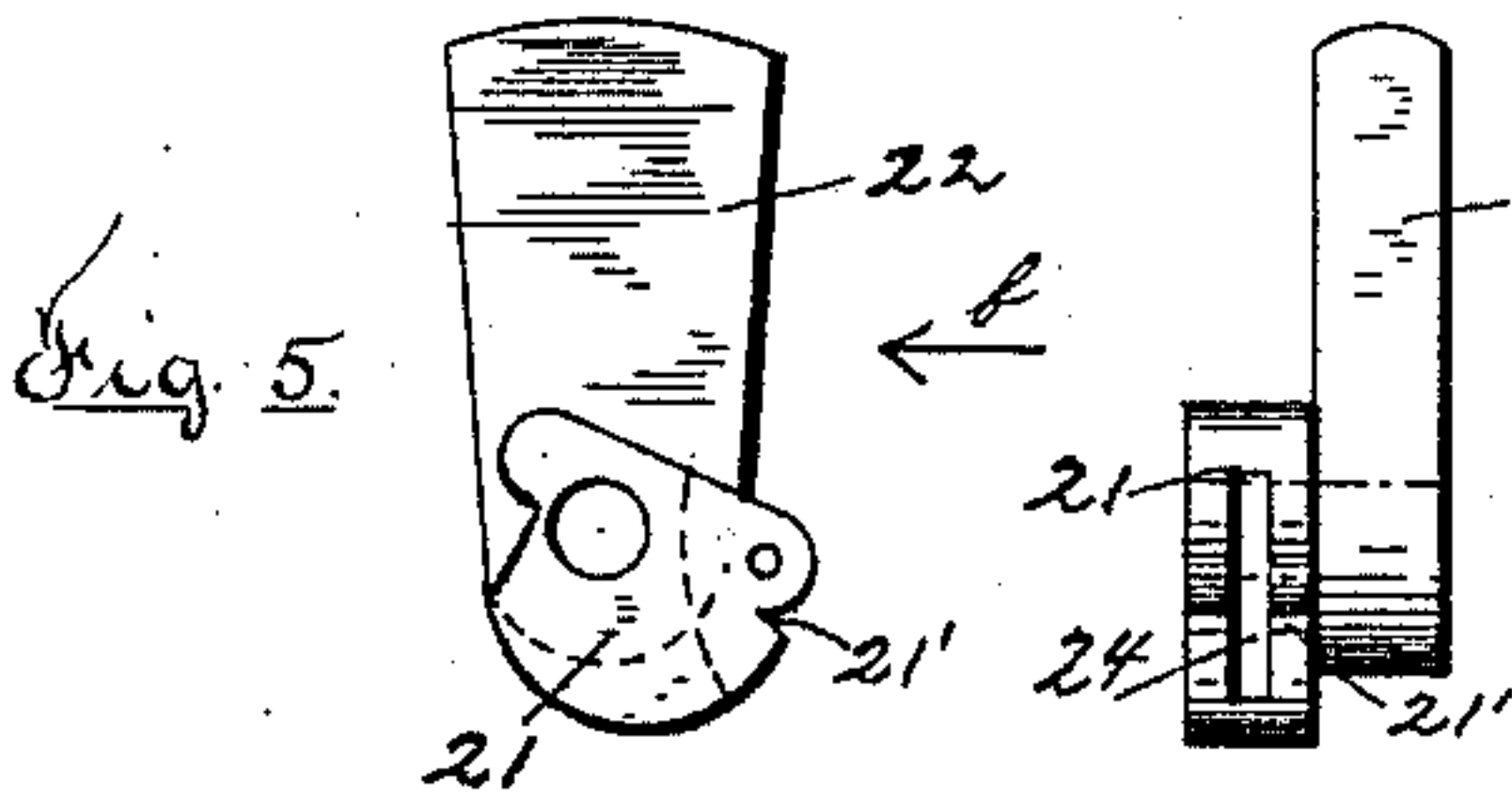
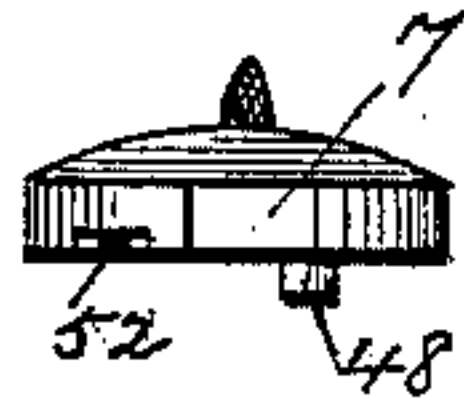


Fig. 5.

Fig. 6.

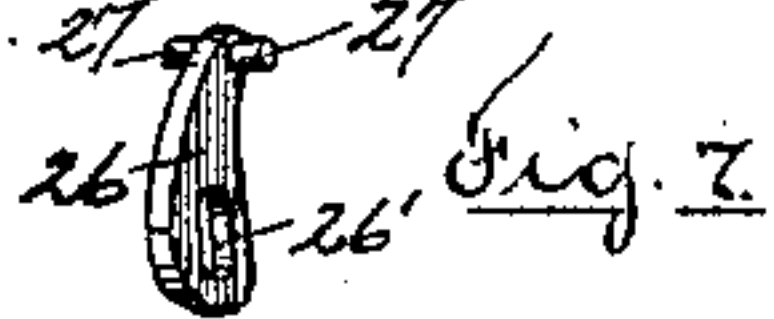


Fig. 7.

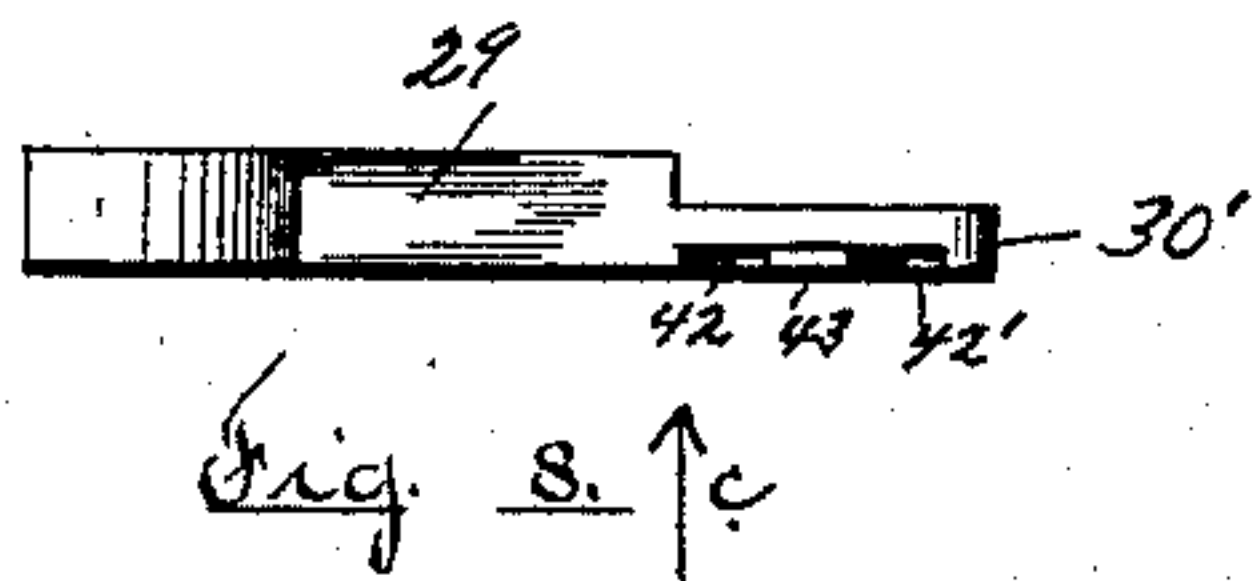


Fig. 8.

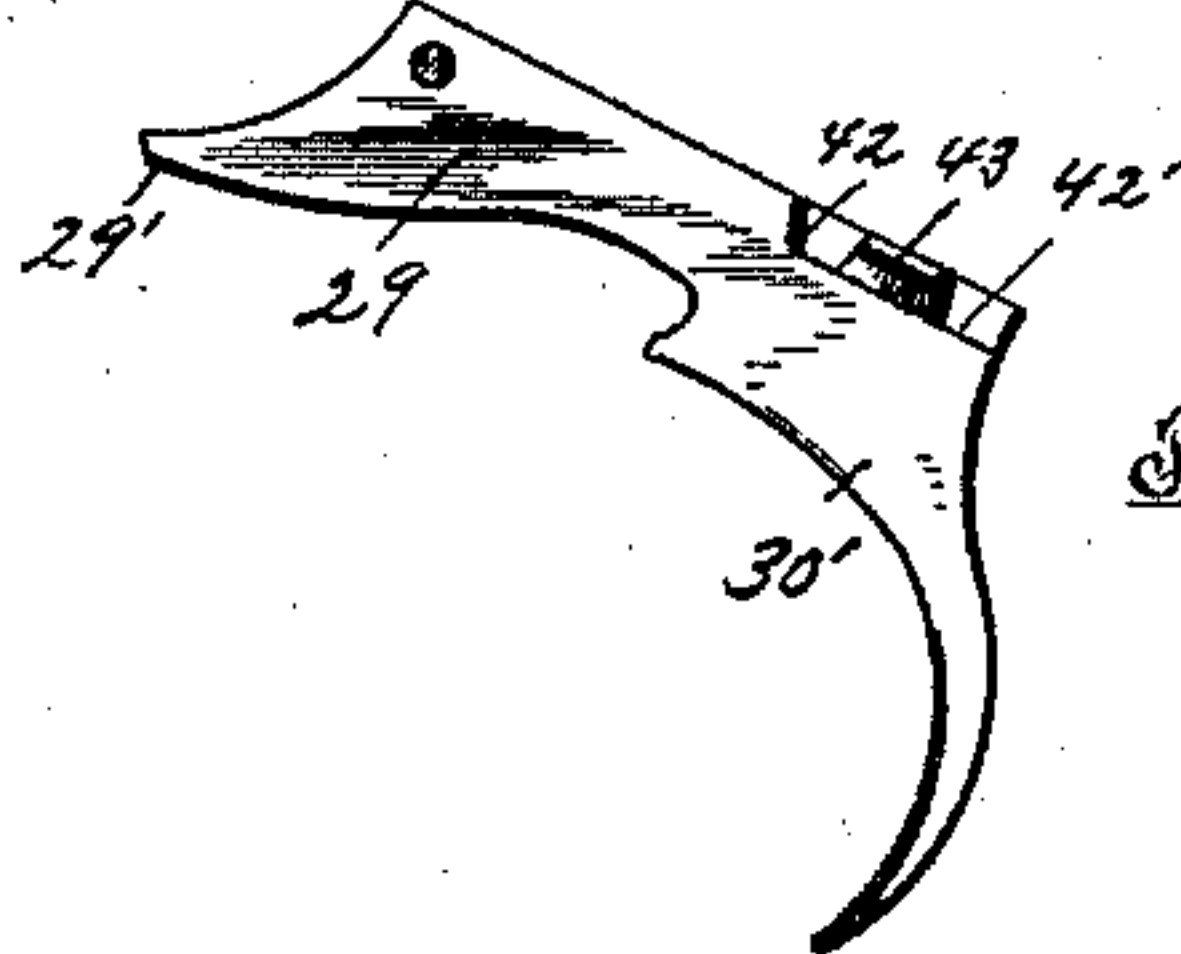


Fig. 9.

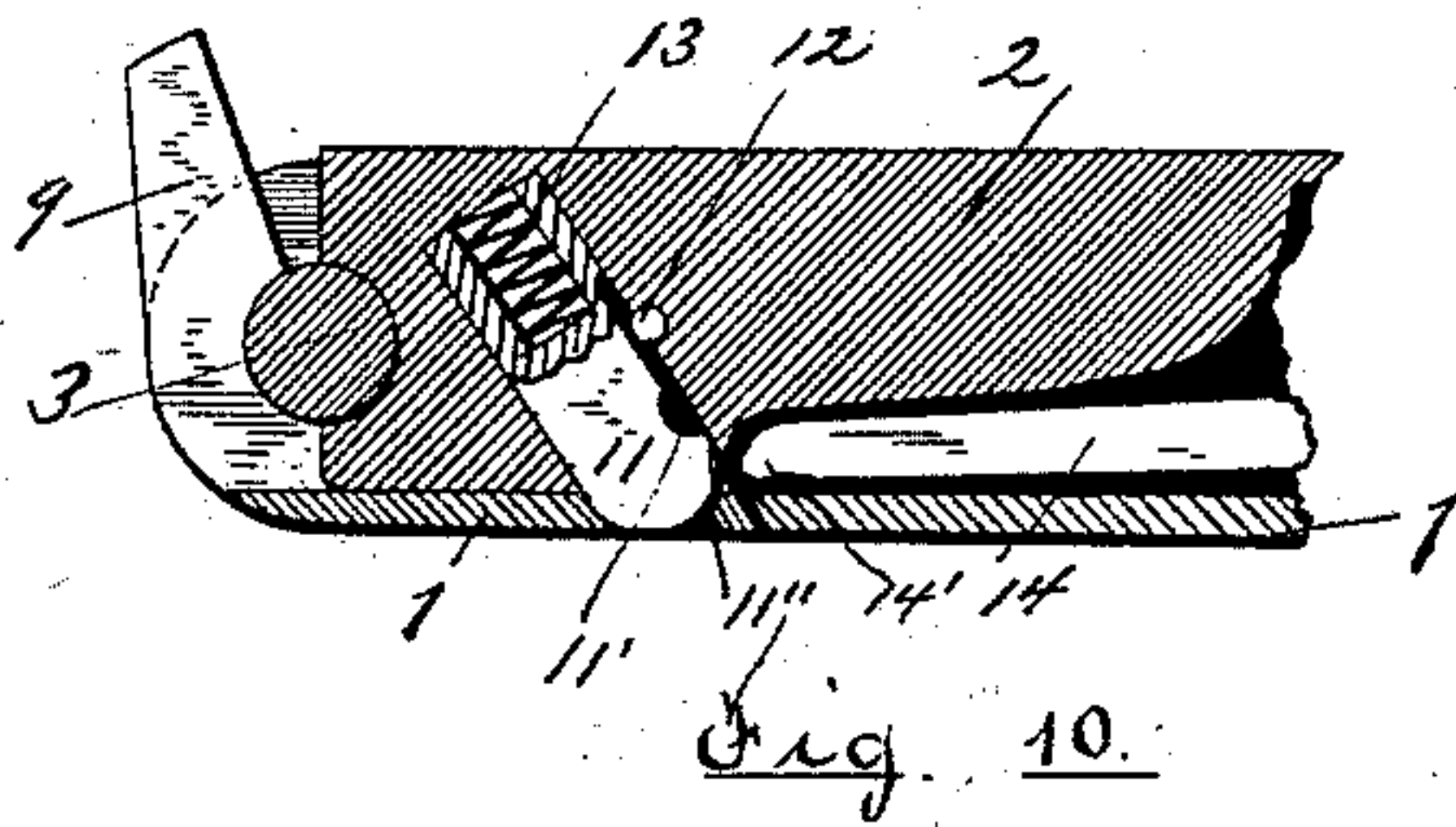


Fig. 10.

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UNITED STATES PATENT OFFICE.

MARTIN BYE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO SULLIVAN
FOREHAND, OF SAME PLACE.

BREECH-LOADING GUN.

SPECIFICATION forming part of Letters Patent No. 441,395, dated November 25, 1890.

Application filed June 28, 1890. Serial No. 357,061. (No model.)

To all whom it may concern:

Be it known that I, MARTIN BYE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings, making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to breech-loading fire-arms, and more particularly to that class of fire-arms termed "breakdown internal hammer-guns."

The object of my invention is to improve upon and simplify the construction of breech-loading fire-arms of the class referred to and to reduce the number of parts of the mechanism employed.

My invention consists in certain novel features of construction and operation of a breech-loading fire-arm, as will be hereinafter fully described.

I have shown in the drawings my improvements applied to a double-barrel gun; but they may be equally well applied to and used in a single-barrel gun, if preferred.

Referring to the drawings, Figure 1 is a sectional elevation longitudinally of the mid-rib with the gun closed and the several parts shown in the positions they occupy after the gun has been fired. Fig. 2 represents a view similar to Fig. 1, showing the barrels broken down from the frame and the hammer cocked and the trigger locked. Fig. 3 is a plan view of the barrels and a part of the frame locked together, as shown in Fig. 1. Fig. 4 is an end view of the thumb-lever for locking the barrel to the frame, looking in the direction of the arrow *a*, Fig. 3. Fig. 5 is a side elevation of one of the hammers detached. Fig. 6 is a rear edge view of one of the hammers, looking in the direction of arrow *b*, Fig. 5. Fig. 7 represents the stirrup, which connects the hammer with its mainspring. Fig. 8 is a plan view of the sear and trigger detached. Fig. 9 is a side elevation of the sear and trigger, looking in the direction of arrow *c*, Fig. 8; and Fig. 10 is a detail showing the cocking-

pin detached from its engaging-lever to allow of the free removal of the barrels from the frame after the fore end (not shown) has been removed, and also to allow of the breaking down of the gun without cocking the hammer.

I have shown in the drawings only such parts of a breech-loading fire-arm as are necessary to fully illustrate the nature and application of my improvements, so that the same may be readily understood by those skilled in the art.

In the accompanying drawings, 1 is the frame of the gun, and 2 the barrel portion hinged to the front part of the frame on the pin 3. The mid-rib 4 of the barrel portion is provided with a notch 5 at its rear end, (see Fig. 2,) which is engaged by the nose 6 on the thumb-lever 7, as shown in Fig. 1, to lock the barrels to the frame, as is customary in this class of fire-arms.

The barrel portion 2 is provided with a shell-extractor 8 in the ordinary way, which is operated to extract the shells when the barrels are broken down, as indicated in Fig. 2, by the extractor-arm 9, located in the front part of the frame 1 in the ordinary way.

In an oblique opening 10 in the lower part of the barrel portion 2 is located a cocking-pin 11, which has a sliding motion in and out, and is held in said opening and prevented from being disengaged therefrom by a pin 12, extending transversely of a depression in the upper part of said cocking-pin 11. (See Figs. 1 and 2.) A spiral spring 13 is seated within the end of the cocking-pin 11 and has its bearing against the end of the opening 10, and tends to force the cocking-pin outwardly and hold it in its extreme outward position, as shown in Figs. 1 and 2. The cocking-pin 11 has a notch 11' in its upper surface at its outer end, forming a hook 11'', which is adapted to engage with a depression 14' in the lower surface of the end of the intermediary lever 14, located within the frame portion 1 and pivoted on a pin 15.

In breaking down the gun the hooked end of the cocking-pin 11 engages the end of the intermediary lever 14 and raises it up, as shown in Fig. 2. When the barrels are closed down, a flat spring 16, secured by screw 17 within the frame 1, with its free end pressing

against a shoulder 15' on the intermediary lever 14 at the opposite side of its pivot-point from the end engaged by the cocking-pin, serves to force back the intermediary lever 5 into its normal position, as shown in Fig. 1. The upper part of intermediary lever 14 is provided with a notch 18 and a projecting lug 14''. Into the notch 18 extends a lug 19' on the cocking-slide 19. Said cocking-slide 10 19 is also provided with a notch 20, into which extends the projection 14'' on the intermediary lever 14.

The cocking-slide 19 is arranged to have a slight longitudinal motion within the frame 1, 15 and is engaged at its forward end to be moved back and forth by the intermediary lever 14 in the manner above described, and clearly shown in the Figs. 1 and 2 of the drawings. The rear end of the cocking-slide 19 is adapted 20 to engage the side extension 21 on the hammer 22 to force back said hammer to cock the same when the barrels are broken down, as shown in Fig. 2.

The hammer 22 is pivoted on a pin 23 25 within the frame 1, and is preferably made of the shape shown in Figs. 5 and 6, having the side extension 21, with which the cocking-slide 19 comes in contact, made integral therewith and provided with a vertical slot 24 30 therein, within which extends and is pivoted on a pin 25 the lower end of the stirrup 26. The upper end of the stirrup 26 is provided with projecting pins 27, upon which is hooked the free end of the hammer-spring 28, the 35 other end of said spring being secured in the frame 1. The lower end of the stirrup 26 has an oblong slot 26' therein, through which the fastening-pin 25 extends. Said slot 26' allows for the rebound of the hammer after firing.

40 The side extension 21 of the hammer 22 is provided at its lower part with the notch 21', with which the end 29' of the nose of the sear 29, pivoted on a pin 30 within the frame 1, engages, and holds the hammer cocked 45 when the same is pushed back by the cocking-slide 19, operated by the intermediary lever 14 and the cocking-pin 11, when the barrels are broken down, in the manner before described.

50 The sear 29 and trigger 30' are made in one piece, as shown in Figs. 8 and 9, and the nose 29' is held in its upward position, adapted to engage the notch 21' in the hammer to hold the same cocked by means of a spring 31, secured in this instance at its rear end in the 55 frame 1 by a pin 32, with its free end bearing on the upper side of the sear 29, and trigger 30 on the opposite side of the pivot-point of the same from the nose 29'. (See Figs. 1 60 and 2.)

In the central part of the frame 1, back of the hammers, is located the trigger-locking lever 33, which consists of an angle-lever having the two arms 33' and 33'' and pivoted at 65 34 on a sliding bar 35, placed centrally of the frame and longitudinally thereof and in the upper part thereof, and of substantially the

shape shown in Figs. 1 and 2 of the drawings. The front end of the sliding bar 35 extends at the side of the hammer above the side extension 21 thereof, so as not to interfere with 70 the free movement of said hammer and the parts connected therewith.

The forwardly-projecting end 35' of the slide 35 extends forward beyond the hammer, as 75 shown in Fig. 1, and is adapted to be engaged by the inner end of cocking-slide 19. The opposite end of the sliding bar 35 is made hooked and adapted to engage with notches 36 within the frame 1. 80

The sliding bar 35 is operated, when desired, to lock and unlock the triggers through the locking-lever 33 by means of the thumb-slide 39, located on the upper side of the frame 1 at the rear of the thumb-lever 7, 85 and connected with the sliding bar 35 by an arm 37, extending down from the thumb-slide 39 through a slot 38 in the frame 1, and in this instance through a slot in the hooked end of the sliding bar, thus causing said bar 90 to move with the thumb-slide, and at the same time allowing the hooked end of the bar to have a slight up-and-down motion to be engaged with or disengaged from the notches 36.

The trigger-locking lever 33 has its upper 95 angle-arm 33' extending in a slot in the sliding bar 35. A flat spring 40, retained in place by a pin 41 on the arm 37 of the thumb-slide 39 and bearing at one end on the short arm 33' of the locking-lever 33 and at the other 100 end on the hooked end of the sliding bar 35, serves to hold the arm 33' in its slot in the sliding bar 35, and at the same time allows of a slight movement of the locking-lever 33 on its pivot-point 34. The spring 40 also 105 holds the hooked end of the sliding bar 35 in one of the notches 36.

The long arm 33'' of the trigger-locking lever 33 extends down at substantially right angles to the sliding bar 35, and its lower end 110 is adapted to extend into notch 42 or 42', made in the upper surface of the trigger 30. Said notches 42 and 42' are made deep enough, so that the end of the locking-lever 33 extending therein will not interfere with 115 the free movement of the trigger. A third notch 43 is made in the upper surface of the trigger between the notches 42 and 42', which notch is not so deep as the other notches, and when the end of locking-lever 33 extends into 120 the notch 43, as shown in Fig. 2, it locks the trigger and prevents any movement of the same and of the sear made integral with the trigger.

When the end of the locking-lever extends 125 into either of the notches 42 or 42' and the hooked end of the sliding bar 35 extends into the corresponding end notch 36 in the frame 1, as shown in Fig. 1, the trigger is free to operate. When the hooked end of the slide 35 130 extends into the middle notch 36 in the frame 1, the end of the lever 33 will extend into the notch 43, as shown in Fig. 2, and block the trigger to prevent any movement of the same

or of the sear until the thumb-slide 39 is moved in one direction or the other to cause the sliding bar 35 to be moved, and with it the locking-lever 33, until the end of said lever enters one of the notches 42 or 42', and the hooked end of the sliding bar 35 enters the corresponding notch 36.

After the gun has been fired the locking-lever 33 and parts connected therewith are in the position shown in Fig. 1. The breaking down of the gun, as shown in Fig. 2, causes the sliding bar 35, carrying the locking-lever 33, pivoted thereto, to be forced back by the cocking-slide 19 into the position shown in Fig. 2, with the end of the locking-lever 33 extending into the middle notch 43, thus automatically blocking the trigger and preventing the firing of the gun until the thumb-slide 39 is moved to move the sliding bar 31 and cause the end of the locking-lever 33 to enter the notch 42 or 42'.

In case it is not desired to use the trigger-locking mechanism the thumb-slide 39 is moved toward the rear until the hooked end of sliding bar 35 extends into the rear notch 36 and the end of the locking-lever 33 extends into the notch 42' in the trigger, when the trigger will be free to operate after the cocking of the hammer.

I will now describe another feature of my invention relating to the improved construction of the thumb-lever 7 and the means for operating the same. The thumb-lever 7 extends longitudinally on the upper part of the frame 1, and is secured thereto by a screw 44 and adapted to have a movement outwardly on said frame to release the barrels, and when the barrels are returned to be automatically moved in to lock the same in place, all in the ordinary way.

My improvement relates to the means for automatically returning the thumb-lever 7, and consists of a bent spring 45, which rests in a cavity 46, made in the upper part of the frame 1 and encircles the knob 47, into which the lower end of the screw 44 extends. One end of said spring 45, which is of the shape shown by dotted lines, Fig. 3, bears against one side of the cavity 46, in which it is placed, and the other end bears against a pin 48, extending down from the lower side of the thumb-lever 7. (See Fig. 4 and dotted lines Fig. 3.) A pin 49, seated in a cavity 50 in front of the cavity 46 in the frame 1, (see Fig. 2,) actuated by a spiral spring 51, serves to hold the thumb-lever 7 in its outward position against the action of the spring 45, the upper end of said pin 49 entering into a depression 52 (see Fig. 4) in the rear end of thumb-lever 7. The thumb-lever locking-pin 49 is provided with a shoulder 49', with which the inner end of the barrel portion 2 comes in contact, as indicated in Fig. 1, when the barrels are shut down, causing said pin to be pressed down against the action of the spring 51 and its upper end to be disengaged from the depression 52 in the thumb-lever 7, leaving said

thumb-lever free to return to its normal position actuated by the spring 45.

Another feature of my improvements relates to the cocking-pin 11, and consists in so arranging the cocking-pin in the barrel portion of the gun that the end of the cocking-pin will project beyond the frame 1, so that the same may be engaged by the thumb or finger of the operator from the outside of the gun and pushed in so as to disconnect said cocking-pin from the hooked end of intermediary lever 14, as shown in Fig. 10, to allow of the breaking down of the gun without operating the cocking mechanism and cocking the hammer, and, further, the disconnection of the cocking-pin from the intermediary lever 14, as above described, allows of the free removal of the barrel portion of the gun from the frame.

The advantages of my improvements in breach-loading fire-arms will be appreciated by those skilled in the art. It will be understood that the details of construction of some of the parts of my improved mechanisms may be varied from what is shown and described without departing from the principle of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In fire-arms wherein the breaking of the gun serves to cock the hammer, the combination, with the hammer and the sear adapted to engage a notch in the hammer, of a cocking-slide adapted to engage and cock the hammer, an intermediary lever to engage and operate the cocking-slide, and the cocking-pin supported in the barrel portion to engage and operate the intermediary lever, substantially as set forth.

2. In fire-arms provided with a hammer cocked by the breaking of the weapon, the combination, with the hammer, a sear, and trigger made in one piece, of the cocking-slide to engage said hammer, intermediary lever operating said slide, and a cocking-pin operating said lever, substantially set forth.

3. In fire-arms, the combination, with a hammer having an extension at one side thereof made integral therewith, of mechanism for cocking said hammer upon the breaking of the gun, consisting of the cocking-slide adapted to engage said hammer, an intermediary lever operating said slide, and a cocking-pin operating said lever, substantially as set forth.

4. In fire-arms, the combination, with the hammer having an extension at one side thereof made integral therewith, a slot in said extension, and the hammer-spring, of the stirrup having an oblong hole in its lower part and pivoted in said slot by a pin passing through said oblong slot for connecting the hammer with its spring, substantially as set forth.

5. In fire-arms, the combination, with the cocking mechanism consisting of a cocking-

pin supported in the barrel portion, an intermediary lever operated by said cocking-pin, a cocking-slide operated by said lever, and the hammer cocked by said slide, of the sear 5 which engages and holds the hammer cocked, the trigger, and the trigger-locking mechanism consisting of a sliding bar carrying an angle-lever, with one arm extending into notches in the upper surface of the trigger, 10 said bar actuated by the cocking-slide to lock the trigger automatically upon the breaking down of the gun, substantially as set forth.

6. In a fire-arm, the trigger-locking mechanism consisting of a sliding bar supported 15 in the upper part of the frame at the rear of the cocking mechanism and carrying an angle-lever pivoted thereto, with one arm extending in a slot in said bar and held therein by a spring, and the other arm extending into 20 notches in the upper surface of the trigger, for the purpose stated, substantially as set forth.

7. The combination, with a thumb-lever and its actuating-spring, of the spring-actuated pin placed in a depression in the frame 25 at the pivoted end of the thumb-lever, with its upper end adapted to be engaged with and disengaged from the thumb-lever, for the purpose stated, substantially as set forth.

8. In a fire-arm, the combination, with the 30 frame and the barrel portion, of the spring-actuated cocking-pin supported in the barrel portion, with its outer end extending beyond the frame when the barrels are locked and adapted to be disconnected from the cock- 35 ing mechanism, for the purpose stated, by pushing in said pin, substantially as set forth.

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