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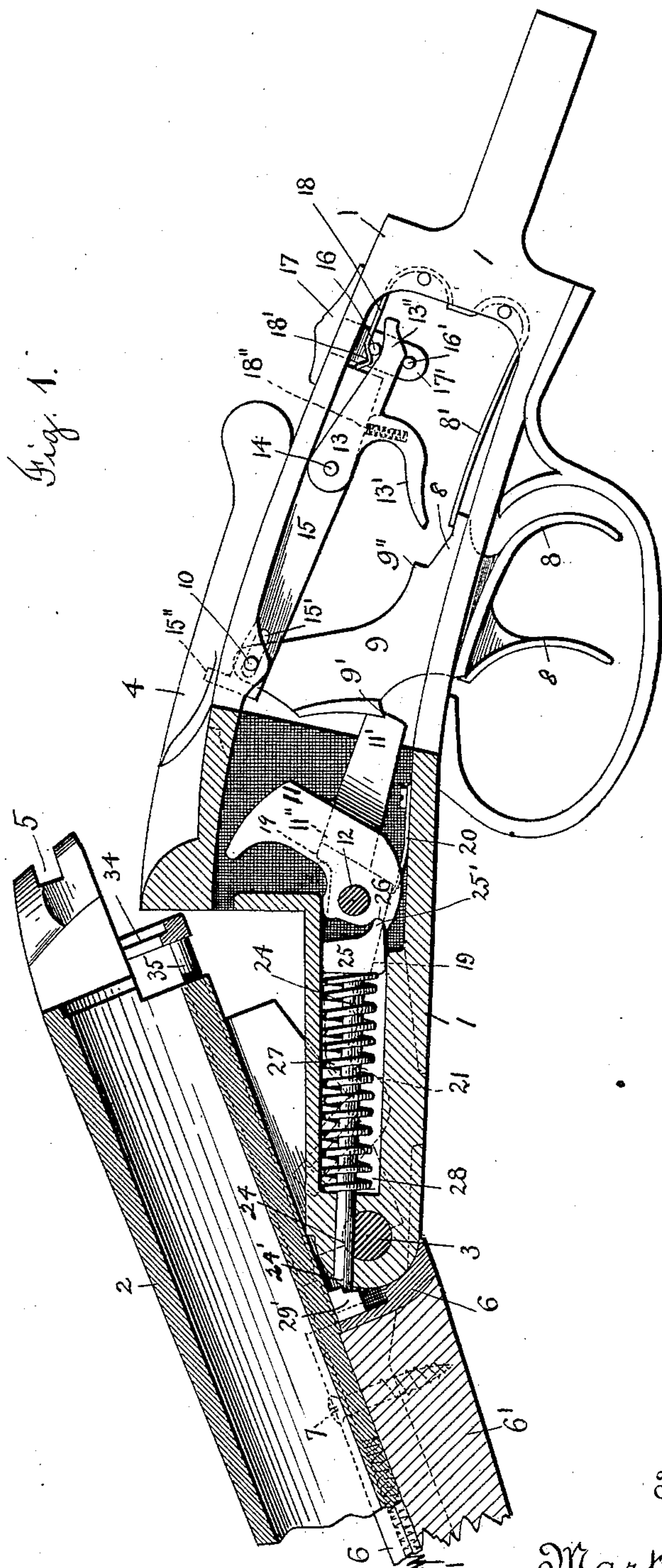
3 Sheets—Sheet 1.

M. BYE.

EJECTING MECHANISM FOR BREAKDOWN GUNS.

No. 535,528.

Patented Mar. 12, 1895.



Witnesses
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(No Model.)

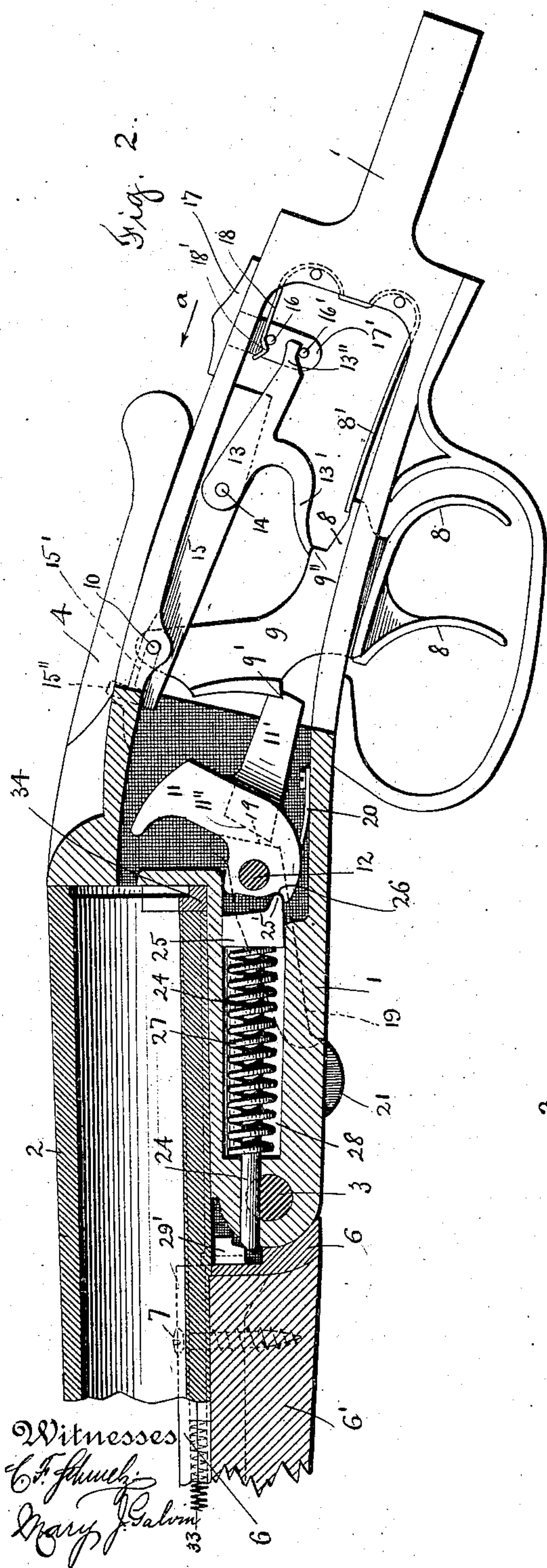
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M. BYE.


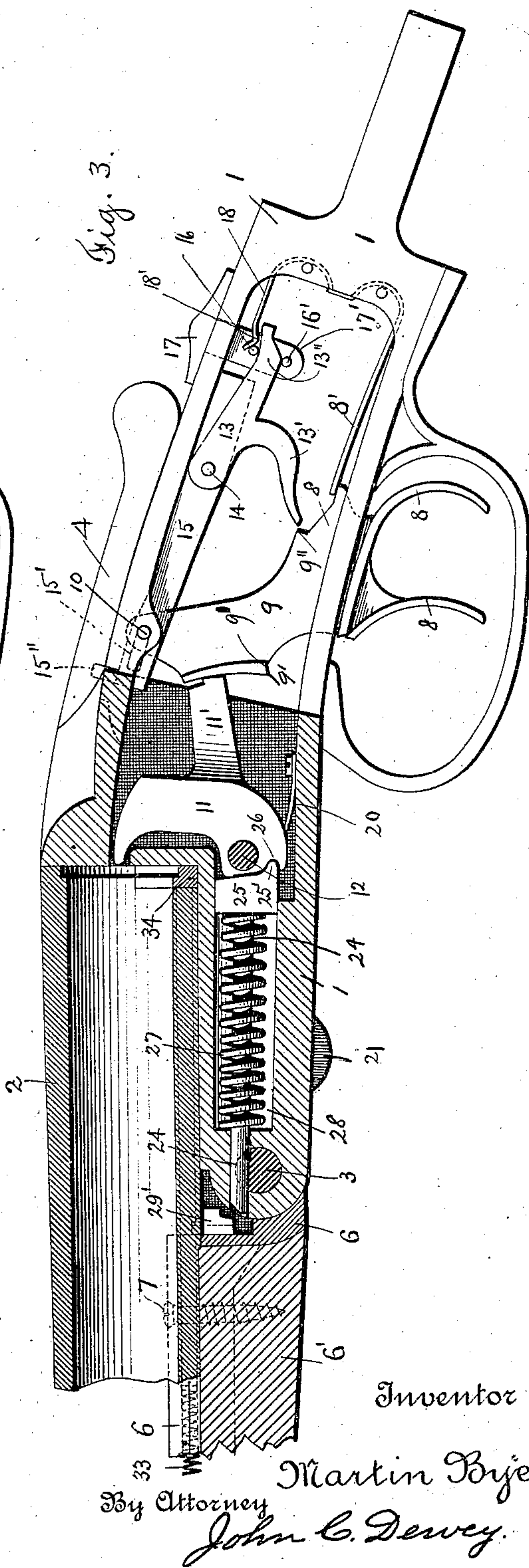
EJECTING MECHANISM FOR BREAKDOWN GUNS.

No. 535,528.

Patented Mar. 12, 1895.



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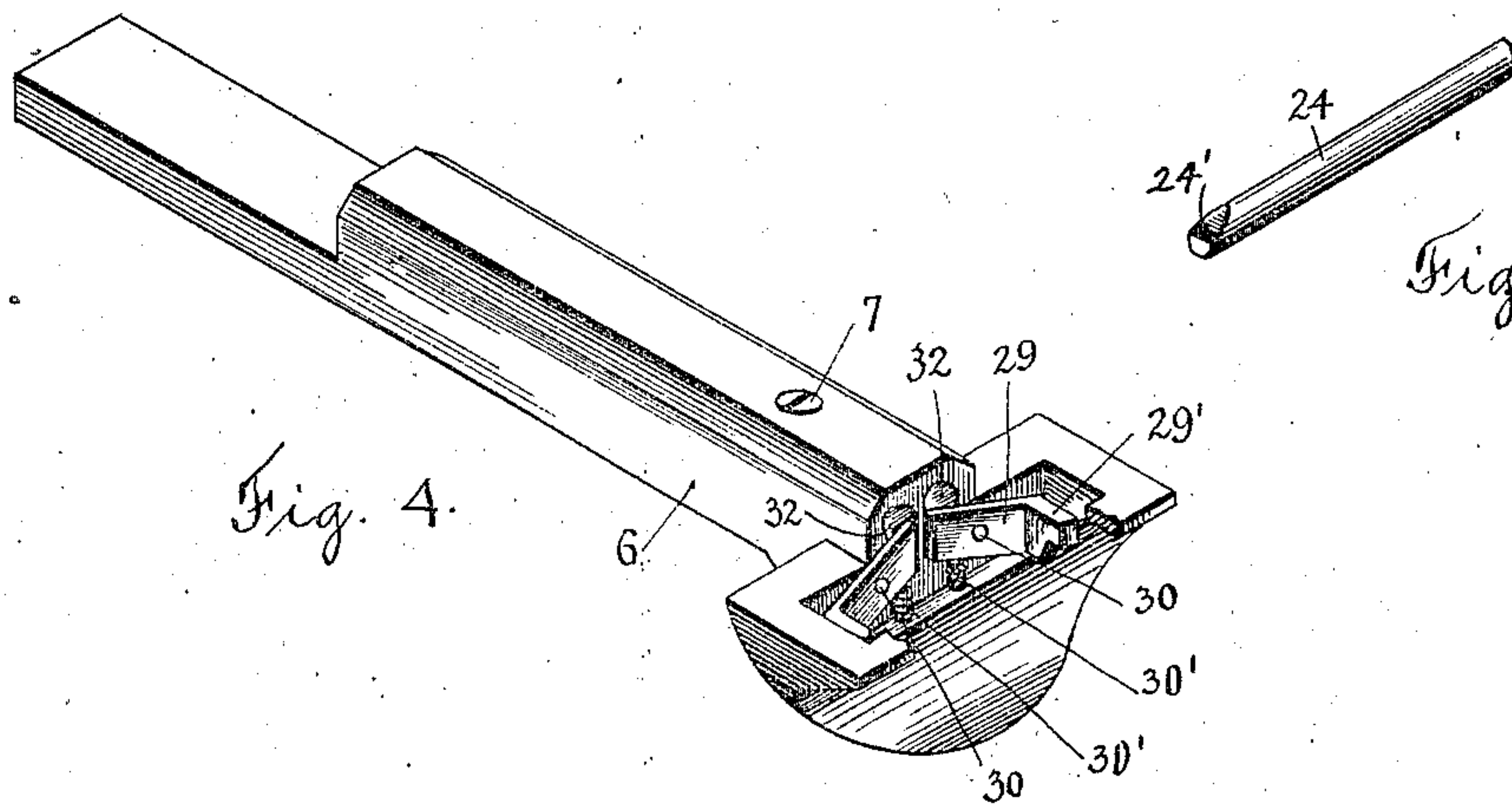


Fig. 4.

Fig. 6.

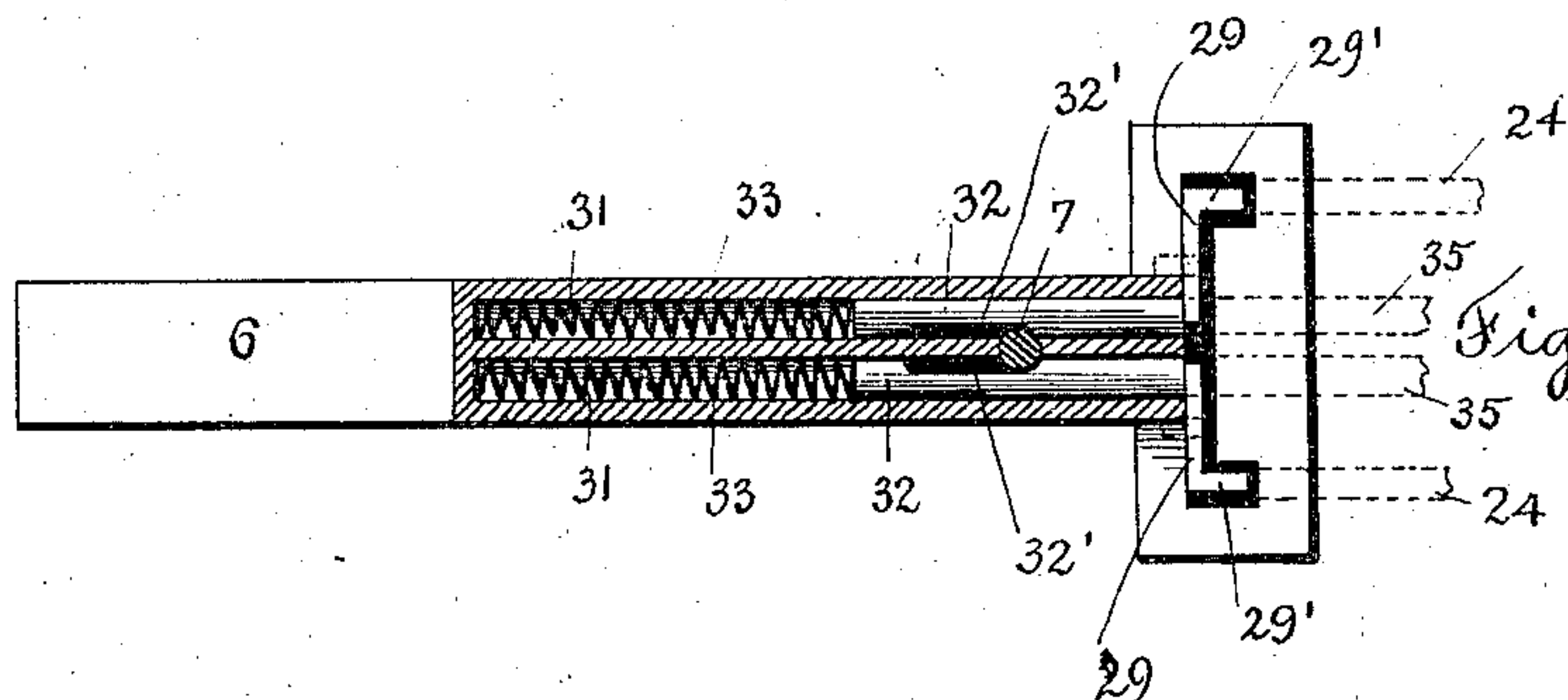


Fig. 5.

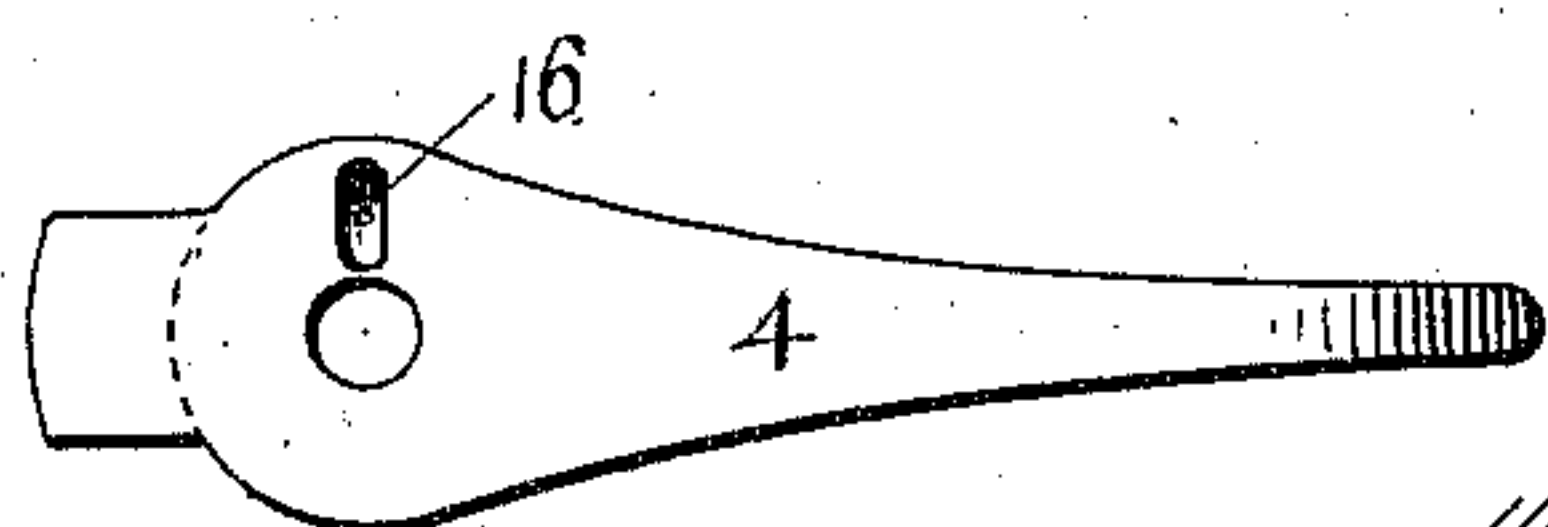


Fig. 7.

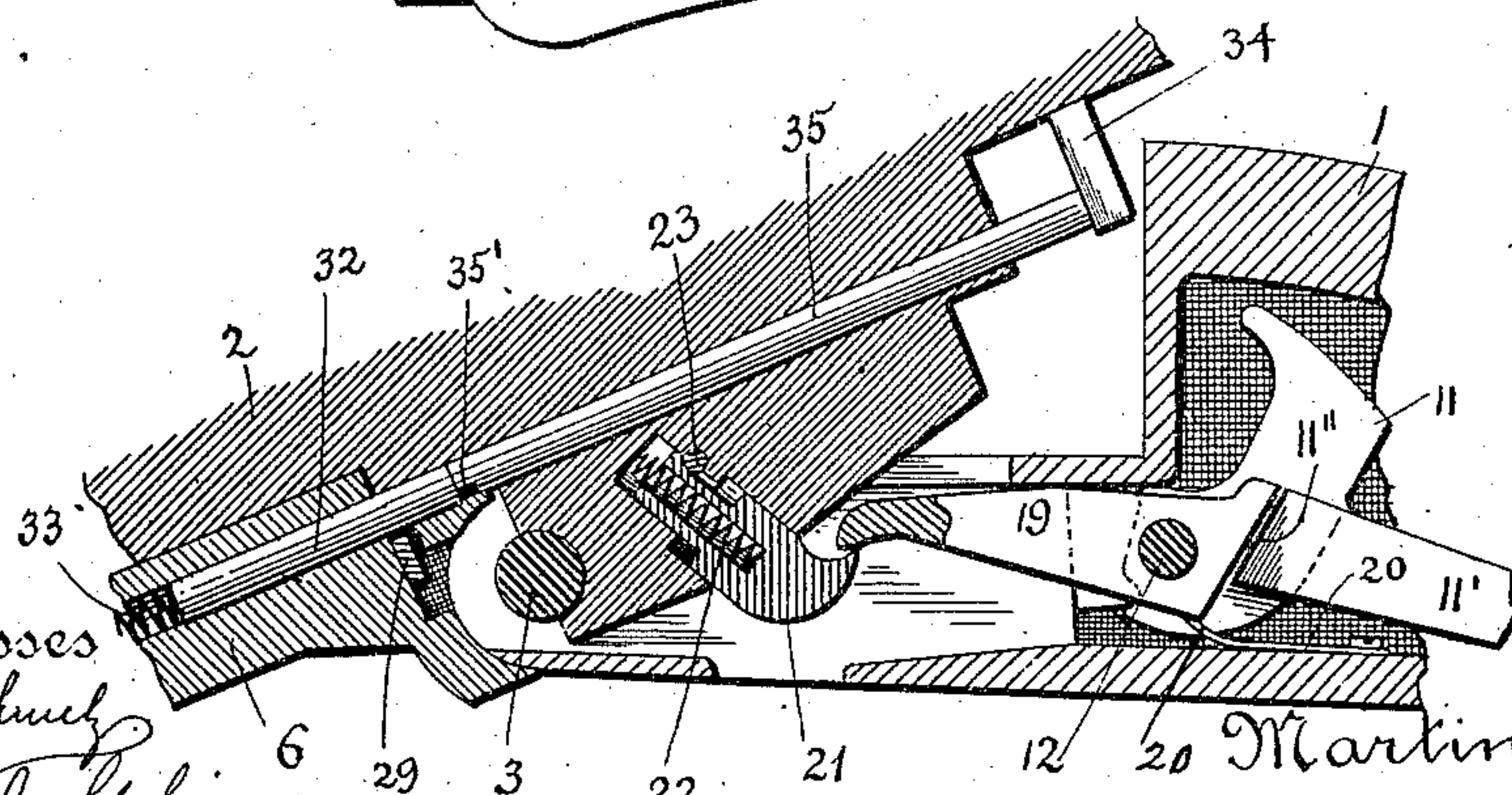


Fig. 8.

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UNITED STATES PATENT OFFICE.

MARTIN BYE, OF WORCESTER, MASSACHUSETTS.

EJECTING MECHANISM FOR BREAKDOWN GUNS.

SPECIFICATION forming part of Letters Patent No. 535,528, dated March 12, 1895.

Application filed July 19, 1894. Serial No. 517,964. (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 Firearms; 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 firearms, and to that class of firearms, generally termed, "break down internal hammer guns," in which the barrel portion is jointed to the frame.

The object of my invention is to improve upon the construction of firearms, of the class above referred to, as now ordinarily made, and more particularly to simplify the construction, and reduce the number of parts, and provide an improved trigger locking mechanism, to prevent the accidental discharge of the gun, and also an improved shell ejector mechanism, to cause the discharged shell, upon the breaking of the gun, to be forcibly ejected from the barrel.

My invention consists in certain novel features of construction of a breech loading firearm of the class above referred to, and more particularly of the trigger locking mechanism, and the shell ejector mechanism.

Referring to the drawings:—Figure 1 is a longitudinal section of a portion of a gun, of my improved construction, taken through one barrel, representing the several parts in the positions they occupy after the gun is fired and broken. Some of the concealed parts are shown by broken lines. Fig. 2 is a longitudinal section, corresponding to Fig. 1, but shows the gun closed preparatory to firing, and the trigger locked. Fig. 3 corresponds to Fig. 2, but shows the parts in the position they occupy after the trigger has been unlocked and the gun fired. Fig. 4 is a perspective detail of the fore end strap or plate, detached, and partially broken away at one end, showing a part of the shell ejector mechanism. Fig. 5 is a top view, and partial section of the parts shown in Fig. 4. The ejector rods, and the hammer spring rods or followers which oper-

ate the latches of the shell ejector mechanism are shown by broken lines. Fig. 6 shows the hammer spring rod or followers, detached, with one end beveled to engage the latch of the shell ejector mechanism. Fig. 7 is a bottom view of the thumb lever, detached, and Fig. 8 is a central longitudinal section, through the mid rib of the gun, showing by full lines some of the parts which are not shown in Fig. 1.

I have shown in the drawings sufficient parts of a breech loading firearm, to illustrate the construction and operation of my improvements applied thereto.

In the accompanying drawings, 1 is the gun frame, and 2 the barrel portion, jointed to the front part of the frame, by the pin 3, in the usual way. The barrel portion 2 is locked to the frame 1 by the thumb lever 4, which engages the notch 5 in the rear of the barrel portion, in the usual way. The wood portion 6' of the fore end, is secured to the fore end strap 6, by a screw 7. Within the fore end strap 6 is located my improved mechanism, for operating the shell ejectors.

I will first describe my improved trigger locking mechanism. The trigger 8 and the sear 9 are made integral or in one part, and hung or pivoted on a transverse pin 10, secured in the upper part of the frame 1. The sear 9 is provided with a projection or nose 9', adapted to engage the notched end of the rear extension 11' of the hammer 11, as shown in Figs. 1 and 2, and is held in engagement therewith by a spring 8', which engages the rear projecting part of the trigger 8.

The trigger locking lever 13 is pivoted on a pin 14, in the sliding bar 15, which is supported and adapted to slide longitudinally in the upper part of the frame 1, and its front end is provided with a longitudinal slot 15', through which extends the pivot pin 10 of the sear and trigger. The slide 15 is also provided in this instance with an upward extension or lug 15'', at its front end, which is adapted to extend into an oblong hole or recess 16, in the under side of the thumb lever 4. See Fig. 7.

The locking lever 13 has two diverging arms 13', and 13''. The end of the lower arm 13' is adapted to extend over and engage a projection 9'' on the trigger 8 as shown in Fig.

2, to lock the trigger, and prevent the releasing of the hammer, and the accidental discharge of the gun. The other arm 13'' of the locking lever 13 has its outer end beveled or inclined, and slightly notched, and extends rearward between two pins 16 and 16' on the downwardly extending arm 17' of the thumb slide 17. Said arm 17' extends through a longitudinal slot in the upper portion of the frame, and is adapted to move with the thumb slide 17, as the same is moved forward or backward. The hooked end 18' of a spring 18 extends over the pin 16 on the arm 17', and serves to hold said arm and thumb slide 17, in its backward or forward position, as shown in Figs. 2 and 3. A small coiled spring 18'', is inclosed within a recess in the locking lever 13, as shown in Fig. 1, and bears at its upper end against the under side of the slide 15, and acts to move the locking lever 13 down, to cause the end of the arm 13' thereof to engage with the projection 9'' on the trigger 8, when the slide 15 is moved backward, as shown in Fig. 2.

From the above description in connection with the drawings, the operation of the trigger locking mechanism will be readily understood by those skilled in the art.

In Fig. 2 the hammer is cocked, and the locking lever in engagement with the trigger, to lock the same. When it is desired to fire the gun, the thumb slide 17 is pushed forward, in the direction of arrow *a* Fig. 2, causing the inclined edge of the arm 13'', of the locking lever 13, to ride up on the pin 16', and tilt the locking lever 13, and cause the lower end of the arm 13' thereof to be disengaged from the projection 9'' on the trigger 8, as shown in Fig. 3. The trigger is now free to operate to fire the gun, as shown in Fig. 3. It will be observed that the forward motion of the thumb slide 17, to move the locking lever 13 and unlock the trigger, does not move the slide 15, which is only moved by the movement of the thumb lever 4, with which said slide is in indirect engagement, and there is no direct engagement between the slide 15 and the thumb slide 17. After the gun has been fired, the side movement of the thumb lever 4, (to release the barrels to break down the gun,) by reason of the engagement of the projection 15'' on the slide 15, with the oblong recess 16 in the lower surface of the thumb lever 4, will cause the slide 15, carrying the locking lever 13, to be moved backward, as shown in Fig. 1, leaving the trigger free to move, to allow the cocking of the hammer, as shown in said Fig. 1. At the same time the rear end of the slide 15 coming in contact with the thumb slide arm 17' will move back the thumb slide 17, and cause the end 18' of the spring 18 to hook over the pin 16, as shown in Fig. 1. When the gun is closed, the return movement of the thumb lever 4, to lock the barrels to the frame, will cause the slide 15, carrying the locking lever 13, to move forward and bring the end of the arm 13' of the locking lever 13

over the projection 9'' on the trigger 8, to automatically lock the trigger, as shown in Fig. 2, leaving the thumb slide 17 in its backward position, preparatory to being moved forward to unlock the trigger, as shown in Fig. 3.

I will now describe the mechanism for operating the shell ejectors. Said mechanism is operated in connection with the hammer spring rod or follower.

The hammer 11 is cocked by the cocking lever 19, which is loosely mounted on the pivot pin 12 of the hammer, and is acted on by a spring 20, bearing on its lower rear corner. The rear end of the cocking lever 19 is adapted to engage a side extension 11'', on the inside of the hammer, as shown in Fig. 8. The forward end of the cocking lever 19 is engaged by the projecting end of the cocking pin 21. Said cocking pin 21 extends into a recess in the lower part of the barrel portion 2, and a spring 22 inclosed within a chamber in said pin, acts to force said pin outwardly. A transverse pin 23 extends into a depression in said cocking pin 21, to prevent said cocking pin from coming out too far, as shown in Fig. 8. The construction of the cocking pin 21 corresponds to the construction and operation of the cocking pin 11, shown and described in my Patent No. 441,395, of November 25, 1890, to which reference is hereby made.

It will be observed that upon the breaking of the gun, the end of the cocking pin 21 will engage with the end of the cocking lever 19, and rock said lever on the pin 12, and the other end of said cocking lever engaging with the side extension 11'' on the hammer 11, will force back said hammer to cock the same, as shown in Fig. 8. The closing of the barrels will allow the cocking lever 19, actuated by the spring 20, to move down, as shown by dotted lines Fig. 2. The hammer 11 is operated to fire the gun, on the pulling of the trigger, by a spring actuated rod or follower 24, supported and adapted to move longitudinally in a recess in the frame 1, below the barrel portion. The rod 24 has a head 25 fast on the inner end thereof, and said head 25 is provided with a rounded projection 25' adapted to extend into a curved recess 26, in the front edge of the hammer 11, below the pivot point thereof. A spiral spring 27 encircles the rod 24, and bears at one end against the end of the recess 28 in the gun frame, and at its other end against the head 25 on said rod 24. Said spring serves to actuate the rod, to cause the head 25 to act on the hammer to fire the gun. The outer end of the rod 24 is beveled, as shown in Fig. 6, and is adapted to extend under the notched end 29' of a dog 29, see Fig. 4 hung on a pin 30, secured in the end of the fore end 6. A coiled spring 30' extends under the other end of the dog 29, and acts to keep said end in its upper position.

It will be understood that the gun shown in the drawings is a double barreled gun, and the parts shown in Figs. 4 and 5 are in duplicate.

Within recesses or chambers 31 in the upper part of the fore end strap or plate 6, which extends between the barrels, are contained the longitudinally moving spring actuated plungers 32, the outer ends of which are engaged by the ends of the spring actuated latches or dogs 29, as shown in Fig. 4, to hold said plungers within their chambers, against the action of the spiral springs 33, confined within the chambers 31. See Fig. 5. The screw 7, which secures the wood 6' of the fore end, to the fore end plate 6, extends through grooved or depressed portions 32', upon the inner surface of each pin 32, as shown in Fig. 5, and limits the outward motion of said plungers.

By locating the plungers 32 in the upper part of the fore end strap 6, and between the barrels, they will extend in the same horizontal plane as the ejector rods, and the ends of said plungers will engage directly with the ends of the ejector rods, and by this construction the wood portion 6' of the fore end is not cut into or weakened, but remains intact.

The shell ejector 34 may be of the usual construction, and is provided with the ejector rod 35, which is supported and moves longitudinally in the lower part of the barrel portion, as shown in Fig. 8. The inner end of the ejector rod 35, abuts on the outer end of one of the plungers 32, and the lower part of said end is notched as shown at 35', Fig. 8, to allow the inner end of the dog 29 to extend up in front of the rod 32, as shown in Fig. 4.

From the above description in connection with the drawings, the operation of my improved shell ejector mechanism will be readily understood by those skilled in the art.

After the gun has been fired, and before the same is broken, the several parts of the operating mechanism are in the position shown in Fig. 3. Upon the breaking of the gun, the cocking lever 19, operated by the cocking pin 21, as above described and shown in Fig. 8, cocks the hammer, and the cocking of the hammer, by reason of the engagement of the projection 25' on the head 25 of the follower of the rod 24, with the front edge of the hammer, forces forward said rod 24, and causes the inner beveled end 24' thereof to engage with the notched end 29' of the dog 29, at such time when the barrel has been broken down or tilted sufficiently far for the shell to be ejected free of the frame. The engagement of the end of the rod 24 with the end 29' of the dog 29, moves said latch on its pivot pin 30, and depresses the other end of said dog, against the action of the spring 31, thereby releasing the end of the plunger 32, and allowing the spring 33 to act to force out said plunger, and with it the ejector rod 35 and the ejector 34, as shown in Figs. 1 and 8, with sufficient force to eject the shell from the barrel.

It will be observed that the operation of the ejector mechanism for one barrel, is entirely independent of the operation of the

ejector mechanism for the other barrel, and in case one shell is not discharged, the breaking down of the gun to eject the discharged shell will not eject the other shell, for the hammer remaining cocked will act on the head 25 of the rod 24, to force forward said rod, and cause the beveled end thereof to engage with the lowest point of the end 29' of the dog 29, and operate the dog, to release the plunger 32, at the beginning of the breaking of the gun, to allow the ejector 34 to move out slowly, as the gun is broken, without ejecting the shell, but moving it out sufficiently to be pulled out by hand if desired.

It will be understood that the details of construction of some of the parts of my improvements for breech loading fire-arms, may be varied somewhat from what is shown and described, if desired, and the trigger locking mechanism applied to a gun of ordinary construction.

The advantages of my improved breech loading fire-arm will be readily appreciated by those skilled in the art. It is of very simple construction and operation, and there are few parts, which may be readily assembled in the gun frame, and the action of the ejector mechanism is to automatically eject the discharged shell from the barrel, on the breaking of the gun, so that a new shell may be immediately inserted in the barrel without any delay.

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

1. In a breech loading fire-arm, a trigger locking mechanism, consisting of a longitudinally sliding bar, supported in the upper part of the frame, at the rear of the cocking mechanism, said sliding bar adapted to be engaged at its front end by the thumb lever, to be moved thereby, and carrying the locking lever pivoted thereon, and said locking lever, provided with two arms, one adapted to engage the trigger, to lock the same, and the other adapted to engage the downwardly extending arm of the thumb slide, which operates to move said locking lever, to unlock the trigger without moving said sliding bar substantially as shown and described.

2. In a breech loading fire-arm, the combination with the sear and trigger made integral, of a locking lever to lock the trigger, said lever pivoted on a slide and provided with two arms, one adapted to engage the trigger, and the other having its end beveled and slightly notched and adapted to engage a pin on the thumb slide, and said thumb slide, the forward motion of which moves the locking lever to unlock the trigger, without moving the slide on which the trigger is pivoted, and said slide, carrying the locking lever, supported and adapted to move longitudinally in the upper part of the frame, and engaged by the thumb lever and moved thereby, and said thumb lever, substantially as shown and described.

3. In a trigger locking mechanism, the combination with a slide, supported and adapted to move longitudinally in the upper part of the frame, and provided with a projection at its front end adapted to engage the thumb lever, to be moved thereby, and said thumb lever, of a locking lever pivoted on said slide and adapted to move therewith, and to be moved independently thereof and provided with two arms, one adapted to engage the trigger to lock the same, and the other adapted to engage the downwardly extending arm of the thumb slide, to be moved thereby, to unlock the trigger without moving the slide on which said lever is pivoted, and said thumb slide, substantially as set forth.

4. In a breech loading fire-arm, the combination with the hammer, provided with a rearward projection adapted to be engaged by the sear, and a side extension adapted to be engaged by the cocking lever to cock the hammer, of said cocking lever, mounted on the hammer pivot pin, and a cocking pin for operating said cocking lever, and a spring actuated rod or follower for acting on the hammer to fire the same, substantially as set forth.

5. In the fore end of a gun, the combination with two longitudinally moving plungers, contained in chambers in said fore end, and spiral springs for actuating said plungers, also contained in said chambers, and a screw extending through depressions or grooves in said plungers, to limit the longitudinal movement thereof, and into the wood of the fore end, to secure the same to the fore end strap, of two spring actuated dogs pivoted at the end of the fore end strap, and adapted to extend in front of the plungers above mentioned, to hold the same in place, and to be moved away from said plungers to allow the same to operate the ejector rods, to eject the shells, substantially as shown and described.

6. In a double barrel breech loading fire arm, the combination, with the fore end strap provided with longitudinal chambers, of a spring actuated plunger within each chamber, an ejector rod for each chamber, a catch or dog for each plunger, and means intermediate the hammer and the ejector, actuated by the hammer, for releasing the dog at the initial movement of the breaking when the hammer is cocked, and at the final opening movement

when the gun has been fired, whereby the cartridge is ejected or extracted accordingly as the gun has been fired or not, substantially as set forth.

7. In a double barrel breech loading fire arm, the combination, with the fore end strap provided with longitudinal chambers, of a spring actuated plunger within each chamber, an ejector for each plunger, a longitudinally movable hammer spring rod, and means between the plunger and the rod, actuated by the rod, for releasing the plunger at the initial movement of breaking when the hammer is cocked, and at the final opening movement when the gun has been fired, whereby the cartridge is ejected or extracted accordingly as the gun has been fired or not, substantially as set forth.

8. In a double barrel breech loading fire arm, the combination, with the fore end strap provided with longitudinal chambers, of a spring actuated plunger within each chamber, a dog pivotally secured to the end of the strap for each chamber, one end of which is adapted to move over the mouth of the chamber, and the opposite end is provided with shoulders, an ejector rod for each plunger, and means for engaging with one of the shoulders of the dog when the gun is broken and the hammer is cocked, and with the other shoulder when the hammer is at rest, substantially as set forth.

9. In a double barrel breech loading fire arm, the combination, with the fore end strap provided with longitudinal chambers, of a spring actuated plunger within each chamber, an ejector rod for each plunger, a dog pivotally secured to the end of the strap for each plunger, one end of which is adapted to move over the mouth of the chamber, and the other end is provided with shoulders, of a longitudinally movable hammer spring rod for each plunger, the end of which is adapted to engage with one of the shoulders, when the gun is broken and the hammer is cocked, and with the other shoulder when the hammer is at rest, substantially as set forth.

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