No. 629,142. Patented July 18, 1899.

# N. G. WHITMORE.

## BREECH LOADING FIREARM.

(Application filed Oct. 22, 1898.)

(No Model.) 2 Sheets—Sheet 1.

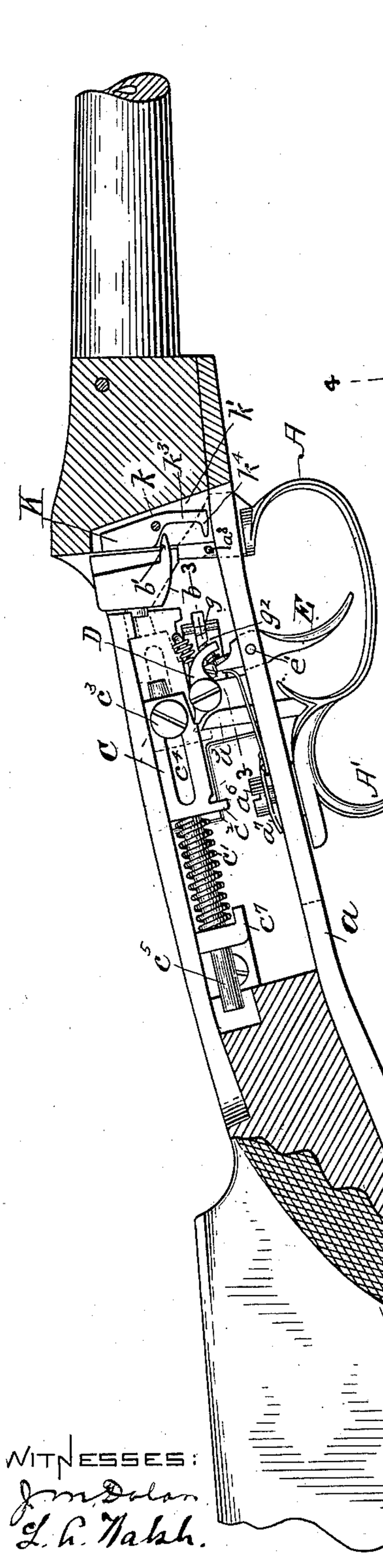

Fig. 1.

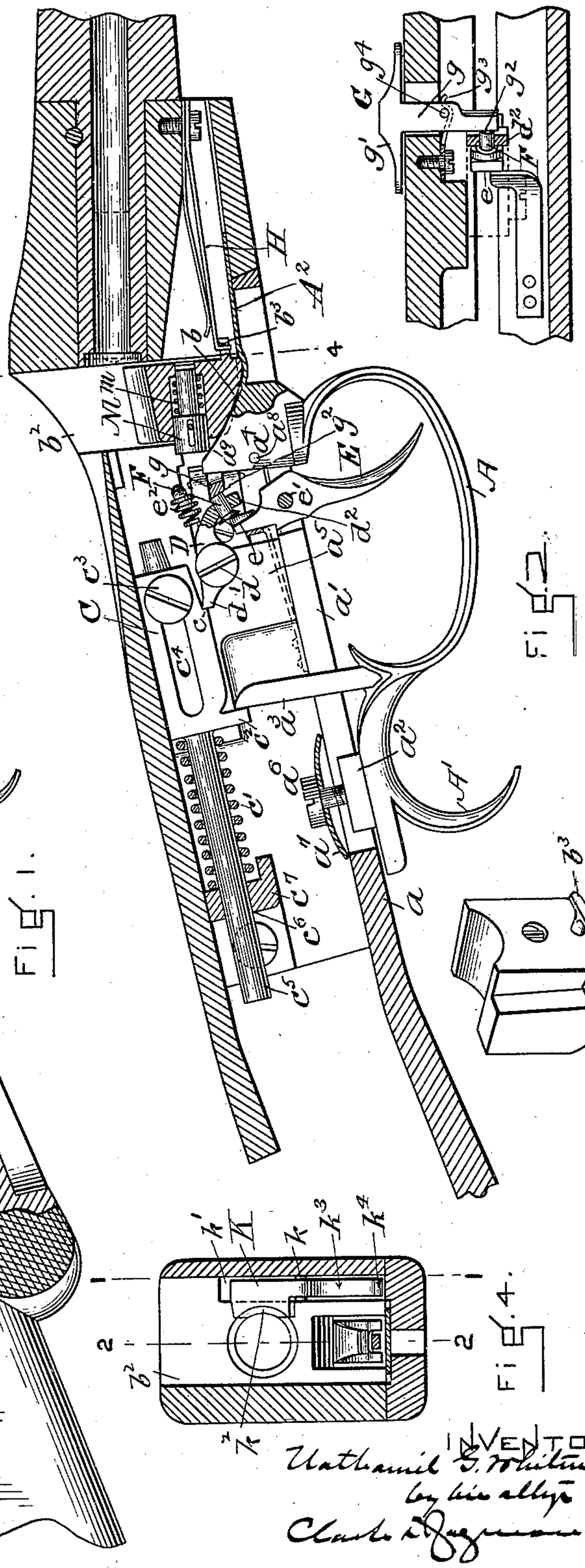

Fig. 2.



Fig. 3.

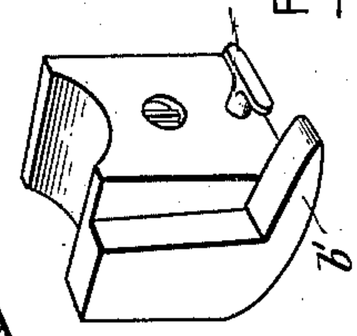

Fig. 5.



Fig. 4.

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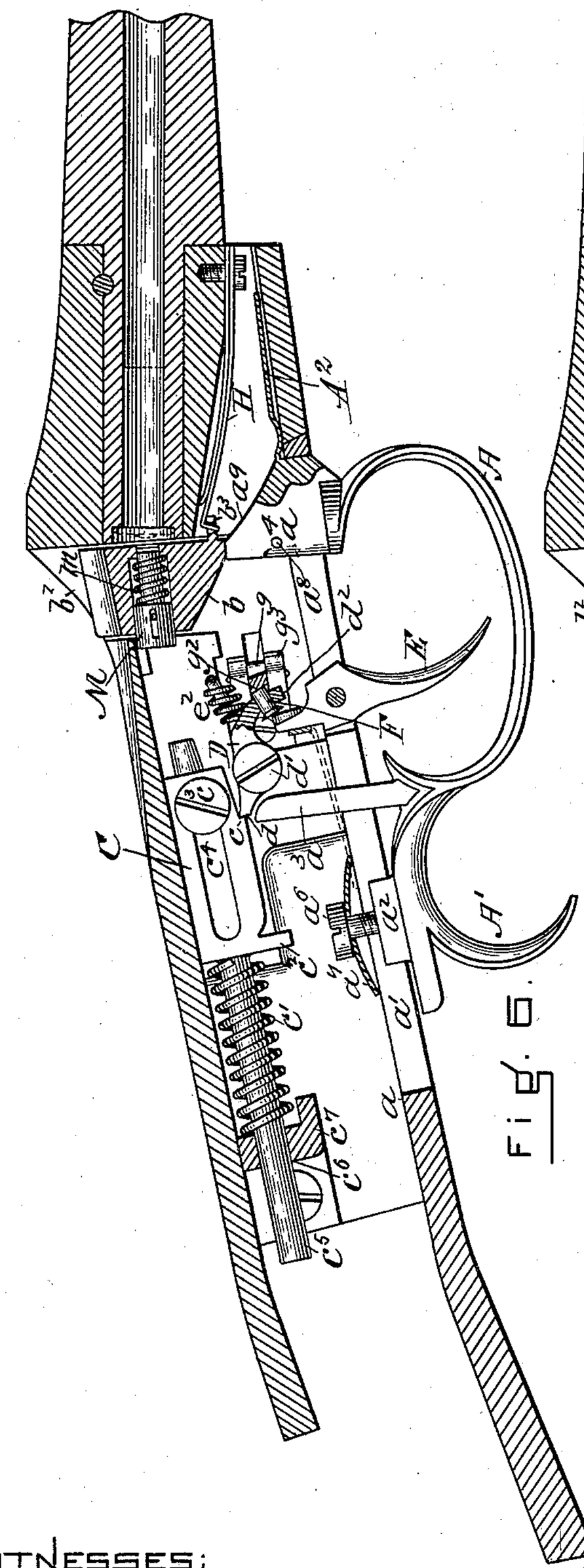

Fig. 6.

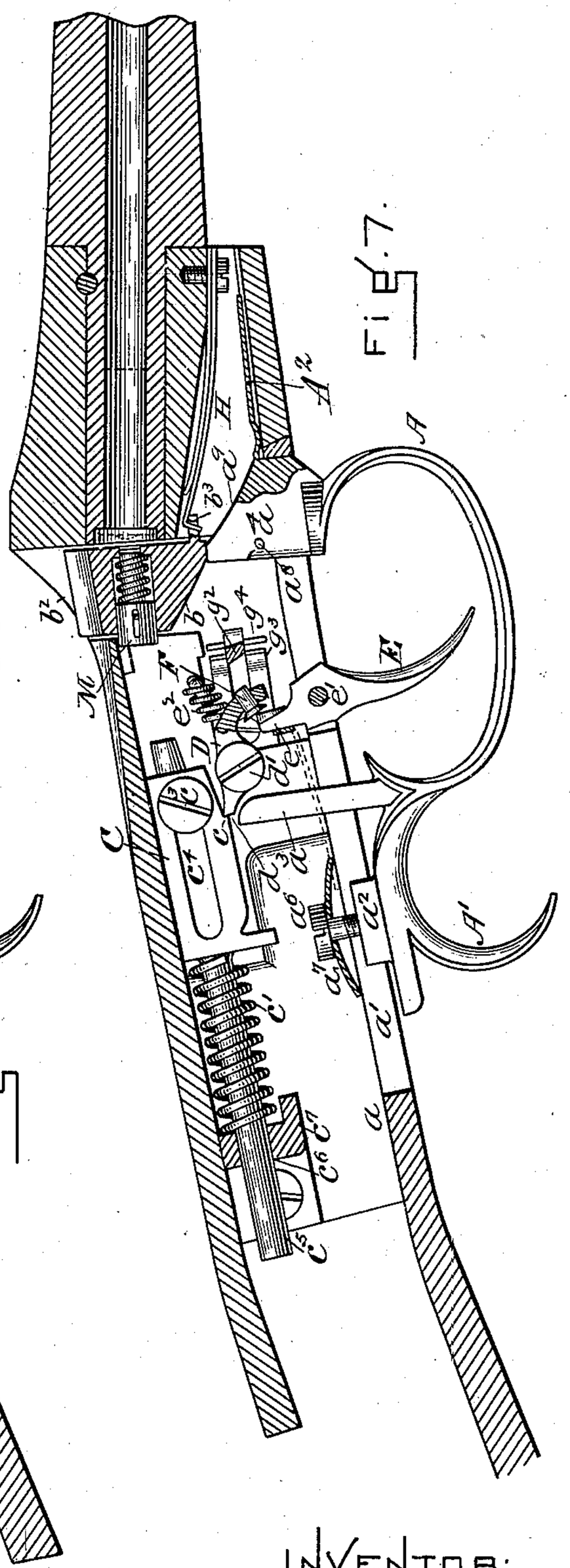

Fig. 7.

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# UNITED STATES PATENT OFFICE.

NATHANIEL GILBERT WHITMORE, OF TAUNTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JAMES BOOTH, OF SAME PLACE.

## BREECH-LOADING FIREARM.

SPECIFICATION forming part of Letters Patent No. 629,142, dated July 18, 1899.

Application filed October 22, 1898. Serial No. 694,270. (No model.)

*To all whom it may concern:*

Be it known that I, NATHANIEL GILBERT WHITMORE, a citizen of the United States, residing at Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Breech-Loading Hammerless Guns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a sliding trigger-guard, a firing-hammer cocked by the rearward movement of the trigger-guard, a breech-block released by the said rearward movement of the trigger-guard and replaced by the reverse movement thereof, and a cartridge-shell ejector, also released by said movement of the trigger-guard.

The invention further relates to a trigger-lock or safety device which is actuated to lock the trigger by said rearward movement of the trigger-guard and which holds the trigger locked during the forward movement of the guard and the replacement of the breech-block and until it is released by the independent movement of a releasing device.

In the drawings, Figure 1 is a view of a gun containing the features of my invention, one side of the frame being removed to show the lock mechanism. Fig. 2 is a view, enlarged, upon the section 2 2 of Fig. 4, representing the position of the trigger-guard and parts which it actuates at the end of its rearward or cocking movement. Fig. 3 is a view in section upon the line 3 3 of Fig. 1. Fig. 4 is a view in section upon the dotted line 4 4 of Fig. 2. Fig. 5 is a view in perspective of the breech-block removed from the gun. Fig. 6 is a view of the parts represented in Fig. 2, the trigger-guard, however, having been restored to its original position, thereby moving the breech-block to firing position. Fig. 7 is a view of the parts as shown in Figs. 2 and 6, but with the safety device removed from locking engagement to permit the operation of the trigger in the firing of the gun.

Referring to the drawings, A represents the trigger-guard. It is arranged to be movable lengthwise the stock on the trigger-plate $a$, the trigger-plate having a slot $a'$, through which arms $a^2$, $a^3$, and $a^4$ from the trigger-guard extend into the lock-chamber $a^5$. The arm $a^2$ is at the rear of the guard and has at its inner end a screw $a^6$ for holding a spring-washer $a^7$ against the inner surface of the trigger-plate $a$. The arm $a^4$ has a cross-pin $a^8$, which bears against the inner surface of the said plate. This arm is shaped to form the cam $a^9$ for closing the breech-block. It operates in conjunction with an opposing cam $b$ upon the breech-block and a breech-block spring H, which acts to open the block upon the release of its cam by the rearward movement of the trigger-guard. The said cam $a^9$ thus serves upon said rearward movement of the trigger-guard to release the breech-block and permit its actuating-spring to move it downwardly from the breech end of the gun and upon the reverse movement of the trigger-guard serves to come into contact with the said breech-block cam $b$ and, riding upon the same, moves or forces the breech-block against the pressure of its actuating-spring to a closed position, in which position the breech-block is held by said arm.

The arm $a^3$ connects the trigger-guard with the hammer C in the frame and serves upon the rearward movement of the trigger-guard to move it backward until the end $d$ of the sear D engages the shoulder $c$ upon it. This backward movement of the hammer also compresses its actuating-spring $c'$, and the engagement of the sear with the hammer holds it stationary and the spring compressed. The trigger-guard arm $a^3$ makes engagement upon the rearward movement of the guard with the lug or ear $c^2$ of the hammer and moves it backward, but is free to be moved forward with the guard to its original position without actuating the hammer, which to actuate the firing-pin M upon its release is thrown forward by the spring $c'$ and the lug $c^2$ moved to a position adjacent to the said arm $a^3$ at the end of its forward movement.

The hammer is attached to the frame to slide thereon by means of a screw $c^3$, passing through the slot $c^4$ therein, and by a tail-rod $c^5$, about which the spring $c'$ is coiled and which extends through a hole $c^6$ in the steadying and holding block $c^7$. The sear D is pivoted at $d'$ and has the arm $d^2$, which is adapted

to be engaged by the inner end *e* of the trigger E, which is pivoted at *e'* to the trigger-plate *a* upon the backward or firing movement of the trigger. A spring $e^2$ bears against said sear-arm and serves to press its end constantly against the under surface of the hammer and to hold it in engagement with the shoulder thereof. The sear-arm $d^2$ also carries a block or piece F, which is attached thereto in a manner to be freely movable thereon lengthwise it a limited distance. It is located and held by the arm to be interposed between the inner end of the trigger and the safety device G. This safety device is attached to a slide *g*, which is mounted in the frame to be movable lengthwise it and which is adapted to be moved by a thumb or operating knob *g'* on the outer side of the frame. The safety device has the inclined face $g^2$, which is adapted to bear against the end of the block F, and the block has an angular relation to the safety device. The safety device is held in locking position partly by friction, partly by the said angular position of the block and angular face of the safety device, which causes the thrust of the trigger to be delivered at an angle to the line of movement of the slide *g*, and partly by a latching-spring $g^3$, which engages the cross-pin $g^4$ of the safety device when the safety device is closed. The safety device is moved to its locking position, or to a position to cause it to be brought into contact with the sear-block F, upon the rearward movement of the trigger-guard, the arm $a^4$ coming into contact with the safety device and moving it rearward to its locking position. Of course upon the forward movement of the trigger-guard to restore the breech-block the said arm $a^4$ is removed from the safety device, leaving it free to be moved to release the block F and trigger by the thumb-piece *g'* or other independent agency. This block F is movable in the sear-arm without moving the sear and it serves to form the connection between the safety device and the trigger after the trigger-guard has been moved forward to restore the breech-block, the trigger then being held removed from the sear by said safety device and said block F, and the trigger cannot be moved to engage the sear until the safety device has been moved from contact with the said interposed block, when the interposed block is free to be moved in the sear until it comes into contact with the sear, when the movement of the trigger is communicated to the sear and the hammer released and the gun discharged.

The interposition of the sear between the safety device and the trigger without the use of the movable block will not serve the purpose of the invention, because there must be sufficient lost or free motion in the arm $d^2$ of the sear to permit the seating or engagement of the arm *d* in the notch at the end of the backward movement of the trigger-guard. The trigger-guard upon its backward movement simultaneously moves the hammer and the safety device, and the safety device is brought into locking position and stopped practically at the instant that it becomes possible for the sear to engage the hammer, and if the sear-arm $d^2$ were then held tightly confined between the safety device and the trigger the sear could not move. By interposing the block it becomes possible for the sear to move after the trigger is locked to engage the hammer, as its arm is not restricted by the safety device, trigger, or block F, but can slide upon the block and does slide upon the block when the latching engagement is made. This movement of the arm is away from the safety device, and consequently if the block were not used and the trigger should bear directly against the sear-arm it could move the arm toward the safety device sufficiently to discharge the gun.

The trigger-guard is latched in its forward position by a latch, which engages a catch on the trigger-guard. This latch consists of a light leaf-spring (marked $A^2$) which projects from the front end of the trigger-guard within the frame and is slightly bowed at the end where it joins the guard, so that it will engage with the interior surface of the frame, as shown in Figs. 6 and 7, and prevent the trigger-guard from sliding easily into its rearward position. For this purpose the front edge of the slot *a'* in the plate *a* forms a catch, with which the bow portion of the spring $A^2$ engages or latches. The ejector K is pivoted at *k* to the frame and its end enters the recess *k'*, extending across one side of the butt of the barrel of the gun, and it forms a side of the bore at the butt-end and has a shoulder $k^2$, against which a part of the flange of the cartridge when in place rests. The ejector also has a toe $k^3$, having an end $k^4$, formed at a right angle thereto and closing under a projection *b'* of the breech-block, which upon its opening movement comes into contact therewith and causes the ejector to be moved outward and to eject the cartridge-shell from the barrel.

The breech-block is moved vertically in the frame at the end of the barrel in a slideway $b^2$ in the frame. It is moved downward to open the breech by the opening-spring H, which is shaped to engage the cross-bar $b^3$. It is moved to close the breech by the cam-arm $a^4$ of the trigger-guard, which closes against the cam $b^4$ on the back of the breech-block. These cams are shaped not only to permit the spring H to open the breech-block upon the removal of the cam, but to cause the breech-block to be closed and to be held closed by the contact of the flat sections of the two cams.

The breech-block carries the firing-pin M, which is contained in a hole therein, is moved outward therefrom by the spring *m*, and is adapted to receive when in firing position the impact of the hammer, by which it is moved to discharge the gun.

The operation of the device is as follows:

The trigger-guard is drawn rearward by its hook A'. The breech-block is thus released and opened by its actuating-spring, and the ejector by the same spring is caused to eject the shell of the fired cartridge. This same rearward movement of the trigger-guard also moves backward and cocks the hammer, compresses the hammer-spring, and locks the trigger. The gun is then in a position to receive a fresh cartridge or shell, the placing of which restores the ejector to ejecting position. The trigger-guard is free to be moved forward without disturbing the hammer or the safety device. This forward movement moves the breech-block into firing position and causes it to be held there and at the same time compresses its opening-spring. It also removes the guard-arm from the safety device and from the hammer, leaving the hammer free to be released by the trigger as soon as the safety device has been withdrawn. This releasing of the trigger requires an action on the part of the user of the gun entirely independent of the movement of the trigger-guard in either direction, and the gun cannot be discharged by the movement of the trigger until this safety device has been so independently moved. Upon this movement of the safety device the trigger may be actuated to discharge the gun.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a breech-loading gun, the combination of the hammer, its retaining-sear, the trigger, a movable safety device and a block carried by the sear, adapted to form the connection between the safety device and the trigger when the safety device and trigger are in a locked position and upon which the sear is movable to engage the hammer, as set forth.

2. In a breech-loading gun, the combination of the hammer, a sear to engage and hold the hammer in opposition to an actuating-spring, a trigger, a safety device and a connection located between the safety device and the trigger, adapted to hold the trigger removed from the sear, and also movable in relation to the sear upon release of the safety device to permit the operation of the sear by the movement of the trigger, as set forth.

3. In a breech-loading gun, the combination of the trigger, a hammer-sear, a safety device, said sear carrying a piece or block movable therein and located to engage at one end with said trigger and at the other end with said safety device when said safety device is in its locking position.

4. In a breech-loading gun, the combination of a sliding breech-block having a cam-surface and a sliding trigger-guard separate therefrom and movable across the line of motion of said breech-block, and also having a cam-surface adapted to coöperate with the cam-surface of said breech-block, whereby said trigger-guard will support said breech-block in place to close the breech of the gun and its movement allows it to be withdrawn therefrom to open the breech.

5. The combination of a sliding breech-block having a cam-surface, a spring adapted to withdraw said breech-block from its position, and a sliding trigger-guard separate therefrom and carrying a surface adapted to coöperate with the cam-surface on said breech-block to support, release and return said breech-block, as and for the purposes set forth.

6. The combination, in a breech-loading gun, of the breech-block, its opening-spring, the sliding trigger-guard separate therefrom and having an arm integral therewith adapted to release, restore and lock said breech-block, as and for the purposes set forth.

7. The combination in a breech-loading gun, of the breech-block, the rearward-sliding trigger-guard, a device carried by the guard for releasing and restoring the breech-block, a connection between the sliding trigger-guard and the hammer to engage the hammer upon its sliding movement and compress the spring, a sear to hold the hammer and its compressed spring, a trigger, a safety device connected with the trigger-guard and adapted to be operated to lock the trigger on its rearward movement and independent means for moving the safety device and release the trigger after the forward movement of the trigger-guard, to firing position.

8. The combination in a breech-loading gun, of the hammer, its sear, the trigger, a sliding trigger-guard, a safety device moved by the trigger-guard to lock the trigger, and a means independent of the trigger-guard to release the safety device after the reverse movement of the trigger-guard.

9. In a breech-loading gun, the combination of a hammer, its sear, the trigger, a movable trigger-guard, a safety device operated by the movement of the guard in one direction to lock the trigger, a block carried by the sear adapted to form connection between the safety device and the trigger when the safety device and trigger are in a locked position, and a device upon the exterior of the frame connected with the safety device to move the same from locking position, as and for the purpose set forth.

10. In a breech-loading gun, the combination of a sliding trigger-guard, a hammer and its spring, a sear, a safety device, the safety device and hammer being set by the rearward movement of the trigger-guard, a block or piece movable with respect to the sear carried thereby and interposed between the safety device and the trigger, and a releasing device independently movable from without the frame to unlatch the trigger.

NATHANIEL GILBERT WHITMORE.

In presence of—
GEORGE O. G. COALE,
J. M. DOLAN.