

No. 776,270.

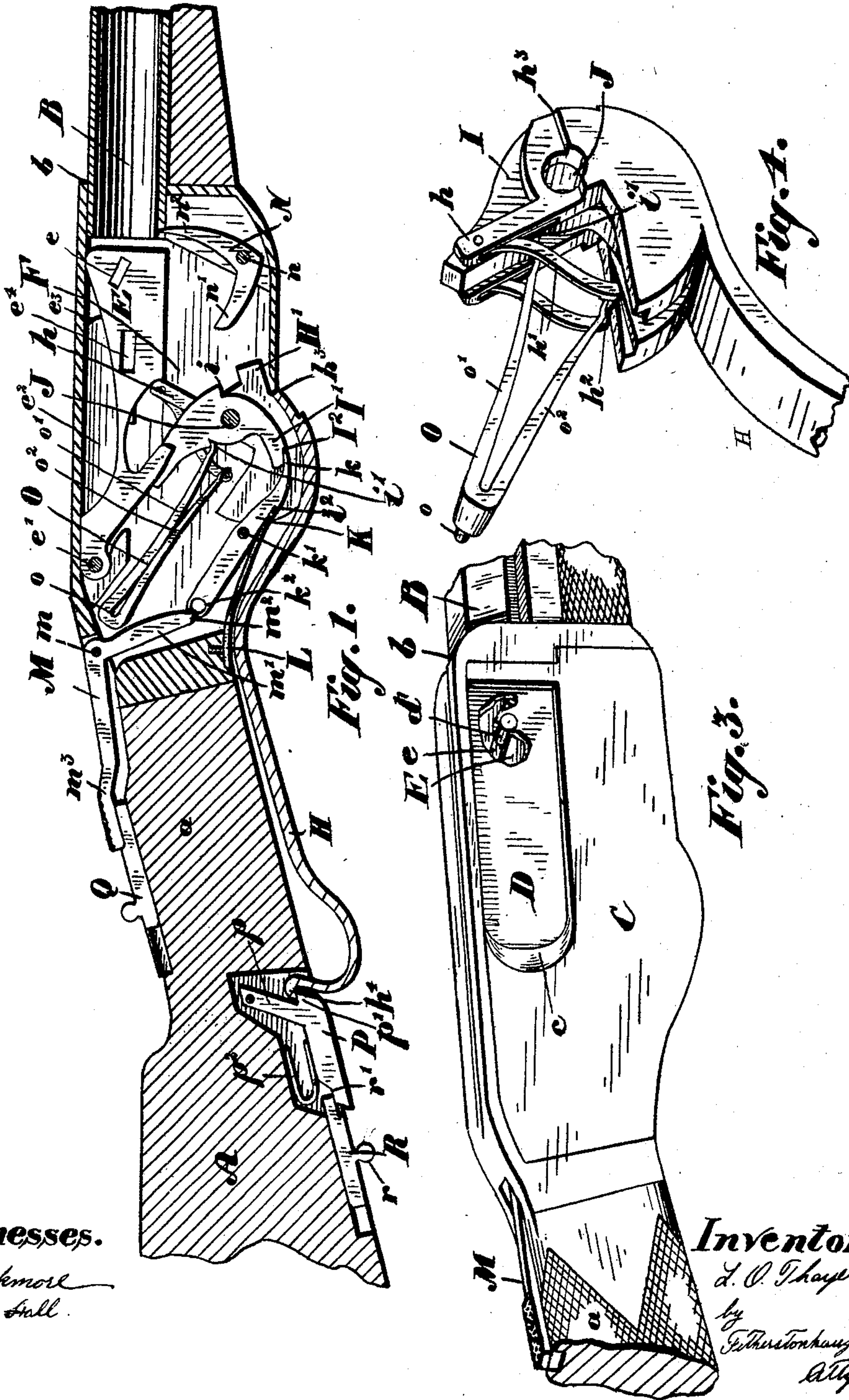
PATENTED NOV. 29, 1904.

L. O. THAYER.
FIREARM.

APPLICATION FILED FEB. 13, 1901. RENEWED MAY 25, 1904.

NO MODEL.

2 SHEETS--SHEET 1.



Witnesses.

L. Blackmore
F. C. Hall.

Inventor.

L. O. Thayer
by
Fetherstonhaugh & Co
Attys

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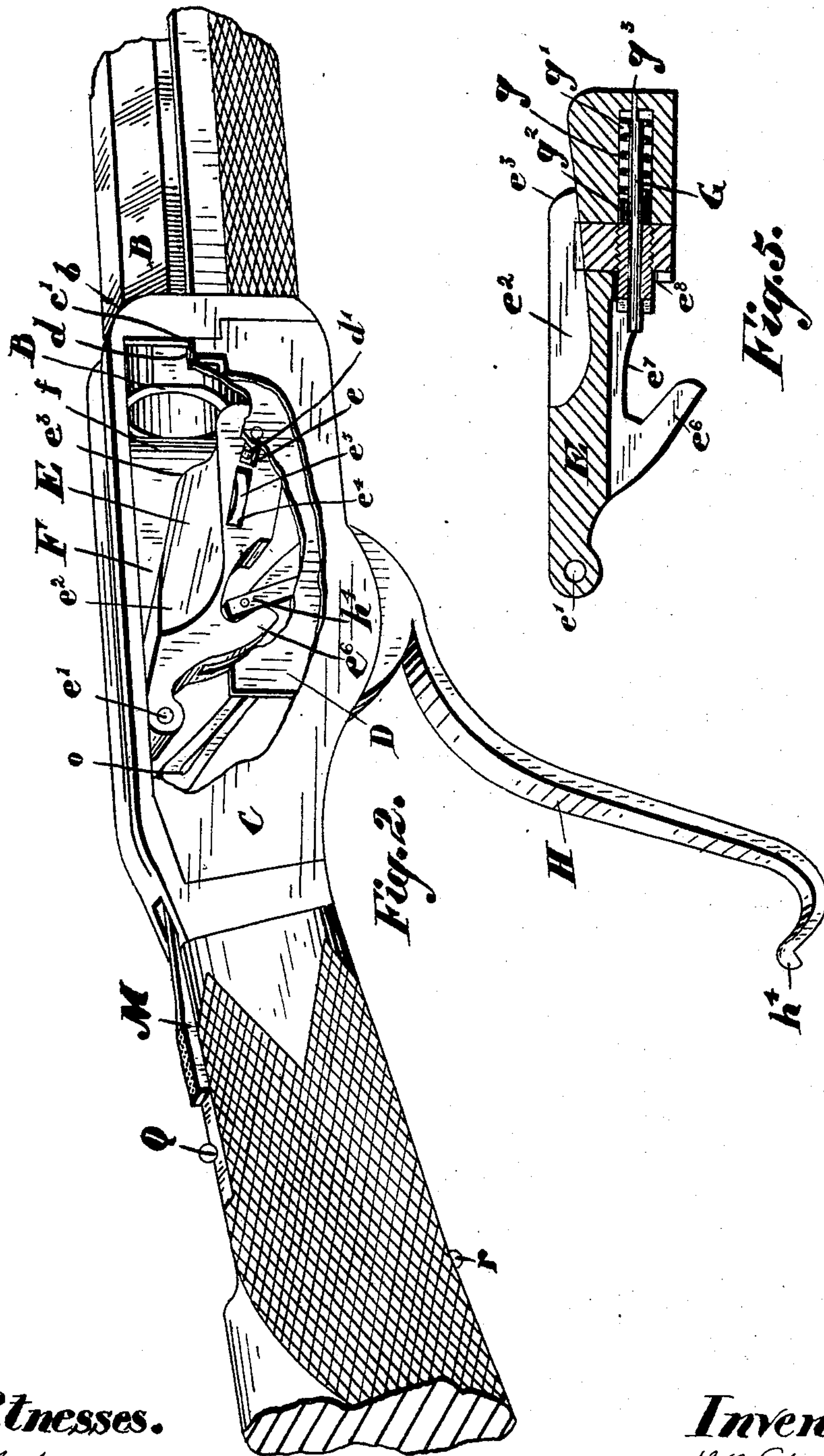
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UNITED STATES PATENT OFFICE.

LINUS ORTON THAYER, OF MONTREAL, CANADA.

FIREARM.

SPECIFICATION forming part of Letters Patent No. 776,270, dated November 29, 1904.

Application filed February 13, 1901. Renewed May 25, 1904. Serial No. 209,798. (No model.)

To all whom it may concern:

Be it known that I, LINUS ORTON THAYER, a subject of the Queen of Great Britain, residing at Montreal, in the county of Hochelaga, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Firearms, of which the following is a specification.

My invention relates to improvements in firearms; and the object of the invention is to devise a rifle which shall be hammerless and triggerless and yet be a safe and quick firer and have its parts in the breech mechanism so arranged and of such size that the effective operation of the same will be assured; and it consists, essentially, of a stock having in the interior a V-shaped mainspring with arms or legs of uneven length designed to operate the various parts of the breech mechanism, a lever closing up underneath the grip of the stock, where it locks itself in a spring-catch and has projecting ends inside the gun for raising and lowering the breech-block, which is pivoted at one end and has a scoop-shaped recess in one of its sides, a hammer interposed between the projecting ends of the lever and journaled on the same pivot designed to strike the firing-pin incased in the breech-block, an ejector operated by the dropping of the breech-block, and a crank-lever forming the trigger with a suitable raised portion at the extremity of one arm thereof provided with a safety-catch or locking device and extending above the upper surface of the grip of the stock and a sloping point at the extremity of the other arm to connect with a pivoted sear for releasing the hammer, the various parts being constructed in detail, as hereinafter more particularly described.

Figure 1 is a sectional view through the center of the breech mechanism and grip of stock. Fig. 2 is a perspective view showing the cover of breech partially broken away. Fig. 3 is a view of the breech closed. Fig. 4 is an enlarged detail of the lever, mainspring, and hammer. Fig. 5 is an enlarged sectional view of the breech-block, showing the firing-pin.

Like letters of reference indicate corresponding parts in each figure.

A is the stock, and *a* the grip of the stock.

B is the barrel, which is suitably fixed in the frame *b*.

The breech has no opening whatever in line with the top of the barrel B; but by removing the side plate C all the breech mechanism is disclosed.

An opening *c* is provided in the side plate C for the introduction and ejection of the cartridge. The slide D is provided to close the opening *c*, a small flange *d* being at one end thereof and arranged to slide in the groove *c'* of the plate C. The slide D is also provided with a projection *d'* to fit into the recess *e* in the breech-block E.

The breech-block E is pivoted at *e'* in the side plate F and has a scoop-shaped recess *e''* from the near side of the block, though all but reaching the opposite side and being deeper, narrower, and swerving to the near side as it approaches toward the pivoted end *e'*. At the opposite side of the breech-block E and at the end nearest the barrel the block is cut away at *e'''* sufficiently to allow it to pass over the raised portion *f* of the side plate F, which would correspond to a continuation of the barrel. On the near side of the breech-block E is a recess *e''''*, which holds the spring *e'''''* against the slide D, keeping the same firmly in its place and pressing the breech-block E against the side plate F.

The firing-pin G is incased in the breech-block E and has a spring *g* encircling it and pressing against one end of the recess *g'* at one end and at the other end against the bushing *g''*, being, of course, suitably connected to the firing-pin G to insure the necessary recoil. The inner or rear end of the firing-pin G protrudes out of the recess *g'* on the under side of the breech-block E.

The downward projections *e''''''* from the breech-block E lead down in an easy curve from the pivoted end *e'* and stand out a short distance below that portion of the breech-block, so that the upward projections *h* from the lever H will fit into the space thus made. A curve *e''''''''* is made on the under side of the block for raising the same to its closed position, and to accomplish this object the upward projections *h* have to describe the curve *e''''''''* and rest in the corner or notch *e''''''''''*. The le-

ver H is, as before stated, provided with the projections h . These projections have pivotally swung from them the two parallel bars h' , which are joined at their outer end by a cross-bar h^2 . Between the projections h I interpose the hammer I, which turns on the same pivot J as the lever H. The hammer I is provided with the notch i , which normally abuts the lever H at h^3 and is intended to carry the hammer to its position before striking, when the curved point k of the pivoted sear K engages with the notch I^2 in the tumbler I' . The extremity of the sear K inside the pivot k' has an elliptical mouth k^2 . The point k of the sear K is held to its engagement in the notch I^2 by means of the spring L, the end of which extends into the cross-notch i^2 .

The crank-lever M is pivoted at m in the grip of the stock, and its arm m' , with the slightly-sloping extremity m^2 , rests in the mouth k^2 of the sear K, so that any pressure on the arm m^3 of the crank-lever M will release the point k from the notch I^2 of the tumbler I' .

The ejector N is pivoted at n , and when the breech-block is brought down by means of the lever H it strikes the lower arm n' of the ejector N, thus giving a sharp movement to the upright arm n^2 , which arm being tapered and curved to a point catches the rim of the cartridge and quickly ejects it from the breech. The limiting of the downward movement of the breech-block may be accomplished by extending the lever, as shown at H' .

The mainspring O, which is the means of operating all these parts, is pivoted at its closed end o in the side plate F, the ends or legs o' and o^2 extending down, respectively, to fit in between the hammer I and the cross-bar h^2 , which connects the pivotally-swung parallel bars h' . The leg o' of the spring o is slightly longer than the leg o^2 , therefore giving the leg o^2 a stronger and a quicker movement and allowing the more pliable leg o' to reach the jog or cross-notch i' in the hammer.

The importance of the construction of my spring must here be emphasized, especially the difference in the length of the legs. The shorter, and consequently the stiffer, leg is intended to force the lever H open, thereby opening the breech and ejecting the cartridge, at the same time bringing the hammer back to its striking position, as before explained. This could not be accomplished if the legs of the spring were of even length and pliability, as in that case the leg abutting the hammer would prevent the full swing of the lever before the point k engaged the notch I^2 . It will be understood that when the hammer strikes the resistance in connection with the spring is at the cross-bar h^2 , whereas when the hammer has struck the firing-pin and the lever opened the resistance is at i' . The swinging bars h' regulate the adjustment of the ends of the

legs o' and o^2 through the spring being pivoted at its closed end. After the hammer has been released and strikes the firing-pin the full force of the leg o' is not expended; but there is sufficient resiliency to allow of the spring g' encircling the firing-pin to hold the hammer back, so that the notch i does not abut the lever at h^3 , but allows a certain amount of play for the lever before it has to carry the hammer back to its striking position.

P is a spring-catch pivoted at the extremity of an inwardly-extending arm p in a recess in the under side of the stock, and p' is the tooth or point which engages the hooked end h^4 of the lever H.

p^2 is the spring, which in its normal position holds the point p' to its engagement with the hooked end of the lever.

The slide R, with a suitable knob r , is designed to slide into a notch r' in the spring-catch P.

Having now described the several parts involved in my invention and shown how essential my construction of the mainspring is to the successful working of the device, I shall explain more fully the exact operation when in use and the good results obtained.

In order to load my rifle, I slip a cartridge into the breech when it is open, as shown in Fig. 2, pressing it forward into the barrel at the same time. I then close the lever H up against the underneath portion of the stock until the hooked end h^4 locks itself in the spring-catch P. This operation raises the breech-block E to the position shown in Fig. 1, as the projections h have described the curve e' and abut the corner e^8 . The breech-block E being now in its upper position, the firing-pin G is directly in a line with the cap of the cartridge which it reaches through the orifice g^3 . The rifle now being loaded and the hammer I being in the position shown in Fig. 1 and held in that position by the point of the sear K engaging the notch I^2 , all that is necessary to explode the cartridge is to press very lightly on the crank-lever at m^3 . The slide Q of course must be first moved from under. When a pressure is put on the crank-lever at m^3 , the point m^2 , where it engages the sear K, turns the latter on its pivot to a sufficient extent to release the point k , which engages the tumbler at I^2 , and as the hammer is now free to turn on its pivot the spring O sends it with considerable force against the firing-pin G, thus exploding the cartridge. The cartridge having been exploded, the empty shell is left in the barrel, the rim of its base being immediately behind the ejector N, and in order to eject this empty shell the spring P is pressed. The lever immediately and rapidly drops through the pressure of the mainspring pulling on the projections h . The dropping of the lever accomplishes much. In the first place, the projections h , engaging the breech-block, bring the latter to its lower position, at the

same time opening the slide D. The breech-block striking the lower arm of the ejector N gives a backward movement to its upright arm, and as the point of this arm is forward of the rim of the cartridge the latter is forcibly thrown into the frame and the shape of the recess e^2 guides it out of the opening c in the side. The hammer is also carried back to its striking position as the lever at h^3 engages the hammer at i and carries it backward until the point k engages in the notch I^2 , being held to that position by the spring L.

The recess e in the breech-block has projecting into it from the inner side of the slide D the pin d' , so that any movement of the breech-block immediately affects the slide which is closed or opened as the breech-block is raised or lowered, respectively. The peculiar shape of the recess e allows the pin d' a certain amount of play, thus tightly closing the opening when the lever is closed and allowing it to be wide open when the lever is open. This will be understood from what has been before explained—namely, that the breech-block works upon a pivot.

The locking or safety devices in my rifle are very simple, the slide Q being provided on the upper side of the grip to slip under the raised end of the arm m . Underneath the grip the slide R is provided to slide into a suitable notch in the spring-catch P.

The fact of the only opening being at the side of my rifle is one to which I desire to draw attention.

It is well known with military men and nations what a large percentage of the soldiers suffer from the blinding gas emitted from the openings at the top of the frame of the present gun. In many cases it has resulted seriously, and, taken as a whole, it is considered the great drawback of the modern rifle.

The attachment of a magazine to my gun is merely a question of mechanical skill, though the rapid action of my breech mechanism renders such an addition rather unnecessary.

What I claim as my invention is—

1. In combination, a barrel, a stock, an interposed frame, a breech-bolt pivoted therein, a firing-pin carried thereby, a hammer confined entirely within the frame, a lever for setting the hammer and controlling said breech-bolt, means for forcing the hammer against the firing-pin and automatically operating the lever, means for locking the hammer in set position, a controller therefor having a part adapted to be manually operated projecting outside the frame and extending along the upper side of the stock, means for locking said part located on the upper side of the stock, and means for locking said lever located on the under side of said stock, substantially as described.

2. In combination, a stock, a barrel, an interposed frame, a breech-bolt, a lever controlling the same, a hammer, swinging par-

allel bars secured to said lever, said bars being connected at their lower ends, and a spring having two legs, one of said legs being connected to said swinging bars for operating the lever and the other leg engaging the hammer for operating the same, substantially as described.

3. The combination with the stock, barrel, and interposed frame, of a breech-bolt pivoted in said frame, a firing-pin carried thereby, a pivoted hammer, a lever for setting the same and controlling said breech-bolt mounted on the same pivot as said hammer but having pivotal movement independently thereof, and a spring having two legs operating independently of each other, one of said legs operating said hammer and the other said lever, substantially as described.

4. In combination, a barrel, a stock, an interposed frame having a cartridge-discharge opening in the side thereof, a slide-plate for covering the opening, a breech-bolt pivoted within the casing, a firing-pin, hammer mechanism, means for raising and lowering the breech-bolt and a connection between said bolt and said slide-plate for operating the latter from the former, substantially as described.

5. In combination, a barrel, a stock, an interposed frame having a cartridge-discharge opening in the side thereof, a slide-plate for covering the opening, a breech-bolt pivoted within the casing, a firing-pin, hammer mechanism, means for raising and lowering the breech-bolt and a pin-and-slot connection between said bolt and said slide-plate for operating the latter from the former, substantially as described.

6. The combination with the stock, barrel, a frame and a pivoted lever, of a hammer pivoted on the lever-spindle and having a suitable tumbler, and a notch i at the lowermost end thereof, and a notch h^3 in the lever, a pivoted breech-block and an ejector, a V-shaped spring, a swinging projection from the lever abutting a leg of the spring, and suitable means for releasing the spring when compressed, as and for the purpose specified.

7. The combination with the stock, barrel and inclosing frame, of a lever pivoted in said casing, swinging arms pivotally connected thereto, a hammer having movement between said arms, a tumbler forming a portion of said hammer, and having a notch at its extremity, a pivoted sear pointed at one end, a V-shaped mainspring interposed between the hammer and the swinging arms from the breech-block-operating lever, and suitable connections to the outside of the breech for releasing the spring when compressed, as and for the purpose specified.

8. In combination, a pivoted and spring-held sear, with a tapered and curved pointed end on one side of the pivot, and on the other an end with an elliptical mouth, a hammer, and a tumbler having a notch at its extremity, an

operating-lever with upright projections journaled on the same spindle as the hammer, swinging arms pivotally connected to said operating-lever, a V-shaped spring interposed
 5 between the hammer and the swinging projection from the lever, and suitable means for releasing the point of the pivoted sear from the notch in the tumbler, as and for the purpose specified.

10 9. In combination, a trigger comprising a crank-lever pivoted adjacent to the breech, with one of its arms extending into the breech mechanism, a pivoted sear having one extremity thereof coacting with the arm of said lever, and a curved and tapered point at its other
 15 end, a hammer, a tumbler forming part of said hammer, a breech-block, a lever for controlling the same and setting said hammer, arms pivotally connected to said lever, a pivoted V-shaped mainspring interposed between
 20 the hammer and said arms, as and for the purpose specified.

10. The combination with the stock, barrel frame and a trigger comprising a crank-lever,
 25 of a safety-slide provided with a suitable knob, and designed to slide under the upper arm of said crank-lever, having its downwardly-extending arm protrude into the frame, a hammer and tumbler forming a part thereof, a breech-
 30 bolt, swinging projections pivoted thereto, a spring-held pivoted sear engaging at one end the aforesaid downwardly-extending arm, and at the other the extremity of the tumbler forming part of the hammer, and a V-shaped main-
 35 spring interposed between the hammer and a swinging projection from the breech-block-operating lever, as and for the purpose specified.

11. In combination, a stock, a barrel, an interposed frame, a pivoted breech-bolt having
 40 a scooped-shaped recess therein, a firing-pin guided in said bolt, a pivoted lever having upward extensions designed to coact with the breech-bolt, an ejector operated by said breech-
 45 bolt, swinging parallel bars pivotally connected to said extensions, a pivoted hammer, a spring for operating the hammer and lever, means for locking the hammer, a releasing device comprising a crank-lever, a sliding bar
 50 designed to engage therewith to lock the same and a similar bar for locking the lever aforesaid, substantially as described.

12. In combination, a stock, barrel and an interposed frame, a breech-bolt, a lever controlling the same, a hammer, swinging parallel bars secured to said lever, said bars being connected at their lower ends, a V-shaped
 55 spring with legs of unequal length pivoted at its closed end in the frame in proximity to the rear of the breech-bolt, the longer leg of the said spring engaging the hammer to operate
 60 the same, and the shorter leg being connected to the said swinging bars for operating the lever, substantially as described.

13. The combination with a stock, barrel and an interposed frame, of a breech-bolt pivoted
 65 in said frame, a V-shaped spring with legs of uneven length pivoted at its closed end in immediate proximity to the pivot of the said breech-bolt, a firing-pin incased in the breech-
 70 bolt, a pivoted hammer, a lever for setting the same and controlling the said breech-bolt, pivoted on the same spindle as the said hammer and having independent movement thereon,
 75 swinging parallel bars from upward extensions of the said lever designed to receive the shorter leg of the operating-spring, the longer leg of the latter abutting the hammer,
 80 and an ejector pivoted in the frame and designed to catch the rim of the cartridge on the downward movement of the breech-block, substantially as described.

14. The combination with the stock, barrel and an interposed frame, having a breech-bolt pivoted at its rear end, inclosed therein, a lever pivoted in said frame designed to operate
 85 the said breech-bolt, and a hammer journaled on the same spindle as the said lever with independent movement thereon, of a mainspring designed to operate the said lever, swinging
 90 bars connected to upwardly-extending projections in the lever and designed to connect at their ends with the shorter leg of the mainspring, the other leg engaging the hammer,
 95 and means for releasing the said hammer from the outside of the stock, as and for the purpose specified.

Signed at Montreal this 22d day of January, 1901.

LINUS ORTON THAYER.

Witnesses:

THOMAS PAGE BUTLER,
 FRANK C. HALL.