

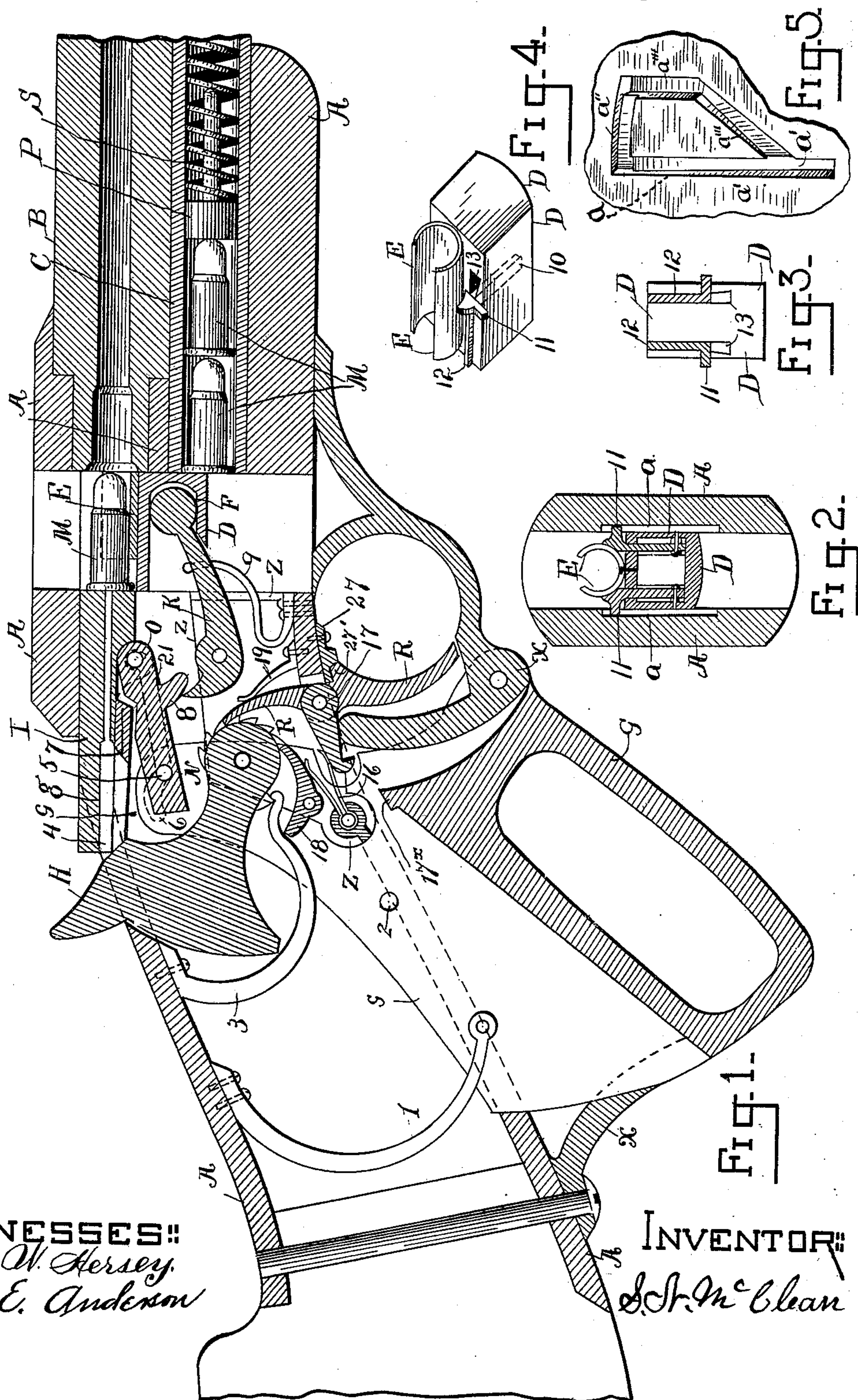
(No Model.)

2 Sheets—Sheet 1.

S. N. McCLEAN.
MAGAZINE FIREARM.

No. 601,844.

Patented Apr. 5, 1898.



WITNESSES:
Fred W. Hersey.
W. E. Anderson

INVENTOR:
S. N. McClean

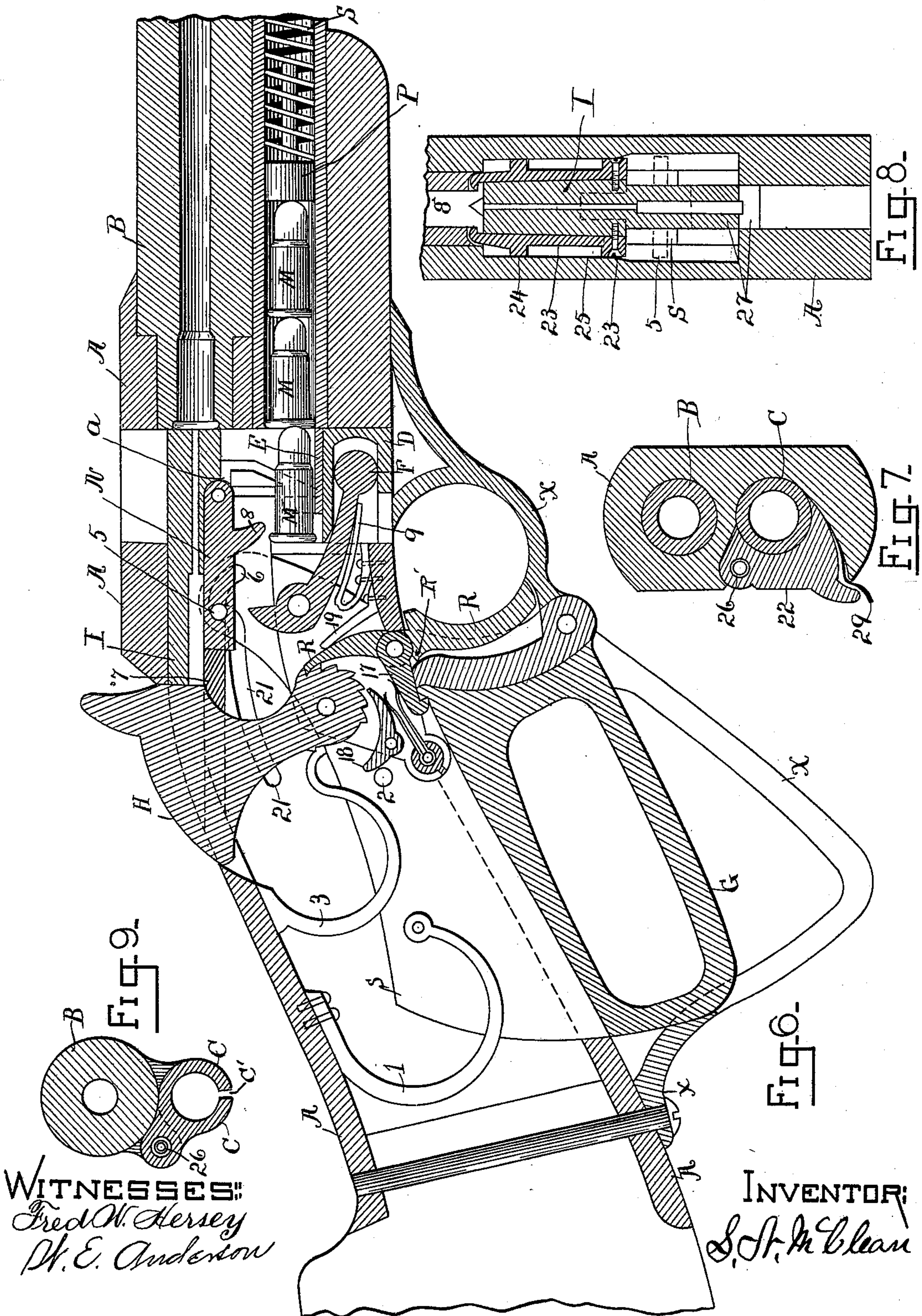
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UNITED STATES PATENT OFFICE.

SAMUEL N. McCLEAN, OF WASHINGTON, IOWA.

MAGAZINE-FIREARM.

SPECIFICATION forming part of Letters Patent No. 601,844, dated April 5, 1898.

Application filed June 17, 1893. Renewed March 15, 1898. Serial No. 674,000. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL N. McCLEAN, a citizen of the United States, residing at Washington, in the county of Washington and State of Iowa, have invented certain new and useful Improvements in Firearms, of which the following is a specification.

My invention relates to breech-loading and magazine firearms.

My object is, first, to actuate the operating mechanism of a breech-loading firearm by the grip movement of the hand, providing for this purpose a grip-lever; second, to actuate a reciprocating breech-piece by means of a grip-lever; third, to provide a reciprocating breech-bolt actuating and locking device the reciprocating and locking movement of which shall be controlled by cam-grooves or cam-slots; fourth, to provide an automatic shell-extracting device which shall grasp the cartridge as it passes into the bore of the barrel and release the shell when fully extracted, the grip movement of the extractors being caused by cam action; fifth, to provide a firing or automatic firing device composed of a grip-lever, a trigger, firing mechanism, and an automatic trigger or sear; sixth, to provide a cartridge carrier or receiver which shall automatically grasp the cartridge as it passes from the magazine into the stock-chamber and automatically release the same as it passes from the carrier into the barrel, the opening-and-closing movement of the carrier being controlled by cam action; seventh, to provide a cartridge-magazine located beneath the barrel and capable of being rotated out to the side of the gun, thus opening the rear end of the magazine for the purpose of loading and when loaded allowing it to swing back to position beneath the barrel; eighth, to provide an actuating and locking device composed of a grip-lever, a trigger, and a locking-dog. I accomplish these objects by means of the mechanism which is hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of the firearm, showing the operating parts in the loading position or position of rest, the grip-lever being thrown forward, the breech-bolt withdrawn, the hammer cocked, and the cartridge lifted into the presence of the bore of the bar-

rel. Fig. 2 is a transverse sectional view through the stock of the firearm and the cartridge-carrier, showing the frame A, the rear part of the cam-grooves α , the bearings 11, the shell E, and the cartridge-carrier D. Fig. 3 is a view of the upper surface of the cartridge-carrier, showing the bearings 11, the bars 12, and cam-slots 13. Fig. 4 is a perspective view of the cartridge-carrier, showing the shell E, illustrating the manner in which this shell is closed by the reciprocating movement of the bearings 11. Fig. 5 is a detailed illustration of the cam-groove α , illustrating the varying depth of the different parts of this groove. Fig. 6 is a longitudinal sectional view of the firearm, showing the operating parts in the loaded, locked, or firing position. The grip-lever has been squeezed back toward the stock-chamber and is in locked engagement with the dog 17, the breech-bolt has been pushed forward by the upper extremity of the grip-lever, and the bar N lifted into locked engagement with the shoulder 7. The hammer is in the down position. The secondary sear 18 has been disengaged from the hammer by the forward movement of the bearing 2. The cartridge-carrier is in position in front of the magazine and shows the large cylindrical-shaped bearing of the lever F. The triangular-shaped cam-groove α is also shown, which groove is located in the frame-wall and controls the opening-and-closing movement of the cartridge-carrier. Fig. 7 is a transverse section of the firearm near the rear end of the magazine, showing the stock A, the magazine C, and the spring 26, which is coiled around the pivot on which the magazine is rotated, also the thumb-piece 22 and the spring-catch 29. Fig. 8 is a longitudinal sectional view through the stock of the firearm on a line with the center of the extractors, showing the frame A, the cam-grooves 25, the extractors 23, the bearings 24, the locking-pin 5, the upper end of the grip-lever G, the shoulder 7, the breech-bolt I, and illustrates the diminished size of the rear part of the breech-bolt. Fig. 9 is a section through the barrel and magazine near the forward end of the magazine, showing the barrel B, magazine C, coiled spring 26, and the longitudinal slot c' , in which slides a pin which is fixedly attached to the side of the

plunger P and by means of which the plunger can be forced forward to the front end of the magazine in the process of loading.

Similar letters and figures of reference refer to corresponding parts.

In the drawings accompanying this specification I have illustrated the construction of my invention with reference to a repeating rifle, but it is apparent that the invention will be generally applicable to breech-loading small-arms.

The frame of the weapon is provided with the usual chamber A. The upper side of the chamber is provided with an opening through which the shells are ejected. It is also mortised to admit the action of the hammer and breech-bolt. The forward end of the chamber is provided with an opening into the barrel B and magazine.

The lateral walls of the chamber A are formed by removable plates, in which plates are located the cam breech-locking grooves 21, Figs. 6 and 1; also, the cam extracting-grooves 25, Fig. 8; also, the cam-grooves *a*, Figs. 6, 5, and 2. The under side of the chamber A is mortised to admit the action of the grip-lever.

The grip-lever G, Figs. 1 and 6, is hinged to the trigger or grip guard X and its upper extremity is pivotally connected to the breech-bolt by a hinged connection which employs the action of a movable and an immovable guide-cam to lock and unlock the breech. The guard X extends sufficiently below the under side of the frame to give the required movement of the upper or breech-actuating extremity of the grip-lever and prevents the weapon from being accidentally discharged by either the trigger or grip-lever. This lever is provided with a guard and is connected to a spring 1, the action of which resists the movement of the lever and throws it outward to a position sufficiently distant from the frame to give the required movement to the breech-bolt I. The inner surface of the grip-lever is provided with a projection 2 for engagement with the secondary sear 18, pivotally mounted in the bracket *z* and arranged to engage the heel of the hammer and has a latch-shaped projection 17^x on the forward upper corner of the grip-lever for engagement with the dog 17. The lateral walls of this lever pass forward and upward on either side of the operating devices and may be hinged to the breech-bolt by any suitable means. In the drawings I have illustrated but one of the lateral walls of the grip-lever. The other wall being a duplicate it is not deemed essential to further illustrate this element.

The breech-locking device is constructed and actuates and locks the breech as follows:

Located in the upper extremities of the grip-lever G are the cam-slots 6, Figs. 1 and 6, through which passes the locking pin or bolt 5, which bolt 5 passes through the bar N and extends into the cam-grooves 21 in the side

plates of the frame, Fig. 6. The bar N is hinged at O to the under side of the breech-bolt. The forward movement of the grip-lever causes the bolt 5 to slide forward in the grooves 21, and the joint action of the grooves 21 and the slot 6, acting on the bolt 5, lifts the bar N into locked engagement with the shoulder 7, located beneath the rear end of the breech-bolt and attached to the frame, the slots 6 being long enough to allow a slight forward movement of the grip-lever after the locking movement of the breech is completed, the reverse movement of the parts unlocking and withdrawing the breech-piece.

The breech-bolt I, Figs. 1, 6, and 8, is a bar or rod of a size and length to be determined by the cartridge used. The rear part of the breech-bolt is diminished in size to correspond to the thickness of the hammer. The forward part corresponds to the thickness of the chamber in which the breech-bolt slides. The breech-bolt contains the usual firing-pin 4, (shown in Fig. 8 of the drawings,) and is provided on its under side with a hinge O for engagement with the bar N. The rear end of the breech-bolt bears against the face of the hammer and its rearward movement forces the hammer into cocked position. The breech-bolt contains a chamber *g* for the firing-pin 4. The breech-bolt is provided on its respective opposite sides with grooves in which are located the spring shell-extractors 23, provided with bearings 24, which bearings 24 are arranged to slide back and forth in the cam-grooves 25 in the receiver and to spring against the bottom of these grooves. The grooves 25 being of varying depth and the forward part of the grooves converging toward the bore of the barrel, the forward movement of the breech-piece causes the bearings 24 to compress the extractors and cause the hooked extremity of the extractors to grasp the cartridge as it passes into the barrel and retain this engagement until the shell is fully extracted.

The firing mechanism may be described as follows:

The hammer H, Figs. 1 and 6, is pivotally supported in the chamber and is forced into cocked position by the rearward movement of the breech-bolt or by the hand. The heel of the hammer is provided with ratchet-catches, which are arranged to engage in the usual manner with the spring-actuated trigger R and the spring-actuated automatic sear 18. The trigger R is disengaged from the hammer by the finger in the usual manner. This trigger is provided with a shoulder 27', Fig. 1, which engages with a movable slide 27, located in front of the trigger and pivotally supported to engage with said shoulder on the front side of the trigger when the trigger is fully retracted and retains the trigger out of engagement with the hammer when the weapon is to be discharged by the secondary sear alone.

The secondary sear 18 is located in the path of the forward movement of a projection 2,

which is fixedly attached to the grip-lever, which projection disengages it from the hammer at a time when the bar N has been lifted into engagement with the shoulder 7, the construction allowing the grip-lever to move slightly forward after the locking movement of the bar N is complete.

The bracket Z is fixedly attached to the trigger-plate, and the hammer H, secondary sear 18, spring 16, dog 17, trigger R, and carrier-lever K are supported between the opposite walls of this bracket.

The actuating and locking device may be described as follows:

The grip-lever is connected to a spring 1, which resists its movements. This lever when in a position of rest is thrown outward beyond the limit of the frame and when actuated moves back toward the frame until the catch 17^x on its front edge engages with the spring-actuated dog 17, which dog 17 is pivoted to the frame by the same pivot which passes through the trigger R. The rear side of the trigger R is provided with a shoulder R', which is arranged to bear on the under side of the dog 17, and when the trigger R has been drawn back by the finger sufficient to release the hammer and discharge the weapon this shoulder engages with the dog 17 and disengages it from the grip-lever, when the force of the spring 1 immediately throws the grip-lever outward to its first position. The engagement of the trigger with the hammer is effected by the spring 19, and the hammer is actuated by the spring 3, as indicated in the drawings.

The loading device may be described as follows:

The bar N, Figs. 1 and 6, is provided with an arm or projection 8, which is arranged to engage with the short arm of the carrier-lever K. The long arm of this lever engages with the spring 9 and terminates in an enlarged cylindrical bearing F, which bearing engages with a chamber formed in a vertically-reciprocating cartridge-carrier D. The contact of the cylindrical bearing with the carrier is always in line with the direction in which the carrier moves.

The cartridge-receiver E, Figs. 1, 2, 4, and 6, is a semicylindrical shell and is fixedly attached to the upper surface of the carrier D in the central longitudinal line thereof, and its forward end is even with the front face of the carrier and is arranged to receive the cartridges as they pass from the magazine into the chamber. The shell E is constructed to spring against the bearings 11, which bearings 11 extend into and travel around in the cam-groove *a*, the cartridge-receiver being opened and closed by the cam action of the groove *a* on the bearings 11. The bar 12 on the upper face of the carrier D is movable in slots 13 beneath the shell E and has a depending arm 10, which is pivoted to the carrier, as shown in Fig. 2.

For convenience of description I have di-

vided the groove *a* into three different parts—a rear part *a'*, an upper or curved part *a''*, and a vertical and diagonal part *a'''*. When the carrier is in position in front of the magazine, the bearings 11 are located in the lower end of the part *a'*, and when the cartridge-receiver E is lifted into position in front of the bore of the barrel the bearing 11 travels through this part and drops into the curved part *a''*, which part is slightly deeper and forms a shoulder on which the bearings 11 rest and retains the receiver in position in front of the bore of the barrel until, the forward movement of the breech-bolt coming in contact with the bar 12, the bearings 11 are forced forward through the part *a''* and drop into the vertical part *a'''*, which part is sufficiently deeper to allow the cartridge-receiver E to spring open and release the cartridge at a time when the cartridge has been engaged by the shell-extractors and the bore of the barrel, when the cartridge-carrier M, actuated by the spring 9, immediately descends to position in front of the magazine. The bearings 11 travel through the parts *a'''* and drop back into the parts *a'*, and which parts *a'* are slightly deeper than the parts *a'''*. The part *a'''* becomes considerably shallower as it approaches the part *a'*, the receiver being opened and closed by the cam action of the groove *a* on the bearings 11.

The magazine C is located beneath the barrel and is provided with a spring S and plunger P and contains a longitudinal slot, Fig. 9, through which slot *c'* extends a projection which is fixedly attached to the side of the plunger P, by means of which projection the plunger can be forced forward to the front end of the magazine, when it engages with any suitable means to hold it until released to force the cartridges forward, when the magazine is swung back into position beneath the barrel. The magazine is hinged to the side of the frame, Fig. 7, and the forward end of the magazine, as shown in Fig. 9, is hinged to an arm or projection which is fixedly attached to the barrel. The rear end of the magazine is provided with a spring-catch 29, which retains it in position beneath the barrel, and has a projection or thumb-piece 22, by means of which it can be rotated out to the side of the barrel, thus exposing the rear end of the magazine for the purpose of refilling it with cartridges. The coiled spring 26 operates to return the magazine to position beneath the barrel.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a firearm, a breech-closing mechanism, a grip-lever, a reciprocating breech-bolt connected to the grip-lever by a pivot which engages with a movable and an immovable cam-guide, to reciprocate and lock the breech-piece.

2. In a firearm the side walls of the chamber having cam-grooves 21 which grooves have a curved and rearward direction, a

grip-lever having lateral walls arranged to pass forward and upward on either side of the operating devices, said walls having cam-slots cut in their upper extremities, a
 5 breech-locking pin which passes through the said cam breech-locking slots and extends into said curved grooves 21, a breech-locking bar which is hinged to a reciprocating breech-bolt and connected to said breech-
 10 locking pin, a locking-shoulder fixedly attached to the stock-wall which engages with the said breech-locking bar N.

3. In a breech-loading firearm, a breech-locking mechanism, comprising a frame-wall
 15 having a cam-guide located beneath the breech-bolt and a shoulder against which the breech-bolt is locked, a reciprocating breech-bolt, a grip-lever having a cam-guide in its upper extremity, a connecting-bar between
 20 the breech-bolt and the grip-lever to engage with the said cam-guides to lock and unlock the breech, and to engage with said shoulder when the breech-bolt is locked.

4. In a breech-loading firearm, a grip-lever
 25 hinged to the stock or handle of the weapon, a spring to resist the movement of the lever, a breech-bolt connected to said lever, a hammer engaged by the breech-bolt, a spring-actuated sear engaging the heel of the hammer
 30 and a lug on the grip-lever, which, in its forward movement disengages the said sear from the hammer.

5. In a breech-loading firearm a firing and automatic firing mechanism, comprising a
 35 grip-lever a spring to resist the movement of the grip-lever, a reciprocating breech-bolt, a hammer engaged by the breech-bolt, a sear to engage the heel of the hammer and located in the path of, and disengaged by the grip-
 40 lever to fire the weapon, a trigger to engage the hammer, and a lock attached to the frame to engage the trigger and hold it out of engagement with the hammer, whereby the weapon may be discharged by the action of the trig-
 45 ger or grip-lever as desired.

6. In a breech-loading firearm, a grip-lever forming a hand-grasp, a reciprocating breech-bolt, a connecting medium between the grip-lever and the breech-bolt engaging with a
 50 movable and an immovable cam-guide, and a cartridge-carrier, all actuated by said grip-lever.

7. In a breech-loading firearm a chamber
 55 having a cam-guide beneath the breech-bolt and a breech-locking shoulder, a grip-lever

having cam-slots in its upper end, a connecting-bar between the breech-bolt and grip-lever and engaging said cam-guides and said shoulder to lock and unlock the breech, a carrier-lever engaging with said bar and a recip- 60
 rocating carrier engaging said lever.

8. A stock wall or plate provided with a triangular-shaped cam-groove *a*, a reciprocating cartridge-receiver or semicylindrical
 shell E attached to a cartridge-carrier, a mov- 65
 able bearing 11 against which the shell E springs, the said bearing engaging with the said triangular cam-groove *a* and the cam action of the groove operating to open and close the receiver as and for the purpose set forth. 70

9. A cartridge-receiver or semicylindrical shell E, a cartridge-carrier connected with said shell, movable bearings 11 against which the respective opposite sides of the shell E
 spring in opening, a stock wall or plate con- 75
 taining a cam-groove *a* with which the said movable bearings 11 engage, a projection or arm 12 which is arranged in the path of the forward movement of a reciprocating breech-bolt, a reciprocating breech-bolt engaging 80
 with the said bearings 11.

10. A cartridge-magazine located beneath the barrel and having its rear end hinged to the frame, so that the magazine can be swung out to the side of the frame when it is desired 85
 to load the same, the forward end of the magazine having a corresponding hinge which is fastened to an arm which arm is fixedly attached to the barrel.

11. A cartridge-magazine located beneath 90
 the barrel and having at its rear end a projection attached to the side of the magazine which projection is hinged to the frame of the weapon, the forward end of the magazine hav-
 ing a corresponding projection which is at- 95
 tached or hinged to a projection or arm which is fixedly attached to the barrel, the said magazine containing a spring-actuated plunger and having a longitudinal slot in which
 slot slides a pin or spur which is fixedly at- 100
 tached to the plunger and by means of which the plunger can be forced forward.

12. The combination with the barrel and stock of a breech-loading firearm of a maga-
 105
 zine beneath the barrel and eccentrically and pivotally supported.

S. N. McCLEAN.

Witnesses:

W. E. ANDERSON,
 C. C. PATTERSON.