

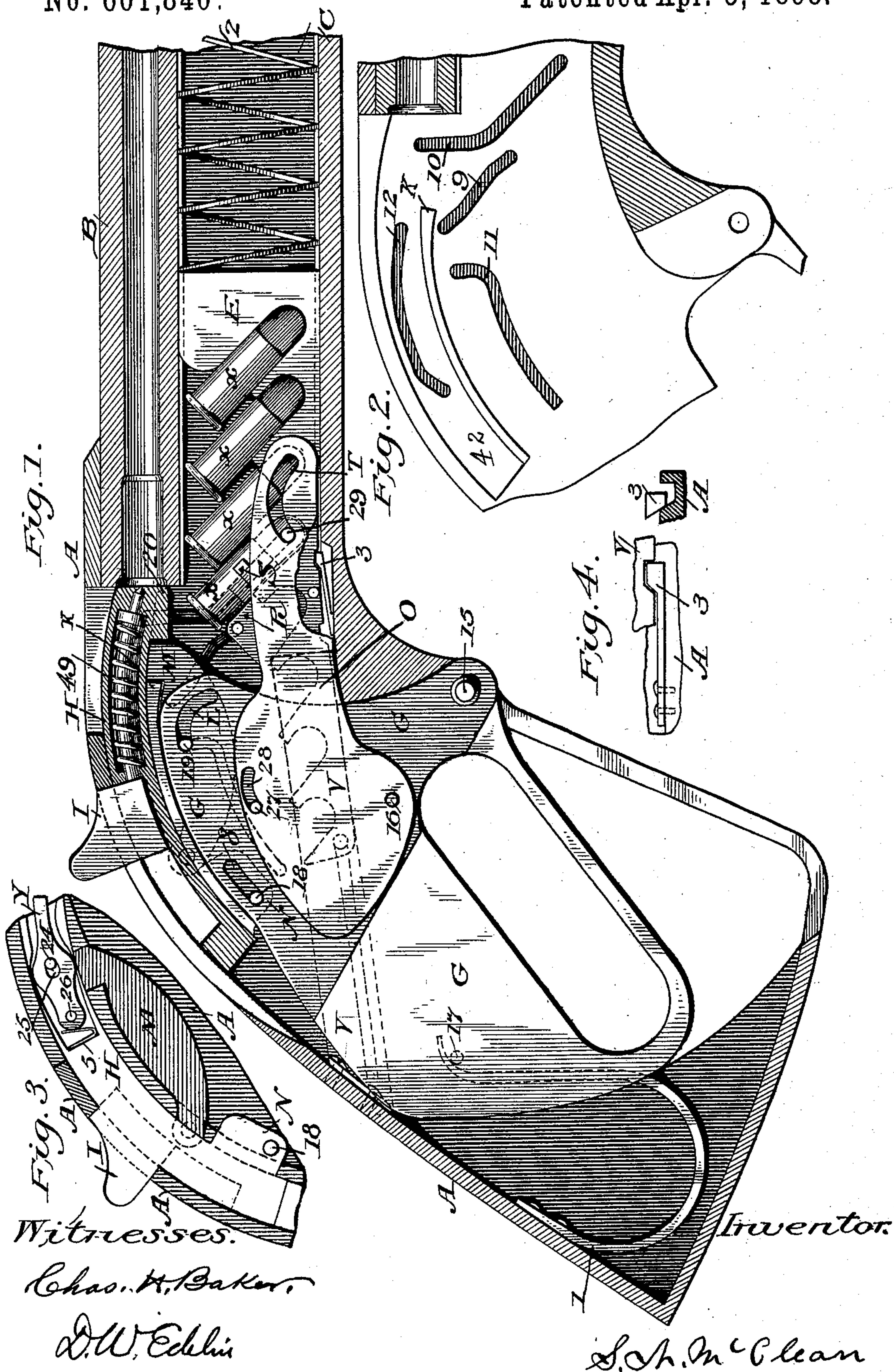
(No Model.)

2 Sheets—Sheet 1.

S. N. McCLEAN.
MAGAZINE FIREARM.

No. 601,840.

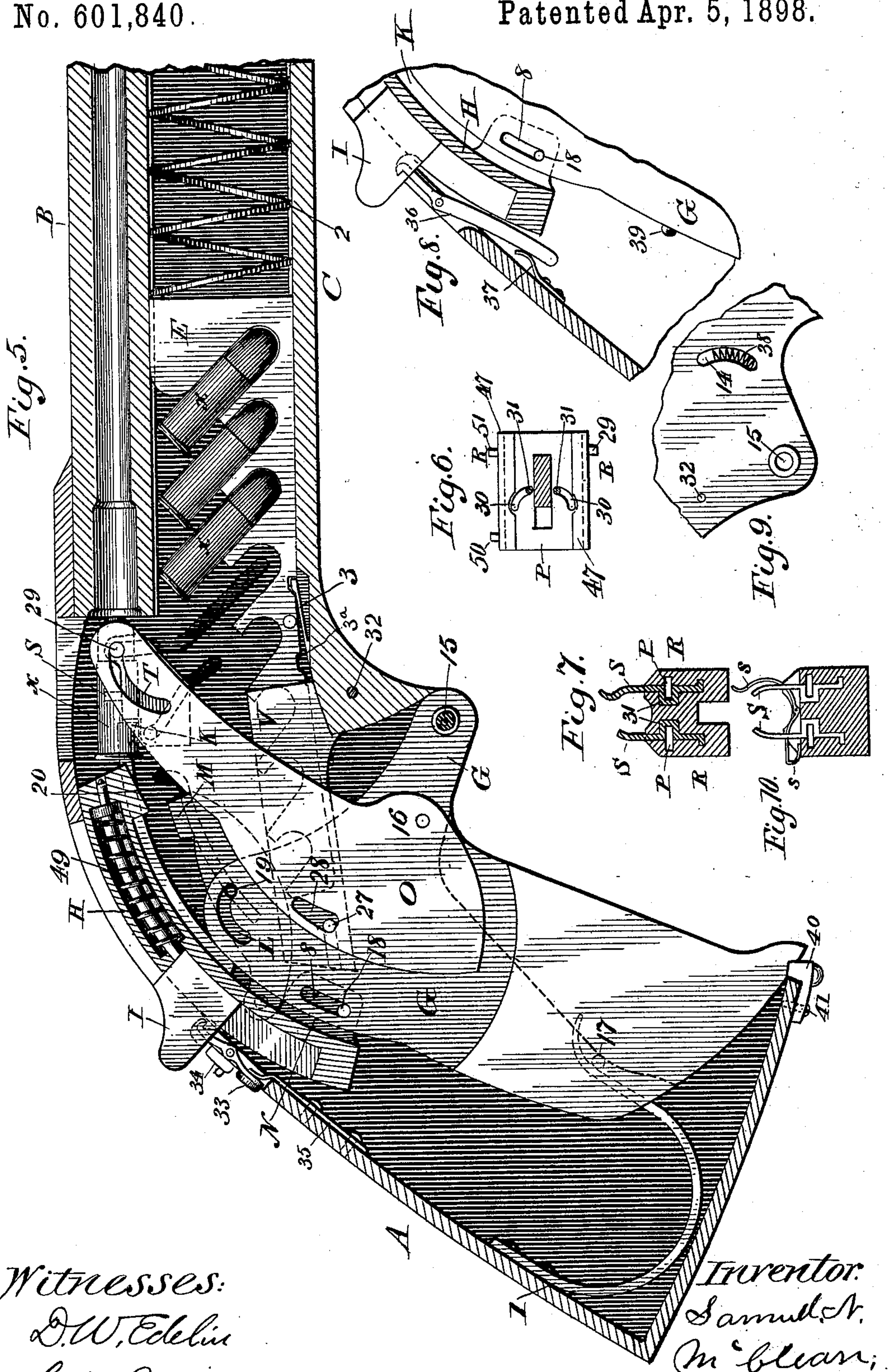
Patented Apr. 5, 1898.



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Patented Apr. 5, 1898.



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UNITED STATES PATENT OFFICE.

SAMUEL N. McCLEAN, OF WASHINGTON, IOWA.

MAGAZINE-FIREARM.

SPECIFICATION forming part of Letters Patent No. 601,840, dated April 5, 1898.

Application filed June 29, 1894. Serial No. 516,129. (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 Breech-Loading Firearms, of which the following is a specification.

My invention relates to improvements in breech-loading firearms, the primary object being to improve and simplify the construction of such weapons by providing an improved actuating, breech-loading, breech-closing, shell-extracting, shell-ejecting, firing, automatic firing and loading mechanism, and to control the action and combination of the parts by means of movable and immovable guides and cam-guides.

To distinguish this application from previous applications of mine now pending in the United States Patent Office, my more specific objects are, first, to provide an actuating grip-lever or hand-grasp having an immediate connection with the breech-piece; second, to provide a breech-closing mechanism comprising a grip-lever and a breech-bolt carried with and by the grip-lever; third, to provide a front locking mechanism for the breech-bolt, which shall engage with a movable and an immovable cam-guide to lock and unlock the breech-bolt in front of the guides and immediately behind the breech; fourth, to provide an improved shell-extractor which shall engage with a cam-guide having a varying direction to retain the hook extremity of the extractor in alinement with the bore of the barrel and to cause it to engage with and disengage from the cartridge; fifth, to provide a firing mechanism comprising a swinging grip-lever, a breech-bolt carried with the grip-lever, a firing-pin carried by the breech-bolt, and a sear engaging the firing-pin and disengaged by hand; sixth, to provide a firing mechanism comprising a swinging hand grip-lever, a breech-bolt carried by the grip-lever, a firing-pin carried in the breech-bolt and actuated by a spring, a sear engaging the firing-pin and disengaged by the grip-lever; seventh, to provide a carrier-lever engaging with the cartridge-carrier and pivotally connected to an operating-lever and engaging with a guide to modify and con-

trol the movement of the lever; eighth, to provide a cartridge-carrier having gripping-arms which are rotated into engagement with the cartridge and are controlled by a reciprocating device retained on the upper surface of the carrier and actuated by the breech-bolt to release the cartridge and by the carrier to grip it; ninth, to provide a cartridge-ejector connected to the carrier and actuated by the upward movement of the carrier to eject the cartridges.

A brief description of my invention regarded in the entirety of its various parts is as follows:

In the drawings accompanying this specification I have shown a repeating pistol illustrating my improvements, and while the invention will be generally applicable to breech-loading firearms, yet it is designed that it shall be specially applicable to hand-firearms or to that class of weapons which are held in the hand and actuated by a single gripping movement of the hand to load and fire the weapon. The grip-lever or hand-grasp is hinged to the stock or handle of the weapon and has a direct connection with the breech-bolt, which has a reciprocating or swinging movement and is locked and unlocked by a forward-acting locking device. The breech-bolt is formed on an arc of a circle and carries a spring-actuated firing-pin which engages with a sear which is disengaged from the firing-pin by hand. The firing-pin also engages with a second or auxiliary sear which is disengaged by the grip-lever. The shell-extractors are pivoted to the breech-bolt and are provided with a pin to engage with a guide in the stock-wall. This guide has a varying direction to cause the extractors to engage with the cartridge and to retain the hooked extremity of the extractors in line with the bore of the barrel and to assist in ejecting the cartridge. The carrier-lever is pivotally connected with the grip-lever, engages with a reciprocating carrier, and is provided with a pin which engages with a cam-guide in the stock-wall to modify the action of the lever. The carrier has a compound reciprocating and rotary motion with relation to the magazine and barrel and is controlled by cam-guides in the stock-wall. The cartridge-magazine carries its car-

tridges in file and has a rack provided with a series of seats to maintain the regular order of the cartridges.

A description of my invention with reference to the accompanying drawings is as follows:

Figure 1 is a longitudinal sectional view of the firearm, showing the operating parts in the second or discharged position of the weapon and the breech-bolt locked in its forward position and the cartridge-carrier in its lower position in front of the magazine. Fig. 2 is an inside view of the left stock-wall, showing the guides which modify and control the movement of the operating parts and the chamber 42 in which the breech-bolt moves. Fig. 3 is a view showing the breech-bolt H, the shell-extractor Y, the firing-pin I, the locking-bar M, the shoulders K beneath the breech-bolt, against which the bar M locks, also the shoulder 20 in front of the bar M and attached to the breech-bolt. Fig. 4 is a detail of the spring-catch 3, which controls the feeding action of the cartridge-rack. Fig. 5 is a longitudinal section showing the operating parts in the loading position or position of rest, the breech-bolt unlocked and withdrawn, and the carrier in position in front of the barrel. Fig. 6 is a view of the upper surface of the cartridge-carrier, showing the reciprocating cam P, which controls the gripping-arms S, also the flanges 47 to retain the cam in position. Fig. 7 is a sectional view of the carrier, taken through the gripping-arms S, showing the crank 31, by means of which the arms S are rotated, and the opening in which the cam P slides. Fig. 8 is a broken section of the stock, showing the breech-bolt H, firing-pin I, sear 36, and lug 39 on the grip-lever to release the sear. Fig. 9 is a broken view of the inside of the right stock-wall, showing the guide 14 to modify the movement of the carrier-lever and the coil-spring 35 to act on the carrier-lever. Fig. 10 is a sectional view of the cartridge-carrier, showing the cartridge-ejector S, which engages with a lug on the stock-wall to laterally eject the cartridge.

A designates the stock-wall, B the barrel, and C the magazine.

The stock-chamber contains a series of guides (shown in Figs. 2 and 9 as guide-grooves) to control and modify the action and movement of the operating parts. The carrier-guides 9 and 10 are located opposite the rear end of the magazine in the stock-wall and have a rearward and upward direction to control the movement of the carrier. The breech-locking guides 11 control the locking of the breech and their forward ends are eccentric to the movement of the operating parts. These guides 9, 10, and 11 are similar to guides shown and claimed in application of mine, Serial No. 505,508, filed March 28, 1894, now pending in the United States Patent Office. No claim is made to them in this application, excepting to the novel combinations. The extractor-guides 12 have a gen-

eral rearward and varied direction and are formed eccentric to the movement of the breech-bolt to cause the extractors to engage the cartridge and to move the hooked extremity of the extractors into line with the bore of the barrel and to assist in ejecting the cartridge. The guide-grooves 14, Fig. 9, are located in the opposite stock-wall and are eccentric to the movement of the carrier-lever to modify and control its action.

G is a swinging hand grip-lever or hand-grasp, which is hinged to the stock or handle of the weapon by the pivot 15, and is actuated by the spring 1, the free end of which bears on a pin 17 in the grip-lever, and it is provided with a slot 8 and a cam-slot L and has a direct connection with the breech-bolt and a limited locking movement independent of the breech-bolt by means of the slot 8 and pin 18. The pivot 15 is located on the front side of the lever and connects it with the stock. The slots 8 are located in the rear side of the grip-lever, and the slot L is located in the upper and forward part of said lever, as shown. The grip-lever is also connected to the breech-bolt by the locking-bar M, which bar M is hinged at its rear end to the under side of the breech-bolt and engages with the cam-guides L and 11 by means of the pin 19. The guide 11 is located in the stock-wall and has a forward and upward direction. The guide L is in the grip-lever and has a curved upward and rearward direction. These guides are similar to those shown in my application, Serial No. 505,508, heretofore cited, and no claim is made to them in this application, excepting the novel combination. The bar M is hinged at its rear end to the breech-bolt, and at its forward end engages with the shoulder 20 on the under side of the front end of the breech-bolt and with the shoulders K on the side walls of the stock-chamber beneath the chamber in which the breech-bolt moves. The breech-bolt H, Figs. 1, 3, and 5, is square in transverse section, is formed on the segment of a circle, and is arranged to slide in a guide or receiver 42, which is also formed in the segment of a circle, as seen in 42, its bottom being formed by the inwardly-projecting ribs K, Fig. 2. The breech-bolt is provided on its under side at its front end with a shoulder 20, and the receiver is slotted on the under side to permit the travel of this shoulder.

The breech-bolt is provided at its rear end with a lug N, on which is a pin 18 to connect it with the grip-lever.

I is the firing-pin, carried in the breech-bolt, actuated by a spring 49 and engaging with the sears 33 and 36. The sear 33 is pivotally supported in a slot located in the upper rear wall of the receiver and has a hook-shaped forward end to engage with the firing-pin and a button at its rear end to disengage it therefrom, as shown in Fig. 5. The sear 36 is pivotally mounted on the same pivot which passes through the sear 33 and has a hooked

forward end to engage with the firing-pin, as seen in Fig. 8 of the drawings, the rear end of the sear 36 being located in the path of the projection 39 on the grip-lever and is engaged by the said projection to disengage the sear from the firing-pin after the locking movement of the bolt is completed.

Y is the shell-extractors, pivotally connected to the sides of the breech-bolt by the pivot 24 and slot 25. The forward ends of the extractors are hook-shaped to engage with the cartridge, and the pin 26 on the side of the extractors engages with the guide 12 in the stock-wall. The extractors are actuated to slide forward by a spring 5, located at their rear ends.

R is the cartridge-carrier, formed to slide smoothly between the opposite walls of the receiver and provided on the upper corners of the left side with pins 50 and 51 to engage with the carrier-guides 9 and 10. These guides are located in side walls of the receiver, their lower ends being opposite the rear end of the magazine and having an upward and rearward direction rising into line with the barrel.

O is the carrier-lever, pivotally connected with the grip-lever by a pin 27 and slot 28 to permit limited movement of the carrier-lever independently of the grip-lever. This lever is also provided with a pin 16 to engage with a curved guide 14, located in the stock-wall to modify the movement of the carrier-lever. This lever is also provided with a cam-slot T to engage with the pin 29 on the forward upper corner of the right-hand side of the carrier R.

S is the gripping-arms of the cartridge-holder, which are pivotally supported in the sides of the cartridge-carrier R to permit them to be turned or rotated into and out of engagement with the cartridge. The upper gripping ends of the arms S conform to the shape of the cartridge, as seen in Fig. 7, and beneath the cartridge they form a crank 31 and pass through the cam-slots 30 in the reciprocating slide P. These slots 30, as seen in Fig. 6, have a curved direction and operate to turn the arms S on their pivots and cause them to grip the cartridge when the slide P is driven back and to release it by the reverse movement.

The cartridge-rack E, Figs. 1 and 5, is formed with a series of seats to maintain the regular order of the file of cartridges and has a series of notches 3^a on its under side to engage with the catch 3. This catch 3 is in the path of the downward movement of the carrier and is disengaged by the carrier to release the rack and successively feed the cartridges to the carrier. The cartridge-rack E is actuated by the spring 2.

The sears 33 and 36 are pivotally mounted in the frame to engage with the firing-pin and are actuated by springs 35 and 37. The sear 33 is disengaged by a button which projects through the stock-frame, and this sear is retained out of action by the slide 34, which en-

gages with it when the sear 33 is depressed. The sear 36, Fig. 8, is located in the path of the movement of a lug 39, attached to the grip-lever.

The operation is as follows: When the various parts are in a position of rest, as shown in Fig. 5, the breech-bolt is drawn back and the cartridge is carried in position to be driven into the bore of the barrel and discharged as follows: The grip-lever when actuated swings on its pivot 15 and its inner end moves forward and carries the breech-bolt with it and causes the breech-bolt to engage with the rear end of the cartridge and with the rear end of the reciprocating slide P, the forward movement of the breech-bolt causing the cartridge to enter the bore of the barrel, the breech-bolt also actuating the slide P to rotate the gripping-arms S and release the cartridge. The carrier then moves to position in front of the magazine by the action of the carrier-lever as follows: A limited movement of the carrier-lever is permitted by the pin 27 and slot 28 to allow the cartridge to engage with the barrel and with the shell-extractors; but when this pin 27 reaches the forward end of the slot it moves the lever, and the pin 16 on the outer side of the lever engages in the groove 14, located in the stock-wall, and this groove retards the movement of the pin and causes the lever to swing on the pivot 27, which swings the forward end of the lever down and releases the carrier and brings it down quickly out of the path of the breech-bolt, the groove 14 being formed to give the required movement to the lever by the sliding of the pin 16 in and through the groove. A spring, as seen in 38, is provided to retain the lever in its upper position while the grip-lever is performing its limited movement.

The cartridge-carrier is formed to slide smoothly between the opposite walls of the receiver, and is provided with pins 50 and 51, located on the left-hand side of the carrier, as seen in Fig. 6 of the drawings, to slide in the guides 9 and 10 and control the reciprocating and rotating movement of the carrier. The carrier is also provided with a pin 29, located on the right-hand side of the carrier, as shown, to engage with the guide T in the lever O. The arms S of the cartridge-carrier are actuated to automatically grip and release the cartridges as follows: These arms are formed with a crank 31, which passes through the slots 30 in the reciprocating slide P. This slide P is guided in grooves 47 in the upper and opposite sides of the carrier, and when the carrier is in its upper position is in the path of the forward movement of the breech-bolt and is engaged by the breech-bolt, causing the slots 30 to exert a cam action on the cranks 31 and to rotate and cause the arms S to be rotated out of engagement with the cartridge, and when the carrier descends to position in front of the magazine the slide P comes in contact with the rack E

and the further movement of the carrier causes the cam-slots 30 to rotate the arms S into engagement with the cartridge.

The cartridges are carried in the magazine C in file, and the regular order of the file is maintained by a rack E, which is provided with a series of seats for the cartridge α . This rack is actuated by a spring 2 and has a series of notches on its under side to be engaged by a spring-catch 3, which is located in the path of the movement downward of the carrier and is disengaged from the rack by the carrier to feed the cartridges into the grip of the cartridge-holder. This spring-catch 3 is latch-shaped on its inner side and engages with the side wall of the stock-chamber. The side face of the catch 3 is beveled and engages with a companion bevel on the stock-wall, which swings it out of line with the carrier and permits it to reengage with the rack.

The shell-extractors Y are pivotally connected to the breech-bolt H by a pin 24 and slot 25 to permit a limited movement of the extractors. A pin 26 is also provided on the outer side of the extractors, at their rear ends, to engage with a cam-guide 12 in the receiver-wall. This guide 12 has a rearward direction which is eccentric to the movement of the breech-bolt, and the sliding of the pin 26 through these guides varies the movement of the extremity of the extractors and causes them to extract the cartridge in a direct line with the bore of the barrel until the shell is fully extracted, when the groove is curved at its rear end to disengage one extractor by a downward movement and to disengage the other extractor by an upward movement, thus assisting in the lateral ejection of the shell.

The breech-bolt H is locked by a forward locking device as follows: The locking-bar M is hinged to the under side of the breech-bolt at its rear end and is connected with the cam-guides L and 11 by a pin 19. The shoulders K are on the side walls of the receiver and the shoulder 20 is on the under side of the breech-bolt, and when the grip-lever moves forward to actuate the breech-bolt the pin 19 moves through the groove in the stock-wall until it reaches the curved end of these grooves, when the cooperating of these guides L and 11 lifts the forward end of the locking-bar M into engagement between the shoulders K and 20 and locks the breech-bolt in front of the guides and immediately behind the breech. The firing-pin I is actuated by a spring 49 and is provided with a sear 33, having a button, as seen in Fig. 5, by means of which button it may be disengaged from the firing-pin to discharge the weapon. This sear 33 is also provided with a slide 34 to maintain it out of action and leave the weapon to be discharged by an automatic sear alone.

The automatic sear 36 is pivoted to the frame and located in the path of the movement of the grip-lever and engaged by the grip-lever to discharge the weapon, as heretofore specified.

A lock 40 is provided to engage with the

grip-lever and is conveniently located on the stock in the path of the movement of the grip-lever and is connected by a pivot-pin 41 to be rotated into engagement with the grip-lever by hand to prevent the accidental discharge of the weapon. The cartridge-ejector A is hinged to the cartridge-carrier and engages with the stock-frame to cause the ejector to laterally eject the cartridge.

V is the guide which governs the movements of the cartridge-rack E, the rear end of the guide being attached to the stock, as seen in Fig. 1, and the forward end attached to the stock by the pin 32, as seen in Fig. 5.

Having now fully described the construction and operations of my improvements, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a breech-loading firearm, a grip-lever forming a hand-grasp, hinged to the stock or handle of the weapon, and conforming to the contour of the gripping-hand, and a breech-bolt connected to and carried by said lever.

2. In a breech-loading firearm, a breech-closing mechanism, comprising a swinging hand grip-lever hinged to the stock or handle of the firearm, and having an upper or breech-closing extremity, provided with a slot; a swinging breech-bolt connected to and carried with said swinging grip-lever by a pin which engages with the said slot to give a limited movement to the breech-bolt.

3. A forward locking device for a breech-loading firearm, comprising a stock-frame having a receiver formed on an arc of a circle; a cam-guide in the frame beneath the receiver, the forward end of the guide being eccentric to the movement of the breech-bolt; a breech-bolt formed on the arc of a circle to swing in said receiver; a hand grip-lever hinged to the stock or handle and having cam-slots in its upper end, and a locking-bar hinged at its rear end to the breech-bolt and connected to the grip-lever by a pin which coöperates with the said cam-guides to lock and unlock the breech-bolt in front of the guides and immediately behind the breech.

4. A forward locking mechanism for a breech-bolt, comprising a swinging hand grip-lever hinged to the stock or handle of the weapon; a swinging breech-bolt connected to the grip-lever by a pin and slot to give limited movement to the breech-bolt; a locking-bar hinged at its rear end to the breech-bolt and connected to the grip-lever by a pin and a movable and an immovable cam-guide engaged by said pin to lock and unlock the breech-bolt.

5. In a breech-loading firearm, a receiver having a cam-guide groove which has a varying direction, the cam part of the guide-way being eccentric to the path of movement in which the breech-bolt is guided, a breech-bolt movable in the receiver, and shell-extractors attached to the breech-bolt and engaging with the said cam-guide groove to engage and release the cartridge.

6. A stock-frame, in a firearm, having a receiver formed on an arc of a circle, and a cam-guide in the frame, formed with a varying rearward direction; shell-extractors pivoted to a swinging breech-bolt, and provided with a pin to engage the said guide, to cause the extractors to engage with the cartridge, and to move the hooked extremity of the extractors in line with the bore of the barrel.

7. In a breech-loading firearm; a stock-frame having a cam-guide in walls of the receiver, the guide having a rearward and varying direction, and the rear end of the guide having a short curve eccentric to the movement of the breech; shell-extractors attached to a reciprocating breech-bolt, and provided with a pin to engage with said cam, the rear end of the cam causing the extractors to assist in ejecting the shell.

8. In a breech-loading firearm; a carrier-lever pivoted to an operating-lever and connected to a movable cartridge-carrier, and provided with a pin to engage with a guide in the stock-wall to modify the movement of the lever.

9. In a breech-loading firearm, a cartridge-carrier having gripping-arms pivotally supported in the carrier, having a crank to rotate the arms, their upper ends formed to grip the cartridge; a movable slide retained on the upper side of the carrier and connected to the cranks to rotate the arms into and out of engagement with the cartridge.

10. In a breech-loading magazine-firearm, a cartridge-carrier having gripping-arms pivoted to the carrier, and having cranks; a reciprocating slide to engage the arms by means of cam-slots to rotate the arms.

11. In a breech-loading firearm; a firing mechanism, comprising a swinging hand-grip lever; a breech-bolt connected to and carried with the lever; a firing-pin carried by the breech-bolt; and a sear to hold and release the firing-pin.

12. In a breech-loading firearm; a firing mechanism, comprising a grip-lever; a breech-bolt carried by the grip-lever; a spring-actuated firing-pin carried in the breech-bolt; a sear engaging the firing-pin and located in the path of the movement of the grip-lever, and disengaged by the grip-lever to fire the weapon.

13. In a breech-loading firearm; a stock-frame having guides 9, 10 and 14 in the walls of the stock-chamber; a swinging grip-lever hinged to the stock or handle; a carrier-lever pivoted to the grip-lever, and having a pin engaging the guide 14; and a carrier having pins at its forward and rear ends to slide in the guides 9 and 10, the carrier being pivotally connected to the carrier-lever.

14. In a breech-loading firearm; a loading mechanism, comprising a swinging grip-lever pivoted to the stock or handle of the weapon; a breech-bolt connected to and carried with the grip-lever; a carrier-lever connected to the grip-lever by a pin and slot; and a reciprocating carrier connected to the carrier-lever.

15. In a magazine-firearm, a swinging grip-lever hinged to the stock or handle of the weapon; a breech-bolt connected to and carried with the grip-lever; a carrier-lever connected to the grip-lever; a carrier having gripping-arms pivoted in the carrier, and having a crank engaged by a reciprocating slide to rotate the arms; a cartridge-magazine carrying its cartridges in file, and having a rack to maintain the regular order of the cartridges; and a spring engaging the rack and disengaged by the carrier.

16. In a firearm; a cartridge-ejector attached to the upper surface of a cartridge-carrier, and having an upwardly-projecting arm to engage the cartridge, and a laterally-projecting arm to engage with a shoulder on the stock-wall, the upward movement of the carrier actuating it to laterally eject the cartridges.

17. In a breech-loading firearm; a swinging grip-lever pivoted to the stock or handle of the weapon; a breech-bolt connected to and carried with the grip-lever; a carrier-lever connected with the grip-lever; a movable carrier attached to the carrier-lever; and a cartridge-ejector attached to the upper surface of the carrier, and having an upwardly-extending arm to engage the cartridge, and a laterally-extending arm to engage a lug on the side wall to laterally eject the cartridge.

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Witnesses:

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