

No. 708,794.

Patented Sept. 9, 1902.

J. M. BROWNING.
AUTOMATIC FIREARM.

(Application filed Nov. 7, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

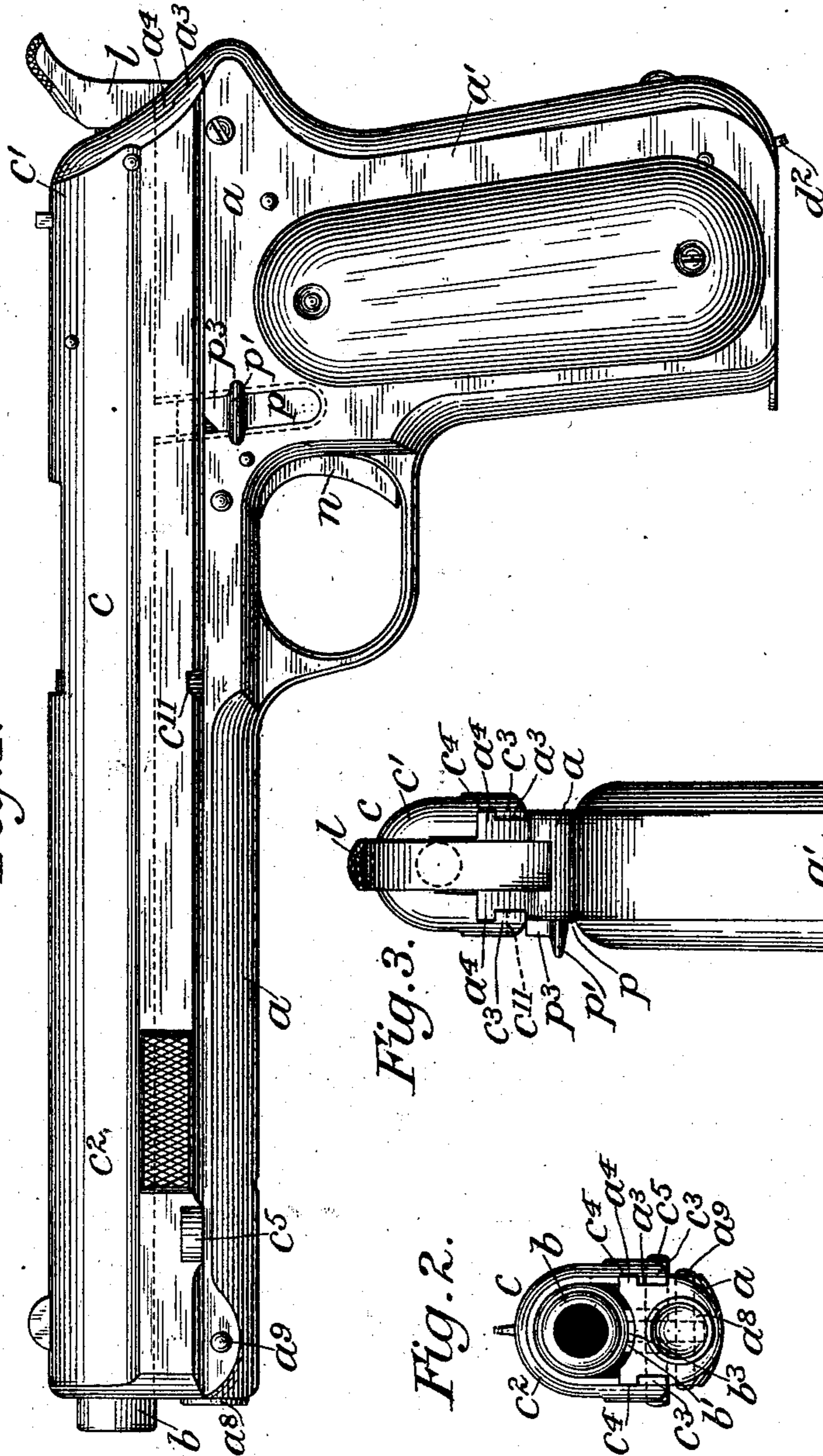


Fig. 3.

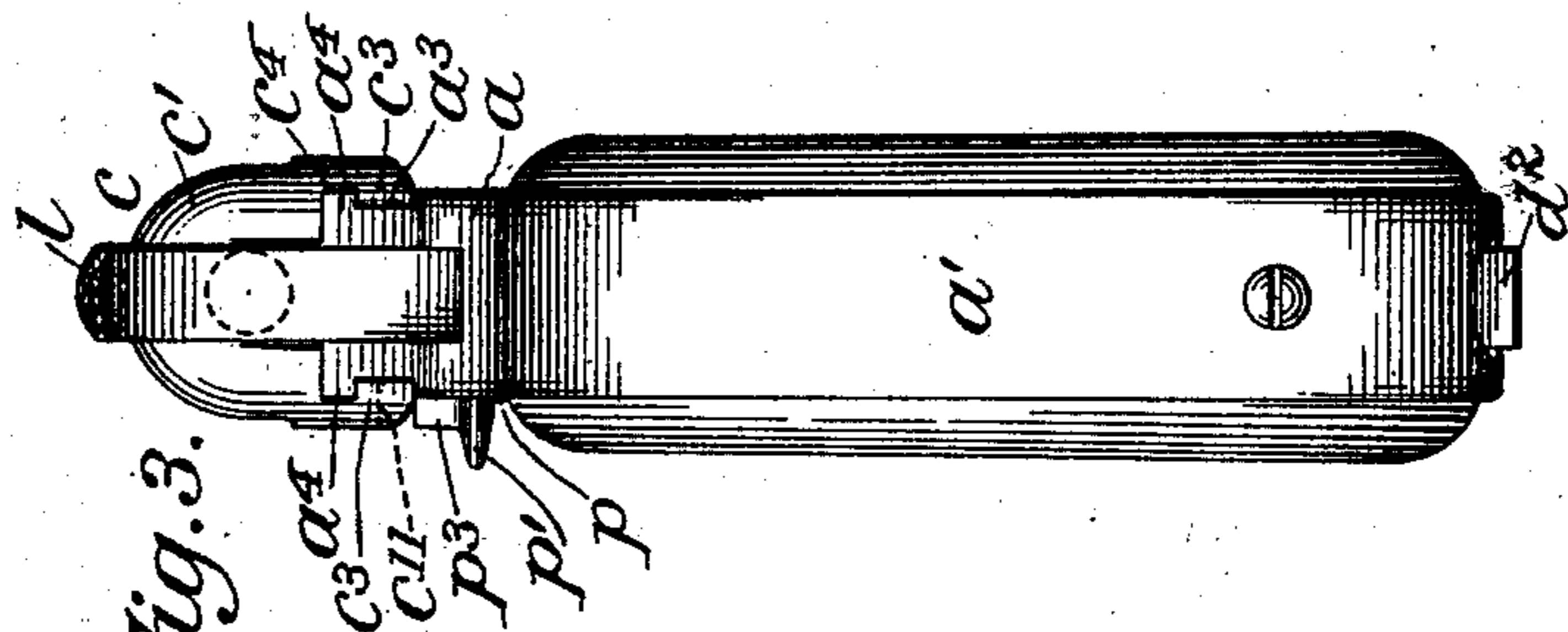
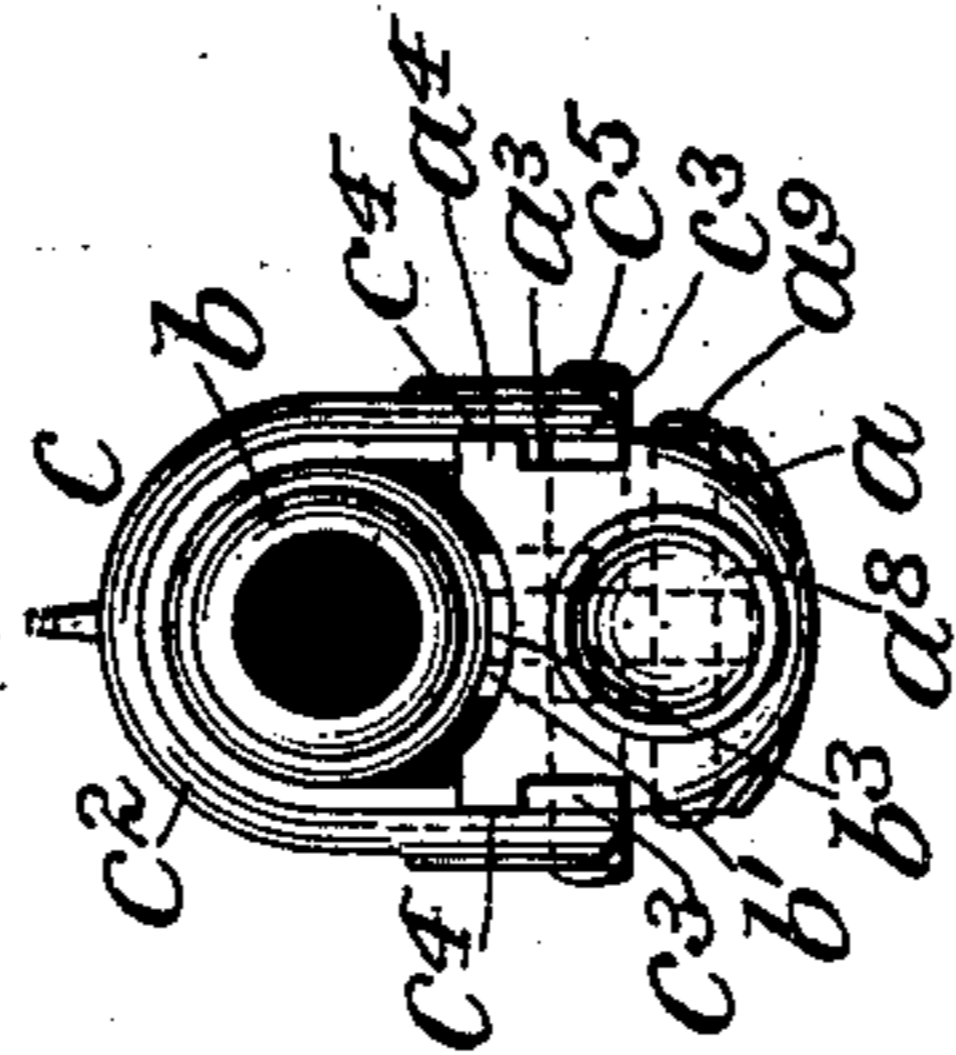


Fig. 2.



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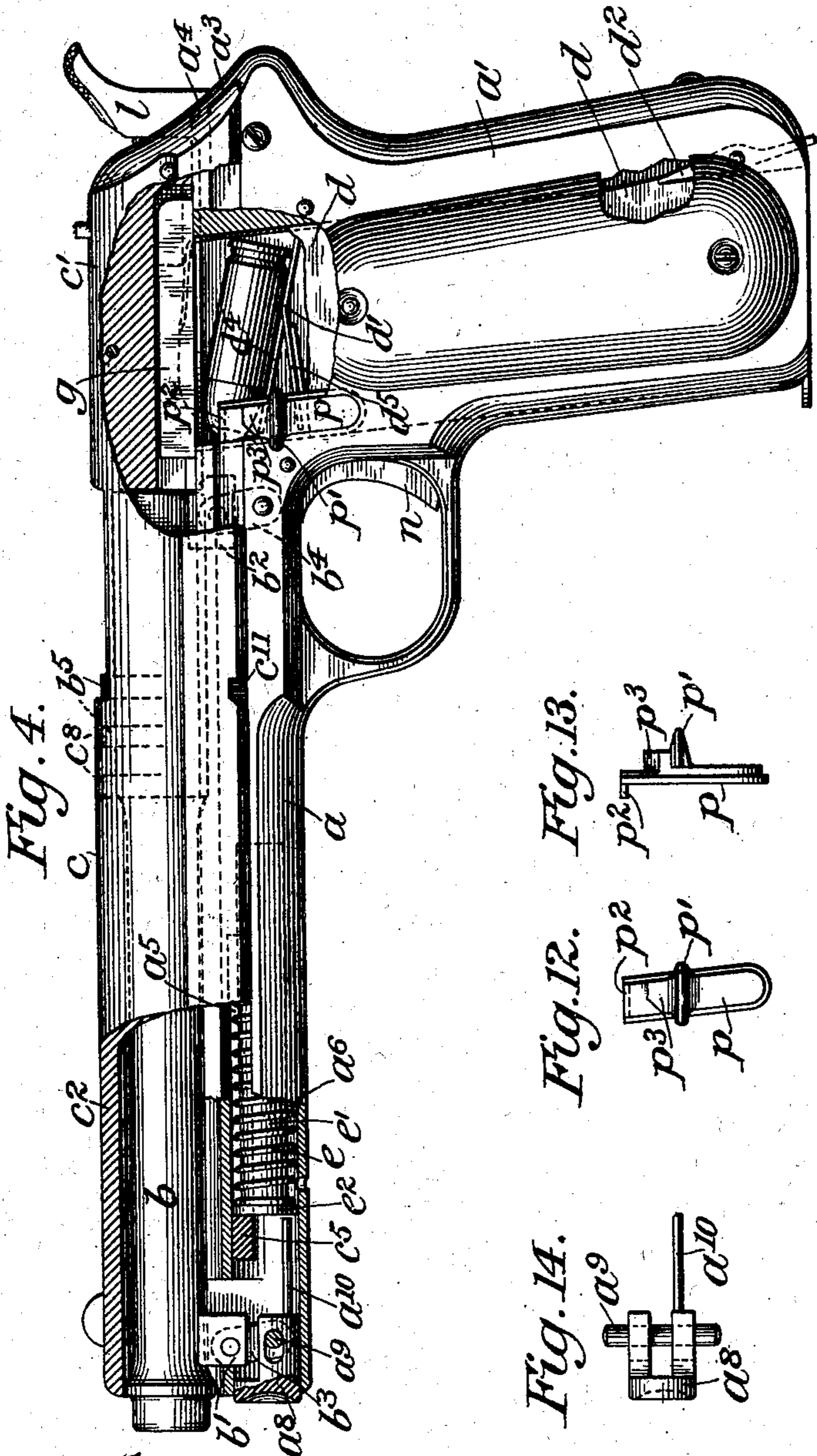
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3 Sheets—Sheet 2.



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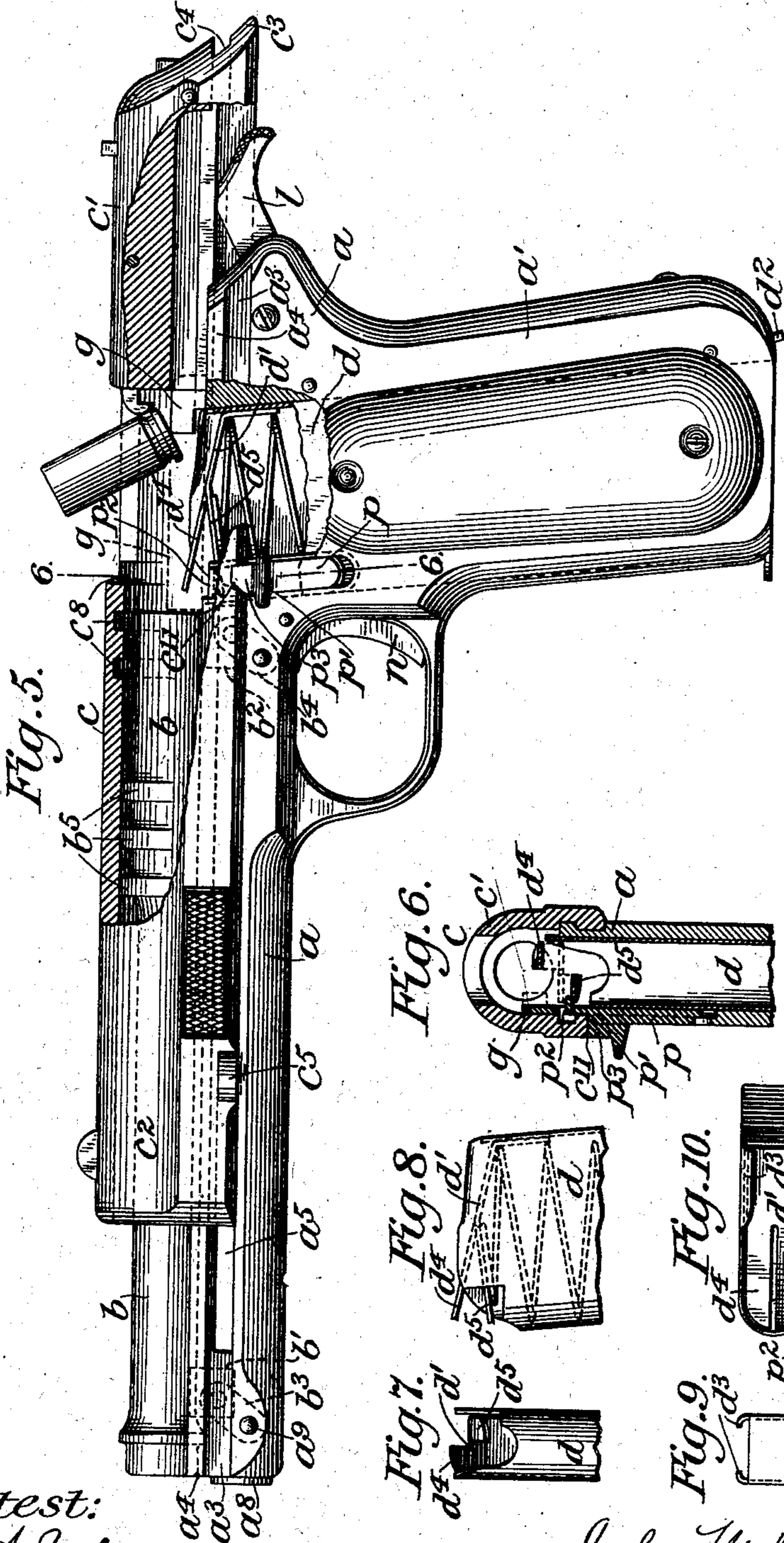
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH.

AUTOMATIC FIREARM.

SPECIFICATION forming part of Letters Patent No. 708,794, dated September 9, 1902.

Application filed November 7, 1901. Serial No. 81,361. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, a citizen of the United States, residing in Ogden, county of Weber, in the State of Utah, have invented certain new and useful Improvements in Firearms, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to automatic firearms of that description in which the several operations—such as the opening of the breech after firing a shot, the ejection of the empty cartridge-shell, the cocking of the hammer, the presentation and introduction of a new cartridge to the chamber of the barrel, and the closing of the breech—are automatically effected through or by the energy of the recoil of the breech-block or that part which at the time of firing the shot closes the breech of the barrel, and more especially relates to firearms of this description in which energy is stored during the opening movement of the breech-block in a spring, the reaction of which is utilized to actuate the return or closing movement of the breech-block.

One object of the invention is to produce a firearm of this class in which the breech-block shall not only be adapted to move on the frame to and from the barrel to be engaged by the reaction-spring and to be positively limited in its movements on the frame, but shall be at will and readily removable from the frame and disengaged from the reaction-spring without requiring the use of any tool for its disengagement and removal.

Another object is to provide a positive means for at once indicating when the supply of cartridges in the arm has become exhausted and to facilitate the renewal of the supply of cartridges without requiring the breech mechanism to be operated, and thereby to reduce to a minimum the unavoidable interruption of a continuous firing of the arm.

These objects are attained by mechanism of very simple and practical construction, which is efficient and perfectly safe in use and not liable to get out of order.

For the purposes of explanation and illustration of the invention it is shown herein as embodied in a magazine-pistol in which in firing the barrel and the breech-block are in-

terlocked and recoil some distance together, and during the rearward movement the barrel has another movement imparted to it, which unlocks it from the breech-bolt, after which the movements of the barrel are arrested, while the breech-block continues to recoil until the breech is fully opened. Beneath the barrel a reaction-spring is arranged in a chamber in the frame and connected with the breech-block, energy being stored in this spring, which effects the return or closing movement of the breech-block and of the barrel and the interlocking thereof. The features of such a magazine-pistol are shown and described in the United States Patent No. 580,924, granted April 20, 1897; but it will be understood that the invention is applicable to other firearms—such, for example, as those in which the barrel is fixed to the frame and the breech-block alone moves rearward and is returned forward by energy stored in a reaction-spring. Therefore it is not intended to restrict the present invention to a magazine-pistol nor to any other particular kind of firearm nor to the combination of the several features of improvement in a single structure.

In the accompanying drawings, wherein is represented the embodiment of the invention, Figure 1 is a left-hand side elevation of the pistol with the breech closed. Figs. 2 and 3 are respectively front and rear end views of the same. Fig. 4 is a side elevation similar to Fig. 1, but showing the forward portion of the frame and of the breech-slide in section, portions of the breech-slide, grip, and cartridge-holder being broken away to expose other parts to view. Fig. 5 is a side elevation with the breech-slide in its rearward position and locked by the latch-slide, a portion of the breech-slide being broken away, as also a portion of the receiver above the grip, exposing to view the latch-slide and the top of the empty magazine with the spring-follower, the ejector *g* being shown in dotted lines. Fig. 6 is a detail cross-section on the plane indicated in the line 6 6 of Fig. 5. Figs. 7, 8, 9, 10, and 11 are detail views of the magazine and follower, the latch-slide being also shown in Fig. 10. Figs. 12 and 13 are detail elevations of the latch-slide detached. Fig. 14 is a detail plan view of the plug in the end

of the spring-chamber and of the transverse pin which holds it in place.

Similar letters refer to similar parts throughout the several views.

5 In the pistol represented in the drawings the barrel b is attached to the top of the frame a by two links b^3 and b^4 , which are pivoted in the frame by transverse pins and in the same manner secured by pins to the lugs b^1 and b^2 10 of the barrel. On the top of the frame the breech-slide c is fitted to slide rearwardly and forwardly, the rear part of the breech-slide c forming the breech-bolt c^1 , adapted to close the chamber of the barrel, and the forward 15 portion c^2 of the breech-slide extending in semitubular form and inclosing the barrel. The sides of the breech-slide extend downward, overlapping the sides of the frame, and have longitudinal ribs and grooves c^3 and c^4 , 20 engaging corresponding ribs and grooves a^3 and a^4 on the frame a to hold the breech-slide to the frame and guide it in its reciprocation. The barrel is provided with locking-ribs b^5 , and the interior surface of the breech-slide 25 has corresponding recesses c^8 , whereby the breech-slide and the barrel are securely interlocked when in their forward firing position; but when the barrel and breech-slide are moved rearward, as by the energy of recoil on firing a shot, the barrel, swinging on 30 the links, has also a downward movement toward the frame, which causes the disengagement of the locking-ribs b^5 from the recesses c^8 , the rearward movement of the barrel being arrested, while the breech-slide continues 35 its rearward movement away from the barrel, thus opening the breech. Beneath the barrel the frame a has a longitudinal chamber a^6 for the reception of the reaction-spring e , and a transverse key c^5 is inserted through 40 rectangular recesses in the sides of the breech-slide and passes transversely through the chamber a^6 in the frame, projecting, normally, slightly from each side of the breech-slide. A longitudinal slot a^5 through the 45 frame allows the key c^5 to travel freely therein, and the rear end of said slot a^5 forms an abutment for the key c^5 to limit the rearward movement of the breech-slide and positively 50 obviates all danger of the breech-slide flying back and from the frame. The key c^5 also forms the bearing through which the reaction-spring e acts upon the breech-slide to return it and the breech-bolt c^1 to the normal closed 55 position after the recoil has moved them to the rear, the forward end of the spring e being fitted to a piston e^1 , the head e^2 of which bears against the key c^5 , which is slightly recessed for the reception of said head e^2 , thereby preventing the accidental displacement of the key 60 c^5 . The rear end of the spring e bears against the rear end of the chamber a^6 . The frame a in rear of the barrel forms the receiver and has an opening at the top for the ejection of 65 the cartridge-shells, and the breech-bolt is provided with a firing-pin and an extractor of usual construction, while an ejector g is

fitted to the receiver. Below the receiver the frame a has the grip or handle a^7 and in rear of the grip the hammer h , other parts of 70 the firing mechanism being fitted in the frame, while in front of the grip the trigger n is located. Within the grip a^7 and extending upward through it to the receiver is arranged a chamber for the reception of the 75 cartridge magazine or holder d , which is a sheet-metal tube in which the cartridges are laid one upon the other, resting upon a spring-follower d^1 , by which they are pressed upward to the receiver. The holder d is re- 80 tained in the grip by a spring-latch d^2 , and at the upper end of the holder the rear portion of the side walls are turned inward to form ears d^3 , which engage the rear portion 85 of the topmost cartridge and prevent its escape from the holder except when the cartridge is pushed forward, as by the forward movement of the breech-bolt in closing the breech.

All of the parts thus far referred to may 90 be and are here shown as of the same construction and mode of operation as fully set forth in said Letters Patent No. 580,924 and forming no part of the present invention re- 95 quire no further description or explanation herein except so far as certain features will be referred to hereinafter.

In order to be able to withdraw the key c^5 , as for the removal of the breech-slide c and breech-bolt c^1 , it is necessary to free the key 100 c^5 from the piston-head e^2 , by which it is locked in place. Heretofore this was accomplished, as described in the Patent No. 580,924, above referred to, by cocking the hammer, drawing the breech-slide to the rear 105 until the key c^5 had passed by a small hole in the bottom of the spring-chamber a^6 , and inserting a pin through this hole into the path of the piston e^1 . On then pushing the breech-slide forward the pin would arrest the 110 forward movement of the piston e^1 and spring e , thus freeing the key c^5 from the head e^2 of the piston and permitting the key c^5 to be withdrawn. By the improved construction the key can be released and withdrawn with- 115 out the use of a pin or any other tool and without having to cock the hammer or to move the breech-slide, this result being attained without adding to the number of parts of the arm and without making them more 120 complicated or expensive.

The front end of the chamber a^6 for the reaction-spring e is closed by a plug a^8 , held in place by a transverse spring a^9 , which also serves to attach the link b^3 to the frame, the 125 upper end of said link being pivotally connected to the barrel b . Instead of being held immovable by the pin a^9 the plug is allowed to have a slight longitudinal movement in the chamber a^6 by elongating the hole in the plug 130 through which the pin passes. To the rear end of the plug a^8 is affixed a small projecting rod a^{10} , which extends rearwardly beneath the key c^5 toward the front of the head

e^2 of the piston e' , but without making contact with the head when the parts are in their normal position. The front end of the plug a^8 is made slightly concave in a form convenient for the application of the pressure of a finger. When it is desired to withdraw the key c^5 , it is only necessary to push the plug a^8 inward, so that the projecting rod a^{10} shall come in contact with the piston e' or its head, move the same rearward against the tension of the reaction-spring e , and thereby remove the head e^2 of the piston from the recess in the key c^5 and release the latter, so that it can be easily withdrawn. The replacing of the key is as readily done by pushing inward the plug a^8 , inserting the key through the breech-slide and frame, and releasing the plug, when the spring e will push the head of the piston into the recess of the key, and thereby lock it and the breech-slide in place, at the same time pushing the plug to its normal forward position, so that the pistol is ready for charging and firing.

The charging is performed by inserting a loaded cartridge-magazine into the grip, drawing back the breech-slide, and releasing it. During the closing movement of the breech-slide by the reaction-spring e the topmost cartridge in the magazine is transferred to the chamber of the barrel, so that a pull on the trigger will fire a shot. The recoil resulting will again open the breech, eject the empty shell, cock the hammer, and store energy in the reaction-spring for the closing movement by which the next cartridge is transferred to the barrel ready for firing by a pull on the trigger. These operations may be repeated so long as cartridges are supplied by the magazine in the grip.

The cartridge magazine or holder d may be the same as that shown and described in said patent No. 580,924 except that provision is made for engagement of the follower with a latch, hereinafter described, preferably by cutting a small portion from the upper end on the left side, forming a substantially square notch to the left of the front opening. The spring-follower d' in the magazine also is unchanged except that it is arranged to engage the latch aforesaid, preferably being divided for a part of its length, a cut running from its front end rearward through about half the length of the follower, one of the two parts thus formed, as d^4 , retaining its shape and serving for raising the cartridges in the magazine, the other part d^5 being bent downward, the front end of this part standing considerably below the other part d^4 . On the left side of the frame, in rear of the trigger, a substantially vertical cut is made running for some distance downward from the top through the left-hand wall of the receiver, the forward edge of said cut preferably being parallel to and coinciding with the front of the magazine in the grip. In this cut is fitted a small slide or latch p of a thickness equal to that of the wall of the grip outside

of the magazine-seat and in cross-section T-shaped, the cut being correspondingly shaped. On the outside the slide has a projecting thumb-piece p' of somewhat greater width, this and the T shape of the slide confining it in the cut, so that it may be moved freely up and down. On the inside the slide p at its top is provided with a projecting rib p^2 , which extends inward into the notch cut in the top of the magazine and far enough to stand in the path of the follower, but not far enough to interfere with the free upward and forward passage of the cartridges from the magazine to the receiver. Above the slide p the cartridge-ejector g is attached to the top of the frame or receiver and serves to limit the upward movement of the slide p when the breech-slide is removed from the frame, but allows some up and down play to the slide p . In the lower edge of the breech-slide c , on its left side, a notch c^{11} is cut, in a position which brings this notch above the thumb-piece p' on the slide p when the breech-slide c is moved to its rearmost position, as in opening the breech, and above the thumb-piece the slide p is shaped in the form of a latch-nose p^3 , corresponding to the notch c^{11} in the breech-slide, the forward edge of the latch and of the notch being beveled to incline rearward and upward. When the breech is fully open and the latch p^3 is pushed into the notch c^{11} in the breech-slide, the latter is thereby positively locked in its rear position, but may be released by pressure upon the thumb-piece p' . As the latch-slide p moves freely in the cut, its weight is sufficient to keep it in its lower inoperative position, even when the opening of the breech brings the notch above it, unless it is pushed upward by some means. While a cartridge remains in the magazine the latch-slide p remains inoperative, as on firing the cartridges are successively fed from the magazine to the receiver and to the chamber in the barrel without operating the slide p ; but when the last cartridge has been fed to the barrel the spring-follower d' rises to the top of the empty magazine, and the left-hand part d^5 of the front end of the follower engages the inward-projecting rib p^2 of the latch-slide p , so that when on firing this last cartridge the breech-slide c recoils the spring-follower raises the latch-slide and by pushing the latch-nose p^3 into the notch c^{11} locks the breech-slide in its open rear position. The breech remaining thus wide open serves as an unmistakable indication that the magazine is empty and for continued firing must be replaced by a loaded one. This is now readily and safely accomplished by withdrawing the empty magazine from the grip and introducing a loaded one while the breech remains open. Then releasing the breech-slide by pressing upon the thumb-piece p' of the latch-slide the breech will be automatically closed by the reaction-spring e , and the pistol will be ready again for firing. In case the firing is to be discon-

tinued after a charged magazine has been inserted it is only necessary to release the open breech-slide and to lower the hammer, which makes the arm safe, though loaded, and it requires only the cocking of the hammer to make it ready for firing again.

Another great advantage gained by the improvement is the fact that during the replacing of the empty magazine by a loaded one the pistol need not leave the hand with which it is fired, the exchange of the magazine being wholly effected by the other hand.

It will be evident that various features of the invention may be employed independently of the others and in firearms of a different kind from that which has been described herein and that various changes in form and arrangement may be made without departing from the spirit of the invention.

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

1. In a firearm, the combination with a frame, a reaction-spring mounted in the frame, and a breech-slide formed to engage the frame and slide thereon, of an abutment for said spring carried by the breech-slide and a plug having a limited movement in the frame and adapted to cooperate with said spring to press the same back and release the abutment, substantially as shown and described.

2. In a firearm, the combination with a frame having a chamber, a reaction-spring mounted in said chamber, and a breech-slide formed to engage the frame and slide thereon, of a key carried by the breech-slide and traveling in a slot in the frame to couple said

slide and frame and form an abutment for said spring, and a plug having a limited movement in the end of said chamber and adapted to cooperate with said spring to press the same back and release the key, substantially as shown and described.

3. In a firearm, the combination with a frame, a breech-slide formed to slide on the frame, and a magazine having a spring-actuated follower, of a latch mounted to slide in the frame, said latch having a locking-nose to engage the breech-slide and having a projection in the path of said follower whereby when the magazine is empty the latch is raised to engage the breech-slide and hold the same in its rearward position, substantially as shown and described.

4. In a firearm, the combination with a frame having a slot in its side, a breech-slide formed to slide on the frame and a magazine having a spring-actuated follower, of a latch mounted to slide in the slot in the frame, said latch having a locking-nose to engage the breech-slide and having a projection in the path of said follower, whereby when the magazine is empty the latch is raised to engage the breech-slide and hold the same in its rearward position, substantially as shown and described.

This specification signed and witnessed this 25th day of October, A. D. 1901.

JOHN M. BROWNING.

In presence of—

GEO. E. BROWNING,
J. C. ZITYMAN.