E. H. SEARLE.

RELOADING MECHANISM FOR MAGAZINE FIREARMS.

APPLICATION FILED MAY 31, 1919.

1,382,680. **Patented June 28, 1921.**

2 SHEETS—SHEET 1.

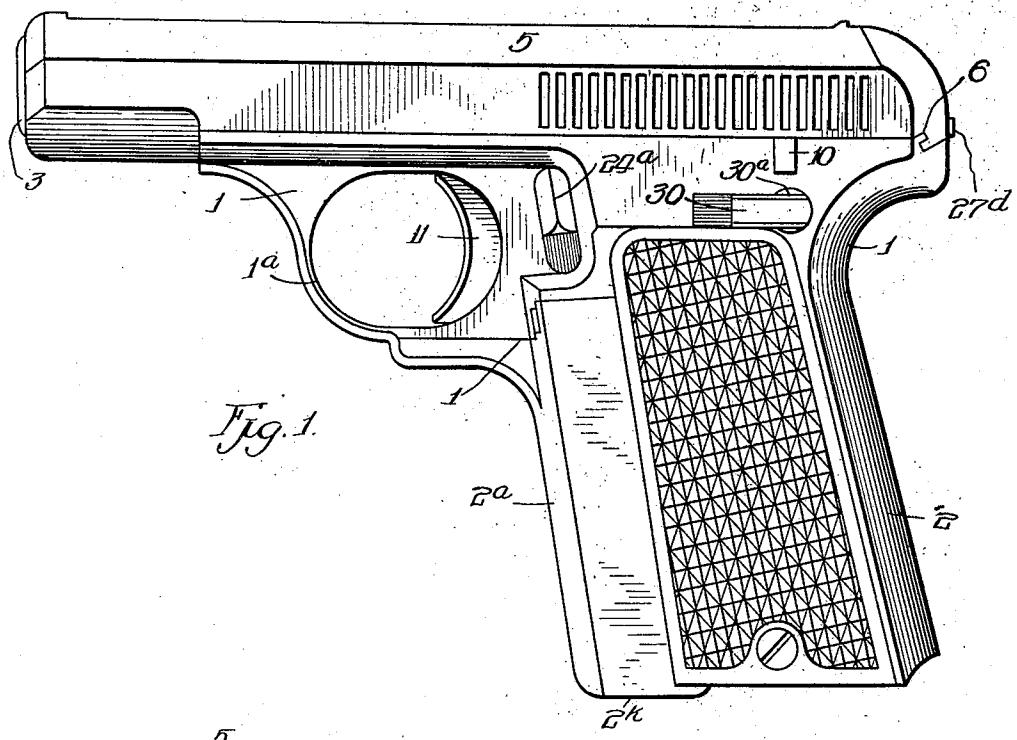


Fig. 1.

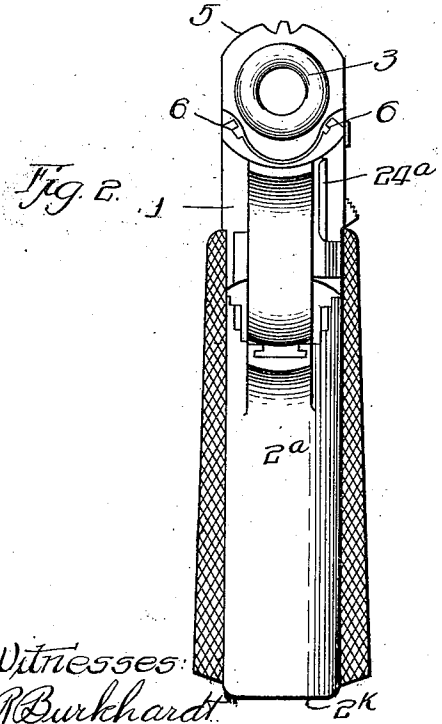


Fig. 2.

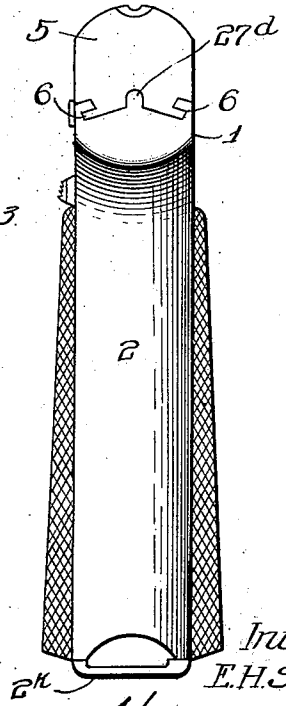


Fig. 3.

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2 SHEETS—SHEET 2.

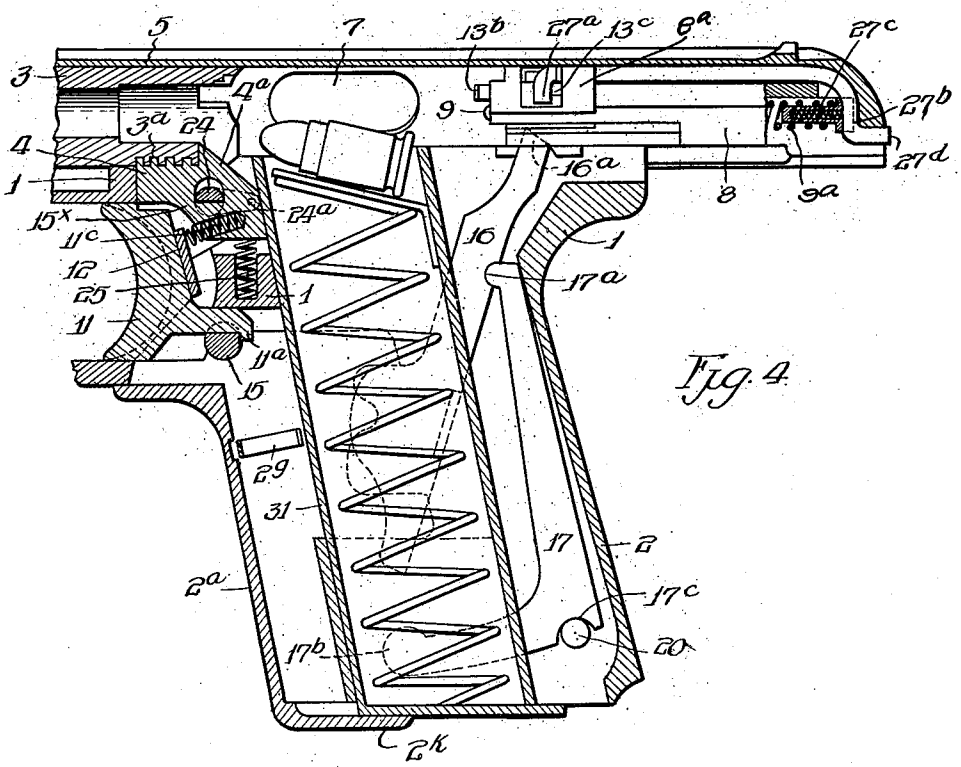


Fig. 4

Fig. 5

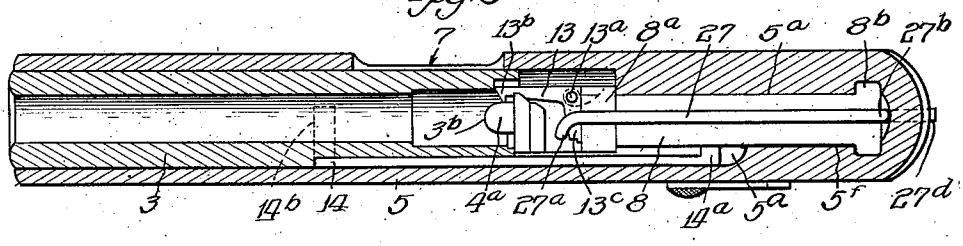
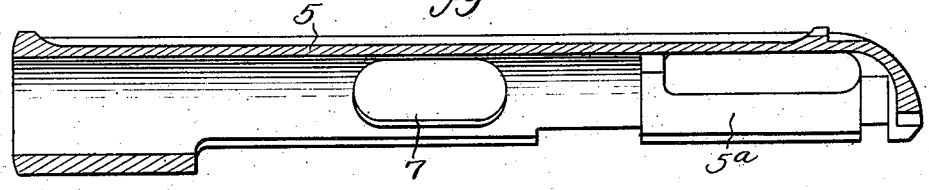


Fig. 6



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UNITED STATES PATENT OFFICE.

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RELOADING MECHANISM FOR MAGAZINE-FIREARMS.

1,382,680. Specification of Letters Patent. Patented June 28, 1921.

Original application filed July 22, 1918, Serial No. 245,981. Divided and this application filed May 31, 1919. Serial No. 301,036.

To all whom it may concern:

Be it known that I, ELBERT H. SEARLE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Reloading Mechanism for Magazine-Firearms, of which the following is a specification.

This application is a division of my application Serial No. 245,981 filed July 22nd, 1918, for Letters Patent for improvements in breech-loading magazine fire-arms, the several features of novelty in which, while applicable for the most part to magazine fire-arms in general, are designed particularly for and are illustrated as being embodied in a semi-automatic or recoil actuated fire-arm of the pistol type.

More specifically stated, the invention herein claimed relates to certain improvements in the construction and relation of parts having to do with extracting and ejecting of the spent cartridge shell, the barrel upon which the ejector is mounted, the breech-slide with which the barrel and ejector are assembled and through which the barrel is mounted on the frame, the breech-closure mounted in the rear end of the breech-slide, in position to open and close the breech end of the barrel as the breech-slide reciprocates over the barrel, and a load indicator developed from the actuating rod of the extractor.

In the accompanying drawings—

Figures 1, 2, and 3 represent a left side elevation, a front elevation, and a rear elevation of a fire-arm designed as a pistol, in which the several features of my invention may be embodied.

Fig. 4 is a vertical longitudinal section in an intermediate plane through the fire-arm, and showing the positions of the parts at the commencement of reloading.

Fig. 5 is a section in about the horizontal plane of the bore and disclosing the extractor and ejector in their relation to the barrel and the breech-closing element therefor; and

Fig. 6 is a vertical axial section of the breech-slide.

1 represents the frame; 2 the grip; 3 a barrel held against both rotary and longitudinal movement upon the frame by the locking block 4; 5 a breech-slide which extends the full length of the frame, and is mounted thereon to slide longitudinally relatively thereto, through means of the tongue and groove joints 6, and which is provided with the usual ejector opening 7, 8 the breech-closure removably inserted through the under side of the breech-slide, but longitudinally fixed therein and carrying the striker 9 with its driving spring 9^a; 10 the sear; 11 the trigger; 12 the trigger and sear connector; 13 the extractor; and 14 the ejector.

While each of these parts involves novelty in its construction and assembly in the fire-arm, so far as above described, each enters into the organization for the same general purposes and in substantially the same functional relationship to the other parts as is common in fire-arms of this general type.

The grip 2 embodies in its construction a front member 2^a, which imparts rearward movement to a breech-controlling lever system to open the breech to admit a cartridge from the magazine upward into the path of the breech-closure, return movement of the lever system to close the breech being imparted by a spring as described in application Serial No. 245,981, aforesaid. This lever system comprises a transmitting lever 16 having its upper end 16^a constantly engaged with the breech-closure 8, and, therefore, adapted to impart rearward and forward longitudinal movement to both said closure and the breech-slide which carries it, and a master lever 17 which has a constant bearing 17^a against the lever 16, a fixed fulcrum 17^b upon a suitable portion of the frame, and a bearing 17^c upon the stirrup 20 depending from the upper end of the main spring 21.

Mounting the barrel upon the frame.

The barrel 3 fits snugly in the breech-slide 5 so as to be confined thereby in all traverse directions, and it thus becomes necessary merely to anchor the barrel upon the frame firmly against rotary and longitudinal displacement to secure a complete mounting. The barrel is first inserted in the breech-slide 5, being introduced endwise at the forward end of the breech-slide and the latter is then slid rearwardly over the frame, with the tongue and groove 6 inter-engaged, until the ribs and grooves 3^a of the barrel come into registry with the locking-block 4 in the frame. In introducing the barrel into the breech-slide, the barrel is rotated until the

longitudinal groove 5b of the breech-slide catches the end 14a of the ejector which is carried by, and circumferentially and longitudinally fixed upon, the barrel as hereinafter described, and the ejector thus serves as a means for angularly locating the rib 3a and recess 3b of the barrel for registry with the locking block 4 and its lug 4a carried by the frame. Block 4 may be depressed by a cam shaft 24 in opposition to a spring 25, until the ribs thereon are retired from the path of the ribs 3a of the barrel, rotation of the cam 24 being imparted by any convenient means, such, for instance, as the lever 24a (Fig. 1), and after the ribs and grooves are thus in registry the block 4 is allowed to rise under the action of its spring, and the barrel will be secured. Block 4 not only secures the barrel 3 against longitudinal movement, but has the lug 4a that enters a recess 3b in the rear end of the barrel (Fig. 5), and this firmly secures the barrel against rotation upon the frame. Lug 4a conveniently serves as the slide or incline through which to guide the point of the cartridge into the chamber of the gun when it is being displaced from the upper end of the magazine by the closing of the breech.

Breech-closure.

The breech-closure is in the form of a block 8 inserted through the open under side of the breech-slide 5, while the latter is separated from the frame, and held therein, as suggested in Figs. 5 and 6, by means of the enlargements 8a and 8b at the ends of the breech-closure and the thickened portions 5a on the inner side walls of the breech-slide.

The extractor.

The extractor 13, as clearly shown in Fig. 5, is in the form of a bell-crank lever fulcrumed at 13a with the usual end 13b in position to engage the neck of a cartridge, and having in this instance, arm 13c extending transversely of the breech-block 8, and in position to receive the forward hook end 27a on a draw rod 27 which lies longitudinally along the top of the breech-block, and has its rear end 27b dropped into alinement with the spring 27c that imparts a rearward thrust to said draw rod, and through it rocks the extractor 13 upon its pivot 13a to cause it to engage the cartridge. Spring 27c might obviously be the rear end of the spring that controls the striker, but I prefer to employ a separate spring of milder strength for this purpose, and to leave the entire effective force of the striker spring to control that part.

Load indicator.

A further feature of the draw rod 27 is its rearward projection 27d presented at the rear end of the breech-slide in such manner that by its protrusion beyond or retirement into coincidence with the rear surface of the breech-slide it will indicate whether or not the extractor is displaced by the presence of a cartridge; in other words, will show whether or not the chamber of the firearm contains a cartridge.

The ejector.

The ejector in the present organization is mounted upon the barrel, and is assembled and disassembled with the barrel. To this end the ejector comprises a rearwardly extending rod 14 confined between the barrel 3 and the breech-slide 5, as shown in Fig. 5, with a shell-engaging shoulder 14a at its rear end presented in the path of the shell as it is withdrawn by the extractor 13 and at the time the ejector opening 7 is brought into proper position; and this ejector is preferably provided with an arcuate clip 14b at its forward end seated in a correspondingly formed groove in the exterior surface of the barrel, and serving the purpose of fixing the ejector against longitudinal movement. In this aspect of the clip 14b it is merely a shoulder longitudinally interlocking with the barrel, and this is its prime function since it is naturally held against displacement from the barrel by the wall of the breech-slide which surrounds it. But the clip 14b is preferably made to embrace more than a semi-circle of the barrel, so that it serves the additional function of holding the ejector to the barrel even when the latter is separated from the other parts and until it becomes necessary to remove or replace the ejector when the resilient nature of the clip permits this to be conveniently done.

Position index for non-rotary barrel.

The ejector 14 serves still another purpose, in that it enters a recess 5b in the breech-slide 5 when the barrel is introduced into the latter, and this determines the position of the barrel circumferentially within the breech-slide, and insures position of the interlocking ribs 3a for registry with the locking block 4, and greatly adds to the convenience of first assembling the barrel with the breech-slide, and then sliding both of these parts longitudinally over the end of the frame and without the necessity of further manipulation of the barrel. The length of the groove 5b is, of course, sufficient to avoid interference with the reciprocating action of the breech-slide independently of the barrel, and it may also be utilized to limit the inward movement of the barrel in the breech-slide, and thus further assist in positioning the locking ribs of the barrel over those of its securing block in the frame.

31 represents the magazine which is introduced between the members 2, 2a of the

grip as described in my original application.

I claim:

1. In a fire-arm having a reciprocating breech-closure, an extractor carried by said breech-closure, a rod extending rearwardly from said extractor and drawing rearwardly thereon, and a longitudinally reacting spring on the breech-closure pressing rearwardly upon said rod and thereby holding the extractor to its duty.

2. In a fire-arm having a reciprocating breech-closure, an extractor carried by said breech-closure, a rod extending rearwardly from said extractor, and an axially located spring on the breech-closure acting upon said rod in the direction to hold the extractor to its duty, said rod being presented at the rear surface of the fire-arm and serving by its position to indicate the presence or absence of a cartridge in the chamber of the fire-arm.

3. In a fire-arm having a reciprocating breech-closure with an extractor mounted thereon, a rod engaging the extractor to control the same and extending longitudinally of the breech-closure to the rear end thereof, a striker carried by said breech-closure, and a spring arranged co-axially with the axis of the striker engaging the rod and through the rod controlling the extractor.

4. In a fire-arm having a reciprocating breech-slide with a breech-closure removably mounted therein, an extractor carried by the breech-closure, and a controlling rod for said extractor mounted upon the breech-closure and extending longitudinally thereof; said rod being held in place upon the breech-closure by the breech-slide in which the breech-closure is mounted.

5. In a fire-arm having a removable barrel, an ejector carried by and longitudinally and circumferentially fixed on said barrel, and interengaging with a part adjacent the barrel to define the circumferential position of the barrel.

6. In a fire-arm having a reciprocating breech-slide with an extractor thereon and a removable barrel in said breech-slide carrying an ejector for coaction with said extractor; said ejector being longitudinally and circumferentially fixed on the barrel and interengaged with the surrounding wall of the breech slide to define the circumferential position of the ejector relative to the extractor.

7. In a fire-arm having a reciprocating breech slide with an extractor thereon carried thereby and circumferentially and longitudinally fixed therein, a removable barrel carrying an ejector for coaction with said extractor; said ejector comprising a shouldered arm longitudinally and circumferentially fixed upon the barrel and extending rearwardly from the breech end thereof; and said breech slide having a longitudinal groove engaged by the ejector to determine the position of the ejector and barrel relative to the extractor.

8. In a fire-arm having a frame, a reciprocating breech slide with an extractor thereon carried thereby, a removable barrel having an ejector longitudinally and circumferentially fixed on said barrel and adapted to coact with said extractor; said ejector comprising a shouldered arm extending rearwardly from the breech end of the barrel; said breech slide having a longitudinal groove that receives the ejector to determine the circumferential position of the barrel; and said frame having means interlocking with the barrel when the barrel is in the position defined by the ejector.

9. In a breech-loading fire-arm, a frame, a breech slide engaging the frame by longitudinal movement and sliding thereon in the functioning of the fire-arm, a barrel carried by said breech slide, assembled therewith by endwise insertion through the front end thereof, and movable therewith into position upon the frame, and locking means carried by the frame and movable thereon into engagement with the barrel to resist longitudinal movement of the latter during the functioning movement of the breech slide; said breech slide having an internal longitudinal groove; and said barrel having an ejector longitudinally and circumferentially fixed thereon entering the breech slide with the barrel and angularly positioning the barrel to receive the locking means.

10. In a breech-loading fire-arm, a frame, a breech slide interlocking with but movable longitudinally upon the frame in the functioning of the fire-arm and also in the assembly and disassembly thereof, a barrel incased in and assembled by rearward endwise introduction with the breech slide, means for interlocking the barrel against longitudinal and rotary movement on the frame during the functioning of the fire-arm but movable out of engagement therewith to permit the barrel to be assembled and disassembled, a projection circumferentially and longitudinally fixed on the barrel and entering the forward end of the breech slide therewith, and a longitudinal groove in the breech slide in which said projection slides to hold the barrel in the proper circumferential relation to the breech slide during assembly.

Signed at Bridgeport, in the county of Fairfield and State of Conn., this 17th day of May, 1919.

ELBERT H. SEARLE.