May 8, 1956 E. A. ALLEN 2,744,448

AUTOMATIC PISTOL

Filed Nov. 30, 1953 5 Sheets-Sheet 1

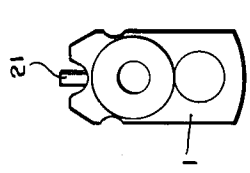


Fig. 3.

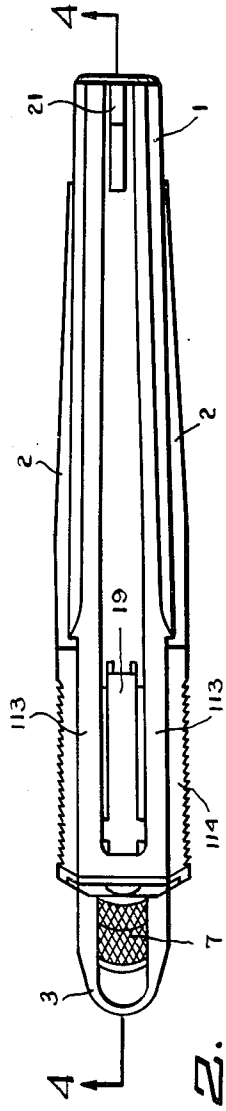


Fig. 2.

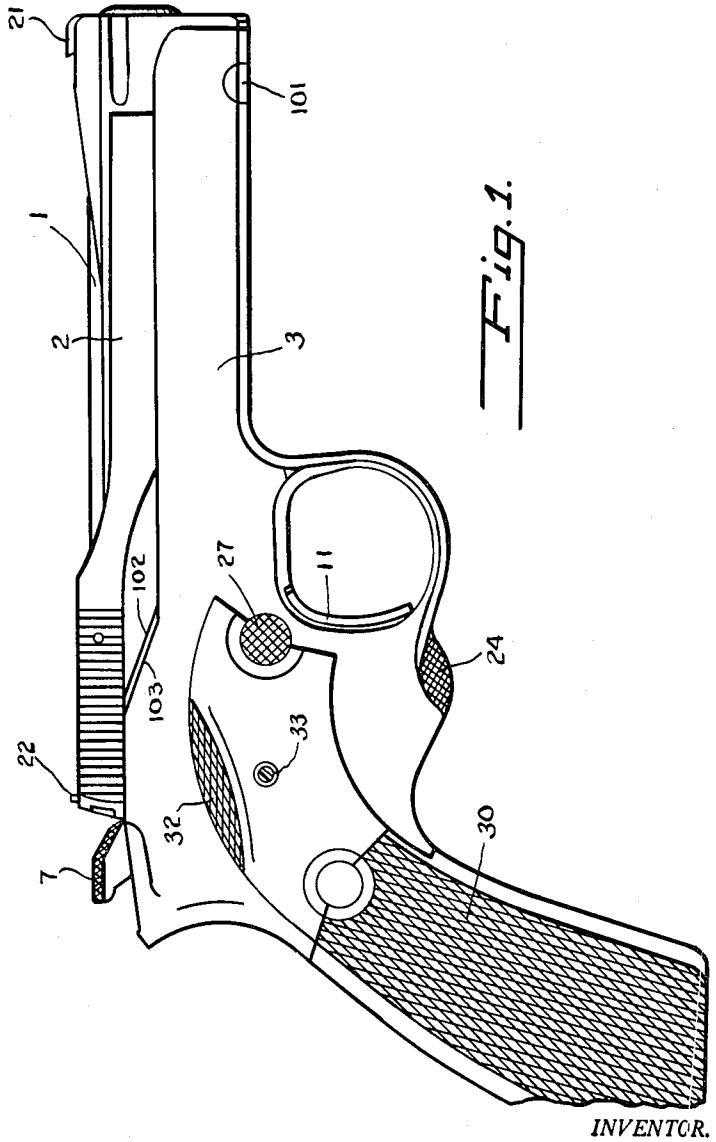


Fig. 1.

INVENTOR.
EDWARD A. ALLEN
BY
Chapin & Neal
ATTORNEYS.

May 8, 1956 E. A. ALLEN 2,744,448

AUTOMATIC PISTOL

Filed Nov. 30, 1953 5 Sheets-Sheet 2

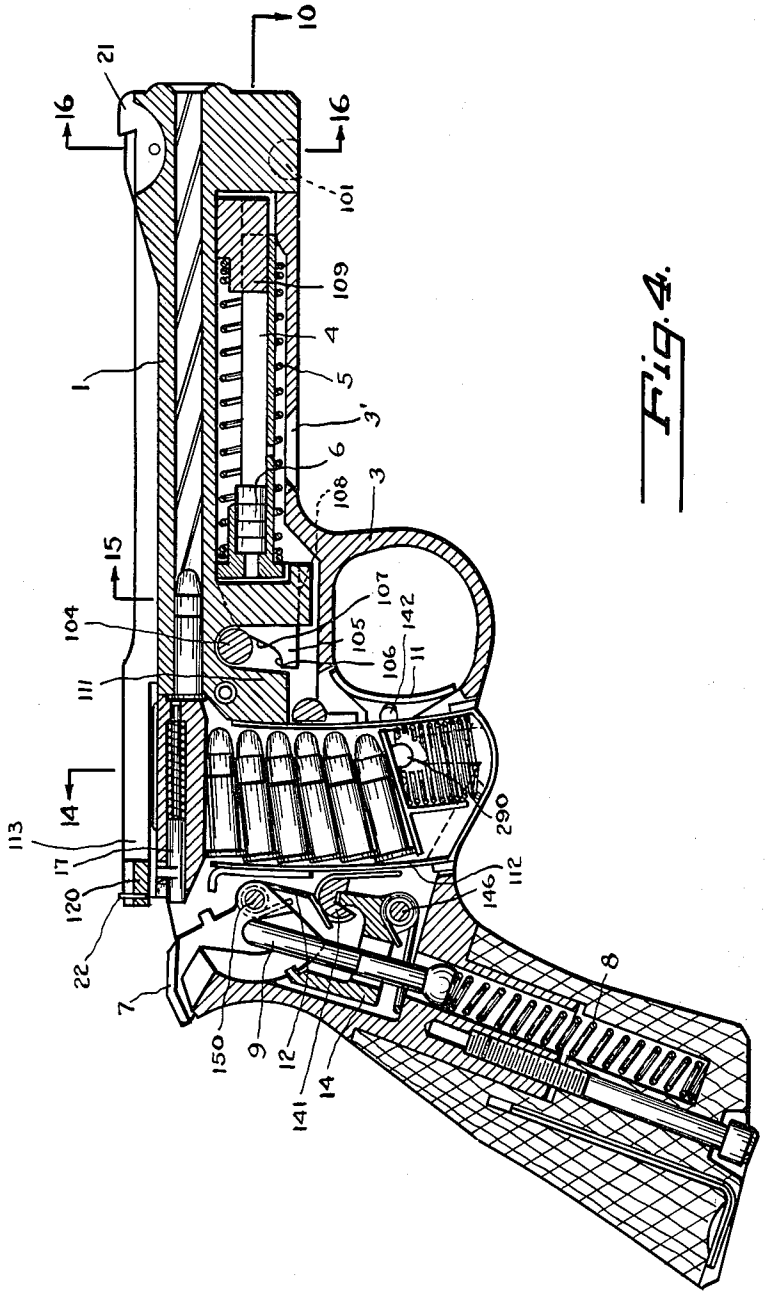


Fig. 4.

INVENTOR.
EDWARD A. ALLEN
BY
Chapin & Neal
ATTORNEYS.

May 8, 1956 E. A. ALLEN 2,744,448

AUTOMATIC PISTOL

Filed Nov. 30, 1953 5 Sheets-Sheet 3

Fig. 8.

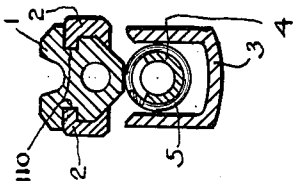


Fig. 6.

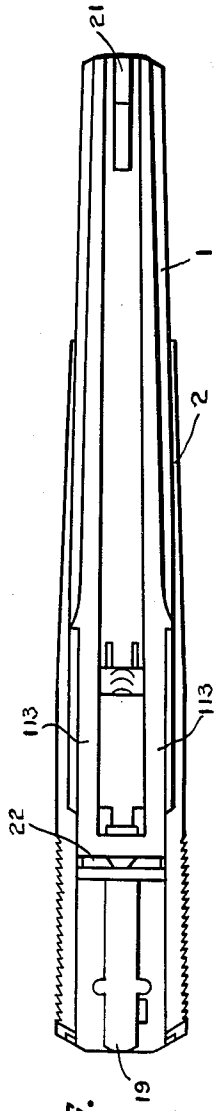


Fig. 5.

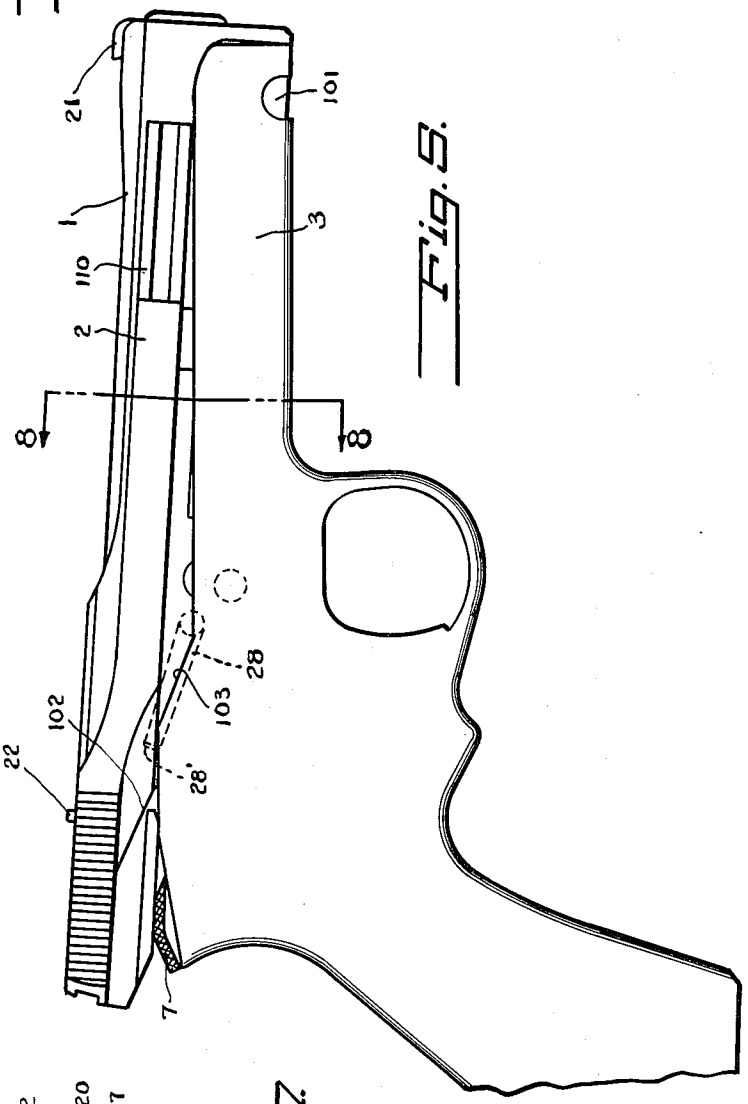
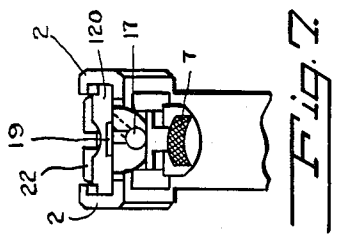


Fig. 7.



INVENTOR.
EDWARD A. ALLEN
BY
Chapin & Neal
ATTORNEYS.

May 8, 1956 E. A. ALLEN 2,744,448

AUTOMATIC PISTOL

Filed Nov. 30, 1953 5 Sheets-Sheet 4

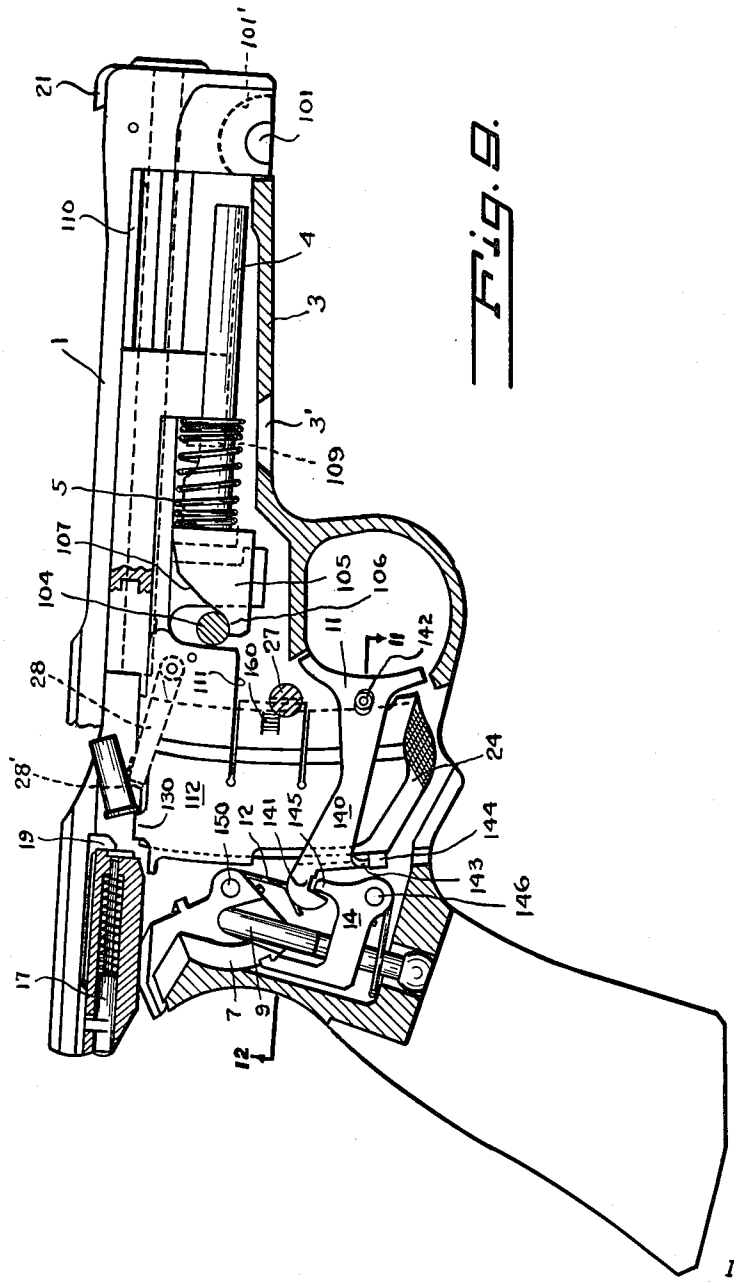


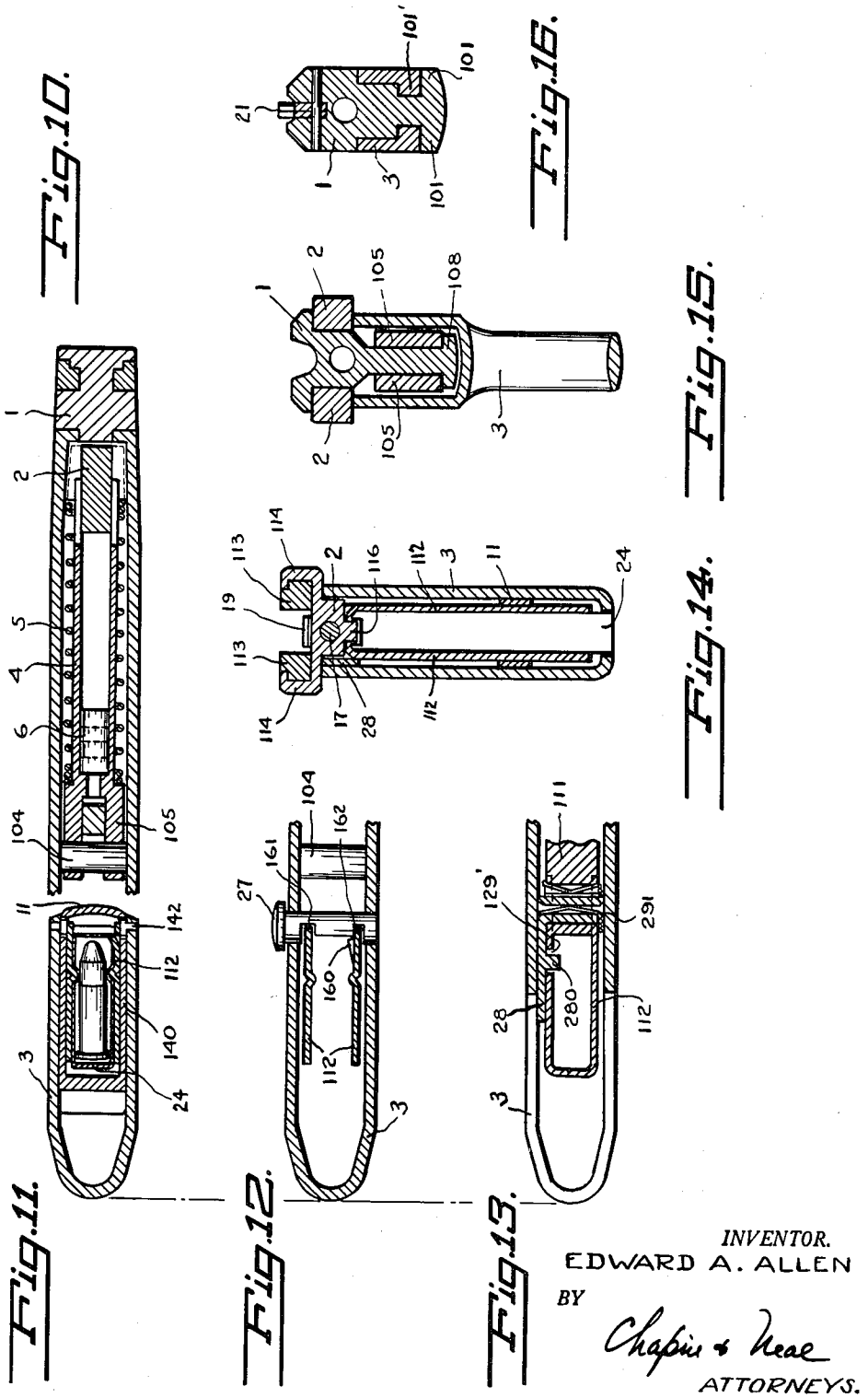
Fig. 9.

INVENTOR.
EDWARD A. ALLEN
BY
Chapin & Neal
ATTORNEYS.

May 8, 1956 E. A. ALLEN 2,744,448

AUTOMATIC PISTOL

Filed Nov. 30, 1953 5 Sheets-Sheet 5



INVENTOR.
EDWARD A. ALLEN
BY
Chapin & Neal
ATTORNEYS.

United States Patent Office

2,744,448

Patented May 8, 1956

2,744,448

AUTOMATIC PISTOL

Edward A. Allen, Westfield, Mass.

Application November 30, 1953, Serial No. 395,077

12 Claims. (Cl. 89—196)

This invention relates to automatic pistols and has for a particular object to provide an automatic hand gun which will sit low in the hand to permit support of the gun near the barrel center line for better support by the hand on recoil and thus for producing more accurate grouping of successive shots as in target shooting.

Another object is to provide in an automatic pistol advantages which have long been found desirable in a revolver type of weapon—an external hammer, a curved grip, and the low barrel center line. The basically superior advantages of the low barrel line are well recognized since the moment arm from the hand to the center line of the barrel is a direct measure of the recoil movement.

It is another object of this invention to provide a pistol of the unlocked breech type adapted for low or medium power ammunition in which the recoil movement is cam operated for an oblique blow back action, a spring loaded slide producing a reciprocal movement for dependable operation of the conventional functions of loading, firing and extracting.

A further object of the invention is to provide a mechanism in which the cartridges may be stacked in the magazine in a true arc to avoid wedging and the magazine is located back of the trigger yet forwardly of the grip.

Yet another object is to provide an automatic pistol with an external hammer in which the fall of the hammer is extremely short. In the preferred embodiment of a gun of this invention the hammer fall is one quarter of an inch, thus affording a shorter "lock time" than any other weapon of this type now known to me.

A still further object is to provide an automatic pistol of symmetrical construction in which a minimum of changes are needed to form the gun for a right or left handed shooter and further to provide a pistol in which the barrel may be made short or long as desired.

The novel relation of the parts in combination for the above and other objects and advantages will be clear from the following description of an embodiment of the invention.

In the drawings:

Fig. 1 is a side elevational view of an automatic pistol embodying the invention;

Fig. 2 is a top plan view of the pistol shown by Fig. 1;

Fig. 3 is a front end elevation of the muzzle end of the pistol;

Fig. 4 is a longitudinal section, substantially on line 4—4 of Fig. 2;

Fig. 5 is a side elevational view as in Fig. 1 with parts omitted and showing the position of the barrel and slide elements with the action open;

Fig. 6 is a top plan of the pistol as shown by Fig. 5;

Fig. 7 is a rear elevational view of the pistol of Fig. 5;

Fig. 8 is a sectional detailed view substantially on line 8—8 of Fig. 5;

Fig. 9 is a side elevational view with the frame side wall removed and with various parts sectioned to show the relationship of the elements with the action open;

Fig. 10 is a fragmentary horizontal section substantially on line 10 through the recoil bolt as shown by Fig. 4;

Fig. 11 is a fragmentary horizontal section with parts removed substantially on line 11 through the trigger as shown by Fig. 9;

Fig. 12 is a fragmentary horizontal section with trigger parts removed and substantially on line 12 as shown by Fig. 9;

Fig. 13 is a fragmentary sectional view cut through a slide stop element acting to hold the action open after the last cartridge is fired, viz. the element 28 as shown by Fig. 9;

Fig. 14 is a vertical section substantially on line 14 as shown by Fig. 4 with magazine removed;

Fig. 15 is a vertical section substantially on line 15 as shown by Fig. 4; and

Fig. 16 is a vertical section on line 16—16 as shown by Fig. 4.

Referring to Figs. 1 to 3 inclusive, the external views of the pistol show a barrel member 1 with an interfitting slide member 2 on a frame 3. The barrel and slide are linked to the frame by a recoil bolt as will be described, the barrel being also pivotally related to the frame at the front end thereof by eared pivots 101 at each side of the frame.

The frame has a grip or stock 30, a thumb rest 32, with mounting screw 33, and magazine catch release 27 forwardly thereof. The thumb rest on the facing side of the frame as in Fig. 1 indicates the pistol is fitted for a left handed shooter. As will later be apparent the thumb rest and catch release 27 may also be located at the opposite frame side for right hand shooting. The trigger guard is integral with frame 3 and a trigger is shown at 11. The hammer is indicated at 7, a rear sight at 22, a front sight at 21, and an extractor at 19 (Fig. 2), the latter being mounted on the slide 2 between rearwardly extending spaced track members 113 of the barrel. The members 113 slidably carry the side rail portions of the slide 2 as will be later described.

When the pistol is fired, the slide 2 recoils rearwardly of the frame 3 and the barrel 1. The direction of recoil is axially of the barrel until a cam shoulder, on either side of the slide as at 102 between its forward and rearward sections, hits sloped camming ramps at 103 of the frame. The slide is then raised obliquely to the rear and at the same time pivots the barrel member on the ears 101 (see also Fig. 5).

The frame 3 is formed with spaced side walls with lower connecting webs and as seen by Figs. 4 and 10 with an integral connecting cross pin 104. The pin 104 serves together with a recoil bolt 4 to maintain the slide member 2, and barrel 1 interlocked with the frame.

The recoil bolt 4 at its rear end is provided with forked finger pieces 105 (see also Fig. 15) having lower hook portions 106 (Fig. 4) at the tip ends thereof, the end edges above the hooks forwardly sloping as at 107. Between the fingers is a depending double hook at 108 formed integrally with barrel 1. The hook 108 is cross sectionally in the form of an inverted T (see Fig. 15) for engaging the undersides of the fingers 105 and preventing upward movement of the barrel relative to the bolt 4.

Forwardly of the fingers the recoil bolt is provided with a short longitudinal chamber for holding a recoil buffer plug 6 (Fig. 4). The bolt is cylindrically formed and extends forwardly in the frame with its upper arcuate wall cut away to provide a grooved slot formation (see also Fig. 8) for slidably receiving a depending lug joining the forward laterally spaced ends of the slide and abutting the front face of a recoil spring 5. A rearwardly directed hooked end 109 supports the front end of the recoil compression spring 5 surrounding the bolt and normally

urging the slide to its forward position and the recoil bolt to its rearward position in the frame. It is to be noted that spring **5** resiliently "locks" the slide and barrel together thus preventing a looseness or shucking in the parts and a rattling noise as is commonly found in prior guns.

The barrel member which at its forward depending end portion is held in pivotally fixed engagement on the frame by the ears **101** (see Fig. 16) and at its rearward end in hooked engagement with the recoil bolt 4 (Fig. 4), which in turn underlies the frame pin 104, is interlocked with the slide **2** as follows. Adjacent its forward end the slide **2** is provided with a pair of spaced side channel rails (Fig. 8) riding in slotted track ways at **110** (see also Fig. 5) at each side of the barrel member. Rearwardly of the ways **110** the barrel (see Fig. 15) is Y shaped in cross section with the side rails of the slide being in rectangular cross sectional form and riding under the upper wings of the barrel. It is to be noted that the upper surfaces of the slots or ways **110** (Fig. 8) are continuous in the barrel member, reappearing in Fig. 15 as the underside of the upper barrel wings, and in Fig. 14 as the underside of elements **113**, the divided rear extension of the barrel member yet to be described.

Towards its rearward end (Fig. 4) the central longitudinal portion of the barrel terminates in a breech chamber section. Below the firing chamber the barrel extends in depending relation to provide the double hook at **108** forwardly of the pin **104** as has been described and rearwardly of pin **104** as at **111** to straddle the pin and provide the mounting for a magazine housing retainer **112** (see also Fig. 9). The spaced housing walls of retainer **112** are preferably of sheet metal and may be suitably secured at each side of the portion **111** as by welding.

Rearwardly in line with the bore of the barrel, the barrel member is provided between the spaced track members **113** and the upper edges of the retainer **112** with a horizontally disposed slotted portion open at the rear to receive the breech block section of the slide. The barrel member is here (see Fig. 14) split above the slide with the spaced track sections at **113** being embraced by the outer rail portions at **114** of the slide **2**. At its lower portion the magazine retainer section of the barrel member extends below the breech portion of the slide which rides in the rearwardly open slot of the barrel member. As shown by Fig. 4 and Fig. 14 the breech section of the slide encloses the firing pin **17** which is of the usual spring returned inertia actuated type. The slide in this section is also provided with a depending keel at **116** by which each succeeding cartridge from the magazine may be fed into the firing chamber after the manner of the usual recoil operated automatic pistol.

At the rearmost end of the barrel member the tracks **113** are joined by an integral rear cross piece **120** (Fig. 4) in which is mounted the rear sight **22**.

In operation the hammer **7** strikes the firing pin **17** to fire the cartridge. The recoil of the exploding cartridge is exerted against the slide **2** at the breech section thereof causing it to recoil rearwardly of the frame against the spring **5**. The hooked end **109** is carried rearwardly in the groove of the recoil bolt **4** and as will be seen from Fig. 1 the slide cam surfaces **102** of the slide travel a short distance rearwardly in a straight line before commencing an upwardly rising oblique travel. The projectile thus is afforded an opportunity to clear the muzzle of the pistol before the slide under recoil acts to pivot the barrel member.

As the cam surfaces encounter the frame cam slopes **103** the slide and barrel are cammed upwardly the slide traveling in an oblique path to the rear and the barrel member pivoting on the axis of the ears **101** at the front end of the frame. From a comparison of Figs. 4 and 9 it will be seen that as the slide travels in its oblique path relative to the frame the barrel raises the rear end of the recoil bolt pushing the bolt forwardly in the frame by reason of the cam surfaces **107** on the rear edges of the fingers **105** engaging the cross pin **104**. The upward motion of the bolt is arrested when the hooked ends **106** engage the pin and prevent further movement. At the limit of upward pivotal travel of the barrel member and recoil bolt **4**, the slide moves further to the rear pushing the hammer rearwardly and downwardly into cocked position and coming to rest above the hammer. Further rearward travel of the slide is prevented by engagement of the toe **109** against the buffer plug **6** of the recoil bolt.

It may be noted at this point and especially from Fig. 9 that in blowing back obliquely the slide will ride upwardly over a shooter's hand which will grip the gun in the conventional manner but with the web between the thumb and index finger at the top rear side of the grip. Thus the center line of the bore of the barrel will be substantially tangent to the top of the shooter's hand and with the result that there is substantially no moment arm of recoil on firing the gun to twist the gun upwardly in the hand. This makes for more accurate shooting of successive shots as previously stated.

The extractor **19** is located on the upper surface of the slide breech portion and extracts the shell from the chamber to carry it rearwardly. The shell is kicked upwardly by the ejector tip at **130** of the magazine housing and out of the port between the spaced side members **113** of the barrel, the slide breech section having recoiled rearwardly of the chamber of the barrel.

The slide under the influence of spring **5** then returns forwardly to pick up the top most cartridge of the magazine and load the chamber of the barrel and return to the position of Fig. 4. The return of the slide is accompanied by the pivotal downward motion of the barrel member and the camming of the recoil bolt **4** to its rearward position under the influence of the cross pin bearing against the surfaces **107** of the recoil bolt fingers.

A slide stop for maintaining the action open upon exhausting the supply of live cartridges in a magazine is provided at **28**. This acts in a similar manner to the conventional slide stop of an automatic pistol. Fig. 9 shows the stop pivoted on the portion **111** of the barrel member and extending rearwardly as in Fig. 13 on the outer side wall of the retainer housing **112**. An inwardly directed lug **280** of the stop is received within an opening **129'** at the top of the retainer wall to project into the path of a lifter notch at **290** on the magazine follower shown by Fig. 4.

The stop **28** is spring pressed to a lowered position (from that shown by Figs. 9 and 5) by a torsion spring **291** (Fig. 13) in which position the stop remains out of the path of the slide **2** in its reciprocal recoil movement. When the last cartridge is fired the magazine follower with its notch **290** has risen to cradle lug **280** and lift the stop against its spring. The rear tip of the stop is thus carried upwardly and prevents the forward return of the slide, holding the action locked open by engagement of the tip in a notched abutment **28'** on the slide wall. The stop spring exerts a counterclockwise movement of the stop as seen by Fig. 9 and is overcome by the magazine follower spring when contact is made against the lug. Also in Fig. 9 the notched wall is indicated at **28'** to provide the stop abutment for the slide. It will be realized that the slide may be manually pulled rearwardly a fraction of an inch to release the stop therefrom upon replacing an empty magazine and for placing the pistol in condition for firing again or otherwise to close the action.

Referring now to Figs. 9 and 4 the trigger **11** is provided with spaced sides **140**, connected at the front by the finger actuator portion, and at the rear by a sear engaging hook portion **141**. At the fore portion the sides **140** are mounted on studs **142** for short reciprocal movement. At the rear cross piece a depending discon-

nector tip 143 is for engagement with a magazine lug 144 of a magazine 24 to prevent firing during the recoil and reload cycle. As has been described the barrel pivots upwardly of the frame in the rearward position of the slide. Thus the magazine is carried upwardly of the frame during the reload cycle to maintain the hook 141 from engaging the sear tooth 145 in its rack space.

The sear 14 is pivoted at 146 and spring loaded to pivot its hammer engaging end upwardly to engage the sear notch on the hammer piece 7. The hammer is pivoted at 150 and is spring loaded for clockwise movement by the pusher rod 9 and spring 8 in the grip portion (Fig. 4).

Keyed to the hammer pivot 150 is a trigger spring 12 which extends to exert downward and forward pressure on top of the trigger hook 141, causing the trigger piece to be urged into engagement with the sear. Thus it will be realized that in firing or resetting the trigger after firing the trigger slides; and in disconnecting it pivots.

The magazine clip 24 is received within the retainer housing walls 112 of the barrel member and held therein by an inwardly directed tongue located as at 160 (Figs. 9 and 12). The tongue engages a notch in the magazine locating the same and holding it in assembled position. The magazine catch release button 27 as shown extends between the walls of the frame and is notched as at 161 and 162 to receive the forward edges of the retainer housing walls. Pressure exerted inwardly on the button will flex the retainer wall carrying the tongue 160 outwardly to release the magazine. Notch 161 is of greater width than notch 162 and accordingly will permit endwise movement of the button without affecting the adjacent retainer wall 112. It will be noted that the tongue may be placed on the opposite retainer wall and the button position reversed for locating the thumb piece on the other side of the frame and providing for the right handed shooter.

For dismantling the parts of the pistol an opening 3' (Fig. 4) in the underside of the frame is provided through which a suitable tool can be extended to release the pressure of spring 5 against the recoil bolt 4. The bolt 4 may then be lifted clear of the cross pin 104 and disengaged from the double hook at 108 whereupon the barrel and slide as a unit can be rotated forwardly of the frame. The barrel can then be disengaged from the frame slipping off the semi-circular bosses 101' of the slide shown by Figs. 9 and 16. It will be realized from this connection that a long or short barrel as preferred may be made for the pistol. The unit shown is designed as a 4½ inch barrel. Extension of the barrel member may easily be incorporated in the design by the mere extension of the front end thereof, as, for example, to provide a 6½ inch barrel.

What is claimed is:

1. An automatic pistol including in combination a frame, a barrel pivoted thereon forwardly of the frame, a breech loading slide carried by said barrel and reciprocably mounted thereon and means interlocking the barrel and frame for limited pivotal movement of the barrel relative to the frame, said interlocking means having yieldable mechanism normally urging said barrel to a lowered position on said frame and said slide forwardly of said barrel, said slide and frame having slidably engaging surfaces operable to raise said slide upwardly of the frame during rearward recoil movement of the same relative to the barrel and to pivot said barrel to an upward position on the frame.

2. The combination of claim 1 in which said frame is provided with a hand grip portion and said frame at the top rear side thereof is formed to receive the web between a shooter's thumb and index finger substantially in alignment with said barrel.

3. The combination of claim 2 in which said frame is chambered in the rear portion thereof to contain hammer and sear mechanism, forwardly thereof and rearwardly of a trigger guard integral with the frame to contain an arcuate magazine retainer housing rigidly affixed in depending relation to said barrel, and above said trigger guard to contain said interlocking means, and a trigger mounted at the rear side of said guard having spaced walls straddling said magazine housing and operatively connected to said hammer mechanism.

4. The combination of claim 3 in which a pivoted hammer adapted to be actuated by said trigger extends in uncocked position to lie above the frame against the rear end of said slide and in cocked position to engage the slide at the underside thereof in rearwardly extended position of the same, said rear portion of the slide constituting a breech block section having an inertia actuated firing pin member housed therein and at its lower rear edge adapted to rock said hammer rearwardly on recoil movement of said slide.

5. In an automatic pistol the combination of a frame, a barrel and a breech loading slide member, said barrel having a slotted extension rearwardly of the breech thereof and pivotally connected to the frame adjacent the forward end thereof, said slide having a breech block portion riding in the slot of said barrel extension and having spaced side portions extending forwardly thereof and slidably embracing said barrel, said frame having spaced side walls slidably supporting said side portions of the slide with said frame and slide having rearwardly inclined opposed surfaces engageable to cam said slide upwardly on rearward recoil movement of the latter, said frame being provided with a rear wall formed to receive the web between a shooter's thumb and index finger at the top thereof substantially in alignment with the slot of said barrel.

6. The structure of claim 5 in which said frame is chambered below the breech block portion of the slide and the slot of said barrel extension is defined at its lower side by the walls of a magazine retainer housing rigid with said barrel member.

7. The structure of claim 5 in which said frame in the forward portion thereof is provided with interlocking retainer means yieldably urging said slide forwardly of the barrel and said barrel in downwardly pivoted position relative to said frame, said means including a forwardly and upwardly directed cam surfaced element slidably engaging said frame for forward movement of the element in response to upward pivotal movement of said barrel, said barrel having a depending hook portion slidably engaging the underside of said camming element, and a recoil spring interposed between said element and said slide forwardly of said barrel hook.

8. An automatic piston including in combination a frame, a barrel pivoted to the frame adjacent the front end thereof, a breech loading slide member having a breech block portion adapted to feed a cartridge to the barrel and a forward portion slidably embracing said barrel, said slide and said frame having complementary opposed cam surfaces upwardly directed towards the rear of the frame, and a barrel retainer member in said frame slidably interlocked with said barrel rearwardly of the pivotal connection thereof on said frame and adapted to limit the upward pivotal movement of the barrel on the frame, said retainer member having a slidable cam surfaced engagement with said frame limiting upward and forward travel of said member in the frame, a recoil spring between said member and the forward portion of said slide urging the slide forwardly and the retainer member rearwardly in the frame.

9. The structure of claim 8 in which the engagement of said retainer member against said frame is provided by a cross pin positioned between spaced side walls of the frame and said retainer member has spaced walls with a depending portion of the barrel being received therebetween and hooked underneath said retainer walls, the rear edges of said retainer walls being forwardly and up-

wardly directed for camming action against said cross pin under pressure from said recoil spring.

10. The structure of claim 9 in which said retainer member is provided with a forwardly extending portion around which said recoil spring is wound and said slide at the foremost end thereof is yoked to join forward embracing portions thereof in a depending rearwardly projecting hook receiving the fore end of said recoil spring.

11. The structure of claim 10 in which said frame is provided with an access opening adjacent said recoil spring to collapse said recoil spring and disengage said retainer member from said frame cross pin for lifting said barrel and slide free of said frame.

12. An automatic pistol comprising in combination a frame member having a pistol grip and spaced side walls forming in outline the general shape of a complete pistol, a barrel member having at the front end of the frame a pivotal connection therewith and at the rear end of the barrel longitudinally slotted rear extension beyond the barrel firing chamber, a slide member with a breech block portion slidable in said slotted extension and forwardly extending side portions embracing said barrel member, the sides of said breech block portion being parallel to and at a higher elevation than said forward side portions and having inclined cam receiving surfaces

disposed therebetween, said frame wall upper edges slidably supporting the overlying edges of said parallel side portions of the slide and provided with a diagonal connecting cam surface opposed to said cam receiving surfaces of the slide to lift said slide on rearward recoil movement of the same, said opposed diagonal surfaces being in spaced relation in the forward breech closing position of said slide, and retainer means interlocking said frame and barrel in rearwardly spaced relation to said pivotal connection between said members, said retainer means limiting upward pivotal movement of the barrel and rearward sliding movement of said slide and including yieldable means for mutually opposing said movements of the barrel and slide respectively under recoil of said pistol.

References Cited in the file of this patent

UNITED STATES PATENTS

808,003	Browning	Dec. 19, 1905
896,496	Whiting	Aug. 18, 1908
1,395,141	Reising	Oct. 25, 1921

FOREIGN PATENTS

358,102	Germany	Sept. 5, 1922
1,002,900	France	Nov. 7, 1951