Jan. 24, 1950 E. J. SIMONSON ET AL 2,495,428

SEMIAUTOMATIC PISTOL WITH BLOWBACK BREECHBLOCK

Filed June 4, 1948 2 Sheets-Sheet 1

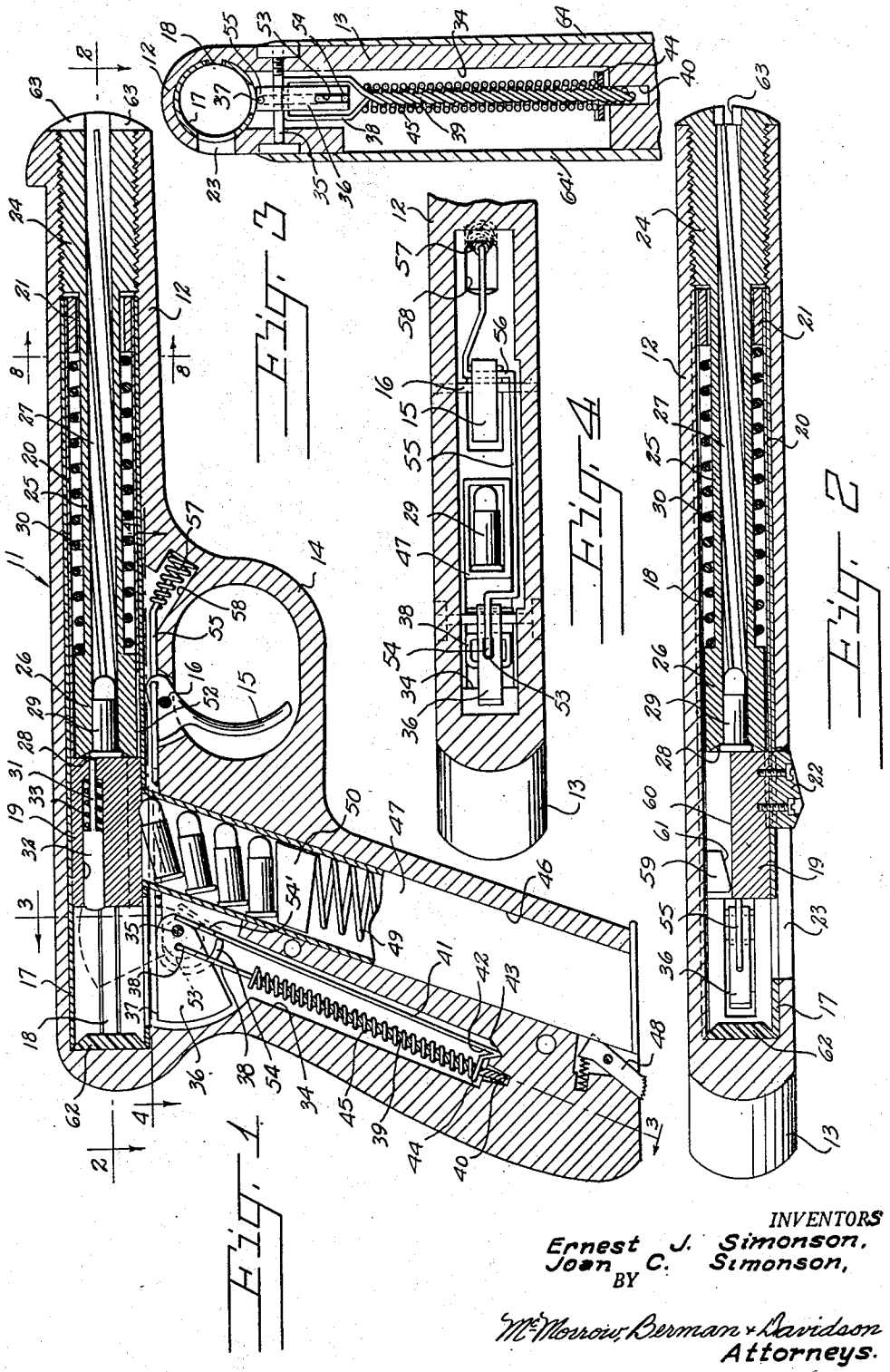


Fig. 3

Fig. 4

Fig. 2

Fig. 1

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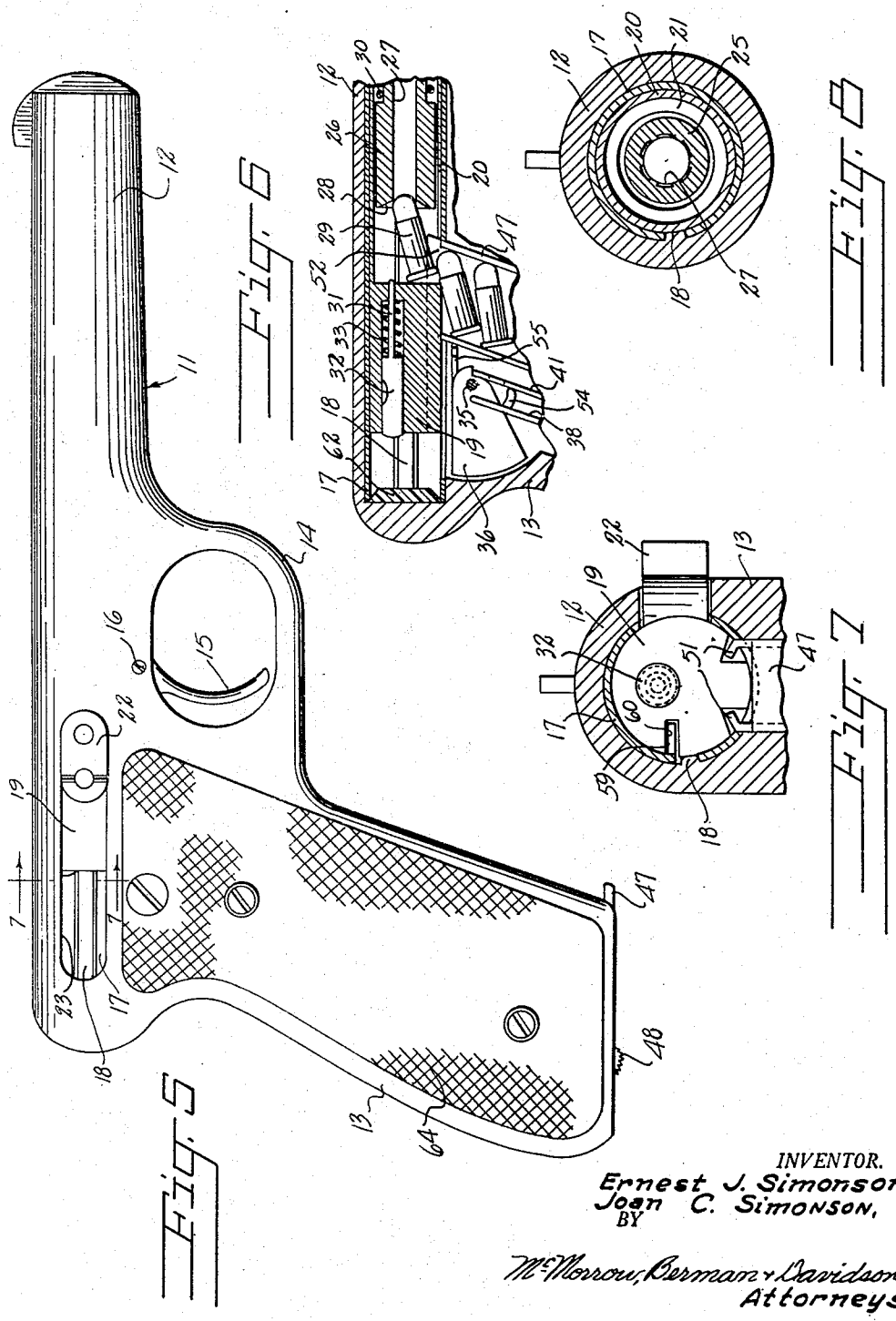


Fig. 5

Fig. 6

Fig. 8

Fig. 7

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SEMIAUTOMATIC PISTOL WITH BLOWBACK BREECHBLOCK

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3 Claims. (Cl. 89—195)

1

This invention relates to firearms and more particularly to a semi-automatic pistol with a blow-back breech block.

A main object of the invention is to provide a novel and improved semi-automatic pistol which is simple in construction, inexpensive to manufacture and which is reliable in performance, said pistol being very easy to load and also being easy to take apart for cleaning or repair.

A further object of the invention is to provide an improved semi-automatic pistol wherein the main body of the pistol may be die cast and does not require any milling operations, the barrel and firing mechanism being secured in said main body in a simple manner and wherein wearable parts are very easy to replace whenever required.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a vertical longitudinal cross-sectional view taken through a semi-automatic pistol constructed in accordance with the present invention.

Figure 2 is a horizontal cross-sectional view taken on line 2—2 of Figure 1.

Figure 3 is a cross-sectional view taken on line 3—3 of Figure 1.

Figure 4 is a cross-sectional view taken on line 4—4 of Figure 1.

Figure 5 is a side elevational view of the semi-automatic pistol of Figure 1.

Figure 6 is a fragmentary longitudinal vertical cross-sectional detail view taken through the upper rear portion of the pistol of Figure 1, showing a cartridge being loaded from the magazine into the firing chamber of the pistol responsive to the rearward movement of the breech block.

Figure 7 is an enlarged cross-sectional detail view taken on line 7—7 of Figure 5.

Figure 8 is an enlarged cross-sectional detail view taken on line 8—8 of Figure 1.

Referring to the drawings, 11 designates the main body of the pistol, said main body being made, for example, as a die casting and being formed with a top frame portion 12 and with a grip portion 13. The body is further formed with the finger guard portion 14. The trigger of the pistol is designated at 15 and is pivoted within the top frame portion 12 at 16.

Top frame portion 12 is formed with a longitudinal bore which contains a wear sleeve 17, said sleeve being split longitudinally and engaging with a longitudinal internal rib 18 formed

2

in said bore, whereby rotation of sleeve 17 in the bore is prevented. Slidably positioned in the sleeve 17 is a breech block 19, said block having a forwardly extending tubular portion 20. Secured within the forward end of tubular portion 20, as by welding or brazing, is a stop ring 21. Secured to breech block 19 is a finger-engaging projection 22 extending laterally through a longitudinal slot 23 formed through the rear portions of sleeve 17 and top frame portion 12.

Threaded into the forward end portion of top frame portion 12 of the pistol body is a plug member 24 formed with an elongated rearwardly extending barrel 25 terminating in a firing chamber member 26. The member defined by elements 24, 25 and 26 is axially formed with a rifled bore 27. As shown in Figures 1, 2 and 6, the rear end of member 26, converges inwardly toward the end of bore 27 and defines a conical recess 28 adapted to receive the rim of a cartridge 29, when said cartridge is in firing position in member 26, as illustrated in Figures 1 and 2. Encircling barrel 25 is a coiled spring 30 which bears between ring 21 and member 26 and biases the breech block 19 forwardly toward the position shown in Figures 1 and 2.

Slidably mounted in breech block 19 is the firing pin 31, said pin being provided with a rear head portion 32. Head portion 32 is located in a bore containing a spring 33 encircling pin 31 and biasing head portion 32 rearwardly toward a position wherein it projects slightly from the rear end of block 19. In this position the pin 31 engages the rim of the cartridge 29 in chamber 26 and when the head portion 32 is struck, as will be subsequently described, the pin 31 fires the cartridge.

The grip portion 13 is formed with a cavity 34 in the upper portion of which is pivotally mounted, by a transverse pin 35, the hammer 36, said hammer being shaped generally as the sector of a circular disc. Sleeve 17 is longitudinally slotted at 37 to allow hammer 36 to rotate upwardly into striking contact with the end of head portion 32, as shown in dotted view in Figure 1. Pivotally engaging the hammer 36 rearwardly adjacent pin 35 is the top loop 38 of a twisted wire rod member 39 whose bottom end is received in a recess 40 formed in the bottom of cavity 34. Designated at 41 is a sear bar formed with a sharp bottom bend 42 pivotally engaging in a V-shaped recess 43 formed forwardly adjacent recess 40 in the bottom of cavity 34. Bend 42 terminates in an apertured arm 44 through which the twisted wire rod 39 slidably passes. Encir-

cling rod 39 is a coiled spring 45 which bears between arm 44 and loop 38, biasing hammer 36 upwardly and biasing sear bar 41 counterclockwise, as viewed in Figure 1. Hammer 36 is formed at its small end forwardly adjacent the pivot pin 35 with a notch engageable with the top end of sear bar 41 to hold the hammer in a cocked position, shown in Figures 1 and 6.

Grip portion 13 is formed forwardly of cavity 34 with another cavity 46 which receives the cartridge magazine 47. Magazine 47 is conventional in structure and is releasably held in cavity 46 by a spring-biased detent lever 48 pivotally carried by grip portion 13 at its bottom end and engaging a notch in the rear wall of the magazine to lock the magazine in place. The detent lever 48 may be manually rotated counterclockwise from the position shown in Figure 1 to release the magazine. The magazine contains a follower spring 49 acting upwardly on a follower block 50. The cartridges are stacked above the block 50 and are urged upwardly by the action of spring 49. The top end of magazine 47 is open and is formed with upwardly-inclined inwardly-convergent flanges 51, 51 which guide the cartridges toward the firing chamber 26 as said cartridges are moved upwardly. The tubular breech block extension 20 is suitably apertured at 52 forwardly of the block 19 to provide a passage for the upward movement of the cartridges into the firing chamber when the breech block is in a rearwardly moved position, as shown in Figure 6.

Hammer 36 is formed with an arcuate passage 53, eccentric with respect to pin 35, which extends from its bottom edge to its top edge, and extending through said passage and longitudinally movable therein is a curved vertical depending hook element 54 formed at the rear end of a sear rod 55. Sear rod 55 is formed of stiff wire and extends horizontally around the top end of magazine 47, passes transversely through the upper forward portion of trigger 15, as shown at 56, and is secured at its forward end to the upper portion of a coiled spring 57 seated in a recess 58 formed in body 11, at the trigger guard portion 14. The transverse sear rod portion 56 makes a pivotal connection with the upper forward portion of trigger 15, and when the trigger 15 is pulled rearwardly, the sear rod 55 is moved longitudinally forwardly, compressing spring 57, the end of hook element 54 moving the sear bar 41 forwardly out of engagement with the notch in hammer 36. This releases the hammer, whereby the spring 45 is allowed to expand and rotate the hammer upwardly into striking engagement with the firing pin head portion 32.

Designated at 54' is an opening formed in sear bar 41 slightly above the point at which hook element 54 engages the sear bar as above described. When the hammer rotates upwardly, the sear rod 55 is cammed upwardly by the eccentric passage 53 and the end of the hook element 54 slips into the opening 54', releasing the pressure of said hook element on the sear bar 41. The sear bar 41 is then returned by spring 45 into contact with the smaller end of hammer 36.

Rearwardly of the firing chamber portion 26, sleeve 17 is formed opposite slot 23 with an inwardly struck lug 59, breech block 19 being formed with a longitudinal groove 60 slidably receiving said lug 59, whereby the breech block is longitudinally slidable in the sleeve 17 and is held against axial rotation therein. Lug 59 is formed

with an inclined inner edge 61 which is engaged by a rearwardly moving cartridge shell after explosion thereof and causes said shell to be ejected laterally through the slot 23, as will be presently explained.

Secured to the rear end wall of the bore cavity defined by sleeve 17 is a cushion member 62 of suitable resilient material, such as rubber or the like, which cushions the rearward impact of the breech block 19 on recoil.

To cock the pistol, breech block 19 is manually retracted by means of projection 22. As said breech block uncovers the opening 52 communicating with magazine 47, the uppermost cartridge 29 therein is moved upwardly into the inclined position shown in Figure 6, the nose of the cartridge entering the conical recess 28 and being moved into the end of bore 27. When the breech block is released, it pushes the cartridge into the firing chamber portion 26 and the parts assume the positions shown in Figure 1. It will be noted that rearward movement of the breech block rotates the hammer 36 downwardly and allows the top end of sear bar 41 to interlock with the notch in the forward end of the hammer, so that when the breech block is released, the hammer is held by the sear bar in the cocked position of Figure 1.

When the trigger is pulled, the end of hook portion 54 moves the sear bar 41 forwardly out of engagement with the hammer notch, as above explained, and said end enters opening 51' as the hammer is rotated upwardly by spring 45 to strike the firing pin head 32 and fire the cartridge. The lead pellet is blown forwardly through the bore 27. The recoil of the exploding gases moves the cartridge shell and breech block 19 rearwardly. The shell engages the inclined lug edge 61 and is ejected laterally through the slot 23.

The rearward movement of breech block 19 on recoil rotates hammer 36 downwardly and the top end of sear bar 41 again interlocks with the notch in the forward end of said hammer. At the same time a new cartridge is moved upwardly by the action of the spring-biased follower block 50, and enters the space between breech block 19 and firing chamber 26 in the position of Figure 6. Spring 30 is compressed by the rearward recoil movement of the breech block, and after the recoil force is spent said spring returns the breech block to the position shown in Figure 1. Upon release of trigger 15 spring 57 moves element 54 rearwardly out of opening 54', whereupon the piston may again be fired, to repeat the above described action. It is thus seen that after the pistol has been initially cocked manually it is merely necessary to pull the trigger each time it is desired to fire a cartridge and to then release the trigger. The pistol is automatically recocked by the recoil of the fired cartridge.

The parts carried in top frame portion 12 may be readily removed for cleaning by unthreading the plug member 24 from the forward end of said top frame portion. To facilitate this operation, the forward end of said plug member is formed with aligned radial notches 63, 63 into which the edge of a coin or the blade of a screw driver may be inserted for rotating said plug member with respect to the mentioned top frame portion 12.

Secured to the sides of the grip portion 13 are cover plates 64, 64 of suitable knurled or otherwise roughened grip material, such as plastic or the like. From Figure 3 it will be seen that

access to the interior of grip portion 13 may be had by removing the cover plate 64'.

While a specific embodiment of an automatic pistol has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In a semi-automatic pistol comprising a pistol body having a hollow grip portion, a slidable breech block with a firing pin extending movably therethrough, and a trigger pivoted at one portion thereof in the pistol body, the combination of a hammer extending rearwardly in cocked position and pivoted at the forward end thereof in said pistol body below the level of the breech block and having a notch in the forward end thereof, the hammer being rotatable upwardly into striking contact with the rear end of said pin, a sear bar pivotally mounted in the grip portion and extending upward forwardly adjacent the hammer, resilient means biasing the upper end of the sear bar rearwardly into engagement with the notch on the hammer to cock the latter and simultaneously acting on said hammer to bias the hammer upwardly, a rod member in the pistol body pivotally connected to the trigger eccentrically of the pivot mounting thereof and having a rear depending hook portion extending about but out of contact with the pivot mounting of the hammer and movable forwardly into engagement with said sear bar in response to operative rotation of said trigger and thereby effective to release the sear bar from the notch on said hammer and allow the latter to rotate upwardly and strike the firing pin under the bias of said resilient means, the hammer being engageable by said breech block as the latter is moved rearwardly to rotate said hammer downwardly to the cocked position wherein the upper end of said sear bar engages in the notch of said hammer, and further resilient means biasing the rod member rearwardly with its rear depending hook out of operative engagement with said sear bar.

2. In a semi-automatic pistol comprising a pistol body having a hollow grip portion, a slidable breech block with a firing pin extending movably therethrough, and a trigger pivoted at one portion thereof in the pistol body, the combination of a hammer extending rearwardly in cocked position and pivoted at the forward end thereof in said pistol body below the level of the breech block and having a notch in the forward end thereof, the hammer being rotatable upwardly into striking contact with the rear end of said pin, a sear bar pivotally mounted in the grip portion and extending upward forwardly adjacent the hammer, an apertured rearwardly-extending projection upon the lower end of the sear bar, an elongated spring guide member extending upwardly through the aperture in the latter projection and pivotally connected at the upper end thereof to the hammer eccentrically of the pivot mounting thereof, a stop on the spring guide member spaced a distance below the hammer, a helical compression spring mounted on said spring guide member in a position to engage downwardly upon said rearwardly-extending projection of the sear bar and the stop on said spring guide in order to bias the upper end of said sear bar rearwardly into engagement with the notch on said hammer and to bias the latter upwardly, a

rod member in the pistol body pivotally connected to the trigger eccentrically of the pivot mounting thereof and having a rear depending hook portion extending through the hammer and movable forwardly into engagement with said sear bar in response to operative rotation of said trigger and thereby effective to release the sear bar from the notch on said hammer and allow the latter to rotate upwardly and strike the firing pin under the bias of said helical spring, the hammer being engageable by said breech block as the latter is moved rearwardly to rotate said hammer downwardly to the cocked position wherein the upper end of said sear bar engages in the notch of said hammer, a second spring engaging with the rod member forwardly of the trigger and biasing said rod member rearwardly with its rear depending hook out of operative engagement with said sear bar.

3. In a semi-automatic pistol comprising a pistol body having a hollow grip portion, and a slidable breech block with a firing pin extending movably therethrough, the combination of a trigger pivoted at one portion thereof in the pistol body forwardly of the normal operative position of said breech block, a rearwardly-flaring hammer extending rearwardly in cocked position and pivoted at the forward end thereof in said pistol body below the level of the breech block and having a notch in the forward end thereof, the hammer being rotatable upwardly into striking contact with the rear end of said firing pin, a sear bar pivotally mounted at the lower end thereof in the grip portion and extending upwardly forwardly adjacent the hammer, a rearwardly-extending apertured projection upon the lower end of the sear bar, an elongated spring guide member extending upwardly through the aperture in the latter projection and pivotally connected to the hammer eccentrically of the pivot mounting thereof, a stop on the spring guide member spaced a distance below the hammer, a helical compression spring mounted on said spring guide member in a position to engage downwardly upon said rearwardly-extending projection of the sear bar and against the stop on said spring guide in order to bias the upper end of said sear bar rearwardly into engagement with the notch on said hammer and to bias the latter upwardly, a rod member in the pistol body pivotally connected to the trigger eccentrically of the pivot mounting thereof and having a rear depending hook portion extending through the hammer and movable forwardly into engagement with said sear bar in response to operative rotation of said trigger and thereby effective to release the sear bar from the notch on said hammer and allow the latter to rotate upwardly and strike the firing pin under the bias of said helical spring, the hammer being engageable by said breech block as the latter is moved rearwardly to rotate said hammer downwardly to the cocked position wherein the upper end of said sear bar engages in the notch of said hammer, a forward projection upon said rod member extending forwardly of said trigger, a spring in said pistol body engaging against said forward projection and biasing the rod member rearwardly with its rear depending hook out of operative engagement with said sear bar, said sear bar having a transverse aperture therethrough above the normal position of the lower termination of the rear depending hook portion on the rod member, and an eccentric cam portion upon the hammer effective to raise said rear depending hook portion upon

upward rotation of the hammer to raise the lower termination of said hook portion into a position to register with the aperture in the upper portion of said sear bar and thereby free the sear bar from effective contact with said hook portion and allow the same under the bias of the first-mentioned helical spring to engage resiliently against the forward end of the hammer and upon downward movement thereof by means of the breech block to engage with the notch on said hammer, and thereby cock the latter for a new cycle of operation.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,017,119	Toborg	Feb. 13, 1912
1,138,379	Hammond	May 4, 1915
1,405,765	Diehm	Feb. 7, 1922

FOREIGN PATENTS

Number	Country	Date
226,588	Germany	Oct. 6, 1910
464,054	France	Jan. 5, 1914