

Aug. 2, 1938.

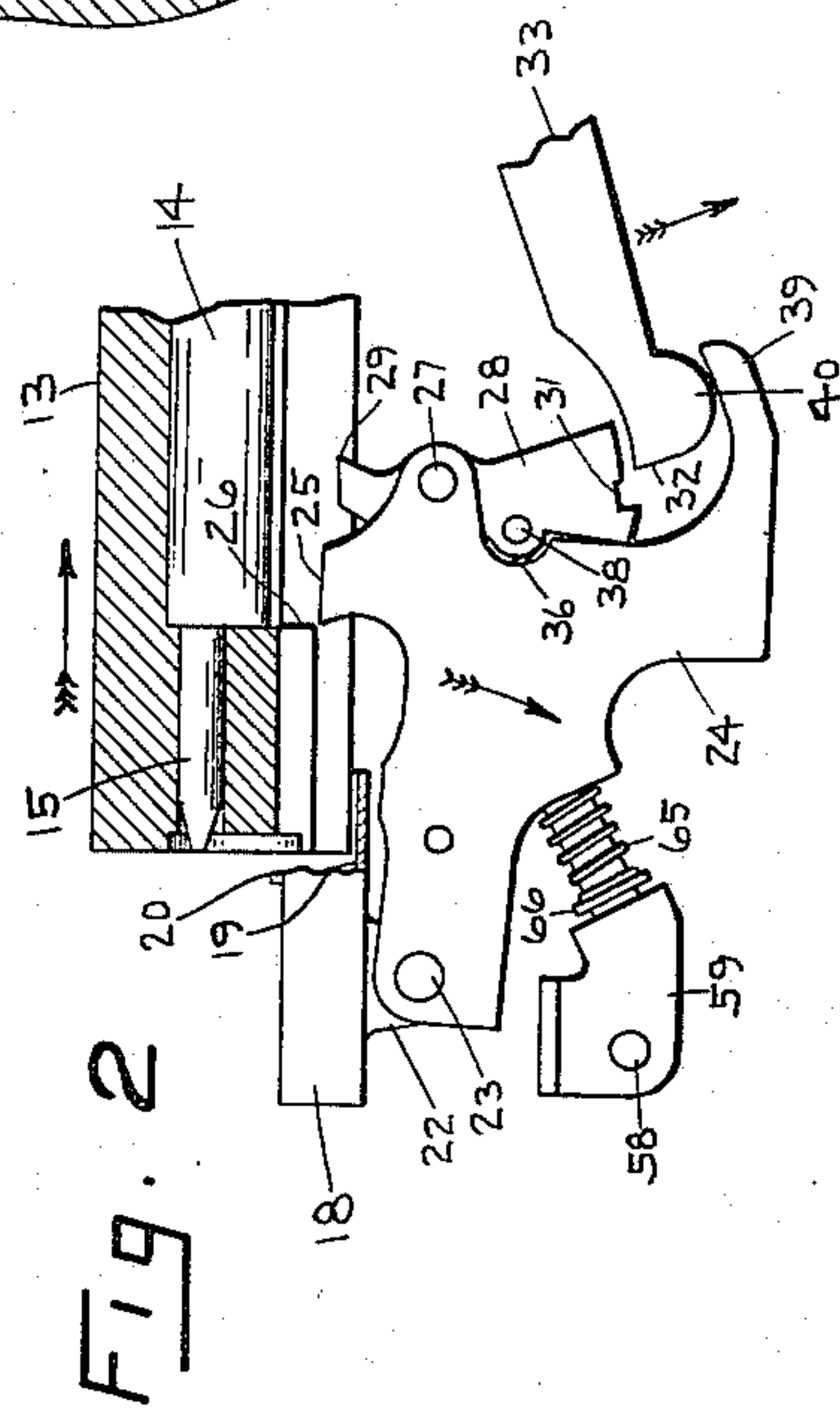
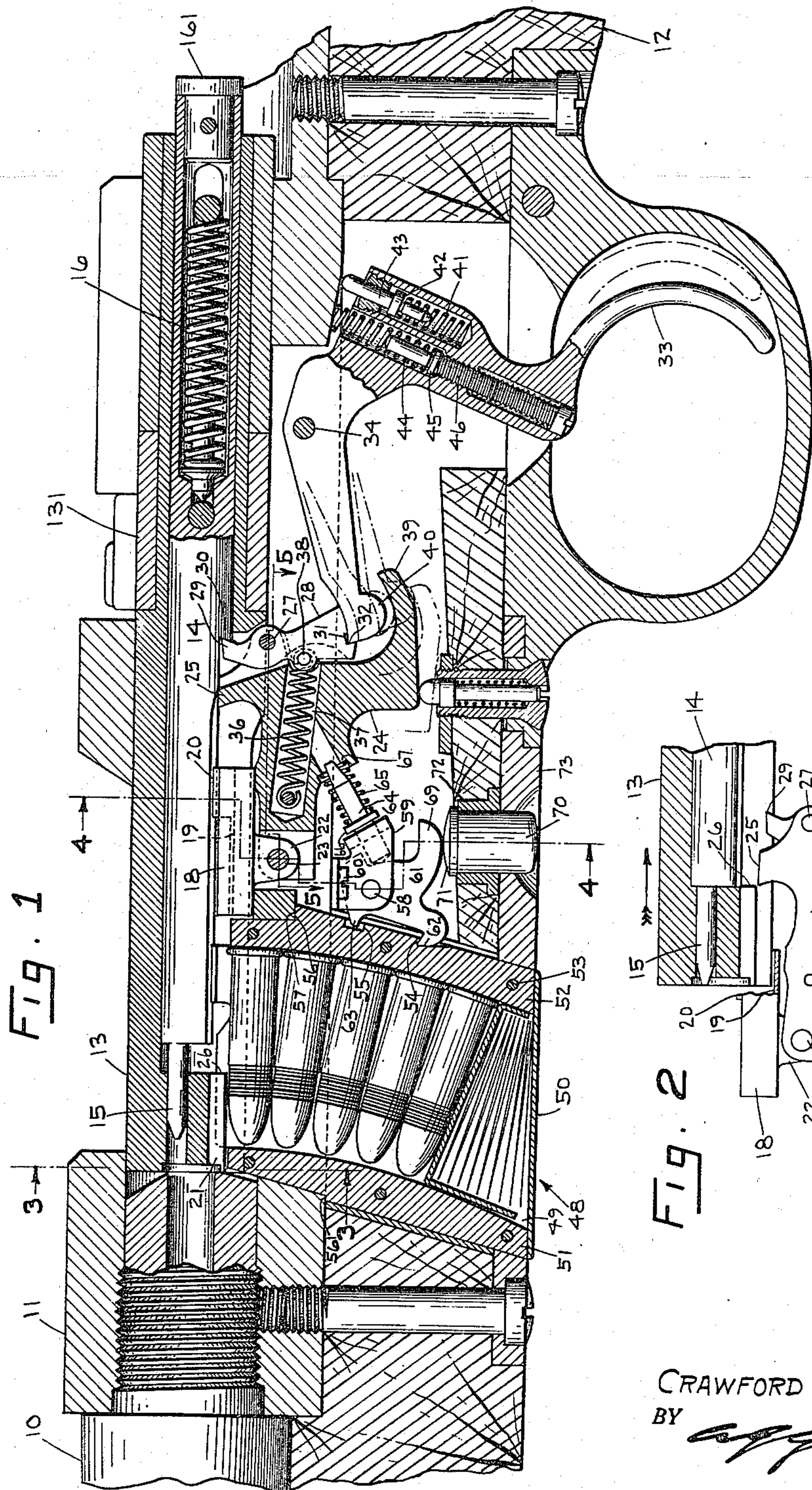
C. C. LOOMIS

2,125,350

FIREARM

Filed Sept. 6, 1935

2 Sheets-Sheet 1



INVENTOR.  
CRAWFORD C. LOOMIS.  
BY *[Signature]*  
ATTORNEY



Aug. 2, 1938.

C. C. LOOMIS

2,125,350

FIREARM

Filed Sept. 6, 1935

2 Sheets-Sheet 2

Fig. 3

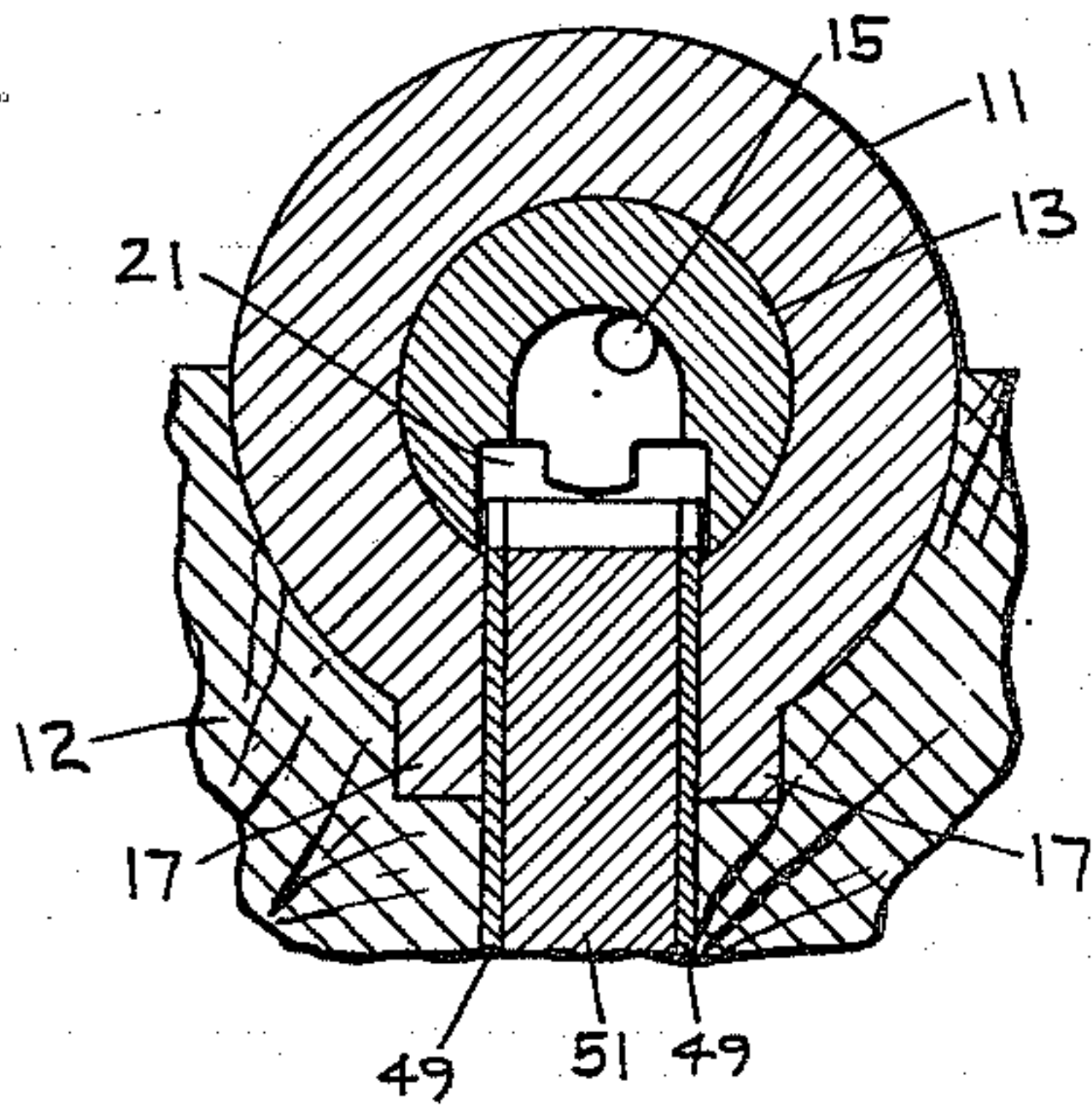


Fig. 4

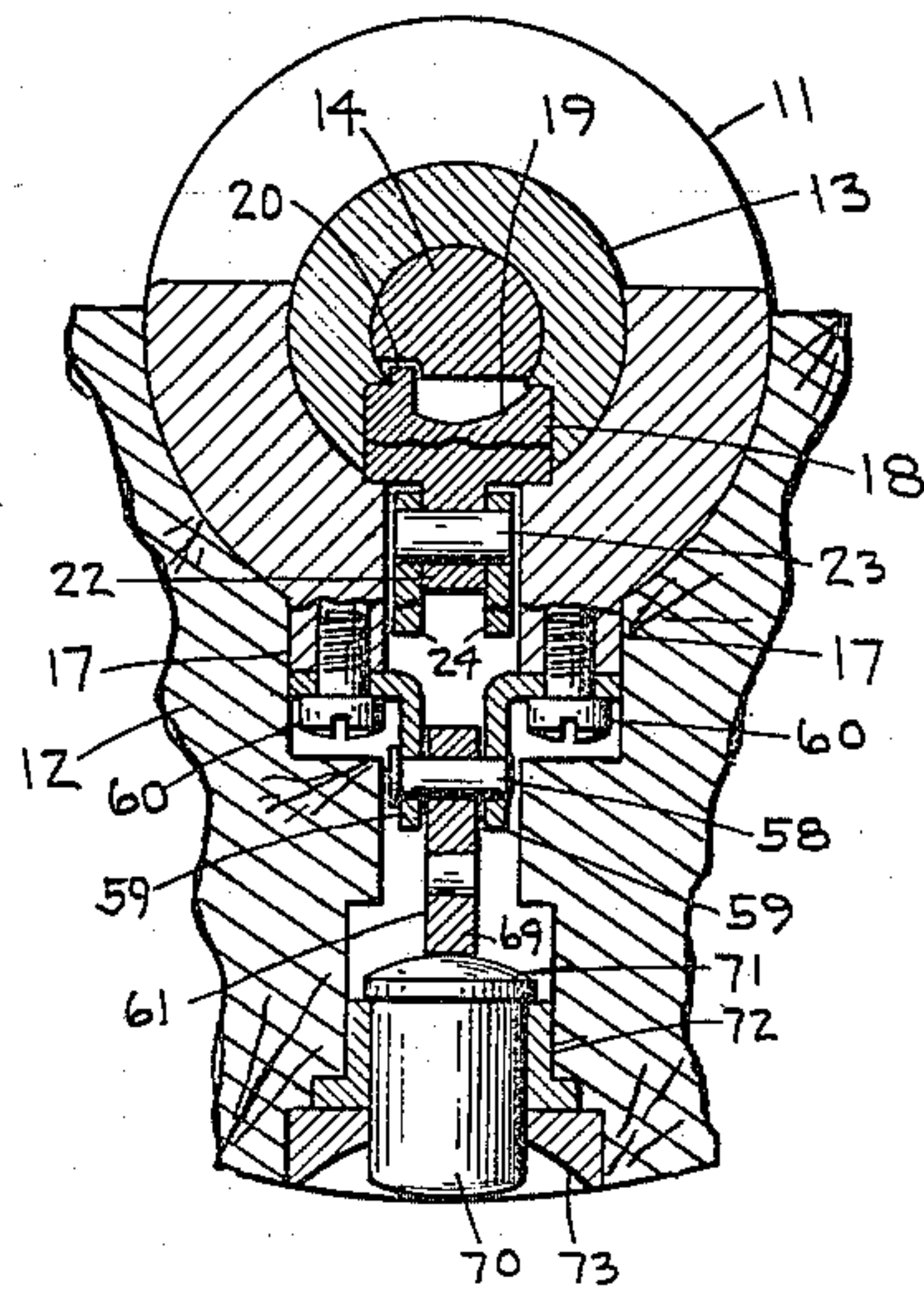


Fig. 5

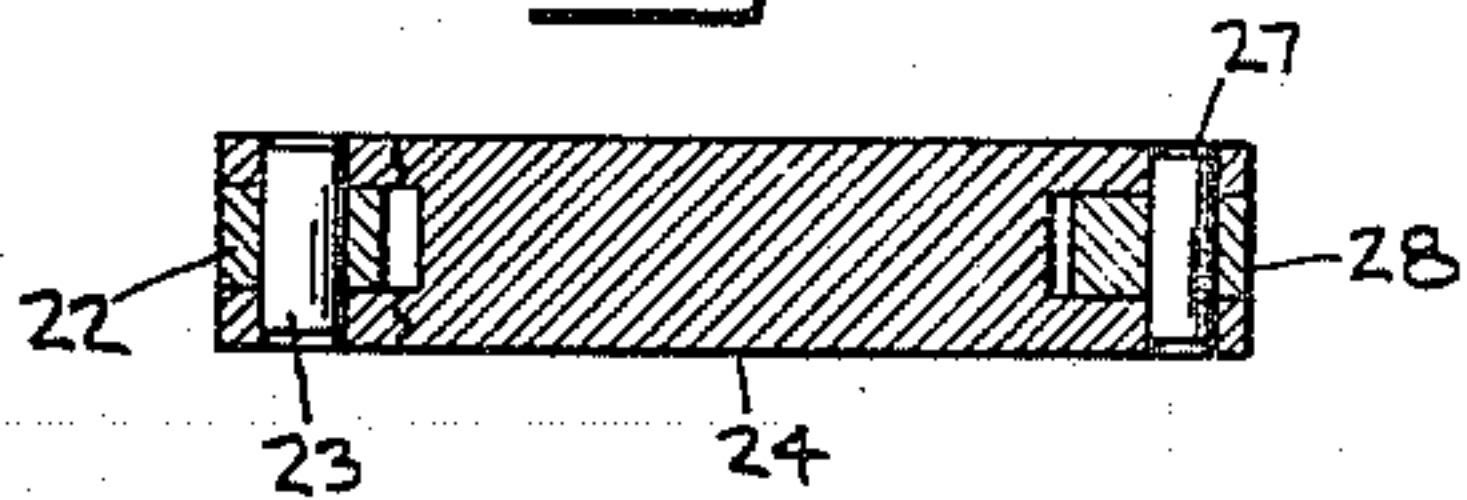


Fig. 6

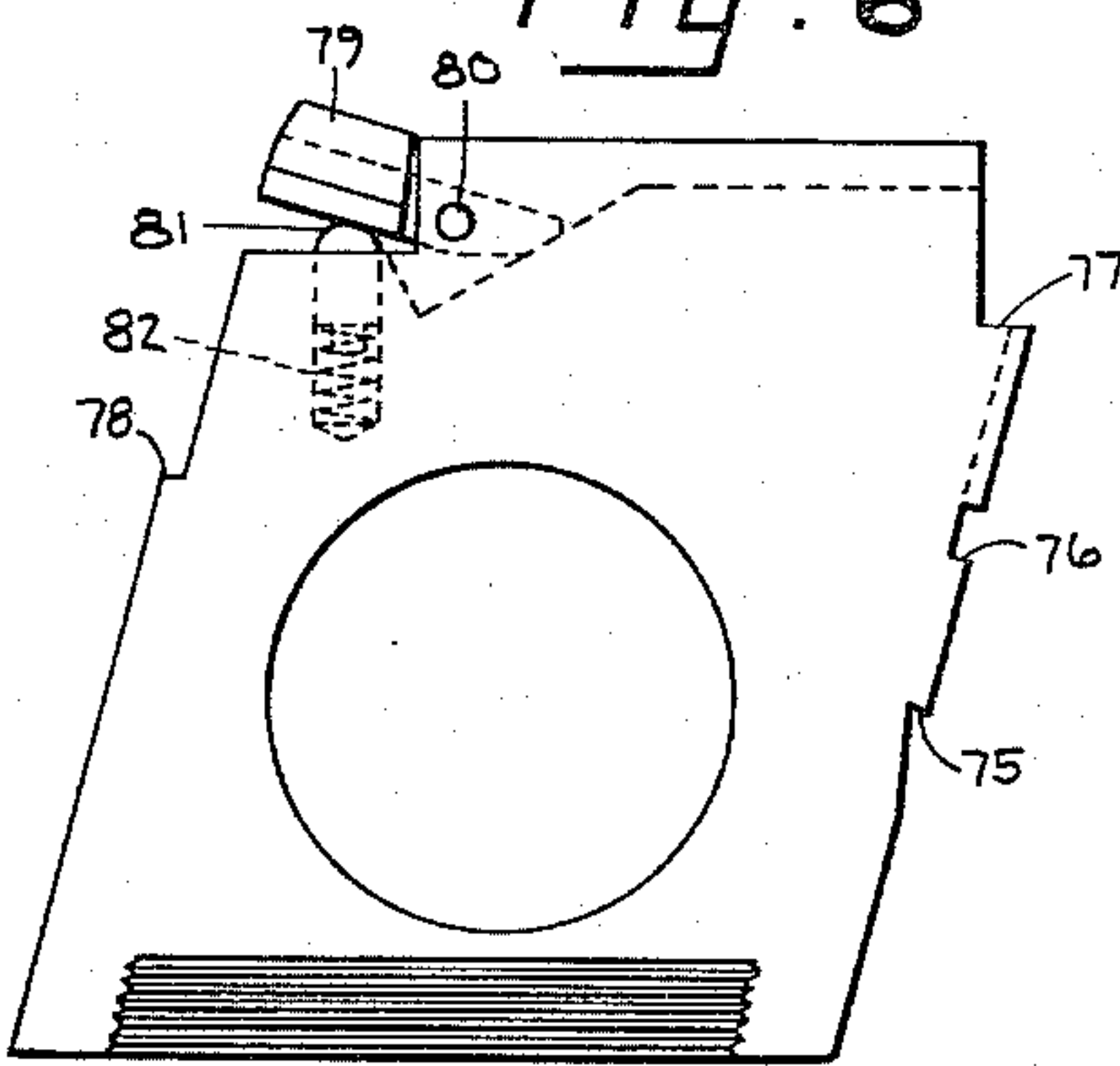
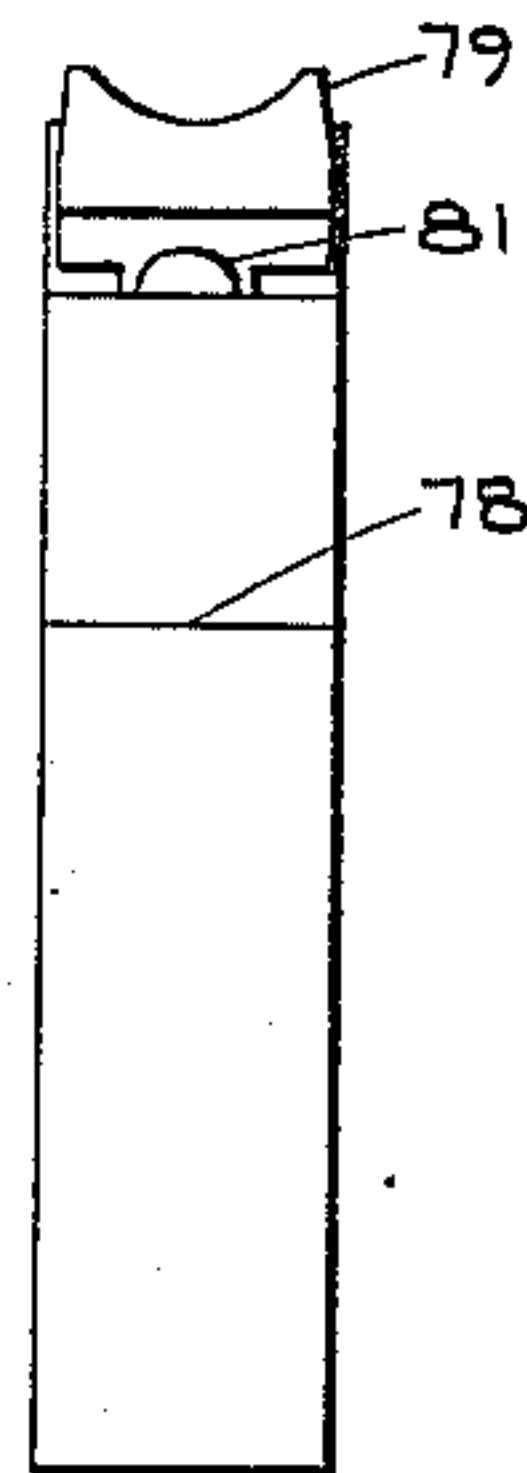



Fig. 7



INVENTOR.  
CRAWFORD C. LOOMIS.  
BY  ATTORNEY



## UNITED STATES PATENT OFFICE

2,125,350

## FIREARM

Crawford C. Loomis, Iliou, N. Y., assignor to  
Remington Arms Company, Inc., a corporation  
of Delaware

Application September 6, 1935, Serial No. 39,365

10 Claims. (Cl. 42—69)

This invention relates to firearms, and contemplates certain improvements in magazine construction and fire control mechanism.

One object of the invention is to provide a magazine and a securing latch therefor so constructed that displacement of the latch will positively project the magazine a short distance from the frame.

A further object of the invention is to provide a new and improved form of sear and trigger mechanism and in conjunction therewith a bolt stop serving as a support for the sear and adapted to be displaced to permit removal of the bolt by an overmovement of the trigger.

A further object of the invention is to provide a simplified construction in which both the bolt stop and the magazine latch, heretofore mentioned, are under the control of a single spring.

With these and other objects in view, the invention consists in the novel constructions, combinations and arrangements of parts, a representative embodiment of which is illustrated in the drawings and will be hereinafter more fully described.

In the drawings:

Fig. 1 is a fragmentary sectional side elevation of a firearm including representative embodiments of the present inventions.

Fig. 2 is a fragmentary detail elevation of part of the mechanism shown in Fig. 1, the bolt stop being retracted.

Fig. 3 is a fragmentary transverse section substantially on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary transverse section substantially on the line 4—4 of Fig. 1.

Fig. 5 is a horizontal sectional detail substantially on the line 5—5 of Fig. 1.

Fig. 6 is a side elevation of a filler block adapted to replace the magazine to convert the arm into a "single shot".

Fig. 7 is a front elevation of the filler block.

The firearm illustrated is of the bolt action box magazine type, but it will be understood that in many aspects the inventions are applicable to other firearms; hence, the drawings and the appended description are to be considered as illustrative, rather than restrictive.

The firearm illustrated comprises a barrel 10 threaded or otherwise secured to a receiver 11, both barrel and receiver being suitably joined to a stock 12. The receiver contains a breech closing bolt 13, a front elevation of which is included in Fig. 3. The bolt, which is manipulated by a handle comprising a hub 131, contains a striker 14 which terminates at its forward end in a firing

pin 15 and is adapted to be propelled forward by a suitable striker spring 16 housed in a recess in the rear portion of the striker which is closed by a safety device 161. The lower forward portion of the breech bolt is cut away to provide clearance for the sear, bolt stop, ejector and magazine to be hereinafter described.

The receiver 11 is of generally cylindrical form, and its lower portion is provided with spaced downwardly extending flanges 17 which serve as supports for the fire control mechanism and the magazine latch. Secured between the flanges 17 and extending upwardly therefrom into the bolt receiving part of the receiver is a supporting block 18 having an arcuate upper surface 19 conforming generally to the peripheral arc of a cartridge head. Extending upwardly from the rear left side portion of the block 18 is an ejector 20 which, in the rearward or breech opening movement of the bolt, traverses a cut-out 21 in the forward chamber closing portion of the bolt, and upon emerging from the front end of said slot engages the rim portion of the head of a cartridge shell moving with the bolt to effect its ejection.

Extending downwardly from supporting block 18 is a lug 22 apertured to receive a pivot pin 23, which pin supports a member 24 having a number of functions as will hereinafter appear. Member 24, which is bifurcated at its forward end to receive lug 22 as illustrated in Fig. 4, comprises an upward extension 25 which terminates immediately below the striker and in position to engage a shoulder 26 near the head of the bolt 13, thereby serving as a stop which limits the rearward movement of the bolt. A spring 25, arranged in a manner to be hereinafter described, normally holds member 24 with its bolt stop 25 in effective position. It will be noted that bolt shoulder 26 is engaged by the bolt stop 25 shortly after the ejector 20 has emerged from cut-out 21 and ejected the shell. Pivoted at 27 in a rearwardly and upwardly opening slot in member 24 is a sear 28, comprising a nose 29 adapted to engage a shoulder 30 on the striker and a notch 31 for engagement by the nose 32 of a trigger 33 pivoted between the receiver flanges at 34. A spring 36, preferably housed in a recess 37 in member 24, is attached to the sear at a point such as 38 below the sear pivot 27, whereby said spring tends to move the sear into striker-engaging position, as illustrated in Fig. 1. The striker, however, is urged forward by the striker spring 16 and, the sear spring 36 being very light in



comparison with the striker spring, the sear will be rocked about its pivot 27 against the tension of spring 36 as soon as the trigger nose 32 is withdrawn from the notch 31. It will be noted that this arrangement differs substantially from the usual sear and trigger construction, in which the sear must be positively disengaged from the striker or hammer in order to permit such striker or hammer to move. In the present construction the sear is actually displaced by the power of the striker spring when such displacement is permitted by the withdrawal of the trigger nose.

The member 24 comprises a downwardly and rearwardly extending tail 39 positioned below the part of the trigger adjacent the nose 32. For the purpose of contacting tail 39 the trigger preferably comprises an enlargement 40 which, when the trigger is depressed enough to withdraw nose 32 from notch 31, thereby firing the gun, just clears the upper surface of the tail 39. If the bolt is now retracted, its rearward motion will be stopped by the engagement of bolt shoulder 26 with bolt stop 25, as heretofore described. When the removal of the bolt from the receiver is desired, the trigger is further depressed and the member 24 rocked about its pivot 23 against the compression of spring 65 by the engagement of trigger enlargement 40 with tail 39, thus carrying the bolt stop 25 below shoulder 26 (Fig. 2).

The trigger pull is controlled by two springs, one of which provides a fixed minimum pull and the second a variable pull in addition to the minimum established by the first. These springs may take the form illustrated in Fig. 1. Spring 41, housed in a recess in the trigger, abuts a shoulder 42 on a plunger 43, which plunger engages an abutment on the receiver. In an aperture extending through the trigger is a second spring 44 abutting a part of the receiver and a headed pilot 45. Into a part of the aperture below the pilot 45 is threaded a screw 46 the head of which is accessible at the lower end of the aperture. By adjusting the screw 46, the force necessary to compress spring 44 is varied. Thus, there is provided a variable trigger pull in addition to the minimum pull required by the non-adjustable spring 41. To further depress the trigger and withdraw the bolt stop 25 requires the compression of spring 65.

The stock is apertured to receive a box magazine indicated generally by the numeral 48. As illustrated, said magazine comprises sheet metal side walls 49 suitably shaped at the top to permit the loading and removal of cartridges; a sheet metal bottom plate 50, and end blocks 51 and 52 secured between the side plates 49 by suitable means such as rivets 53. Novel means are provided for retaining the magazine in place, one form of which is described as follows:

The rearward end block 52 comprises a downwardly facing shoulder 54 and, spaced a suitable distance therefrom, an upwardly facing shoulder 55. A second upwardly facing shoulder 56 cooperates with a shoulder 57 on the receiver to limit the inward movement of the magazine. The forward end block 51 is provided with a similar shoulder 56, similarly abutting a downwardly facing surface on the receiver. Pivoted at 58 in a yoke bracket 59 suitably secured to the receiver as by screws 60 is a magazine latch indicated generally by the numeral 61. Said latch comprises a nose 62 co-acting with shoulder 54 and a nose 63 operating in conjunction with shoulder 55. The latch is urged to a position in which nose 62 engages shoulder 54, thereby holding the mag-

azine in place, by a plunger 64 guided in an aperture in the web of yoke 59 and urged toward the latch by the spring 65 held between a collar 66 of plunger 64 and a shoulder 67 of a recess in the pivoted member 24. Spring 65 thus performs the double function of yieldingly holding both the bolt stop and the magazine latch in effective positions.

The magazine latch comprises a tail 69 overlying a plunger 70 suitably held in the stock and trigger plate. Preferably the plunger 70 comprises a head 71 overlying a bushing 72 inserted in the stock, and the trigger plate 73 is recessed to permit access to the plunger without extending the plunger below the face of the trigger plate. When the plunger 70 is pushed inward, magazine latch 61 will be rocked about its pivot, withdrawing nose 62 from shoulder 54; as these parts are disengaged, nose 63 contacts the shoulder 55 and thereafter the inward movement of the plunger pushes the magazine downward. When the gun is held in the usual horizontal position the magazine will continue to move downward under the action of gravity, thus being entirely removed from the gun. With the gun in any other position the magazine is projected outwardly a sufficient amount to enable it to be grasped for complete removal.

If, for high accuracy target shooting, single shot loading is desired, the magazine may be replaced by a filler block of the type illustrated in Fig. 6. The filler block is of the same exterior configuration as the magazine 48, comprising a downwardly facing shoulder 75 for cooperation with the nose 62 of latch 61, an upwardly facing shoulder 76 for cooperation with nose 63 of latch 61, and movement limiting shoulders 77 and 78 corresponding to shoulders 56 and 56. To facilitate loading, the filler block may be provided with a cartridge guide 79 pivoted at 80 and urged upwardly by a plunger 81 moved by a spring 82 housed in a recess in the block. The guide 79 comprises an arcuate upper surface which directs the nose of a cartridge into the barrel chamber and, when the bolt is closed, the guide is depressed by the breech bolt, compressing the spring 82.

The operation of the gun may be summarized as follows:

The magazine, being loaded with cartridges, is inserted into the magazine recess, the engagement of the rear wall of block 52 with the nose 62 rocking the magazine latch about its pivot. As the magazine reaches the proper position, its inward movement is stopped by the engagement of shoulders 56 and 56 with the cooperating parts of the receiver, and the magazine latch is rocked about its pivot 58 by spring 65 to bring nose 62 into engagement with shoulder 54, thereby holding the magazine in place. The uppermost cartridge in the magazine is then moved into the chamber by the usual reciprocation of the bolt. Upon depression of the trigger against the force of fixed spring 41 and adjustable spring 44, the trigger nose 32 is withdrawn from notch 31 of sear 28 and thereupon the force of the striker spring rocks the sear about its pivot 27, tensioning the spring 36. The cartridge being fired by the forward movement of the striker, the bolt may be unlocked and retracted until the ejector 20 clears the cut-out 21 and the fired shell, moving rearwardly with the bolt, is ejected. Immediately thereafter, rearward movement of the bolt is stopped by the engagement of shoulder 26 with bolt stop 25. This operation may be



repeated until the supply of cartridges in the magazine is exhausted, whereupon the empty magazine is removed by pressing the plunger 70 inwardly, this movement serving to rock the magazine latch 61 about its pivot 58 against the force of spring 65, withdrawing the nose 62 from shoulder 54, and thereafter positively moving the magazine outwardly by the engagement of nose 63 with shoulder 55. The magazine thus ejected may be replaced by another magazine or by the filler block illustrated in Fig. 6. When removal of the bolt for cleaning or other purposes is desired, the trigger is depressed to and beyond its fired position. In the movement beyond fired position the enlargement 40 engages tail 39 of member 24 and this member is rocked about its pivot 23 against the force of spring 65, carrying the bolt stop 25 below the path of movement of shoulder 26 (Fig. 2) and permitting the removal of the bolt. It will be noted that trigger movement for the purpose of removing the bolt requires the compression not only of trigger springs 41 and 44 but also of the combination bolt stop and magazine latch controlling spring 65; this spring providing a definite added resistance to the movement of the trigger past fired position which prevents inadvertent release of the bolt.

The embodiment of the inventions illustrated in the drawings and herein described is to be understood as representative and typical only, the inventions being susceptible to embodiment in many other forms, all falling within the scope of the appended claims.

What is claimed is:

1. In a firearm, in combination, a breech closing bolt, a striker and a striker moving spring in said bolt, a notch in said striker, a retractible bolt stop, a sear pivoted upon said retractible bolt stop and adapted to be moved about its pivot by the movement of said striker by its spring, a spring urging said sear into engagement with said striker notch, and a trigger adapted to engage and hold said sear, thereby holding said striker cocked.

2. In a firearm, a frame having a recess, a magazine adapted to be inserted in said recess, inwardly and outwardly facing shoulders on said magazine, a latch member comprising a projection adapted to engage said outwardly facing shoulder to hold said magazine in place and a second projection adapted to be moved to engage said inwardly facing shoulder to displace said magazine outwardly.

3. In a firearm, a frame having a recess, a magazine adapted to be inserted in said recess, a pivoted latch member comprising a magazine holding element and a magazine ejecting element, a spring normally holding said latch member with said magazine holding element in effective

position, and means for displacing said latch member to withdraw said magazine holding element and render said magazine ejecting element effective.

4. In a firearm comprising a bolt, a striker and a magazine, in combination, a stop for limiting the rearward movement of said bolt, a striker engaging sear mounted on said bolt stop, a magazine latch, and a spring stressed between and for rendering effective said magazine latch and said bolt stop.

5. In a firearm comprising a bolt and a magazine, in combination, a stop for limiting the rearward movement of said bolt, a magazine latch, a spring engaging said bolt stop, and a shouldered pilot for said spring comprising a projecting end which engages said latch.

6. A firearm comprising a frame, a bolt supported in said frame, a striker, a bolt stop pivoted to said frame, a sear pivoted in said bolt stop, a sear controlling spring housed in a recess in said bolt stop, a notch in said sear, a trigger comprising a shoulder adapted to engage said notch and to be withdrawn therefrom by a relatively short movement of said trigger, a tail on said bolt stop adjacent said trigger and adapted to be engaged by said trigger after the release of said sear, whereby additional movement of said trigger will displace said bolt stop.

7. A firearm comprising a frame, a breech closing bolt, a retractible bolt stop mounted in said frame, a sear mounted and supported upon said bolt stop and movable thereon, and a sear controlling trigger adapted to be moved to engage and displace said bolt stop.

8. A firearm comprising a frame, a breech closing bolt, a retractible bolt stop mounted in said frame, a sear mounted and supported upon said bolt stop and movable thereon, and a trigger adapted to hold said sear, to release said sear when given a relatively short movement, and to engage and retract said bolt stop when given an additional movement.

9. A firearm comprising a breech closing bolt; a striker; and bolt and striker controlling devices comprising a trigger, a bolt stop, and a sear pivotally mounted upon said bolt stop, said bolt stop comprising a part underlying said trigger to be actuated thereby.

10. In a firearm, in combination, a frame, a breech bolt in said frame, a striker held in said breech bolt, a retractible breech bolt stop pivoted in said frame, a striker holding sear pivoted and supported on said breech bolt, and a trigger adapted to hold said sear in striker holding position, said trigger being manually shiftable to engage and retract said bolt stop.

CRAWFORD C. LOOMIS.