

June 13, 1933.

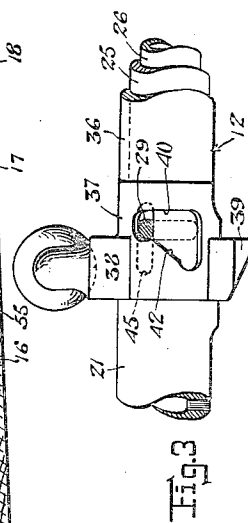
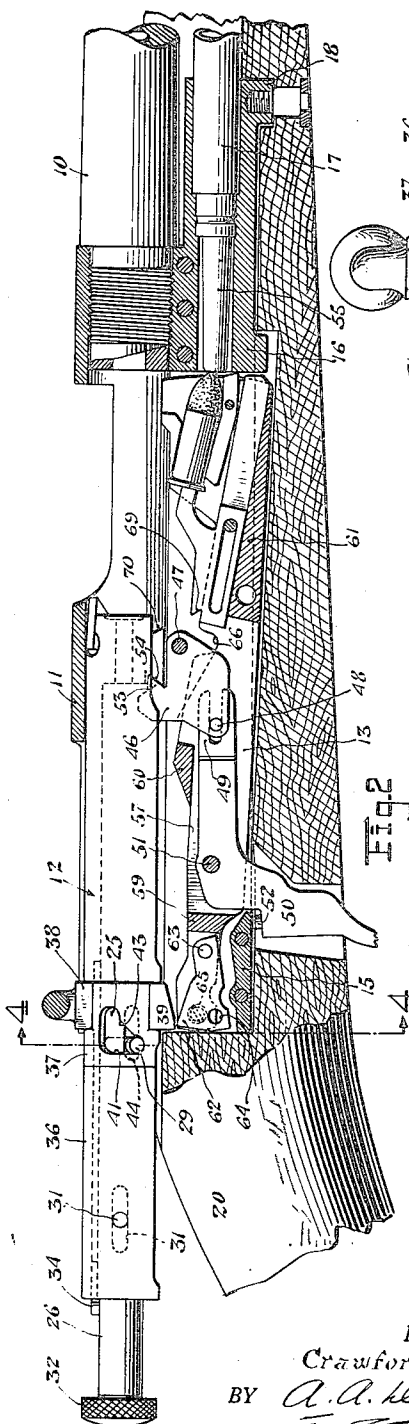
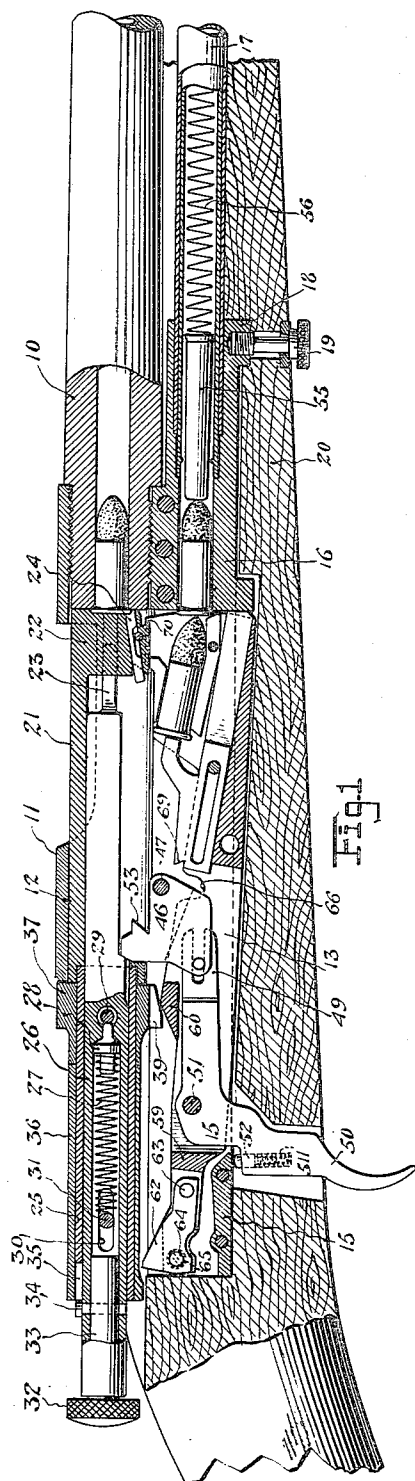
C. C. LOOMIS

1,913,840

FIREARM

Filed Feb. 5, 1932

2 Sheets-Sheet 1



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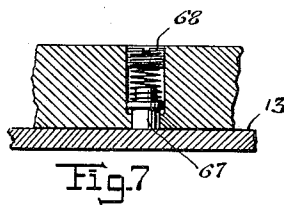
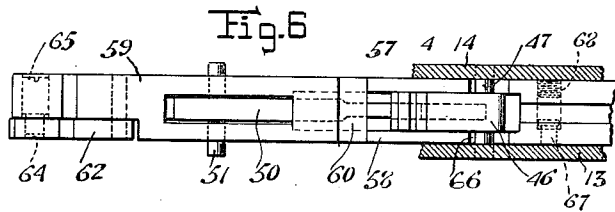
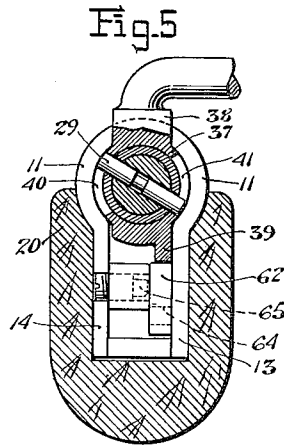
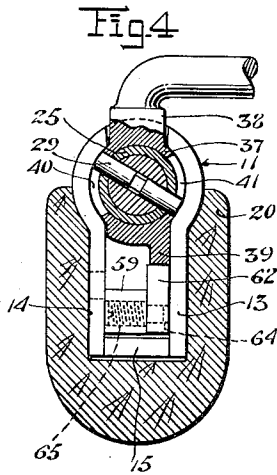
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FIREARM

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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE

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## FIREARM

Application filed February 5, 1932. Serial No. 591,001.

This invention relates to firearms, and has been illustrated as applied to a firearm of the type disclosed in applicant's prior co-pending application, Serial No. 542,267, filed June 5, 1931.

In one aspect the present invention contemplates certain improvements and refinements upon said firearm disclosed in said prior application.

One object of the present invention is to provide mechanism in a firearm of the type disclosed in said application whereby cocking of the striker is effected upon the upward or unlocking movement of the bolt handle.

A further object is to provide certain improvements in the construction and relations of the bolt and striker.

A further object is to provide an improved fire control mechanism including separate inter-connected sear and trigger.

A further object is to provide improved means for controlling the movement of the cartridge transferring device or carrier.

A further object is to provide means for disabling the normally effective bolt actuated carrier operating device and for locking the carrier in a position which will enable the use of the firearm as a single loader.

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

In the drawings:

Fig. 1 is a fragmentary side elevation, partly in section, of a firearm embodying many of the features described in the aforementioned prior application and including the improvements constituting the present invention.

Fig. 2 is a fragmentary longitudinal side elevation, partly in section, showing the action open, the cartridge carrier actuating device disabled, and the cartridge carrier locked.

Fig. 3 is a fragmentary left side elevation of the bolt and bolt operating handle.

Fig. 4 is a transverse section substantially on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 4 but showing the carrier locked and the carrier actuator disconnected from the carrier.

Fig. 6 is a fragmentary plan view of the carrier and associated parts.

Fig. 7 is a detail of a frictional carrier movement controlling device.

The firearm comprises a barrel 10 to which is secured, by threading or other suitable connection, a receiver 11. The receiver is preferably formed of folded sheet metal, the upper part thereof being substantially cylindrical and adapted to receive a breech bolt 12; the cylinder, however, is not closed on the bottom, the sheet metal being turned downwardly to form a pair of spaced flanges 13 and 14, clearly shown in Figs. 4 and 5. Said flanges are spaced and joined at the lower rear corner by a spacer block 15 (Figs. 1 and 2) secured by suitable means such as rivets, and are likewise spaced and joined at their forward ends by a member 16 which is elongated and cylindrically bored and counter-bored to receive the rearward end of a magazine tube 17. Said member 16 likewise comprises a downwardly extending boss 18 into which is threaded a take-down screw 19 by which a stock 20 is detachably secured to the barrel, magazine and receiver assembly.

The breech bolt is essentially a hollow cylindrical member comprising a forward section 21, the front end of which is closed by a head 22 suitably apertured to receive a firing pin 23 and an ejector 24. The rearward end of the bolt section 21 is counter-bored and threaded to receive the threaded end of a rearward bolt section 25. However, if desired, the sections 25 and 21 may be made integral. Within the hollow bolt formed by sections 21 and 25 is a striker 26, the rear end of which is bored out to house a striker spring 27. The forward end of spring 27 is carried by a spring pilot 28, the nose of which engages a peripheral groove in a transversely extending assembly and cocking pin 29 to which further reference will presently be made. The striker is slotted longitudinally at 30 to receive an assembly and abutment pin 31 fixed

in the sides of the bolt section 25. Pin 31 serves as an abutment for the striker spring 27, as clearly shown in Fig. 1.

A striker manipulating finger piece 32 may be secured to the rear end of the striker 26 by any suitable means such as a boss 33 extending from the finger piece and adapted to be received in the spring housing bore of the striker. Boss 33 is held in place by suitable means such as a stud 34 which extends through a short transverse slot in the wall of the striker 26, permitting the finger piece and stud a short angular movement relative to the striker. The stud 34 may project a short distance from the periphery of the striker, the projection being normally received in a slot 35 in the striker and adapted to act as a safety stop by engaging the rear end of the striker when the finger piece 32 is rotated. The pin 31 likewise serves to secure an outer bolt sleeve 36 placed upon the bolt section 25 in the rear of a hub 37 of the bolt handle, which handle will now be more fully described.

As in the application above mentioned, the bolt is locked in forward position by the engagement of suitable locking surfaces associated with the bolt handle with counterpart locking surfaces upon the frame. Locking surfaces associated with the bolt handle may comprise the squared shank 38 of the handle itself and a lug 39 projecting from the opposite side of the bolt handle hub. The bolt handle hub 37, which encircles the forward end of section 25 of the bolt and rotates thereon, is elongated and comprises on opposite sides thereof two generally triangular cam slots 40 (Fig. 3) and 41 (Fig. 2), which slots receive the oppositely projecting ends of the aforementioned cocking pin 29. When the action is closed and the striker, which carries the pin 29, is forward, the ends of said pin 29 will occupy positions in the forward ends of cam slots 40 and 41 and adjacent the inclined surfaces 42 and 43 thereof. As the bolt handle is rotated to unlock the bolt, the bolt and striker being held against rotation as will hereinafter appear, the ends of pin 29 are forced to travel along the cam surfaces 42 and 43, drawing back the striker within the bolt and compressing the striker spring 27. In this movement the parts of the pin 29 adjacent the end sections which project into the bolt handle cams traverse longitudinal slots 44 and 45 provided therefor in the bolt section 25.

The striker 26 is adapted to be controlled by a sear 46 pivoted at 47 on a pivot pin fixed in the sides of the receiver. The lower rearward portion of sear 46 is slotted, and within the slot is a transversely extending pin 48 adapted to be received in the forked end 49 of a trigger 50 pivoted at 51 and urged in a direction to carry the sear into striker engaging position by suitable means such as a

spring 511 housed in a well in said trigger and acting upon a spring pilot 52 which abuts an adjacent part of the frame such as the aforementioned spacing and joining block 15. It will be noted that the sear is pivoted well in front of its engagement with the striker, thereby eliminating any tendency of the sear to rock about its pivot to striker releasing position when engaged by the striker. The sear is further provided with a forwardly facing shoulder 53 preferably under-cut and adapted to engage a counterpart shoulder 54 of a block at the forward end of the bolt, thereby limiting the rearward movement of the bolt.

Cartridges are stored in a column in the tubular magazine 17, and are urged rearwardly in said magazine by a spring follower 55 and a magazine spring 56. Upon leaving the rearward end of the tube 17, the cartridges pass one at a time through the aforementioned bore in the member 16 (which for convenience will be considered as part of the magazine) into the receiver, and are transferred to the chamber by a carrier which may be constructed as follows: The carrier body may be made from a single piece of metal, but consists essentially of two arms 57 and 58, joined at their rearward ends by a block 59, at an intermediate point by ledge 60, and at their forward ends by shelf 61. Said carrier is pivoted upon the trigger pivot 51, the trigger and the lower part of the sear lying between the carrier arms. The carrier is adapted to be rocked about its pivot through the engagement of suitable surfaces associated therewith by the aforementioned lug 39 on the bolt handle hub. Fig. 1 shows the bolt in its forward position with the lug 39 in engagement with the ledge 60 of the carrier, holding the carrier in depressed position.

In the prior application above-mentioned upward movement of the forward end of the carrier to bring the cartridge thereon into alignment with the chamber was effected by the engagement of lug 39 with the upwardly extending rear end of carrier block 59 so that the forward end of the carrier was inevitably moved upward each time the bolt was retracted. The present invention contemplates the provision of means for disabling this movement of the carrier and locking the carrier with its forward end in depressed position so that single loading, by inserting cartridges through the top of the receiver directly into the chamber, may be effected. To this end, one side of the block 59 is cut away and a carrier actuator 62 is pivoted thereon at 63. When it is desired to operate the carrier upon each movement of the bolt the actuator 62 is fixed to and moves with the carrier. To this end, the actuator 62 comprises an aperture 64 adapted to receive the end of a screw 65 threaded into an aperture

in the block 59. The parts are shown in this position in Fig. 1, and it will be apparent that the engagement of the inclined upper surfaces of the actuator 62 by lug 39 will cause an upward movement of the forward end of the carrier. When it is desired to disable the carrier, the screw 65 is retracted out of engagement with the aperture 64 by means of a screw driver inserted through an aperture in the flange 14 of the frame. Upon being so retracted the screw 65 becomes engaged in said aperture so that, as the actuator 62 is freed for rocking movement about its pivot 63, the carrier becomes locked to the frame. The location of the said aperture in frame flange 14 is such that when the screw 65 is engaged therein the forward end of the carrier is in its lowermost or depressed position, as shown in Figs. 1 and 2. In this condition of adjustment, the engagement of actuator 62 by lug 39 merely rocks the actuator about its pivot 63, as shown in Fig. 2, the carrier necessarily remaining stationary by reason of the engagement of screw 65 with the frame. The carrier may of course be again rendered effective by advancing the screw 65 to engage the aperture 64 in the carrier actuator and at the same time become disengaged from the frame flange 14.

The carrier arms 57 and 58 are recessed as shown at 66 (Figs. 1, 2 and 6), the recesses receiving the sear pivot pin 47 when the forward end of the carrier is elevated and, by engagement with this pin, serving to limit the upward movement of the carrier. The carrier is further controlled to prevent unnecessary or violent movement thereof by means of a friction plunger 67 projecting from a transverse recess in the carrier and urged outwardly by a spring 68 into frictional engagement with the frame flange 13.

Other details of the cartridge transferring means are substantially the same as described in the aforementioned prior application. It should be noted, however, that according to the present application, the surface 69 of the "translator member", which is engaged by the forward end of the bolt, is under-cut, and the co-acting surface 70 of the bolt is similarly shaped in order to insure that upon engagement of the translator by the surface 70 of the bolt the translator will positively be moved forward to move the cartridge upon the carrier into the chamber, and not merely depressed as might occur in the absence of a prehensile engagement between bolt and translator.

The embodiment of the invention herein described and illustrated is to be understood as illustrative only, the invention being susceptible of expression in many other forms, all falling within the scope of the appended claims, which are to be broadly construed.

What is claimed is:

1. In a firearm, a reciprocating breech bolt,

an operating handle comprising a hub encircling a part of said bolt intermediate its ends, a striker within said bolt, a cocking pin projecting transversely from said striker through slots in said bolt, and cam apertures in said hub adapted to receive the ends of said cocking pin.

2. In a firearm, a receiver comprising a slot, a reciprocating breech bolt, an operating handle comprising a hub encircling a part of said breech bolt intermediate its ends and a shank extending through said receiver slot to lock said bolt in said receiver, a striker within said bolt, a cocking pin projecting transversely from said striker through slots in said bolt, and cam apertures in said hub adapted to receive the ends of said cocking pin.

3. In a firearm, a reciprocating breech bolt, an operating handle comprising a hub encircling a part of said bolt intermediate its ends, a striker within said bolt, a cocking pin projecting transversely from said striker through slots in said bolt, cam apertures in said hub adapted to receive the ends of said cocking pin, and bolt locking surfaces projecting from said hub, said bolt locking surfaces serving to guide said hub and prevent rotation thereof throughout the reciprocation of said breech bolt.

4. In a firearm, a reciprocating non-rotating breech bolt comprising an intermediate section of reduced diameter, an operating bolt handle comprising an elongated hub adapted to be received on said section, a non-rotating striker housed in said bolt, cocking pins projecting laterally from said striker through longitudinal slots in said bolt, substantially triangular cocking apertures in said hub adapted to receive said cocking pins whereby said striker is retracted by the rotation of said bolt hub, a striker manipulating finger piece attached to said striker for rotation relative thereto, and means whereby rotation of said finger piece upon said striker retains said striker in cocked position.

5. In a firearm comprising a firing chamber, a reciprocating breech bolt, and a magazine; means for transferring cartridges from said magazine to said chamber comprising a pivoted carrier normally oscillated by said breech bolt, a normally operative connection between said breech bolt and said carrier, and means for disabling said connection between said carrier and breech bolt and permitting said breech bolt to reciprocate without moving said carrier.

6. In a firearm comprising a frame, a firing chamber, a reciprocating breech bolt, a magazine, and a carrier for transferring cartridges from said magazine to said chamber; a normally effective carrier actuator for causing a cartridge transferring movement of said carrier during the movement of said breech bolt,

and means for rendering said carrier actuator ineffective.

7. In a firearm comprising a frame, a firing chamber, a reciprocating breech bolt, a magazine, and a carrier for transferring cartridges from said magazine to said chamber; a normally effective carrier actuator for causing a cartridge transferring movement of said carrier during the movement of said breech bolt, and means for locking said carrier against movement.

8. In a firearm comprising a frame, a firing chamber, a reciprocating breech bolt, a magazine, and a carrier for transferring cartridges from said magazine to said chamber; a normally effective carrier actuator for causing a cartridge transferring movement of said carrier during the movement of said breech bolt, said carrier actuator comprising a member pivoted on said carrier, means normally effective to lock said member to said carrier and prevent movement thereof about its pivot, said means being displaceable to permit said member to rock about its pivot and simultaneously lock said carrier to said frame.

9. In a firearm comprising a frame, a firing chamber, a reciprocating breech bolt, a magazine, and a carrier for transferring cartridges from said magazine to said chamber; a carrier actuator normally rigidly connected with said carrier and comprising a part in the path of movement of said breech bolt, whereby said carrier is given a cartridge transferring movement through engagement of said actuator by said breech bolt, and means for permitting said carrier actuator to move relative to said carrier when engaged by said breech bolt and for locking said carrier to said frame.

10. In a firearm, in combination, a frame, a pivoted cartridge carrier comprising a pair of arms, a trigger pivoted on said carrier pivot and comprising an arm extending between said carrier arms, said trigger arm comprising a forked end, and a sear pivoted in said frame and comprising a stud adapted to be received in the forked end of said trigger, said sear pivot serving as a stop to limit the oscillating movement of said carrier about its pivot.

11. In a firearm, in combination, a frame, a pivoted cartridge carrier comprising a pair of arms, a trigger pivoted on said carrier pivot and comprising an arm extending between said carrier arms, said trigger arm comprising a forked end, a sear pivoted in said frame and comprising a stud adapted to be received in the forked end of said trigger, and cut-outs in said carrier arms adapted to receive and engage said sear pivot when said carrier is oscillated, whereby said sear pivot limits the movement of said carrier.

12. In a firearm, in combination, a frame, a pivoted cartridge carrier comprising a pair of arms, a trigger pivoted on said carrier

pivot and comprising an arm extending between said carrier arms, said trigger arm comprising a forked end, a sear pivoted in said frame and comprising a stud adapted to be received in the forked end of said trigger, and a friction device associated with said carrier and engaging said frame.

13. In a firearm, in combination, a firing chamber, a magazine, a pivoted carrier for transferring cartridges from said magazine to said chamber, a device movable on said carrier for delivering a cartridge from said carrier into said chamber, a reciprocating breech bolt, means on said breech bolt for engaging and moving said device, the engaging surfaces on said means and said device being so formed as to insure movement of said device on said carrier without depression of said carrier.

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