May 4, 1937. R. RAZEE 2,079,039

FIREARM

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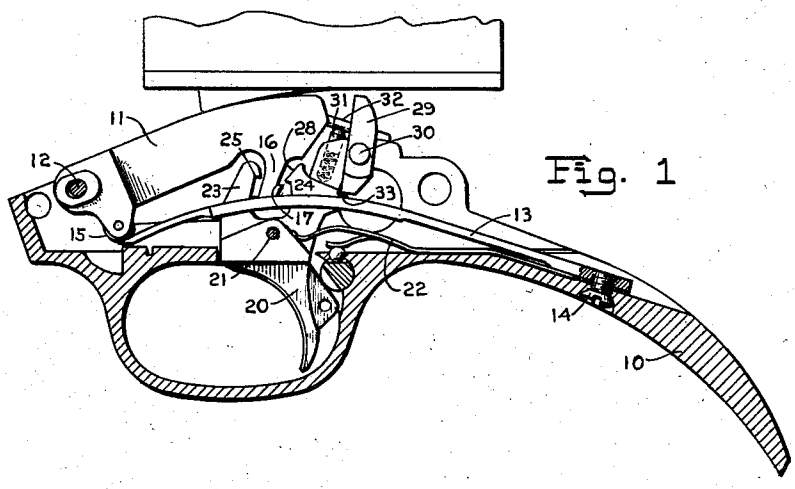


Fig. 1

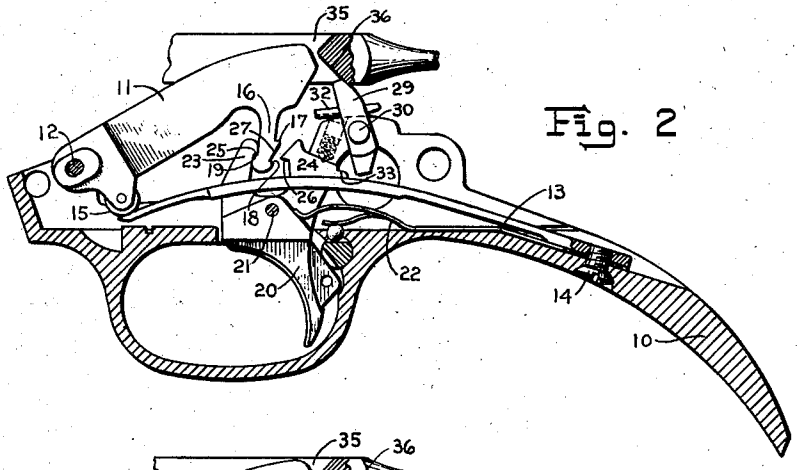


Fig. 2

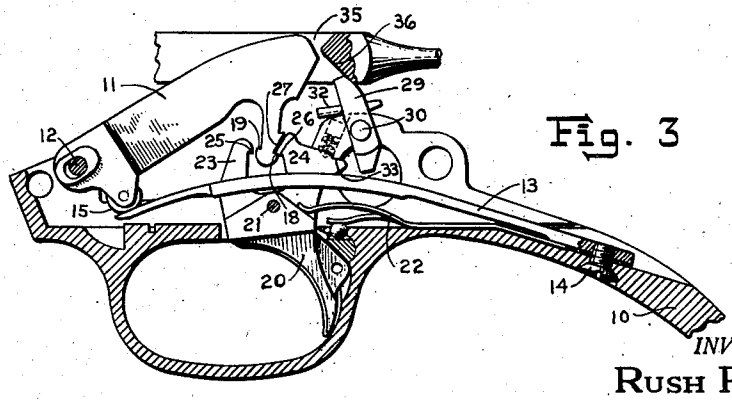


Fig. 3

INVENTOR.
RUSH RAZEE
BY
ATTORNEY

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FIREARM

Rush Razee, Denver, Colo., assignor to Remington Arms Company, Inc., a corporation of Delaware

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2 Claims. (Cl. 42—69)

This invention relates to firearms, and particularly to fire control mechanisms therefor, contemplating a simplified and practical mechanism for effecting discharge of a firearm by release of the trigger, instead of the usual depression of the trigger.

Substantially all hand and shoulder firearms in use at this time comprise a hammer or striker arranged to be propelled forward by a spring when it has been released from a holding sear. The sear is moved to release the hammer by some form of finger trigger, and the substantially universal mode of operation requires for this purpose a depression of the trigger. For various reasons, and particularly for a certain type of shooter, this mode of operation is undesirable. The necessary pressure is applied to the trigger by a muscular contraction, usually of the shooter's right hand, and there is considerable tendency to draw the firearm to the right, instead of holding it upon the correct point of aim. Likewise, shotguns and high powered rifles recoil with some force in shooting, and there is a tendency on the part of the shooter to move the shoulder supporting the gun to the rear or away from the gun at the instant of pulling the trigger. The movement of this tendency to separate the shoulder from the gun is opposed to the movement necessary for the trigger-depressing movement, and may result in the shooter failing to depress the trigger at all while the gun is properly aimed. Such faulty manipulation appears most frequently in shooting at flying targets where the timing of trigger pull with respect to the swing of the gun and the flight of the target is of great importance.

It is an object of the present invention to overcome the difficulties above-mentioned and to improve the functioning of fire control mechanisms generally by providing a mechanism such that the fall of the hammer is effected by releasing the trigger instead of depressing it.

It is a further object of the invention to provide a mechanism such that the gun is cocked and held by the sear in the usual manner and its discharge requires that the trigger be first depressed and subsequently released.

With these and other objects in view, the invention consists in the novel combinations and arrangements of parts illustrated in the drawing and to be hereinafter described in detail.

In the drawing:

Fig. 1 is a longitudinal elevation, partly in section, of a trigger plate carrying fire control mechanism embodying one form of the present invention. The parts are shown in the position they assume while the breech of the gun is open, the hammer being held in an over-cocked position by contact with a part of the breech closing mechanism.

Fig. 2 is a similar longitudinal elevation of the same mechanism in the position it assumes when the breech is closed, the hammer being in its normal cocked position.

Fig. 3 is a similar elevation, showing the trigger depressed and the hammer moved to such a position that it will be released when pressure on the trigger is relaxed.

Only so much of a gun mechanism as is necessary for the illustration of the present invention has been shown and will be described. For a full description of a firearm to which the particular embodiment of the invention illustrated is directly applicable, reference may be had to the patent to Browning, No. 659,507, October 9, 1900, or the patent to Loomis, No. 1,931,262, October 17, 1933.

All parts of the fire control mechanism are mounted upon a trigger plate 10. A hammer 11 is pivoted at 12 in an upstanding portion of said trigger plate and is propelled by a hammer spring 13 secured to the trigger plate by a screw 14 and engaging a suitable part such as a roller 15 associated with the hammer. Rigid with the hammer is a hammer projection 16 upon which are formed notches or shoulders 17, 18, and 19, the purpose of which will hereinafter appear. A trigger provided with a finger piece 20 is pivoted in the trigger plate at 21 and is urged to clockwise rotation about its pivot by a trigger spring 22. Such clockwise rotation carries the finger piece 20 forward to its normal or undepressed position. Above its pivot 21 the trigger comprises two arms 23 and 24 which will be called, respectively, the main sear 23 and the supplemental sear 24. Sear 23 comprises a shoulder 25 adapted to engage the hammer notch 19 to hold the hammer in normal cocked position (Fig. 2). Supplemental sear 24 comprises a nose 26 adapted to engage the hammer notch 18 after the release of notch 19 from shoulder 25 and hold the hammer until pressure on the trigger finger piece is relaxed. Upon the hammer notch 18 is an incline or cam surface 27 which, as the hammer is moved to and past cocked position, engages a face 28 on supplemental sear 24 and positively rotates the trigger clockwise, bringing the shoulder 25 into position to engage the notch 19. Mechanism may be provided for holding the trigger in this position

until the breech mechanism is closed and locked. For this purpose, a latch member 29 is pivoted at 30 in the trigger plate and is urged to trigger-engaging position by a spring-pressed plunger 31 engaging an arm 32 rigidly connected with the latch 29. Fig. 1 shows said latch in trigger-engaging position, its lower end overlying a shoulder 33 on supplemental sear 24. A link 35 associated with the breech mechanism comprises a cam surface 36 adapted to engage the upper portion of latch 29 as the breech mechanism is closed and move said latch to the ineffective position shown in Figs. 2 and 3.

The operation of the gun is as follows:

The hammer is drawn back to an over-cocked position when the breech is opened by direct engagement with a part of the breech mechanism, such as the breech block itself. A portion of the breech block is shown in Fig. 1. As the hammer passes its normal cocked position the cam surface 27 thereon engages the face 28 of the supplemental sear, rocking the trigger to normal position, whereupon latch 29 moves over the shoulder 33 of the supplemental sear, holding the trigger in normal position until the breech is fully closed. In the closing movement of the breech mechanism, the breech block moves off from the hammer and the hammer rises until notch 19 is engaged by shoulder 25 of the main sear 23, holding the hammer in its normal cocked position. To fire, the trigger is first depressed in the usual manner, withdrawing shoulder 25 from notch 19. This movement of the trigger, however, moves shoulder 26 over the notch 18, as shown in Fig. 3, the hammer moving only a short distance; its movement, however, is sufficient to carry notch 19 above shoulder 25, thus preventing re-engagement of these surfaces when the trigger is released. The shooter now releases the trigger which moves forward to normal position under the action of its own spring and the camming action between notch 18 and shoulder 26. When shoulder 26 clears notch 18 the hammer is released for its usual firing movement. In actual use the trigger will be depressed as a part of preparing for a shot, thus its depression may be made an incident to swinging the gun to the shoulder, or in trap-shooting the trigger may be depressed either when the shooter brings his gun to his shoulder or when he calls for a bird, thus the gun is fully prepared and is actually fired by a relaxing of the muscles of the hand, instead of such a contraction as may adversely affect the shooter's accuracy.

The embodiment of the invention herein illustrated and described is to be understood as typical and representative only, the invention being susceptible of many modifications, all falling within the scope of the appended claims.

What is claimed is:

1. A firing mechanism comprising a depressible trigger, a primary sear and a supplemental sear associated with said trigger and movable thereby, a hammer, means for moving said hammer to an over-cocked position, cooperating surfaces on said hammer and supplemental sear for moving said trigger to undepressed position as said hammer is moved to over-cocked position, a latch for temporarily holding said trigger in undepressed position, cooperating surfaces on said hammer and primary sear which engage to hold said hammer in normal cocked position, means for disabling said latch, and cooperating surfaces on said hammer and supplemental sear which engage to hold said hammer when the trigger is again depressed and are disengaged to completely release said hammer when the trigger is again released.

2. In a firearm, in combination, a firing hammer comprising a lateral projection having engageable surfaces on opposite sides thereof, a trigger, a sear rigidly connected with said trigger and comprising spaced substantially parallel arms defining a channel adapted to receive said hammer projection, a nose on one of said arms adapted to engage the engageable surface on one side of said hammer projection to hold said hammer in cocked position and releasable therefrom by depression of said trigger, and means on the other of said arms cooperating with an engageable surface on the opposite side of said hammer projection and normally free therefrom but engageable therewith when the trigger has been depressed to withdraw said nose from said first engageable surface, thereby holding said firing hammer until said trigger is released after its depression to withdraw said nose from said first engageable surface.

RUSH RAZEE.