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SAFETY MECHANISM FOR BOLT ACTION FIREARMS

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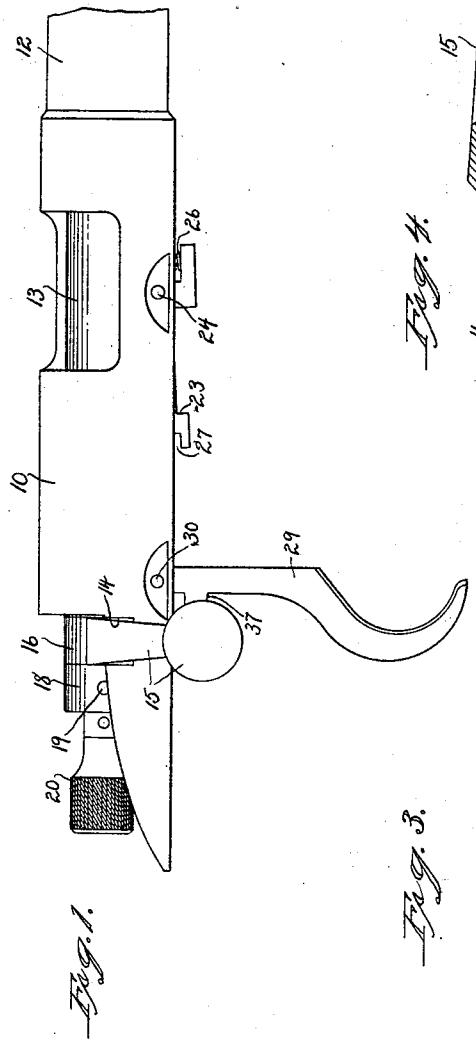


Fig. 1.

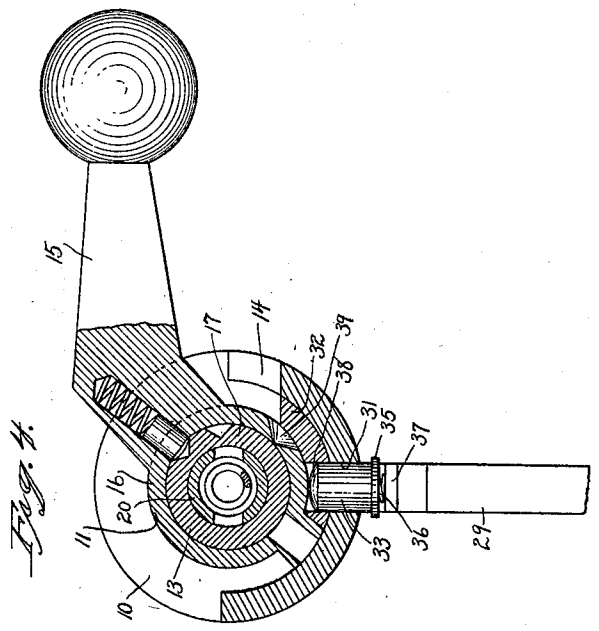


Fig. 4.

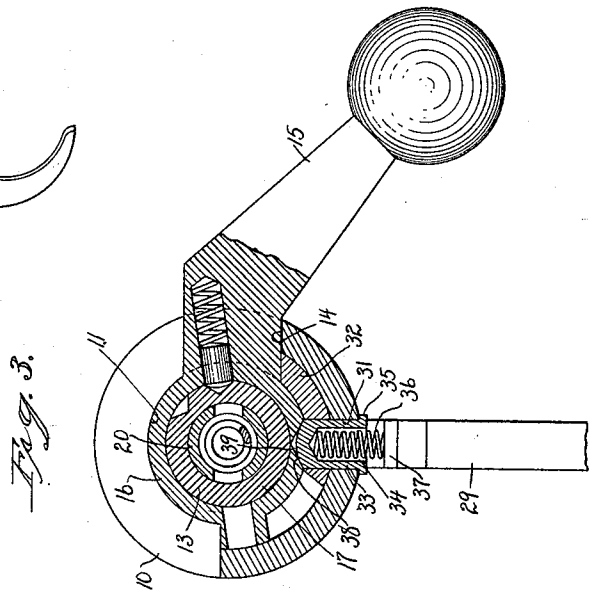


Fig. 3.

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SAFETY MECHANISM FOR BOLT ACTION FIREARMS

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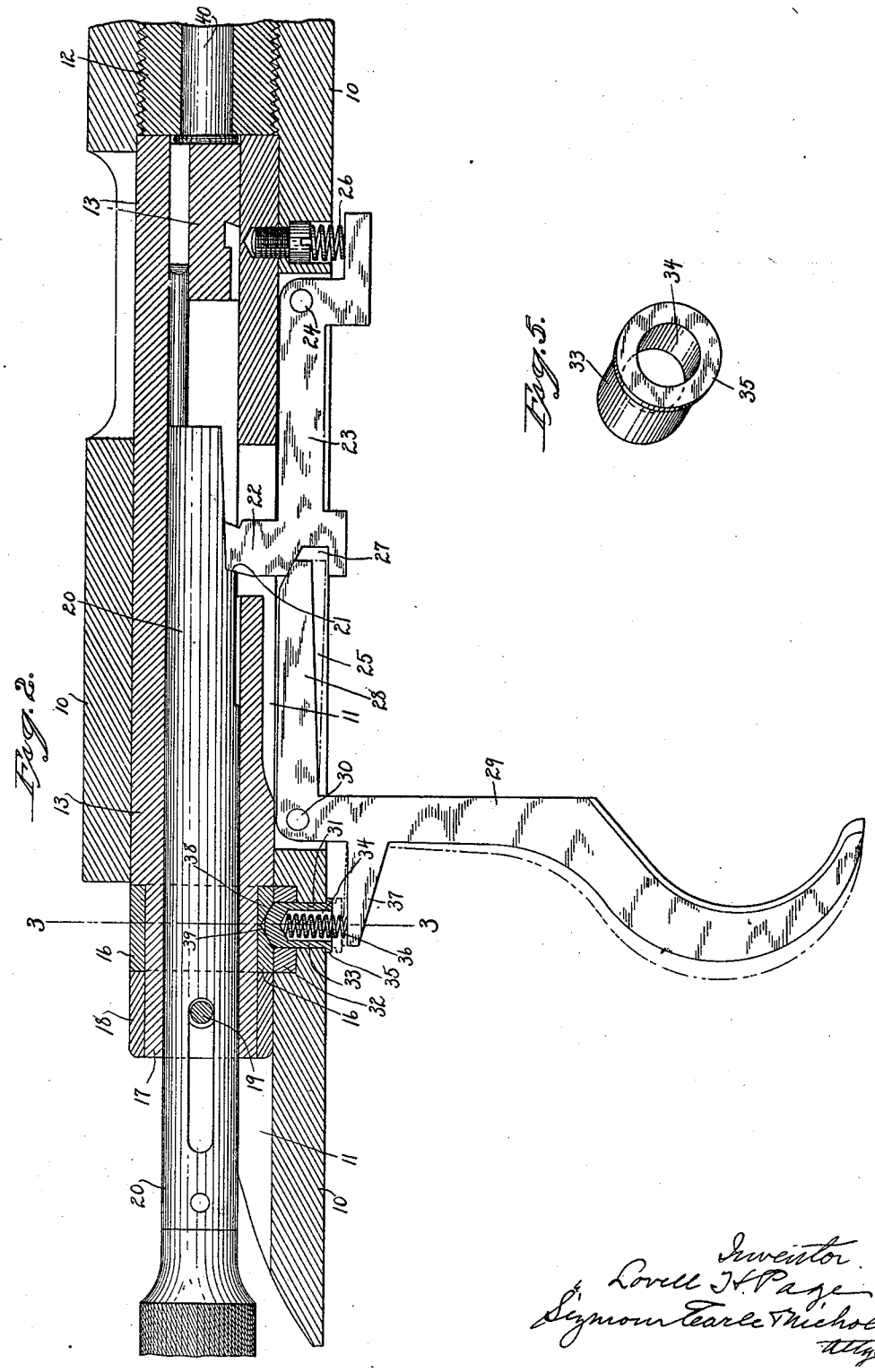


Fig. 2.

Fig. 5.

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UNITED STATES PATENT OFFICE.

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SAFETY MECHANISM FOR BOLT-ACTION FIREARMS.

Application filed April 5, 1927. Serial No. 181,030.

This invention relates to an improvement in safety mechanisms for bolt-action firearms and particularly to that class of safety mechanisms which are automatically brought into and out of play by the movement of the bolt.

The object of this invention is to provide a simple and reliable mechanism of the class described, constructed with particular reference to preventing the firing-pin from being released when the bolt is in any other than its closed position.

A further object of my invention is to provide a safety mechanism which will, in addition to its main function, also act as a limiting-stop for the trigger in the ordinary functioning thereof.

Another object of my invention is to provide a safety mechanism which will also act as a yielding detent for holding the bolt in its closed position.

A still further object of my invention is to provide a safety mechanism which will effectually prevent the bolt from being operated until after the backward draft upon the trigger has been released.

With these objects in view, my invention consists in a safety mechanism characterized by its provision with a movable guard-member which is automatically moved into its guarding position for preventing the release of the firing-pin when the bolt is unlocked, and automatically moved into its retired position when the bolt is moved into its locked position.

My invention further consists in a safety mechanism characterized as above and having certain other details of construction and combinations of parts as will be hereinafter described and particularly recited in the claims.

In the accompanying drawings:

Fig. 1 is a broken view in side elevation of the receiver and associated parts of a bolt-action firearm embodying my invention;

Fig. 2 is a view thereof in vertical longitudinal section on an enlarged scale;

Fig. 3 is a view thereof on the line 3—3 of Fig. 2;

Fig. 4 is a corresponding view but showing the bolt-handle swung upward for unlocking the bolt; and

Fig. 5 is a detached perspective view of the guard-plunger.

In the embodiment of my invention herein shown, the receiver 10 is provided with the usual longitudinal bore 11 threaded at its forward end for the reception of the externally-threaded reduced rear end of the gun-barrel 12 in the usual manner. The bore 11 just mentioned receives a reciprocating hollow bolt 13 and is intersected near its rear end by a lateral locking-notch 14 into which the base of the bolt-handle 15 is swung for locking the bolt against rearward displacement when the firearm is discharged. The aforesaid bolt-handle, while virtually constituting a part of the bolt 13, is permitted a limited oscillating movement with respect thereto, by providing its inner end with an annular ring 16 which embraces the reduced rear end 17 of the bolt and is held in place thereon by a collar 18 slipped over the extreme rear end of the reduced portion 17 of the bolt, where it is, in turn, secured in place by a transverse-pin 19, all as clearly shown in Fig. 2.

Centrally within the hollow bolt 13 is the usual firing-pin 20, which is provided with a forwardly-facing cocking-shoulder 21 which is engaged by the rear face of a sear-lug 22 forming a part of a sear 23 which functions in the usual manner to releasably hold the firing-pin in its cocked position. The sear 23 just mentioned is hung upon a transverse-pin 24 in a vertical passage 25 which intersects the longitudinal bore 11 aforesaid, and is urged by a helical spring 26 so as to engage the sear-lug 22 with the cocking-shoulder 21 of the firing-pin. The rear end of the sear 23 is also formed with a rearwardly-opening notch 27 for the reception of the forward end of a forwardly-projecting actuating-finger 28 forming a part of a trigger 29 which is hung in the aforesaid passage 25 upon a transverse-pin 30.

The parts above described in substance constitute usual features of bolt-action firearms and in themselves are not herein claimed as novel.

For the purpose of preventing the firing-pin 20 from being released by the sear 23, when the bolt-handle is in its unlocked position as shown in Fig. 4, I provide the bottom of the receiver 10 with a vertical passage 31 which extends upward therethrough and through a bolt-stop segment 32 to intersect the bore 11 aforesaid. This vertical passage receives a hollow cylindrical guard-plunger 33 formed with an axially-arranged spring-chamber 34 and provided at its outer

end with an annular overhanging stop-flange 35, which latter serves to limit the upward movement of the plunger 33 under the upward urge of a helical spring 36 which impinges at its outer end against the upper face of a stop-finger 37 which projects rearward from the trigger 29 aforesaid. The spring 36 just mentioned serves the dual purpose of urging the trigger 29 forward and of urging the guard-plunger 33 upward into its retired position, in which position its rounded upper end 38 enters a conical pocket 39 formed in the outer periphery of the bolt-handle ring 16 aforesaid.

In the operation of my improved safety mechanism, it may be presumed that the parts occupy the positions shown in Figs. 1, 2 and 3, wherein the bolt is in its forward position and where it is locked by the entry of the base of the bolt-handle 15 into the locking-notch 14 in the receiver and the firing-pin is held in its cocked position by the engagement of the sear-lug 22 with the cocking-shoulder 21. A rearward draft upon the trigger 29 will cause its forwardly-projecting actuating-finger 28 to swing the sear 23 downward against the tension of the sear-spring 26, so as to disengage the sear-lug 22 from the cocking-shoulder 21, with the effect of permitting the firing-pin to snap forward and strike the cartridge 40 in the chamber of the gun-barrel. This rearward movement of the trigger as just described, will be limited by the engagement of the rearwardly-projecting stop-finger 37 with the flanged outer end of the guard-plunger 33. The bolt-handle 15 is now swung upward into the position shown in Fig. 4, so as to disengage it from the locking-notch 14, after which the bolt is drawn rearward by means of the said handle, for extracting the cartridge just fired and preparatory to the insertion of a new cartridge. The upward swing of the bolt-handle 15, as just described, causes the sloping walls of the conical pocket 39 to cam the guard-plunger 33 downward into the position in which it is indicated by broken lines in Figs. 2 and 3 and by full lines in Fig. 4. As thus positioned, the plunger will prevent the trigger from being pulled to actuate the sear for releasing the firing-pin, should the latter be in its cocked position, as will be shortly described. After the insertion of a new cartridge, the bolt is moved forward in the bore 11 by means of its handle 15 with the effect of inserting a new cartridge into the chamber of the gun-barrel and of cocking the firing-pin 20 in the usual manner.

With the new cartridge in place and the firing-pin cocked as described, the firearm would now (with the bolt as yet unlocked) be capable of being discharged with potentially dangerous results, were it not for the fact that the guard-plunger 33 is, at this time, in position to prevent this from taking place. When, however, the bolt-handle is swung downward into the locking-notch 14, the firearm is thus rendered safe for discharge. Coincident with the locking of the bolt, the pocket 39 is brought into registration with the upper end of the guard-plunger, which is now moved by the spring 36 into its retired position, whereby the trigger is relieved of constraint and may be pulled for effecting the release of the firing-pin through the medium of the sear 23.

It is to be noted that when the trigger is pulled for discharging the firearm, the stop-finger 37 of the trigger will engage the underface of the guard-plunger 33 with the effect of crowding the same upward into the pocket 39 and effectively preventing the bolt from being prematurely unlocked. The bolt can only be unlocked after the backward draft upon the trigger has been relieved.

I claim:

1. In a bolt-action firearm, the combination with the receiver, bolt, firing-pin, sear, and trigger thereof; of a movable guard-member mounted in said receiver and having a guarding position and a retired position; a spring normally urging the said guard-member into its retired position; a stop-member carried by the said trigger for co-action with the said guard-member; a pocket formed in a part of the said bolt for receiving the said guard-member when the said bolt is in its locked position and for moving the said guard-member into its guarding position when the said bolt is moved into its unlocked position; whereby the trigger is prevented from being actuated to move the said sear for releasing the said firing-pin when the said bolt is in its unlocked position.

2. In a bolt-action firearm, the combination with the receiver, bolt, firing-pin, sear, and trigger thereof; of a movable guard-member mounted in said receiver and having a guarding position and a retired position; a stop-member carried by the said trigger for co-action with the said guard-member; a spring abutting at one end against the said guard-member and at its other end against the said stop-member for coincidentally urging the said guard-member into its retired position and the said trigger into its normal position; a pocket formed in a part of the said bolt for receiving the said guard-member when the said bolt is in its locked position and for moving the said guard-member into its guarding position when the said bolt is moved into its unlocked position; whereby the trigger is prevented from being actuated to move the said sear for releasing the said firing-pin when the said bolt is in its unlocked position.

3. In a bolt-action firearm, the combination with the receiver, bolt, pivotal bolt-handle, firing-pin, sear, and trigger thereof; of

a movable guard-member mounted in the said receiver and having a guarding position and a retired position; a spring normally urging the said guard-member into its retired position; a stop-member carried by the said trigger for co-action with the said guard-member; a pocket formed in the said bolt-handle for receiving the said guard-member when the said bolt-handle is in its locking position, and for moving the said guard-member into its guarding position; whereby the firing-pin is prevented from being released when the bolt is in its latter position.

4. In a bolt-action firearm, the combination with the receiver, bolt, pivotal bolt-handle, firing-pin, sear, and trigger thereof; of a movable guard-member mounted in the said receiver and having a guarding position and a retired position; a stop-member carried by the said trigger for co-action with the said guard-member; a spring abutting at one end against the said guard-member and at its other end against the said stop-member for coincidentally urging the said guard-member into its retired position and the said trigger into its normal position; a pocket formed in the said bolt-handle for receiving the said guard-member when the said bolt-handle is in its locking position, and for moving the said guard-member into its guarding position; whereby the firing-pin is prevented from being released when the bolt is in its latter position.

5. In a bolt-action firearm, the combination with the receiver, bolt, and firing-pin thereof; of a movable guard-member mounted in the said receiver and having a guarding position and a retired position; a spring-socket formed in the said guard-member; a spring located in said socket for normally urging the said guard-member into its retired position; a pocket formed in a part of the said bolt for receiving the said guard-member when the said bolt is in its locking position and for moving the said guard-member into its guarding position when the said bolt is moved into its unlocked position; whereby the firing-pin is prevented from being released when the bolt is in the latter position.

6. In a bolt-action firearm, the combination with the receiver, bolt, pivotal bolt-handle, and firing-pin thereof; a movable guard-member mounted in the said receiver and having a guarding position and a retired position; a stop-member carried by the said trigger for co-action with the said guard-member; a spring-socket formed in said guard-member; a spring located in said socket for normally urging the said guard-member into its retired position; a pocket formed in the said bolt-handle for receiving the said guard-member when the said bolt-handle is in its locking position and for moving the said guard-member into its guarding position when the said bolt-handle is moved into its unlocking position; whereby the firing-pin is prevented from being released when the bolt is in its latter position.

7. In a bolt-action firearm, the combination with the receiver, bolt, pivotal bolt-handle, firing-pin, and trigger thereof; of a movable guard-member mounted in the said receiver and having a guarding position and a retired position; a stop-member carried by the said trigger for co-action with the said guard-member; a spring-socket formed in the said guard-member; a spring bearing at one end in the said spring-socket and at its other end against the said stop-member for coincidentally urging the said guard-member into its retired position and the said trigger into its normal position; a pocket formed in the said bolt-handle for receiving the said guard-member when the said bolt-handle is in its locking position and for moving the said guard-member into its guarding position when the said bolt-handle is moved into its unlocking position; whereby the firing-pin is prevented from being released when the bolt is in its latter position.

8. In a bolt-action firearm, the combination with a receiver, bolt, firing-pin, sear, and trigger thereof, of a movable guard-member having a guarding position and a retired position and adapted when in its guarding position to prevent the release of the said sear; a pocket formed in a part of the said bolt for receiving the said guard-member when the said bolt is in its said locked position and for moving the said guard-member into its guarding position when the said bolt is moved into its unlocked position; and a spring extending between a portion of the said trigger and the said guard-member for concurrently urging the same into their normal and retired positions respectively; whereby the said spring is adapted to discharge the two-fold function of a guard-spring and a trigger-spring.

In testimony whereof, I have signed this specification.

LOVELL H. PAGE.