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3,024,559

TRIGGER AND SAFETY MECHANISM FOR FIREARMS

Filed Sept. 17, 1959

FIG. 1

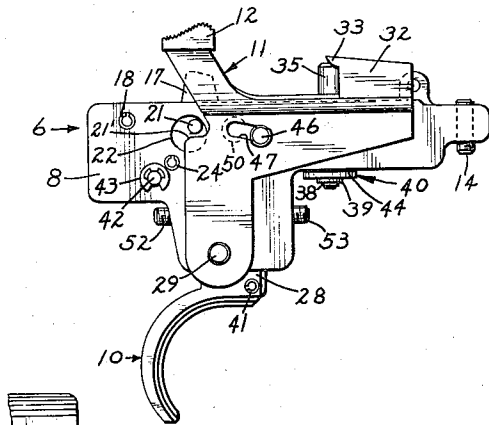


FIG. 2

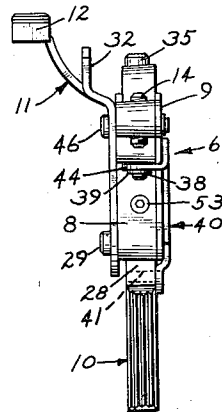


FIG. 4

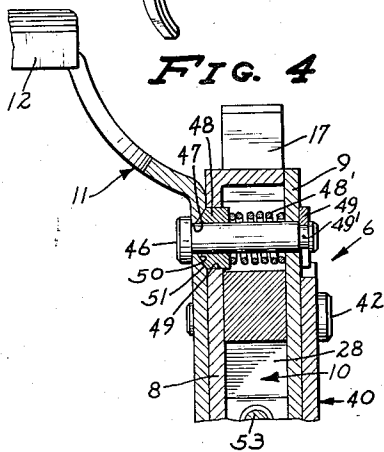


FIG. 3

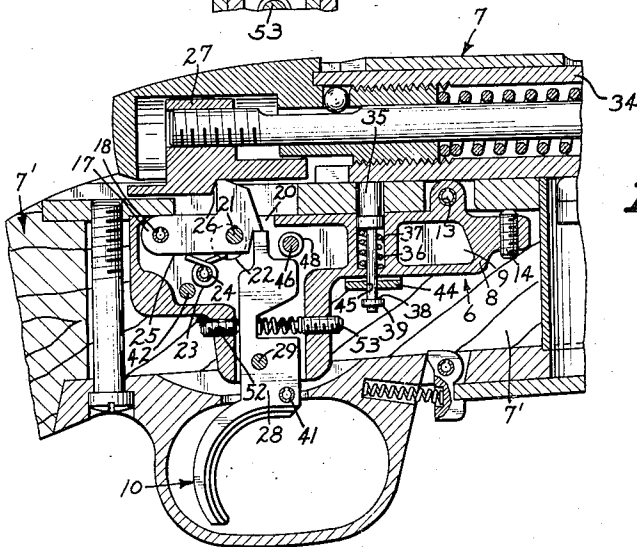
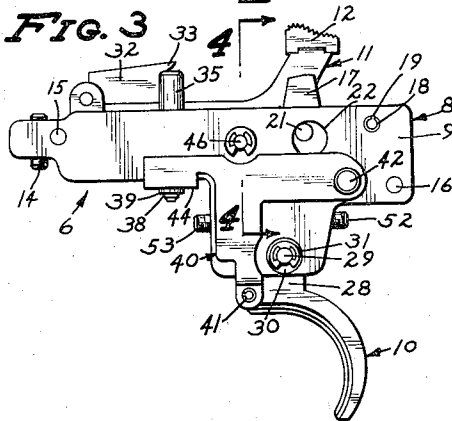


FIG. 5

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TRIGGER AND SAFETY MECHANISM FOR FIREARMS

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2 Claims. (Cl. 42-70)

This invention relates broadly to firearms, more particularly to firearms of the bolt action type and particularly to a trigger mechanism and safety mechanism therefor.

The principal object of this invention is to provide, in combination, a unitary trigger and safety mechanism for firearms of the bolt action type, said trigger mechanism being fully adjustable with respect to trigger pull and the trigger take-up mechanism.

A further object of this invention is to provide a unitary trigger and safety mechanism for firearms of the bolt action type wherein all parts therefor are confined within the stock with the exception of the thumb actuated safety button.

A further object of this invention is to provide a unitary trigger and safety mechanism that can be completely removed from its mounting station in the receiver of the firearm by the removal of a single pin.

A further object of this invention is to provide a unitary trigger and safety mechanism for firearms of the bolt action type wherein the trigger mechanism has in combination therewith a bolt stop and means to release the breech bolt to withdraw the same from the receiver of the firearm.

These and other objects of the invention will become apparent from the following specification and claims when taken in conjunction with the appended drawing which forms a part of this application and in which, like characters indicate like parts throughout the several views.

To the above end, generally stated, the invention consists of the following devices and combination of devices hereinafter described and defined in the claims.

It is important to note that the applicant named herein is also the one and the same as identified in a co-pending application for United States Letters Patent for "Breech Mechanism For Firearms," Serial No. 792,519, filed February 11, 1959.

Referring to the drawings:

FIG. 1 is a right hand side elevational view of the unitary trigger and safety mechanism;

FIG. 2 is a front elevational view of the same;

FIG. 3 is a view similar to FIG. 1 except in left hand side elevation;

FIG. 4 is a fragmentary view partly in section illustrating a portion of the safety mechanism on an enlarged scale taken on the line 4-4 of FIG. 3; and

FIG. 5 is a fragmentary right hand side elevational view in section of the rear portion of the breech mechanism of a firearm showing the invention mounted therein.

The numeral 6 is directed broadly to the unitary trigger and safety mechanism as an entirety mounted on a fragmentary portion of the receiver section 7 of a firearm that is bedded in a fragmentary section of a rifle stock 7', comprising more specifically, the trigger housing 8, the side cover plate 9 therefor, the trigger proper 10, the safety lever 11 and its actuating thumb button 12. The above identified elements constitute the major assembly, which forms a housing for the operating elements as will presently appear.

The trigger and safety mechanism 6 is mounted on the receiver section 7 of a firearm by means of a trigger housing pin 13 and held secured against pivotal movement about the axis of the housing pin 13 by means of an Allen set screw 14 that extends through a screw

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threaded bore in the extreme forward end portion of the trigger housing 8 to impinge the receiver section 7 of the firearm.

The side cover plate 9 is held positioned on the trigger housing 8 by means of a pair of split pins 15 and 16 respectively, said cover plate 9 having aligned apertures therein to receive the rivets with a tight press fit.

The sear 17 is pivotally secured to the trigger housing 8 by means of a split pin 18 that extends transversely through a bore in the sear and an aligned bore 19 in the side cover plate 9 to thus support the end of the split pin 18 opposite its mounting in the trigger housing 8. A longitudinal notch 20 in the rear end portion of the upper surface of the trigger housing 8 affords clearance for the movements of the sear 17 about its pivotal axis provided by the split mounting pin 18. A short stud 21 is rigidly secured to the sear 17 on the side adjacent the trigger housing 8 and extends through and outwardly of an aperture 22 in the trigger housing 8, said aperture affording clearance for movement of the projected stud 21 as the sear moves about its horizontally disposed axis pin 18. A coiled sear spring 23 encircles a split sear spring pin 24 within the trigger housing 8, said pin 24 being supported at its outer end portions by the trigger housing 8 and the side cover plate 9 respectively. The outer end portions of the coiled sear spring 23 are extended outwardly of the axis of its mounting pin 24 at oblique angles therefrom and into abutting engagement with the undersurface 25 of the sear 17 to normally urge the same upwardly under spring tension into engagement with the sear-notch 26 on the cocking piece 27 of a bolt action type firearm.

The trigger proper 28 is pivotally mounted on the trigger housing 8 and the side cover plate 9 as assembled by means of a headed stud 29 having an annular ring 30 in its outer end portion to receive a split washer 31 which has interlocking engagement with the annular ring 30 and thus lock the stud 29 in position. It is important to note at this time that the headed stud 29 also serves as the pivotal mount of the safety lever 11 as will presently be described more in detail.

Formed integral with the safety lever 11, at the forward end portion thereof is an upstanding lug 32 having a rearwardly projecting ear 33 that serves as a bolt lock to prevent inadvertent opening of the breech bolt assembly 34 when the firing mechanism of the firearm is cocked and the safety mechanism is in engagement to prevent firing of the said firearm. As pressure is exerted on the thumb button 12 on the safety lever 11 the entire safety assembly moves rearwardly about its axis, see numeral 29, the rearwardly projecting ear 33 moves into a shallow bore not shown in the forward face of the upper end portion of the bolt handle, not shown, thereby preventing movement of said bolt handle under circumstances above described. While not shown on the appended drawings, the upstanding lug and ear 32 and 33 respectively, move in a narrow aligned clearance slot formed in the receiver section 7 of the firearm. At the rear end portion of the safety lever 11 is a notch 21' having a curved edge.

A novel bolt stop has been described and claimed in the above identified application for U.S. patent but inasmuch as certain elements thereof comprise an important part of the trigger mechanism 6, it is necessary for the sake of clarity to note herein the bolt stop plunger 35, held upwardly projected normally by the action of a coiled spring 36 housed in a vertical bore 37 in the trigger housing 8. An annular ring 38 in the lower end portion of the bolt stop plunger 35 has engagement with a split washer 39 to hold said plunger outwardly projected and into engagement with a long narrow ramp equipped slot, see FIG. 5. A bolt stop actuating lever 40 is pivotal-

ly mounted on the trigger proper 28, see numeral 41, and on the trigger housing 8 where the same is fulcrumed by means of a stud 42 held positioned and locked against endwise movement by means of a split washer 43. An inturred flange 44 underlies the bolt stop spring housing 37 in the trigger housing 8 and is provided with an aligned aperture 45 to permit the lower end portion of the bolt stop plunger 35 to extend therethrough and there locked by the split washer 43. Obviously with the lever 40 fulcrumed at 42 and with the said lever also pivotally connected at 41, the bolt stop plunger 35 is withdrawn from engagement with the breech bolt to permit the entire bolt assembly to be withdrawn from the receiver section 7 of the firearm, and by reverse procedure to reassemble.

As previously stated herein, the safety lever 11 is pivotally mounted on the trigger housing and side cover plate assembly 8 and 9 respectively by means of the lock washer equipped headed stud 29 and its pivotal movements are limited by a lock washer equipped headed stud 46 extending through an oblique slot 47 in the side portion of the safety lever 11 and journaled in the trigger housing 8 and the side cover plate 9.

In addition to limiting the pivotal movements of the safety lever 11 the above noted elements afford a safety return plunger assembly that comprises a case hardened collar bushing 48 which encircles the headed stud 46 and is dimensioned to a close working fit with a bore in the trigger housing 8. A coiled spring 48' is held compressed between the base of the collar bushing 48 and the opposed internal wall surface of said trigger housing and is thus held assembled by engagement of a split washer 49 with an annular ring 49' on the stud 46. The under side of the oblique slot 47 at the rear end portion thereof is provided with a slightly elongated counter-sink 50 dimensioned to engage a bevel 51 on the outer working face of the collar bushing 48 and thereby, as the safety lever 11 is moved forwardly into "fire" position, the engagement of the spring projected collar bushing 48 with the counter-sink 50 will prevent normal inadvertent movement of the assembly out of said normal fire position. Obviously the engagement of the collar bushing 48 with the counter-sink 50 will provide a desired frictional tightness to the entire safety lever assembly.

The trigger proper 28 is obviously designed to engage the sear 17 and the sear engages the sear notch 26 on the cocking piece 27. Trigger movement and pull are independently adjustable by Allen screws 52 and 53 in a conventional manner.

While there are herein disclosed but a limited number of embodiments of the structure, process and product of the invention herein presented, it is possible to produce still other embodiments without departing from the inven-

tive concept herein disclosed, and it is desired, therefore, that only such limitations be imposed on the appended claims as are stated herein or required by the prior art.

What I claim is:

1. A trigger mechanism for firearms of the bolt action type having a sliding breech bolt and a cooperating cocking piece operating in a receiver, said trigger mechanism comprising in combination, a trigger housing, a cover plate for said housing detachably secured thereto, said assembled trigger housing and cover plate being provided with aligned bores in which mounting pins for component elements are journaled, a stud in the housing, a trigger member pivotally mounted on said stud and within the trigger housing and the cover plate, a sear having a transversely projecting sear stud member extending through an aperture in the trigger housing, said trigger cooperating with said sear and a sear notch on the cocking piece to release the same, a safety mechanism comprising a safety lever pivotally journaled on said stud extending through said trigger housing and the cover plate, a lever operating thumb button on the outer end portion on said safety lever whereby rocking movement is imparted to said lever about its pivotal axis, a substantially semi-circular notch formed in the rear edge portion of the safety lever for engagement with the said transversely projecting sear stud member whereby said sear is locked in engagement with the sear notch on the cocking piece when the safety lever is moved to its rearwardmost position, an upstanding lug having a rearwardly projecting ear formed integral with the safety lever, said ear of said upstanding lug having locking engagement with said breech bolt.

2. The structure defined in claim 1 further including an oblique slot in the upper surface of the safety lever, a countersink formed at the rear end of the oblique slot on the inner face thereof, a headed stud journaled at its outer end portions in the trigger housing and the cover plate and secured against endwise movements therein, a collar bushing mounted on the headed stud and having endwise sliding engagement therewith, the inner end of said collar bushing being beveled for engagement with the said countersink and urged into continuous engagement with the slot and the counter-sink by a coiled spring encircling the stud and held compressed between the outer shoulder of the collar bushing and the inner surface of the cover plate.

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