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TRIGGER MECHANISM

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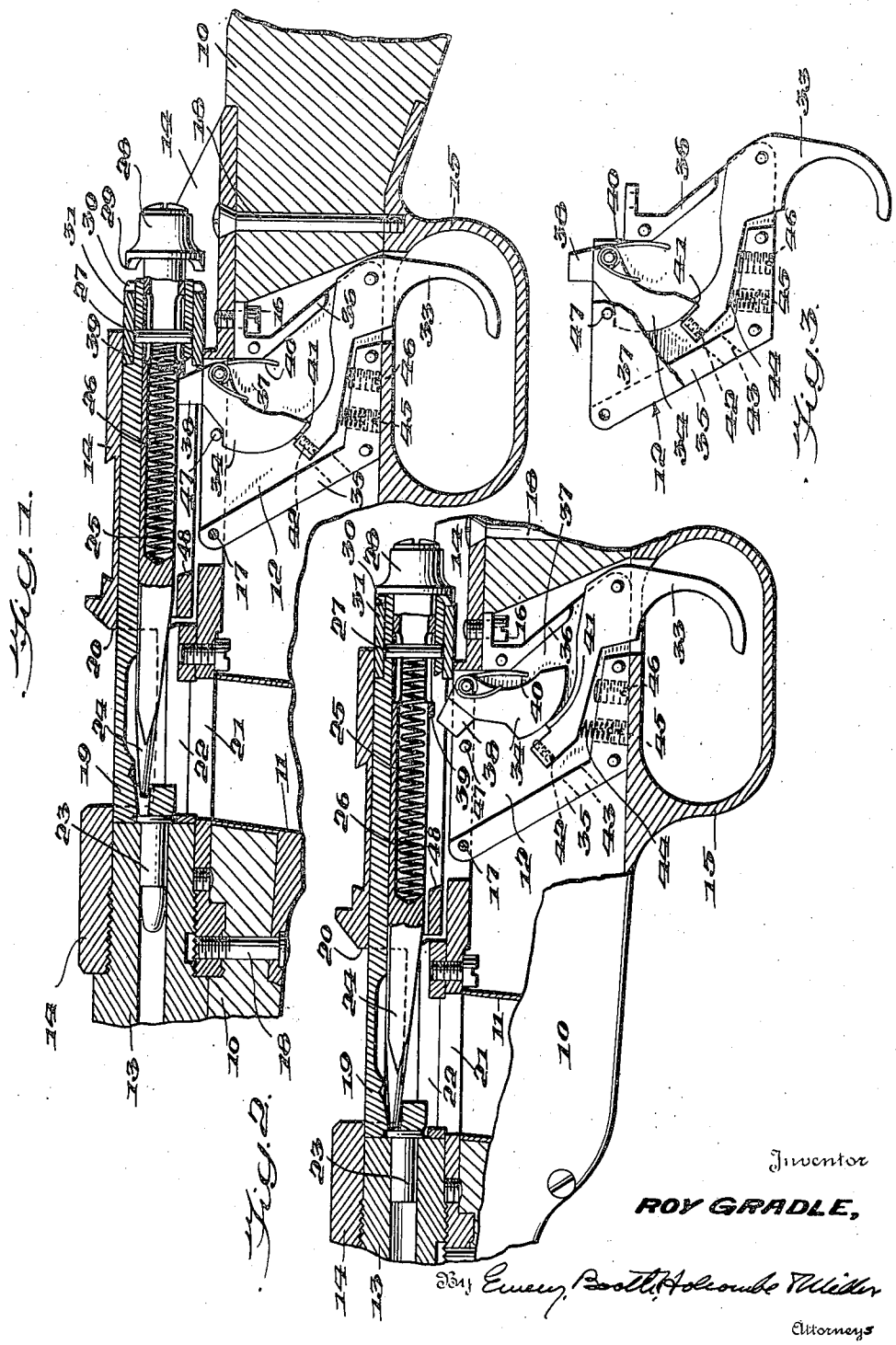


Fig. 1.

Fig. 2.

Fig. 3.

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TRIGGER MECHANISM

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3 Claims. (Cl. 42—69)

This invention relates to shoulder arms of the type wherein the bolt action comprises a sliding bolt for closing the breech and a spring actuated firing pin carried thereby, the bolt and firing pin being removable from the receiver as a unit for cleaning the barrel.

The invention relates more particularly to the trigger and sear mechanism, and comprises a combined sear and bolt stop in combination with a combined trigger and bolt stop retracting member, operable to permit removal of the bolt assembly without unhinging or removing any part of the sear and trigger mechanism.

The invention also provides for mounting all the sear and trigger parts in a unitary assemblage for replacing the standard trigger assembly in bolt action rifles of existing designs, and for embodiment in new weapons to which it is adapted.

The invention aims to improve the action and provide for adjustment thereof to suit individual marksmen, and to simplify the construction and reduce the size and number of the operating parts required, as hereinafter described.

Further objects and advantages of the invention appear in connection with the following description of a preferred embodiment thereof illustrated in the accompanying drawing, in which

Fig. 1 is a vertical section on the longitudinal axis of a firearm, showing the sear and trigger in side elevation and the firing pin partly in side elevation and partly in longitudinal section, the bolt being closed with the firing pin in cocked position;

Fig. 2 is a similar view showing the bolt closed and the firing pin in uncocked position immediately after firing, with the trigger and sear in engagement for withdrawing the bolt-stop from its normal position to permit complete withdrawal of the bolt; and

Fig. 3 is a side view of the trigger and sear assembled with their operating springs and stop members in a housing unit, showing the complete unit removed from the weapon, one side plate being partly broken away to disclose the operating parts within.

The invention is applicable to both single shot and magazine type bolt action rifles and for purposes of illustration is shown in the form of a unitary assemblage (see Fig. 3) applied to an upturn and pull back rifle of well known make, comprising a wood stock 10 which is mortised to receive the magazine chamber 11 and trigger action assembly 12, and to the upper side of which the barrel 13 and receiver 14 are secured. The trigger guard 15 is secured to the stock beneath the magazine chamber. The trigger action assembly is secured to the receiver by a rear fastening screw 16, and a transverse front fastening pin or bolt 17, and is removable from the stock with the receiver. The receiver and barrel are secured to the stock by through bolts or screws 18 which also secure the trigger guard in place.

The receiver is tubular to receive the locking bolt 19, and also supports the rear sight and lock mechanism. It has an opening 20 into the magazine and cartridge chamber for loading and ejecting shells, a slot 21 in the bottom of the receiver in registry with a similar slot in the guide block 22 giving access to the magazine, as is usual in this type of rifle. The locking bolt slides axially in the receiver without rotating as it is opened and closed, the operating lever at the forward end of its sliding movement rotating to engage a notch in the rear end of the receiver to lock the cartridge 23 in place in the chamber of the barrel, as is well understood in this type of rifle.

The firing pin 24 is carried by a hollow plunger 25 axially disposed in a suitable recess in the bolt, and which is actuated by a spring 26, housed in the plunger 25 and abutting at its rear end against a stop pin 27 transversely disposed near the rear end of the bolt, the firing pin plunger being slotted to permit the stop pin to pass through it without interfering with its cocking and firing movement. This stop pin also serves as a guide to prevent the firing pin plunger from turning in the bolt, and the projecting end of the firing pin plunger is provided with a head 28 formed with opposite projections or nibs 29 adapted to enter corresponding notches 30 in the sleeve 31 which carries the bolt operating lever, and which is rotatably mounted on the rear end of the bolt. When the locking lever is turned to unlock the bolt the nibs 29 cannot enter the notches, and the firing pin, if released by the trigger mechanism, cannot move far enough to strike the shell rim or primer, and the rifle will not fire.

My improvements relate to the trigger mechanism and comprise the trigger 33 and sear 34, both preferably being pivotally mounted in a housing made up of a front insert 35, a rear insert 36, and side plates 37, securely pinned together, together with their cooperating springs, adjustment screws, and stop members, although the invention is not restricted to such a unitary assemblage, as the sear and trigger may be mounted in separate parts of the rifle.

The sear has a nose 39, which in cocked posi-

tion of the weapon projects into the path of the firing pin plunger, and the rear face of which engages the cocking shoulder 39 near its rear end, as shown in Fig. 1. When the bolt is pulled back the sear is moved to cocked position by the sear spring 40, which tends to lift the sear nose, and it is retained in cocked position by its toe end which engages against the shoulder of a notch 41 in the inner end of the trigger. This shoulder slopes away from the direction of movement of the notch at an acute angle to lessen the resistance to trigger pull between sear and trigger. An adjusting screw 42 at the inner end of the trigger enables the overlap of the sear nose and trigger notch shoulder, which determines the sear and trigger contact, to be set to maintain a suitable width of contact. A hole 43 in the front insert permits access to the adjusting screw 42 without disassembling the trigger mechanism from its housing 12. A coil spring 44 is provided for regulating the trigger pull, an adjusting screw 45 serving to retain the spring in place under the proper tension to suit the trigger pull desired. This spring normally holds the trigger in engagement with the sear. A stop screw 46 is also provided for limiting the extent of movement of the trigger when pulled to release the sear and firing pin plunger, and this screw may be adjusted to stop the rearward movement of the trigger at the exact point at which the sear is released if a very short trigger pull is desired. The screws 42 and 46 regulate the amount of trigger movement in firing the arm.

The front face of the nose 38 of the sear, by engagement against the shoulder 48 on the under side of the bolt 19, serves to prevent complete withdrawal of the bolt from the receiver in the normal functioning of the rifle. A stop pin 47 prevents the sear from being rotated too far by the sear spring when the bolt is unlocked, so as to interfere with the removal and replacement of the bolt or slammed against the trigger should the bolt be pulled back too violently, and insures the proper engagement of the toe of the sear with the notch 41 and screw 42.

The operation of a bolt action rifle of the type described is well understood, and the action of the bolt and plunger is the same as in such rifles as heretofore constructed. When the trigger is pulled, the notch 41 moves away from the toe of the sear, releasing the latter and permitting the plunger spring 26 to force the plunger forward, swinging the sear around its pivot and depressing the nose of the sear until it rides under the cocking shoulder 39 and is held down thereby until the bolt is pulled back to reload and recock the weapon.

After firing, the upper lip of the trigger notch 41 rides against the curved front face of the toe of the sear, as shown in Fig. 2, the latter constituting a cam portion for engagement by the trigger, and by pressing the finger pull end of the trigger forward, the sear can be rotated sufficiently to withdraw its nose fully from the slot in the bolt and permit the bolt to be entirely withdrawn from the receiver, as is customary for cleaning the rifle barrel after use.

The operation of the trigger mechanism is very fast, and the pull is even and may be adjusted to respond to either a delicate or a strong pull, as desired, as light a pull as one pound being adequate, with a trigger movement as short as .002 inch.

The number of operating parts is few, their design is rugged, and in case of breakage of any part in the form of assemblage illustrated, it may be readily replaced by unscrewing and withdrawing the receiver from the stock and removing the side plate 37, which exposes the entire trigger mechanism without affecting any of the adjustments.

The invention is applicable to many types of rifles, as the sear, sear pin and sear stop may readily be mounted in the receiver, and the trigger, trigger pin, trigger spring and adjusting screw may be mounted in the trigger guard of rifles of well known make so constructed as not to require a housing for these parts.

I claim the following as my invention:

1. A trigger and sear mechanism for a sliding bolt action fire-arm having a spring actuated firing pin, said mechanism comprising a combined sear and bolt stop pivotally mounted for movement into and out of the path of movement of the firing pin and bolt, a spring normally holding said sear and bolt stop in position to engage the firing pin and bolt, said sear and bolt stop being formed with a cam portion and a toe for engagement with the trigger, and a pivotally mounted trigger having an abutment to overlap said toe to retain the sear in cocked position and releasable upon normal movement of said trigger, and said trigger having a contact part to engage said cam portion to withdraw the bolt stop from operative position upon movement of said trigger in reverse direction.

2. A trigger and sear mechanism for a sliding bolt action fire-arm having a spring actuated firing pin, said mechanism comprising a combined sear and bolt stop pivotally mounted for movement into and out of the path of movement of the firing pin and bolt, a spring normally holding said sear and bolt stop in position to engage the firing pin and bolt, said sear and bolt stop being formed with a cam portion and a toe for engagement with the trigger, and a pivotally mounted trigger having an abutment to partly overlap said toe to retain the sear in cocked position and releasable upon normal movement of said trigger, and said trigger having a contact part to engage said cam portion to withdraw the bolt stop from operative position upon movement of said trigger in reverse direction, and adjustable means on said trigger to change the extent of overlapping engagement between said toe and abutment.

3. A trigger and sear mechanism for a sliding bolt action fire-arm having a spring actuated firing pin, said mechanism comprising a combined sear and bolt stop pivotally mounted for movement into and out of the path of movement of the firing pin and bolt, a spring normally holding said sear and bolt stop in position to engage the firing pin and bolt, said sear and bolt stop being formed with a cam portion and a toe for engagement with the trigger, and a pivotally mounted trigger having an abutment to project under and support said toe to retain the sear in cocked position, said toe being releasable upon normal movement of said trigger, and said trigger having a contact part to engage said cam portion to withdraw the bolt stop from operative position upon movement of said trigger in reverse direction, a fixed stop for limiting the pivotal movement of said sear toward its cocked position, and an adjustable stop for limiting the movement of said trigger to release the sear from its cocked position.

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