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(71) Applicant: **STURM, RUGER & COMPANY, INC., Lacey Place, Southport Connecticut 06490 (US)**

(72) Inventor: **Ruger, William Batterman, Croydon Turnpike, Croydon New Hampshire 03773 (US)**
Inventor: **Melcher, Roy Louis, 204 Third Avenue, Stratford Connecticut 06497 (US)**

(74) Representative: **McCallum, William Potter et al, Cruikshank & Fairweather 19 Royal Exchange Square, Glasgow G1 3AE Scotland (GB)**

(54) **Inactivating selector arrangement for bolt action firearms.**

(57) A multiple positionable selector arrangement for a bolt action firearm positioned adjacent the bolt handle (14) which selector (26) carries a cam (46, 47) and a selector handle. Associated with the selector are trigger restraining means (51) and a bolt handle blocking plunger means (52). The selector arrangement is movable to a first active position to cause the trigger restraining means (51) to restrain the trigger (22) and sear (32) so the firearm cannot be discharged and the selector arrangement is movable to a second active position to cause the plunger means (52) to restrain the bolt handle (14). In the second position, the selector handle also serves to prevent substantial forward movement of the cocking piece (17).

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INACTIVATING SELECTOR ARRANGEMENT FOR BOLT ACTION FIREARMS

This invention relates to bolt action rifles, and in particular to an inactivating selector arrangement for selectively restraining movement of the sear, trigger or cocking piece or both.

The major components of a conventional bolt action firearm comprise the barrel, a receiver secured to the rear of the barrel, a cylindrical breech bolt mounted in the receiver in axial alignment with the barrel, a firing mechanism including the trigger mounted on the receiver below the bolt, and the stock. The cylindrical breech bolt is rotatable about its longitudinal axis from its locked firing position to its unlocked extracting and loading position, the bolt being longitudinally slidable within the receiver when it is in its unlocked position.

When the bolt is rotated from its locked to its unlocked position and then is moved rearwardly, the spent cartridge is extracted from the chamber of the barrel and is ejected. When the bolt is moved forwardly from its rearwardmost position a fresh cartridge is inserted into the chamber of the barrel. When the bolt reaches its forewardmost position it is rotated about its longitudinal axis to lock the bolt and cock the firing mechanism.

Associated with the breech bolt is a spring powered cocking piece which is held by a sear in the ready-to-fire position. Operation of the trigger moves the sear to release the cocking piece.

Many arrangements for preventing movement of the cocking piece, the sear or trigger to, in turn, prevent or restrain movement of the cocking piece toward the cartridge have been proposed but none have provided the features and advantages of the present invention.

According to the present invention there is provided

a bolt action firearm having a barrel, a receiver, a bolt sleeve, a cocking piece, a bolt handle, and a recess in the bolt sleeve characterised in that there is provided a multi-positional selector arrangement capable of restraining movement of a trigger in a first position and restraining movement of trigger, sear and bolt handle in a second position, such arrangement in turn comprising:

a) a rotatable selector means positioned in the receiver for rotating about a vertical axis which selector means is rotatable to selected positions such selector means having

1) body means

2) cam means mounted on the body means; and

3) hand-engageable projection means

b) pivotable trigger and sear restraining means having on one end a cam follower surface which engages said cam means on the selector means and such restraining means having on the other end sear blocking means;

c) a recess in the bolt handle; and

d) a blocking plunger means positioned to be moved into the bolt recess when the selector means is moved to such second position.

Preferably, the invention comprises a selector arrangement for restraining movement of the trigger or bolt handle or both. The arrangement includes a rotatable selector carrying in fixed relation a selector cam and a selector handle projection, a pivotable trigger and sear blocker moved by the selector cam, and a bolt handle plunger movable by the selector projection whereby rotatable movement of the selector to first position causes trigger and sear blocker to block movement of the trigger and movement of the selector to a second position causes the selector to continue to hold the trigger and sear in its blocking mode while the selector in addition moves bolt plunger to restrain movement of

the bolt handle. In a third position the selector arrangement is passive.

It is a feature of the inactivating selector arrangement that selector projection is moved to a position in a recess in the cocking piece as the selector is placed in the second position. In this position, the selector projection will prevent any substantial foreward movement of the cocking piece.

An embodiment of the present invention will now be described,by way of example, with reference to the accompanying drawings in which:-

Fig. 1 is a partial side elevational view of a bolt action rifle including the selector arrangement of the present invention;

Fig. 2 is a partial plan view of such rifle;

Fig. 3 is sectional view along lines 3-3 of Fig. 2;

Fig. 4 is a sectional view along lines 4-4 of Fig. 3 with selector projection or thumb piece shown in phantom;

Fig. 5 is a view similar to Fig. 4 showing the selector in a position to activate trigger control lever to block the trigger and sear;

Fig. 6 is a view similar to Fig. 4 showing the selector in a position to block the trigger, sear and cocking piece;

Fig. 7 is a sectional view taken along line 7-7 of Fig. 5; and

Fig. 8 is a fragmented plan view showing the selector in the position of Fig. 6 and further showing blocking plunger blocking the bolt handle.

Referring to Figs. 1 and 2, rifle 10 includes barrel 11, a receiver 12 secured to the rear of the barrel, a cylindrical breech bolt assembly 13 mounted in receiver 12 to the rear of and in axial alignment with barrel 11, a bolt handle 14 secured to the rearward end of the bolt assembly 13, a bolt head sleeve 16, a cocking piece 17, a receiver tang 18 and a stock 21. Rifle 10

also includes trigger 22, trigger guard 23, and a rotatable inactivating selector unit 26. Unit 26 is mounted in the receiver and rotates about a vertical axis.

Turning to Fig. 3, trigger 22 is pivoted about trigger pivot 28 with upper trigger arm 29 engaged in sear notch 31 of sear 32. Sear 32 is mounted about pivot 33 and spring 36 is interposed between trigger 22 and sear 32. The pulling of trigger 22 to rotate it clockwise about pivot 28 causes trigger arm 29 to move out of sear notch 31 permitting sear 32 to rotate clockwise about pivot 33 thus releasing cocking piece 17. Cocking piece 17 then moves forward under the force of a spring (not shown) to strike the rim of the cartridge (not shown) to fire the rifle.

With reference to Figs. 4-8, it is seen that selector unit 26 is rotatably mounted to be turned to and held in three discrete positions determined by detent 37 (see Fig. 7) located in one (1) of the three (3) detent recesses 38, 39 and 40 (Figs. 4-7). Selector unit 26 includes cylindrical body 43 carrying detent 37 in its lower portion (Fig. 7) and two slotted areas 44, 45 in the central part of the body 43 define respectively first selector cam surface 46 and second selector cam surface 47. Selector unit 26 also includes a thumb piece 41. Slot area 44 has a thickness greater than cam follower 54 to accommodate follower 54 therein (Fig. 4). Slot area 45 is less thick than slot area 44 so that in the Fig. 6 position cam follower 54 can not enter slot area 45 but instead rides on cylindrical surface 50 of selector body 43. Turning to Fig. 7, it is seen that cam follower 54 housed between frame elements 55, has a thickness greater than slot area 45.

On the other hand, cam follower 56 with less thickness than follower 54 is accommodated in slot area 45 throughout the rotational operation of selector unit 26.

Trigger control lever 51 is pivotable about pivot 53. On one end lever 51 carries upper cam follower 54 and lower cam follower 56 while on the opposite end trigger blocking finger 57 is located. Lever 51 is urged away from trigger 29 by spring 59.

Turning attention to Fig. 8, it is seen that cocking piece 17 has a blocking notch 60 in it for receiving offset thumb piece 41 when selector unit 26 is rotated to the position shown in Figs. 6 and 8. In this selector position, blocking plunger 52 is urged by selector 26 into bolt handle recess 61 to block movement of the bolt handle 14. Upon release of plunger 52 by selector 26 spring 64 withdraws plunger 52 freeing handle 14.

Summarising, selector unit 26 engages and moves trigger control lever 51 to block the trigger and it in turn the sear (see Figs. 4-6). Unit 26 also serves to restrict movement of cocking piece 17 (see Figs. 2 and 8) and actuates blocking plunger 52 to block movement of bolt handle 14 (Fig. 8).

In step-by-step operation of selector unit 26 is turned through thumb piece 41 to a passive or neutral position causing detent 37 to snap into a detent recess 38 which places cylindrical body 43 with cam surfaces 46 and 47 in such position that finger 57 of lever 51 does not block trigger 29 (see Fig. 4). The firearm can be fired in this selector mode. To restrict trigger movement and in turn sear movement, the selector unit 26 is moved to inactivating position number one where detent 37 is moved into recess 39 causing surface 46 to move cam followers 54 of lever 51 placing lever finger 57 against trigger arm 29 (see Fig. 5). In this position, trigger arm 29 is inactivated by being restrained from rotating blockwise about pivot 28 (as shown in Fig. 3). The trigger 22 cannot rotate and the sear can not drop to fire the rifle. Alternatively, lever 51 and its finger 57 may be designed to block rotational movement of sear 32.

Finally, selector unit 26 is movable to inactivating position number two during which movement cylindrical surface 50 moves cam follower 54 to retain lever 51 in its trigger-sear-restraining position. As thumb piece 41 is moved to bring selector unit 26 to this third position thumb piece 41 bears against bevelled surface 63 causing blocking plunger 52 to move to the right into recess 61 to block rotational movement of handle 14. Spring 64 is compressed during this movement. Upon the selector reaching this third position, thumb piece 41 is in blocking notch 60 of pin striker 17 to limit forward travel of striker 17 (see Figs. 6 and 8).

It will be noted that in operation slot area 45, cam surface 47 and cam follower 56 operate to move lever 51 to the passive or neutral position of Fig. 4 while slot area 44, cam surface 46, cylindrical surface 50 and cam follower 54 operate to move lever 51 into its blocking position and hold it there when selector 26 is in positions number one and two as described above.

CLAIMS

1. A bolt action firearm having a barrel (11), a receiver (12), a bolt sleeve (16), a cocking piece (17), a bolt handle (14), and a recess in the bolt sleeve (16) characterised in that there is provided a multi-positional selector arrangement capable of restraining movement of a trigger (22) in a first position and restraining movement of trigger (22), sear (32) and bolt handle (14) in a second position, such arrangement in turn comprising:

a) a rotatable selector means (26) positioned in the receiver (12) for rotating about a vertical axis which selector means (26) is rotatable to selected positions such selector means having
   1) body means (43)
   2) cam means (46, 47) mounted on the body means (43); and
   3) hand-engageable projection means (41)

b) pivotable trigger and sear restraining means (51) having on one end a cam follower surface (54) which engages said cam means (46, 47) on the selector means and such restraining means (51) having on the other end sear blocking means (57);

c) a recess (61) in the bolt handle (14); and

d) a blocking plunger means (52) positioned to be moved into the bolt recess (61) when the selector means (26) is moved to such second position.

2. A firearm as claimed in claim 1 having a recess in the bolt sleeve (16) into which the hand-engageable projection means (41) moves when the selector means (26) moves to said second position whereby movement of the cocking piece (17) toward the barrel (11) would be arrested by said projection means.

3. A firearm as claimed in claim 1 or 2, in which the multi-positional selector means (26) has three positions positively defined by first location means (37) on the selector means (26) and second location means on the firearm such positions including said first and second positions and a third position in which neither the sear (32) nor the bolt handle (14) are restrained.

FIG. 1

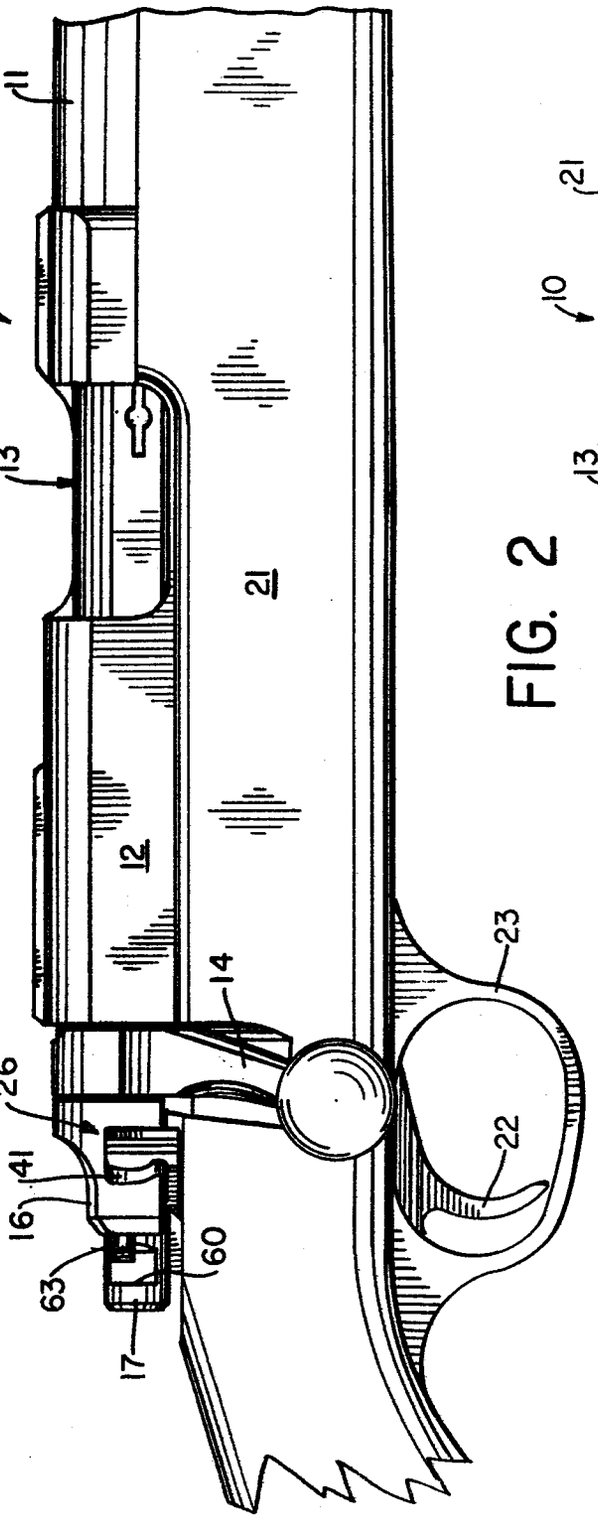
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FIG. 2

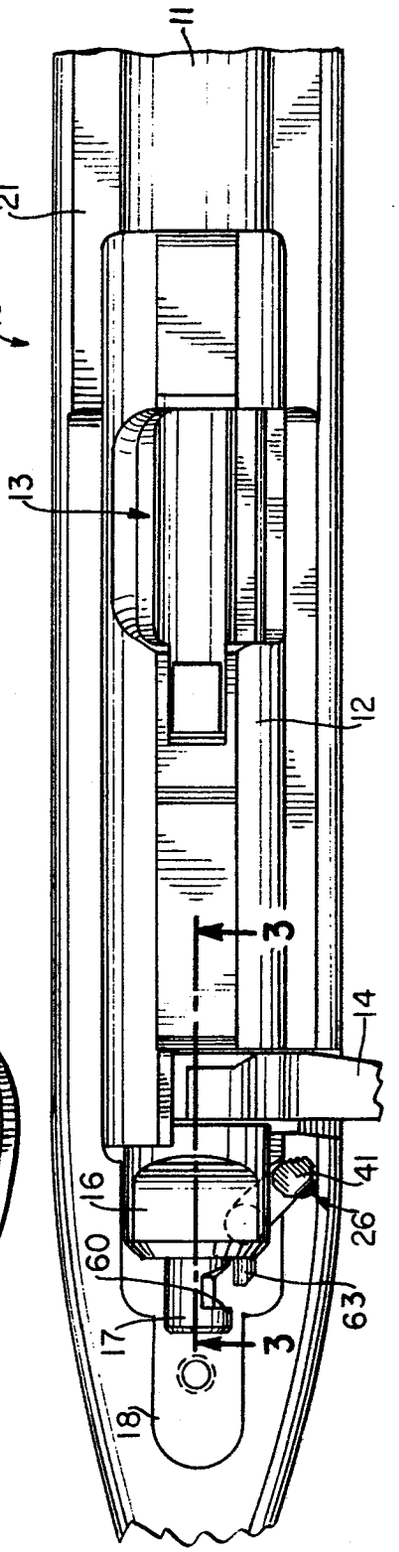
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FIG. 3

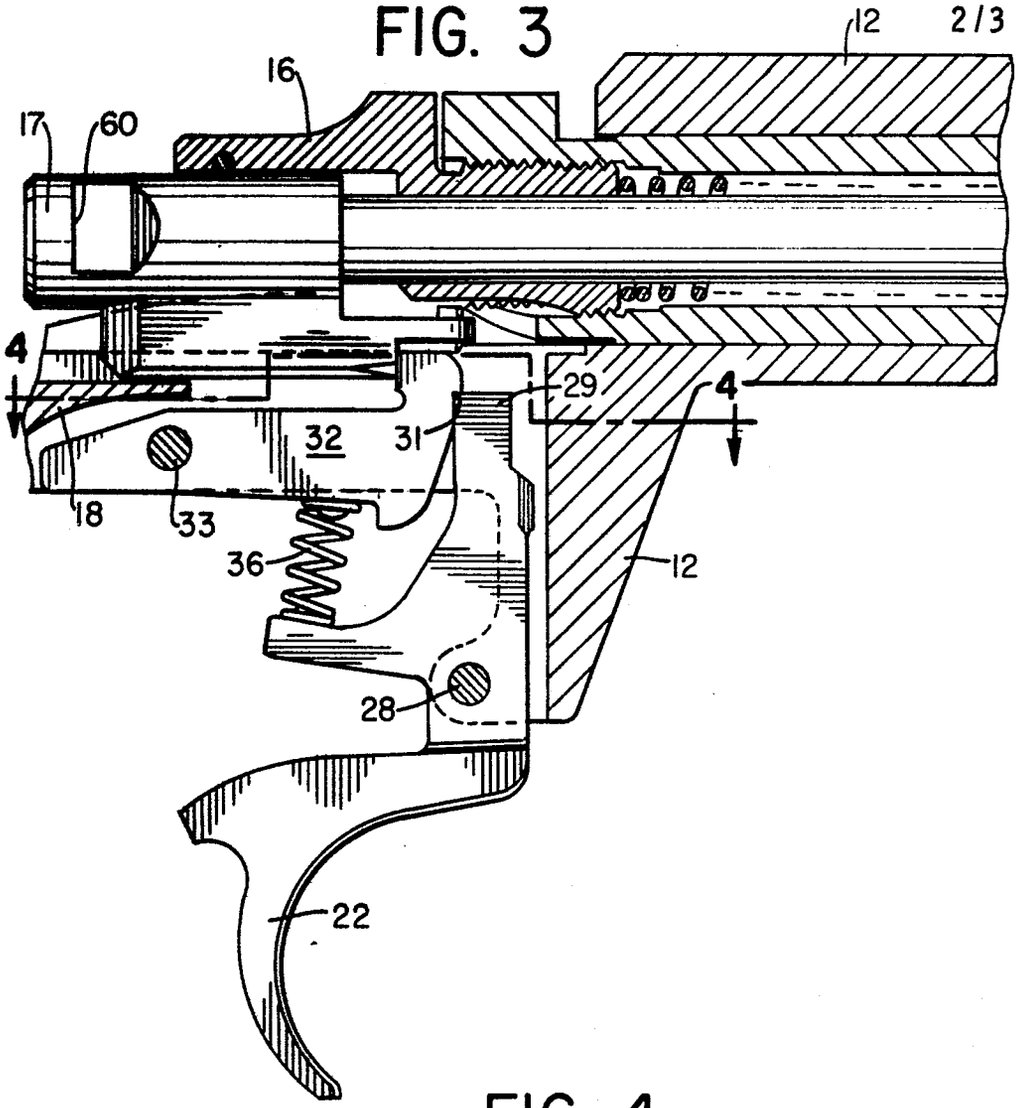
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FIG. 4

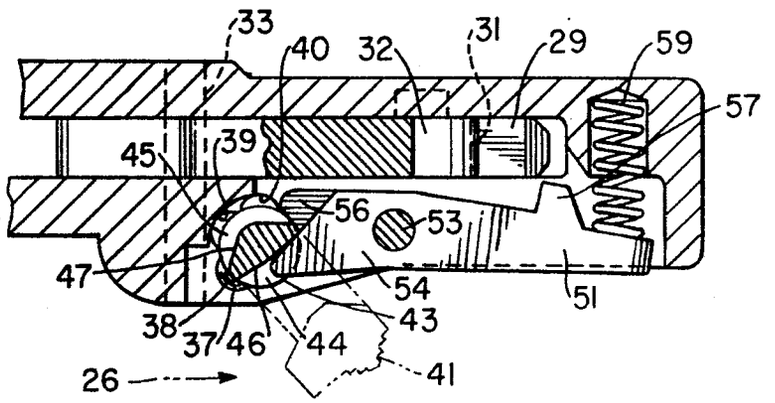
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FIG. 5

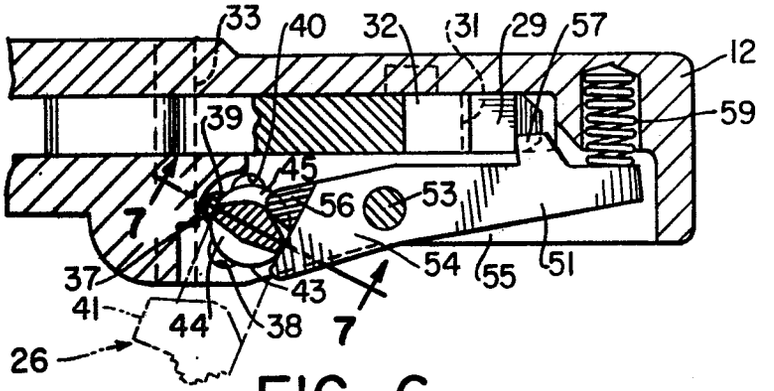

FIG. 6

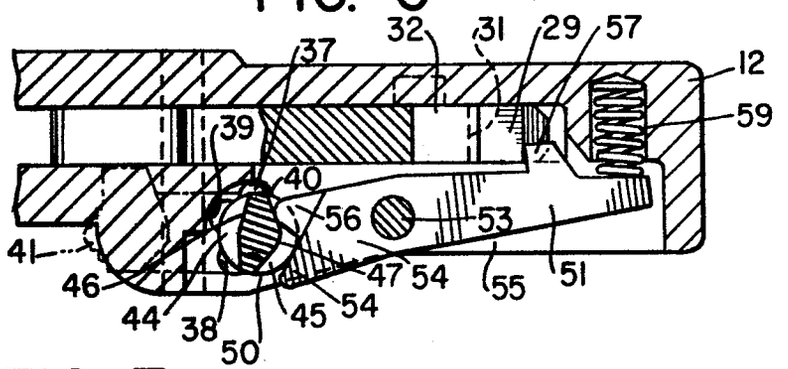

FIG. 7

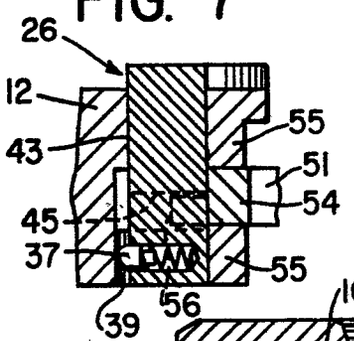

FIG. 8