

June 6, 1944.

J. G. SEITZ

2,350,833

FIRING MECHANISM

Filed Nov. 28, 1939

2 Sheets-Sheet 1

Fig. 1.

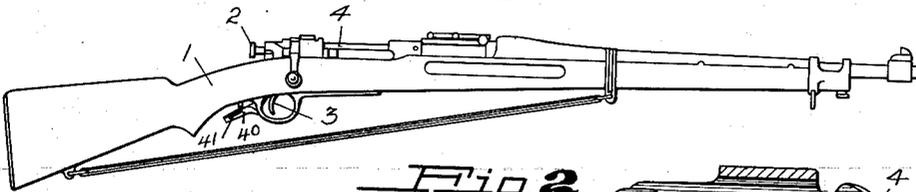


Fig. 2.

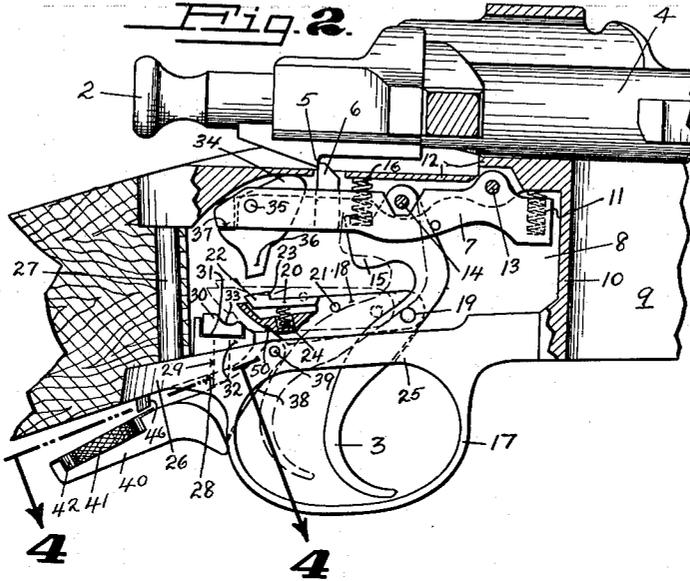


Fig. 4.

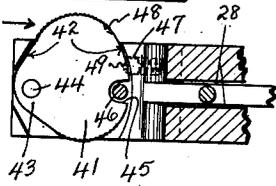


Fig. 5.

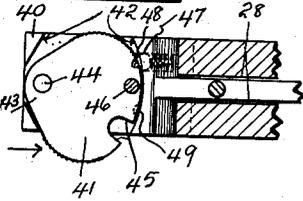


Fig. 3.

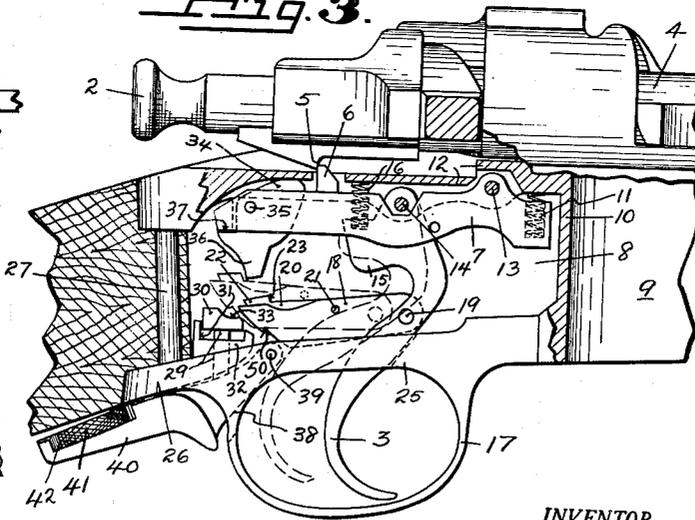
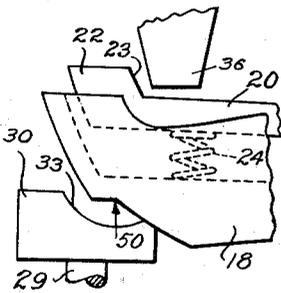


Fig. 5a



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2 Sheets-Sheet 2

Fig. 6.

CONVENTIONAL FIRING MECHANISM

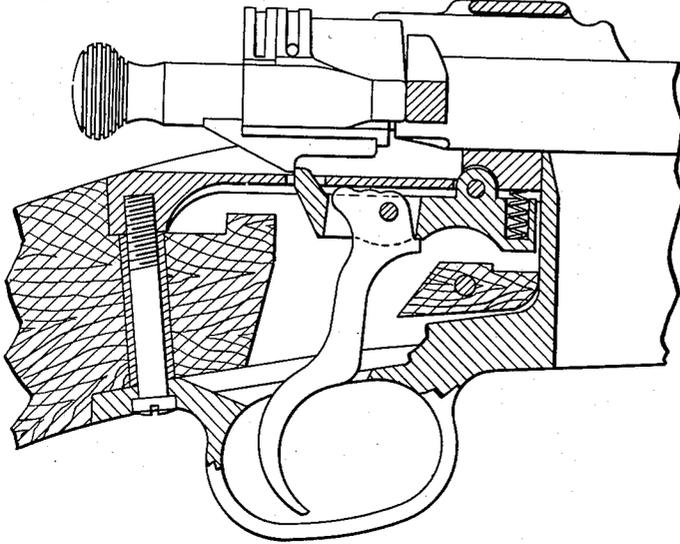


Fig. 7.

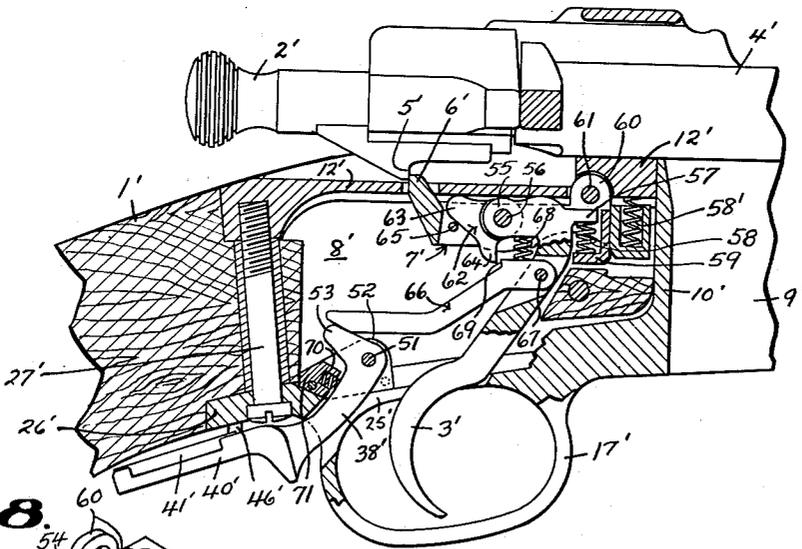
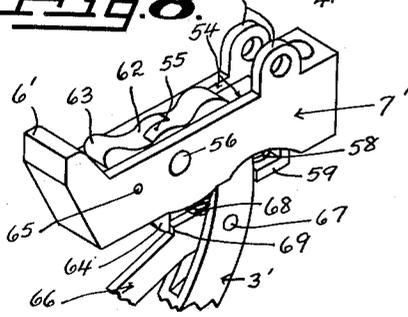


Fig. 8.



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2,350,833

FIRING MECHANISM

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Application November 28, 1939, Serial No. 306,481

8 Claims. (Cl. 42-69)

This invention relates to improvements in the firing mechanism of firearms.

One of the objects of the invention is the provision of improved means for causing actuation of the firing mechanism for firing the piece, which piece, for example, may be a rifle, shotgun, revolver, pistol or the like, in which the firing of the same is effected through employment of a trigger.

Another object of the invention is the provision of improved safety means in a firearm of the type in which the firing thereof is effected upon the release of a forcibly retracted trigger, rather than during the retraction of the trigger.

Another object is a firing mechanism for small firearms of the above said type, wherein improved hand actuatable control means is provided for rendering said firing mechanism operative or inoperative, as desired, for firing the piece by actuation of said trigger, and which control means is positioned for actuation by the hand employed to actuate the trigger without necessitating the removal of the trigger finger of said hand from engagement with said trigger, and without removal of said hand from its position for grasping the stock of the firearm.

A still further object of the invention is improved releasable safety means associated with the firing mechanism of a firearm adapted positively to prevent actuation of the firing mechanism of the piece, and which safety means is positioned to enable rapid release thereof to unlocked position upon normal movement of the trigger finger to trigger engaging position.

Other objects and advantages will appear in the specification and drawings annexed hereto.

In the drawings,

Fig. 1 is an elevational view of a rifle provided with my invention.

Fig. 2 is an enlarged fragmentary side view of the portion of a rifle at the breech, partially broken away and in section, showing my invention in which the firing mechanism is inoperative for firing the piece, although the piece is cocked and although the trigger is freely movable to its limits of movement.

Fig. 3 is a view similar to that of Fig. 2, but with the firing mechanism operative to release the firing pin for firing of the piece upon retraction of the trigger and subsequent release of the latter.

Fig. 4 is a sectional view taken along line 4, 4 of Fig. 2, showing one of the elements of the positive locking means in unlocked position, while Fig. 5 is a view similar to that of Fig. 4,

except that said element is moved to locked position in which the piece cannot be fired.

Fig. 5a is an enlarged fragmentary view of a portion of the firing mechanism.

Fig. 6 is a part sectional and part elevational view of the standard firing mechanism in a standard firearm for illustrating the relatively slight modifications required for applying my invention, the modifications themselves being shown in the other views.

Fig. 7 is a part sectional and part elevational view of the safety device adapted for use in a pressure actuated trigger as distinguished from the releasing trigger of Figs. 2, 3.

Fig. 8 is a fragmentary perspective view of several of the elements indicated in Fig. 6 separate from the firearm.

Briefly described, heretofore, attempts have been made to effect the release of the firing pins in small arms upon the release of the trigger, rather than upon retraction of the latter, but these attempts have generally been abortive due to lack of adequate control by the operator over the firing mechanism. Where actuation of the firing mechanism is by release of the retracted trigger, it is as essential that the operator be able to quickly release the trigger, without causing actuation of the firing mechanism, as to cause said actuation. This release, without causing firing, should be capable of accomplishment without shifting the hands on the firearm, and without the application of force, and should be accomplished by the hand employed for actuating the trigger. My invention accomplishes the above desired results.

The advantages of a firing mechanism in which the firing is effected by release of the trigger, rather than by retraction of the latter are many, among which are (1) elimination of nerve strain heretofore present where sighting and positive pressure or tightening of the muscles are required simultaneously, with the result of greater shooting accuracy by persons heretofore incapable of obtaining the required coordination between sighting and firing under physical and nervous tension, since the necessity for positive increasing physical tension during mental concentration in sighting is eliminated; (2) the elimination of relatively long and arduous training required by novices for gaining a relatively high degree of accuracy in shooting; (3) elimination of the tendency to draw the sighted firearm off the target at the time of firing. There are many other advantages, most of

which, however, are related in some manner to those above indicated.

While Figs. 1 to 5 illustrate a firing mechanism actuated by the release of the trigger, the positive locking safety device as used for the releasing trigger, is also adapted for use with the pressure actuated trigger, and Figs. 6, 7 are intended to show such adaptation, which broadly is believed to come within the scope of the invention since with either the pressure actuated trigger or with the releasing trigger, certain advantages are apparent in the position and manner of actuation of the safety device over the present mechanisms.

In detail, the invention as illustrated in the drawings is applied to the conventional 1903 model Springfield rifle provided with a stock having a pistol grip 1, cocking piece 2, trigger 3, bolt 4, and the usual barrel, etc. The cocking piece 2 is provided with the ordinary sear notch 5 for engaging a sear nose on a sear for holding the cocking piece 2 cocked, or drawn back, under the expansion force of the usual main spring (not shown). When the sear nose is withdrawn from engagement in the sear notch, the cocking piece and conventional striker (not shown) are released to cause the striker, or firing pin, to strike the firing cap of the cartridge or shell. The foregoing elements are old and they, or elements equivalent thereto, are usually found in firearms.

In the following description and claims the terms forward, rear and the like are used with reference to the barrel of the firearm. For example, the "forward" end or portion of an element is the end or portion nearest the barrel, and the "rear" end or portion of an element is the end or portion remote from the barrel, while the terms "rearwardly" or "forwardly" likewise are used with reference to the said barrel. All of the elements hereinafter described, are disposed rearwardly of said barrel, and substantially below the bolt.

In Figs. 2, 3, the sear nose 6 is rigid on sear 7, said sear being an elongated bar extending longitudinally of the rifle, with the nose 6 disposed at a point intermediate of its forward and rear ends, and projecting thereabove. In the particular firearm disclosed in the drawings, the sear lies below the firing pin and cocking piece, and in a chamber 8 disposed rearwardly of the magazine 9, the rear wall 10 of said magazine forming the forward wall of said chamber. The said forward end of sear 7 terminates adjacent said wall 10, and slightly spaced from said forward end is an expansion coil spring 11 adapted to react between the upper wall 12 of chamber 8 and said forward end. Sear pin 13 adjacent the forward end of said sear and positioned between spring 11 and nose 6, pivotally supports said sear in said chamber for swinging about the horizontal axis of said pin, and the spring 11 yieldably urges the rear end of the sear, including nose 6, in an upward direction for holding nose 6 in a position in engagement with the sear notch 5. Upon urging said outer or rear end of the sear downwardly, the nose 6 will be released from engagement with notch 5, and the firing pin will be actuated under the influence of the main firing pin spring (not shown) for firing.

The upper end of trigger 3 extends into said chamber 8 and past the sear 7 for pivotal movement at its upper end on pivot pin 14 secured to the walls of chamber 8 above the sear, the said sear being notched at its upper side to pass the

pivot 14. Adjacent the said pivot 14, the upper end of said trigger is formed with a rearwardly projecting enlarged portion 15, between which portion and wall 12 is an expansion coil spring 16 that yieldably urges the lower end of trigger 3 forwardly for holding the same in a forwardly urged position unless and until the same is retracted or moved rearwardly by the trigger finger of the operator.

The lower end of trigger 3 extends outwardly into the area enclosed by the guard bow 17, in the usual manner. Below the sear 7, is a horizontally elongated bar 18 pivoted at its forward end to trigger 3 by horizontal pivot 19. The upper side of said bar is formed with an upwardly opening recess extending longitudinally of the bar, in which recess is an elongated element 20 secured to said bar at its forward end by a pivot 21. The rear end of said element is formed with an upwardly extending projection 22, providing a forwardly facing shoulder 23 or notch at the forward side of said projection. Also, the rear end of said element is yieldably supported in slightly elevated position with respect to bar 20 on a spring 24 disposed between said element and the bottom of the recess in which said element is positioned (Fig. 2).

The bar 18 is movable with trigger 3. Thus upon retracting the trigger, the bar 18 carrying element 20, will move rearwardly, and the bar and element are carried forwardly by the trigger when the latter is released, the spring 16 causing said forward movement.

The lower side 25 of the chamber 8 carries the guard bow 17, said side being generally termed a guard plate. Said plate extends rearwardly of the guard bow at 26, and a rear guard screw 27 secures said extension 26 to the stock in the usual manner.

At about the juncture of the rear side of guard bow 17 with the extension 26, said guard plate is formed with a slot 28 extending slantingly upwardly through the guard plate. Said slot opens outwardly below said plate at about said juncture and at its upper end, the slot terminates at a point below the rear end of bar 18, when the trigger is in normal, unretracted position.

Just rearwardly of the rear end of bar 18, and also rearwardly of the upper termination of slot 28, the plate 25 is formed with a vertical opening for passing a vertical pin 29 therethrough with the lower end of said pin projecting into slot 28 through the upper side of the latter. On the upper end of said pin is a block 30 adapted to seat in an upwardly opening recess 31 formed in an enlargement 32 projecting upwardly from said guard plate into said chamber 8. The forward wall of said recess is slanted upwardly from its forward side and the upper surface of the block 30 adjacent said forward wall is formed, generally, in upward continuation of the slanted upper edge of said forward wall. A groove 33 extends across the upper side of said block just rearwardly of the slanted portion of the block.

The rear end of bar 18 is slanted in a direction generally similar to the slanted portion of the forward wall of recess 31, so that upon retraction of trigger 3, the correspondingly slanted surfaces of the bar and block 30, will be engaged, and the rear end of the bar 18 will be caused to move upwardly.

It will be seen that when block 30 is seated in recess 31, the rear end of bar 18, including element 22, will be elevated a predetermined distance upon full retraction of trigger 3. The dot-

ted line position indicated in Fig. 2 shows the trigger 3 retracted its full distance, and the bar 18 and element 22 elevated. It will also be seen from Fig. 2, that movement of the trigger when the same is retracted and released, will not function to release the sear nose 16 from the sear notch, since the sear nose is not actuated, by reason of said movement of the trigger.

The release of the sear nose 6 by movement of the trigger is effected through actuation of a cam member 34 pivoted at 35 to the outer end of sear 7 rearwardly of nose 6. Cam member 34 is formed with a downwardly extending projection 36 terminating at its lower end at a point spaced above the rear end of bar 18, when the latter is in its forward position. The cam member 34 is formed with a portion at its upper end extending upwardly and forwardly of pivot 35, and in engagement with the upper wall 12 of chamber 8. This engagement between said portion of the cam and said wall 12, is maintained at all times by action of spring 11. A stop 37 on said cam member below pivot 35 engages the rear end of the sear 7 to prevent rearward movement of said projection 36 beyond a predetermined point while permitting forward movement of said projection, under force.

Referring to Fig. 3, it will be seen that when the block 30 is elevated, and is held in such elevated position, a retraction of trigger 3 will cause the rear end of bar 18 and element 20 to be raised to a position where the projection 22 on element 20 will slidably engage the lower end of projection 36 on cam member 34, upon retraction of the trigger, thus depressing the rear end of the element 20 slightly until the projection 22 passes the lower end of projection 36. Thereafter, upon release of trigger 3, and forward movement of the bar 18 and element 20, the shoulder 23 on said element will engage the lower rear corner of projection 36 and will move the projection 36 forwardly, thereby causing the upper forward portion of the cam to move upwardly. This upward movement of said portion of the cam forces the rear end of the sear 7 downwardly about pivot 13, thereby releasing the nose 6 from engagement with notch 5 and thus causing actuation of the firing pin for firing.

The elevating of block 30 is effected by an arm 38, one end of which is pivoted at 39 in the guard plate forwardly of the pin 29 that carries said block. This arm extends rearwardly and downwardly in slot 28 below the lower end of pin 29, and carries a plate 40 at its rear end, which plate is disposed outwardly and rearwardly of the guard bow 17, and below the pistol grip 1 of the gun stock. The plate 40 is relatively wide and is comfortably gripped by the several fingers of the hand that embraces the pistol grip during shooting or during carrying of the rifle in "ready" position or across the body. In other words, at any time the rifle or firearm is carried in, or is moved to a position from which it may be fired, the plate 40 will of necessity be gripped by the fingers of the hand employed to pull the trigger. This plate 40 manifestly functions as a safety device since the release of the fingers gripping the plate will permit the arm 38 to swing downwardly, thus lowering block 30 to a position where the trigger mechanism is inoperative for releasing the firing pin.

A positive safety device preventing the movement of the plate 40 against or toward the pistol grip, is carried by the said plate, and comprises a

generally elliptical disk 41 seated in a recess 42 in the upper side of plate 40. The major axis of the elliptical contour of said disk extends generally transversely with respect to the rifle, and the side of the recess adjacent the forward elongated curved edge of the disk generally conforms in contour to the curvature of said forward edge of said disk. Instead of the rearwardly disposed edge of said disk following the normal elliptical curve of its forward edge, the rearwardly disposed portion of the disk is formed with a projection 43 projecting rearwardly in line with the central axis of the disk that is perpendicular to its major axis. The disk is pivoted to plate 40 by a generally vertical pivot 44 at the rearward end of said projection 43 (see Figs. 4, 5). The greatest width of disk 41, taken in the direction of its major axis, is slightly greater than the corresponding width of the plate 40. This width of disk 41 with respect to plate 40 is such that one or the other of the ends of disk 41 will project outwardly from one or the other of the sides of the plate 40 upon pivotal movement of the disk in one direction or the other, this movement being limited by the sides of the recess 42, that are at opposite sides of the projection 43.

In Fig. 4, the disk 41 is pushed to the left so that the left edge projects slightly laterally outwardly of plate 4 and the pistol grip 1, and in this position a recess 45 in the edge opposite projection 43 is in alignment with pin 46 projecting downwardly from extension 26. Thus, in this position, the plate 40 may be lifted and gripped close to the pistol grip 1, thereby permitting the lifting of block 30. The disk 41 is releasably held in this position by a spring urged detent member 47 adapted to be yieldably urged in a recess 49 in the edge of disk 41. When the grip on plate 40 is released, the disk 41 may be pivoted by forward pressure against the outwardly projecting edge of disk 41 to swing the disk on its pivot 44 in direction transversely of plate 40 to the position indicated in Fig. 5, in which the disk projects from the opposite side of the plate 40, and detent element 47 will hold the disk in this latter position by engagement in recess 48 in the forward edge of said disk. In this latter position, the plate 40 cannot be raised, since disk 41 will engage the pin 46, and a positive safety against firing of the firearm is effected.

It is important to note, that when the disk is in the position indicated in Fig. 5, with its right hand end projecting laterally from plate 40, the outwardly projecting end is directly in line with the forefinger of the right hand of the operator as said hand is moved forwardly to grip the pistol grip and to position the trigger finger, or said forefinger, to trigger engaging position. Hence the operator in the single movement of the right hand from the butt of the rifle, longitudinally thereof to trigger engaging position, may move the disk 41 to the left just prior to engaging the trigger by the trigger finger, and this movement of the disk will release the obstruction to lifting plate 40 and block 30, thus enabling the operator to fire the rifle swiftly without the slow and awkward fumbling with a safety catch on the cocking piece, or with some other catch out of range of the natural line of movement of the trigger finger to said trigger.

The disk 41 is not readily affected by a direct lateral pressure due to the shape of the same and the position of the pivot 44, but will respond to a forward pressure against the laterally projecting end in the direction of the arrows (Fig. 4, 5).

These outwardly projecting ends of the disk 41 are milled, or serrated, so as to give frictional resistance to the finger engaging the said ends.

In the operation of firing the rifle assuming the disk 41 is at "safety" position and the rifle is gripped at the pistol grip 1 by the right hand, the operator during the movement of the butt to the right shoulder slips the forefinger of the right hand quickly over the projecting end of the disk (Fig. 5) moving the latter to the left (Fig. 4), and continues the movement of the forefinger into engagement with the forward side of the trigger. As soon as the disk is so moved, the plate 40 is released for clamping the same against the pistol grip by the other fingers of the right hand, thereby raising block 30. In action, by the time the butt is against the shoulder, the forefinger is against the trigger. In the moment of forcibly seating said butt against the shoulder the trigger is firmly retracted and aim is taken. This action of gripping the pistol grip tightly by the right hand to seat the butt and retracting the trigger is a normal action as distinguished from the heretofore method of seating the butt and then aiming, and thereafter retracting the trigger under slow tension (known as the "trigger squeeze") or by other application of pressure to the trigger. With my invention with the forcible retraction of the trigger, the piece is not fired, but instead, the tension on the muscles of trigger finger is released, either slowly, intermittently, or rapidly in one motion, as desired, to cause firing. Thus there is no distraction from the mental concentration required in aiming the piece, by reason of a further tensioning of the physical system as a separate act, as has heretofore been the case where the trigger must be retracted under pressure. Instead, the physical and nervous tensioning of the operator occurs simultaneously, without thought, and thereafter, full concentration may be employed in carefully aiming the firearm. Steadiness of aim is assured at the moment of firing since there is no call for any tensioning of the muscular system to fire the piece, and physical tensioning substantially disappears when there is a release of the muscular tension of the trigger finger against the trigger to effect actuation of the firing mechanism. Whether the trigger finger is released quickly or slowly, it is obvious that the aim will not be destroyed, since there is nothing in the releasing operation to cause undue movement of the firearm.

In some instances, the operator may desire some indication immediately prior to actual withdrawal of the sear nose 6 from the sear notch, that this point is about reached, and that only a fractional further movement of the trigger will release the firing pin. This indication is afforded by providing a slight notch 50 across the rear end of bar 18 that slides over block 30. This notch is positioned to engage the upper edge of the forward side of groove 33 in said block just ahead of the point where the forward movement of projection 36 will cause release of engagement between the sear nose 6 and sear notch 5. The engagement between the notch 50 and the upper edge of the forward side of groove 33 is plainly noticeable in the slight diminution in the pressure of the trigger against the trigger finger of the operator, thereby giving the operator notice that a further release of the trigger will effect the release of the firing pin. It is thus seen that my invention fully meets the desires of those who prefer an indication of the fact that the point of

firing is reached, or of those that neither need or require such indication.

The under surface of bar 18 adjacent notch 50 and ahead of the same curves downwardly and forwardly away from the notch. The notch 50 preferably provides a downwardly facing surface of slight horizontal width extending transversely of the curved undersurface of the bar that is ahead of the notch, so that acceleration of forward movement of the projection 22 against the projection 36, is effected after the initial engagement between the notch and the forward side of groove 33. Thus, during the initial downward and forward movement of the curved side of the rear end of bar 18 over the forward wall of block 30, the projection 22 on element 20, will begin to move forward the projection 36 on cam member 34. This movement will be relatively slow until notch 50 is engaged. As soon as the notch 50 is engaged, the forward movement of the projection 36 is accelerated by the direct forward movement of projection 22, upon a further release of the trigger. Thus there are two speeds of movement to projection 22, with respect to the movement of the trigger, first a slow speed that changes to a fast speed at a predetermined point, namely, the point where notch 50 first engages the forward edge of groove 33.

In the event the trigger is retracted and the operator does not wish to fire the piece, the mere release of the fingers gripping the plate 40 will immediately cause the plate to drop, with the result that block 30 will lower the rear end of bar 18, and the trigger may be released for movement to its normal forward position as indicated in Fig. 2.

The invention described above is not intended to be restricted to use on a rifle, but is applicable to other firearms, such as, for example, pistols, revolvers, shot guns, etc., where a hand gripping element, such as a stock, is adapted to be gripped by a hand of the operator, and a finger operated trigger is adjacent the portion of the stock adapted to be gripped by the hand that includes the trigger finger. Some persons use the terms "percussor," "hammer," "bolt," etc., instead of the terms "firing pin," "striker," or "cocking piece." However, in each instance there is a bolt such as the "cocking piece" illustrated in the drawings, or else a hammer or the like that is retracted and released to cause firing of the cartridge. The use of the term "cocking piece" in the claims is not restricted to any particular form of cocking piece, but covers any equivalent member functioning to fire the cartridge.

In Figure 7 is indicated a firing mechanism in which the cocking piece is released upon retraction of the trigger under pressure, and associated with such trigger is a safety device similar in operation to the safety device shown in connection with Figs. 2, 3.

In this form of firing mechanism, the arm 38' is positioned in substantially the same position as arm 38 in Fig. 2, and this arm carries identically the same safety means corresponding to plate 40, disk 41, etc., as shown in Fig. 2, said elements comprising this safety means are given the same numbers as in Fig. 2, except that they are primed, and the pin 46' on the extension 26' of the guard plate functions in the same manner with respect to the disk 41' as does the pin 46 in Figs. 2 to 5.

A horizontal pivot 51 pivotally supports the

forward end of arm 38' between ears 52 that project slightly upwardly into chamber 8' that encloses the trigger mechanism, and a projection 53 on said arm extends slightly rearwardly and upwardly from the pivot 51 into said chamber.

The trigger 3', in Fig. 7, extends upwardly and forwardly in the chamber 8' from its lower end, which lower end extends into the area enclosed within the trigger guard bow 17'.

The sear 7' is formed with a horizontally extending slot 54 opening top and bottom, and the upper end of the trigger arm extends into said slot. The said upper end of the trigger is formed with a rearward extension 55 that is pivoted on horizontal pin 56 carried by the side walls of slot 54. Extending forwardly from the upper end of the trigger is a horizontal lip 57. A coil spring 58 reacts between said lip and a base member 59 formed on the sear at the forward end of slot 54. Thus the spring 58, being ahead of pivot 56, acts yieldably to hold the trigger 3' in forward position in the guard bow 17'. The sear 7' is formed at its forward end and over spring 58 with an upwardly projecting ear 60, and a horizontal pin 61 through said ear pivotally supports the sear in chamber 8'.

Forwardly of spring 58 and pin 61 is a coil spring 58' that reacts between the forward end of sear 7' and the upper wall 12' of chamber 8' for urging the rear end of the sear upwardly for yieldably holding the sear nose 6' at the rear end of the sear in engagement with the forwardly facing side of the conventional sear notch 5' that is on the cocking piece 2'.

Also pivoted on pin 56 is a cam member 62 having projection 63 extending rearwardly of the pivot and engaging the wall 12' of the chamber 8'.

This cam also carries a downwardly projecting arm 64 having a forwardly facing flat surface disposed below pivot 56. A stop pin 65 below projection 63 holds said projection in engagement with wall 12' at all times, but the cam may be rotated clockwise on said pivot 56 (in the position shown in Fig. 7) upon forcing the projection 64 rearwardly. It will be seen that such movement of projection 64 will cause the sear nose 6' to be released from the sear notch 5' for causing firing of the firearm.

To effect firing of the firearm by movement of projection 64 rearwardly, I provide an arm 66 horizontally pivoted at 67 at its forward end to said trigger just below the level of sear 7'. The forward end of said arm extends horizontally rearwardly from said pivot, and then downwardly toward its rearward end, and at the rearward end the arm again extends substantially horizontally with its rearward termination slidably supported on the rearwardly and upwardly inclined upper side of the projection 53 on arm 38'.

Between the forward upper portion of arm 66 and the rearward projection of the upper end of trigger 3, is a coil spring 68 adapted to react between said arm and the trigger for yieldably urging the lower rear end of arm 66 into engagement with the upper side of projection 53 at all times.

At the point where the horizontally extending upper and forward end of arm 66 joins the downwardly extending portion of said arm, is formed a rearwardly facing shoulder 69, which shoulder is adapted to engage the forwardly facing side of projection 64 on cam member 62 when the low-

er end of the arm 66 is elevated, but when the lower end of arm 66 is lowered, this shoulder will freely pass below projection 64.

In the position of arm 38' and arm 66, as seen in Fig. 7, the shoulder 69 is elevated to cause engagement between the projection 64 and shoulder 69 upon a predetermined rearward movement of the trigger 3'. However, if the fingers of the operator grasping plate 40' are released, then the projection 53 of arm 38' will be lowered to cause a lowering of shoulder 69 to the point where the shoulder will freely pass projection 64 in the event the trigger is pulled, or retracted, and nothing will happen insofar as a release of the cocking piece is concerned.

A coil spring 70 reacts between the arm 38' and a fixed stop 71 adjacent the upper rear side of guard plate 26' to yieldably urge the arm 38' downwardly and away from the stock, where the hand gripping the plate 40' is released.

In operation, when the hand of the operator grips the pistol grip 1', in firing position, the retraction of the trigger 3' will cause firing of the piece by engagement between shoulder 69 and projection 64, but if, at any time prior to actual firing, the fingers of the hand release their grip on plate 41', there can be no firing since the shoulder 69 will then travel in a path below and out of engagement with the projection 64. The positive lock afforded by disk 41', is identical in the operation with the disk 41 in Figs. 2 to 5, the importance of which locking disk is its ease of operation and its position for actuation by the fingers of the hand that grip the pistol grip 1' without removing the hand from said grip as would be required, for example, in the standard firearm where there is a locking element directly associated with the cocking piece, as for instance, in the U. S. rifle model 1903.

I claim:

1. A firing mechanism that includes a finger retractable trigger, a sear, a cocking piece, a movable safety device and a stock positioned for grasping by a hand of an operator during engagement of the trigger by the trigger finger of said hand; movable means connecting between said sear, trigger, and safety device responsive to movement of said trigger for releasing the engagement between said sear and cocking piece when the latter is releasably held in cocked position by said sear, said means being also responsive to a predetermined movement of said safety device for movement to a position in which the said means is inoperative for releasing said sear from said cocking piece irrespective of said movement of said trigger, means yieldably urging said trigger to a forward position from which it is adapted to be retracted, said movable means being arranged and adapted to cause release of said sear from said cocking piece only upon movement of said trigger from retracted position to said forward position.

2. In a construction as defined in claim 1, said safety device being disposed between said trigger and said stock and a pivot supporting said safety device, when the latter is free from the gripping influence of said hand, in said position in which the said means is inoperative for releasing said sear from said cocking piece.

3. In a construction as defined in claim 1, a pivot supporting said safety device, when the latter is free from the gripping influence of said hand, in said position in which the said means is inoperative for releasing said sear from said cocking piece, and means for locking said safety

device in said position against movement from said position when the stock and safety device are grasped by said hand.

4. A firing mechanism comprising a cocking piece, a sear adapted for releasably holding said cocking piece cocked, a finger retractable trigger, a movable safety device positioned for engagement with and adapted for movement by the fingers of the hand carrying the trigger finger when the latter is in trigger retracting position, means cooperative with said trigger and with said safety device adapted for actuation by said trigger to release said sear from holding the cocking piece cocked when the said device and said trigger are both actuated for movement by the fingers of said hand, said means being secured to said trigger for movement therewith at all times when said trigger is actuated, said safety device slidably supporting said means for movement of said means relative thereto when said trigger is actuated, a pivot supporting said safety device for swinging thereon, said pivot being positioned relative to said means and said sear for moving said means into and out of engagement with said sear, as desired, upon swinging said safety device on said pivot during actuation of said trigger, spring means yieldably urging said trigger to a forward position from which it is adapted to be retracted by said trigger finger, and said means being arranged and adapted to cause release of said sear from said cocking piece only upon movement of said trigger from retracted position to said forward position.

5. A firing mechanism in a fire arm of the type actuated for firing by the release of a finger retracted trigger comprising; a cocking piece; a finger retractable trigger; a movable sear for releasably holding said cocking piece cocked; sear actuating means connecting between said trigger and said sear actuable by said trigger only upon movement of said trigger from its retracted position to its normal forward position for releasing said sear; said sear actuating means being movable to a position out of sear actuating relation during said movement of said trigger; a safety device adapted to be manually supported by the fingers of the hand carrying the trigger retracting finger for holding said sear actuating means in sear actuating relation during said movement; means mounting said safety device for movement out of its position so holding said sear actuating means upon release of said fingers from said safety device, for movement of said sear actuating means out of said sear actuating relation.

6. A firing mechanism as defined in claim 5; indicating means adapted to abruptly check the normal rate of speed of said trigger during its return from its retracted position to its normal forward position at a predetermined point between said positions and immediately prior to release of said sear; said indicating means being held in connecting relation between said trigger and said sear by said safety device when the latter is supported by said fingers, and being movable out of said latter relation when said safety

device is moved out of its position supporting the sear actuating means in sear actuating relation, and a spring normally urging said trigger to said forward position.

7. A firing mechanism in a firearm of the type actuated for firing by the release of a finger retracted trigger comprising; a cocking piece; a finger retractable trigger; a movable sear for releasably holding said cocking piece cocked; sear actuating means pivotally carried by said trigger for movement therewith and supported for movement independently of said trigger into and out of a position connecting said trigger and said sear during its movement with said trigger when the latter is moved between its retracted and forward position; said sear actuating means including a member actuatable for releasing said sear only upon movement of said trigger from its retracted position to its forward position when said sear actuating means is in a position connecting between said trigger and said sear; a movable safety device adapted to be manually supported by the fingers of the hand carrying the trigger retracting finger for movement in one direction when said fingers are supporting the same and movable in an opposite direction when said fingers are released therefrom; said safety device being engageable with said sear actuating means and being adapted to swing said sear actuating means into said position connecting said trigger and said sear when said safety device is moved in said one direction by said fingers, and said sear actuating means being released for movement out of said position when said safety device is moved in said opposite direction.

8. In a device of the class described, the combination with a finger retractable trigger, of a sear, a cocking piece, and sear actuating means connecting between said trigger and said sear actuated by movement of said trigger only upon release of the latter from retracted position for disengaging said sear from said cocking piece when the latter is cocked to thereby release said cocking piece; means supporting said sear actuating means for movement into and out of position connecting between said trigger and said sear; a movable safety device engageable with said sear actuating means for moving the latter into and out of said last mentioned position; said safety device being manually actuatable for so moving said sear actuating means by the fingers of the hand carrying the trigger retracting finger when the latter is in trigger retracting position; means carried by said sear actuating means and cooperatively associated with said safety device for abruptly resisting return of said trigger to its normal forward position after retraction thereof immediately prior to release of said sear from said cocking piece during said return movement of said trigger; and a spring for so returning said trigger to said forward position; said spring being adapted to overcome said resistance to said return of said trigger.

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