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TRIGGER MECHANISM

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Fig. 1

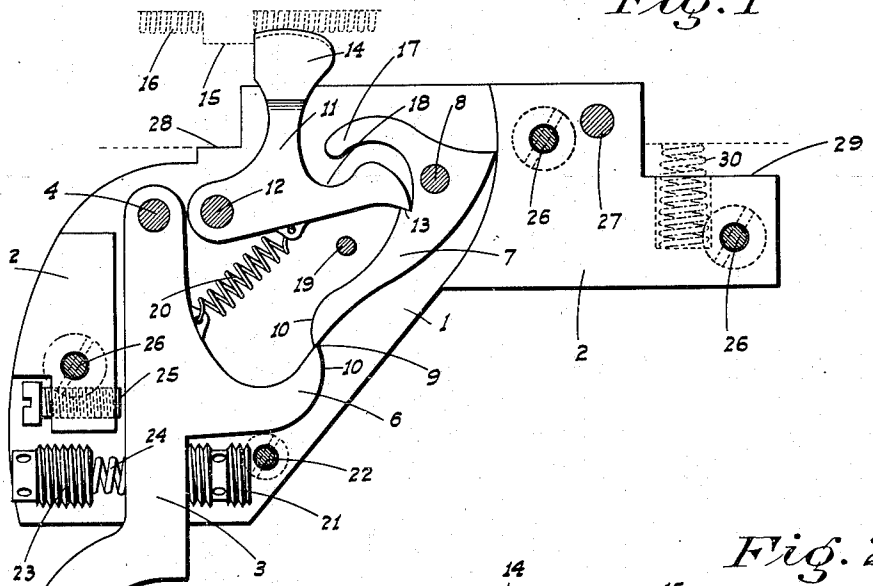
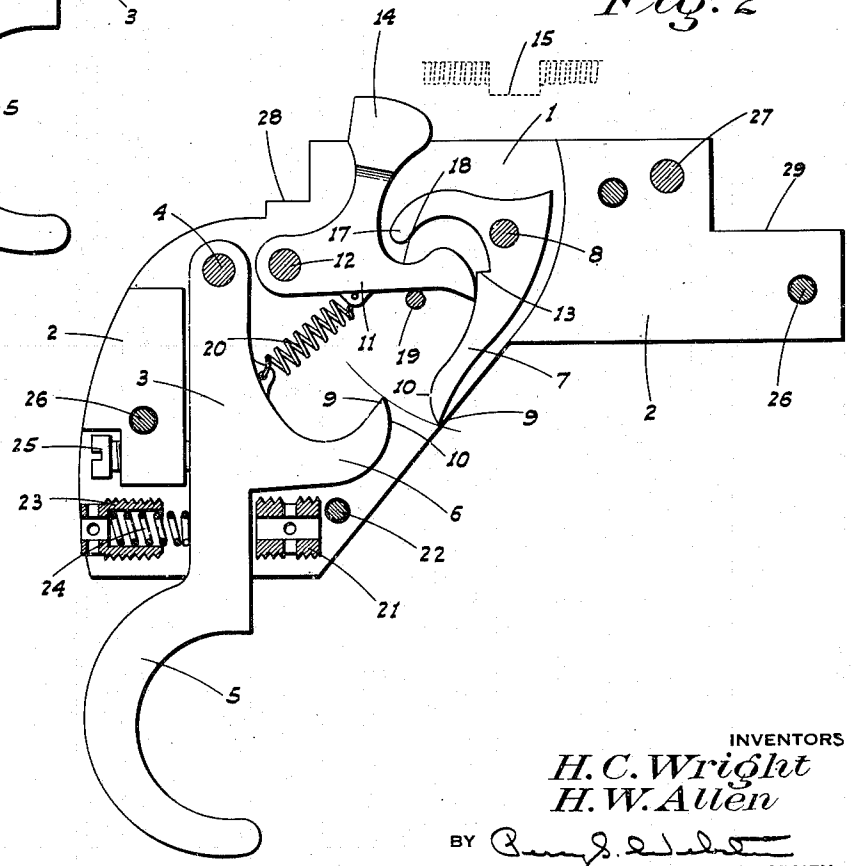


Fig. 2



INVENTORS
H. C. Wright
H. W. Allen

BY

ATTORNEY

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TRIGGER MECHANISM

Henry C. Wright and Herbert W. Allen, Fresno, Calif., assignors of one-third to Russell A. Fortier, Fresno, Calif.

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5 Claims. (Cl. 42—69)

This invention relates generally to a trigger mechanism for rifles and in particular is directed to a trigger mechanism for use in connection with target rifles.

In the use of target rifles where great accuracy is vital, it is necessary that the trigger mechanism be constructed so that the rifle embodying such mechanism may be fired with a minimum of movement or "creep" of the trigger, and preferably with little or no rebound of the trigger when the firing pin is released and snaps forward. However, the trigger mechanisms heretofore available have lacked the desired sensitiveness of operation.

It is therefore the principal object of our invention to provide a trigger mechanism for target rifles which may be actuated with a minimum of "creep", and with no rebound.

Further objects of our invention are to provide a trigger mechanism which is so constructed that the point of engagement of the sear with the trigger may be adjusted in order to assure a minimum of "creep", and to provide a trigger mechanism in which the sear and trigger may be disengaged with a trigger pull which is not only uniform at all times, but which exerts very much smaller pressure against the sear than that exerted on the head of the tumbler by the spring pressed firing pin.

It is also our object to provide a trigger mechanism in which the weight of the pull of the trigger may be selectively adjusted, depending on the requirements of any particular rifle match.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects we accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is an enlarged side elevation of our improved trigger mechanism in cocked position, and with one of the side plates removed.

Figure 2 is a similar view of the mechanism after the trigger has been actuated and the rifle fired.

Referring now more particularly to the characters of reference on the drawing, our improved trigger mechanism comprises a pair of side plates, one of which is indicated at 1, rigidly connected together but spaced by means of relatively thin forward and rear spacing blocks 2.

A trigger 3 is pivoted at 4 between the side plates adjacent the rear spacing block 2 and depends from the pivot; the lower end of the trigger projecting below the side plates in the form of a finger engaging member 5 of usual configuration.

An upwardly curving catch finger 6 is formed integral with the trigger and projects forwardly therefrom. A sear 7 is pivoted at 8 above and forwardly of the catch finger 6; said sear being shaped so that one straight edge of its extreme lower end will engage and rest on the opposite straight edge of the extreme upper end of catch finger 6 when the mechanism is cocked, as shown in Figure 1. Such point of engagement is hereinafter entitled the sear engaging point, and is indicated at 9. The other opposed edges of the catch finger 6 and sear 7 are rounded, as at 10, to facilitate cocking of the mechanism.

A tumbler 11 of inverted T-shape is pivoted at its rear end at 12 adjacent the pivot 4 of the trigger, and is adapted at its forward end to engage in a notch 13 cut in the adjacent edge of the sear 7 immediately below its pivot 8. The upper end of the tumbler is formed with an enlarged head 14 having a straight rear edge; said edge engaging the firing pin abutment 15, and holding the same in retracted position when the trigger mechanism is cocked. The upper edge of head 14 is concave to conform to the curvature of firing pin spring 16. The firing pin abutment 15 and spring 16 are of conventional construction, and therefore are merely shown in dotted lines.

The sear 7 is provided with a curved rearwardly projecting cocking element 17, rounded at its end and overhanging a recessed portion 18 in the adjacent upper edge of the tumbler. A stop pin 19 is secured below the forward end of the tumbler to limit the extent of downward movement thereof. A relatively light tension spring 20 is secured to and extends between the lower edge of the tumbler and forward edge of the trigger.

A set screw 21 is threaded between the side plates in front of the forward edge of trigger 3, and serves as an adjustment for the sear engaging point 9. A transverse binding screw 22 locks the screw 21 against accidental rotation.

Another set screw 23 having a light compression spring 24 disposed in a bore therein and projecting therefrom, is threaded between the side plates on the other side of the trigger with the spring 24 engaging the adjacent edge of the trigger. This set screw serves as an adjustment for the weight of pull on the trigger required to trip

the mechanism, by altering the compression of the spring 24. A third set screw 25, threaded through the rear spacing block 2, serves as an adjustable stop for the trigger when it is pulled. Machine screws 26 secure the side plates together and retain the spacing blocks in place.

The trigger mechanism above described is mounted in a rifle in the following manner:

The mechanism is slipped into the receiver of the rifle, and is secured in place by a pivot pin 27. In such position, a ledge 28 on the upper edge of the side plates at the rear abuts with a fixed portion of the receiver, while the forward upper edges of the side plates ahead of pivot 27 are spaced from the adjacent portion of the receiver, as at 29. A compression spring 30 extends between said spaced parts, and exerts a downward pressure on the forward portion of the trigger mechanism, which being pivoted at 27 is thereby firmly held in the receiver rearwardly of said pivot. In such position, the head 14 of tumbler 11 is close to the firing pin 16 as shown.

In use, our improved trigger operates as follows:

With the mechanism in cocked position, as shown in Fig. 1, the catch finger 6 is engaged with sear 7; the amount of engagement at the sear engaging point 9 being approximately .003. In such position, the sear holds the forward end of the tumbler, which is engaged in notch 13, raised from stop pin 19. With the parts cocked in such position, head 14 of the tumbler cannot move forward, and as a result, the firing pin abutment 15 cannot move forward from its retracted position.

However, when the trigger is pulled or squeezed rearwardly an infinitesimal amount, the sear engaging point 9 is broken, allowing sear 7 to drop which instantaneously releases the forward end of the tumbler 11 from notch 13 in the sear. This results in the tumbler moving downward about its pivot 12 until it engages stop pin 19, causing head 14 to move forward and downward just enough to permit the firing pin abutment to clear the head and be sprung forward under the force of spring 16. When the firing pin is thus sprung forward, the cartridge in the rifle is of course fired.

Due to the fact that the movement of the trigger to release the mechanism is practically imperceptible, there can be no undesirable "creep", and this, in combination with the fact that there is no connection between the trigger and remaining mechanism after the sear engaging point 9 is broken, provides a trigger which has no rebound.

To cock the trigger mechanism, the rifle bolt is retracted by hand, and as the retracting abutment slips over head 14, the head is drawn rearward, moving the tumbler up and about its pivot. When this occurs, cocking element 17 of the sear engages in recessed portion 18 of the tumbler, which results in curved faces 10 of the rear and trigger being brought into engagement, and sliding past each other (the trigger giving way rearwardly) until the sear engaging point 9 is again established.

With the sear and trigger so positioned, the forward end of the tumbler again engages in notch 13 when the firing pin abutment has been drawn completely past the head 14. Spring 20 acts to draw the tumbler into such position. The firing pin is then released from the hand, and again assumes a cocked position with the abutment 15 resting against the straight rear edge of head 14. The mechanism is thus cocked and ready for another firing operation.

Since the tumbler engaging catch notch 13 in the sear is close to the sear pivot 8, while the engaging point 9 of the sear is a relatively great distance from the pivot 8, the pressure at point 9 is correspondingly reduced from that exerted at notch 13 by the tumbler. As a result, a very small pressure is sufficient to hold the sear in cocked position, and also only a very small trigger pressure is necessary to release this hold. This of course means that the pressure of spring 24 may be very light. Besides giving a very sensitive trigger action, this tends to reduce wear at the point 9 (both of the sear and trigger) to a minimum, so that said points will remain in proper sharp edge form indefinitely, permitting the overlap at point 9 to be exceedingly small.

Due to the fact that the entire trigger mechanism is pivoted at 21 in the receiver, and in view of the fact that the forward upper edges of the side plates are spaced from the receiver as at 29, the mechanism may be swung so as to bring adjusting screws 21 and 23 to a position out of the receiver sufficiently to reach the same and adjust either the sear engaging point or weight of trigger pull.

From the foregoing description it will be readily seen that we have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described our invention, what we claim as new and useful and desire to secure by Letters Patent is:

1. In a trigger mechanism, a trigger pivoted at its upper end and depending therefrom, a catch finger projecting forwardly from the trigger intermediate its ends, the upper edge of the catch finger adjacent the outer end thereof being inclined upwardly, a depending sear pivoted ahead of the trigger and above the catch finger, the forward edge of the sear adjacent its extreme lower end being arranged for slight engagement with the extreme outer end of said inclined edge of the catch finger in flat face to face relation whereby to limit forward swinging movement of the sear, a firing pin control tumbler pivoted between the trigger and sear, and catch means between the tumbler and rear edge of the sear releasable upon separation of the sear and trigger catch finger and forward swinging movement of the sear.

2. In a trigger mechanism, a trigger pivoted at its upper end and depending therefrom, a catch finger projecting forwardly from the trigger intermediate its ends, the upper edge of the catch finger adjacent the outer end thereof being inclined upwardly, a depending sear pivoted ahead of the trigger and above the catch finger, the forward edge of the sear adjacent its extreme lower end being arranged for slight engagement with the extreme outer end of said inclined edge of the catch finger in flat face to face relation whereby to limit forward swinging movement of the sear, and an inverted T-shaped firing pin control tumbler disposed between the sear and trigger and pivoted adjacent the rear end for swinging movement, the sear having a notch in its rear edge below the sear pivot, the forward

end of the tumbler being arranged to engage in said notch when the sear and trigger catch finger are engaged and to drop from said notch upon separation of the sear and trigger catch finger and forward swinging movement of the sear.

3. A trigger mechanism as in claim 1 in which the sear engaging portion of the inclined edge of the trigger catch finger is disposed substantially tangent to the arc described by the outer end of the catch finger upon swinging movement of the trigger about its pivot.

4. A trigger mechanism as in claim 2 including a tension spring connected at one end to the trigger above the catch finger, and connected at the other end to the lower edge of the tumbler ahead of its pivot; there being means to limit forward swinging movement of the trigger and downward swinging movement of the tumbler.

5. A trigger mechanism as in claim 2 including a cocking element on the sear above its pivot, said cocking element overhanging the forward arm of the tumbler and arranged to be engaged and lifted by the tumbler when the central leg thereof is retracted after the trigger has been released, whereby to swing the sear rearwardly about its pivot and re-engage the sear and trigger catch finger as well as the sear and tumbler.

HENRY C. WRIGHT.
HERBERT W. ALLEN.