April 1, 1952 F. D. HOPPERT 2,590,862

ADJUSTABLE TRIGGER MECHANISM

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Fig. 1.

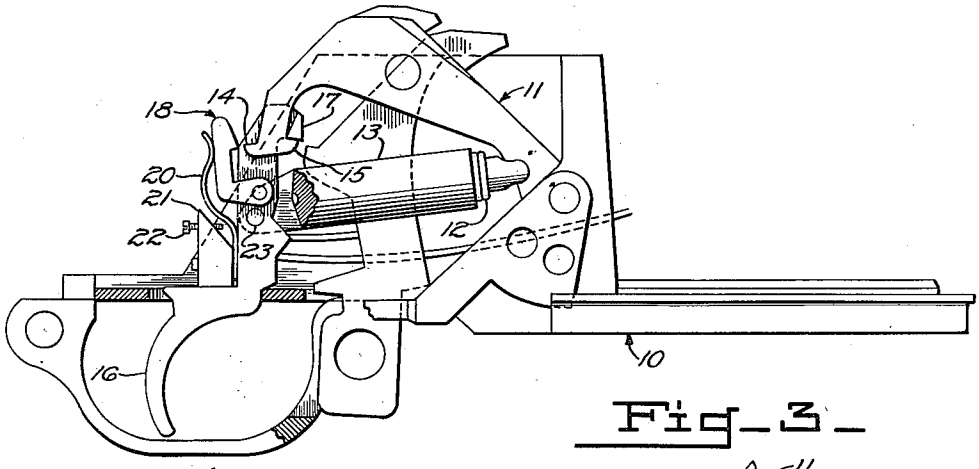


Fig. 2.

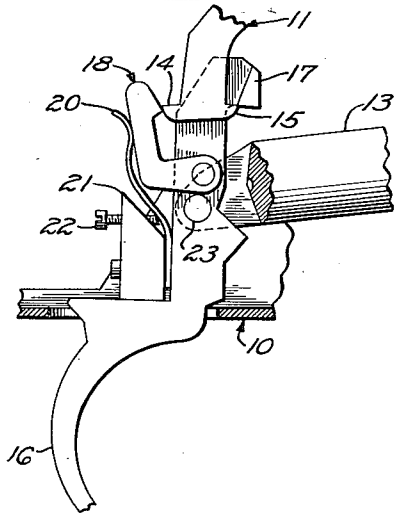
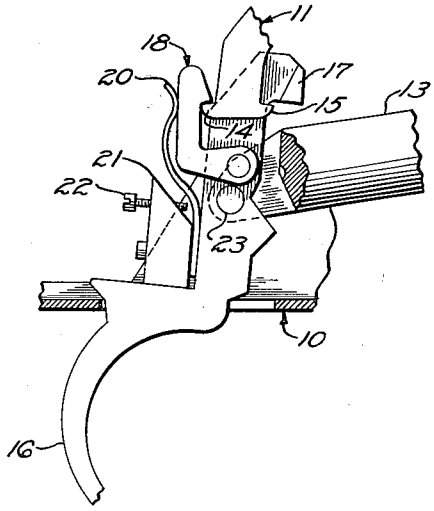


Fig. 3.



Inventor

Filser D. Hoppert

By G. J. Kessenich & J. H. Church

Attorneys

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UNITED STATES PATENT OFFICE

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ADJUSTABLE TRIGGER MECHANISM

Filser D. Hoppert, East Longmeadow, Mass.

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2 Claims. (Cl. 42—69)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates to an adjustable trigger mechanism and more particularly to a mechanism for eliminating the creep in trigger pulls of firearms.

It is most disconcerting to a shooter of firearms, particularly in target shooting, to have an abnormal amount of creep in the trigger pull just prior to release of the sear. In certain types of firearms it is especially difficult to eliminate creep from the trigger pull. One of such firearms is the U. S. rifle, cal. .30 M1 known as the Garand rifle. Due to the accumulation of manufacturing tolerances the trigger pull of such firearm is not always crisp and free from creep.

Accordingly it is an object of this invention to provide a device for substantially eliminating the creep from trigger mechanisms.

A particular object of this invention is to provide an adjustable trigger mechanism for the U. S. rifle, cal. .30 M1 and for substantially eliminating the creep from the trigger mechanism of such firearm.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings in which:

Fig. 1 is a side elevational view of the trigger guard housing of the M1 rifle embodying this invention.

Fig. 2 is an enlarged detail view of the sear and trigger shown just prior to release of the hammer.

Fig. 3 is a view similar to Fig. 2 but showing the position of the related parts when the primary sear is in engagement with the hammer.

In Fig. 1 there is shown in assembled relation a trigger guard housing 10 of the U. S. rifle, cal. .30 M1. A hammer 11 is pivotally mounted on such housing in the well known manner, as disclosed in the Garand Patent 2,377,338 of June 5, 1945 and a hammer spring 12 in spring housing 13 is provided to bias hammer 11 forwardly to discharge a cartridge. The rear end of spring housing 13 is pivotally secured to housing 10 by a pin 23. The rearwardly extending end of hammer 11 is bifurcated so that such end of the hammer can readily pass over a trigger 16 in the usual fashion. Each portion of the bifurcated end is provided with a front shoulder or lug 15 and a rear shoulder or lug 14. Trigger 16 is also

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pivotally mounted on housing 10 by the same pin 23 utilized for mounting spring housing 13. Such trigger is provided on the upper end thereof with a hammer engaging transverse sear lug 17 protruding from each side thereof. Lug 17 is engageable with lugs 15 provided on hammer 11 as will be later described.

A primary sear 18 is pivotally mounted on trigger 16 also in a well known manner. In the M1 rifle trigger mechanism, primary sear 18 is provided with a pair of forwardly projecting lugs (not shown) which contact the rear end of the spring housing 13. The hammer spring 12 is therefore also utilized for the trigger spring in order that sufficient bias may be exerted against the trigger to provide a trigger pull of desired weight and also to insure that lugs 15 of hammer 11 will engage sear lug 17 of trigger 16. In the operation of the U. S. rifle, cal. .30 M1 the reciprocating bolt of such firearm (not shown) recoils and strikes hammer 11 thus pivoting it rearwardly in a counterclockwise direction as shown in Fig. 1. Trigger 16 being held rearwardly at the moment of discharge of the firearm has rocked lug 17 forwardly out of engagement with lugs 15 of hammer 11 thus bringing primary sear 18 upwardly so that primary sear 18 can engage lugs 14 of hammer 11 thus holding the hammer in the cocked position. Upon release of trigger 16, primary sear 18 slides off of lugs 14 whereupon sear lug 17 of trigger 16 engages lugs 15 of hammer 11 thus holding the hammer in the cocked position when the trigger is in its normal or forward position. This operation is all conventional.

It is apparent to those skilled in the art that in the conventional trigger mechanism above described that hammer spring housing 13 exerts considerable bias against the trigger 16 which therefore makes the weight of the trigger pull rather indefinite by reason of the fact that the bias exerted by hammer spring 12 is considerable. Accordingly a heavy trigger pull and one which has considerable creep is commonly found, therefore in the practice of this invention, the forwardly projecting lugs (not shown) of sear 18 are removed, preferably by grinding, thus removing the bias of hammer spring 12 from primary sear 18.

A spring 20 is mounted in back of primary sear 18 and may be fastened to trigger 16 by a block 21 brazed or otherwise secured to such trigger. Spring 20 is arcuately shaped as shown and bears against the upper part of sear 18. A screw 22 provided in block 21 contacts spring 20 whereby

the tension of such spring against sear 18 may be readily varied, thus also may the weight of the trigger pull be readily adjusted to suit.

In the operation of this improved trigger mechanism, spring 20 is normally forced back against screw 22 immediately prior to release of sear lug 17 from hammer lugs 15. Spring 20 is adjustable to provide sufficient force against sear 18 to insure that such sear will always engage hammer lugs 14 in semi-automatic fire as the bolt of the firearm rotates hammer 11 in a counterclockwise direction as shown in Fig. 3, on the recoil stroke of such bolt. Thus the firearm is always maintained in a safe condition so that the hammer will not follow the bolt forwardly to prematurely discharge a cartridge. Many prior art improvements to the M1 rifle trigger mechanism have modified such mechanism to such an extent as to destroy this desirable function of primary sear 18 thus making the firearm relatively unsafe.

As force of spring 20 is of considerably lesser magnitude than that of hammer spring 12 against primary sear 18, a longer preliminary pull is permissible before any substantial resistance is met by the primary sear 18 striking the back of hammer 11 and spring 20 striking the end of screw 22. Thus when the preliminary pull is taken up only a very small engagement of sear lug 17 with lugs 15 remains thereby providing a much lighter trigger pull which is substantially free from creep.

From the foregoing description it is clearly apparent to those skilled in the art that there is here provided a simple and effective device for reducing the weight of the trigger pull as well as substantially eliminating the creep from the trigger pull and yet at the same time maintaining the desirable functional and safety features of the prior art trigger mechanism.

I claim:

1. A trigger mechanism for a firearm having a pivoted hammer movable through a limited arc to a cocked position and a spring biased plunger for operating the hammer, said mechanism comprising a trigger, means on said trigger engageable with the cocked hammer in one position of said trigger, second means on said trigger engageable with the cocked hammer in another position of said trigger, a leaf spring mounted on said trigger directly biasing said first mentioned means against said trigger, and adjusting means engageable with said spring whereby the weight of the trigger pull may be varied.

2. A hammer and trigger mechanism comprising a pivoted hammer movable through a limited arc from a cocked position to a fired position including an arm having forwardly and rearwardly extending shoulders, a spring biased plunger for operating said hammer, a pivoted trigger having a lug thereon engageable with said forwardly extending shoulders of said hammer in the cocked position thereof when said trigger is in a neutral position, a sear pivotally mounted on said trigger and engageable with said rearwardly extending shoulders of said hammer in the cocked position thereof when said trigger is in a pulled position, a leaf spring secured to said trigger and arranged to directly bias said sear forwardly against said trigger, and screw means engageable with said spring whereby the bias of said spring is adjusted to provide a desired trigger pull.

FILSER D. HOPPERT.

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