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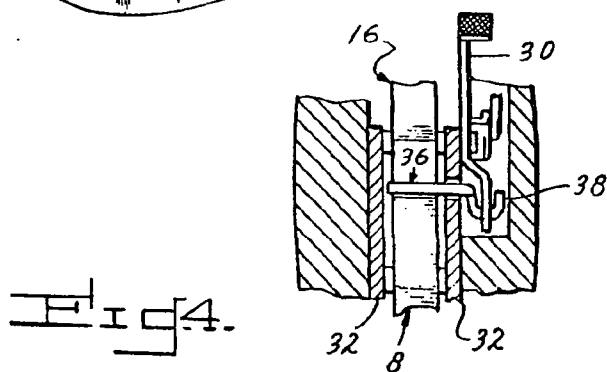
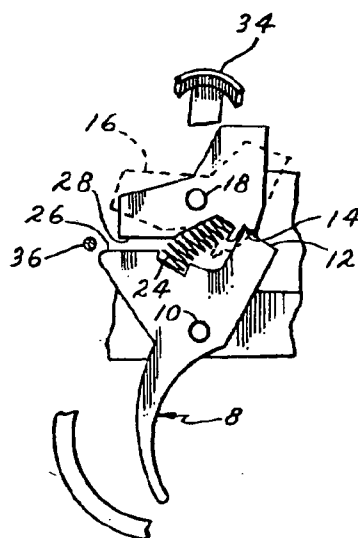
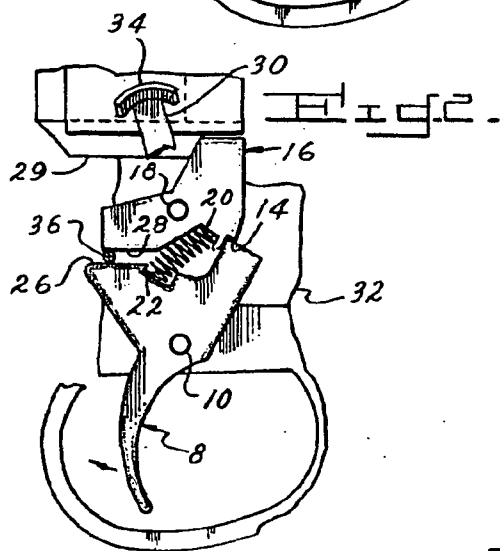
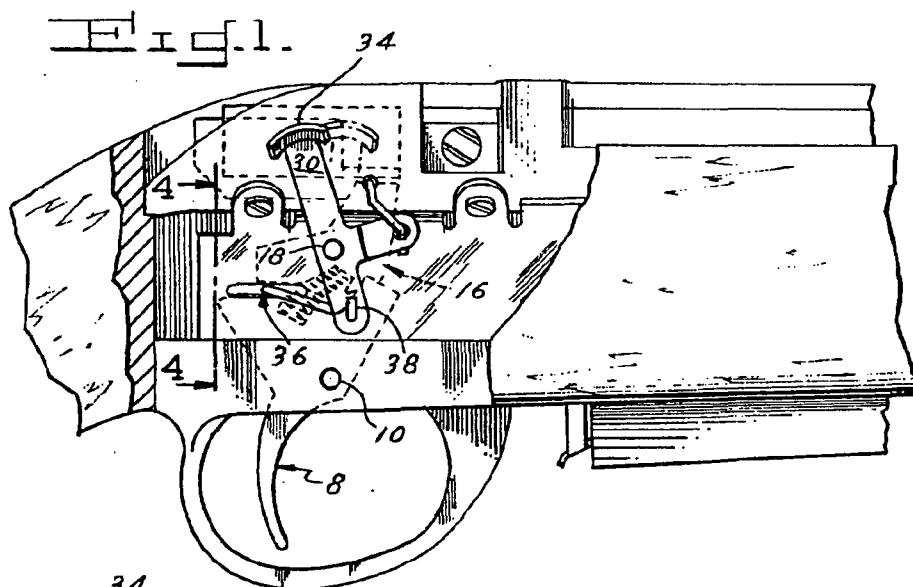
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SEAR-TRIGGER SAFETY MECHANISM FOR FIREARMS

Filed Dec. 19, 1969



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SEAR-TRIGGER SAFETY MECHANISM  
FOR FIREARMSCarl B. Hildebrandt, Springfield, Mass., assignor to  
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6 Claims

## ABSTRACT OF THE DISCLOSURE

Safety mechanism for firearms having a trigger and sear combination in which the trigger has a portion engaged in a notch of the sear when the trigger is in its rest position. The trigger and sear are each pivotable for release of the trigger from the notch of the sear and include spaced opposed portions movable toward each other on said release of the trigger. A safety which has a portion movable between the spaced opposed portions of the trigger and sear and which is in compression therebetween when an attempt is made to pull the trigger.

## BACKGROUND

Safety mechanism for guns are available in a wide variety of types. In general, such safety mechanisms include a block, lever or pin which is moved or swung into blocking engagement with the hammer, sear, trigger or bolt of the gun. All too frequently guns have been fired and people killed or wounded when the safety was "thought to be on." Analysis of many of these accidental firings has shown that in some cases the critical portion of the safety had been broken or distorted as a result of the gun being dropped or sustaining some other sharp impact when the safety was "on." Of course, if the operative portion of the safety is damaged or broken, the safety is generally rendered inoperable or imperfectly operable. In many instances the end of a safety lever or pin has been sheared off permitting inadvertent discharge of the gun, since usually such damage is not known to the operator.

It is the principal object of this invention to provide a safety which is simple in construction and operation while being most reliable and effective in its operation.

Another object of this invention is to provide a safety in which the operative portion thereof is not subject to shear or bending forces when in a "safe" position.

The above and other objects of this invention will be more readily apparent from the following description and with reference to the accompanying drawings, in which:

FIG. 1 is a side elevational view of a portion of a gun partially in section showing a safety embodying this invention;

FIG. 2 is a partial elevational view showing the safety in FIG. 1 in greater detail;

FIG. 3 is a view similar to FIG. 2 with the safety in different operative relationship; and

FIG. 4 is a section taken along line 4—4 of FIG. 1.

The gun comprises a trigger 8 pivotable about a pin 10. The trigger includes a latch portion in the form of a tooth or shoulder 12 forward of the pivot 10 for interlocking engagement with a notch 14 in sear 16. The sear 16 is mounted for pivotable movement about a pin 18 which is located above the trigger pivot pin 10. The trigger and sear are each provided with recesses 20 and 22 to receive the outer ends of a compression spring 24 which urges toward counterclockwise rotation both the trigger and sear. The spring serves as the trigger spring and to return the trigger and sear to their rest positions (FIG. 2) after firing.

The outer surface of shoulder 12 of the trigger is configured for surface to surface engagement with the op-

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posed surface portion of the sear, so that when the trigger is pulled or rotated clockwise, the sear will be rotated counterclockwise through a small angle before the shoulder 12 of the trigger clears the sear notch.

Rearward of their respective pivot pins the trigger and sear each include ledges 26 and 28 respectively, which are in spaced opposed, generally parallel relationship when the action is cocked, as shown in FIG. 2. When the trigger is pulled, the ledges move toward each other until the shoulder 12 clears the sear notch 14. When released, the sear is rotated clockwise by the movement of striker lug 29 moving forward for firing the gun. The bolt and striker mechanism may be of the same general type as disclosed in U.S. Pat. No. 2,765,562, issued on Oct. 9, 1956.

In accordance with this invention the safety comprises a lever 30 pivotable about the pin 18 supported adjacent its outer ends by opposite side wall portions of the housing member 32. The safety lever includes an actuating flange portion 34 by which the lever may be pivoted forward and backward for placing its safety "off" and "on" respectively. Adjacent its lower end, this safety lever is connected to a rod 36.

As best shown in FIGS. 1 and 4, the lever 30 has an aperture adjacent its lower end for receiving the outer end portion of the rod 36. In the embodiment shown, the outer end of the rod is provided with a hook 38 of generally U-shaped configuration by which the lever is drivingly coupled to the rod. From the hook portion 38 the rod extends rearwardly and generally parallel to the path of movement of the safety lever 30 and then transversely or laterally to the direction of movement of the lever 30. The rod 36 is movable from a position in which it is interposed between the opposed ledges 26 and 28 of the sear and trigger to a position in which it is clear of the path of pivotal movement of the sear and trigger (FIG. 3).

The rod may be made of any suitable material of sufficient rigidity and strength to serve as a safety without distortion or breaking. It has been found that metal wire or rod stock, such as steel wire on the order of  $\frac{1}{16}$ "– $\frac{3}{32}$ " in diameter is suitable. The rod stock material selected may be somewhat softer than the steel of the sear and trigger so that in effect it cushions or absorbs any impact or shock transmitted from one to the other of these parts, thereby further minimizing the possibility of breakage or damage. It is important that the diameter of the rod or wire stock be sufficient to block any substantial pivotable movement of the sear or trigger, otherwise the trigger will be released from the sear notch. The diameter should also be such that it will be readily accommodated in the space between the two ledges 26 and 28.

When it is desired to place the safety "on," the actuator 34 of lever 30 is simply moved rearward. Since the lower end of the lever is coupled to safety rod 36 by its hook portion 38, the transverse portion of the rod is carried into a blocking position between the rear ledge portions 26 and 28 of the trigger and sear, as shown in FIGS. 2 and 4. In this position, any attempt to fire the gun by pulling the trigger is entirely blocked, as is also movement of the sear. A simultaneous and mutual blocking of the sear and trigger is thereby achieved since as previously mentioned, to release the sear, the trigger must move clockwise while the sear must move counterclockwise. Thus, with the safety "on" when a firing pull is exerted on the trigger, the transverse portion of the rod is "squeezed" or in compression between the ledge portions 26 and 28 of the trigger and sear respectively.

When it is desired to fire the gun, the actuator 34 of the safety lever is moved forward, whereby the lower end of the lever moves the safety rod 36 rearwardly until it is clear of the path of rotation of the trigger and sear.