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## [54] FIRING PIN SAFETY DEVICE 4 Claims, 3 Drawing Figs.

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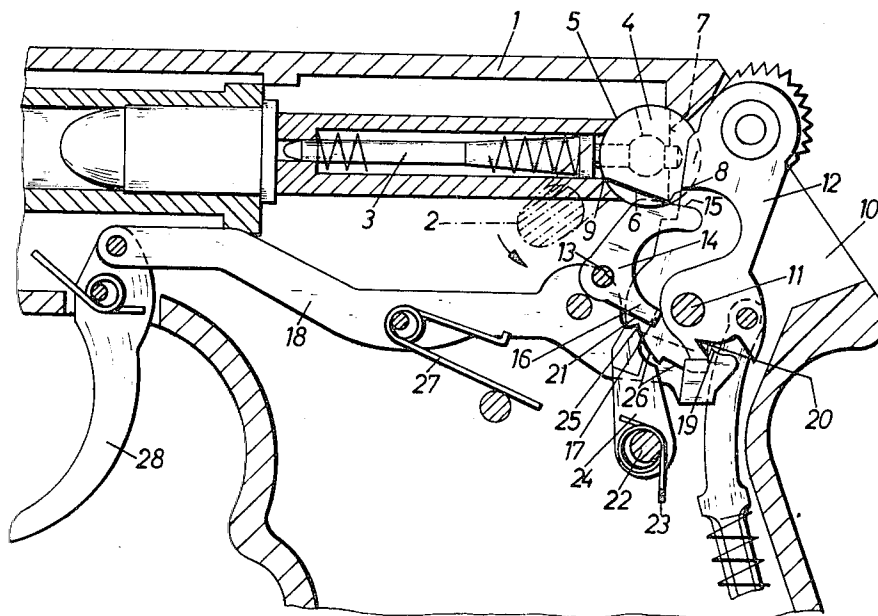
[50] Field of Search. .... 42/70 F, 70  
 R, 70 C, 70 E

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**ABSTRACT:** A safety shaft, pivotable between lock and release position extends transverse to the firing pin to expose the end of the firing pin when in the release position and having its outer surface engaging the hammer when in the lock position to prevent the hammer from striking the firing pin. An intermediate lever has one end engageable by the safety shaft when it is moved to the lock position so that pivoting of the intermediate lever causes a tab on the other end to move the trigger rod from operative engagement with the lower end of the hammer. At the same time, the tab end of the intermediate lever engages a hammer lever to move the hammer lever from engagement with a notch on the hammer. The trigger may thus be actuated when the safety is in the lock position but will not cause the hammer to strike the firing pin.





## FIRING PIN SAFETY DEVICE

The present invention relates to a firing pin safety device for small firearms, more particularly, to such a safety device which permits actuation of the trigger when the safety is locked but prevents discharge of the firearm.

It has been known to employ a safety device of the type which can be pivoted between release and lock positions and has blocking surfaces which engage the hammer to prevent impact of the hammer onto the firing pin when the safety device is in the lock position. Such safety devices have been positioned transversely of the firing pin and have an opening therein through which an end of the firing pin is exposed to the hammer when the safety device is in the release position. When the safety device is pivoted to the lock position, a surface on the safety device which may comprise a peripheral surface of a safety shaft blocks movement of the hammer so that the hammer is engageable only with the safety shaft and not with the firing pin. Firearms are also known in which a safety shaft in the uncocked position of the hammer presses the hammer so far back that it engages a safety cam on the other end of the hammer. By means of additional structure the hammer cannot impact the firing pin. When a shot is released, the safety cam is disengaged in a known manner.

In other known forms of safety devices, rotation of the safety shaft to the lock position will cause the edges of a surface on the safety shaft to move a ratchet lever downwardly whereby the hammer is lifted out of a notch. The hammer becomes uncocked and at the same time the trigger is blocked by means of a blocking element. The actuation by the surface edges on the safety shaft usually occurs in the last third of the movement to the safety position.

All such known safety pin devices have the disadvantage that the firearm may be discharged unintentionally even when the safety is in the lock position because of the wear upon the functioning parts.

It is therefore the principal object of the present invention to provide a novel and improved firing pin safety device for firearms.

It is another object of the present invention to provide a firing pin safety device wherein the trigger may be actuated but is disconnected from the hammer so that the firearm cannot be discharged.

It is a further object of the present invention to provide a firing pin safety device of the type employing a pivotable safety shaft in which is incorporated an additional safety factor.

The objects of the present invention are obtained and the disadvantages of the prior art are eliminated by the present invention wherein one aspect thereof may comprise a safety shaft pivotally mounted in the rear portion of the firearm and extending transversely to the firing pin. The safety shaft may have an opening therein through which an end of the firing pin is exposed to one end of a pivotally mounted hammer when the safety shaft is in the release position. The safety shaft may be pivoted back to a lock position wherein its outer surface is engageable by the hammer so as to block the hammer from impacting upon the firing pin. A trigger rod extends from the trigger and has a cam tooth which is engageable with a notch in an end of the hammer. A pivotally mounted intermediate lever has one end engageable by the safety shaft and a tab on its other end which is engageable with the trigger rod. As the safety shaft is moved to the lock position, the intermediate lever will be pivoted so that the tab engages the trigger rod and disengages the cam tooth thereon from the hammer notch.

Other objects and advantages of the present invention will be apparent from the accompanying description when taken in conjunction with the following drawings, which are exemplary, wherein;

FIG. 1 is a longitudinal sectional view through the rear portion of a firearm incorporating the safety device according to the present invention with the safety being in the release position and the hammer being uncocked;

FIG. 2 is a portion of the view of FIG. 1 showing the safety in the lock position and the hammer blocked against impacting of the firing pin; and

FIG. 3 is a view similar to that of FIG. 2 with the safety being in the release position and the hammer being actuated by the trigger to impact the firing pin.

Proceeding next to the drawings wherein like reference symbols indicate the same parts throughout the various views a specific embodiment of the present invention will be described in detail.

As may be seen in FIG. 1 the rear portion 1 of a firearm is provided with a safety lever 2 attached to a safety shaft 4 which extends through the firearm transversely to a firing pin 3. The outer or peripheral surface of the safety shaft is indicated at 5 and is provided with blocking surfaces 6 and 7 having edges 8 and 9. The safety shaft 4 is provided with an opening through which a portion of the firing pin extends so that the outer end of the firing pin is exposed beyond surface 7 when the safety lever is in the release position as shown in FIG. 1.

When the safety lever 2 is moved into the lock position in the direction of the arrow shown in FIG. 1, the surface edge 8 will act against a hammer 12 which is pivotally mounted on a pin 11 to move the hammer away from the firing pin zone. When the safety lever reaches the lock position, the outer surface 5 of the safety shaft will engage the hammer 12 and will block the hammer from movement toward the firing pin. As may be seen in the drawings, the hammer 12 is located in a recess area 10 formed in the firearm.

As the safety shaft 4 pivots to its lock position, the surface edge 9 will engage an upper arm 15 of an intermediate lever 14 pivotally mounted on a fixed pin 13 to rotate the intermediate lever in a clockwise direction. Rotation of the intermediate lever will cause a bent tab 17 on its other arm 16 to engage an upper edge of a trigger rod 18 having a cam tooth 19 engaged in a notch 20 formed in the lower end of hammer 12. The clockwise rotation of the intermediate lever 14 will move the trigger rod 18 downwardly to disengage its cam tooth 19 from the hammer notch 20.

A hammer lever 24 is pivotally mounted upon a fixed pin 22 below the hammer and is provided with a detent 25 engageable with a notch 26 also formed in the lower end of hammer 12. A torsion spring 23 having one end bent around the edge of the lever 24 urges the lever into engagement with the hammer.

Simultaneously with the contacting of the intermediate lever detent 17 with the upper edge of trigger rod 18, the detent 17 will contact the detent 25 to disengage the detent from hammer notch 26. When the safety lever is in the lock position, the components as described above will be positioned as shown in FIG. 2. It can be seen that in this position trigger 28 can be actuated but since trigger rod 18 is disengaged from the hammer by means of the intermediate lever, actuation of the trigger will have no effect upon the hammer which is also blocked from the firing pin by the outer surface 5 of safety shaft 4.

When the safety lever 2 is pivoted to its release position the torsion spring 27 will urge the trigger rod 18 upwardly so that the cam tooth 19 again becomes engaged with hammer notch 20 and the intermediate lever 14 is pivoted counterclockwise to its original position as shown in FIG. 1. At the same time, torsion spring 23 will return lever 24 to its original position. With the components in this position, actuation of the trigger 28 will cause trigger rod 18 to release hammer 12 to impact the firing pin as shown in FIG. 3. When the trigger is released, the trigger rod cam tooth 19 will again engage hammer notch 20 so that the hammer can be actuated repeatedly upon squeezing of the trigger in a known manner.

Thus it can be seen that the present invention provides a firing pin safety device having an additional safety factor wherein not only is the hammer blocked from contacting the firing pin but the trigger is operatively disengaged from the hammer so that actuation of the trigger will have no effect upon the hammer. Repeated wear of the parts such as would occur through usage of the firearm would have no effect upon the functioning of the safety device of the present invention.

It is understood that this invention is susceptible to modification in order to adapt it to different usages and conditions and, accordingly, it is desired to comprehend such modifications within the invention as may fall within the scope of the appended claims.

What is claimed is:

1. In a firing pin safety device for small firearms, a combination of a pivotally mounted hammer engageable with a firing pin, a pivotally mounted safety shaft having lock and release positions extending transversely to the firing pin and having an opening therein through which the end of the firing pin is exposed to the hammer when the safety shaft is in the release position, the outer surface of said safety shaft engaging said hammer when in the lock position, a trigger rod from a trigger and having means thereon operatively engageable with said hammer, and lever means engageable with said trigger rod and actuated by the pivoting of said safety shaft to the lock position for disengaging said trigger rod and hammer.

2. In a firing pin safety device for small firearms, a combination of a pivotally mounted hammer engageable with a firing pin, a pivotally mounted safety shaft having lock and release positions extending transversely to the firing pin and having an opening therein through which the end of the firing pin is exposed to the hammer when the safety shaft is in the release

position, the outer surface of said safety shaft engaging said hammer when in the lock position, a trigger rod from a trigger and having means thereon operatively engageable with said hammer, and means responsive to the pivoting of said safety shaft to the lock position for disengaging said trigger rod and hammer, said means comprising a pivotally mounted intermediate lever having one end engageable by said safety shaft and a tab on its other end engageable with said trigger rod, said intermediate lever being pivoted when said safety shaft is moved to the lock position so that the tab engages said trigger rod to disengage the rod from said hammer.

3. In a firing pin safety device as claimed in claim 2 wherein said hammer has a first notch at its other end, said trigger rod having a cam tooth operatively engageable and disengageable with said hammer notch by the actuation of the trigger.

4. In a firing pin safety device as claimed in claim 3 wherein said hammer has a second notch adjacent said other end, a hammer lever engageable with said hammer second notch, said intermediate lever tab simultaneously engaging said trigger rod and hammer lever to disengage said hammer lever from said second notch when the safety shaft is rotated to the lock position.

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