Jan. 20, 1953 R. L. MAGARO 2,625,765

SAFETY LOCK FOR FIREARMS

Filed Jan. 23, 1951 2 SHEETS—SHEET 1

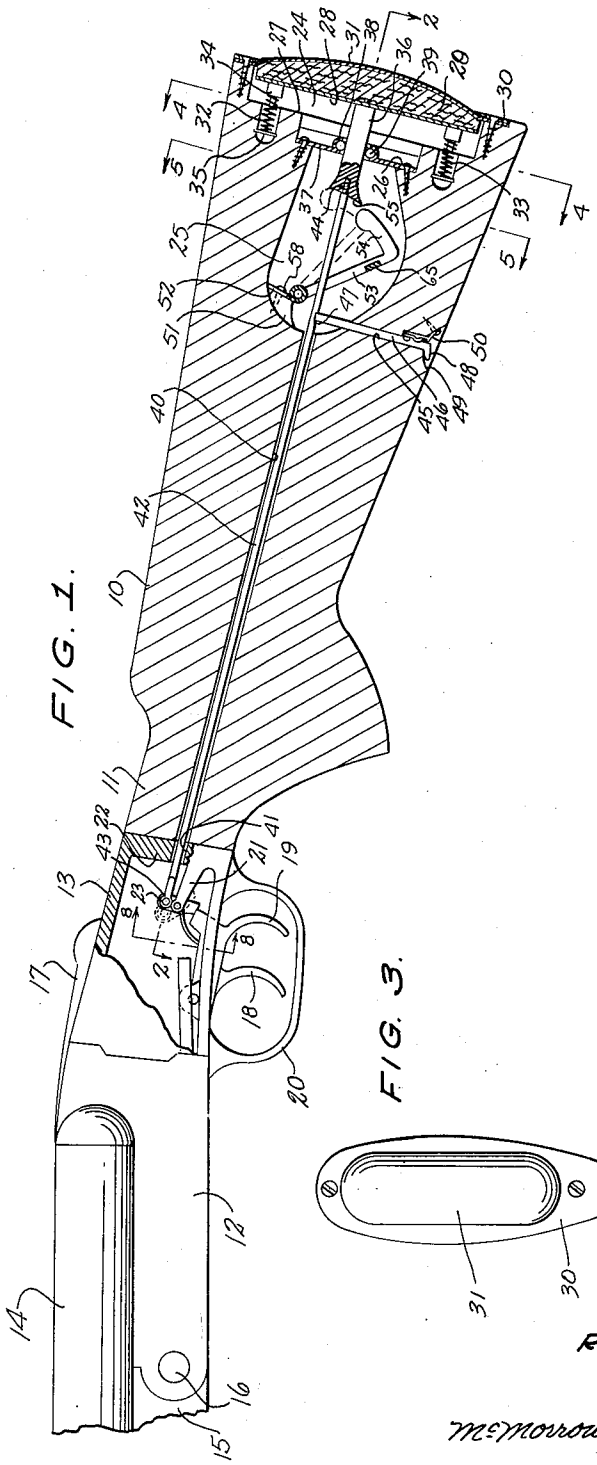


FIG. 1.

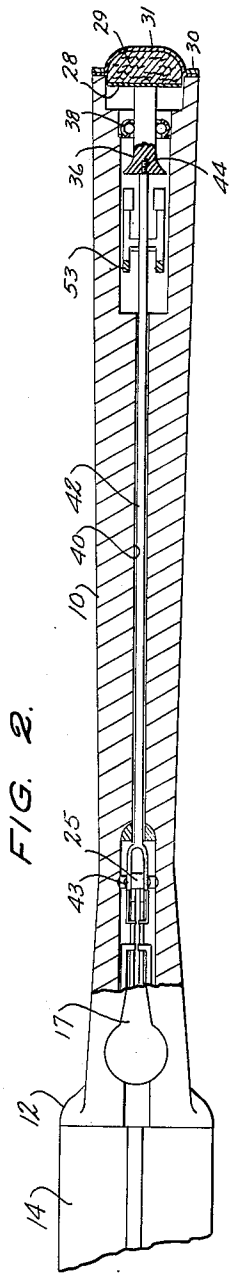


FIG. 2.

FIG. 3.

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FIG. 4.

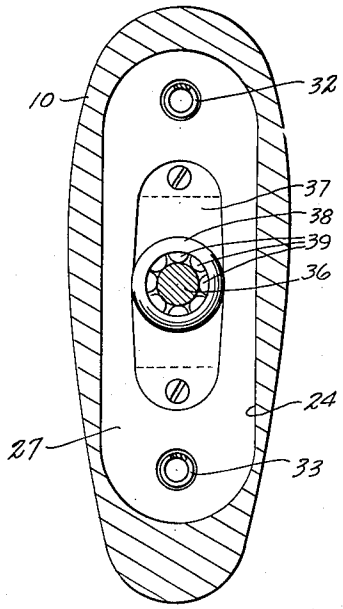


FIG. 5.

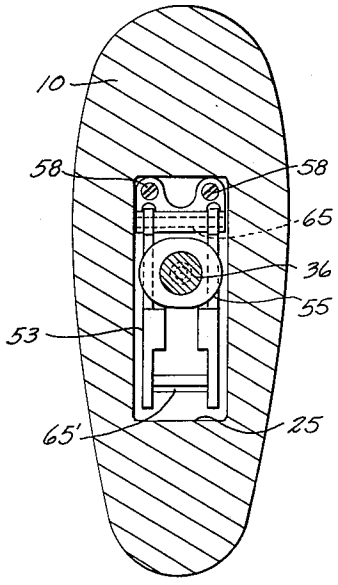


FIG. 6.

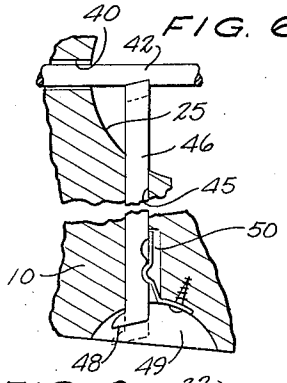


FIG. 8.

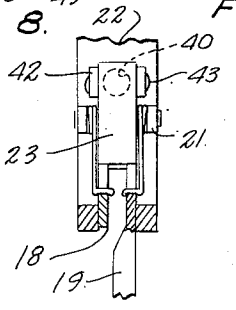


FIG. 7.

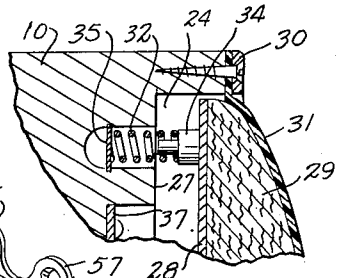
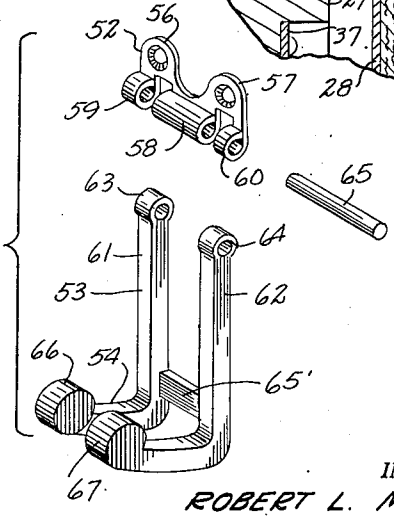


FIG. 9.



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SAFETY LOCK FOR FIREARMS

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Application January 23, 1951, Serial No. 207,368

1 Claim. (Cl. 42—70)

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This invention relates to safety locks for firearms, and more particularly to a safety lock for a shoulder-supported firearm, such as a shotgun or rifle.

It is among the objects of the invention to provide an improved safety lock for a shoulder-supported firearm, such as a shotgun or rifle, which will lock the firing mechanism of the gun against operation except when pressure is applied to the shoulder-engaging end of the gun stock; which will maintain the firing mechanism locked against operation while the gun is in an inverted or vertically upended position; which can be applied to an existing gun without materially changing the appearance or operation of the gun; and which is simple and durable in construction, economical to manufacture, easy to install, and automatic in operation.

Other objects and advantages will become apparent from a consideration of the following description and the appended claim in conjunction with the accompanying drawings, wherein:

Figure 1 is a side elevational view of a shotgun equipped with safety locking mechanism illustrative of the invention, a portion of the gun being broken away and shown in cross-section to illustrate the application of the locking mechanism thereto;

Figure 2 is a longitudinal, cross-sectional view on the line 2—2 of Figure 1;

Figure 3 is an end elevational view of the distal end of the gun stock;

Figure 4 is a transverse cross-sectional view on an enlarged scale on the line 4—4 of Figure 1;

Figure 5 is a transverse cross-sectional view on an enlarged scale on the line 5—5 of Figure 1;

Figure 6 is a view on an enlarged scale of a fragmentary portion of the structure illustrated in Figure 1, showing strctural details;

Figure 7 is a cross-sectional view on an enlarged scale of a fragmentary portion of the structure shown in Figure 1, showing additional structural details;

Figure 8 is a transverse cross-sectional view on the line 8—8 of Figure 1; and

Figure 9 is an exploded perspective view of a gravity-actuated locking dog assembly constituting an operative component of the safety lock mechanism of the invention.

With continued reference to the drawings, the gun illustrated in Figure 1 may be a shotgun of conventional construction having a stock 10 provided at one end with a neck 11, a breech mechanism 12 mounted on the neck 11 at one end of the stock 10 and including a housing 13 enclosing

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the firing mechanism of the gun, a barrel structure 14 mounted on a forearm 15 pivotally connected at its rear end to the forward end of the breech mechanism 12 by the pivot pin 16, a break lock lever 17 pivotally mounted on the upper side of the housing 13 to lock the barrel structure 14 in firing position relative to the breech assembly 12 or release the barrel structure for breaking action about the axis of the pivot pin 16, and triggers 18 and 19 pivotally mounted in the housing 13 and projecting from the under side of the housing into a trigger guard 20.

While the gun has various other operative components, well known to the art, a more detailed description of the conventional parts of the gun is considered unnecessary for the purposes of the present disclosure.

An arm 21 is secured at one end to the wall 22 of the housing 13 adjacent the corresponding end of the stock 10, and a latch dog 23 is pivotally mounted intermediate its length on this arm at the distal end of the latter and has one end engageable with the triggers 18 and 19 within the housing 13 to lock the triggers in their non-firing position in which they are incapable of releasing the firing pins for firing the gun.

A recess is provided in the gun stock 10 at the end of the latter remote from the breech assembly 12 and comprises an outer part 24 opening to the distal end of the stock, and a rounded inner portion 25 extending inwardly of the stock from the inner end of the outer portion 24.

The recess portion 24 is of somewhat elliptical shape corresponding to the elevational shape of the distal end of the gun stock, and terminates inwardly of the stock at an annular shoulder 26 which surrounds a neck between the outer portion 24 and the inner portion 25 of the recess. A shoulder 27 substantially parallel to the surface of the distal end of the gun stock extends around the recess portion 24 between the distal end of the stock and the shoulder 26.

The inner portion 25 of the recess is rounded in shape and provides a pocket for certain mechanism later to be described in detail.

A flat plate 28 is disposed in the outer portion 24 of the recess near the outer end thereof, and an outwardly convex shoulder pad 29 is provided on the outer surface of this plate. A bezel ring 30 is recessed into the end of the gun stock surrounding the plate 28 and a cover 31 of flexible material overlies the other surface of the pad 29 and is secured under the ring 30 to limit movements of the plate 28 outwardly of the recess. Compression springs, as indicated at 32 and 33,

are disposed between the inner side of the plate 28 and the gun stock at the inner side of the outer portion of the recess to resiliently urge the plate 28 outwardly of the recess to the extent permitted by the flexible cover 31.

In the arrangement illustrated, the springs 32 and 33 are partially received in wells or recesses provided in the annular shoulder 27 in the gun stock intermediate the depth of the outer portion 24 of the recess and are also partially received in hollow bosses, as indicated at 34, extending inwardly from the inner side of the plate 28. The ends of the springs 32 and 33 remote from the plate 28 bear against suitable abutments, as indicated at 35, disposed in the spring-receiving recesses in the gun stock near the inner ends of these recesses.

A stem 36 is secured at one end to the inner side of the plate 38 and projects substantially perpendicularly from the plate through the neck between the recess portions 24 and 25 and into the inner portion 25 of the recess. A plate 37 is mounted on the shoulder 26 between the inner and outer portions of the recess and is provided with an aperture through which the stem 36 extends. The aperture in the plate 37 is surrounded by a transversely curved bead 38 and a plurality of anti-friction ball elements 39 are disposed in this bead and bear against the stem 36 to provide an anti-friction bearing between the plate 37 and the stem 36 for sliding movements of the stem relative to the plate.

The stock 10 is provided with a bore 40 which extends from the inner end of the inner portion 25 of the recess longitudinally of the stock to an opening 41 provided in the rear wall 22 of the housing 13 adjacent the latch arm 21, and a rod 42 extends through the bore 40 and connects the latch dog 23 to the stem 36. The corresponding end of the rod is pivotally secured to the latch dog at the side of the arm 21 remote from the triggers 18 and 19 by a construction including a fork provided on the corresponding end of the rod and having terminal eyes disposed at respectively opposite sides of the latch dog and a pivot pin 43 extending through registering apertures in the eyes of this fork and in the latch dog 23. At its other end the rod is secured to the inner end of the stem 36 by suitable means, such as the screw-thread connection 44.

With this arrangement, the springs 32 and 33 urge the plate 28 outwardly of the recess portion 24 to a limiting position in which the plate holds the rod 42 in position such that the latch dog engages the triggers 18 and 19 and locks the triggers in their non-firing position, thus locking the firing mechanism of the gun against operation. When pressure is applied to the shoulder pad 29 to overcome the force of the springs 32 and 33, as by placing the gun against the shoulder in firing position, the plate 28 is forced inwardly of the recess in the gun stock, the rod 42 is forced forwardly and the latch dog 23 is turned about its pivotal connection with the distal end of the arm 21 until it is free of the triggers 18 and 19, thus releasing the triggers for operation to fire the gun.

A transverse bore 45 is provided in the gun stock extending from the inner recess portion 25 at the inner end of the latter to the normally lower edge of the gun stock substantially perpendicular to the bore 40, and a pin 46 is slidably mounted in the bore 45. At its inner end, the pin 46 is beveled, as clearly illustrated in Figure 1, and the rod 42 is provided at the inner end of the pin 46 with a beveled notch 47 providing a shoulder with which the inner end of the pin 46 engages.

When the inner end of the pin 46 is engaged in the notch 47, the rod 42 cannot be moved by pressure on the shoulder pad 29 to release the latch dog 23 from the triggers of the gun. The gun is thus positively locked in safety or non-firing condition until the pin 46 is manually moved. The outer end of pin 46 is provided with a flange or cap 48 received in a recess 49 in the gun stock surrounding the outer end of the bore 45, and a leaf spring 50 is secured at one end to the stock and extends into the outer end of the bore 45 alongside the pin 46 near the outer end of the latter. This spring 50 has protrusions thereon selectively engageable in a recess in the pin 46 to hold the pin in either a locking or a releasing position relative to the rod 42, the pin being manually movable between these two positions.

A step 51 is provided in the inner portion 25 of the recess at the inner end of this inner portion, and a hinge plate 52 is secured to this step and extends transversely of the recess substantially at right angles to the rod 42. A pendulum 53 is pivotally secured at one end of the plate 52 for swinging movement about an axis perpendicular to a plane extending between the top and bottom edges of said stock and along the longitudinal center line of the latter, and comprises two spaced-apart and substantially parallel legs disposed at respectively opposite sides of the rod 42. At their ends remote from the pivotal connection with the plate 52, these legs are provided with arcuately curved, offset portions 54 engageable with the arcuately curved inner end surface 55 of the stem 36 when the gun is disposed in an inverted or in a muzzle-up position with the curved inner end surface of the stem 36 to lock the stem 36 and rod 42 against movement in a direction to move the latch dog 23 to trigger-releasing position.

The plate 52 and pendulum 53 are particularly illustrated in Figure 9, and the plate 52 comprises a pair of spaced-apart apertured lugs 56 and 57 receiving screws 58 which secure the plate to the stem 51 provided in the recess portion 25, and a cylindrical sleeve or eye portion intersected by notches to provide an intermediate portion 58 and end portions 59 and 60 spaced from the adjacent ends of the intermediate portion.

The pendulum 53 comprises the spaced-apart and substantially parallel legs 61 and 62 provided on the corresponding ends with cylindrical eyes 63 and 64 received in the notches between the intermediate portion and the end portions of the cylindrical sleeve formation on the plate 52. A pivot or hinge pin 65 extends through the sleeve portions 58, 59 and 60 and through the eyes 63 and 64 on the ends of the pendulum legs 61 and 62 to pivotally secure the pendulum to the plate 52. A crossbar 65 extends between and is connected at its opposite ends to the pendulum legs 61 and 62 near the ends of these legs remote from the eyes 63 and 64, and the arcuately curved, offset portions of the pendulum extend substantially perpendicularly from these distal ends of the legs 61 and 62 and terminate at their outer ends in rounded weights 66 and 67.

With this arrangement, if the gun is held in a substantially horizontal position and is inverted so that the trigger guard 20 is at the upper side of the gun, as frequently happens when the gun is being carried through a fence or over an obstruction in hunting, the pendulum 53 will swing

about the pivot pin **65**, so that the arcuately curved portions of the pendulum will drop in behind the inner end **55** of the stem **36** and lock the stem against inward movement to release the triggers. The gun thus cannot be fired while held in such an inverted position. The crossbar **65** will engage the rod **42** to limit swinging movement of the pendulum in the locking direction. Also, when the gun is held substantially vertically with its muzzle end up, the pendulum will swing in behind the inner end of the stem **36** and prevent firing of the gun while held in this position, even though the pressure of the shoulder pad **29** against the ground would ordinarily free the firing mechanism of the gun.

It is contemplated that when the gun is to be sharply elevated for firing at a high angle, the shoulder pad **29** will be brought against the shoulder before the gun is elevated, and the stem **36** will thus be moved inwardly before the pendulum **53** is swung to engage the stem and the pendulum cannot thereafter move into locking engagement with the stem, thus leaving the firing mechanism free for firing the gun at the high angle of elevation.

The gun equipped with the safety lock of the present invention is thus normally locked against firing, is automatically released for firing when the gun butt is pressed against the shoulder in firing position of the gun, is automatically locked against release for firing when the gun is in either an inverted or a muzzle-up position and can be manually locked against release for firing in any position of the gun.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of the claim are, therefore, intended to be embraced therein.

What is claimed is:

In a gun having a stock, a breech assembly mounted on one end of said stock and including a housing and a trigger pivotally mounted in said housing, a shoulder plate mounted on the other end of said stock and movable toward and away from the adjacent end of the stock, and spring means resiliently urging said shoulder plate to its limiting position away from the adjacent end of said stock, said stock having a recess therein opening to said other end thereof and including an outer portion adjacent said shoulder plate and a curved inner portion extending longitudinally of said stock from said outer portion and said stock having a bore extending longitudinally therethrough from the inner end of the inner portion of said recess to said breech assembly, a

latch pivotally mounted in said housing and engageable with said trigger to lock the latter in non-firing position, a stem secured at one end to said shoulder plate and extending through the outer portion into the inner portion of said recess, a rod extending through said bore and connected at one end to said latch and at its other end to said stem at said other end of the latter, said rod moving said latch into locking engagement with said trigger when said shoulder plate is moved by said spring means to its limiting position away from the adjacent end of said stock and moving said latch out of engagement with said trigger when said shoulder plate is forced toward the adjacent end of said stock against the force of said spring means and said stem having an abutment surface on said other end thereof, a hinge plate secured in said inner recess portion at the end of the latter remote from said outer portion, and a pendulum hingedly connected at one end to said hinge plate for swinging movement about an axis perpendicular to a plane extending between the top and bottom edges of said stock and along the longitudinal center line thereof and having its other end disposed at the side of said stem adjacent the bottom edge of said stock and provided with a surface engaging the abutment surface on said stem when the gun is in any position other than its upright firing position to thereby hold said shoulder plate against movement toward the adjacent end of said stock and hold said latch in locking engagement with said trigger, said pendulum including two spaced apart legs disposed at respectively opposite sides of said rod and provided at their distal ends with arcuately curved offset portions engageable with the abutment surface on said stem, a hinge eye formation at the proximal end of said pendulum, and a cross bar extending between said legs intermediate the length thereof.

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