

July 19, 1960

L. F. MULNO

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SAFETY LOCK FOR FIREARMS

Filed May 9, 1958

3 Sheets-Sheet 1

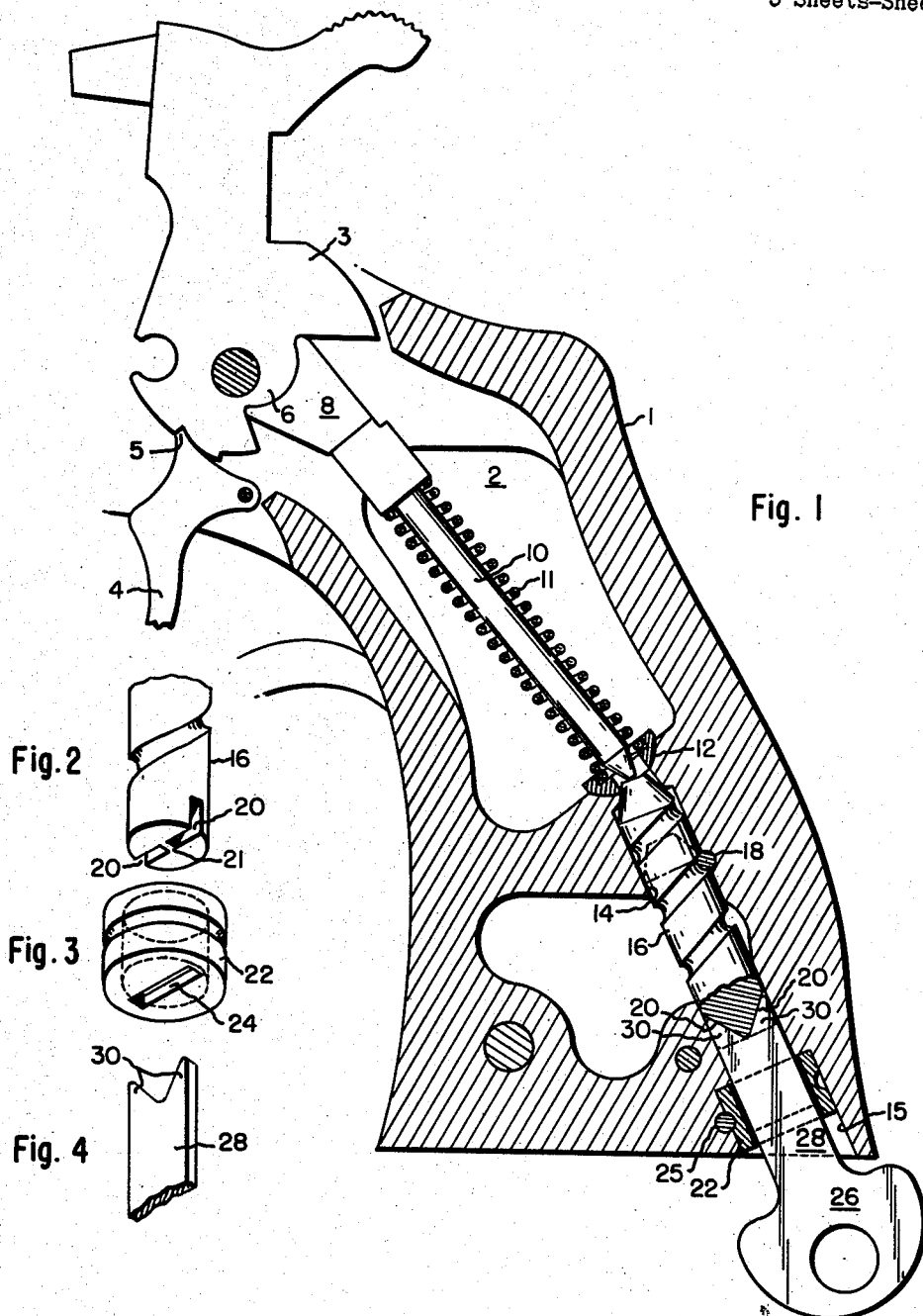


Fig. 1

Fig. 2

Fig. 3

Fig. 4

INVENTOR.
LESTER F. MULNO

BY KENWAY, JENNEY, WITTER & HILDRETH

ATTORNEYS

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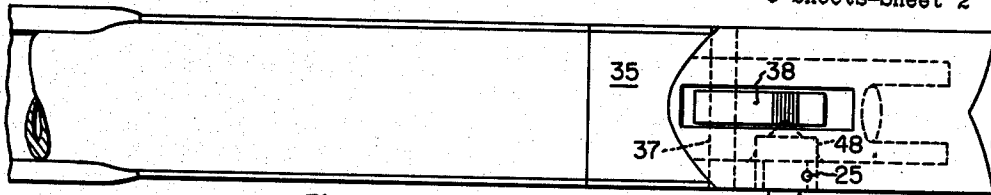


Fig. 5

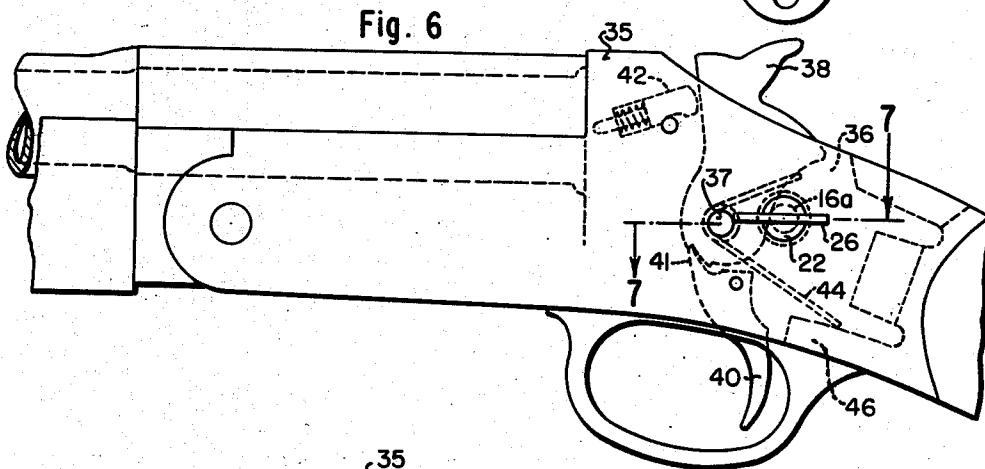


Fig. 6

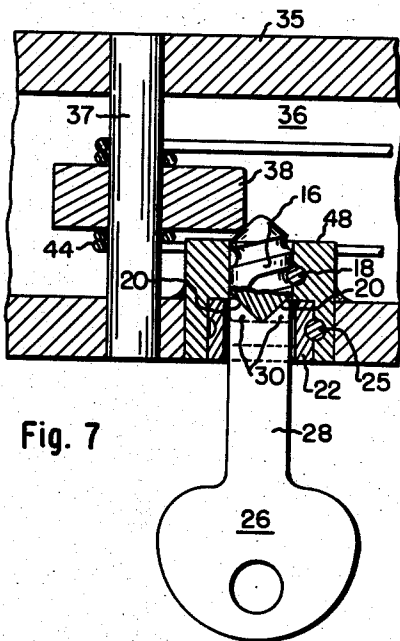


Fig. 7

INVENTOR.
LESTER F. MULNO
BY KENWAY, JENNEY, WITTER & HILDRETH

ATTORNEYS

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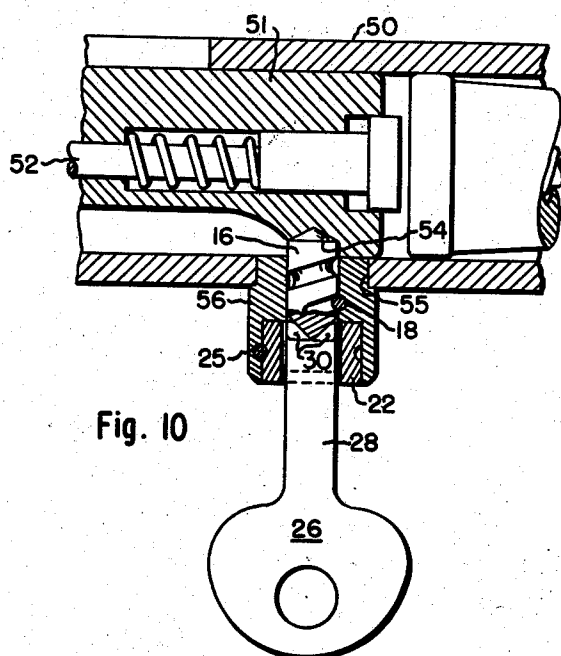
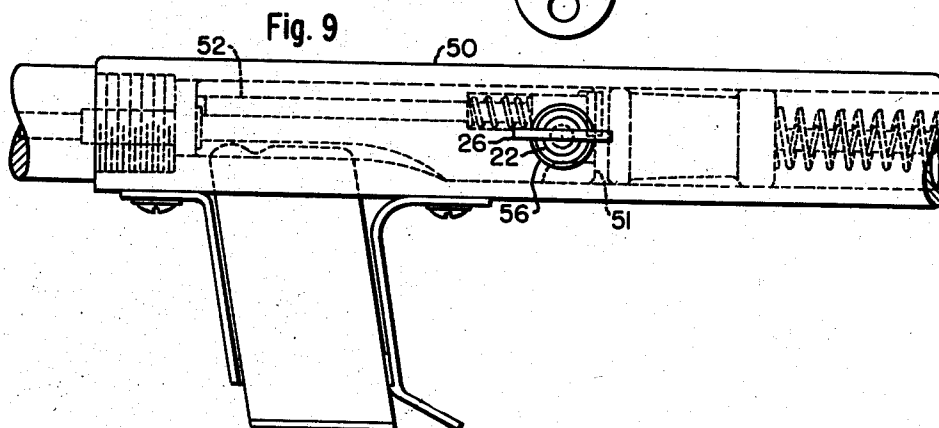
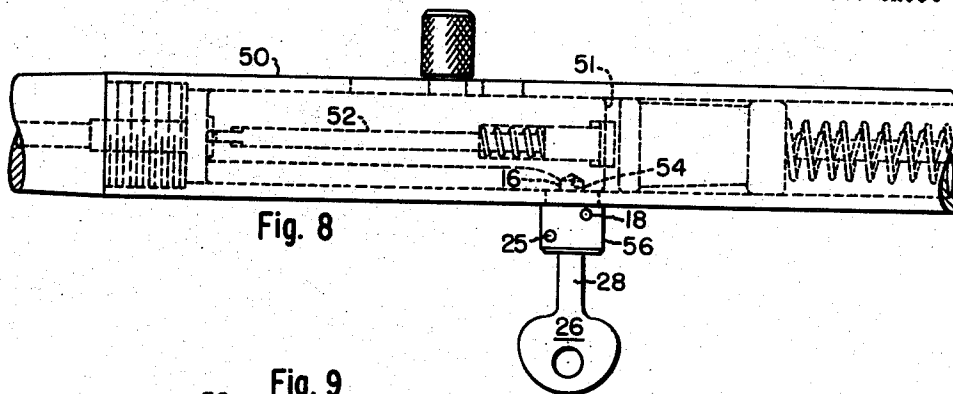
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INVENTOR.
LESTER F. MULNO

BY KENWAY, JENNEY, WITTER & HILDRETH

ATTORNEYS

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SAFETY LOCK FOR FIREARMS

Lester F. Mulno, Worcester, Mass., assignor to Harrington & Richardson, Inc., Worcester, Mass., a corporation of Massachusetts

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16 Claims. (Cl. 42—66)

The unauthorized use of firearms and the accidental discharge of loaded firearms present a troublesome problem for which a feasible solution has not been forthcoming. Various types of safety devices have been suggested, but such devices do not prevent the unauthorized use of the firearms. Locking devices preventing the loading of a firearm have been suggested, but they are not considered practical in that they do not permit a quick use of the firearm in case of an emergency, and locking devices preventing the discharge of a firearm have also been suggested, but they are relatively expensive and often require a redesign of the firearm.

The principal objects of the present invention are to overcome the aforementioned difficulties and to provide a reliable safety lock which can be applied to conventional firearms without appreciably increasing the cost of manufacture and which permit the quick use of a loaded firearm, and to provide a locking device which is tamper-proof and which is quickly operated by a small key which may be carried on the person.

Further objects relate to various features of construction and will be apparent from a consideration of the following description and the accompanying drawings, wherein:

Fig. 1 is a sectional elevation showing the invention applied to a conventional revolver;

Fig. 2 is a perspective of the lower part of the threaded member or worm of the locking device;

Fig. 3 is a perspective of the slotted cap or key guide through which the key is inserted;

Fig. 4 is a perspective of the end portion of a key shank engageable with the end of the threaded member;

Fig. 5 is a fragmentary plan view showing the invention applied to a single barrel shotgun;

Fig. 6 is a side elevation of the parts shown in Fig. 5;

Fig. 7 is an enlarged section on the line 7—7 of Fig. 6;

Fig. 8 is a fragmentary plan view showing the invention applied to a semi-automatic rifle;

Fig. 9 is a side elevation of the parts shown in Fig. 8; and

Fig. 10 is an enlarged section of the locking device.

In accordance with the present invention I provide a locking mechanism for a firearm of the type having a frame, a firing member, such as a hammer or bolt carrying the firing pin, supported within the frame to swing or slide to and from cocked position, a spring acting on the firing member to urge it to firing position and a trigger mechanism for releasably holding the firing member in cocked position, all of which parts are more or less conventional. The locking mechanism is carried by the frame and comprises a locking member or part which is movable toward and away from the firing member and may include or be associated with a part engageable with the firing member so as to hold it in a position such that it cannot be fired. The locking mechanism preferably includes a worm or other threaded means carried within the frame for moving the locking member or part to and from locking position, and this threaded

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member is operated by a removable key or the like means which is formed with an end portion engageable with the outer end portion of the threaded member.

In order to prevent the locking means from being operated by a screw driver, knife or the like implements I provide a rotatable cap having a slot shaped to conform with the cross-sectional area of the key shank and the outer end portion of the threaded member and the shank are formed with spaced slots and projections or the like interengageable parts so designed that it would be difficult, if not impossible, to reproduce without knowing the particular design. For example, the outer end portion of the threaded member may be formed with spaced V-shaped or oblique slots which receive the spaced prongs of the forked end of a key, thus preventing a screw driver, knife blade or the like implement from being inserted through the slotted cap to turn the threaded member. Such a key may be conveniently carried on the person in the same manner as a house or automobile key and it may be used in the matter of a few seconds to lock or unlock the firearm.

Referring to Figs. 1 to 4, the embodiment shown therein is applied to a revolver of more or less conventional construction, having a frame 1 formed with a central chamber 2 in which the operating parts are disposed and since such parts are well known in the art only those directly related to my locking device are shown. The frame 1 pivotally supports a hammer 3 the under part of which is notched to provide the cocked and safety rebound positions. A trigger 4 having a holding finger 5 is engageable with the notched parts of the hammer to hold it in either position, here shown as the safety rebound position. Outwardly of the notched parts the hammer is formed with a curved surface 6 which contacts the concave surface of the head 8 of the main spring assembly comprising a guide stem 10 having a conical lower end and a compression spring 11 which is circumposed about the guide stem. One end of the spring 11 acts on the head 8 and its other end on a washer 12 formed with a rounded surface received in a complementary depression formed in the lower part of the chamber 2.

The lower end of the handle portion of the frame is drilled to provide a passage 14 communicating with the chamber 2 and the lower end of this passage is somewhat enlarged as indicated at 15. Rotatably mounted within the passage 14 is a worm or threaded member 16 and a laterally extending pin 18 engages the groove parts of the worm so that rotation of the worm in one direction or the other moves it inwardly or outwardly. The inner end of the worm is conical and engages the end of the guide stem. The outer end of the worm is formed with spaced V-shaped notches 20 separated by an intervening web 21.

Rotatably mounted in the enlarged passage 15 is a cap or key guide 22, the closed end of which is formed with an elongate slot 24 (Fig. 3), and its side wall is grooved to accommodate a retaining pin 25. A key 26 is formed with a flat shank 28 having a cross sectional area of the same shape as the slot 24 so as snugly to fit the slot, and the end of the shank is forked to provide a pair of spaced V-shaped prongs 30 which are complementary to the slots 20.

With this construction and arrangement of parts the key 26 may readily be inserted through the key guide so that its forked end fits the slots and rotation of the key and guide effects the turning of the worm to and from locking position. When the hammer is in the safety rebound position, as shown in Fig. 1, clockwise movement of the key brings the end of the worm into direct contact with the guide stem so that the hammer is locked in rebound position and hence cannot be cocked

or fired. When thus locked the key may be withdrawn and the hammer can only be released by reinserting the key and turning it counterclockwise to disengage the worm from the guide stem.

It will be observed that the location of the slots in the worm and the intervening web 21 prevent a knife blade or the like implement inserted through the slot 24 from rotating the worm and the slot 24 is preferably made so narrow that a conventional screw driver or spanner wrench cannot be inserted. Moreover, the locking and unlocking of the hammer requires but a few seconds which means that a loaded revolver may be kept handy for emergency use with little or no danger of it being used by an unauthorized person or accidentally discharged.

In Figs. 5 to 7 I have shown the invention applied to a single barrel shotgun having a frame 35 formed with a central chamber 36 in which the operating parts are disposed and since such parts are more or less conventional only those directly related to my locking device are shown. The frame 35 carries a pin 37 which pivotally supports a hammer 38 having its under parts notched to provide the cocked and safety rebound positions. A trigger 40 (Fig. 6) having a holding finger 41 engages one of the notched parts to hold the hammer in either position, here shown as a safety rebound position, wherein the inner face of the hammer is spaced from the firing pin 42. A torsion type spring 44 is carried by the pivot pin 45 and one end of this spring acts on the under face of the hammer and its other end acts against an abutment 46 on the frame.

One of the side walls of the frame 35 is drilled to provide a circular opening adjacent to the underside of the hammer and this opening receives a sleeve 48 which is brazed, welded or otherwise secured within the opening. The outer part of this sleeve is enlarged to accommodate the cap or key guide 22 which is the same as that of the previously described embodiment and as the other parts of the lock are substantially identical, the same or similar reference characters are applied to corresponding parts.

It will be noted that in this embodiment the conical end of the worm 16a directly engages the under surface of the hammer and the same advantages above set forth in connection with the previously described embodiments are true of this embodiment.

In Figs. 8 to 10 the invention is shown applied to a semi-automatic rifle of the well-known type which comprises a receiver 50 within which is mounted a reciprocating bolt 51 which slidably supports the firing pin 52. In this type of firearm the action of the bolt controls the firing and since the other parts of the firing mechanism are well known in the art the following description will be directed to the operation of my safety lock on the bolt.

The side part of the rear of the bolt 51 which contacts the side of the receiver 50 is recessed as indicated at 54 and the side of the receiver is provided with a concentric opening 55 which receives one end of a sleeve 56, the parts being brazed, welded or otherwise suitably secured. The outer part of the sleeve 56 is enlarged to receive the cap or key guide 22 which is substantially identical to those of the previously described embodiments and as the other parts of the lock have been previously described a further description is unnecessary.

It will be noted that in this type of firearm the bolt 51 is normally retracted, as shown, and hence when the locking worm 16 is in locking position, as best illustrated in Fig. 10, neither the bolt nor the firing pin can be moved toward the firing chamber. A complete turn of the key in a counterclockwise direction is effective to release the locking worm so that when the trigger is pressed the firing of the cartridges take place.

While I have shown and described several desirable embodiments of the invention, it is to be understood that this disclosure is for the purpose of illustration and that

various changes and modifications may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. In a firearm having a frame, a hammer supported by said frame so as to move to and from cocked position, a spring-loaded guide stem within said frame acting on said hammer when in cocked position to urge it to firing position, and trigger means carried by said frame for releasably holding said hammer in cocked position, releasable locking means carried by said frame comprising a threaded locking member including a part movable toward and away from the lower end of said stem, the locking means being engageable with said stem for preventing it from moving to cocked position, the threaded member being movable within said frame for moving said part to and from locking position, and key means engageable with and disengageable from the outer end portion of said threaded member for turning it to and from locking position.

2. A firearm as set forth in claim 1, wherein said part is conical shaped and integral with the inner end of said threaded member.

3. A firearm as set forth in claim 1, wherein the outer end of said threaded member and the end of said key means are formed with complementary interengaging parts.

4. In a firearm having a frame, a firing member supported by said frame so as to move to and from cocked position, a spring within said frame acting on said firing member when in cocked position to urge it to firing position, and trigger means carried by said frame for releasably holding said firing member in cocked position, releasable locking means carried by said frame comprising a threaded locking member movable toward and away from said firing member, the locking means being engageable with said firing member so as to hold it in a position such that it cannot fire, and key means having an inner end portion engageable with and disengageable from the outer end portion of said threaded member for turning it to and from locking position, the outer end portion of said threaded member having spaced slots and the inner end portion of the key means having spaced projections fitting the slots in the threaded locking member.

5. In a firearm having a frame, a firing member supported by said frame so as to move to and from cocked position, a spring within said frame acting on said firing member when in cocked position to urge it to firing position, and trigger means carried by said frame for releasably holding said firing member in cocked position, releasable locking means carried by said frame comprising a threaded locking member movable toward and away from said firing member, the locking means being engageable with said firing member so as to hold it in a position such that it cannot fire, and key means having an inner end portion engageable with and disengageable from the outer end portion of said threaded member for turning it to and from locking position, the outer end portion of the threaded member having V-shaped slots and the inner end portion of the key means leaving V-shaped prongs fitting said V-shaped slots.

6. In a firearm having a frame, a firing member supported by said frame so as to move to and from cocked position, a spring within said frame acting on said firing member when in cocked position to urge it to firing position, and trigger means carried by said frame for releasably holding said firing member in cocked position, releasable locking means carried by said frame comprising a rotatable locking member movable into and out of locking engagement with the firing member upon rotation of said locking member, and key means having an inner end portion engageable with and disengageable from the outer end of the rotatable locking member, the outer end of said locking member having a plurality of spaced recesses and the inner end of the key having com-

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plementary projecting portions, the outer end of the locking member between the recesses being substantially flush with the remaining outer end portions to exclude from the recesses objects having transverse blade portions extending substantially perpendicular to the axis of rotation of the locking member.

7. A firearm as set forth in claim 6, wherein a rotatable key guide is disposed adjacent the outer end of the rotatable locking member, said guide having an outer end wall and an aperture therein through which the inner end of the key extends to engage the end of the rotatable member.

8. A firearm as set forth in claim 6, wherein the outer end portion of the rotatable member is formed with V-shaped slots and the inner end of said key means is formed with V-shaped prongs complementary to said V-shaped slots.

9. A firearm as set forth in claim 6, wherein the outer end portion of the rotatable member is formed with V-shaped slots and the inner end of said key means is formed with V-shaped prongs complementary to said V-shaped slots, and a rotatable key guiding means adjacent the outer end of the rotatable member, said guiding means having an outer end wall and an aperture therein through which the inner end of the key extends to engage the outer end of the rotatable member.

10. In a firearm having a frame, a firing member supported by said frame so as to move to and from cocked position, a spring within said frame acting on said firing member when in cocked position to urge it to firing position, and trigger means carried by said frame for releasably holding said firing member in cocked position, releasable locking means carried by said frame comprising a threaded locking member movable toward and away from said firing member, the locking means being engageable with said firing member so as to hold it in a position such that it cannot fire, and key means having an inner end portion engageable with and disengageable from the outer end portion of said threaded member for turning it to and from locking position, the outer end portion of said locking member having a radially extending slot having a bottom oblique to the end of the member, and the inner end of the key having an oblique end portion to fit the slot in the outer end of the locking member.

11. In a firearm having a frame, firing means including a firing member movable within the frame when the gun is fired and a trigger in control of the firing means, releasable locking means for positively obstructing movement of the firing means against operative displacement when the locking means is in locking position comprising a rotatable threaded locking member within the frame and movable toward and away from locking engage-

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ment with the firing means, an aperture in the frame coaxially disposed with relation to the outer end portion of the locking member, and actuating means for rotating the locking member into and out of positive locking engagement with the firing means comprising a key operative through the aperture in the frame to engage the outer end of the threaded member, said actuating means having provision for preventing operation of the locking member from outside the gun by a bladed member having a straight blade end perpendicular to the axis of rotation of the locking member.

12. In a firearm having a frame, a firing member supported by said frame so as to move to and from cocked position, a spring within said frame acting on said firing member when in cocked position to urge it to firing position, and trigger means carried by said frame for releasably holding said firing member in cocked position, releasable locking means for said firing member comprising a threaded locking member carried by the firearm frame and movable toward and away from said firing member, the locking member having an inner end portion engageable with the firing member to lock said firing member against firing movement, a key guide disposed in rotatable coaxial relation to the threaded locking member outwardly of the outer end of said member, a key passage through the key guide, and key means insertable through said passage and engageable with the outer end portion of the threaded member for rotating said member into and out of locking engagement with the firing member.

13. A firearm as set forth in claim 12 wherein the locking member has a conically-shaped inner end portion.

14. A firearm as set forth in claim 12 wherein the locking member has a steep pitch thread so that approximately a single rotation of the locking member is sufficient to move the locking member between locking and release position.

15. A firearm as set forth in claim 12 where the threaded engagement of the locking member with the firearm frame is provided by a pin disposed in the frame generally transverse to the axis of rotation of the locking member and intersecting the thread groove thereof.

16. A firearm as set forth in claim 12 wherein the rotatable key guide is rotatably positioned in the firearm frame by a pin disposed in the frame generally transverse to the axis of rotation of the key guide and intersecting a peripheral groove surrounding said guide.

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20,373 Austria ----- June 10, 1905

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,945,316

July 19, 1960

Lester F. Mulno

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 60, for "leaving" read -- having --.

Signed and sealed this 27th day of December 1960.

(SEAL)

Attest:
KARL H. AXLINE

Attesting Officer

ROBERT C. WATSON
Commissioner of Patents

UNITED STATES PATENT OFFICE
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