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Angell et al.

[54] DUAL PROTECTION SAFETY DEVICE FOR SEMI-AUTOMATIC PISTOL

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[57] ABSTRACT

A semi-automatic pistol having a manually-operated safety device affording dual protection whereby, should the standard safety mechanism fail, a secondary safety mechanism acts to prevent firing. The safety device is constituted by a lever pivotally mounted on the receiver of the pistol and cooperating in its operative position with a standard safety mechanism adapted to lock the striker to prevent accidental firing. To afford additional security, the lever is also adapted to cooperate with a safety block assembly having a block which is movable within a recess in the pistol slide communicating with the striker tunnel in a direction transverse to the longitudinal axis of the tunnel. The block in the operative position of the safety lever is disposed to obstruct the tunnel passage, the block being clear of the tunnel in the retracted position of the lever.

4 Claims, 8 Drawing Figures
DUAL PROTECTION SAFETY DEVICE FOR SEMI-AUTOMATIC PISTOL

BACKGROUND OF THE INVENTION

This invention relates generally to automatic pistols, and in particular to a manual safety device for a pistol affording dual protection to prevent improper firing of the weapon.

The term "pistol" denotes the smallest type of firearm, a type adapted to be fired from one hand. The sole concern of the present invention is with the semi-automatic or self-loading pistol, which is a pistol so arranged and constructed that when the chamber and magazine are loaded and the trigger is pressed, the following actions take place in sequence: First, the cartridge in the chamber is fired; second, the fired cartridge case is ejected; third, the firing mechanism is cocked in readiness for the next shot; and finally, a cartridge from the magazine is loaded into the chamber in position for firing, such that when the trigger is again pressed the cycle is repeated.

During rearward movement of the breech mechanism, which is effected by recoil, a disconnecting unit is automatically forced down to break the connection between the sear which holds the hammer or striker at full cock, and the trigger bar. This principle prevents the firing of more than one shot for each pull of the trigger, since the trigger must be released to permit springs to force the connecting trigger bar into position to release the sear for the next shot.

In semi-automatic pistols, such as those of the Browning type, a manual safety device is provided in the form of a thumbpiece-operated lever so mounted on the receiver that pushing the lever turns a cutaway pin to lock the hammer or striker, and sometimes the sear as well.

The problem with existing manual safeties is that the safety pin cannot be relied on to ensure a positive locking action, particularly if the pin is bent or otherwise distorted with continued use. This creates a hazardous condition which may result in accidental firing.

SUMMARY OF THE INVENTION

In view of the foregoing, it is the main object of this invention to provide a dual-protection safety device for an automatic pistol, the device affording an additional measure of security should the standard safety mechanism fail.

Though the invention will be described in conjunction with a standard Browning automatic pistol, it is to be understood that it is also applicable to a Colt and other types of automatic pistols having thumbpiece-operated levers for actuating a safety mechanism by standard "Browning," "Colt" and other automatic pistols having thumbpiece-operated levers for activating a safety mechanism, is meant pistols of this type as described in reference works on pistols such as the "The Book of Pistols and Revolvers" by W.H.B. Smith, published by W. Miillang, Service Division, the Stackpole Company.

More specifically, it is an object of the invention to provide a dual-protection safety device which retains the existing safety mechanism of the automatic pistol and adds thereto a supplemental safety mechanism to prevent firing upon failure of the existing mechanism.

A significant feature of the invention as applied to a Browning or similar types of commercially available automatic pistols, is that it involves a relatively minor modification of the pistol design whereby the additional safety feature may be introduced without difficulty and at low cost.

Briefly stated, these objects are attained in an automatic pistol having a slide whose rear end houses a striker firing mechanism including a spring-biased striker which, when released, travels through a striker tunnel to impinge on the cap of a cartridge contained in the pistol chamber.

Also provided is a safety device including a pivoted lever which when manually pushed into its operative position, actuates a standard safety mechanism such as that constituted by a cutaway pin adapted to lock the striker. To afford additional security, a supplemental safety mechanism is provided in the form of a safety block assembly having a spring-biased block which is movable within a slide recess communicating with the striker tunnel in a direction transverse to the longitudinal axis of the tunnel, the block having an actuating arm extending therefrom which is engageable by a projection formed on the lever, whereby in the retracted position of the lever, the block is urged by its associated spring to assume a position clearing said tunnel, and in the operative position of the lever, the block is disposed to obstruct the tunnel passage to prevent the striker from engaging the cartridge.

OUTLINE OF THE DRAWING

For a better understanding of the invention as well as other objects and further features thereof, reference is made to the following detailed description to be read in conjunction with the accompanying drawings, wherein:

FIG. 1 is an elevational view of an automatic pistol including a dual-protection manual safety device in accordance with the invention, the safety lever being shown in the raised or operative state;

FIG. 2 is the same as FIG. 1, but with the safety lever shown in the retracted state;

FIG. 3 is a transverse section taken through the plane indicated by line 3—3 in FIG. 1;

FIG. 4 is the same as FIG. 3, except that is shows the safety lever in the retracted state;

FIG. 5 is a longitudinal section taken in the plane indicated by line 5—5 in FIG. 1, with the striker retracted;

FIG. 6 is the same as FIG. 5, but with the striker part way down the striker tunnel;

FIG. 7 is a perspective and exploded view showing the internal mechanism of the pistol and the safety device in accordance with the invention; and

FIG. 8 is a separate perspective view of the safety block assembly in accordance with the invention.

DESCRIPTION OF THE INVENTION

Referring now to FIGS. 1 and 2, there is shown a self-loading or semi-automatic pistol of the Browning type, having a frame or receiver 10 provided with guides adapted to support a slide 11. A sight 12 is formed on the nose of the slide. A trigger 13 is pivotally mounted within a trigger guard 14.

A removable magazine containing cartridges is insertable in an internal magazine well 15 within the hollow handle 16. In the magazine, the cartridges are placed one on top of the other upon a follower, below
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which is a zig-zag spring resting on the magazine bot-
tom.

The rear end of slide 11 forms the breech-block and
houses the extractor and the striker firing mechanism. As
best seen in FIG. 7, the firing mechanism includes
a striker 17, from which a striker pin 18 projects axi-
ally, the striker being engaged by one end of a helical
main spring 19 whose other end is secured to a spring
guide 20 receivable in a socket 21.

When a loaded magazine is inserted in the handle
of the pistol, drawing the slide back to the rear will force
down the disconnector inside the receiver to positively
disconnect the firing mechanism from the trigger.
Spring 19 is compressed as the slide 11 is brought back
and a projection or tail 17A is caught and held by the
rear 22. When the safety device is retracted, pulling of
the trigger effects disengagement of rear 22, releasing
the striker which travels through the striker tunnel 23
in the slide until the striker pin 18 engages the cap of
a cartridge 24 placed in the pistol chamber 25 (See
FIG. 5).

The nature of the disconnector forms no part of
the present invention. The function of the disconnector
is to prevent firing more than one shot for each pull of
the trigger. In the Browning disconnector design, a bar
mounted with the rear rises so that when the slide is
fully home, the top of the disconnector seats in a cut on
the underside of the slide, and when so seated, the rear
is in contact with the trigger bar. Any opening move-
ment of the slide causes it to ride over the projecting
head on the disconnector, thrusting it down against its
spring pressure and breaking the connection between
trigger bar and rear.

The safety device for the automatic pistol is consti-
tuted by a lever 26, one end of which is provided with
a thumbpiece 27, the other end being pivoted by a pin
28 to the receiver. When the safety lever is pushed up
to occupy a horizontal position along the receiver, as
shown in FIG. 1, this action operates a standard safety
mechanism such as a cutaway pin (not shown) adapted
when actuated, to lock the striker to prevent it from
travelling down the striker tunnel.

The nature of the standard locking mechanism oper-
ating in conjunction with the safety lever to lock the
striker or the rear, is not the concern of the present
invention, which is applicable to any existing manual
safety device and serves to provide an added measure of
protection.

As best seen in FIGS. 3 and 4, the auxiliary safety
mechanism in accordance with the invention, is consti-
tuted by a block assembly movable and disposed in a re-
cess or cavity 29, which is cut in slide 11 and communi-
cates with the striker tunnel 23 therein.

The block assembly is formed by a cylindrical block
30 having a pin 31 projecting upwardly therefrom. Sur-
rounding the pin within a tubular cavity 33 is a spring
32. When spring 32 is compressed, the tip of pin 31
projects through the upper surface of slide 11 to pro-
vide an indication that the auxiliary safety is in its oper-
ative state, and when the pin is hidden within the slide
this signifies that the safety mechanism is retracted and
the pistol may be fired.

Safety block 30 is provided with an offset and down-
wardly extending actuator arm 34 whose lowermost
end is engageable by a tab 35 projecting from the upper
ege of safety lever 26 at a point adjacent thumbpiece
27 (See FIG. 7).

When lever 26 is in its retracted position and tab 35
is disengaged from actuator arm 34, spring 32 acts to
urge safety block 30 to a position clearing striker tun-
nel 23 (See FIG. 4), in which event when the trigger is
pulled, the striker is able to travel the full distance in
the striker tunnel and to strike the cartridge in the
chamber to fire the pistol.

But when lever 26 is raised to assume its operative
state, tab 35 engages actuator arm 34 to press block 30
upwardly against the pressure of spring 32, until a point
is reached where, as shown in FIGS. 3, 5 and 6, the
edge of block 30 protrudes into striker tunnel 23.

In the event one then attempts to fire the pistol with
the safety on, when the trigger is pulled, near 22 will
lower to release the tail 17A of striker 17 and should
the main safety mechanism fail to hold striker 17, the
striker will, as shown in FIG. 6, be released and travel
down the striker tunnel until it is intercepted by safety
block 30 acting to prevent striker pin 18 from engaging
the cartridge in the chamber.

Thus the auxiliary safety mechanism affords an addi-
tional measure of security preventing accidental firing
of the automatic pistol. Or

While there has been shown and described a pre-
ferred embodiment of safety device for semi-automatic
pistols in accordance with the invention, it will be ap-
preciated that many changes and modifications may be
made therein without, however, departing from the es-
sential spirit of the invention. For example, the inven-
tion is also applicable to a semi-automatic, hammer-
-fired pistol provided with an inertia-type firing pin that
is driven down a firing tunnel when the fully cocked
hammer is released. In a pistol of this hammer-fired
type, a safety block in accordance with the invention is
so arranged that when the safety is operative, the block
is received within a notch in the firing pin to prevent
movement thereof. Of the block may be so positioned
in the firing tunnel as to prevent the pin from complet-
ing its forward motion therethrough. The safety is
spring-biased and the pistol is so designed, so that when
the hammer is half or fully cocked, the safety falls into
its operative position, and when the trigger is pulled,
the safety block is retracted concurrently with the re-
lease of the hammer.

I claim:

1. In an automatic pistol having a receiver and a slide
thereon, said slide housing a striker firing mechanism
including a spring-biased striker having a firing pin pro-
jecting axially therefrom which when released, travels
through a striker tunnel in the slide to cause the pin to
impinge on the cap of a cartridge contained in the pis-
tol chamber, a dual-protection safety device compris-
ing:

A. A lever pivotally mounted on the receiver and
manually shiftable from a lowered retracted posi-
tion to a raised operative position.

B. A standard safety mechanism actuated by the lever
in the operative position to lock the striker, and an
auxiliary safety mechanism also actuated by the
lever and including a safety block assembly mov-
ably disposed within a recess in the slide communi-
cating with said striker tunnel, said safety block as-
sembly being provided with a block having a down-
wardly extending arm whose lowermost edge is en-
gageable by the upper edge of said lever, which
block in the operative position of the lever, is
casted to assume a position in said recess protrud-
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ing into said tunnel to obstruct the passage of the released striker, and to intercept the forward end of the released striker before the striker pin can impinge on said cap, and in the retracted position of said lever, assumes a position clearing said tunnel.
2. A safety device as set forth in claim 1, wherein said lever is provided with a thumbpiece to facilitate manual shifting thereof.
3. A safety device as set forth in claim 1, wherein said safety block assembly includes a pin mounted above said block and a spring surrounding said pin to urge said block to said clearing position.
4. A safety device as set forth in claim 3, wherein said pin passes through a bore in said slide, the tip of said pin extending out of the bore in the operative position of the lever to indicate this state.