

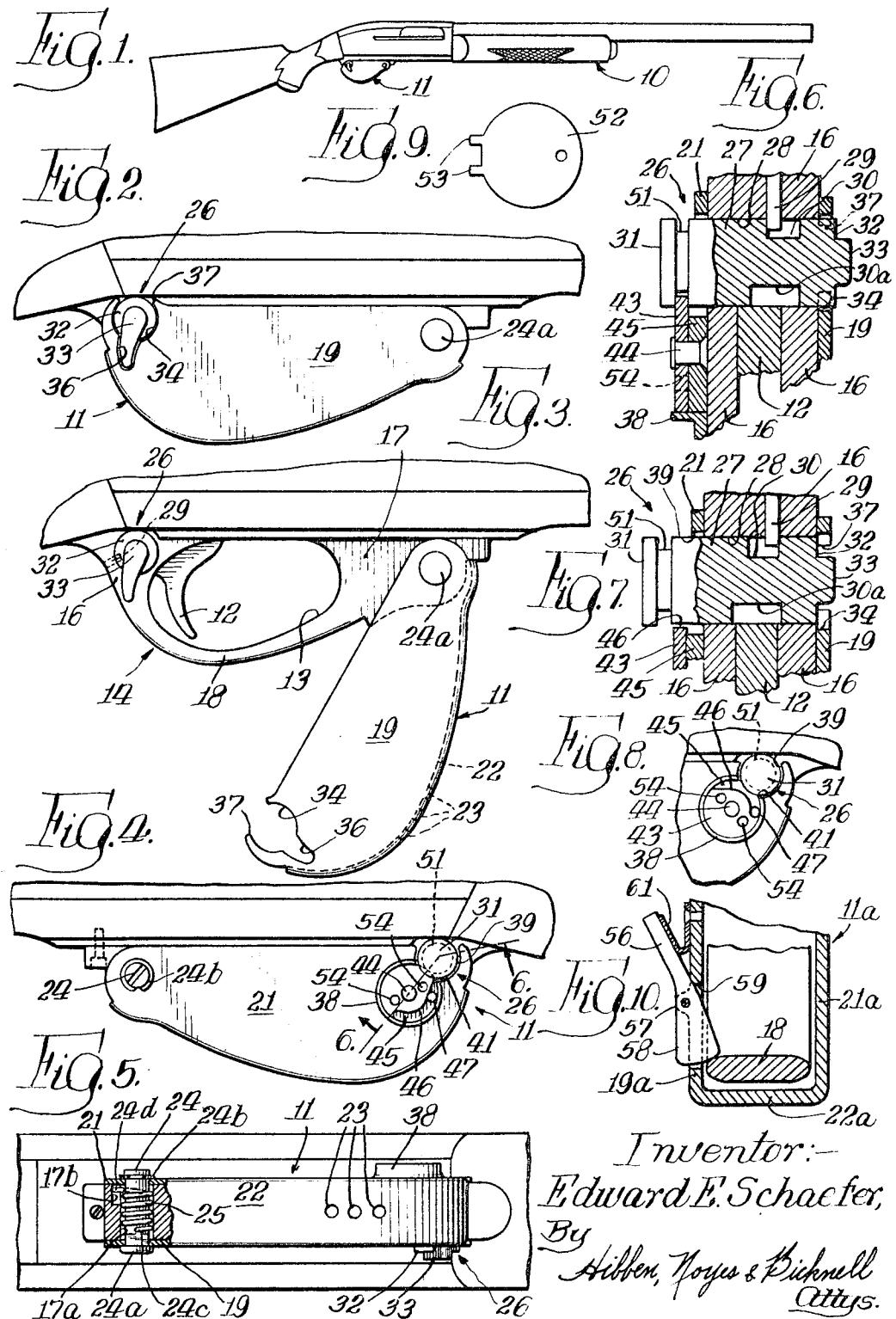
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TRIGGER SHIELD FOR FIREARMS

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TRIGGER SHIELD FOR FIREARMS

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This invention relates to an improved trigger shield for firearms, particularly rifles and shotguns. More particularly, the invention relates to an improved shield of the type which completely encloses the conventional trigger guard so as to render the trigger inaccessible but which can be opened instantly and conveniently to expose the trigger for normal use of the gun.

Firearms, such as rifles and shotguns, are ordinarily provided with a "safety" which renders the trigger inoperable and prevents firing of the gun. However, the safety is manually movable between "on" and "off" positions so that when the user desires to fire he must first shift the safety to "off" position and then pull the trigger. Proper regard for safe hunting and shooting practice demands that the safety be left in the "on" position at all times except at the instant just prior to firing of the gun.

Because of the extra operation involved in manipulating the safety and because of the conscious effort and self-discipline required to make proper use of the safety, it is well-known that some careless hunters and sportsmen are in the habit of leaving the safety in the "off" position while in the field so that they can shoot more quickly. Many accidents have been caused by this improper practice. However, one reason that some hunters will follow this careless practice is because the usual safety is a rather inconspicuous device. Consequently, it is not readily apparent to other hunters in the vicinity that a particular individual is violating accepted safe practice by deactivating the safety of his gun. The ordinary safety on a rifle or shotgun also has the further disadvantage that there is no simple means available for locking the safety in "on" position so that the gun can be handled or left exposed without danger of it being accidentally fired.

Accordingly, a primary object of the present invention is to provide a novel and improved trigger shield for a gun which is adapted to enclose the trigger guard of the gun and render the trigger inaccessible but which can be opened instantly and conveniently to expose the trigger when desired.

A further object of the invention is to provide a trigger shield of the foregoing character which when in open position provides a readily visible indication and warning to others in the vicinity that the gun is in condition to be fired, either intentionally or accidentally.

Another object of the invention is to provide a novel and improved spring-actuated trigger shield for firearms which is adapted to be opened rapidly and with a minimum of effort and inconvenience.

An additional object of the invention is to provide a trigger shield for a gun which normally encloses the trigger guard and trigger of the gun but which is arranged so that the user's trigger finger can effect opening of the shield and firing of the gun rapid succession.

Still another object of the invention is to provide in a firearm a novel combination of a safety and a trigger

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shield such that release of the safety to render the trigger operable also causes simultaneous opening of the shield to expose the trigger.

Other objects and advantages of the invention will become apparent from the subsequent detailed description taken in conjunction with the accompanying drawing, wherein:

FIG. 1 is a reduced scale side-elevational view of a shotgun equipped with a novel trigger shield comprising one specific embodiment of the present invention;

FIG. 2 is an enlarged side-elevational view of the trigger shield portion of the gun shown in FIG. 1, the trigger shield being in closed position;

FIG. 3 is a view similar to FIG. 2 with the trigger shield in open position;

FIG. 4 is an enlarged side-elevational view similar to FIG. 2 but as seen from the opposite side of the gun and showing a novel lock means in locked position;

FIG. 5 is a bottom plan view of the structure shown in FIG. 4, portions of the device being broken away to reveal internal structural details;

FIG. 6 is an enlarged fragmentary sectional view as taken along the irregular line 6—6 of FIG. 4 and showing the safety of the gun in "on" position;

FIG. 7 is a sectional view similar to FIG. 6 but showing the safety in "off" position;

FIG. 8 is a fragmentary side-elevational view similar to FIG. 4 but showing the lock means in unlocked position;

FIG. 9 is a side-elevational view of a key for use in manipulating the lock means; and

FIG. 10 is a fragmentary vertical sectional view through the trigger guard of the gun and showing another embodiment of the invention.

Referring to the drawing, FIG. 1 shows a gun 10 equipped with a safety shield 11 comprising a preferred embodiment of the invention, the shield 11 being shown in closed position completely enclosing the trigger guard so as to prevent access to the trigger of the gun.

As best seen in FIG. 3, the gun 10 has a depending trigger 12 which extends into the generally oval-shaped transverse opening 13 of a conventional trigger guard 14. The trigger guard 14 is rigidly secured to the underside of the gun 10 and has a rear portion 16 closely spaced from the rear of the trigger 12 and a forward portion 17 spaced a somewhat greater distance from the front of the trigger 12. The front portion 17 and the rear portion 16 are integrally connected by a smoothly curved thin connecting portion 18.

The shield 11 comprises a generally trough-shaped housing having spaced parallel side walls 19 and 21 integrally connected along their bottom edges by a transverse bottom wall 22, the latter having a plurality of drainage openings 23 to prevent accumulation of water in the event the gun is exposed to rain or snow. The shield 11 has a configuration conforming generally to the external shape of the trigger guard 14, and the top of the shield is open so that the shield can fit closely around the trigger guard in completely enclosing relation as seen in FIGS. 1, 2 and 4.

The shield 11 is movably mounted on the gun 10, preferably by means of a pivotal support. Thus, as best seen in FIG. 5, the forward end of the shield 11 is pivotally connected to the trigger guard 14 by means of a pivot

pin 24 extending through aligned openings in the shield walls 19-21 and through a bore 17a in the forward portion 17 of the trigger guard. The pivot pin 24 has an enlarged head portion 24a engaging the shield wall 19, and the pin 24 is retained in rigid relation with the shield 11 by means of spring ring or clip 24b seated in a groove in the opposite end of the pin and engaging the shield wall 21. The shield 11 is thereby mounted for swinging movement between a rearwardly pivoted closed position (FIGS. 1, 2, 4, and 5) in which the shield encloses the trigger guard 14 to prevent access to the trigger 12 and a forwardly pivoted open position (FIG. 3) in which the trigger guard and trigger are exposed, the pin 24 being rotatable in the bore 17a.

An important aspect of the invention is that the pivotally supported shield 11 is normally biased toward its open FIG. 3 position, preferably by means of a suitable spring arrangement. Thus, as seen in FIG. 5, a coil spring 25 encircles the pivot pin 24 with one end of the spring projecting into an aperture in the pin 24, as at 24c, for anchoring the spring to the pivot pin and the other end of the spring extending into a slot 17b in the trigger guard. The spring 25 thus operatively coacts between the shield 11 and the trigger guard 14 to urge the shield toward open position. The invention further contemplates a manually releasable retainer or catch which, in the preferred embodiment of the invention, is mounted adjacent the rear of the trigger guard for cooperation with the rear end of the shield so as to retain the latter in closed position. When the user desires to activate the gun for firing, the retainer is released and the spring-loaded shield moves automatically to its open position so that the trigger of the gun is quickly accessible. Preferably, the retainer for the shield is arranged so as to be accessible from the side of the gun so that the user's trigger finger can move conveniently from the release to the trigger in rapid succession.

Although the invention in its broadest aspect is not so limited, in the preferred embodiment of the invention herein illustrated the releasable retainer is combined with the conventional safety of the gun so that when the user releases the safety the trigger is rendered operable and, simultaneously therewith, the spring-loaded shield swings to open position.

Thus, the gun 10 is provided with a safety 26 of a familiar type comprising a shiftable plunger 27 mounted for limited axial movement in a bore 28 (FIG. 6 and 7) extending transversely through the rear portion 16 of the trigger guard 14 closely adjacent the trigger 12. A retainer pin 29 is rigidly mounted in the rear trigger guard portion 16 and extends into a groove 30 in the plunger 27 for limiting axial movement of the plunger. The plunger 27 also has another groove 30a which is wide enough to receive the upper portion of the trigger 12. The opposite ends, indicated at 31 and 32, of the plunger 27 are accessible from the opposite sides of the trigger guard 14 so as to be manually operable in a rapid and convenient manner well understood by those familiar with firearms.

When the plunger 27 is shifted to its extreme right position (as viewed in FIG. 6) by manual pressure against the plunger end 31, the groove 30a is out of register with the trigger 12 so that a portion of the plunger barrel to the left of the groove 30a overlies the path of movement of the trigger 12 and blocks the trigger. However, when the safety is released by shifting the plunger 27 to its extreme left position (FIG. 7) by manual pressure on the plunger end 32, the groove 30a is moved into alignment with the trigger 12 so that there is no obstruction to movement of the trigger. To facilitate rapid release of the safety, the plunger end 32 in this instance is provided with an elongated depending portion or extension 33 having a substantially tear-drop shape, thereby affording a finger piece of greater area for quick finger contact. As will be noted from FIGS. 6 and 7, an end wall of the groove 30 abuts the rigid pin 29 in each of the ex-

treme positions of the plunger 27, thereby preventing the plunger from being displaced from the bore 28 and also accurately positioning the groove 30a with respect to the trigger 12.

In accordance with the present invention, the plunger 27 of the safety 26 also functions as a retainer for the shield 11. For this purpose, the upper edge of the side wall 19 of the shield 11 is formed with a substantially circular cut-out or slot 34 large enough to receive the plunger 27 and having a depending narrow portion 36 to receive the extension or finger piece 33. The slot 34 has an inlet or entrance 37 which is narrower than the diameter of the plunger 27 so that the plunger can enter the slot 34 only axially and not radially through the entrance 37.

To retain the shield 11 in closed position, the shield is pivoted rearwardly against the action of the spring while the safety 26 is in its "off" position (FIG. 7) with the plunger 27 shifted away from the shield wall 19. In this position of the safety, when the shield 11 is pivoted rearwardly, the finger piece or extension 33 enters the slot inlet 37 and is readily received in the slot 34 and its depending portion 36 so that the shield is in fully closed position with the slot 34 in alignment with the plunger 27. While holding the shield closed, the user then places the safety in "on" position (FIG. 6) by manually shifting the plunger 27 toward the shield wall 19 so as to project the plunger through the aligned circular slot 34. The upper portions of the wall 19 adjacent the restricted slot entrance 37 now overlie and engage the plunger 27 so as to retain the shield 11 in closed position against the action of the spring. Thus, the safety 26 when in "on" position not only renders the trigger 12 inoperable but also retains the shield 11 in closed position.

When the user desires to fire the gun, finger pressure against the finger piece 33 shifts the plunger 27 of the safety to "off" position thereby rendering the trigger 12 operative and at the same time displacing the plunger from retaining relation in the slot 34 so that the shield is immediately pivoted to open position by spring action. Thus, the user can move his trigger finger from the safety to the trigger in rapid succession since the safety release is closely adjacent the trigger at the side of the gun. No other manual operation is required to fire the gun except the single uninterrupted movement of the trigger finger to the finger piece 33 and thence to the exposed trigger 12. Since the safety 26 is of a conventional type and is in the conventional location, the provision of the shield 11 does not require any extra or unfamiliar operations by the user in order to fire the gun. The customary release of the safety in the customary manner also opens the shield. Thus, the invention has the important advantage of providing additional safety features without requiring any special training or the learning of new habits in connection with firing the gun.

As an added feature of the invention, the safety 26 is preferably provided with a key-operated lock means which locks the safety in "on" position and also locks the shield in closed position. A suitable lock, as illustrated herein, may conveniently be mounted on the wall 21 of the shield 11. Thus, the wall 21 is formed with an integral outwardly projecting open-ended boss 38 adjacent the rear end of the shield. A substantially semi-circular cut-out or slot 39 is provided in the upper edge of the wall 21 opposite the slot 34 in the wall 19. As seen in FIGS. 4 and 8, the boss 38 and the slot 39 overlap slightly so that there is a communicating opening 41 therebetween. The inlet or entrance to the slot 39 is slightly wider than the maximum diameter of the plunger 27. Consequently, when the shield 11 is pivoted rearwardly to its closed position with the safety "off" (FIG. 7), the projecting portion of the plunger 27 will be received radially in the slot 39.

A thin locking disk 43 is rotatably mounted on a thickened base 45 within the boss 38 by means of a rivet 44. As seen in FIGS. 4 and 8, a portion of the periphery of

the disk 43 is cut away to leave a recessed shoulder 46 which defines, with the exposed surface of the base 45, an irregular groove. A stationary abutment pin 47 projects upwardly from the base 45 and is received in the groove defined by the recessed shoulder 46 and the exposed surface of the base 45. The portion of the plunger 27 adjacent the end 31 is provided with an annular locking groove 51 adapted to receive the edge of the thin disk 43 for preventing axial shifting of the plunger 27.

When the safety is in "on" position (FIG. 6), the groove 51 is in register with the thin disk 43, the coaction of the pin 29 and the end wall of the groove 30 insuring proper registration. By rotation of the disk 43 in a clockwise direction, as seen in FIG. 4, the edge of the thin disk 43 moves through the opening 41 into the aligned groove 51, thereby locking the safety in "on" position as shown in FIG. 6. Since the plunger cannot be shifted as long as the lock means is in the FIG. 6 position, it will be appreciated that the shield 11 cannot be released and is therefore locked in closed position. The stationary abutment pin 47 limits the extent of clockwise rotation of the disk 43 by engagement with an end portion of the recessed shoulder 46, as seen in FIG. 4, thereby insuring proper positioning of the disk 43 in locking relation in the groove 51. When the disk 43 is rotated in a counterclockwise direction, as seen in FIG. 8, the disk 43 is retracted from the groove 51, the extent of rotation of the disk in this direction being limited by abutment of an opposite end portion of the recessed shoulder 46 against the pin 47.

Rotation of the disk 43 is effected by means of a special tool or key 52 (FIG. 9) having a pair of spaced prongs 53 the ends of which are adapted to be inserted in a pair of similarly spaced sockets or openings 54 in the outer surface of the disk 43. To prevent unauthorized manipulation of the lock, the disk 43 is recessed in close-fitting relation within the boss 38 (FIG. 6) so that it is impossible to grasp the edge of the disk to rotate the same. Thus, only the possessor of the special key 52 can lock or unlock the safety of the gun.

FIG. 10 illustrates a modification of the invention in which the pivotally mounted shield is retained in closed position by a releasable catch which is separate from and independent of the conventional safety. In fact, if desired, the usual safety may be entirely omitted. Thus, the shield designed at 11a has side walls 19a and 21a and a bottom wall 22a similar to the previous embodiment. On the side wall 19a a detent 56 is mounted by means of a central pivot 57. The lower end of the detent 56 comprises a locking portion 58 which is urged inwardly through a slot 59 in the wall 19a by means of a spring 61 secured to the wall 19a and coacting with the upper end of the detent 56. When the shield 11a, which may be pivotally mounted and spring loaded in a manner similar to that previously described, is moved toward closed position, the locking portion 58 of the detent 56 is cammed outwardly by the trigger guard portion 18 and then snaps inwardly to overlie the trigger guard, thereby holding the shield 11a in closed position. To release the shield, the user presses the upper end of the detent 56 against the action of the spring 61 to retract the locking portion 58 from the slot 59.

As will readily be understood, the FIG. 10 form of the invention is particularly advantageous where the trigger shield is to be sold as an accessory for installation on the gun by the user rather than in the factory, whereas the previously described embodiment is best suited for factory installation so that the shield is properly coordinated with the safety. In either case, however, once the trigger shield is installed it becomes an integral part of the gun and is not normally removed except possibly for repairs or cleaning.

From the foregoing, it will be understood that the invention provides a novel and improved trigger shield which, by means of the disclosed spring loading arrange-

ment and the manually releasable catch means, normally prevents access to the trigger of the gun but which can be instantly opened in a convenient manner by the trigger finger of the user. When the shield is open it projects outwardly from the gun in a conspicuous manner, thereby giving visible evidence to others in the vicinity that the user is either about to use the gun or is violating accepted safe practice. Although it is within the broad scope of the invention to use the disclosed trigger shield as a substitute for the conventional trigger-disabling safety, the invention in its preferred form utilizes the trigger shield in combination with a conventional safety which is so arranged as to function as a releasable retainer for the trigger shield. Thus, the usual trigger-disabling function of the safety is retained but is supplemented by the trigger shield which when closed prevents access to the trigger and thereby provides dual protection. Moreover, since the safety release also effects opening of the shield, the conspicuously projecting open shield again provides visible evidence that the safety has been deactivated so as to place the gun in condition for firing, either intentionally or accidentally. Since the releasable retainer for the trigger shield, or preferably the combined release for the safety and the shield, is located closely adjacent the trigger so as to be readily accessible to the trigger finger at the side of the gun, the release can be actuated and the trigger pressed in rapid succession by the trigger finger in a movement which has long been standard and familiar to those experienced in the use of guns.

Although the invention has been described with particular reference to a preferred structural embodiment, it should be understood that various modifications and equivalents may be resorted to without departing from the scope of the invention as defined in the appended claims.

I claim:

1. In combination with a gun having a trigger and a trigger guard, a shield movably mounted on the gun for movement between a closed position in which the shield encloses the trigger guard for preventing access to the trigger and an open position in which the trigger guard and trigger are exposed, biasing means normally urging said shield to said open position, and releasable retainer means for holding said shield in said closed position, whereby said shield is automatically opened by said biasing means in response to release of said retainer means.
2. The combination of claim 1 further characterized in that said retainer means is mounted on said gun with a portion thereof accessible from the side of the gun for release by the trigger finger of the user.
3. In combination with a gun having a trigger and a trigger guard, a shield pivotally mounted forwardly of said trigger for swinging movement between a rearwardly pivoted closed position in which the shield encloses the trigger guard for preventing access to the trigger and a forwardly pivoted open position in which the trigger guard and trigger are exposed, spring means cooperable with said shield for normally urging the latter to said open position, and releasable retainer means cooperable with said shield for holding the same in said closed position, whereby said shield is automatically opened by said spring means in response to release of said retainer means.
4. The combination of claim 3 further characterized in that said retainer means comprises a shiftable element mounted for shifting movement transversely of said trigger guard and having an operating portion accessible from one side of the gun adjacent said trigger, whereby said element can be actuated for releasing said shield by the user's trigger finger and the trigger can thereafter be engaged by the trigger finger in rapid succession.

5. A safety shield mechanism for use with a gun having a trigger and a trigger guard, said mechanism comprising a housing adapted to surround the trigger guard in close-fitting relation, means for movably mounting said housing on the gun for movement between a closed position in which the housing encloses the trigger guard for prevent-

ing access to the trigger and an open position in which the trigger guard and trigger are exposed, biasing means adapted to normally urge said housing to said open position, and releasable retainer means adapted to hold said housing in said closed position, whereby said housing is adapted to be opened automatically by said biasing means in response to release of said retainer means.

6. A safety shield mechanism for use with a gun having a trigger and a trigger guard, said mechanism comprising a housing adapted to surround the trigger guard in close-fitting relation, pivotal mounting means adapted to support said housing on the gun forwardly of the trigger for swinging movement between a rearwardly pivoted closed position in which the housing encloses the trigger guard for preventing access to the trigger and a forwardly pivoted open position in which the trigger guard and trigger are exposed, spring means cooperable with said housing and adapted to normally urge said housing to said open position, and releasable retainer means adapted to cooperate with said housing for holding the same in said closed position, whereby said housing is adapted to be opened automatically by said spring means in response to release of said retainer means.

7. In combination with a gun having a trigger and a transversely open trigger guard including a rear portion at the rear of said trigger and a forward portion disposed in front of said trigger, a shield adapted to surround said trigger guard in close-fitting relation, pivotal mounting means supporting one end of said shield on said forward portion of said trigger guard for swinging movement between a rearwardly pivoted closed position in which said shield encloses said trigger guard for preventing access to the trigger and a forwardly pivoted open position in which said trigger guard and trigger are exposed, spring means coacting between said shield and said forward portion of said trigger guard for normally urging said shield to said open position, and releasable retainer means mounted on said rear portion of said trigger guard and cooperable with the opposite end of said shield for holding said shield in said closed position, whereby said shield is automatically opened by said spring means in response to release of said retainer means, said retainer means comprising a manually shiftable element movable transversely of said trigger guard and having an operating portion accessible to the user's trigger finger at one side of said rear portion of said trigger guard, whereby said element can be actuated for releasing said shield by engagement of the user's trigger finger with said operating portion and said trigger can thereafter be engaged by the trigger finger in rapid succession.

8. The combination of claim 1 further characterized by the provision of key-operated lock means cooperable with said retainer means for rendering the latter inoperative and thereby locking said shield in said closed position.

9. The combination of claim 4 further characterized by the provision of key-operated lock means cooperable with said shiftable element at the opposite side of the gun for rendering said shiftable element inoperative and thereby locking said shield in said closed position.

10. The combination of claim 7 further characterized in that said operating portion of said element is provided at one end of said shiftable element at said one side of said rear portion of said trigger guard, the opposite end of said shiftable element at the opposite side of said rear portion of said trigger guard is provided with a lock portion, and key-operated lock means is mounted on said opposite side of said rear portion of said trigger guard, said lock means being cooperable with said lock portion of said shiftable element for rendering the latter inoperative and thereby locking said shield in said closed position.

11. In a gun having a trigger, a trigger guard, and a safety movable between one position preventing operation of the trigger and another position permitting operation of the trigger; the improvement which comprises a shield movably mounted on the gun for movement between a

closed position in which the shield encloses the trigger guard for preventing access to the trigger and an open position in which the trigger guard and trigger are exposed, biasing means normally urging said shield to said open position, and means cooperating between said safety and said shield for holding said shield in said closed position when said safety is in said one position, whereby said shield is automatically opened by said biasing means in response to movement of said safety to said other position.

10 12. The device of claim 11 further characterized in that said safety comprises an operating portion disposed at and accessible from one side of the gun adjacent said trigger, whereby the safety is adapted to be moved to said other position by the user's trigger finger and the trigger can thereafter be engaged by the trigger finger in rapid succession.

15 13. In a gun having a trigger, a trigger guard, and a safety movable between one position preventing operation of the trigger and another position permitting operation of the trigger; the improvement which comprises a shield pivotally mounted forwardly of said trigger for swinging movement between a rearwardly pivoted closed position in which the shield encloses the trigger guard for preventing access to the trigger and a forwardly pivoted open position in which the trigger guard and trigger are exposed, spring means coacting with said shield for normally urging the latter to said open position, and means cooperating between said safety and said shield rearwardly of said trigger for holding said shield in said closed position when said safety is in said one position, whereby said shield is automatically opened by said spring means in response to movement of said safety to said other position.

20 14. The device of claim 13 further characterized in that said safety comprises a shiftable element mounted for shifting movement between said one position and said other position transversely of said trigger guard and having an operating portion disposed at and accessible from one side of the gun adjacent said trigger, whereby said element is adapted to be moved to said other position by the user's trigger finger and the trigger can thereafter be engaged by the trigger finger in rapid succession.

25 15. In a gun having a trigger, a trigger guard including a rear portion at the rear of the trigger and a forward portion disposed in front of the trigger, and a safety comprising a manually shiftable element mounted in the rear portion of the trigger guard and movable transversely of said trigger guard between one position preventing operation of the trigger and another position permitting operation of the trigger; the improvement which comprises a shield adapted to surround said trigger guard in close-fitting relation, pivotal mounting means supporting one end of said shield on said forward portion of said trigger guard for swinging movement between a rearwardly pivoted closed position in which said shield encloses said trigger guard for preventing access to the trigger and a forwardly pivoted open position in which said trigger guard and trigger are exposed, spring means coacting between said shield and said forward portion of said trigger guard for normally urging said shield to said open position, and means cooperating between said shiftable element and the opposite end of said shield for holding said shield in said closed position when said shiftable element is in said one position, whereby said shield is automatically opened by said spring means in response to movement of said shiftable element to said other position, one end of said shiftable element being accessible to the user's trigger finger at one side of said rear portion of said trigger guard for simultaneously releasing the safety and the shield, and the trigger thereafter being engageable by the trigger finger in rapid succession.

30 16. The device of claim 11 further characterized by the provision of key-operated lock means cooperable with said safety for locking the same in said one position and thereby locking said shield in said closed position.

17. The device of claim 14 further characterized by the provision of key-operated lock means cooperable with said shiftable element at the opposite side of the gun for locking said element in said one position, and thereby locking said shield in said closed position.

18. The device of claim 15 further characterized in that the opposite end of said shiftable element at the opposite side of said rear portion of said trigger guard is provided with a lock portion, and key-operated lock means is

5 mounted on said opposite side of said rear portion of said trigger guard, said lock means being cooperable with said lock portion of said shiftable element for locking the same in said one position and thereby locking said shield in said closed position.

No references cited.

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