Oct. 18, 1949. J. F. BOONE 2,484,928

SAFETY DEVICE FOR GUNS

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Fig. 1.

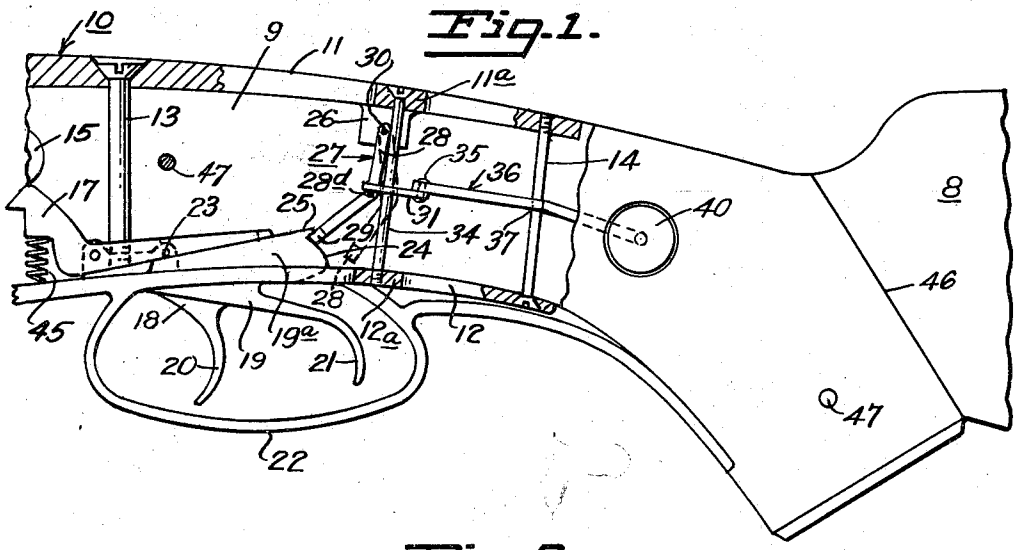


Fig. 2.

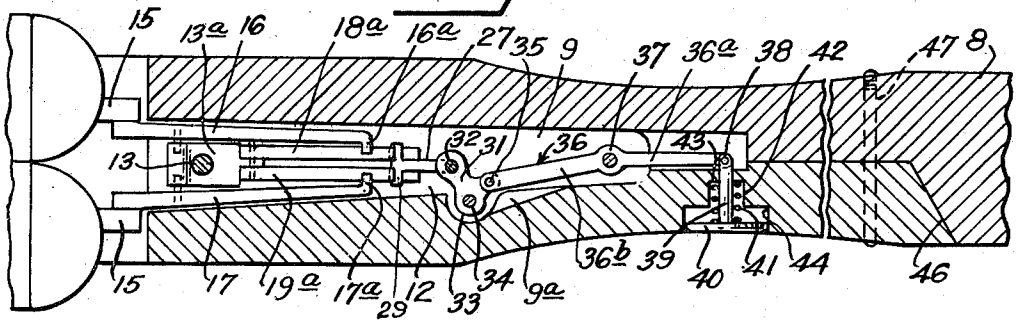


Fig. 3.

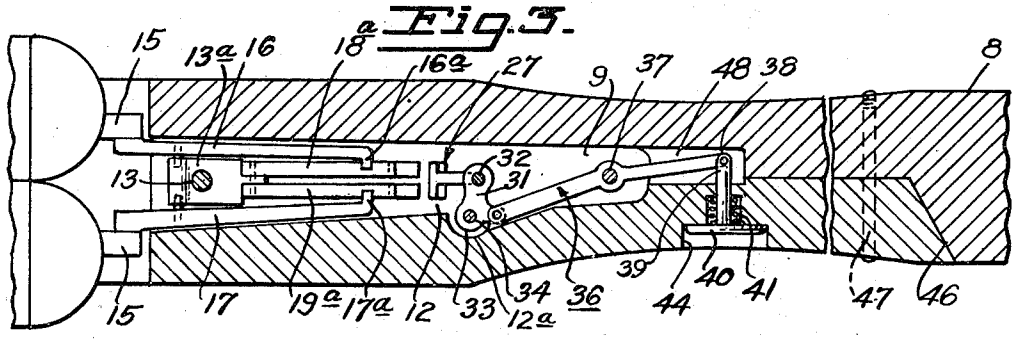
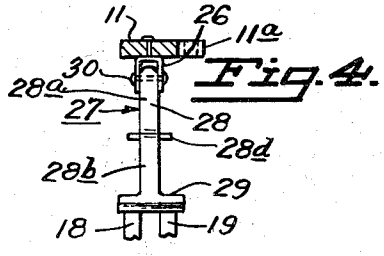


Fig. 4.



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SAFETY DEVICE FOR GUNS

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7 Claims. (Cl. 42—70)

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This invention relates to safety devices for guns and more particularly relates to devices which automatically lock the gun trigger, and are conveniently manually manipulable to release the trigger when the gun is at shoulder firing position.

An object of the invention is to provide a safety locking device for guns whereby the trigger or triggers are automatically normally locked against unintended discharge of the gun at any position, but which may be conveniently manually manipulated to release the trigger lock when the gun is at firing position.

Another object is to provide a device for normally automatically locking the trigger or triggers of the gun, wherein a releasing means is provided on the side of the gun stock for manual operation by the free fingers of the trigger-operating hand in the natural gripping of the gun stock.

A further object is to provide a trigger-locking device of few parts and which is simple and rugged in construction, light in weight, economical in manufacture and readily installed in a gun.

With the foregoing and other objects in view, all of which will be apparent from this specification, the invention consists of an automatic trigger-locking device one form of which is exemplified in the following description and accompanying drawing, it being understood that changes may be made in size, shape, form, material, degree and minor details without departing from the spirit of the invention which is defined in the appended claims.

In the drawing;

Fig. 1 is a fragmentary longitudinal side view of the invention with one wall of stock broken away.

Fig. 2 is a fragmentary longitudinal transverse section of stock and tang structure showing safety device in locking position.

Fig. 3 is a fragmentary longitudinal transverse section of stock and tang structure with safety device in released position.

Fig. 4 is a front view of safety block structure and portions of tang and trigger structures.

In a broad sense, the invention consists in providing an automatically operative lock for the trigger or triggers of a gun and means on the side of the stock rearwardly of the triggers for releasing the lock by manual operation of pressure by a finger of the trigger-operating hand which grasps the gun stock when the gun is at firing position. As herein exemplified, the invention is described and illustrated as applied to a type of gun generally designated as a double barrelled hammerless shotgun.

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Referring to the drawing in which like reference characters indicate corresponding parts in the several views, 8 is a conventional gun stock having a longitudinally hollowed or recessed portion 9 at its forward end to receive therein an elongated structure generally indicated 10 and referred to herein as the tang structure, though also known as a receiver structure in some guns. The tang structure is relatively narrow and its depth is substantially the depth of the stock. At the top of the tang structure is an upper tang plate 11 and at its bottom is a lower tang plate 12, also sometimes called a trigger plate, which plates close the recess 9 at top and bottom and support the tang structure in the stock by forward and rearward tang bolts 13, 14. Within the tang structure are the usual and well known standard mechanisms for operating a double-barrel shotgun, such as hammers 15, sears 16, 17 each with an inturned finger 16a and 17a respectively at the rear end, which fingers overlie and engage the upper surface of that portion of triggers 18, 19, which have elongated plates extending within the tang structure, which for descriptive purposes may be termed trigger plates, 18a and 19a. The triggers have the usual integral depending right or forward and left or rearward trigger hooks 20, 21 within a trigger guard 22.

The portions of the triggers which extend into the tang structure and are termed trigger plates, are elongated, and each is pivotal at its forward end on trigger pin 23 mounted on an upformed lug 13a on the lower tang plate, the lug also serving to receive one end of bolt 13 and the pivot pins for the sears. At the rearward end within the tang structure the trigger plates are chamferred arcuately from near the top to the bottom thereof as at 24 and are provided with a stop member or tooth 25 providing a notch at the extreme upper portion of the chamfer, for purposes hereafter described. Intermediate the ends of the upper tang plate 11 and rearwardly of the triggers, the upper tang plate 11 is provided at its lower face with a depending transversely central bifurcated bracket 26 which provides spaced parallel depending arms having a pivot pin 30 therethrough, for supporting thereon a safety block indicated generally 27. The safety block is generally T-shaped and comprises a shank bar 28 and a crosshead 29. The opposite end portions 28a and 28b of shank 28 are pref-

erably relatively angularly disposed at approximately midlength of the shank. The upper portion 28*a* is provided with an eyelet through which the pivot pin 30 extends whereby the safety block is adapted for pivotal movement thereon. The cross head 29 is spring actuated, as will be further described, to normally bear upon the chamfer 24 at the rear end of the trigger plate portion within the tang structure and thus prevent the triggers from being raised by pressure upon either of the trigger hooks 20, 21.

It is to be understood that the operation of the respective hammers is effected by raising the sears 16 and 17 responsive to upward movement of the respective trigger plates 18, 19 through engagement by the triggers of the inturned sear fingers 16*a*, 17*a*. Since the upward movement of the triggers is responsive to a pulling pressure of the trigger hooks 20, 21, it follows that by thus locking the triggers there can be no operation of the triggers nor of the sears to release the hammers. This is the automatically locked normal position of the triggers and safety block at all times when they are not intentionally released by mechanism hereinafter described.

Means are provided for releasing the locking of the triggers so that the triggers may be manually operated for actuating the hamers to fire the gun, it being understood that both triggers are locked and released simultaneously, though usually the barrels of a gun are fired separately, yet frequently in close succession. Broadly, the releasing means comprises the safety block 27, a train of levers, and spring tensioned press button which is positioned in the outer sidewall of the gun stock which is vertical when the stock is at shoulder position, said button being sufficiently rearwardly of the triggers to be manually engaged by the free fingers of the shooter's trigger-operating hand which pass under the stock and up the vertical side wall thereof. Intermediate its length the safety block shank 28 is engaged by one arm of a relatively substantially perpendicularly disposed bellcrank lever plate 31, the latter having an opening 32 adjacent the free end of one arm for loosely but closely engaging the shank 28 at approximately the angle thereof, so that the bellcrank plate 31 is free to pivotally turn thereon. In assembling the parts it is to be noted that the opening 32 of the bellcrank plate 31 and the upper portion 28*a* of the safety block shank are of suitable size relatively so that the shank end portion 28*a* may be slid through the opening 32. A stationary pin 28*d* may be inserted through the shank to maintain the bellcrank plate against downward slippage.

The bellcrank plate 31 fulcrums with a pivot bearing at its angle of leverage 33 on a vertical pin or bolt 34 which is mounted in the offset lugs 11*a* and 12*a* of the opposite tang plates whereby the pin 34 is offset from the longitudinal center line of the tang structure. An inner side wall of the hollowed-out portion 9 of the gun stock may be recessed as at 9*a* to provide space accommodation for pin 34 and for lateral operation of bellcrank plate 31, as best shown in Fig. 3. The other arm of the bellcrank plate is pivotally connected as at 35 to an elongated lever bar 36 which is pivotally fulcrumed approximately centrally intermediate its ends as at 37 on the rear tang bolt 14. The opposite end of the lever bar 36 is connected for relative pivotal movement, as at 38 to the shank or post 39 of a manually depressible member such as a plunger button 40, the latter being depressible inwardly horizontally

relative to the vertical plane of the stock when at shoulder position, and being tensioned against a coil spring 41 on its shank, the spring and the shank being set in an opening 42 provided therefor in the sidewall of the stock, the spring having footing on a shoulder of said openings as at 43. The head of the button 40 is countersunk in a recess 44 so that, when the safety block is at normal position in locking relation to the trigger, the top of the button is substantially flush with the outer surface of the side wall of the grip portion of the gun stock, whereby the button will be free from any inadvertent pressure which would release the safety block from locking engagement of the trigger parts.

The spring 41 tensions the button and the rear end 36*a* of lever bar 36 outwardly, and at such position of the button, it will be noted that the forward end 36*b* of lever bar 36 is fulcrumed inwardly at the bellcrank connection 35 towards the longitudinal center line of the stock, so that the point of pivotal connection of the bellcrank to the shank 28 of the safety block is at a forward position, with the cross head end portion 29 bearing in the notch on the arcuate chamfer 24 of the trigger plates 18, 19 and with the stop or tooth 25 preventing the safety block from overriding the upper end of the chamfer. This is the normal locked position referred to above.

When the gun is in firing position, which is usually at the shooter's shoulder, with the trigger-operating hand gripping the pistol grip portion closely rearwardly of the trigger guard 22 and the trigger finger is on a trigger hook, the second or third finger of the hand will normally and naturally pass under the pistol grip rearwardly adjacent the trigger guard and be positioned on the outer surface of the button 40, so that, at that position, the normal and natural firm grip of the hand on the stock when steadying the gun for firing, exerts pressure of said finger on the button inwardly at the time when the triggers are to be pulled. The purpose of the invention being to provide a release for trigger-locking means operable by the free fingers which normally pass under the pistol grip portion of the stock, the depressible button member 40 is positioned in the side wall of the stock which is vertical when the gun is at shoulder position and is sufficiently adjacent to the bottom of the stock to be reached by the free fingers which pass under the stock. The spring tensioned inward movement of the button presses the rear end 36*a* of lever 36 inwardly and thereby fulcrums the forward end 36*b* outwardly, whereby the bellcrank plate 31, due to its aforesaid pivoted point 33, pulls the crosshead 29 of the safety block rearwardly free of the trigger plates to the position shown in dotted lines in Fig. 1, whereupon the trigger may be freely operated. If, in concentrating on the target, or excitement in firing, the button should not be fully pressed to its seat to completely release the block from engagement with the trigger plate, the raising of the arc of the chamfer 24 will push the safety block back and clear of the trigger plate as soon as button 40 is depressed sufficient to release the safety block for its notch seat and the safety block passes the maximum height of the arc. Upon release of the finger pressure from button 40, the tension of spring 41 is immediately effective to return the safety block to its locked position in engagement with the triggers. Thus, at all times when the button 40 is not pushed inwardly, the triggers are automatically locked against unintended discharge of the gun.

The triggers themselves have downward spring-actuated pressure responsive to the spring tensioned sears bearing upon them, such as by sear spring **45**, enabling the chamfer at the rear end of the trigger plates to facilitate the movement of the safety block to regain its position seated in the notch back of the stop member **25** for locking the trigger, regardless of whether the trigger or the button **40** is released first after discharging the gun. At such time, if the pressure on the button should be eased before the release of pressure on the trigger, that is, while a trigger plate still remains raised, the crosshead end of the safety block will abut the rear end of the trigger plate, and due to the arcuate chamfer, will automatically ride smoothly to its seat on the trigger plate upon lowering of the trigger by release of finger pressure on the trigger hook, the stop **25** preventing any override. Release of the trigger prior to the release of the button lowers the trigger plate and permits the safety block to ride up the chamfer to its normal seat without obstruction.

To facilitate mounting of the apparatus in the stock and frame of the tang it is desirable that the forward end of the stock be divided longitudinally midway resulting in a removable section rearwardly to the end of the pistol grip portion indicated at **46**. The stock pieces are closely and nicely fitted and may be replaced and firmly held by threaded bolts **47**. Also, since the rear end **36***a* of lever **36** and the connection **38** of the button shank thereto will be rearwardly of the usual length of the tank structure, an additional length of longitudinal recess indicated **48** is provided in the stock approximately midway between the upper and lower tang plates, and of sufficient diameter to permit the reciprocation of the rearward end of lever **36**.

The invention is not limited to operation by a press button **40** on the specific side of the stock as shown in the drawing, since it is obvious that by transposing the necessary parts to the opposite side of the center line of the tang structure, the same operation could be accomplished by a press button on the opposite side of the stock.

It is also to be understood that the mechanism described herein would be adaptable to a single trigger gun by merely making the crossbar **29** of lesser width.

Having thus described the invention, I claim:

1. In a safety device for guns, the combination of a gun stock and a tang structure inserted thereinto, a gun trigger having a plate portion extending within the tang structure, a safety block for engaging said plate portion of the trigger, means for automatically moving the safety block into engagement with the trigger plate to lock the trigger against movement, and means for releasing the safety block from engagement with the trigger, said last mentioned means including a manually depressible member on the outer sidewall of the stock rearwardly of the trigger, and sufficiently close to the bottom of the stock whereby it may be depressed inwardly by a finger of the trigger-engaging hand which passes under the stock rearwardly of the trigger.

2. In a device of the character described, the combination of a gun stock and a tang structure inserted thereinto, a trigger having within the tang structure an elongated plate portion provided with a chamfer at its rear end said chamfer being inclined upwardly and forwardly and terminating at its upper portion in a stop member providing a notched seat for a safety block, a safety block for engaging the notch of the chamfer of the trigger plate, means for automatically moving the safety block into engagement with the chamfer of the trigger to lock the trigger against movement, and spring tensioned means operable from the outer side wall of the stock rearwardly of the trigger for releasing the safety block from such locking engagement, said chamfer and said safety block being cooperatively arranged whereby said safety block is adapted to ride along the chamfer and engage said stop means responsive to said spring tension means.

3. A safety device for guns, comprising the combination of a gun stock and a tang structure inserted thereinto, a trigger having a trigger plate extending into the tang structure and provided with a chamfer at its rear end and a stop member at the upper end of the chamfer providing a notched seat for a safety block, a safety block for engaging the notch of the chamfer of the trigger plate, means for automatically moving the safety block into engagement with the chamfer of the trigger plate to engage said stop means and thereby lock the trigger against movement, and a finger press member operable from the outer side wall of the stock rearwardly of the trigger for releasing the safety block from such locking engagement, said finger press member being spring tensioned for operating horizontally to the vertical plane of the stock when at shoulder position, and being sufficiently adjacent to the bottom of the stock whereby it may be depressed inwardly by a free finger of the trigger-engaging hand which passes under the stock rearwardly of the trigger.

4. In a safety device for guns, a tang structure for insertion into a gun stock, including a trigger having a trigger plate extending into the tang structure and provided with a chamfer at its rear end, a safety block for lockingly engaging the trigger plate, means for automatically moving the safety block into engagement with the chamfer of the trigger plate to lock the trigger against movement, and means including a lever train and a bellcrank for releasing the locking device from locking engagement with the trigger, and a spring tensioned finger press member mounted on the outer side wall of the stock rearwardly of the trigger and depressible horizontally to the vertical plane of the stock for actuating said lever train means, said finger press member being spring tensioned for operating horizontally to the vertical plane of the stock when at shoulder position, and being sufficiently adjacent to the bottom of the stock whereby it may be depressed inwardly by a free finger of the trigger-engaging hand which passes under the stock rearwardly of the trigger.

5. A safety device for guns, comprising the combination of a tang structure for insertion into a gun stock, a gun trigger having a trigger plate extending into the tang structure, a safety block for lockingly engaging the trigger plate, means for automatically moving the safety block into engagement with the trigger plate to lock the trigger against movement, and means for releasing the locking device including a spring-tensioned train of pivotally connected levers, and a finger press member on the outer side wall of the stock rearwardly of the trigger for actuating said lever train, said finger press member being spring tensioned for operating horizontally to the vertical plane of the stock when at shoulder position, and being sufficiently adjacent to the bottom of the stock whereby it may be depressed inwardly by a free finger of the trigger-engaging hand

which passes under the stock rearwardly of the trigger.

6. In a device of the character described, the combination of a gun tang structure for insertion in a gun stock, a trigger having a trigger plate extending into the tang structure, a safety block for the trigger, means for automatically moving the safety block into engagement with the trigger plate to lock the trigger against movement, and means for releasing the locking device including a bellcrank in a spring tensioned train of pivotally connected levers, and a finger press member manually operable from the outer side wall of the stock rearwardly of the trigger for actuating the lever train to release the safety block, one lever being an elongated bar having connection at one end with the finger press member and pivotally fulcrumed intermediate its ends and being connected at its opposite end to one arm of the bellcrank lever, the other arm of the bellcrank lever having connection to the safety block, said bellcrank having pivotal mounting at its leverage angle in offset relation to the longitudinal center line of the tang structure, said finger press member being spring tensioned for operating horizontally to the vertical plane of the stock when at shoulder position, and being sufficiently adjacent to the bottom of the stock whereby it may be depressed inwardly by a free finger of the trigger-engaging hand which passes under the stock rearwardly of the trigger

7. A safety device for guns, comprising the combination of a gun having a recessed stock for receiving therein, a tang structure, a tang structure for insertion into the recess of the stock said tang structure having respective upper and lower tang plates for closing the recess in the stock at top and bottom, and each being provided intermediate the ends thereof with a laterally extending lug overlying and offset from the center line of the tang structure, a pivot bolt mounted between said offset lugs, a gun trigger having a trigger plate extending into the tang structure, a safety block for the trigger pivotally mounted at one of its ends to the tang structure and having its opposite end adapted for lockingly engaging the trigger against movement, and means for releasing the locking device including a train of pivotally connected levers one of which has pivotal mounting on said offset pivot bolt, and a press button operable from the outer side wall of the stock rearwardly of the trigger for actuating the lever train, said finger press member being spring tensioned for operating horizontally to the vertical plane of the stock when at shoulder position, and being sufficiently adjacent to the bottom of the stock whereby it may be depressed inwardly by a free finger of the trigger-engaging hand which passes under the stock rearwardly of the trigger.

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