Aug. 9, 1927. 1,638,351

C. C. LOOMIS

FIREARM

Filed Aug. 24, 1926

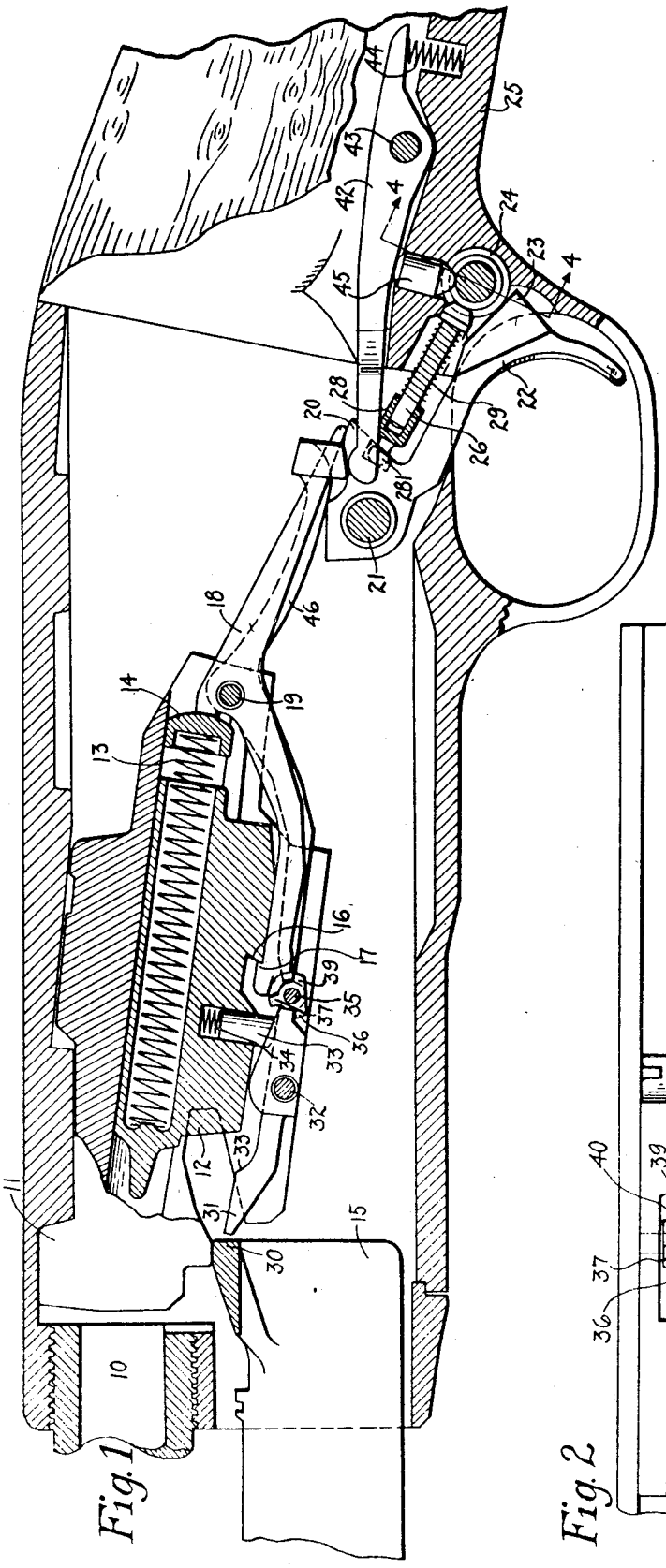


Fig. 1

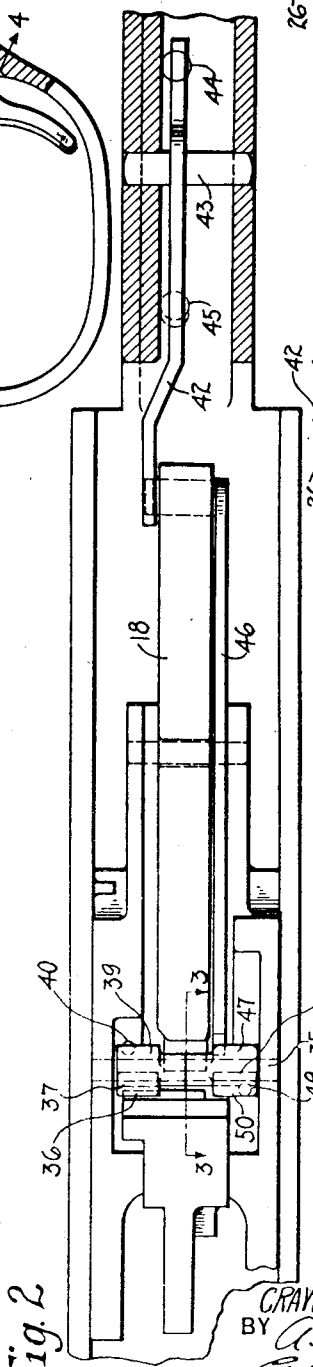


Fig. 2

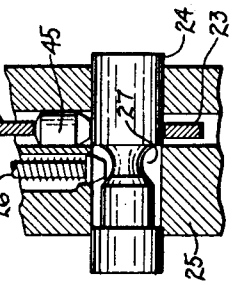


Fig. 5

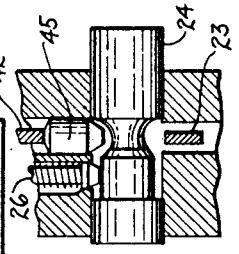


Fig. 4



Fig. 3

INVENTOR

CRAWFORD C. LOOMIS

BY A. A. Hirsch and

ATTORNEYS

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CRAWFORD C. LOOMIS, OF ILION, NEW YORK, ASSIGNOR TO REMINGTON ARMS COMPANY, INC., A CORPORATION OF DELAWARE.

FIREARM.

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This invention relates to firearms and particularly to safety mechanisms therefor, these mechanisms being for the purpose of preventing accidental discharge of the gun when the firing mechanism is in cocked position.

In small caliber guns adapted to be held in the hand or fired from the shoulder, a cartridge in a chamber which is closed by the breech mechanism, is adapted to be fired by impact therewith of a firing pin which is urged toward the head of the cartridge by means of a strong spring or is driven into engagement with the cartridge head by a hammer impelled by a spring. The firing pin or hammer is held in retracted position with the impelling spring compressed by means of a sear member which is adapted to be moved to disengage the firing member by the manual actuation of a trigger.

It is customary to provide a so-called "safety member" which, in one position, blocks the movement of the trigger and prevents firing of the gun by accidental pressure on the trigger. The safety member is so located that it can be readily manipulated to a position which permits the firing movement of the trigger. Such safety devices, however, do not block the movement of the sear and if the gun is subjected to a sudden shock or jar the sear member may be moved to disengage the firing member and discharge the gun, although movement of the trigger is blocked. The gun is thus not in a really safe condition, even though the safety element is in its so-called "safe" position.

It is an object of the present invention to provide safety mechanism by which the gun will actually be rendered safe from accidental discharge by shocks or jars of any kind, as well as accidental pressure on the trigger.

The invention has been illustrated as applied to a gun of the type shown in Patents Nos. 963,171 of July 5, 1910, and 1,044,568 of Nov. 19, 1912 to J. D. Pedersen. In its broad aspect, however, the invention is applicable to firearms generally and is to be so construed.

In the drawings:

Fig. 1 is a longitudinal section through the receiver of a firearm of the type shown in the Pedersen patents above identified, many parts being omitted for the sake of clearness.

Fig. 2 is an inverted plan view of the sear, safety device and associated parts.

Fig. 3 is a detail section on line 3—3 of Fig. 2, showing the control of the sear blocking member.

Fig. 4 is a detail section substantially on the line 4—4 of Fig. 1, showing the trigger and sear locking element ineffective.

Fig. 5 is a detail section similar to Fig. 4, but showing the trigger and sear locking element effective.

The gun comprises a cartridge holding chamber 10 adapted to be closed by a breech block 11, which breech block contains a firing pin 12 urged toward the forward end of the breech block by a spring 13 which is partly housed within the firing pin and at its rear end engages an abutment 14 in the breech block. The firing pin is cocked on the reciprocation of the breech block by the action bar 15 and is held in cocked position by the engagement with a notch 16 of the nose 17 of a sear 18 pivoted at 19 near the rear end of the breech block. The rearward end of the sear overlies a trigger 20 pivoted in the frame at 21 and comprising an extending finger piece 22, all as more fully described and illustrated in the patents above identified. The trigger is provided with a rearward extension 23, adapted to cooperate with a transversely slidable safety member 24, which slides transversely in an opening through the trigger plate 25. A spring plunger 26 bears against the side of the pin or member 24 to yieldingly retain the pin 24 in "safe" position. The opposite end of plunger 26 is received in a housing, comprising a head 28, which is received in a recess in the trigger 20. The controlling spring 29, which is shown as encircling plunger 26, thus serves to both hold the plunger 26 in contact with safety member 24 and to retain the trigger in contact with the sear 18. When the safety member 24 is

in the position illustrated in Fig. 4 the extension 23 on the trigger is received in a cut out or groove 27 and the trigger may be moved to disengage the sear from the firing pin. If, however, member 24 is moved transversely until the head of plunger 26 enters the cut out 27, the rearward extension 23 of the trigger engages the side of plunger 24 and movement of the trigger is blocked.

When the firing pin is cocked action bar 15 is locked against rearward movement through the engagement of its rear face at 30 with an action bar locking lever 31 pivoted in the breech block at 32. Said action bar lock 31 is held with its forward end in elevated or action bar locking position by the engagement therewith at a point on the rearward side of its pivot of a spring plunger 33 mounted in a recess in the firing pin 12 and pressed into engagement with the action bar lock by a spring 34 in said recess. As the firing pin moves forward spring plunger 33 slides along the action bar lock 31 to a point forward from pivot 32 and engages the cam surface 33 on the action bar lock, thereby depressing it to unlocking position. The action bar lock is manually moved to disengage the action bar by mechanism fully described in the Pedersen patents above identified. When it is thus moved it is necessary to lock the sear in engagement with the firing pin. For this purpose, a three arm sear locking member is pivoted on a pin 35 extending transversely thru the breech block. The forwardly extending arm 36 of the locking member underlies the rear end of the action bar lock, a vertically extending arm 37 is adapted to move beneath an under cut portion 38 on the nose 17 of the sear, and a rearwardly extending arm 39 is engaged by a spring plunger 40 which occupies a suitable recess in the breech block, and tends to rock the member towards sear locking position.

The mechanism thus far described is similar to that disclosed in the Pedersen patents above identified. It will be seen that when the action is closed movement of the sear is not prevented, even though the pin 24 is in trigger locking position. For the purpose of positively locking the sear against any movement whatever, when the trigger locking member 24 is in trigger locking position, the following mechanism is provided.

A lever 42 is pivoted in the trigger plate at 43. A spring 44, partly contained in a recess in the trigger plate, underlies the rear end of this lever, tending to rotate it in a counter-clockwise direction (Fig. 1). A plunger 45 passes through an opening in the trigger plate, its upper end being in contact with lever 42 and its lower end in contact with the trigger locking pin 24. When the pin 24 is in firing position the nose of plunger 45 enters the cutout 27, and the forward end of lever 42 is held depressed by the spring 44. When, however, the pin 24 is moved to trigger locking or "safe" position the plunger 45 is moved upwardly, rocking a lever 42 clockwise. The forward end of lever 42 underlies a sear lock controlling lever 46 pivoted in the rear end of the breech block, preferably on the sear pivot 19. The forward end of lever 46 engages a rearwardly extending ledge 47 on a three armed sear locking member, similar to the action bar controlled sear lock, and preferably mounted on the pivot pin 35. Said sear locking member comprises an upwardly extending arm 48 adapted to be moved under the cutout portion 38 of the sear nose, when said member is rocked by lever 46. A spring plunger 49, partly contained in a recess in the breech block, overlies a forwardly extending arm 50 on the sear lock and tends to move it to ineffective position.

It will be seen that whenever the trigger locking member 24 is moved to "safe" position the plunger 45 is raised, rocking lever 42. The rear end of lever 46 being in engagement with lever 42, the movement of the latter depresses the forward end of lever 46, rocking the sear engaging arm 48 of the sear lock to effective position. Thus, not only the trigger but the sear lock operating devices are all positively held in sear locking position. No element of the lock operating train of mechanism is capable of any movement whatever unless and until member 24 is moved to permit downward movement of the plunger 45. A perfectly definite and positive locking of the firing mechanism is thus insured and accidental discharge of the gun by jars or shocks is rendered impossible. It will also be seen that the plunger 45 serves to yieldingly retain the trigger locking member 24 in its ineffective position, just as plunger 26 retains it in effective position.

While, for the purpose of illustration, one particular embodiment of the invention has been illustrated in some detail in the drawings and similarly described in the foregoing specification, it is to be understood that this embodiment is illustrative rather than restrictive, the invention being susceptible of embodiment in a wide variety of other forms, all falling within the scope of the appended claims.

What is claimed is:—

1. In a firearm comprising a trigger, a firing mechanism holding sear operated thereby, and a trigger locking safety device; means comprising an element actuated by engagement with said trigger lock for positively locking said sear in engagement with said firing mechanism when said trigger lock is moved to effective position.

2. In a firearm comprising a trigger, a firing mechanism holding sear operated thereby, and a trigger locking safety device, means comprising a sliding element in engagement with said trigger lock and adapted to be displaced on movement thereof to effective position for positively locking said sear in engagement with said firing mechanism.

3. In a firearm comprising a trigger, a firing mechanism holding sear operated thereby, and a trigger locking device, a pivoted member adapted to lock said sear in engagement with said firing mechanism, and means actuated by the movement of said trigger lock to effective position for rendering said sear lock locking member effective.

4. In a firearm comprising a firing mechanism, a holding sear therefor, an action bar, and an action bar lock, a trigger and a trigger lock means for blocking the firing mechanism releasing movement of said sear controlled by said trigger lock, and means for blocking the firing mechanism releasing movement of said sear controlled by said action bar lock.

5. In a firearm comprising a firing mechanism, a holding sear therefor, a trigger, a trigger lock, an action bar and an action bar lock, a rocking member controlled by said trigger lock for blocking the firing mechanism releasing movement of said sear, a rocking member controlled by said action bar lock for blocking the firing mechanism releasing movement of said sear, and a common pivot supporting said rocking members.

6. In a firearm comprising a breech block and a firing mechanism in combination, a holding sear for said firing mechanism, a device for blocking the firing mechanism releasing movement of said holding sear, and means for controlling said device comprising a lever pivoted in said breech block.

7. In a firearm comprising a breech block and a firing mechanism in combination, a pivoted holding sear for said firing mechanism, a device for blocking the hammer releasing movement of said sear, means for controlling said device comprising a lever, and a common pivot in said breech block for said lever and said sear.

8. In a firearm comprising a breech block, a firing mechanism, and a holding sear for said firing mechanism, a device for blocking the firing mechanism releasing movement of said sear pivoted in said breech block, and a lever for controlling said device pivoted in said breech block.

9. In a firearm comprising a breech block and a firing mechanism mounted therein, a holding sear for said firing mechanism pivoted in said breech block, a device for blocking the firing mechanism releasing movement of said sear pivoted to said breech block and a controlling lever for said device pivoted in said breech block.

10. In a firearm comprising a breech block and a firing mechanism, a holding sear for said firing mechanism, a device for blocking the firing mechanism releasing movement of said sear and a lever for controlling the movement of said blocking device, said sear device and lever all being pivoted in the breech block.

11. In a firearm, a breech block having pivoted therein a firing mechanism engaging sear, a device for blocking firing mechanism releasing movement of said sear, a lever for controlling said device, an action bar lock, and a sear movement blocking member controlled by said action bar lock.

12. In a firearm comprising a breech block, a firing mechanism, a holding sear for said firing mechanism, a trigger plate and a sear controlling trigger carried thereby, a sear blocking member and a control element therefor mounted in said breech block, and means for actuating said controlling element mounted in said trigger plate.

13. In a firearm comprising a breech block, a firing mechanism holding sear, a trigger plate, a sear controlling trigger mounted in said trigger plate, a sear blocking member, and means for controlling said sear blocking member, comprising a lever pivoted in said breech block and a second lever pivoted in said trigger plate.

14. In a firearm comprising a breech block, a firing mechanism, a firing mechanism holding sear, a trigger plate, a sear controlling trigger, a trigger locking device in said trigger plate, a sear blocking member, and means for controlling said sear blocking member from said trigger lock comprising a device mounted in said breech block and means cooperating therewith mounted in said trigger plate.

15. In a firearm comprising a breech block, a firing mechanism, a firing mechanism holder sear, and a sear controlling trigger, a trigger lock, a sear blocking member, means for actuating said sear blocking member comprising a lever pivoted in said breech block, a second lever, and means for actuating said second lever upon movement of said trigger lock to effective position.

16. In a firearm comprising a firing mechanism, a holding sear therefor, and a sear operating trigger; means for blocking the firing mechanism releasing movement of said sear, a trigger lock movable from ineffective to effective position and a controlling device for said sear blocking means adapted to yieldingly retain said trigger lock in effective position, and to actuate said sear blocking mechanism when said trigger lock is moved to effective position.

17. In a firearm, a trigger, a trigger blocking member movable from ineffective to effective position, means for yieldingly retaining said trigger blocking member in

ineffective position, adapted to be displaced on movement thereof to effective position, a sear, and controlling means for said sear actuated by the displacement of said trigger lock retaining means when said trigger lock is moved to effective position.

18. In a firearm comprising a firing mechanism, and a firing mechanism holding sear; a sear blocking member adapted to prevent firing mechanism releasing movement of said sear, means tending to move said sear blocking member to ineffective position, a sear controlling trigger, a trigger lock, and means controlled by said trigger lock for moving said sear blocking member to effective position.

CRAWFORD C. LOOMIS.