C. A. NELSON.

FIREARM SAFETY.

APPLICATION FILED AUG. 22, 1916. RENEWED MAY 3, 1917.

1,249,175.

Patented Dec. 4, 1917.

Fig. 1.

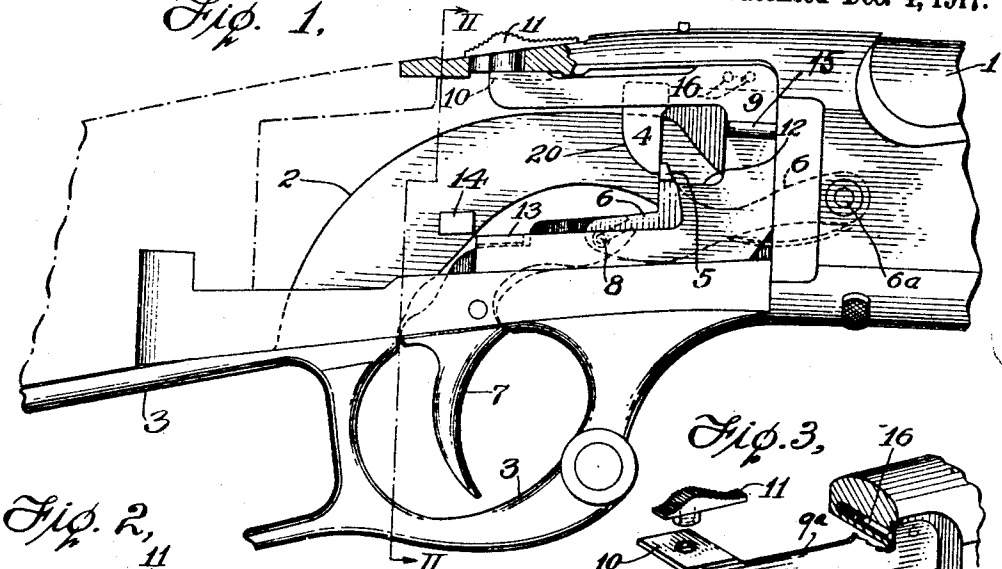


Fig. 3.

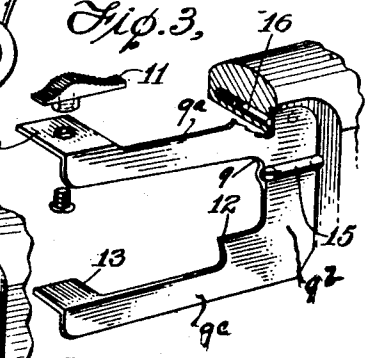


Fig. 2.

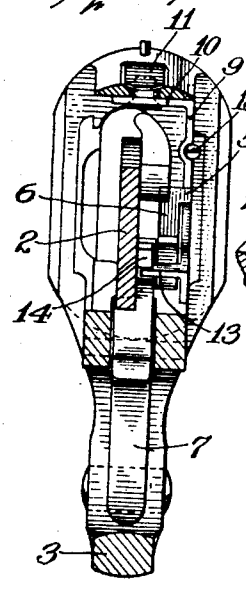


Fig. 4.

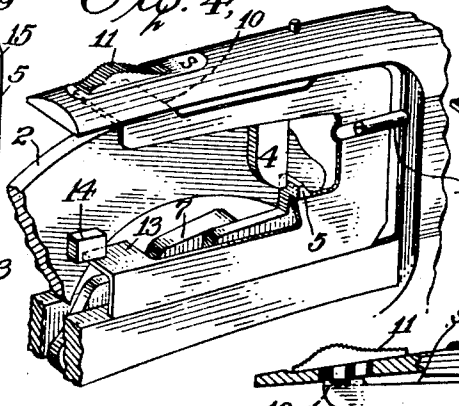


Fig. 5.

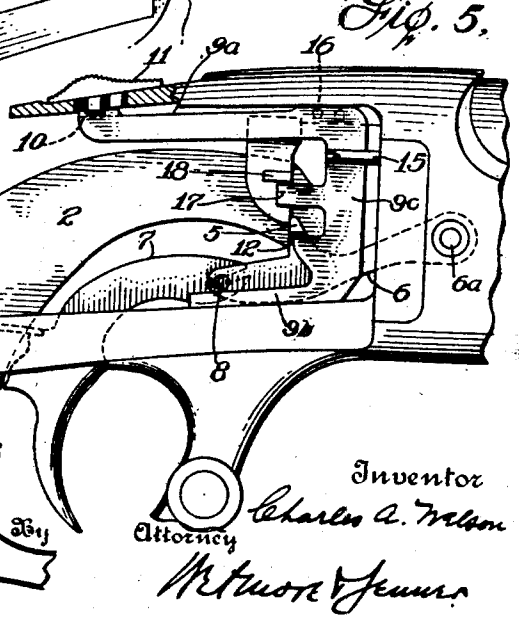
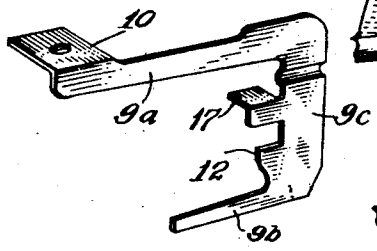


Fig. 6.



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UNITED STATES PATENT OFFICE.

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FIREARM-SAFETY.

1,249,175. Specification of Letters Patent. Patented Dec. 4, 1917.

Application filed August 22, 1916, Serial No. 116,229. Renewed May 3, 1917. Serial No. 166,274.

To all whom it may concern:

Be it known that I, CHARLES A. NELSON, a citizen of the United States, residing in Utica, New York, have invented the following-described Improvements in Firearm-Safeties.

The invention is an improvement in safety devices for fire arms and more especially in that class of fire arms in which the breech piece is operated by an action lever and is unlocked from the barrel by an initial movement transverse to the axis of the gun, following which movement the said piece is retracted rearwardly or into the breech casing. The invention consists in a safety mechanism of simple and reliable form, so related to the other parts that its operating member may be disposed at the top of the grip portion of the gun for movement to "fire" by a forward push of the thumb and without encroaching on the clearance space required for the breech piece or its operating mechanism, and whereby the reverse movement may not only securely lock the firing mechanism but also the entire action if preferred. The invention also affords additional and independent features of improvement which will be apparent to those skilled in this art from the accompanying drawings and the description which follows.

In the drawings, Figure 1 is a side elevation of a portion of a fire-arm, the side wall of the breech casing being removed and exposing the improved safety mechanism.

Fig. 2 is a transverse section on line II—II of Fig. 1;

Fig. 3 is a perspective view showing the plate-form safety and the location of its detent;

Fig. 4 shows in perspective the parts of Fig. 1 with the plate safety in locking position;

Fig. 5 is a broken side elevation of a modification;

Fig. 6 is the plate-safety of Fig. 5.

In Figs. 1 to 4 the breech piece 1 will be understood to be operated by the curved arm 2 of the action lever 3, receiving therefrom an initial downward movement, prior to its withdrawal rearwardly into the breech casing and it will be further understood that the breech piece carries the firing-pin or striker, the lug of which marked 4, is arrested during the return movement of the breech piece by the nose 5 of the sear 6, and that the latter is connected to the trigger 7 so that it may be withdrawn from the lug 4 to fire the gun. These parts and their described arrangement and operation are well understood in this art. The sear is pivoted at 6^a and the trigger engages its rear end by a pin and slot connection marked 8, these parts being disposed in the lower part of the breech casing below the normal path of the breech piece therein.

The safety mechanism comprises a flat and relatively thin plate 9^c which can be stamped of sheet metal and more or less skeletonized according to the design of the gun. This plate is housed in the breech casing at one side of the sear and trigger combination and the other working parts therein and by preference is disposed close to, if not in actual contact with, the vertical side wall of the casing. In the case in hand it is so placed, and occupies the entire vertical height of the interior chamber, its upper and lower edges being parallel and adapted to slide upon or at least be guided by the top and bottom walls of said chamber which are also parallel, and it is of sufficient lengthwise dimension to extend from a point in rear of the sear, where it carries the thumb piece, to a point in front of the sear whereby it may engage therewith by rearward movement. In its lateral location it will be observed the plate 9 is well out of the way of all of the operating parts, and inasmuch as it is moved only in the direction of its own length it will be apparent that it functions with much rigidity notwithstanding its thinness. At its upper rear side the plate 9 carries a bent over lug 10 extending toward the center of the gun and closely underlying the upper wall of the breech casing chamber, and the safety thumb piece 11 is screw-connected to this lug, through an appropriate slot in the breech frame in which it slides freely. Forward operation of the thumb piece 11 sets the gun at "fire." The reverse movement brings one or more parts of the plate into obstructing position to one or more of the operating members of the action, thus locking either the firing mechanism or the whole action. In Figs. 1 to 4 the shoulder 12 cut in the plate 9 slides under the nose 5 of the sear which is extended laterally for engagement by it and at the same time a lateral or

bent over lug 13, rearward of the sear, moves under a lug 14 laterally projecting from the curved arm of the action lever. Inasmuch as both the sear and action lever require to be moved initially downwardly in order to be operated, it will be evident that both will be locked against such movement so long as the safety plate 9 is in its rearward position. The screw post marked 15 is a guide for the plate and the spring pressed plunger 16 housed in the upper part of the breech frame is a detent serving to hold the plate yieldingly in one or the other of its two described positions and prescribing for it the desired snap movement. The detent plunger acts transversely to the general plane of the plate engaging shallow sockets therein as indicated in the drawings and the guide pin 15 serves to take the thrust of the plunger although the side wall of the casing might be satisfactorily relied on for this purpose. The post 15 engages a longitudinal groove in the plate 9 to improve its guiding function and being removable, serves to permit removal of the safety plate when the cover plate for the side of the breech casing has been removed.

Inasmuch as the operating arm 2 of the action lever, when opening the breech causes an initial movement of the breech piece which is downward or transverse to the axis of the gun as above explained, it is evident that the breech may be locked in its closed position either by directly preventing the motion of the arm as above described or by obstructing the said downward movement of the breech piece. In Figs. 5 and 6, the modified form of safety plate carries a laterally projecting member 17 which, on rearward motion, rides under the cocking lug of the striker or under a part 18 thereof, and when in this position prevents the opening of the breech by obstructing the initial downward or opening movement as will be understood. Manifestly the action lever may also be locked in this form if desired, as by means of the lug 13, as before. Otherwise, the construction and operation of this safety device and its relation to the other parts may be as already described.

In both the forms above described the particular character of the locking engagement of the plate with the sear and bolt mechanism will be recognized as subordinate to the design of the arm as a whole and also subject to variation according to the preference of the manufacturer. The flat safety plate is in any event given suitable guiding bearing to insure its easy and true movement endwise from one position to the other. Inasmuch as in the present case the upper and lower edges form such a bearing on the upper and lower casing walls and by marginal contact on the side wall of the casing, the space not required for engagement with the guide-ways or for interlocking engagement with the working parts of the action is cut away for lightness or to make room for the other members. Thus the plate in both forms illustrated in the drawings comprises an upper limb 9^a and a lower limb 9^c on which it slides and the sear-locking shoulder is cut or formed on the rear edge of the flat connecting member 9^b between the limbs and in front of the sear and the lever lug 13 is bent over from the lower limb. By this design of the flat plate it operates with a positively guided rectilinear movement and is capable of resisting the maximum possible pressure from either the sear or action lever.

Claims:

1. In a fire-arm, the combination with a breech bolt which is retracted into the breech casing, of a safety comprising a plate disposed in the interior and along the side of said casing and a thumb piece therefor disposed at the top of the grip portion of the gun and adapted to move said plate into position to obstruct the operation of the gun.

2. In a fire-arm, the combination with a breech bolt having an initial opening movement transverse to the axis of the gun, of a locking member operable from the upper side of the grip portion of the gun longitudinally for preventing or permitting the operation of the gun.

3. In a fire-arm, the combination of a breech bolt and casing, mechanism for operating the bolt, firing mechanism, and a vertically disposed plate longitudinally movable alongside of said mechanism and within the casing and having different parts for separate obstructive engagement with the said mechanisms.

4. In a fire-arm, a safety consisting of a flat plate movable endwise and disposed vertically in the breech casing of the arm, a lug carried by said plate underlying the upper wall of the breech casing and extending laterally substantially to the center of such wall and a longitudinally operated thumb piece connected with said lug through said upper wall.

5. In a fire-arm, a safety consisting of a plate movable endwise and disposed along and adjacent to a vertical side wall of the breech casing of the arm, a lug thereon underlying the upper wall of the breech casing and extending substantially to the center of such wall, a thumb piece connected to the lug and disposed to move lengthwise of the arm at the top of the grip portion thereof, and one or more shoulders on said plate adapted to obstruct movement of the working parts inside the breech casing.

6. In a fire-arm, the combination with a breech mechanism including a casing adapted to house the breech bolt and an action lever below the casing for operating the

bolt, of a flat plate guided to slide lengthwise of the arm within the casing and adjacent to one of the side walls thereof and provided with a member for obstructing operation of the arm, and a thumb piece sliding on the top of the casing and operating said plate.

7. In a fire-arm, the combination of a sear and trigger, a breech bolt and an action lever, of a safety plate disposed within the breech casing alongside of said parts and comprising upper and lower parallel limbs, a connecting bar between said limbs and a shoulder in the rear edge of said connecting bar adapted to obstruct the sear on the rearward movement.

8. In a fire-arm, the combination of a breech bolt and casing, mechanism for operating the bolt, firing mechanism, a vertically and longitudinally disposed plate alongside of both said mechanisms and having parts for separate obstructive engagement therewith, a laterally extending lug at the upper margin of the plate, and a thumb piece disposed to move longitudinally along the upper side of the fire-arm and connected to said lug for shifting the plate.

9. In a fire-arm, the combination of a downwardly and rearwardly movable breech bolt, a downwardly movable sear, and a vertically disposed plate at one side of said sear having separate shoulders movable to a position beneath and into the path of said sear and the operating mechanism for said breech bolt.

10. In a fire-arm, the combination of a breech bolt, a sear, a longitudinal locking plate at one side of the sear, said plate having a shoulder movable into the path of the sear to prevent movement of the latter, a separate shoulder movable into position to prevent movement of the breech bolt, a thumb piece at the upper side of the fire-arm and operatively connected to said plate, and a transversely acting spring-pressed detent for yieldingly holding said plate in its "safe" and "fire" positions.

In testimony whereof, I have signed this specification.

CHARLES A. NELSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."