

BOLT LATCH FOR BOLT-ACTION FIREARM

This application is a continuation of application Ser. No. 290,693 filed Aug. 6, 1981.

This invention relates to firearms of the bolt-action type, which have a bolt reciprocable in a receiver between open and closed portions, and rotatable by means of a handle between locked and unlocked relationship to the firearm barrel. The invention is particularly concerned with an improved bolt latch mechanism which is normally operated automatically by the firing and re-cocking of the firearm, but which may be selectively disabled, according to the user's wishes.

In a bolt-action firearm intended for hunting use, it is desirable to provide both a safety, and a bolt latch for securing the bolt locked in a closed position. These two features allow the firearm to be carried in the field loaded and cocked, without risk either of accidental firing, or of the bolt being unlocked by some accidental jar or collision. At the same time, the user should be enabled to open the bolt readily and safely for unloading. Controls for the safety and bolt latch should be simple enough to avoid confusion in poor lighting conditions; should be readily manipulable even by a hunter wearing gloves; and yet should not protrude in a manner either to interfere with manual operation of the firearm, or to be susceptible to inadvertent displacement.

One approach to this question is shown in U.S. Pat. No. 2,514,981 to Walker et al, in which a two-position safety lever also serves as a bolt latch. The safety lever has two arms: a safety arm bearing an eccentric which blocks the sear of the trigger mechanism in a "safe" position of the lever; and another latch arm which engages a notch in the bolt to latch it against rotation. Movement of the safety lever to the "fire" position releases the sear, and also removes the latch arm from engagement with the bolt. This is a satisfactory system; but it does require the safety to be released when the bolt is opened, and therefore calls for proper caution to be exercised when the user wishes to unload the firearm.

Another prior art solution involves a safety lever movable to three positions: one in which the safety and the bolt latch are both engaged; a second, intermediate position which either disengages the bolt latch, or enables it to be manually disengaged, but leaves the safety on; and a third, firing position in which both the safety and the bolt latch are inoperative. Examples of this approach appear in U.S. Pat. Nos. 2,824,402 to Fischer; 1,318,423 to Williams; 2,869,269 to Couture; and 3,138,888 to Brewer. If a hunter is working in good lighting conditions, without gloves, and with leisure to see that the safety is correctly positioned, these systems are satisfactory. But in the press of urgency and excitement that often arises in the field, and under adverse conditions, error in selecting among three safety positions is not unlikely to occur.

Another solution that has been suggested is to provide a bolt latch that is completely divorced from the safety mechanism. This enables the hunter to unload without concern about changing the condition of a safety he has previously activated. Two examples of such a bolt latch are found in U.S. Pat. Nos. 1,322,514 to Bader, and 1,669,496 to Stahl. In Bader, a sliding latch, mounted on the side of the bolt plug just behind the bolt handle, is movable to or from latching engagement with

the bolt handle by means of a pivoted lever, which is spring-biased toward the latch-engaging position. The latch may be withdrawn either by lever engagement with a shoulder on the firing pin when the rifle is fired, or by manual rotation of the pivoted lever. After manual opening with the rifle cocked, the pivoted lever must be held manually retracted in order to re-close the bolt.

In the Stahl Patent, a rotatable shaft, formed with a flat and carrying a spring-biased latch plunger, extends transversely across a mating flat in the firing pin. The cocking of the firing pin mates the two flats so as to turn the shaft and latch plunger into locking engagement with the bolt handle. Upon firing, the flats disengage so that the bolt handle may be raised, with the shaft and latch plunger now being free of the firing pin and able to rotate to permit this opening movement. If it is desired to unload the rifle with the firing pin cocked, the latch plunger may be retracted manually to permit the bolt to be opened. The latch plunger must once again be held retracted to permit the bolt to be re-closed; this disadvantage is shared by Bader and Stahl.

The present invention has as its general object the improvement of bolt latch mechanisms for bolt-action rifles which have independently-operable safety devices. The improved mechanism features a simplified construction, involving a single pivoted, spring-loaded latch lever, which is automatically operated by the displacements of a firing pin during cocking and firing. In one embodiment, a detent is provided so that the latch is selectively operable manually to releasably secure it in a disabled position. The latch may readily be disabled or reactivated by the press of even a gloved finger, after which the hands are free to carry out loading, cocking, firing, or unloading operations without further attention to the latch.

According to the invention, the bolt plug of a bolt-action firearm is recessed to receive a latch lever, which is pivotally mounted in the recess for rocking motion to either of two positions: latched by cocking the weapon and closing the bolt handle; or unlatched by firing the weapon. A spring and plunger bias the lever toward the latched position, in which a tooth formed at one end of the lever engages in a mating notch in the closed bolt handle. The latch lever has a cam surface so arranged, in the latched position, as to project into the path of motion of the head of the firing pin, which therefore pivots the lever to the unlatched position when the weapon is fired. Subsequent re-cocking and withdrawal of the firing pin head enables the spring-loaded plunger to return the lever automatically to the latched position.

In one embodiment, the latch lever may be manually rocked beyond the latched position to a disabled position, in which a detent notch formed in the lever engages and interferes with movement of the spring-loaded plunger. The plunger cannot then move the lever toward the latched position until the lever is manually pressed in a direction to release the detent and thus restore automatic operation.

FIG. 1 is a fragmentary view in side elevation of one embodiment of the improved bolt latch mechanism, shown in latched relation to the bolt assembly of an illustrative bolt-action firearm, which is shown cocked and ready to fire;

FIG. 2 is a fragmentary view in rear elevation of the assembly of FIG. 1;

FIG. 3 is a fragmentary view showing the latch in unlatched position, with the bolt handle raised to un-

