Aug. 12, 1952 W. A. SCHAICH 2,606,382

TWO-PIECE FIREARM BOLT

Filed Nov. 29, 1948

Fig. 1.

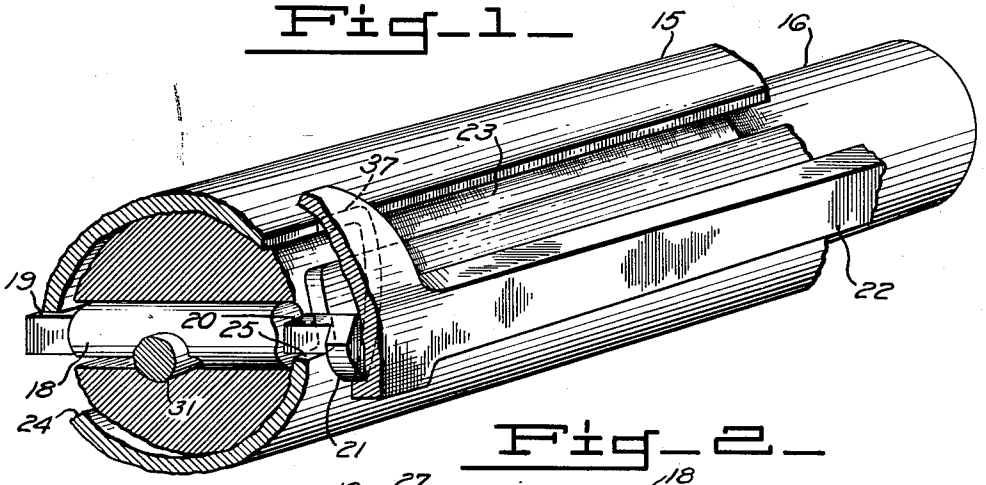


Fig. 2.

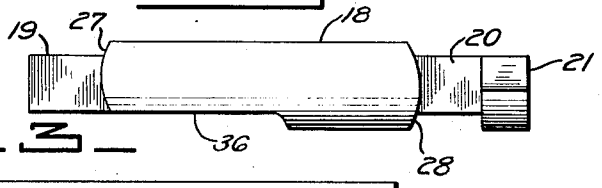


Fig. 3.

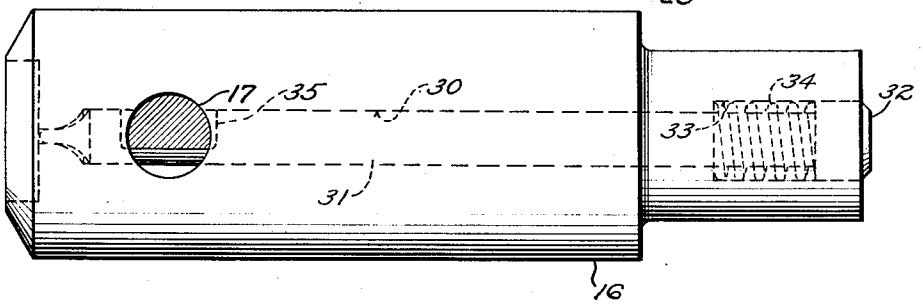
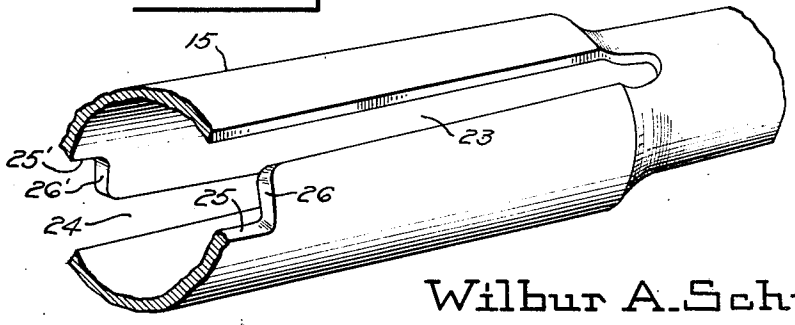


Fig. 4.



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TWO-PIECE FIREARM BOLT

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2 Claims. (Cl. 42—16)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

1

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates to an improved firearm construction, and particularly to an improved bolt construction for an automatic firearm incorporating a separable locking member associated with the bolt.

Conventional firearms of the reciprocating bolt type generally accomplish the locking of the bolt to the receiver in battery position by means of locking lugs integrally formed on the bolt. Such integral locking lugs necessarily complicate the configuration of the bolt and the manufacture of any such bolt with integral locking lugs is complicated, costly and a time-consuming procedure.

Furthermore, it has long been recognized that the simplest as well as the most economically manufacturable construction of a firearm having a bolt reciprocating in a receiver would lie in a tubular receiver having a cylindrical bore in which a generally cylindrical bolt member is mounted for rotative and axial movement. Such economical structure has heretofore been impossible to utilize in any firearm requiring locking lugs cooperating between the bolt and receiver solely because it is not possible to insert a cylindrical bolt with radially projecting lugs into a tubular bore of substantially the same size as the bolt without cutting an opening in the receiver wall having a width of at least the diameter of the receiver bore and a length approximately equal to the length of the bolt.

When it is also considered that in most firearms the remaining half of the receiver wall must provide a cartridge feeding or magazine opening, it is apparent that the remaining portion of the receiver wall must be so thick to provide the necessary strength requirement that the use of a tubular blank to form the receiver would be more costly than the commonly utilized forging and machining operation.

Accordingly, it is an object of this invention to provide an improved bolt construction for a firearm which will permit the receiver to be economically manufactured from a tubular blank, the bolt to be fabricated from a cylindrical blank, and a separable locking member cooperating with the bolt in such manner as to permit the assembly of the bolt into the tubular receiver by axial movement through the open end of such receiver.

Another object of this invention is to provide an improved firearm bolt having a separable locking lug member which can be quickly and easily assembled to such bolt.

2

The specific nature of the invention, as well as other objects and advantages thereof will clearly appear from the following description of a preferred embodiment shown in the accompanying drawings in which:

Fig. 1 is a fragmentary perspective view of a firearm receiver showing a bolt embodying this invention assembled to such receiver;

Fig. 2 is a side elevational view of the locking member;

Fig. 3 is a side elevational view of the bolt showing the manner of securing the firing pin within the bolt and preventing rotation of the locking member, such locking member being shown in section.

Fig. 4 is a fragmentary perspective view of the receiver, particularly showing the locking surfaces therein.

In Fig. 1 there is shown in assembled relation a firearm receiver 15 and a bolt 16 embodying this invention. Bolt 16 and receiver 15 are preferably of cylindrical construction as shown. An axially disposed hole 30 of suitable configuration is provided in bolt 16 to accept a firing pin 31. The right end of such hole is counterbored as shown at 33 to accommodate a head 32 integrally formed on pin 31 and a firing pin retracting spring 34 surrounding such pin and abutting the head portion thereof. A substantially U-shaped notch 35 of somewhat greater width than that of locking member 18 is provided near the forward end of pin 31 for a purpose to presently appear. A transverse hole 17 is provided at the front end of bolt 16 through which is inserted a rod-like locking member 18.

Locking member 18 is provided to securely lock bolt 16 to receiver 15 as will be later described. Each end of locking member 18 is substantially square as shown at 19 and 20. An integral lug 21 projecting beyond the squared end 20 of locking member 18 is provided to engage a cam slot or recess 37 of an operating rod 22 for locking and unlocking of bolt 16 as will be later explained.

Receiver 15 is provided with oppositely disposed longitudinal ways 23 and 24 which terminate near the forward end of receiver 15 in substantially vertical notches 25 and 25'. Locking surfaces 26 and 26' are provided on the rearward sides of notches 25 and 25', respectively, and each of such surfaces is preferably formed on a suitable helix. One corresponding side of each of the squared ends 19 and 20 of locking member 18 is likewise formed on a similar helix in order that such surface will cooperate

with corresponding locking surfaces 26 or 26' provided on receiver 15.

Each end of the cylindrical body portion of locking member 18 adjacent the squared ends 19 and 20 is rounded as shown at 27 and 28 to slidably contact the inside surface of receiver 15. The underside of locking member 18 is flattened for a substantial distance as shown at 36 to lock firing pin 31 within bolt 16 in a manner as will now be described.

Firing pin 31 is assembled within hole 30 in bolt 16 and such bolt in turn is inserted in receiver 15. Bolt 16 is then moved forwardly until transverse hole 17 is aligned with opposed notches 25 and 25'. Locking member 18 is then readily assembled to bolt 16. Firing pin 31 is however first moved forwardly until notch 35 is opposite hole 17 whereupon such locking member is inserted in hole 17. The flattened undersurface 36 of locking member 18 slidably engages notch 35 of firing pin 31. Thus such firing pin is slidably retained in bolt 16, notch 35 permitting limited longitudinal movement of pin 31.

When assembling locking member 18 to receiver 15 and bolt 16, the helical surfaces of such locking member are properly positioned in order to contact and cooperate with helical locking surfaces 26 and 26' of receiver 15. When locking member 18 is assembled to bolt 16 and receiver 15 as shown in Fig. 1, the operating rod can be readily engaged with lug 21 provided on one end of locking member 18, thus securing such locking member against displacement.

Actuation of operating rod 22 will effect rotation of locking member 18 about the axis of bolt 16 thereby rotating such bolt to effect unlocking of locking member 18 from slots 25 and 25' thereof. This unlocking is accomplished in a manner similar to operation of the U. S. Rifle, Cal. .30, M1, and as such operation forms no part of this invention, such need not be further described here.

From the foregoing description it is obvious to those skilled in the art that there is here provided a simple bolt construction wherein the locking lugs are made separable from the bolt member thereby facilitating fabrication of the bolt as well as the locking member.

I claim:

1. In a firearm, a cylindrical receiver having a tubular bolt receiving bore open at one end of the receiver, a cylindrical bolt insertable in said receiver bore only through said open end, said bolt being slidably and rotatably movable in said bore, said bolt having a non-axial transverse opening, said receiver having a pair of diametrically opposed longitudinal slot-like openings through the wall thereof terminating in a vertical notch portion of greater width than said slot-like openings thereby forming a locking shoulder in each of said openings, and a locking member insertable through said vertical notch portion having a body portion snugly engageable in said bolt opening and an integral locking portion projecting from each end of said body portion into said opposed receiver slot-like openings, each of said locking portions having a locking surface constructed and arranged to cooperate with each of said locking shoulders by limited rotation of said bolt within said receiver.

2. In a firearm, the combination of a cylindrical receiver having a bolt receiving bore at one end of the receiver, a cylindrical bolt insertable in said receiver bore only through said open end, said bolt being slidably and rotatably movable in said bore, said bolt having a non-axial transverse opening, said receiver having a pair of diametrically opposed longitudinal slot-like openings through the wall thereof terminating in a vertical notch portion of greater width than said slot-like openings thereby forming a locking shoulder in each of said openings, a locking member insertable through said vertical notch portions, said member having a body portion snugly engageable in said bolt opening and an integral locking portion projecting from each end of said body portion into said opposed receiver slot-like openings, one of said locking portions terminating in a cam portion arranged to protrude beyond said receiver, and a bolt operating member axially reciprocably mounted along the exterior of said receiver, said bolt operating member having a cam recess disposed adjacent said receiver opening, each of said locking portions having a locking surface constructed and arranged to cooperate with said locking shoulder by limited rotation of said bolt within said receiver when said cam recess of said bolt operating member engages said cam portion of said locking member.

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