Dec. 29, 1942. R. R. McCRUMB 2,306,633

SEMIAUTOMATIC RIFLE

Filed July 17, 1939 3 Sheets-Sheet 1

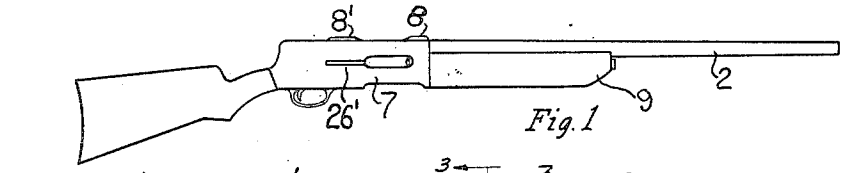


Fig. 1

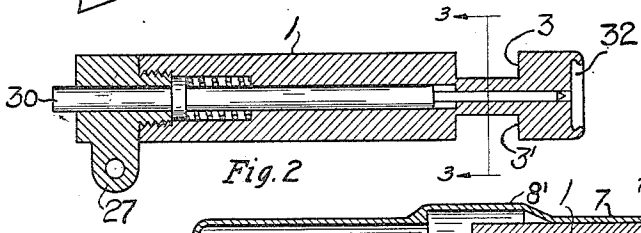


Fig. 2

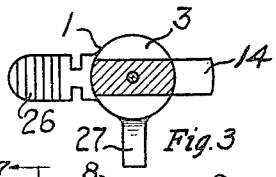


Fig. 3

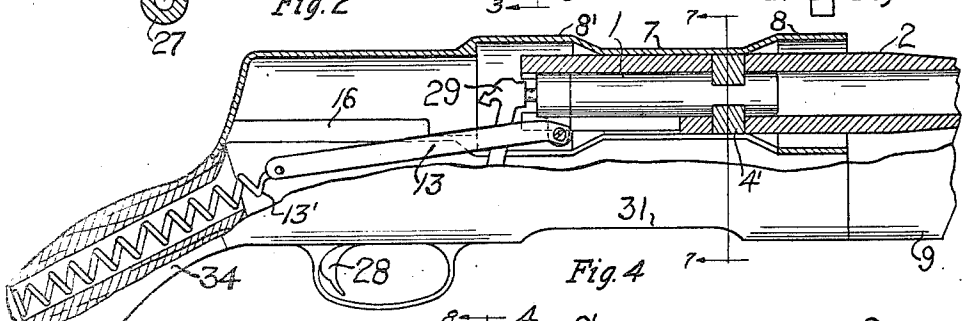


Fig. 4

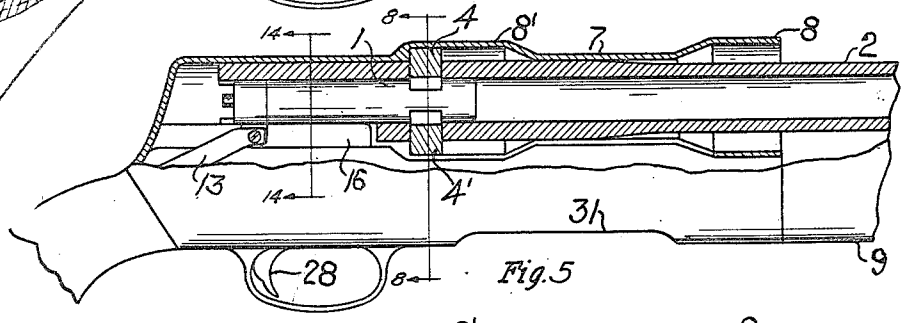


Fig. 5

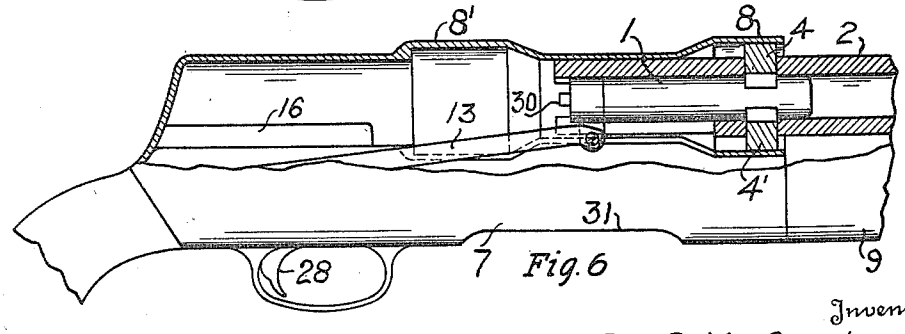


Fig. 6

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Dec. 29, 1942. R. R. McCRUMB 2,306,633

SEMIAUTOMATIC RIFLE

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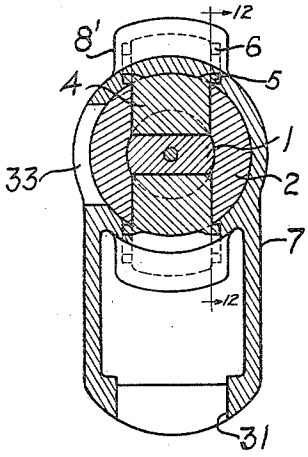


Fig. 7

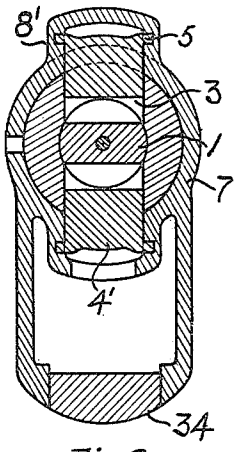


Fig. 8

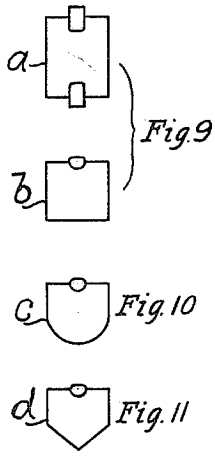


Fig. 9

Fig. 10

Fig. 11

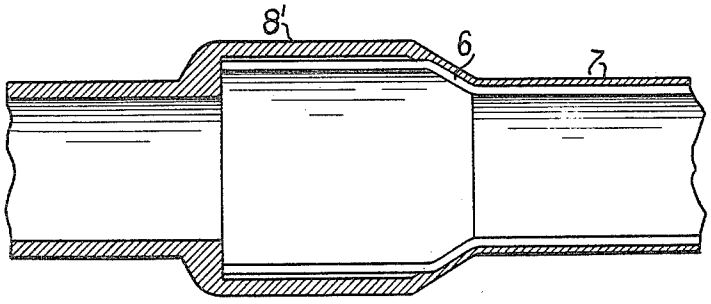


Fig. 12

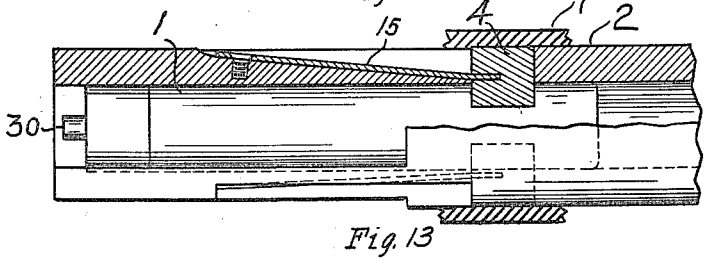


Fig. 13

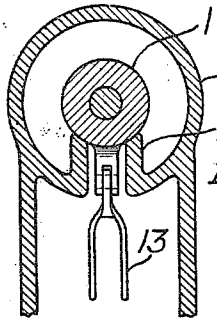


Fig. 14

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SEMIAUTOMATIC RIFLE

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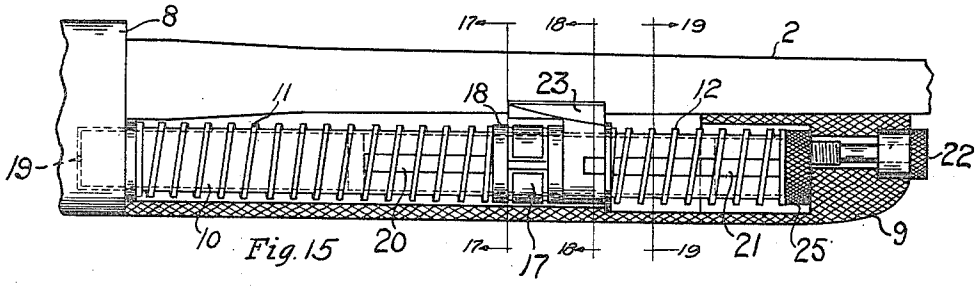


Fig. 15

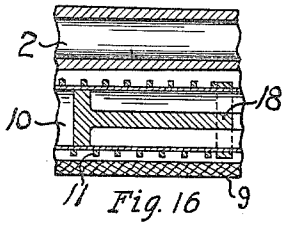


Fig. 16

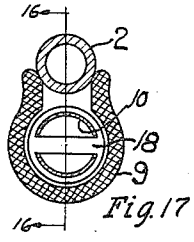


Fig. 17

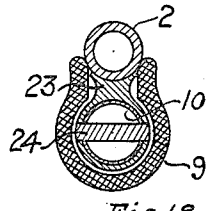


Fig. 18

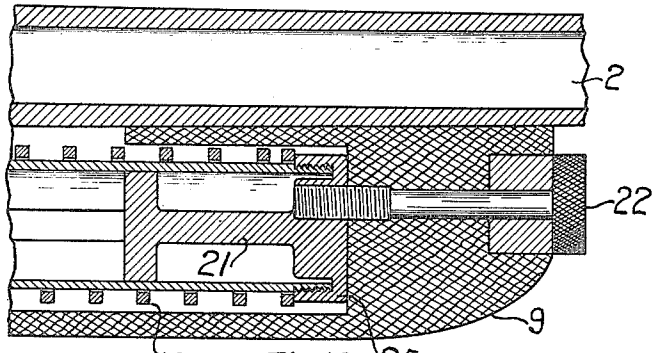


Fig. 19

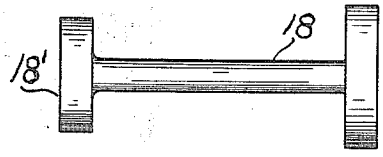


Fig. 20

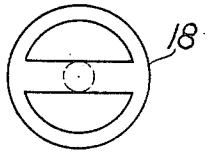


Fig. 21

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Patented Dec. 29, 1942

2,306,633

UNITED STATES PATENT OFFICE

2,306,633

SEMIAUTOMATIC RIFLE

Ray R. McCrumb, Lansing, Mich.

Application July 17, 1939, Serial No. 285,013

2 Claims. (Cl. 42—4)

This invention may be termed a semi-automatic rifle, or more particularly it may be considered to be in the class of breech loading firearms generally whether rifled or smoothbore.

The invention has for its object the provision of certain specially constructed and arranged parts or members whereby it is believed the gun is more easily and conveniently operated, and as a whole is rendered more durable and less likely to get out of order in regular use. It is thought further that the construction herein described is of a particularly simple character, and may be readily and cheaply manufactured.

By means of the accompanying drawings and this specification, the individual construction of this invention will be apparent to any one interested.

Fig. 1 of the drawings represents a side view of an ordinary type of gun with this invention applied.

Fig. 2 is a vertical and longitudinal section of the breech bolt or block having the firing pin.

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a view of the rear part of the gun stock, partly in vertical section, showing the mechanism in firing position.

Fig. 5 is a like partly sectional view of the rear and interior of the gun stock, showing the barrel and bolt in their most rearward positions in the stock casing.

Fig. 6 is a partly sectional view similar to Fig. 5, showing the barrel and bolt therein moved into their forward positions.

Fig. 7 is a vertical sectional view taken on the line 7—7 of Fig. 4, showing the barrel and bolt in the stock casing.

Fig. 8 is a similar vertical sectional view to Fig. 7, taken on the line 8—8 of Fig. 5 showing the barrel and bolt in the casing.

Figs. 9, 10 and 11 are introduced to illustrate various forms of the lugs borne by the receiver and arranged to engage the bolt.

Fig. 12 is a partial longitudinal and vertical sectional view of a modified construction of the receiver element described herein.

Fig. 13 is a fragmentary vertical sectional view of the slotted rear end of the barrel, illustrating the construction and positions of the lugs.

Fig. 14 is a vertical sectional view of the rear portion of the gun stock casing taken on the line 14—14 of Fig. 5.

Fig. 15 is a vertical section of the forward or hand grip portion of the gun stock and the tubular member with the recoil and master springs thereon in the hollow stock.

Fig. 16 is a fragmentary vertical section of the forward portion of the barrel and stock showing the tubular member therein encircled by the recoil spring and the air pump plunger therein. The section is taken on line 16—16 of Fig. 17.

Fig. 17 is a vertical sectional view of the forward portion of the gun stock taken on the line 17—17 of Fig. 15.

Fig. 18 is a vertical section of the forward portion of the stock and parts therein taken on the line 18—18 of Fig. 15.

Fig. 19 is a vertical, longitudinal sectional view of the forward end of the gunstock with the barrel thereon, taken on line 19—19 of Fig. 15.

Fig. 20 is a side view of the air tube plunger and recoil spring operating element.

Fig. 21 is an end view of the plunger showing the annular end portion which encircles the tubular member.

Throughout the drawings and description the same number is employed to refer to the same part.

Considering the drawings, a cylindrical bolt or breech block 1 is located in the rear end of the barrel 2, and the bolt is provided with opposite recesses 3, 3' best shown in Fig. 2. Those recesses are to be engaged by the lugs 4, 4' as shown in Fig. 4, or lugs of different forms as appear in the Figs. 9, 10 and 11. There is no limitation as to the shape or positions of the lugs. The lugs may be constructed with projecting edges 5, fashioned to traverse the grooves 6 in the stock casing or receiver 7 and enlargements thereof 8, as shown in Fig. 8. As ordinarily formed, the stock casing 7 which constitutes the rear portion of the gun body, is made substantially as illustrated in Figs. 4, 5 and 6. It will be noted that the enlargements 8 and 8' are arranged to receive the lugs 4, 4' when in their raised positions, as shown in Fig. 6.

As best shown in Fig. 15, the forward portion of the gun stock 9 is hollow. This portion may be of wood and can be grasped by the hand in aiming the piece. Within part 9 is a tubular member 10 extending lengthwise and having opposite longitudinal slots. The tubular member is encircled by the recoil spring 11 and the master spring 12 hereinafter mentioned.

Returning to Figs. 4, 5 and 6, there will be noted a link or connecting piece 13, shown also in Fig. 14. The link is pushed rearwardly into the shoulder end or butt of the gun stock by the rearward movement of the bolt which compresses

the spring 13' pivotally connected with the link and located in the butt as shown in Fig. 4.

In Fig. 13 are best illustrated the springs 15 which are connected with the lugs. The springs may be advantageously used to prevent the possibility of the lugs binding during the operation, but are not considered essential parts of the invention. The feature marked 16 in Figs. 4, 5, 6 and 14, and best shown in Fig. 14, is a support and guide for the bolt and for the pivotal connection of the bolt and the link 13, when the bolt is moved back into the position illustrated in Fig. 5.

Located in the hollow of the forward portion 9 of the gun stock, as best appears in Fig. 15, is a friction ring 17 that is introduced to exert friction upon the hollow of portion 9 when the gun is discharged. The friction ring 17 is arranged next to the air pump plunger 18, the piston end 18' of which and the general form of the plunger is set out in Fig. 20. In Fig. 15 is also shown the air vent 19 in the closed end of the tubular member 10, and the longitudinal side slots 20 and bumper 21 therein. As also shown in Fig. 19, a thumb screw 22 may be used to lock the bumper 21 against the inner wall of the hollow of the portion 9. Taking in view also Fig. 18, there will be seen the barrel guide 23. This element is an attachment to the barrel and it is arranged to act upon the plunger 18 and the recoil spring during the discharge, and to be acted upon by the master spring 12 to replace the barrel into the position set out in Fig. 4. The cross bar 24 of the attachment 23 engages the side slots of the tubular member as shown in Fig. 18. This prevents any displacement of the parts during the operation. As usually made, the head 25 of the bumper 21 is engaged by the lock screw 22.

In Fig. 3 will be noted the thumb piece 26 by which the bolt may be moved from and into the barrel. This thumb piece travels the side slot 26' shown in Fig. 1. In Fig. 3 is also shown the downwardly extending lug 27 at the rear end of the bolt 1, by which the bolt is pivotally attached to the link 13 described. Thumb piece 26 is used to move bolt 1 when unloading.

In Figs. 4, 5 and 6 will be noted the trigger 28, and in Fig. 4 is represented a hammer element 29. The hammer and trigger mechanism constitute no direct part of this invention, as any known devices may be employed which will permit of the rearward movement of the bolt 1, and which may be cocked and fired by the trigger 28. It is thought that the construction of the hammer and its actuating features does not affect the construction of this invention as herein described. Any form of the hammer may be introduced to strike the firing pin 30, shown in Fig. 2.

As usually constructed the casing portion 7 of the gun stock has a bottom opening 31, as best shown in Fig. 7, and the cartridges may be ejected automatically through this opening. In Fig. 2 is shown the annular groove 32 to receive the end of a cartridge inserted by way of the side opening 33 in casing 7, shown in Fig. 7. The end of the barrel 2 has a slotted terminal portion 35 as illustrated in Figs. 4, 5 and 6. The invention is not limited to the special forms of the openings described.

As shown in Fig. 15 the tubular member 10 has one end fastened into the body of the stock, the forward end being closed by the bumper 21 having the threaded head 25 engaging the tube. Thumb screw 22 passes through the fore end of part 9 and is connected with head 25, and thereby fastens fore end stock portion 9 to the gun.

In the operation, the action of the bolt and lugs raising out of the bolt, and the projections of the lugs in the grooves of the receiver are all automatic, caused by the recoil of the barrel. As shown in Fig. 5, when the gun is fired the barrel and bolt are forced by the recoil into the extreme rearward position with the lugs raised from the barrel. The link shown in Fig. 4 now acts to move the bolt forward by the expansion of the butt spring 13', while the barrel and lugs by the action of the springs shown in Fig. 15 and compressed air are impelled to their extreme forward positions illustrated in Fig. 6. The master spring now forces the barrel backwards and the parts assume the positions set out in Fig. 4. If now the barrel and lugs are held temporarily in the positions of Fig. 6, and the bolt is drawn backwards by means of the finger piece 26, the exploded shell will drop or be shaken out through the opening 31 and slotted end 35 of the barrel. The operation is semi-automatic. A new shell may be introduced by way of the side opening 33 and slotted end 35 of the barrel, and it will be pressed into the barrel by the expansion of the butt spring 13'. It is held to be within the rights of this applicant to use clips of any selected construction cooperating with projections such as the extension 14 shown in Fig. 3 on the bolt or barrel to hold the parts in forward or backward positions, but such clips are not shown and are not thought by applicant to be essential to the full understanding of the drawings and the description of this invention.

Having now described this invention I claim:

1. In a firearm of the character described, a gun stock having a forward hollow portion, a tubular member in said stock portion having lengthwise side slots, said tube having a closed end provided with an air vent, a spiral recoil spring placed around the tubular member, a plunger engaging the said slots and constructed to act upon the said spring and compress the air in the tube when the gun is discharged, an attachment for the barrel of the gun constructed to encircle the said tubular member and engaging the said slots and adapted to act upon the said plunger.

2. In a firearm of the character described, a gun stock having a forward hollow portion, a tubular member in the said portion having lengthwise side slots, said tubular member having a closed end provided with an air vent, a spiral recoil spring around the said member, a plunger engaging the said slots and constructed to act upon the said spring and to compress air in the tubular member when the gun is discharged, an attachment for the barrel of the gun constructed to encircle said member and to act upon the said spring, and an adjustable master spring arranged to act upon the said barrel attachment and to return the barrel into its firing position.

RAY R. McCRUMB.