

July 5, 1938.

V. J. KING

2,123,111

BOLT ACTION RIFLE

Filed June 16, 1936

2 Sheets-Sheet 1

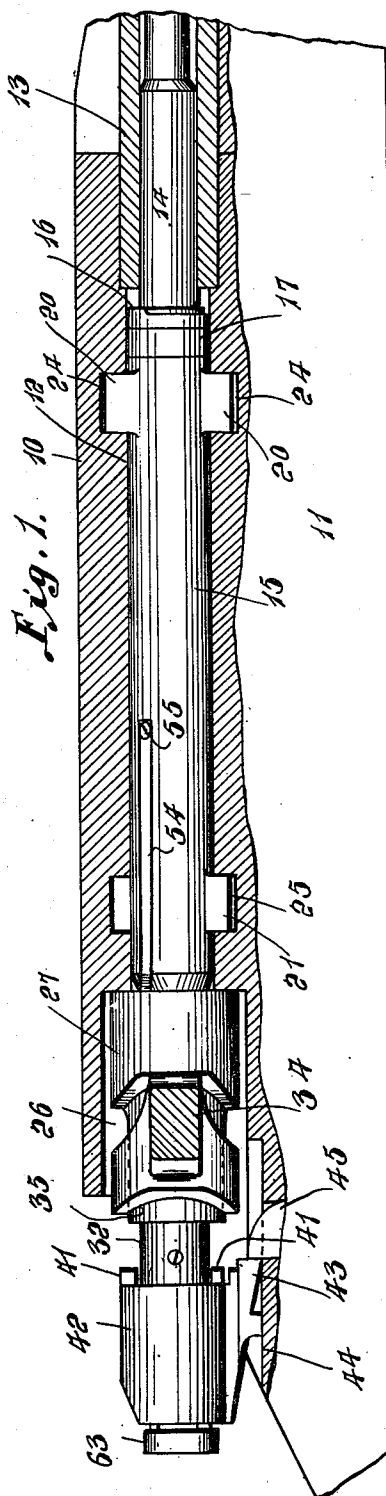


Fig. 1.

Fig. 9.

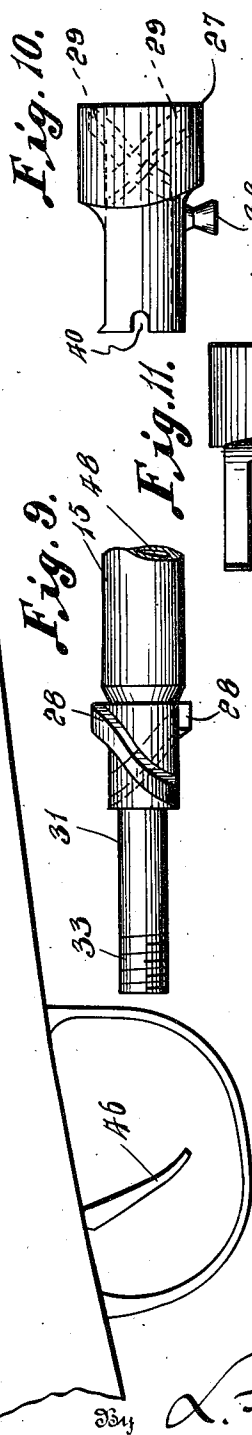


Fig. 10.

Fig. 11.

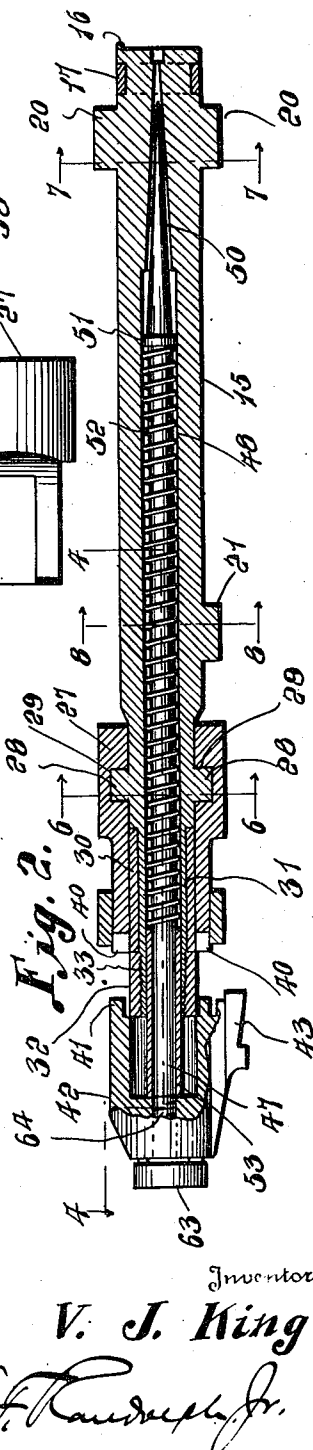


Fig. 2.

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2 Sheets-Sheet 2

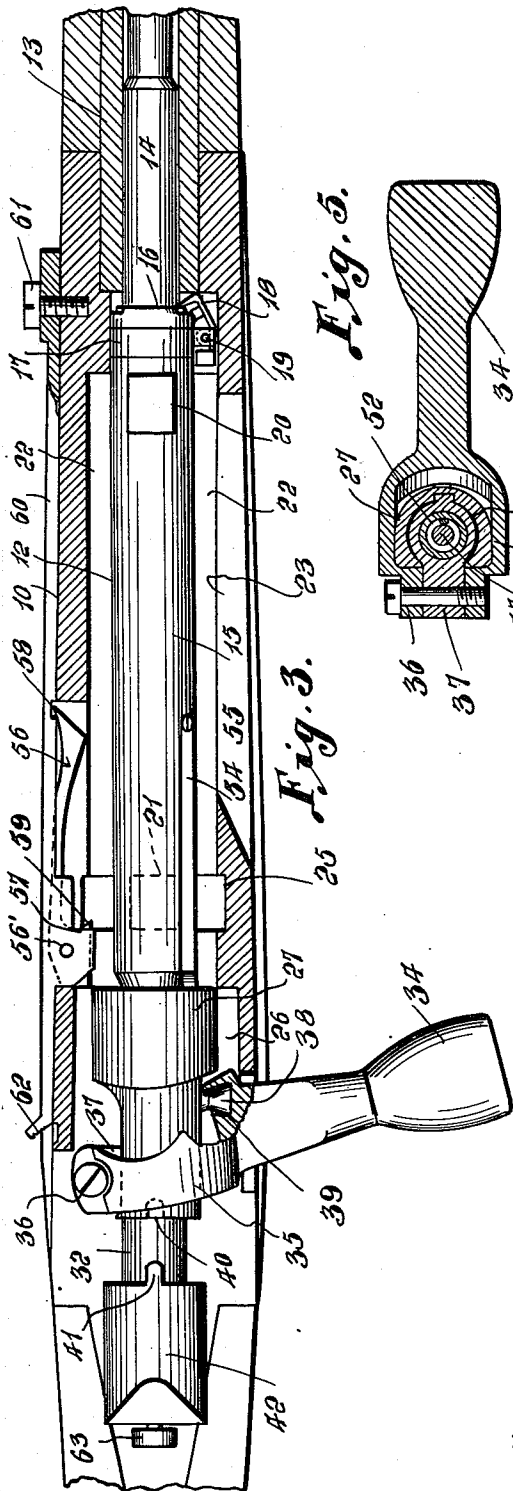


Fig. 3.

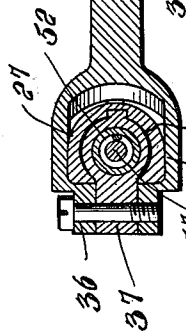


Fig. 6.

Fig. 4.

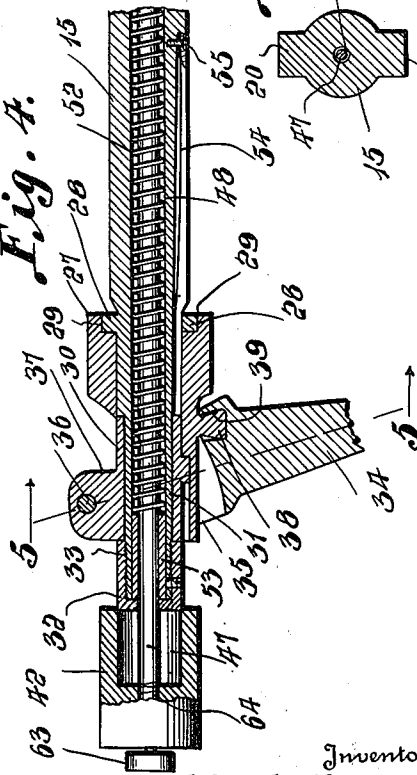
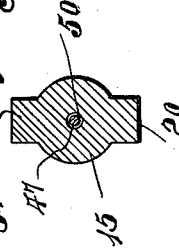
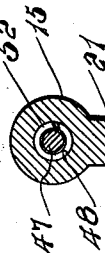


Fig. 8.

Fig. 7.



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UNITED STATES PATENT OFFICE

2,123,111

BOLT ACTION RIFLE

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Application June 16, 1936, Serial No. 85,589

7 Claims. (Cl. 42—16)

This invention relates to a bolt action rifle.

It is particularly aimed to provide a simplified and novel construction wherein the bolt has a straight pull or rectilinear action.

It is further aimed to provide a construction of the character set forth wherein the bolt has coacting oscillating worm gearing.

Another object is to provide a novel construction which will vibrate to a minimum and which will withstand the enormous breech pressure required, permitting the use of at least three pressure lugs, which may remain intact, that is without being slitted.

Still further it is aimed to provide a structure which can only be assembled in the correct way, and which cannot be fired until the bolt is locked.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:—

Figure 1 is a fragmentary view of a gun in side elevation, the same being partly in vertical section to disclose details;

Figure 2 is a vertical sectional view through the improved bolt mechanism, taken longitudinally;

Figure 3 is a horizontal sectional view taken through the parts of Figure 1 at a right angle thereto and along the axis of the bolt;

Figure 4 is a detail sectional view taken on the line 4—4 of Figure 2;

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 4;

Figure 6 is a detail section taken on the line 6—6 of Figure 2;

Figure 7 is a detail sectional view taken on the line 7—7 of Figure 2;

Figure 8 is a detail sectional view taken on the line 8—8 of Figure 2;

Figure 9 is a fragmentary elevation of one end of the bolt;

Figure 10 is a side view of the sleeve, and

Figure 11 is a plan view of said sleeve.

Referring specifically to the drawings wherein like reference characters designate like or similar parts, 10 designates a receiver suitably mounted upon the stock 11 of a rifle, the receiver having an interior space or bore 12 in line with the bore of the barrel 13 of the rifle, in the inner end of which bore 13, a conventional projectile 14 removably seats for firing.

Slidable and turnable in the bore 12 of the receiver 10 is a bolt 15, the forward end of which has a lug 16 for abutment by the base of the pro-

jectile 14 and around which end, a ring 17 is swiveled which in turn carries a latch 18, pivoted thereto at 19, and adapted to overlap said base of the projectile, as best shown in Figure 5.

Said bolt has, near the forward end, a pair of radially aligned locking lugs and at a distance from one of said lugs 20, preferably on the right hand side, the bolt is provided with a lug 21, similar to and longitudinally aligned with one of the lugs 20. Said bolt 15 and parts attached thereto and carried thereby is removably mounted in the bore 12. To this end, the bore 12 has openings into the same, diametrically opposite horizontal grooves 22 in the wall of the receiver 10. In one side of such wall an opening 23 is provided through which the projectiles 14 are loaded into the gun and ejected therefrom. Said grooves 22 communicate with arcuate grooves 24 and 25, in the said wall of the receiver, and the lugs 20 and 21 are adapted to engage the same so as to lock the bolt and associated parts in applied position.

At the rear end, bore 12 is enlarged into a chamber 26. In said chamber 26, a sleeve 27 is disposed, the same movably surrounding the rear end portion of the bolt 15. Rigid with the bolt 12 are one or more spirally arranged ribs 28 which are engaged with similarly shaped spiral grooves 29 provided in the bore of the sleeve 27. Said sleeve 27 also extends over a bushing 30 loose on a reduced portion 31 of the bolt into which reduced portion, a ring nut 32 is screw threaded at 33, to prevent accidental displacement of the bushing 30.

A horizontally disposed actuating member is provided at 34 which has a bifurcated portion 35, straddling a reduced end portion of the sleeve 27 and being pivoted by means of a bolt or otherwise as at 36 to a lug 37 on the bushing 30. In addition, a projection 38 on the sleeve 27 is loosely disposed in a socket 39 of the operating member or slide 34.

The rear end of the sleeve 27 has one or more notches 40 therein adapted to receive lugs 41 on a hammer 42 having a depending projection 43 adapted to travel in a groove 44 suitably provided in the receiver 10 or stock 11 and at the forward end being adapted to abut the upper end 45 of a conventional lever or trigger 46.

Said hammer 42 is rigid with a firing rod 47, the latter projecting forwardly from the hammer and through a bore 48 of the bolt, the forward end of such bolt being separate or rigid therewith as preferred, and in the form of a firing pin 50, adapted to be projected forwardly beyond the bore of the bolt and into firing relation with

the projectile 14. A collar 51 is fastened on the firing rod 47 and an expansive coil spring 52 surrounds the firing rod, abutting the shoulder 51 and the forward end of a sleeve or tube 53 surrounding the firing rod and abutting the hammer.

The bolt 15, proper, snugly fits the bore 12. On the periphery of the bolt is a detent spring 54 screwed thereto as at 55, the tendency of the detent spring 54 being to move outwardly slightly at its free end, when the bolt and associated parts are retracted.

Fired projectiles are adapted to be discharged through the opening 23 upon retraction of the bolt and action of an ejector 56 pivotally mounted as at 56' within the receiver and having a shoulder at 57, engageable by one of the lugs 20 as the bolt is retracted, to throw the forward end 58 of the ejector into engagement with the projectile 14 and discharge it through the opening 23.

Said ejector pivot member 56' is preferably connected to lugs 59 carried by a removable spring latch 60, secured as by a screw 61 to the receiver. Said latch 60 has a thumb piece 62.

It will be realized that one of the lugs 20 when the bolt is retracted, will in addition to engaging and actuating the shoulder 57 of the ejector, abut the lugs 59, thus limiting the retraction of the bolt. In the event the bolt is to be completely removed, as for inspection or repair, the thumb piece 62 is engaged and the latch 60 sprung outwardly, so that the shoulder 57 and lugs 59 will not be in the path of outward movement of the adjacent lug 20.

The firing rod 47 preferably has a safety 63 connected thereto, for instance being of the screw type as suggested at 64.

Presuming operation, if a shell has been fired as in Figures 1 and 3 of the drawings, the handle 34 is pulled in a straight line horizontally toward the butt of the gun, moving therewith the bolt and connected parts and projectile 14, the relatively movable parts and worm or screw engagement at 28 and 29 moving the lugs 20 and 21 into alignment with the slots 22 and thence moving the bolt in a rectilinear path rearwardly until one of the lugs 20 strikes the shoulder 57, thereby moving the end 58 of the ejector into engagement with the projectile 14, causing the latter to be moved outwardly through the opening 23. When such bolt is thus withdrawn, the sleeve or rear end of the detent 54 springs laterally outwardly to a slight extent, engaging the end of the sleeve 27, and preventing accidental return of the sleeve and associated parts to the first mentioned position. A fresh projectile may be thrust through the opening 23 into the bore of the receiver where it is engaged by the abutment 16 and hooks 18, following which the handle or operating member 34 is thrust forwardly moving the bolt and associated parts forwardly until the lugs 20 and 21 align with the grooves 24 and 25 at which time, the snug fit of the bolt in the bore 12 retracts the detent 54, and the spring 52 causes the bolt to turn in the arcuate slots 24 and 25, thus locking the bolt in such position.

It will be realized that during the aforesaid forward movement of the operating member 34, lug 43 will abut a trigger end 45, the movement of the hammer thus being arrested while the remainder of the bolt and associated parts move forwardly relatively thereto to tension the spring and align the lugs 20 and 21 with the grooves 24 and 25, respectively. Thereafter, when the

trigger 46 is pulled, the end 45 is retracted, whereupon the tension of the spring 52 pulls the hammer 42 forwardly, thus driving the firing rod 47 and firing pin 50 into engagement with the projectile 14.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:—

1. In combination, a bolt, a receiver mounting the bolt for longitudinal and rotary movement relatively to the receiver, interengaging lugs and grooves between the bolt and receiver, a sleeve about the bolt, a spiral rib connection between the sleeve and bolt, a bushing on the bolt, an operating handle pivoted to the bushing and interengaged with said sleeve to move the latter to rotate the bolt, a firing rod in said bolt, mounted for sliding movement, a hammer connected to said firing rod, a spring associated with said firing rod tensioned through the application of the bolt, whereby upon operation, the spring will operate the hammer and rod.

2. In combination, a bolt, a receiver mounting the bolt for longitudinal and rotary movement relatively to the receiver, interengaging lugs and grooves between the bolt and receiver, a sleeve about the bolt, a spiral rib connection between the sleeve and bolt, a bushing on the bolt, an operating handle pivoted to the bushing and interengaged with said sleeve to move the latter to rotate the bolt, a firing rod in said bolt, mounted for sliding movement, a hammer connected to said firing rod, a spring associated with said firing rod tensioned through the application of the bolt, whereby upon operation, the spring will operate the hammer and rod, said interengaging means between the receiver and bolt consisting of radially opposite lugs on the bolt, another lug on the bolt longitudinally aligned with one of the first mentioned lugs, diametrically opposite longitudinal grooves in the receiver engaged by the lugs, and arcuate grooves for the lugs extending from the first mentioned grooves.

3. In combination, a bolt, a receiver mounting the bolt for longitudinal and rotary movement relatively to the receiver, interengaging lugs and grooves between the bolt and receiver, a sleeve about the bolt, a spiral rib connection between the sleeve and bolt, a bushing on the bolt, an operating handle pivoted to the bushing and interengaged with said sleeve to move the latter to rotate the bolt, a firing rod in said bolt, mounted for sliding movement, a hammer connected to said firing rod, a spring associated with said firing rod tensioned through the application of the bolt, whereby upon operation, the spring will operate the hammer and rod, said bolt having a reduced portion on which said bushing is disposed, and a ring nut secured to the reduced portion at one end of the bushing.

4. In combination, a bolt, a receiver mounting the bolt for longitudinal and rotary movement relatively to the receiver, interengaging lugs and grooves between the bolt and receiver, a sleeve about the bolt, a spiral rib connection between the sleeve and bolt, a bushing on the bolt, an operating handle pivoted to the bushing and interengaged with said sleeve to move the latter to rotate the bolt, a firing rod in said bolt, mounted for sliding movement, a hammer connected to said firing rod, a spring associated with said firing rod tensioned through the application of the bolt, whereby upon operation, the spring will operate the hammer and rod, said bolt having a

reduced portion on which said bushing is disposed, and a ring nut secured to the reduced portion at one end of the bushing, a tube in said hammer surrounding the firing rod, an abutment
5 on said firing rod, and an expansive coil spring surrounding the rod and engaging said tube and said abutment.

5. In combination, a bolt, a receiver mounting the bolt for longitudinal and rotary movement
10 relatively to the receiver, interengaging lugs and grooves between the bolt and receiver, a sleeve about the bolt, a spiral rib connection between the sleeve and bolt, a bushing on the bolt, an
15 operating handle pivoted to the bushing and interengaged with said sleeve to move the latter to rotate the bolt, a firing rod in said bolt, mounted for sliding movement, a hammer connected to
20 said firing rod, a spring associated with said firing rod tensioned through the application of the bolt, whereby upon operation of the trigger, the spring
will operate the hammer and rod, the rear end of
said sleeve having a notch, and said hammer having a projection in line with and adapted to engage said notch.

25 6. In combination, a bolt, a receiver mounting

the bolt for longitudinal and rotary movement relatively to the receiver, interengaging lugs and grooves between the bolt and receiver, a sleeve about the bolt, a spiral rib connection between the sleeve and bolt, a bushing on the bolt, an operating handle pivoted to the bushing and interengaged with said sleeve to move the latter to rotate the bolt, a firing rod in said bolt, mounted for sliding movement, a hammer connected to
10 said firing rod, a spring associated with said firing rod tensioned through the application of the bolt, whereby upon operation, the spring will operate the hammer and rod.

7. In combination, a bolt, a receiver mounting the bolt for longitudinal and rotary movement
15 relatively to the receiver, interengaging lugs and grooves between the bolt and receiver, a sleeve about the bolt, a spiral rib connection between the sleeve and bolt, a bushing on the bolt, an operating handle pivoted to the bushing and interengaged with said sleeve to move the latter to rotate the bolt, a firing rod in said bolt mounted for
20 sliding movement, and a hammer connected to the firing rod.

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