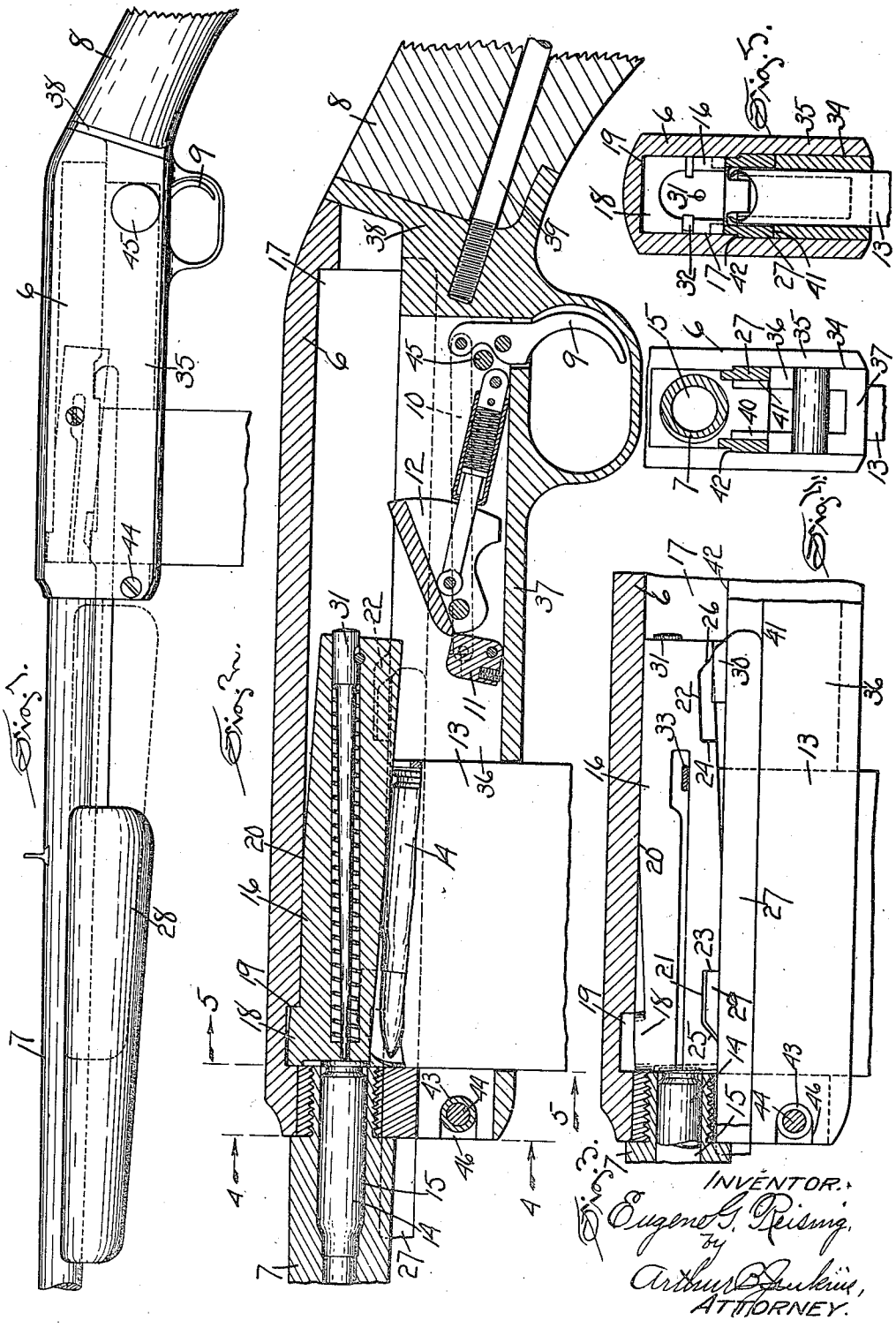
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FIREARM

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FIREARM

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10 Claims. (Cl. 42—16)

My invention relates more particularly to that class of firearms which embody a slidably mounted breech bolt for opening and closing the breech in the barrel and for effecting firing of a cartridge therein, and an object of my invention, among others, is the production of a mechanism of this type in which the action shall be smooth, positive and effective with ease of manipulation; and a further object of the invention is to provide a mechanism of this type that shall be simple in construction and particularly efficient in operation.

One form of a mechanism embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawing, in which—

Figure 1 is a side view of a portion of a firearm embodying my invention, the part shown being that embodying the firing mechanism.

Figure 2 is a view on enlarged scale in lengthwise central section through that part of my improved firearm embodying the firing mechanism, the breech bolt being shown in its closed and locked position.

Figure 3 is a similar view of a portion of the device shown in Fig. 2 but with the breech bolt shown in unlocked position but still closed.

Figure 4 is a view in section on a plane denoted by the dotted line 4—4 of Fig. 2.

Figure 5 is a similar view on a plane denoted by the dotted line 5—5 of Fig. 2.

My invention, although not limited in its application to a firearm of any particular type, is especially applicable to a firearm in which loading and unloading is manually performed, and for this reason a firearm of this type has been selected by me for the purpose of disclosing my invention herein. In the accompanying drawing the numeral 6 denotes the receiver of my improved firearm having a barrel 7 secured at its front end and a stock 8 at its rear end. A trigger 9 is pivotally mounted in the receiver and is connected by a sear bar 10 with a sear 11 arranged for engagement with and disengagement from a hammer 12. A magazine 13 is removably engaged within the receiver to supply cartridges 14 to the breech bolt chamber 15 in the barrel in a manner common to firearms of this type, all of the parts thus far described in fact being of old and well known construction and further and detailed description thereof is omitted herein.

My invention relates particularly to the breech bolt and the means for operating it. This breech bolt 16 is slidably mounted in a chamber 17 in the receiver and has a locking lug 18 at its forward end adapted to engage in a breech bolt locking recess 19 in the receiver. This breech bolt has a fulcrum 20 intermediate its ends resting against the top wall of the chamber 17, although I contemplate that this fulcrum need not necessarily be located on the top of the breech bolt. The under side of the breech bolt has notches 21—22 located at opposite ends thereof, there being two of these notches located on opposite sides of the breech bolt at each end. These notches have shoulders 23—24 on that end of the notch towards the lengthwise center of the breech bolt, said notches being beveled as at 25—26 at the ends opposite said shoulders.

A pair of action bars 27 extend into the forward end of the chamber 17 on each side thereof, the forward ends of these action bars being secured to opposite sides of a sliding grip 28 mounted for sliding movement underneath the barrel in a manner common to firearms of this type. Each of the action bars has two breech bolt actuating lugs 29—30 positioned to enter the recesses 21—22, these lugs being beveled to correspond with the bevels 25—26 in the notches 21—22, as shown in Figure 3 of the drawing, and also shouldered to correspond with the shoulders 23—24 in the breech bolt. A firing pin 31 is mounted in the breech bolt in a manner common to firearms of this type to be actuated by the hammer 12 when the sear is released by action of the trigger 9. The firearm may also have an extractor 32 and an ejector 33 constructed, mounted, and also operated in a manner common to firearms of this type and as will be readily understood by those skilled in the art.

In the operation of the device the parts being in the position shown in Fig. 2 movement of the sliding grip 28 backwardly will engage the beveled portions of the lugs 30 with the beveled parts 26 of the recesses 22, thereby rocking the breech bolt on its fulcrum and disengaging the lug 18 from the locking recesses 19, as shown in Fig. 3 of the drawing. This movement of the lugs 30 rocks the breech bolt on the fulcrum 20 and engages the shoulders at the rear of the lugs 29 with the shoulders 23 of the recesses 21 just before the lug 18 is disengaged from the recesses 19. Continued rearward movement of the grip 28 backwardly to the position shown in dotted lines in Fig. 1 moves the breech bolt to its rearward position in the chamber 17. This operation carries the extractor backwardly removing the shell from the breech of the barrel, and the shell striking the ejector is thrown out through the

ejection opening in the receiver in a manner common to structures of this type and as will be readily understood. In the return and forward movement of the sliding grip 28 the lugs 29 engaging the forward ends of the recesses 21 will return the breech bolt to its forward position, and as soon as the lug 18 reaches the recess 19 the pressure of the beveled surfaces of the lugs 29 against the beveled surfaces 25 will force the lug 18 into the hole 19 and lock the breech bolt in this position. The sliding grip being moved slightly further to its extreme forward position, the shoulders on the front of the lugs 30 engaging the shoulders 24 of the recesses 22 will limit the forward movement of the sliding grip and the lugs 29 riding under the breech bolt forward of the beveled surfaces 25 will hold the lug 18 in the recess 19, thereby locking the breech bolt against rearward movement, this position of the parts being shown in dotted line in Fig. 2.

An enclosing action housing 34 is inserted through an opening in the bottom of the receiver extending lengthwise between the side parts 35 thereof, this action housing being of U-shape in cross section, comprising sides 36, a bottom 37 and a heel 38, the stock 6 being secured to the latter as by means of a bolt 39, as shown in Fig. 2. The sides 36 of the housing have lips 40 extending lengthwise along the upper edge thereof and forming slideways 41 for the action bars 27, as shown in Figs. 3 and 4. The action bars have shoulders extending lengthwise along the outer sides thereof in engagement with shoulders 42 in the side parts 35. This construction provides for an extremely easy and steady movement of the parts connected with the sliding grip 28, the slideways for the action bars avoiding any cramping or twisting action, and the ease and steadiness of movement of the sliding grip 28 is particularly noticeable in the operation of the piece.

The action housing is pivotally supported at its front end on a bushing 43 mounted on a screw 44. The rear end of said housing is held by a screw 45 passing through one side of the receiver, through said housing, and into the other side of the receiver. By removing the screw 45 and the stock 8 held by the screw 39 the action housing may be pulled backwardly within the receiver and disengaged therefrom, a notch 46 in the front end of the sides of the housing permitting this to be done.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:

1. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess, a fulcrum bearing against the wall of said chamber intermediate the ends of the breech bolt to provide maximum leverage for rocking and supporting sliding action of said bolt to engage and disengage said locking lug within and from said recess, an action bar operatively connected with said breech bolt, said connection including a cam on the end of the breech bolt opposite said locking lug and a lug on the action bar to engage said cam to effect the rocking movement specified with maximum leverage, and means for operating the action bar.

2. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess, a fulcrum bearing against the wall of said chamber intermediate the ends of the breech bolt to provide maximum leverage for supporting and sliding rocking action of said bolt to engage and disengage said locking lug within and from said recess, an action bar operatively connected with said breech bolt, said connection including a cam on the end of the breech bolt opposite said locking lug and a cooperating lug on the action bar to engage said cam to effect said rocking action with said maximum leverage for disengagement of the locking lug from said recess, means for re-engaging said lug in said recess with the effect of said increased leverage, and means for operating the action bar.

3. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess, a fulcrum bearing against the wall of said chamber intermediate the ends of the breech bolt to provide maximum leverage for supporting and sliding rocking action of said bolt to engage and disengage said locking lug within and from said recess by the effects of said increased leverage, an action bar operatively connected with said breech bolt, said connection including a cam on the end of the breech bolt opposite said locking lug and a cooperating lug on the action bar to engage said cam to produce said rocking action by the effects of said increased leverage, engaging shoulders on the breech bolt and action bar for effecting movement of the breech bolt, and means for operating the action bar.

4. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess, a fulcrum bearing against the wall of said chamber intermediate the ends of the breech bolt to provide maximum leverage for sliding and supporting rocking action of said bolt to engage and disengage said lug within and from said recess, an action bar operatively connected with said breech bolt said connection including interengaging means comprising a cam on the end of the breech bolt opposite to said locking lug and a lug on the action bar to engage said cam for disengaging action of said lug from said recess through effect of said maximum leverage, and interengaging means on the action bar and breech bolt for re-engaging said lug with said recess through effect of said maximum leverage, and means for operating the action bar.

5. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess, a fulcrum bearing against the wall of said chamber intermediate the ends of the breech bolt to provide maximum leverage for supporting and sliding rocking action of said bolt

to engage and disengage said locking lug within and from said recess, an action bar operatively connected to said breech bolt, said connection including a cam on the end of the breech bolt opposite to said locking lug and a lug on the action bar to engage said cam to force the fulcrum bearing on the breech bolt closely against the wall of the chamber in the receiver and also for disengaging said locking lug from said locking recess for moving the breech bolt backward through effect of said maximum leverage, interengaging shoulders on the action bar and breech bolt for moving the latter forward through effect of said maximum leverage, and interconnecting means for operating the action bar.

6. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess and a fulcrum bearing against a wall of said chamber intermediate the ends of the breech bolt for rocking and supporting sliding action of said bolt intermediate its ends to engage and disengage said lug within and from said recess, a shoulder and a cam on said breech bolt near opposite ends thereof on opposite sides of said fulcrum to provide maximum leverage for tipping action of the breech bolt, an action bar having a cam to engage said cam on the breech bolt to effect said maximum leverage to tip said bolt in one direction to release said locking lug from said recess, said action bar having another cam to engage said shoulder and rock said bolt in the opposite direction to effect said maximum leverage to project said locking lug into said recess, and means for operating said action bar.

7. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber near its front end, a breech bolt slidably mounted in said chamber and having a locking lug at its front end to engage within said recess and a fulcrum bearing against a wall of said chamber intermediate the ends of the breech bolt for rocking and supporting sliding action of said bolt intermediate its ends to engage and disengage said lug within and from said recess, a shoulder and a cam on said breech bolt near opposite ends thereof and on opposite sides of said fulcrum to provide maximum leverage for tipping action of the breech bolt, an action bar having a cam to engage said cam on the breech bolt to effect said maximum leverage to rock said bolt in one direction to release said locking lug from said recess, said action bar having another cam to engage said shoulder and rock said bolt in the opposite direction to effect said maximum leverage to project said locking lug into said recess, and means for operating said action bar.

8. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess and a fulcrum bearing against a wall of said chamber intermediate the ends of the breech bolt for rocking action of said bolt to engage and disengage said lug within and from said recess, notches formed near opposite ends of said breech bolt, said notches each having a cam at one end and a shoulder at the opposite end, an action bar having lugs thereon to engage within said notches, said lugs having cams to engage the cams in said notches to rock said bolt on its fulcrum to engage and disengage said lug within and from said recess, said lugs on the action bar also having shoulders to engage the shoulders of said notches to move the breech bolt in one direction and to limit forward movement of said action bar, and means for operating said action bar.

9. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess and a fulcrum bearing against a wall of said chamber intermediate the ends of the breech bolt for rocking action of said bolt to engage and disengage said lug within and from said recess, a notch formed in the breech bolt near one end with a cam at the front end of said notch and a shoulder at the rear end thereof, a notch formed in the breech bolt near its rear end with a cam at the rear end of said notch and a shoulder at the front end thereof, an action bar having lugs with cams and shoulders shaped to correspond with the cams and shoulders of said notches, and means for operating said action bar rearwardly to engage with the cam in the rearward notch to tip the breech bolt on its fulcrum and release said lug from said recess and to engage the shoulder at the forward end of the breech bolt to move the breech bolt backwardly and also to operate said action bar forwardly and also for operating said action bar to engage said cam at the front end of the breech bolt to move said lug into said locking recess and lock it in position and to engage the shoulder near the rear end of the action bar to limit forward movement of the action bar.

10. A firearm including a receiver having a breech bolt chamber therein with a breech bolt locking recess in a wall of said chamber, a breech bolt slidably mounted in said chamber and having a locking lug at one end to engage within said recess and a fulcrum bearing against a wall of said chamber intermediate the ends of the breech bolt for rocking and supporting sliding action of said bolt intermediate its ends to engage and disengage said lug within and from said recess, shoulders and cams on opposite sides of said breech bolt near opposite ends thereof and on opposite sides of said fulcrum to provide maximum leverage for tipping action of the breech bolt, an action bar comprising two members located on opposite sides of the breech bolt each of said members having a cam to engage one of said cams on the breech bolt to effect said maximum leverage to tip said bolt in one direction to release said locking lug from said recess, said members of said action bar each having another cam to engage one of said shoulders and rock said bolt in an opposite direction to effect said maximum leverage to project said locking lug into said recess, and means for uniting said members and for operating said action bar.

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