July 19, 1932. J. M. HORGER 1,867,569

FIREARM

Filed Nov. 17, 1930

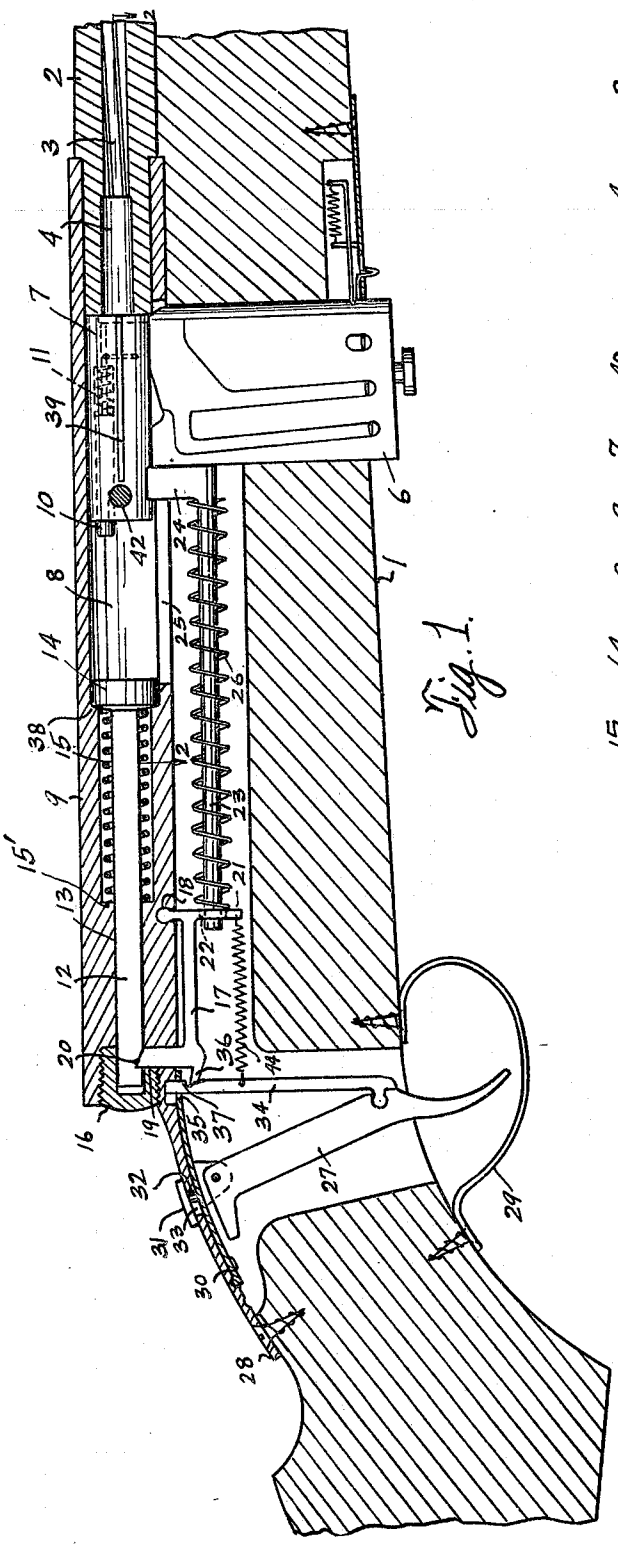


Fig. 1.

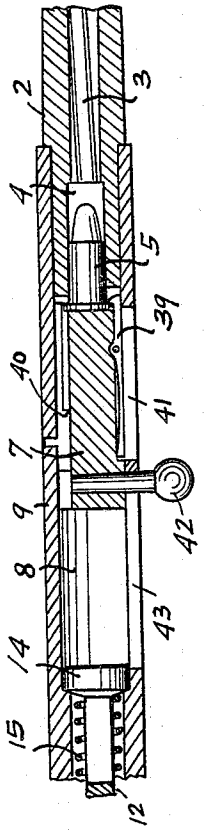


Fig. 2.

Inventor
James Melton Horger

Hardway & Cathey
Attorneys

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UNITED STATES PATENT OFFICE

JAMES MILTON HORGER, OF CORRIGAN, TEXAS

FIREARM

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This invention relates to new and useful improvements in a fire arm.

One object of the invention is to provide improvements in a fire arm of the hammerless, automatic, type which consist in novel means for automatically cocking the arm, novel trigger mechanism and a novel safety device to prevent the accidental firing of the arm.

Another object of the invention is to provide improvements in fire arm mechanism particularly designed for application to a rifle of the twenty two caliber gauge, either long or short, but which may also be applied to other types of fire arm.

With the above and other objects in view this invention has particular relation to certain novel features of construction, operation and arrangement of parts an example of which is given in this specification and illustrated in the accompanying drawing, wherein:

Figure 1 shows a fragmentary longitudinal vertical sectional view of the arm, showing the improvements applied thereto, and

Figure 2 shows a fragmentary horizontal sectional view taken on the line 2—2 of Figure 1.

Referring now more particularly to the drawing, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 designates the stock and the numeral 2 designates the barrel having the rifled bore 3 and whose inner end is provided with the usual cartridge chamber 4, aligned with the bore and provided to receive the cartridge 5. The numeral 6 designates the magazine of conventional construction and which is detachable for loading purposes and which is held in assembled position in the arm, in the conventional manner. The numeral 7 designates a cylindrical breech block which is reciprocable in the chamber 8 of the tubular casing 9 into the forward end of which the breech end of the barrel fits. There is the usual firing pin 10 mounted in the breech block whose point is normally held normally retracted by the coil spring 11. There is a firing bolt 12 polygonal in cross section and slidable in a correspondingly shaped axial bearing 13 in the casing 9. The inner end of the firing bolt is formed with a cylindrical head 14 in the chamber 8 and there is a main spring 15 which surrounds the firing bolt and is interposed between the head 14 and the internal annular shoulder 15′, in the casing. Screwed into the rear end of the casing 9 there is the plug 16 into which the bearing 13 extends.

The numeral 17 designates the sear which is pivotally connected at the point 18 to the casing 9 and whose other end works through the bearing 19 and is in position to engage in the notch 20 of the firing bolt when said bolt is retracted to cocked position. The pivoted end of the sear has a depending arm 21 provided with a bearing 22 through which one end of the rod 23 works. The other end of this rod is attached to an arm 24 which works through the slot 25, of the casing 9, and is also attached to the breech block 11. A sear spring 26 surrounds the rod 23 and is interposed between the arms 21 and 24 and operates to hold the sear in position to engage in the notch 20 upon retraction of the firing bolt 12.

The numeral 27 designates a trigger which is pivotally connected at its upper end to the plate 28 carried by the stock and around the lower end of the trigger is the usual trigger guard 29. There is an arcuate safety plate 30 fitted against the underside of the plate 28 and there is a thumb plate 31 slidable on the plate 28 and connected to the safety plate by means of a pin 32 which works in the oblong slot 33 cut through the plate 28.

There is a sear link 34 whose lower end is pivotally connected to the trigger 27 and whose upper end works through a bearing 35 in the inner end of the safety plate 30. The sear 17 has a rearwardly extended dog 36 adapted to be engaged by a shoulder 37 carried by the sear link 34. A pull spring 44 is connected, at one end, to the arm 21, and at its other end to the sear link 34 about midway between its ends.

As shown in the drawing, the mechanism is in cocked position and ready for firing. A pull on the trigger 27 will now operate to actuate the sear link 34 whose shoulder 37

will engage the dog 36 and force the sear from the notch 20. The main spring 15 will thereupon drive the firing bolt forwardly and it will strike the firing pin. Said pin will be driven suddenly against the rim of the cartridge and the cartridge will thereby be fired. The recoil of the breech block will move the firing bolt back until its head 14 engages against the internal annular shoulder 38, and the rear end of the rod 23 will engage the sear link 34 and disengage its shoulder 37 from the dog 36. The spring 26 will operate to return the sear to its original or engaging position and the spring 44 will return the trigger to its original position and carry the sear link into position to engage its shoulder 37 over the dog 36.

When the firing bolt is moved back to said position, the sear will now engage in the notch 20 and hold said bolt in cocked position. Mounted on one side of the breech block 7 there is the usual dog 39 which engages the cartridge rim and as the breech block moves back this dog will carry the shell back until the rim engages the ejector shoulder 40 and a further movement will result in the shell passing out through the slot 41.

Attached to the breech block 7 there is a hand grip 42 which works through a side slot 43 of the casing 9 and through which the arm may be manually cocked.

In case it is desired to place the arm on safety so that it can not be accidentally fired the safety plate 30 may be moved rearwardly through the thumb plate 31 so as to carry the shoulder 37 out of the range of the dog 36, to the end that when the trigger is pulled, the sear 17 will be unaffected.

Upon retraction of the breech block, when it clears the upper end of the magazine 6 another cartridge will be elevated into the path of said block and upon return of the block, through the influence of the spring 26, said cartridge will be moved forwardly into the chamber 4 and the extractor dog 39 will engage over the cartridge rim in the usual way, as shown in Figure 2.

The corresponding chamber is of sufficient length to permit the use of either long or short cartridges of any particular caliber. Ordinarily this type of fire arm will be of twenty-two caliber, and the mechanism will not be of sufficient strength to withstand the force of the explosion of cartridges of larger caliber, although it may be built sufficiently strong to accommodate cartridges of larger caliber.

While I have shown what I now consider to be the preferred form of the invention it is obvious that mechanical changes may be made therein and equivalents substituted for the parts shown and I reserve the right to make such mechanical changes and substitutions as may be found desirable within the principle of the invention as defined by the claims.

What I claim is:

1. In a fire arm having a firing bolt, a reciprocable breech block and a firing pin in said block; a sear engageable with said bolt when the latter is in retracted position, a yieldable member disposed between the sear and breech block and effective to hold the sear in bolt engaging position and to return said breech block to original position after its recoil, a trigger, means connected to the trigger and effective to release the sear from said bolt upon actuation of said trigger.

2. In a fire arm having a firing bolt, a reciprocable breech block and a firing pin in said block; a sear engageable with said bolt when the latter is in retracted position, a yieldable member disposed between the sear and breech block and effective to hold the sear in bolt engaging position and to return said breech block to original position after its recoil, a trigger, means connected to the trigger and effective to release the sear from said bolt upon actuation of said trigger, and a main spring effective to drive the firing bolt against said pin upon such release of said sear.

3. In a fire arm having a firing bolt, a breech block, a firing pin in said block and means for driving said bolt into contact with said pin; a sear engageable with the bolt when the latter is in retracted position, a yieldable member arranged to hold the sear in bolt engaging position and also to return the breech block after its recoil, a trigger, a sear link connected to the trigger, interengaging means carried by the sear and link through which the sear may be disengaged from said bolt upon actuation of the trigger.

4. In a fire arm having a firing bolt, a breech block, a firing pin in said block and means for driving said bolt into contact with said pin; a sear engageable with the bolt when the latter is in retracted position, a yieldable member arranged to hold the sear in bolt engaging position and also to return the breech block after its recoil, a trigger, a sear link connected to the trigger, interengaging means carried by the sear and link through which the sear may be disengaged from said bolt upon actuation of the trigger, and a safety device through which said interengaging means may be held in nonengaging position.

5. In a fire arm having a firing bolt, a breech block, a firing pin in said block and means for driving said bolt into contact with said pin; a sear engageable with the bolt when the latter is in retracted position, a yieldable member arranged to hold the sear in bolt engaging position and also to return the breech block after its recoil, a trigger, a sear link connection to the trigger, interen-

gaging means carried by the sear and link through which the sear may be disengaged from said bolt upon actuation of the trigger, and means connected with the breech block and effective to disengage said engaging means upon recoil of said block.

In testimony whereof I have signed my name to this specification.

JAMES MILTON HORGER.