

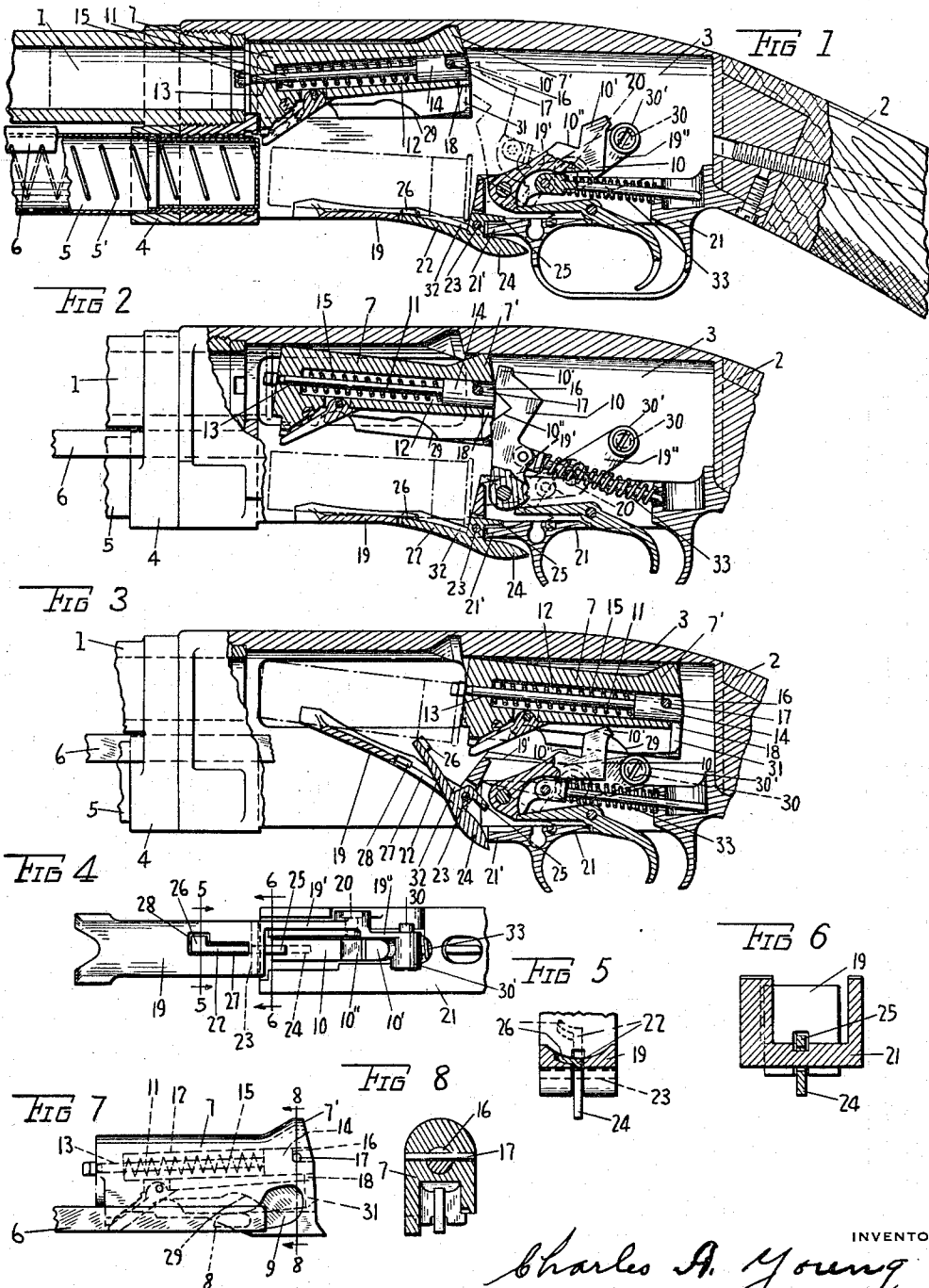
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GUN

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## UNITED STATES PATENT OFFICE

2,127,318

GUN

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3 Claims. (Cl. 42-70)

This invention relates to guns, particularly repeating shot guns and rifles.

An object of the invention is to provide safety devices such that the hammer of the gun will be in ineffective position with respect to the firing pin when the gun is in a partly open position or until the gun is completely closed.

In the accompanying drawing:

Fig. 1 is a longitudinal section of so much of a gun as is necessary to illustrate my improvements, with the gun in closed position ready for firing.

Fig. 2 is a partial longitudinal section with the parts shown in the position assumed before the gun is closed ready for firing.

Fig. 3 is a partial longitudinal section with the parts in another position in which the breech bolt is retracted and the shell carrier is feeding the shells to the barrel.

Fig. 4 is a top plan view of the shell carrier and its supporting frame and also of the hammer which is likewise carried by the frame.

Fig. 5 is an enlarged transverse section through the carrier on the line 5-5 of Fig. 4.

Fig. 6 is an enlarged transverse section through the carrier and its supporting frame, the section being on the line 6-6 of Fig. 4.

Fig. 7 is a side elevation of the breech bolt.

Fig. 8 is a section on the line 8-8 of Fig. 7.

Referring to the drawing, 1 represents the barrel of the gun, 2 the grip portion of the stock and 3 the chamber or receiver which houses the firing mechanism, the barrel of the gun being provided in the usual way with a receiver extension indicated at 4. A portion of the magazine of the gun is indicated at 5, this magazine being partly surrounded by a grip (not shown in the present instance) which has connected therewith an action bar 6, a portion of which is shown in Figs. 1 and 7, this action bar acting to operate the breech bolt 7 in the usual way; that is, the rear end of the action bar has a stud 8 (Fig. 7) which cooperates with a cam-shaped recess 9 in the side of the breech bolt to cooperate with the stud to first depress the breech bolt to release the back stop 7' from the notch in the receiver and then retract the breech bolt.

My improved safety features will first be described, this safety feature being so arranged that until the gun is in fully closed position the head 10' of the hammer 10 will be out of effective alignment with the firing pin which is located in the breech bolt so that in the event that the cocked hammer is inadvertently re-

leased prior to the closing of the gun the head 10' thereof will contact with the rear end of the breech bolt instead of with the firing pin. This feature contemplates a changed construction in the rear end of the breech bolt and also of the firing pin. The firing pin is indicated at 11, this firing pin being located mainly in a chamber 12 in the breech bolt with its forward end slidably mounted in a reduced aperture 13 leading from the chamber 12. The rear end of the firing pin has an enlarged head 14 which is slidably mounted in the chamber 12 and interposed between the forward end of the chamber and this head 14 is a coil spring 15. The rear end of the head is recessed on its upper side as indicated at 16. A pin 17 carried by the breech bolt and extending through this recess acts as a stop for the firing pin so as to maintain the rear end of the unnotched portion of the firing pin substantially flush with the rear end of the breech bolt. The hammer 10 is provided with a notch 10'' and the rear end of the breech bolt just beneath the firing pin is notched as indicated at 18. As a result of this construction, when the gun is in partly open position as shown in Fig. 2, if the cocked hammer should be accidentally released the head 10' thereof will strike against the rear end of the breech bolt, the notch 10'' in the hammer insuring that no portion of the hammer will strike the firing pin. When the gun is completely closed and fired the head 10' of the hammer will strike the firing pin and the notch 18 in the breech bolt beneath the firing pin provides a clearance for the hammer as it projects the firing pin forward momentarily to strike the primer in the head; it having been before-mentioned that the rear end of the firing pin is substantially flush with the rear end of the breech bolt and this is also true of the forward end of the firing pin with respect to the forward end of the breech bolt.

It will be understood that the recess 16 in the rear end of the firing pin provides clearance for the stop 17 when the firing pin is projected forwardly.

The next feature of my improvement to be described will be the shell carrier and the means associated therewith to align a shell on the carrier with the bore of the barrel. Heretofore when a shell is fed from the magazine to the barrel it is located on the carrier at a slight inclination with relation to the bore of the barrel, this inclination increasing as the carrier moves upwardly, reliance being had upon the contact of the forward end of the shell with the bore of the

barrel to straighten the shell out in alignment with the bore. This feature of my improvement consists in providing means associated with the carrier for aligning the shell with the bore of the barrel before it is projected into the bore by the action of the breech bolt. The floor of the carrier is indicated at 19 and has a rearwardly projecting arm 19' which is pivoted on a stud 20 (Fig. 4) which is carried by the supporting frame 21. Pivotaly mounted in the carrier is a lifter arm 22, this arm being pivoted on a pin 23 carried by the carrier. This lifter arm is provided with two fingers 24 and 25 located on the opposite side of the pin from the arm proper 22. The forward end of the lifter arm is preferably provided with a laterally extending foot 26, the lifter arm and its foot in the lowermost position of the carrier lying in a slot 27 and recess 28 (Fig. 4) in the carrier so as to be flush with the floor thereof. The carrier is raised by the forward movement of the breech bolt in the usual way; that is, there is a cam 29 on the breech bolt which makes contact with the spring-pressed pin 30 on the rear end of the arm 19' of the carrier; the pin being pressed into its housing 30' on the rear end of the arm 19' on the rearward movement of the breech bolt by a cam 31 on the breech bolt and being engaged by the cam 29 of the breech bolt on the forward movement of the breech bolt so as to lift the carrier. As the carrier begins to rise the finger 24 makes contact with the forward portion 21' of the frame and lifts the foot 26 of the lifter arm so as to raise the rear portion of a shell which may be on the carrier until at the time the carrier has reached its uppermost position the shell will be in alignment with the bore of the barrel. The short finger 25 is merely for the purpose of insuring that the lifter arm will be restored to its normal position when the carrier is lowered, this short finger 25 making contact with the upper surface of the frame part 21'.

Another feature of my improvement is provision for inserting a shell wholly upon the carrier when the gun is closed, with the breech bolt in firing position above the carrier. In manipulation of guns of this character it is sometimes desirable that but two shells be in the gun at any one time, one of the shells in the barrel and another shell wholly on the carrier, the magazine being empty. In order to provide for this I so construct the carrier floor that there is sufficient clearance between the carrier and the breech bolt so that when a shell is on the carrier the breech bolt may be retracted to its rearward position without striking the shell on the carrier. To that end the rear portion of the carrier instead of being at the same incline as the forward end thereof is depressed as indicated at 32, so that the rear end of the shell will not be elevated to such a degree as to stand in the path of the breech bolt as it is being retracted. Assuming that there is a shell in the barrel of the gun and the carrier and magazine empty, if it is desired to insert another shell upon the carrier the shell is first projected sufficiently into the magazine from the under side of the receiver by forcing the carrier upwardly sufficiently for the shell to pass the forward end of the carrier and the

carrier then dropped in alignment with the magazine, the spring 5' of which will then force the shell upon the carrier.

Referring again to the safety feature, when the gun is fired the spring 15 which surrounds the firing pin not only retracts the pin but through it also forces the hammer back sufficiently to enable its head to clear the notch in the rear end of the breech bolt, after which the hammer is cocked by the retracting movement of the breech bolt. During the initial cocking movement of the hammer it rubs over the rear end of the breech bolt and at one point is in alignment with the rear end of the firing pin, but sufficient compression has not been placed upon the spring 33 which operates the hammer to overcome the tension of the spring 15 which surrounds the firing pin, and the pin could not be moved both for this reason and also for the reason that any hammer blow would be in an upward direction.

Having thus described my invention, I claim:

1. In a gun, a barrel, a breech bolt, means for retracting said bolt after firing of the gun and restoring it to firing position, a movable firing pin in said bolt, a spring acting to hold said pin in retracted position, a spring-pressed hammer to strike the rear end of said pin and move it forwardly when the gun is in firing position, a notch in the rear end of said breech bolt to receive a portion of said hammer when the gun is fired, said firing pin spring acting to remove the hammer from said notch after the firing of the gun, and means for thereafter preventing any portion of said hammer from moving said pin to firing position when said bolt is retracted until said bolt has been fully restored to firing position.

2. In a gun, a barrel, a breech bolt, means for retracting said bolt after firing of the gun and restoring it to firing position, a firing pin in said bolt, a hammer having a head at its outer end to strike the rear end of said pin when the gun is in firing condition, and means for tilting said bolt downwardly when it is retracted to bring the pin out of alignment with said hammer head until said bolt has been restored to firing position, said hammer having a clearance space beneath the head thereof and said bolt having a clearance space beneath the rear end of the pin for the purpose specified.

3. In a gun, a barrel, a breech bolt, means for retracting said bolt after firing of the gun and restoring it to firing position, a firing pin in said bolt, a spring in said bolt acting to retract said firing pin, a spring-pressed hammer having a head at its outer end to strike the rear end of said pin when the gun is in firing condition, said bolt having a clearance space beneath the rear end of the pin to receive said hammer upon the firing of the gun, said firing pin spring acting to force said hammer out of said clearance space after the firing of the gun, means for tilting said bolt downwardly when it is retracted and after the hammer has been removed from said clearance space to bring the pin out of effective alignment with said hammer head until said bolt has been restored to firing position, said hammer having a clearance space beneath the head thereof for the purpose specified.

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