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C. G. SWEBILIUS

AUTOMATIC GUN

Original Filed July 16, 1918

FIG. 1

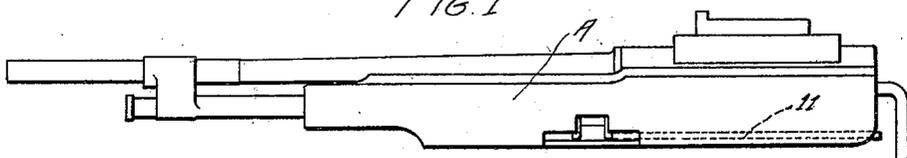


FIG. 2

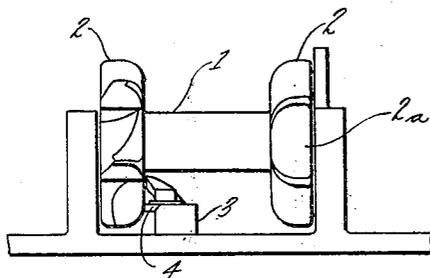


FIG. 3

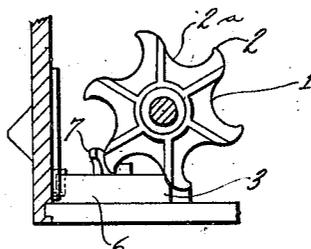


FIG. 4

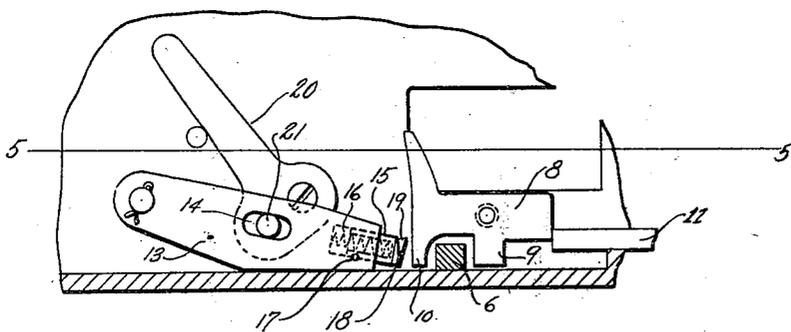
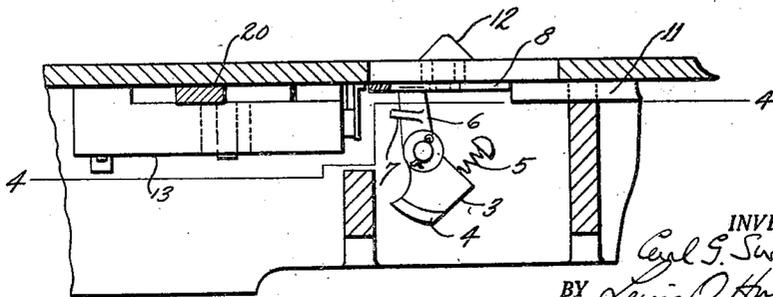


FIG. 5



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# UNITED STATES PATENT OFFICE.

CARL G. SWEBILIUS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE MARLIN FIREARMS CORPORATION, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF DELAWARE.

## AUTOMATIC GUN.

Application filed July 16, 1918, Serial No. 245,152. Renewed November 21, 1921. Serial No. 516,902.

*To all whom it may concern:*

Be it known that I, CARL G. SWEBILIUS, a citizen of the United States, residing in New Haven, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Automatic Guns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to automatic guns and has to do more especially with the cartridge-feeding mechanism thereof.

In automatic or machine guns, a mechanism is provided for feeding the cartridge belt into proper position to have the cartridges removed therefrom. A common type of feed mechanism consists of a wheel or the like, having sockets in which the cartridges are received and carried to position, which is rotated step by step in the desired direction upon each complete opening and closing of the breech of the gun. A pawl or the like, which normally prevents backward rotation of the feed wheel, is operable from the exterior of the gun by means of a handle or the like to release the feed wheel. The release of the feed wheel allows it to freely rotate rearwardly, and if a cartridge belt be in position thereon, the weight of the cartridges causes the wheel to rotate until all the cartridges drop out of their sockets.

This arrangement is very inconvenient when it is desired to reduce a feed jam and get the gun back into operation in the shortest period of time possible. It also renders a gun mounted upon an airplane useless if a jam develops. In order to reduce a feed jam it is ordinarily necessary only to rotate the feed wheel a single step rearwardly and then operate the gun manually. The belt will, however, as above pointed out, upon the release of the feed wheel cause it to rotate until the cartridges are disengaged therefrom. It is therefore necessary to re-engage the cartridges before the gun can be manually operated to feed a cartridge into the chamber. When the gun is used on the ground, this means merely a loss of time, important enough, but in airplane work it means that the gun is out of commission until after the aviator lands.

The object of the invention is an automatic firearm in which the cartridge feeding mechanism can be moved rearwardly step by step only.

The invention provides a pawl for normally preventing rearward movement of the cartridge feeding mechanism and a member to release said pawl from said feed mechanism to allow rearward movement of the feeding mechanism. On the pawl is provided an arm, which when the pawl is moved from its normal position moves into the path of the feeding mechanism, thereby allowing only a limited rearward movement thereof. Upon return of the pawl to normal position, the arm releases the feeding mechanism and allows it to move rearwardly until another portion is engaged by the pawl. During this operation, the feeding mechanism has been allowed to retract but a single step.

Referring now to the drawings:

Fig. 1 is an elevation of an automatic gun having my device applied thereto.

Fig. 2 is a side elevation of the feed wheel and ratchet.

Fig. 3 is an end elevation of the same.

Fig. 4 is a section taken on the line 4—4 of Fig. 5.

Fig. 5 is a section taken on the line 5—5 of Fig. 4.

The gun to which my device may be applied is designated by the reference character A.

The reference numeral 1 denotes the feed wheel provided with teeth 2, forming the sockets 2<sup>a</sup>, which are adapted to receive the cartridges and carry the same into position. Pivoted on the bottom of the gun and directly below the feed wheel, is the ratchet or pawl 3. One end of this ratchet is provided with a shoulder 4, against which the teeth of the feed wheel bear in order to prevent rearward rotation of the said feed wheel. A spring 5 is provided to normally hold the ratchet in such a position as to have the shoulder 4 engage the teeth of the feed wheel. Carried by the arm 6 of the ratchet and extending at approximately right angles to the arm, is a prong 7 which normally lies out of the path of the teeth 2, but which under certain circumstances is moved into said path.

The slide 8 is mounted for reciprocatory

movement upon that side of the gun from which the belt exits. This slide has two downwardly projecting lugs 9 and 10, extending on either side of the arm 6. In alignment with this slide and extending through the rear end of the gun is a rod 11. This rod can be reciprocated and by means of the same it is possible to operate the slide. The slide is also provided with a button 12 extending through the side of the gun, by means of which it is possible to operate the same.

Pivotaly mounted on the side of the gun and in advance of the feed wheel, is the lever 13, provided in approximately the center thereof with the elongated opening 14. Mounted in the end of this lever adjacent to the feed wheel, is the dog 15. This dog is set in a socket and is pressed outwardly by the spring 16. The outward movement of this dog is limited by the stop 17, and the outer end of this dog is provided with a slanting cam surface 18 and also a projection 19, laterally of said surface, and adapted to be engaged by the end of the slide 8.

The lever 13 is cut out on the side near the wall of the gun to accommodate the lever 20 which is also pivoted to the wall of the gun. This lever 20 is provided with a pin 21 which engages the opening 14. A rearward and forward oscillation of the lever 20, raises and lowers the dog-carrying lever 13. The lever 20 is oscillated due to the engagement thereof by lugs carried on the sliding action rod of the gun, this sliding action rod being of the well-known type. By means of the raising and lowering of the lever 13, the feed wheel 1 is caused to rotate forwardly a predetermined distance sufficient to bring a cartridge into position to be extracted from the belt. When the lever 13 is raised the surface 18 rides over the teeth 2 of the feed wheel 1. When the lever moves downwardly, however, the under edge of the surface engages with a tooth and rotates the feed wheel.

The operation of my device is as follows:

For some reason the gun has jammed and it is impossible for the gun to lock and consequently impossible to fire. The breech block is pulled to its rear position and held there in the well-known manner. The rod 11 is then pushed inwardly, operating the slide 8. Due to the fact that the breech block is back, the lever 20 is in the opposite position from that shown in Fig. 4, and the lever 13 is raised. The edge of the slide 8 presses against the projection 19 and forces the dog 15 inwardly against the action of the spring 16. At the same time the lug 9 has engaged the arm 6 and rotated the ratchet sufficiently to disengage the shoulder 4 from a tooth 2. Co-incident with the disengagement of the shoulder 4

from the tooth 2, the prong 7 is moved into the path of the teeth 2. The weight of the cartridges is sufficient to pull the belt rearwardly and so cause the feed wheel to rotate backwardly.

When the feed wheel has rotated a distance equal approximately to one-half the space between the teeth, one of the teeth is engaged by the prong 7. Upon releasing the rod 11, the spring 16 pushes the slide 8 back into place and at the same time allows the ratchet 3 to resume its normal position, thus allowing the feed wheel to rotate the remaining distance. At this time all obstruction has been removed and it is possible to manually operate the mechanism of the gun to bring the breech block into locked position. However, the belt is in proper position to be fed through and bring a cartridge into place upon the next operation of the breech block. By manually operating the breech block an attempt can be made to see whether the cause of the jam has been overcome.

Thus it will be seen that I have devised a simple and efficient means for releasing the feed wheel to allow a backward movement of the belt sufficient to clear the gun and reduce the jam without running any risk of the belt being drawn entirely out of the gun.

It is understood, of course, that the particular device shown and described in the present application illustrates merely a preferred form of construction and an arrangement of parts, which, it has been found, will successfully carry out the principles of my invention, and that various changes and modifications of details may easily be made without departing from the spirit of my invention as defined in the appended claims.

I claim as my invention:

1. In an automatic gun, a feed element, means to intermittently advance said feed element a predetermined amount, members adapted to alternately engage said feed element to limit rearward movement thereof, and means operable independently of said first-named means for actuating said members whereby said feed element may be moved rearwardly step by step.

2. In an automatic gun, a feed element, means to intermittently advance said feed element a predetermined amount, members adapted to alternately engage said feed element to limit rearward movement thereof, means to normally maintain one of said members in engagement with said feed element, and means operable independently of said first-named means for actuating said members whereby said feed element may be moved rearwardly step by step.

3. In an automatic gun, a feed element, means to intermittently advance said feed element a predetermined amount, members

adapted to alternately engage said feed element to limit rearward movement thereof, and means for actuating said members and rendering said first-named means inoperative.

4. In an automatic gun, a feed element, means to intermittently advance said feed element a predetermined amount, members adapted to alternately engage said feed element to limit rearward movement thereof, means to normally maintain one of said members in engagement with said feed element and means for actuating said members and rendering said first-named means inoperative.

5. In an automatic gun, a feed member, means to move said feed member in one direction, means to allow step by step movement of said feed member in the opposite direction, means to normally maintain said second-named means in position to prevent movement of said feed member in said last-named direction, and means to operate said second-named means and render said first-named means inoperative.

6. In an automatic gun, a feed member, means to move said feed member in one direction a predetermined amount, means to allow movement of said feed member a predetermined distance in the opposite direction, means to normally maintain said second-named means in position to prevent movement of said feed member in said last-named direction, and means to operate said second-named means and render said first-named means inoperative.

7. In an automatic gun, a feed member having teeth, means to move said member in one direction, a ratchet having a shoulder and an arm, means to normally maintain said ratchet with the shoulder thereof in position to be engaged by said teeth to prevent movement of said feed member in the opposite direction, and means operable independently of said first-named means to actuate said ratchet to move said shoulder out of and said arm into position to be engaged by said teeth whereby the feed member may be moved step by step in said last-named direction.

8. In an automatic gun, a feed wheel, means to intermittently advance said feed wheel a predetermined amount, a ratchet having a shoulder to normally engage said feed wheel to prevent backward rotation thereof, means on said ratchet adapted to engage said feed wheel when said shoulder is disengaged, and means operable independently of said first-named means to actuate said ratchet whereby said feed wheel may be moved rearwardly step by step.

9. In an automatic gun, a feed wheel, means to intermittently advance said feed wheel a predetermined amount, a pivotally-mounted ratchet having a shoulder to nor-

mally engage said feed wheel to prevent backward rotation thereof, an arm on said ratchet adapted to engage said feed wheel when said shoulder is disengaged and means operable independently of said first-named means to actuate said ratchet whereby said shoulder and said arm may be alternately engaged with said feed wheel to allow step-by-step rearward rotation thereof.

10. In an automatic gun, a feed wheel having teeth, means adapted to intermittently engage said teeth to advance the feed wheel a predetermined amount, a member having arms adapted to alternately engage said teeth to limit the rearward rotation of said wheel, and a slide having a socket in which fits one of said arms.

11. In an automatic gun, a feed wheel having teeth, means adapted to intermittently engage said teeth to advance the feed wheel a predetermined amount, a member having arms adapted to alternately engage said teeth to limit the rearward rotation of said wheel, a slide having legs straddling one of said arms and means for operating said slide.

12. In an automatic gun, a feed wheel having teeth, means adapted to intermittently engage said teeth to advance the feed wheel a predetermined amount, a member having arms adapted to alternately engage said teeth to limit the rearward rotation of said wheel, means to normally maintain said member with one arm in position to engage said teeth, and means to move said member to bring said arm out of, and the other arm into position to engage said teeth.

13. In an automatic gun, a feed wheel, a ratchet pivotally mounted on the bottom of the gun for cooperation with said feed wheel, said ratchet being provided with a shoulder and an arm the said arm having an upwardly extending projection at right angles thereto, and means to operate said ratchet whereby the said wheel may be rotated rearwardly step by step.

14. In an automatic gun, a feed wheel, a ratchet therefor, said ratchet having members to alternately engage said feed wheel and means to operate said ratchet to allow the said feed wheel to rotate backwardly step by step.

15. In an automatic gun, a feed wheel having teeth, means adapted to intermittently engage said teeth to advance the feed wheel a predetermined amount, a member having arms adapted to alternately engage said teeth to limit the rearward rotation of said wheel, a slide having legs straddling one of said arms, resilient means for holding said member in one position, and means for operating said slide.

16. In an automatic gun, a feed wheel having teeth, a ratchet provided with a shoulder normally lying in the path of said teeth and a prong normally lying out of the path of

said teeth, said ratchet being operative to simultaneously move said shoulder out of, and said prong into the path of said teeth.

17. In an automatic gun, a feed wheel having teeth, a ratchet provided with a shoulder normally lying in the path of said teeth and a prong normally lying out of the path of said teeth and means to move said shoulder out of and the prong into the said path.

18. In an automatic gun, a feed wheel having teeth, a ratchet provided with a shoulder normally lying in the path of said teeth and a prong normally lying out of the path of said teeth and means including a rod extending through the rear end of the gun, to operate said ratchet.

19. In an automatic gun, a feeding mechanism, a ratchet pivoted on the wall of the gun having a portion thereof normally preventing backward movement of said feeding mechanism and another portion thereof adapted to engage the feed mechanism after the first-named portion has been disengaged and means to operate said ratchet.

20. In an automatic gun, a feed mechanism, means to operate said feed mechanism in one direction, means having members adapted to alternately engage said feed mechanism to limit the movement thereof in the opposite direction, and means to render inoperative said first-named means and actuate said second-named means to move

one of said members out of and the other of said members into position to engage said feed mechanism.

21. In an automatic gun, a feed mechanism normally capable of operation in one direction only and means including a rod extending through the rear end of the gun, whereby said feeding mechanism may be operated in the opposite direction, step by step.

22. In an automatic gun, a feed mechanism, means to operate said feed mechanism in one direction and means independent of said feed mechanism operating means to allow only a step by step rearward movement of the feed mechanism.

23. In an automatic gun, a cartridge feed mechanism, means for operating said feed mechanism, and means independent of said operating means for normally preventing rearward movement, said means allowing step-by-step rearward movement only of said feed mechanism.

24. In an automatic gun, a cartridge feed element, means for advancing said feed element, means independent of said advancing means for preventing retraction of said feed element, and means for effecting step-by-step retraction of said feed element.

In witness whereof, I hereunto affix my signature.

C. G. SWEBILIUS.