Sept. 25, 1945. G. M. TAYLOR 2,385,387

APPARATUS FOR LOADING GUNS

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Fig. 4.

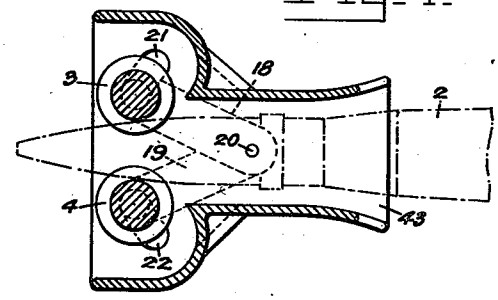
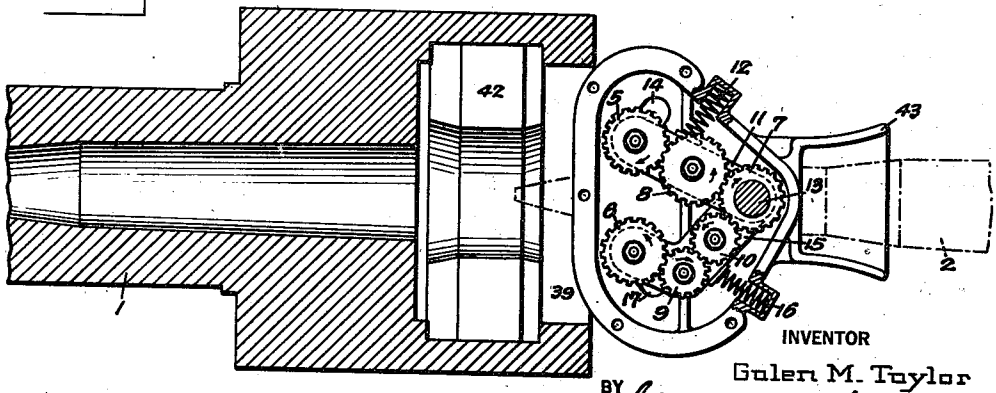


Fig. 1.

Fig. 3.



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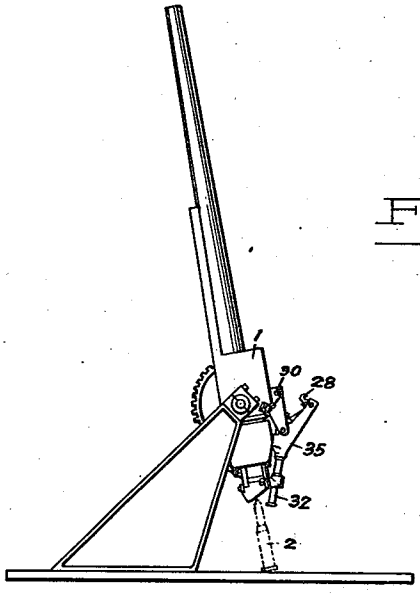
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Fig. 5.



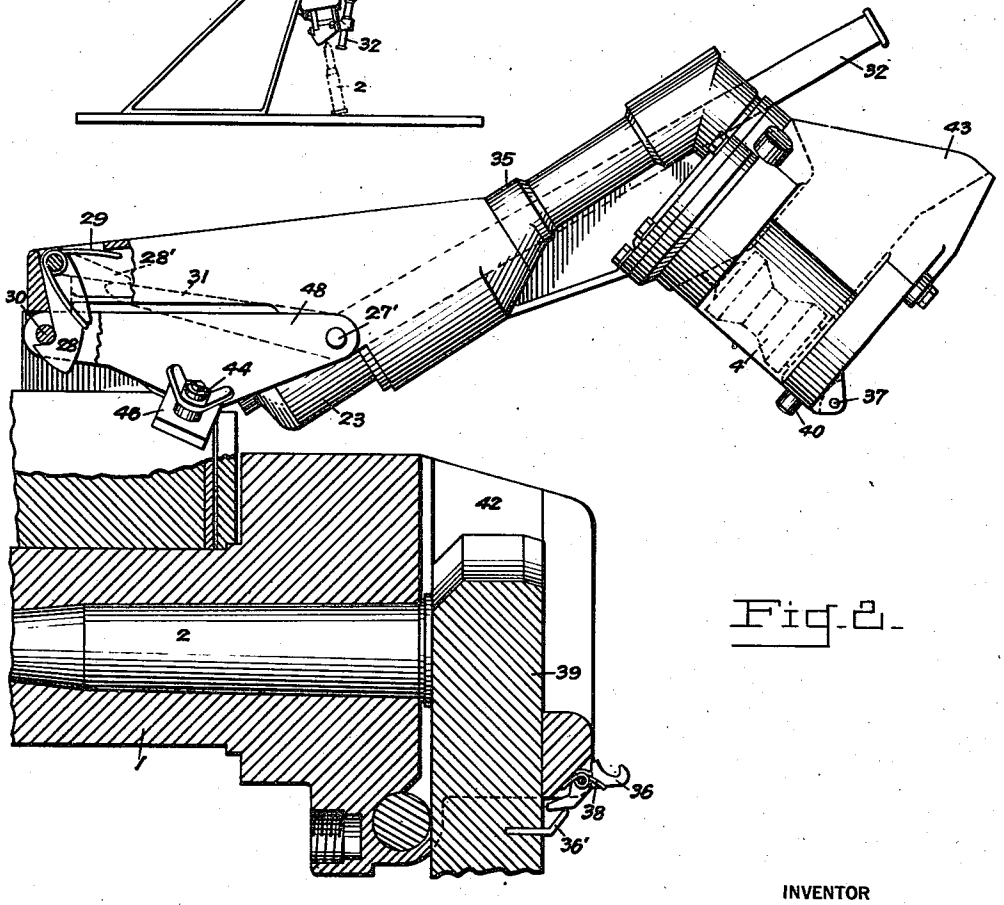


Fig. 6.

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Fig. 6.

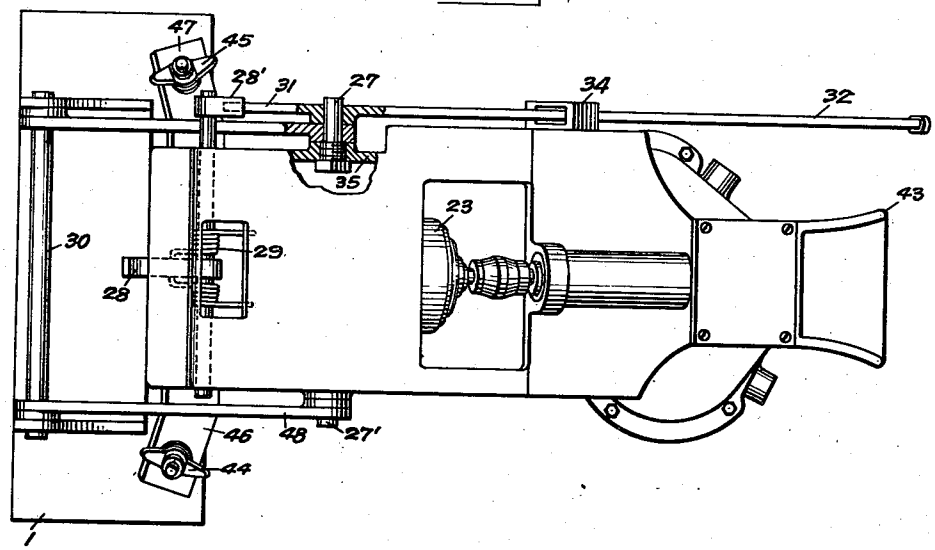


Fig. 7.

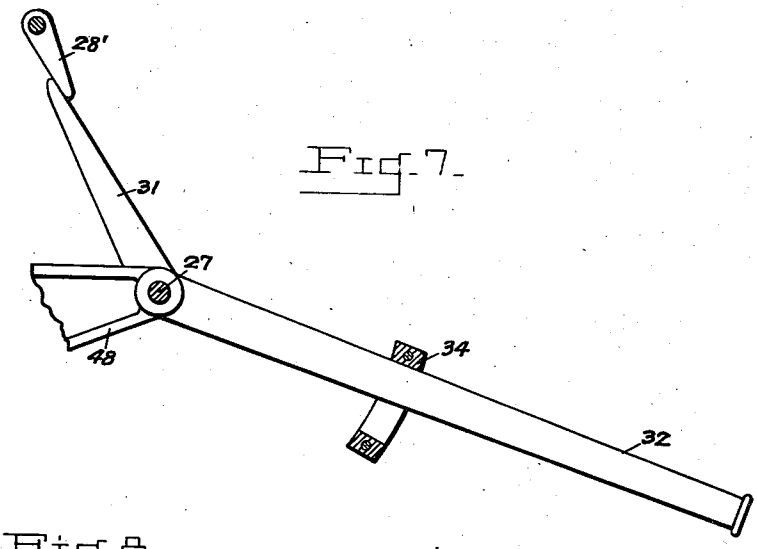
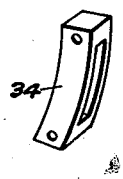


Fig. 8.



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Patented Sept. 25, 1945 2,385,387

UNITED STATES PATENT OFFICE

2,385,387

APPARATUS FOR LOADING GUNS

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Application May 17, 1941, Serial No. 393,906

9 Claims. (Cl. 89—45)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to an ammunition feeding mechanism for a gun.

An object of this invention is to provide a motor operated ammunition feeding mechanism mounted on a gun which may be positioned manually in front of the loading aperture of a gun or manually moved out of the vicinity of the loading aperture of the gun according to the election of the operator.

An object of this invention is to provide a motor operated ammunition feeding mechanism mounted on a gun whereby ammunition is injected in the barrel of a gun quickly and with little effort on the part of the operator. This is a desirable condition in firing antiaircraft guns and this invention is particularly applicable to the firing of antiaircraft guns although this invention may be applied to guns of other caliber.

An object of this invention is to provide a motor operated ammunition feeding mechanism mounted on a gun which may be readily made inoperative in case a fault in the feeding mechanism occurs and allow the gun thereafter to be loaded in the conventional manner.

With the foregoing and other objects in view, my invention resides in the novel arrangement and combination of elements necessary to produce a fuse setter of the type hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A practical embodiment of my invention is illustrated in the accompanying drawings, wherein like numerals and figures indicate like elements.

Fig. 1 discloses the feeding mechanism in operating position.

Fig. 2 discloses the feeding mechanism in the raised and latched position.

Fig. 3 is a view taken on line 3—3 of Fig. 1.

Fig. 4 is a view taken on line 4—4 of Fig. 1.

Fig. 5 discloses the feeding mechanism mounted on an antiaircraft gun and it is seen that the feeding mechanism would not be in the way and thus prevent the firing of the gun at high angles of fire.

Fig. 6 discloses a plan view of the feeding mechanism.

Fig. 7 discloses in a little more detail the relative position of the handle and the stop on the housing of the feeding mechanism.

Fig. 8 discloses a perspective view of the stop.

Referring to the drawings the numeral 1 designates a portion of the gun and the numeral 2 designates the shell to be inserted in the gun. The shell 2 is accelerated by two rollers 3 and 4 covered with resilient material such as rubber. The rollers 3 and 4 are rotated with the gears 5 and 6 respectively. The gears 5 and 6 are rotated from the motor driven gear 7 through the gears 8, 9 and 10. The gears 5 and 8 are mounted on the arm 11 which is biased by the compression spring 12 and pivoted about the shaft 13 so that the opposite extremity of the arm 11 is movable within the boundaries of the aperture 14. The gears 6, 9 and 10 are mounted on the arm 15 which is pivoted about the shaft 13 and biased by the compression spring 16 so that the opposite extremity of the arm 15 is movable within the boundaries of the aperture 17. The lower ends of the rollers 3 and 4 are rotatable on the arms 18 and 19, Fig. 4, which are pivoted about the point 20 and the extremities of the arms 18 and 19 are movable within the boundaries of the apertures 21 and 22. The rollers 3 and 4 rotate constantly due to the fact that the constantly rotating motor 23 is directly coupled to the gear 7 through the shaft 24 and the bevel gears 25 and 26. It is not necessary that both rollers be driven directly by the motor and one of the rollers might serve the purpose of guiding the inserted cartridge.

The feeding mechanism comprises two main portions, an anchor member 48 adapted to be fixed to the gun 1, and a housing 35 in the form of a rocker arm pivoted at 27, 27' on the anchor member 48.

The ammunition feeding mechanism proper is pivoted about the aligned transversely extending shafts 27 and 27'. In the raised position the catch 28 on one end of the housing 35 biased by the spring 29 is adapted to engage the pin 30 on the anchor member 48 and to thus lock the entire mechanism in a raised position. A rigid extension 31 of the operating handle 32 is also pivoted at 27, and cooperates with the lever 28' which forms a bell-crank arrangement with catch 28 to unlock the catch 28. The operating handle 32 is rotatable about the shaft 27 within the limits defined by the stop 34 on the housing 35 (Fig. 6). The stop 34 is rigidly connected to the housing 35 which is also rotatable about the shaft 27. Thus assuming that the mechanism is in the upper locked position, the mechanism is unlocked and swung into the operating position by a continuous downward push on the operating handle 32 since the stop 34 permits sufficient independent movement of the handle 32 to cause actuation of the catch 28 through the lever 28' prior to actuation of the housing 35.

In the operating position the ammunition feeding mechanism is locked in position by the cooperation of the catch 36 of the bell-crank type with the pin 37. The catch 36 is biased in closed position by the spring 38. The feeding mechanism

is unlocked when the sliding breech block 39 of the gun is closed for then the extension 36' on the breach block actuates the catch 36.

A piston 40 is biased by the spring 41 and serves to take up the impact between the feeding mechanism and the gun when the mechanism is lowered to the operating position.

It is noted that the rollers 3 and 4 do not engage the shell while the rearmost portion of the shell is in the breech block chamber 42; that fact does not make this device inoperative for it has been found that the shell acquires enough momentum during the early stages of acceleration of the shell to be fully inserted in the barrel of the gun. It is advantageous to have an ammunition feeding mechanism which is not located in the breech block chamber because then the parts of the mechanism will not be subjected to a high temperature when the gun is fired. Also in case a fault develops in the ammunition feeding mechanism due to high temperature or other causes normal hand feeding of the ammunition would not be prevented in this arrangement since the feeding mechanism per se is not made an integral part of the breech mechanism and the feeding mechanism may be readily swung out of position.

The feeding mechanism has a bell-shaped mouth 43 which serves to guide the shell during the inserting process. The feeding mechanism may be removed from the gun entirely by unscrewing the bolts 44 and 45. These two bolts serve to clamp extensions 46 and 47 of the bracket 48 to the gun.

I claim:

1. In combination with a gun, ammunition feeding mechanism comprising a plurality of rotatable rollers aligned to engage and propel a cartridge along a line extending through the axis of the gun, a mounting for said rollers, means for pivoting said mounting about a point on said gun, a handle pivoted about the same point on the gun, stop means on the mounting for limiting the motion of the handle relative to the mounting, means comprising the handle for rotating the mounting and the enclosed rollers out of said aligned position to a second position, cooperating latching means on the gun and mounting for latching the mounting in said second position, and means responsive to the relative movement between the handle and mounting for releasing said latch.

2. In combination with a gun, ammunition feeding mechanism comprising a plurality of rotatable rollers aligned to engage and propel a cartridge along a line extending through the axis of the gun, a mounting for said rollers, means for pivoting said mounting about a point on said gun, means for rotating said mounting and the rollers out of said aligned position to a second position, a latch for latching the mounting to the gun in the second position and means responsive to the actuation of the last mentioned means for releasing said latch.

3. In combination with a gun having a breech block, ammunition feeding mechanism comprising a plurality of rotatable rollers aligned to engage and propel a cartridge along a line extending through the axis of the gun, a mounting for said rollers, a latch for latching the mounting and rollers to the gun in the aligned position, and means responsive to the actuation of the breech block for releasing said latch.

4. In combination with a gun having a breech block, ammunition feeding mechanism comprising a plurality of rotatable rollers aligned to engage and propel a cartridge along a line extending through the axis of the gun, a mounting for said rollers, means for pivoting said mounting about a point on said gun, means for rotating said mounting and the rollers out of said aligned position to a second position, percussion absorbing means for relieving the impact which occurs between said mounting and gun when the mounting is rotated from said second position to the aligned position, a latch for latching said mounting to the gun against the action of said percussion absorbing means and means responsive to the actuation of the breech block for releasing said latch.

5. In combination with a gun, ammunition feeding mechanism comprising a plurality of rollers aligned to engage and propel a cartridge along a line extending through the axis of the gun, a motor coupled to at least one of said rollers, a housing for said motor and rollers, means for pivotally mounting the housing to one point on the gun and means rotatable about the same point adapted to rotate the housing away from the aligned position.

6. For use with a gun, ammunition feed means comprising a portion adapted to be fixed to the gun, a pivot on said portion and a rocker arm on said pivot, ammunition propulsion means on one side of said rocker arm, means on the arm to actuate said propulsion means, a snap catch on the other side of said rocker arm, and anchor means for the snap catch on the said portion.

7. Ammunition feed means as in claim 6 comprising a handle for moving the said arm, said handle being fixed to the arm but movable through a limited arc relative to the arm and cooperatively located with respect to said snap catch to release the same on motion of the handle through said arc.

8. For use with a gun, ammunition feed means comprising an anchor portion adapted to be fixed to the gun, a pivot on said portion, a rocker arm medially fixed to said pivot, a motor on one branch of said rocker arm including a shaft, a pair of rollers on said branch, the axes of said rollers being oblique to said shaft, gearing between said rollers and said shaft, a spring-pressed catch on the other branch of said rocker arm, cooperating means on said anchor portion to receive said catch, a handle on said pivot for moving said arm about said pivot, said handle being movable through a limited arc with respect to said arm, and an extension on said handle beyond said pivot adapted to contact said spring catch to release the same on movement of said handle through said arc and prior to moving said arm.

9. In combination with a gun, ammunition feed mechanism comprising an arm pivoted to said gun and having a portion alignable with the breech bore of the gun in one extreme position of said arm and vertically rockable to a position wholly free of said breech bore in the other extreme position of said arm, said portion having a rearwardly facing ammunition receiving opening, rotary ammunition feed means carried solely by said portion and constructed and arranged to engage the ammunition when said portion is aligned with the breech bore, and means carried by said portion for rotating said feed means to feed the ammunition to the gun.

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