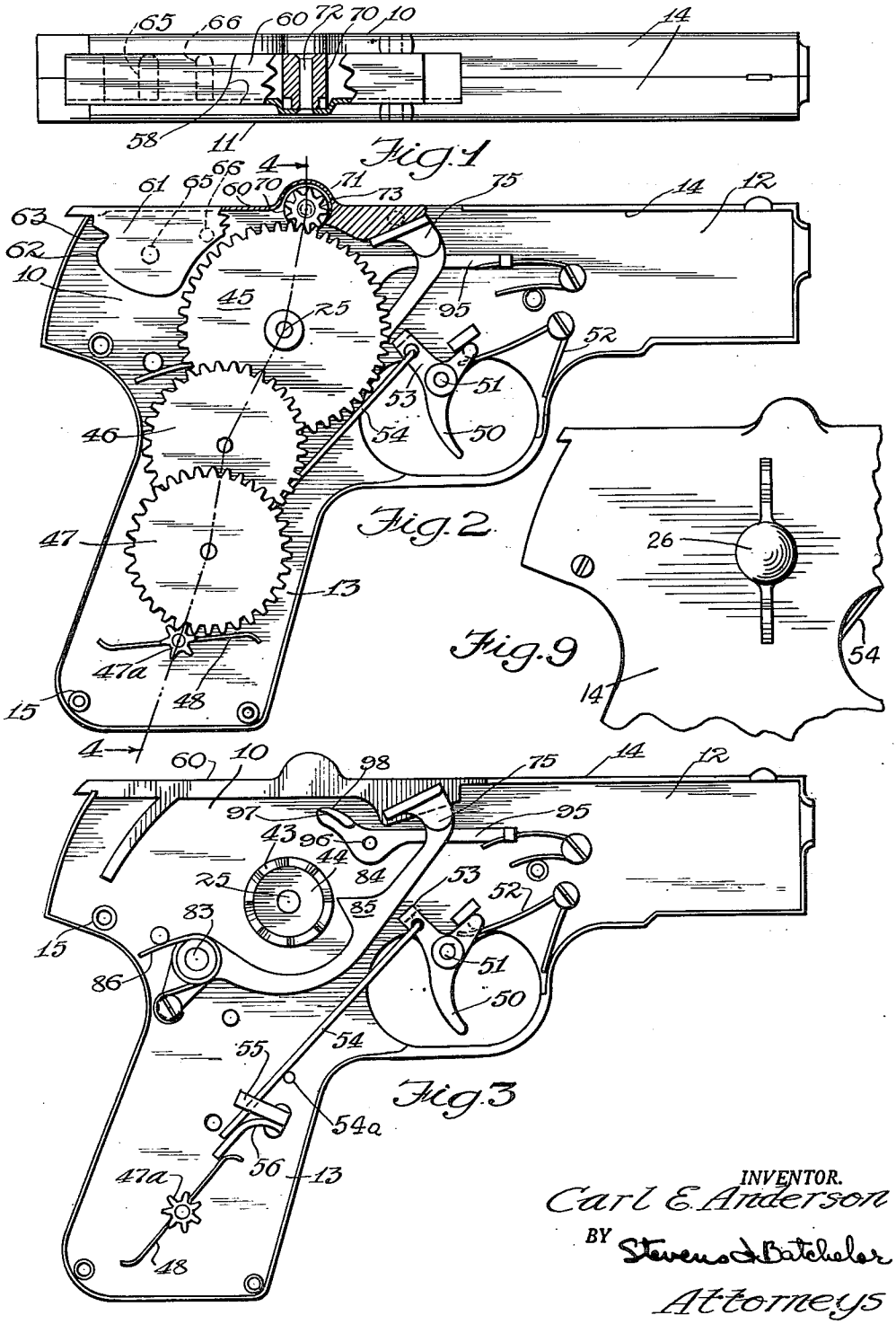
Oct. 2, 1951 C. E. ANDERSON 2,569,913

AUTOMATIC CAP PISTOL

Filed Sept. 24, 1948 2 Sheets-Sheet 1



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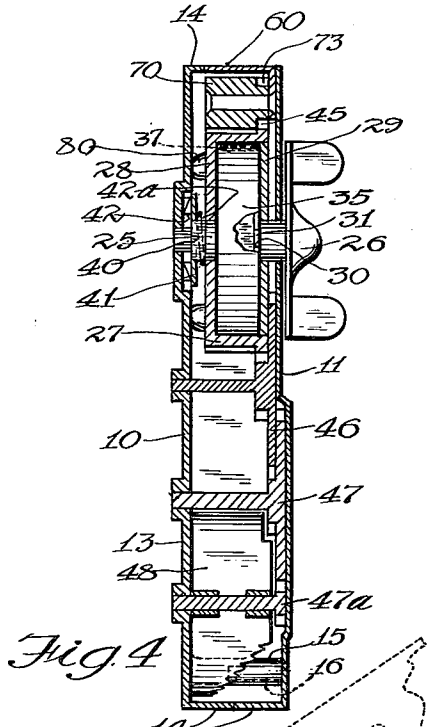


Fig. 4

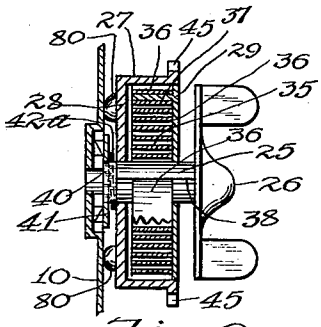


Fig. 6

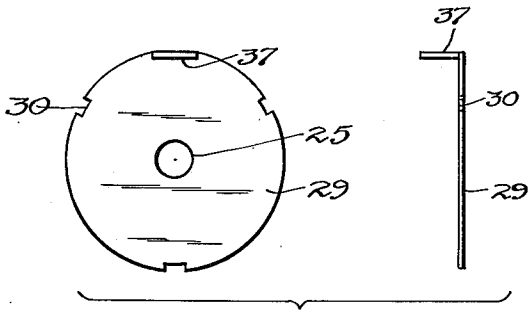


Fig. 7

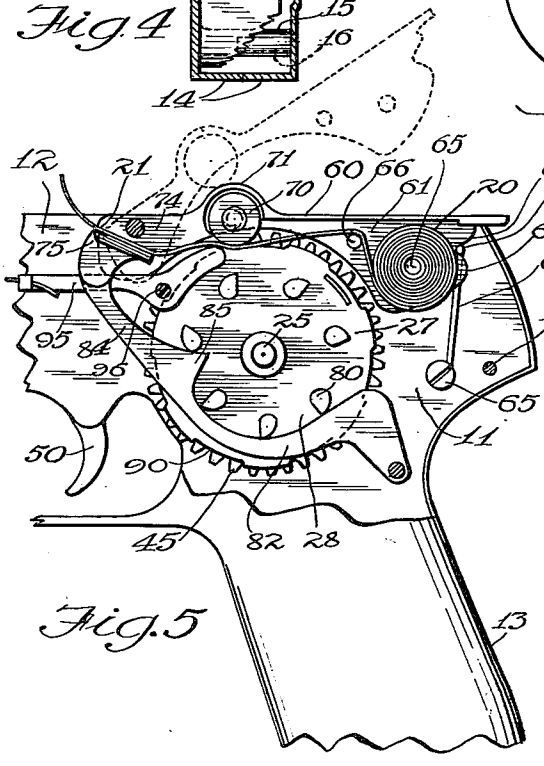


Fig. 5

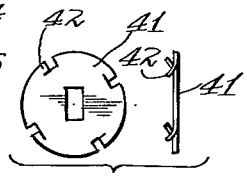


Fig. 8

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AUTOMATIC CAP PISTOL

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Application September 24, 1948, Serial No. 50,998

6 Claims. (Cl. 42—57)

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My invention relates to toy pistols of the type employing a roll of ammunition caps, and more particularly to the automatic or repeating variety of pistol.

One object of the invention is to provide a pistol of the above character which secures repeated firing action by the mere pressure of the trigger.

A further object is to include a control in the pistol which varies the firing rate or sequence in accordance with the amount of pressure on the trigger, the release of the latter at any time serving as a stop for the firing action.

Another object is to include a feed for the ammunition tape which imparts a stop motion to the latter, and is designed to procure firing action only when the caps in the ammunition tape are opposite the anvil element of the pistol.

A still further object is to provide an ammunition feed which, despite its interrupted effect in respect to the ammunition tape, operates continuously in respect to the firing element of the pistol and a feature controlling the firing frequency.

An additional object is to include a simple yieldable element as an intermediary between the trigger of the pistol and its running gear in order to control the latter according to the position of the trigger.

An important object is to construct the novel pistol along lines of compactness, whereby to include its various mechanical features in a casing no larger than that of the conventional toy pistol.

With the above objects in view, and any others which may suggest themselves from the description to follow, a better understanding of the invention may be had by reference to the accompanying drawings, in which:

Fig. 1 is a top plan view of the pistol, partly broken away, and on a full-size scale;

Fig. 2 is a face view of the interior of the pistol from the right-hand side after one of its walls has been removed;

Fig. 3 is a view similar to Fig. 2, showing certain parts after a train of gears has been removed;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a fragmental view of the inside of the pistol from the left-hand side;

Fig. 6 is a sectional view of a spring-wound assembly shown in the upper part of Fig. 4;

Fig. 7 is a group face and side view of a cover carried by an ammunition feed drum;

Fig. 8 is a group face and edge view of a locking disc employed in the said spring-wound assembly and

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Fig. 9 is a fragmental front elevation of the showing in Fig. 1.

In accordance with the foregoing, it may be said that the novel pistol follows conventional lines of appearance and body form, being generally composed of two laterally assembled sections 10 and 11. Each of these is extended forwardly with a muzzle section 12 and downwardly with a handle section 13. The sections are also formed with inward marginal flanges, as indicated at 14, to form a closure when assembled; and the sections are held together by the extension of spacer tubes 15 from the section 10 to the section 11, and screws 16 driven from the latter section into the tubes 15.

The pistol is designed to receive a roll 20 of ammunition tape in which powder caps are contained in longitudinal sequence, the tape from the roll extending forwardly under the top of the pistol as shown at 21 in Fig. 5. It is intended that the tape be fed in forward direction periodically, and a spring-wound mechanism is provided for this purpose. Thus, the side walls of the pistol are bored to journal a spindle 25 which protrudes on the right-hand side to receive a winding key 26. The spindle also forms a support for a feed drum 27 formed with a closed end 28 on one side and receiving a cover 29 on the other side. The said end and cover are centrally bored to rotate freely on the spindle; and the cover 29 is notched peripherally in a number of places, as indicated at 30, to fit correspondingly-located lugs 31 in the open side of the drum 27, whereby to lock the cover 29 against rotation relative to the drum when the cover has been fitted in the same as shown in Figs. 4 and 6.

A clock spring 35 is disposed in the drum 27 and anchored with its outer end to the same. This is done by forming the outer end of the clock spring with a loop 36 and directing an inward lug 37 from the periphery of the cover 29 into the loop. The inner end of the clock spring is anchored to the spindle 25 by being inserted in a longitudinal groove 38 made in the spindle. The rotation of the key 26 in the proper direction will now wind the spring in relation to the drum.

A simple mechanism is employed to stop the spindle 25 from backward rotation as the spring is wound. Such mechanism originates with a flattened section 40 near the inner end of the spindle, such section receiving a disc 41 illustrated more clearly in Fig. 8. This disc is formed with a series of circularly spaced wings 42 and urged by a spring 42a to act in cooperation with

a ratchet tooth surface formation 43 made in a shallow cavity 44 inside the adjacent wall of the pistol, such formation and cavity being more clearly shown in Fig. 3. Thus, the rotation of the key 26 causes the disc wings 42 to slip on the ratchet formation, but become locked by the same from reverse motion.

The winding action of the feed drum 27 is designed to actuate a train of gears directed downwardly from the zone of the drum. Thus, the open side of the latter is enlarged peripherally with a gear 45; and Figs. 2 and 4 show succeeding gears 46 and 47 which connect in a downward multiplying gear train to drive a final pinion 47*a*, it being understood that all the gears in the drive are journaled between the side walls of the pistol. The spindle of the pinion 47*a* carries a fan wheel 48 which—like in a clock train—comprises the final and most delicate element of the drive.

A control for the gear drive occurs between the trigger of the pistol and the fan wheel 48. As shown, the trigger 50 is centered at 51 between the walls of the pistol, and its rearward pull is resisted in the usual manner by a spring 52. However, the trigger has a rearward lug 53 from which a rod 54, slidable along a pin 54*a* projecting from one of the handle walls, is directed into the handle space 13 of the pistol. Here the rod receives a stiffly slidable block 55 which carries a pendent rubber wing 56 directed in the path of the fan wheel 48. The position of the block 55 along the rod 54 determines the proper or suitable projected length of the wing 56; and the wing is in a position as a stop for the fan wheel when the trigger is in the idle position as shown in Fig. 3. This indicates that the entire gear train is held in check. However, it will be apparent that the pressure of the trigger will gradually withdraw the wing 56 from the fan wheel until the latter—owing to the flexibility of the wing—begins to slip and rotate. It follows now that the more the trigger is retracted the freer the fan wheel becomes to rotate, so that the speed of the gear train is thus regulated by the control of the trigger 50.

The top flanges 14 of the pistol are spaced toward the rear, as indicated at 58, to accommodate an elongated closure plate 60 whose forward end is pivoted between the side walls of the pistol to enable the plate to be swung from the closed position indicated by full lines in Figs. 2 and 5 to the open one indicated by dotted lines in Fig. 5. The back flange portions 14 form a bottom rest for the closure plate, as shown in Fig. 3; and the plate has a downflange 61 on the right-hand side presenting a rising cam 62 at the rear, such cam terminating at its upper end with a notch 63. The right-hand wall of the pistol has a wire spring 64 secured at the bottom by a screw 65. The upper end of this spring has a bend 66 in the path of the cam 62 when the plate 60 is swung to close, so that the spring is thus tensioned to fall into the notch 63 and hold the plate in the closed position.

Primarily, the closure plate 60 serves as a carrier for the ammunition roll 20. For this purpose the downflange 61 has an inwardly directed pin 65 on which the roll is threaded as shown; and the tape 21 issuing from the roll is trained forwardly over a second pin 66 carried at a higher level by the downflange. It is thus easy to insert an ammunition roll in the pistol by merely raising the closure plate clear and mounting the roll and issuing tape over the free ends of the pins 65 and 66 as shown in Fig. 5.

The drum 27 is employed to institute the forward feed of the ammunition tape 21 received from the supply roll 20. The feed is by friction, and is induced by the passage of the tape between the periphery of the drum 27 and that of a small roller 70 disposed in an upward pocket 71 formed in the closure plate 60 over the drum. The roller 70 is journaled on a spindle 72 secured transversely in the pocket 71; and the end portion of the spindle occurring opposite the drum gear 45 is formed as a pinion 73 to mesh with the gear when the plate 60 is closed. At such time the tape 21 is frictionally engaged by the roller and drum. Consequently, when the trigger 50 is drawn to release the gearing seen in Figs. 2 and 4 for rotation as previously explained, the roller 70 and drum 27 will move in unison to feed the tape 21 to a position under the pivoting stock 74 of the closure plate. This stock comprises the anvil of the pistol; and the hammer 75 thereof is designed to strike the tape 21 when it lies against the bottom face of the anvil as shown in Fig. 5. The meeting plane of the hammer and anvil rises forwardly so as to project the fired end of the tape through the opening 58 for removal as waste.

The firing of the ammunition caps is accomplished by the rotation of the drum 27. Thus, Figs. 4 and 6 show that the side wall 28 of the drum has a circularly-spaced series of outward lugs 80 which are pointed in substantially radial directions, as indicated at 81. These lugs act as cams in respect to a lever 82 pivoted at its rear end between the pistol walls as shown at 83. The lever is first underslung to clear the lugs 80, but rises on its forward course to form an inclined shank 84 for the hammer 75. The lever has a sharp ridge 85 on its upper side at a point in the path of the lugs 80 when the drum is in rotation. Thus, each lug crowds the ridge with a wiping action to retract the hammer shank 84 until the ridge clears the lug, when the latter allows the shank to return with force, so that the hammer delivers a sharp blow against the ammunition cap. Fig. 3 shows that the lever 82 carries a torsion spring 86 in the pivoting region to exert the necessary influence on the hammer.

It is now apparent that the rotation of the feed drum 27 will induce a continuous series of hammer blows as long as the clock spring 35 is allowed to unwind by pressure on the trigger 50; and it is understood that the increased retraction of the trigger results in a more rapid delivery of the hammer blows. It is, however, necessary to coordinate the feed of the tape 21 with the rate or sequence of the hammer strokes in a manner to position each cap over the anvil 74 as the hammer takes a stroke. Primarily, this is done by feeding the ammunition tape a corresponding distance while the hammer is being retracted, and allowing the tape to remain at rest during the active stroke of the hammer, in order that the same may fire the cap. Specifically, this feed is accomplished by forming the periphery of the feed drum with circularly-arranged depressions 90, these being spaced as the caps in the ammunition tape; and the camming controls between the drums and the hammer are so designed as to locate normal portions of the drum periphery opposite the roller for the tape feeding periods just mentioned, and intervening depressions 90 for the intervals when the tape is at rest. Since the cap placement and hammer strokes are entirely coordinated by the feed drum, it follows that the firing action of the pistol will

always be precise, irrespective of the firing rate or sequence. Moreover, in case the spacing of the caps is somewhat inaccurate in some ammunition rolls, it is noted that the length of the opposed hammer and anvil sections is so great as to insure the firing of all caps which may occur somewhat ahead of or behind the precise firing point.

A tendency may develop for the ammunition tape **21** to sag and clog on the way from the feed drum to the anvil; and means are therefore provided to counteract this tendency. Figs. 3 and 5 show that a horizontal lever **95** is situated along the inner side of one pistol wall, and is horizontally pivoted on a side pin **96** projecting from such wall. The rear end of the lever is extended laterally with a blade **97** which tapers with a curve **98** at the rear end, while the front end of the lever is boosted by a torsion spring **99** suitably mounted on the wall under consideration. Fig. 5 shows that the lever blade **97** lies over the periphery of the feed drum **27** directly in front of the point where the tape **21** issues from the feed zone. The curved end **98** of the blade **97** therefore raises the tape **21** to definitely project it apart from the feed drum.

It is now apparent that the novel pistol has a number of advantageous features. One is the interrupted ammunition tape feed to station each cap in front of the anvil as the hammer strikes. If the feed of the tapes were continuous it would wrinkle and pack every time its leading portion is stopped by a blow of the hammer. Another feature is the closure plate **60**, which serves primarily as a cover designed to allow access to the ammunition roll when opened. In addition, the plate serves as a carrier for the ammunition roll, as a carrier for the friction roller **70** and pinion **73**, and as the anvil to back the ammunition caps as they are fired. Further, the trigger operated speed control changes the firing rate at will, and stops the firing the moment the trigger is released. Finally, the operative units of the pistol are arranged to cooperate in harmony within a small space, enabling the pistol to be made in a convenient and compact size.

While I have described the invention along specific lines, various minor changes or refinements may be made therein without departing from its principle, and I reserve the right to employ all such changes and refinements as may come within the scope and spirit of the appended claims.

I claim:

1. A toy pistol designed to feed a tape of longitudinally-spaced ammunition caps, said pistol having a hollow body with an opening at the top, a closure plate for said opening and formed as an anvil opposite one side of the tape, a hammer operative toward the latter from the other side in the direction of the anvil, and a friction drive for the tape comprising a rotary feed drum in said body, and a roller carried by said closure plate opposite the feed drum, the tape passing between said roller and feed drum.

2. The structure of claim 1, said closure plate opening upwardly from said body to separate the roller from the tape.

3. The structure of claim 1, said opening and closure plate being longitudinally-directed, and the closure plate being hinged to said body from one end to open upwardly and separate the roller from the tape.

4. The structure of claim 1, said opening and closure plate being longitudinally-directed, and the closure plate being hinged to said body from one end, the latter being coincident with said anvil.

5. The structure of claim 1, said opening and closure plate being longitudinally-directed, and the closure plate being hinged with its front end to said body to open upwardly, such end being coincident with said anvil.

6. The structure of claim 1, said opening and closure plate being longitudinally-directed, and the closure plate being hinged with its front end to said body to open upwardly, such end being coincident with said anvil, and a support for a supply roll of said tape carried by the opposite end portion of the closure plate.

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