June 23, 1936. R. J. RICKENBACHER 2,045,369

MACHINE GUN TYPE PISTOL

Filed June 18, 1934 2 Sheets-Sheet 1

Fig. 1.

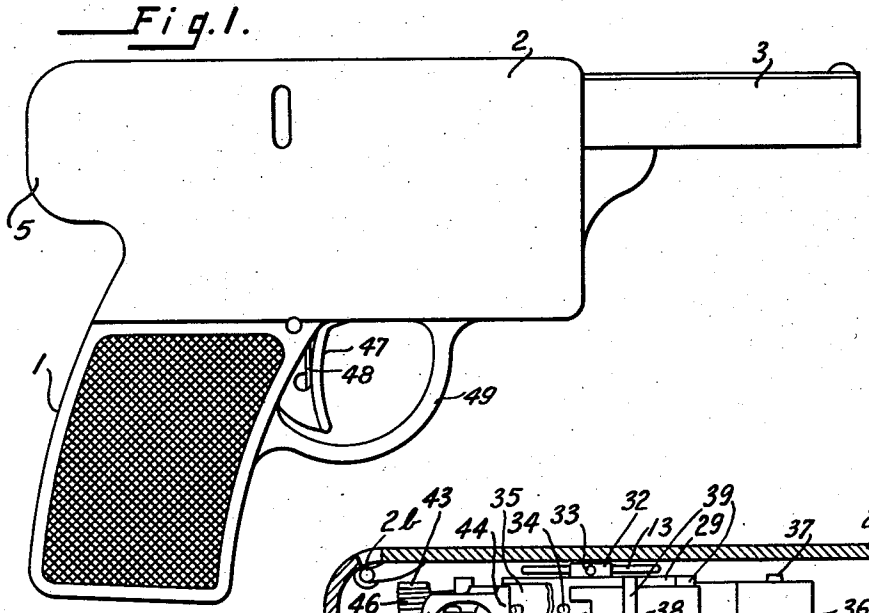


Fig. 2.

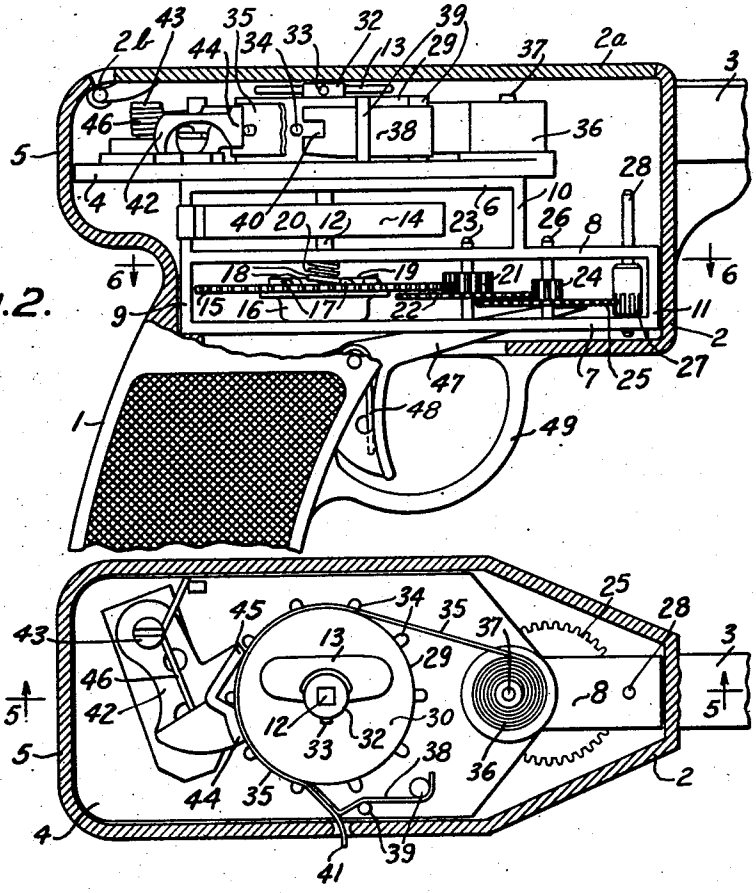


Fig. 3.

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Fig. 4.

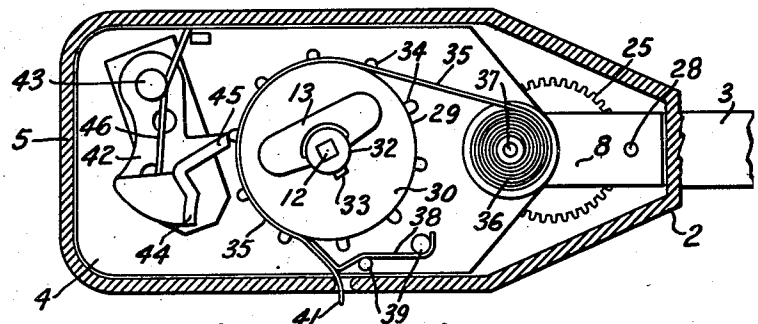


Fig. 5.

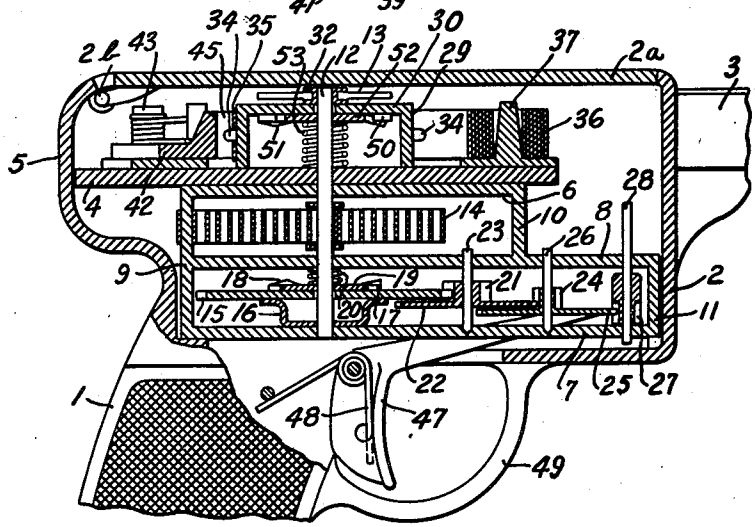


Fig. 6.

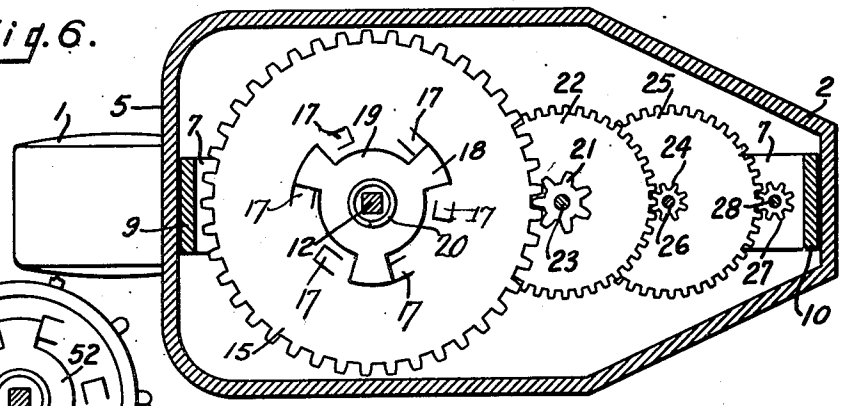
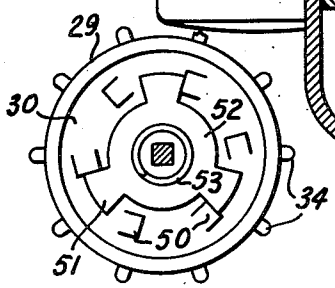


Fig. 7.



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MACHINE GUN TYPE PISTOL

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Application June 18, 1934, Serial No. 731,044

9 Claims. (Cl. 42—57)

This invention relates to improvements in toy pistols, and particularly that type of toy pistol which embodies machine gun elements, and has for its object to provide means for supporting a strip of ammunition, and means continually operating to fire said strip of ammunition.

It is an object of this invention to provide, in connection with a toy pistol adapted to use a strip of ammunition, means for supporting the strip in a roll form, means constituting an anvil for feeding the strip, and means operated by the anvil as it rotates for causing the hammer to strike the strip of ammunition on the anvil.

It is an object of this invention to provide, in connection with an anvil and a hammer for firing the strip of ammunition, means for continually feeding and firing said strip, said means comprising a means for applying power to the shaft for rotating it.

It is also an object to provide, in connection with an anvil and a hammer, means for rotating the anvil and causing the hammer to strike the anvil, said means including a shaft connected to the anvil by means of a pawl and ratchet mechanism, means for operating the shaft, and means for retarding the rotation of the shaft for the operation of the hammer and anvil.

These and other objects and advantages will appear from the following description taken in connection with the drawings.

Referring to the drawings:

Figure 1 is a side elevational of the complete pistol.

Figure 2 is a side elevation of the operating mechanism located within a casing forming part of the body of the pistol.

Figure 3 is a top plan view of the mechanism shown in Figure 2, and showing the hammer and drum in their positions just before the drum begins its operation on the hammer.

Figure 4 is a view similar to Figure 3 but showing the drum and the hammer in their positions just before firing.

Figure 5 is a section on the line 5—5 of Figure 3.

Figure 6 is a section on the line 6—6 of Figure 2.

Figure 7 is a bottom plan view of the drum, showing the spring and pawl and ratchet mechanism in their operative relation therein.

The form of the pistol is shown in Figure 1, which shows the pistol to have the usual butt 1, casing 2, and a barrel member 3. The casing is adapted to receive and contain the operating mechanism, such as that disclosed in Figures 2 and 3. The operating mechanism is supported on and includes a plate 4, which constitutes a support, one end of which engages the rear 5 of the casing. Beneath the plate, which is rectangular in shape, there is a frame which has an upper member 6 attached to the plate, a lower member 7 and an intermediate member 8. These three members 6, 7, and 8 are attached to one another at their rear ends by means of an end member 9. The front end of the part 6 is attached to the intermediate part 8 by means of an end member 10, while the front ends of the parts 7 and 8 are connected by means of a front member 11.

The frame formed by these various parts and members forms two cavities, an upper one and a lower one. Extending through the frame and these cavities is a shaft 12, which has on its upper end an operating handle 13 pivoted to a sleeve 32. In the upper cavity and around the shaft is a coil spring 14, which has one end attached to the shaft, while its other end is attached to the part 9 of the frame.

Between the intermediate member and the lower member is a train of gears comprising a gear 15 mounted upon the shaft 12 and provided with a hub 16, a gear 22 integral with a pinion 21, which meshes with the gear 15 and is mounted upon a shaft 23, a gear 25 which is integral with the pinion 24 in mesh with the gear 22 and is mounted upon a shaft 26, and a pinion 27 in engagement with the gear 25 mounted on a shaft 28.

This train of gears serves to retard the rotation of the shaft, due to the operation of the spring 14. The gear 15 is provided with teeth 17 engaged by pawls 18, extending from the periphery of a disc 19, mounted on the shaft 12 to rotate therewith. Between the disc 19 and the lower surface of the intermediate member 8 is a spring 20, which tends to hold the disc against the gear 15 so that the pawls 18 and teeth 17 will permit the disc and shaft to rotate clockwise for winding the spring 14 independently of the gear, while in anti-clockwise direction the gear and the disc will rotate together.

On top of the plate or support 4 is a drum which comprises a periphery 29 and an end 30 provided with a hole 31 through which the shaft 12 extends. Mounted on the shaft 12 and above the drum is the sleeve 32 attached to the shaft by means of a screw 33. On the periphery of the drum is a plurality of projections 34 adapted to extend through perforations in a strip of ammunition 35, which is in the form of a roll 36 supported and rotatably mounted on a post 37 suit-

ably attached to the frame and the plate or support.

For the purpose of stripping the part of the strip of ammunition that has been used from the drum, there is provided a spring **38**, which is supported by means of a pair of posts **39**. The free end of this spring has a slot **40** therein through which the projections **34** pass during the rotation of the drum. The end of the ammunition strip separated from the drum is indicated by the numeral **41**.

For the purpose of firing the ammunition a hammer **42** is provided, which is pivoted at one end to a post or pivot **43**, while its other end is formed into a hammer head **44** adapted to engage the strip of ammunition between two adjacent projections on the periphery of the drum and a projection **45** adapted to be engaged by the projections on the drum for the purpose of tripping the hammer, or withdrawing it from the drum. The hammer is provided with a spring **46** tending to urge the head of the hammer against the drum. This spring is sufficiently strong that when the projection **45** passes over any of the projections **34** the head will be brought into sharp impact with the ammunition strip so that the ammunition will be fired.

For the purpose of holding the train of gears against operation during the time the coil spring is wound up, a trigger **47** is provided. This trigger is operated by means of a spring **48** to engage some part of the train of gears to prevent the rotation of any of the parts thereof. The trigger is protected by means of a guard **49**.

In order to prepare the pistol for firing the shaft **12** is rotated clockwise by turning the handle **13** so that the coil spring is tightened. During this rotation the drum is stationary and the train of gears is stationary. The pawls will pass over the teeth **17** but prevent a reverse rotation of the shaft so that the spring is uncoiled. A similar pawl and ratchet mechanism is located in the drum so that the spring may be coiled for operating purposes without rotating the drum, but if the spring be uncoiled the drum is forced to rotate with it and feed and fire the ammunition.

On the inside of the drum and attached to the end **30** is a plurality of teeth **50** adapted to be engaged by pawls **51** located on the periphery of a disc **52**. This disc **52** rotates with the shaft **12** at all times. Between the disc **52** and the upper surface of the plate **4** is a spring **53**. This disc **52** and the pawls thereon are similar in shape to the disc **19** and the pawls **18** thereon. When the shaft **12** rotates anti-clockwise under the action of the spring **14**, the drum rotates in an anti-clockwise direction due to the engagement of the pawls **51** with the teeth **50**. When the shaft **12** rotates clockwise for winding the spring **14** the pawls **51** slip over the teeth **50**.

The top of the casing is provided with a cover or lid **2a**, pivotally attached to the butt end of the casing by means of hinge members **2b**. All operating parts are securely housed and protected by the casing and the cover therefor. This casing and cover also serve to protect the operator from danger, due to the explosion of the ammunition.

While inoperative the trigger engages the gear **25** and tends to push this gear against the gear **22**. The friction between the gears and between the trigger and one of the gears is sufficient to prevent the rotation of the gears and the parts operated by the spring during the time the trigger is in engagement with the gear **25**. The trigger is held in engagement with this gear by means of the spring **48**. When the trigger is operated against the tension of the spring **48** to release the gears, the spring will cause the drum to rotate and operate the hammer for firing the ammunition.

Thus it will be seen that the pawl **18** and ratchet **17** transmit power from the main spring, mounted on square shaft **12**, to the train of gears, which act as a governer, this train being held stationary by trigger **47**, as shown in Figures 2, 5, and 6. The pawl **51** and the ratchet **50** in the feed drum **30** transmit the power from the main spring on the square shaft to the feed drum **30**, and at the same time allow the feed drum to idle while the spring is being wound up. Consequently, the feed drum rotates in but one direction only, namely the firing direction, as the main spring unwinds.

It will be understood that I desire to comprehend within my invention such modifications as come within the scope of my claims and my invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a toy pistol having a closed casing with a single narrow slot disposed at one side thereof and having fully enclosed therein means to support a strip of ammunition, hammer means, and means cooperating with said support means and hammer means to move said strip into the zone of operation of said hammer means, cooperate with said hammer means to fire the ammunition and feed the spent portion of the strip through said slot, said cooperating means comprising a horizontally disposed hollow feed and anvil drum driven in one direction by a spring motor through a vertical shaft having a pawl and ratchet connection with said feed and anvil drum.

2. In a toy pistol having a closed casing with a single narrow slot disposed at one side thereof and having fully enclosed therein means to support a strip of ammunition, hammer means, and means cooperating with said support means and hammer means to move said strip into the zone of operation of said hammer means, cooperate with said hammer means to fire the ammunition and feed the spent portion of the strip through said slot, said cooperating means comprising a horizontally-disposed feed and anvil drum connected to a vertical shaft driven by a spring motor, said connection being uni-directional whereby the shaft when driven by the spring motor in one direction rotates said drum and when driven in a reverse direction rotates freely with respect to said drum and winds the spring motor.

3. In a toy pistol, a horizontally-disposed plate having a vertically-disposed spring-urged shaft extending upwardly beyond the plate and a spring-pressed hammer mechanism swingably mounted on a pin on said plate, said pin being parallel to said shaft and spaced therefrom, a hollow drum rotatably mounted on the shaft and having a ratchet mechanism secured rigidly to one end thereof and feed means disposed on its periphery for cooperating with an ammunition strip and with said pivoted hammer mechanism, pawl means mounted on the vertical shaft to rotate therewith and engageable with the ratchet means on the drum to transmit rotative power from the shaft to the drum in one direction, whereby it feeds the ammunition strip over its periphery and operates the hammer mechanism

which cooperates with said periphery to fire the ammunition.

4. In a toy pistol, a horizontally-disposed plate having a vertically-disposed spring-urged shaft extending upwardly beyond said plate with an operating handle mounted at the top thereof, a spring-pressed hammer mechanism swingably mounted on a pin on said plate, which pin is parallel to said shaft and spaced therefrom, a hollow drum rotatably mounted on said shaft and having a ratchet mechanism integral with one end thereof, and spaced projections on the periphery thereof for engagement with a perforated ammunition strip and with said hammer mechanism, said shaft having mounted thereon pawl means rotatable therewith and disposed within said drum and engageable with said ratchet mechanism to transmit rotative power from the shaft to the drum in one direction, whereby said drum rotates with said spring shaft in one direction to feed the ammunition strip over its periphery, operate the hammer mechanism and cooperate therewith to fire the ammunition and whereby, when the shaft is operated in the opposite direction by said operating handle, it rotates free of said drum.

5. In a toy pistol, a housing, a spring therein having one end secured to the housing and the other end attached to a rotatable shaft extending therethrough, said shaft having a pawl mechanism rotatable therewith and adjacent one end, an operating member rigid on that end, a drum rotatably mounted on said shaft having thereon a ratchet mechanism engageable with said pawl mechanism, said drum having means thereon for engaging an ammunition strip and for operating a cooperating hammer mechanism whereby, when the shaft is rotated in one direction by the spring, the drum is rotated therewith by engagement of said pawl and ratchet mechanisms to feed the ammunition strip about its periphery, to operate the hammer mechanism and to cooperate therewith to fire the ammunition, and when the shaft is rotated in the reverse direction by the operating member, the spring may be wound and the drum remains stationary.

6. In a toy pistol with a closed casing having enclosed therein a support for an ammunition strip, hammer means and cooperating rotary feed and anvil means, means for driving said feed and anvil means in one direction comprising a spring driven shaft having a pawl and ratchet connection with said feed and anvil means at one end thereof, a connection with a driving spring at the central portion thereof and a pawl and ratchet connection at the other end thereof with one of the members of a gear train, said gear train governing the speed and acceleration of the parts when they begin to operate under spring power.

7. In a toy pistol with a closed casing having enclosed therein a support for an ammunition strip, hammer means and cooperating rotary feed and anvil means, means for driving said feed and anvil means in one direction comprising a vertical spring driven shaft having a pawl and ratchet connection with said feed and anvil means at one end thereof, a connection with a driving spring at the central portion thereof, and a second pawl and ratchet connection at the other end thereof with one of the members of a gear train, whereby when said shaft is rotated by the spring, it drives the feed and anvil means in one direction at a controlled speed and when the shaft is manually rotated in the reverse direction it rotates free of the feed and anvil means and winds the spring.

8. In a toy pistol with a closed casing having enclosed therein a support for an ammunition strip, hammer means and cooperating rotary feed and anvil means having projections on the periphery thereof to engage perforations in the ammunition strip, means for driving said feed and anvil means in one direction comprising a spring driven shaft having a pawl and ratchet connection with said feed and anvil means at one end thereof, a connection with the driving spring at the central portion thereof and a pawl and ratchet connection at the other end thereof with one of the members of a gear train, said gear train comprising an acceleration governor composed of a plurality of gear members, one of said gear members frictionally engaging a spring-pressed arm of a bell crank member having the other arm in the form of a trigger, whereby said gear train normally prevents rotation of said shaft and said driven mechanisms and whereby, when said spring-pressed arm is released from said frictionally-engaged gear member by operation of the trigger, the gear train limits the acceleration of the shaft and feed and anvil means to prevent tearing of the ammunition strip.

9. In a toy pistol with a closed casing having enclosed therein a support for an ammunition strip, hammer means and cooperating rotary feed and anvil means having inter-penetrating projections on the circumference thereof to engage the ammunition strip, means for driving said feed and anvil means in one direction comprising a spring driven shaft having a pawl and ratchet connection with said feed and anvil means at one end thereof, a connection with a driving spring at the central portion thereof, and a pawl and ratchet connection at the other end thereof with one of the members of a gear train, said gear train comprising an acceleration governor composed of a plurality of interengaging gear members, one of said gear members having a frictional engagement with one arm of a spring-pressed bell crank, the other end of said bell crank being in the form of a trigger, whereby when said bell crank arm is in engagement with said gear train member the shaft may be manually rotated in one direction free of the gear train and feed and anvil means to wind the spring, and when the trigger is operated and the said bell crank arm is disengaged from said gear train member, the gear train limits the acceleration of said shaft and feed and anvil means to prevent tearing of the ammunition strip by sudden starting of the inter-penetrating projections on the feed and anvil means.

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