

Feb. 14, 1950

H. GILGOFF

2,497,723

CONTINUOUS FIRING TOY GUN

Filed March 21, 1947

3 Sheets-Sheet 1

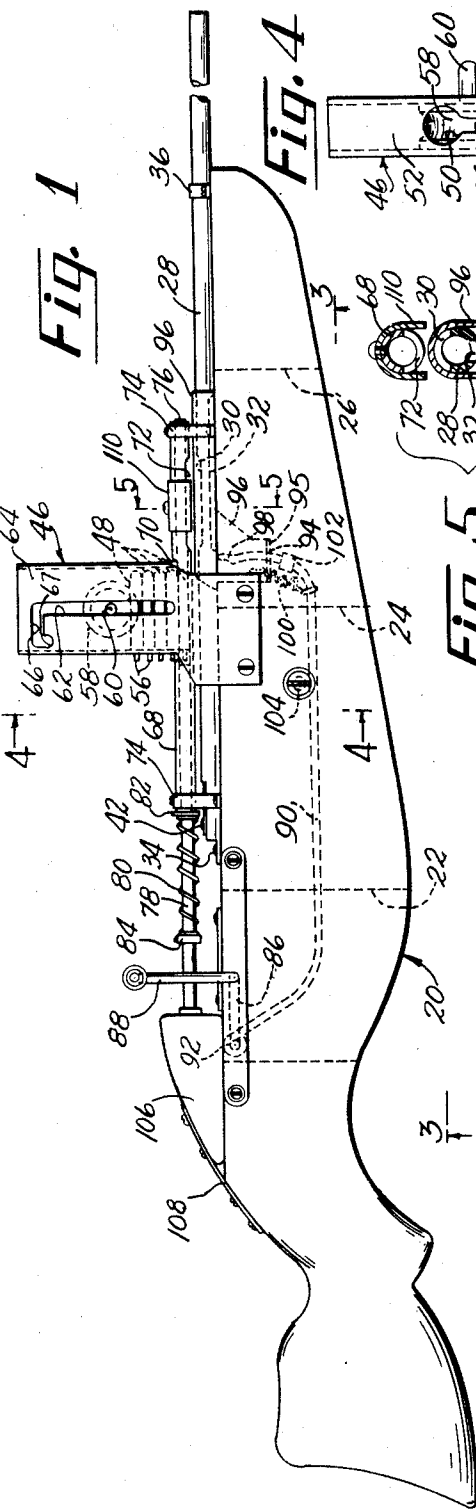


Fig. 1

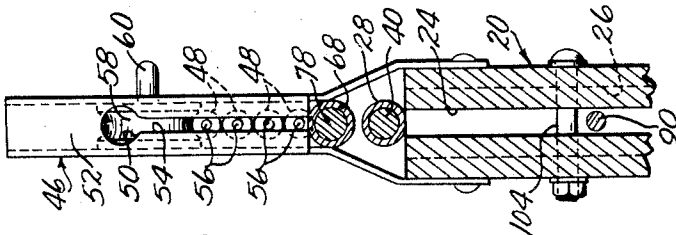


Fig. 2

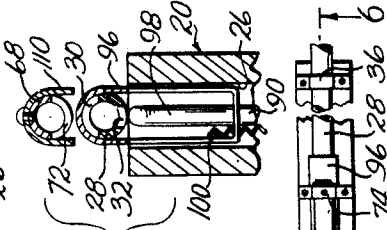


Fig. 3

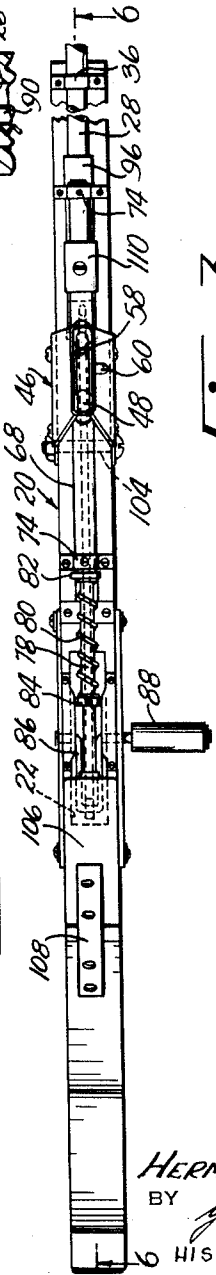
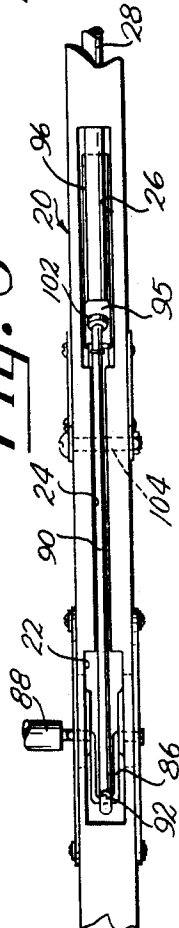


Fig. 4



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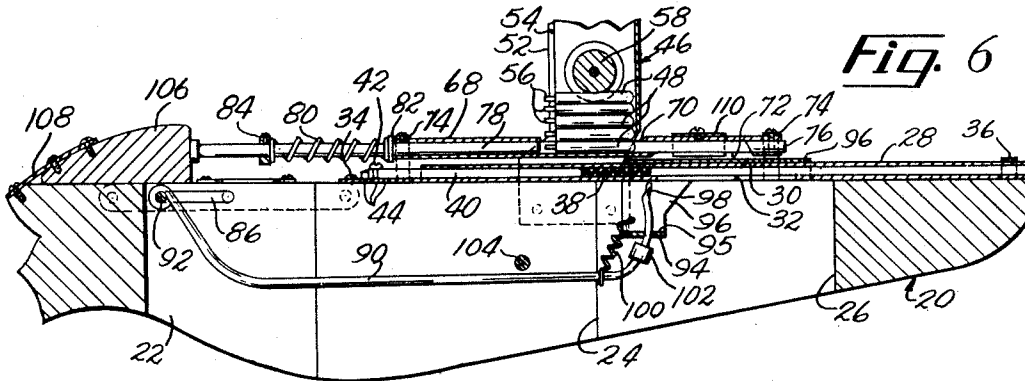


Fig. 6

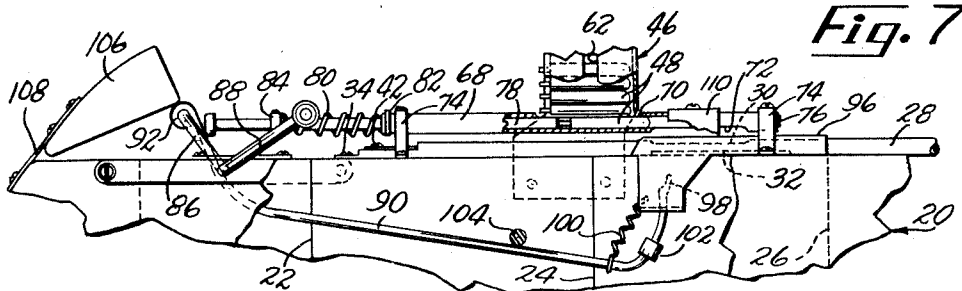


Fig. 7

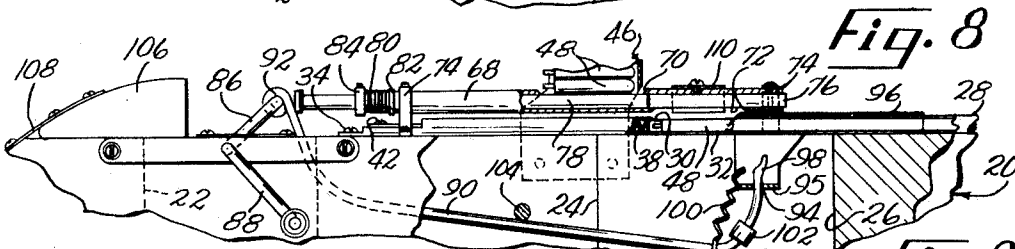


Fig. 8

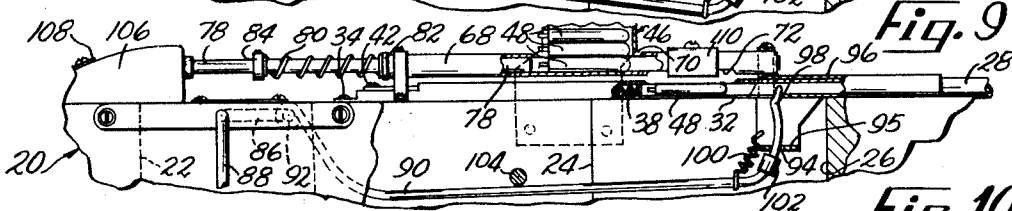


Fig. 9

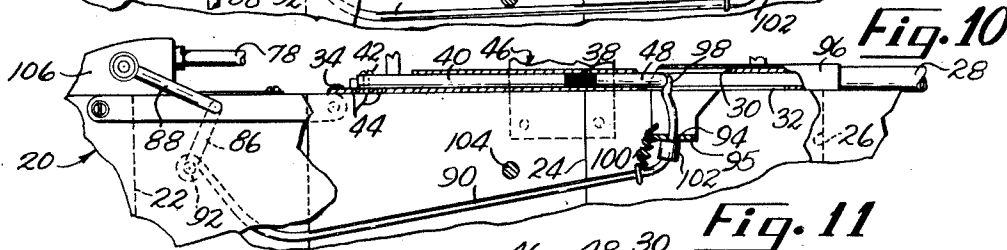


Fig. 10

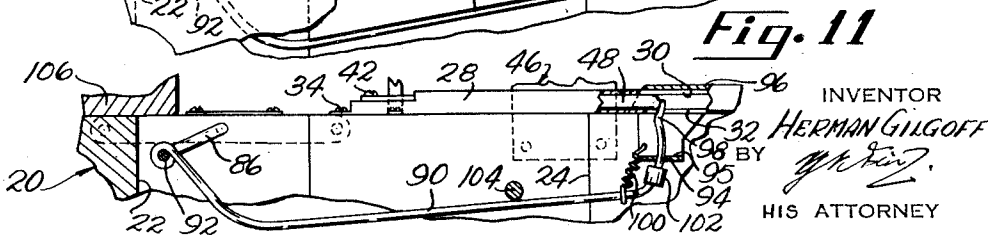


Fig. 11

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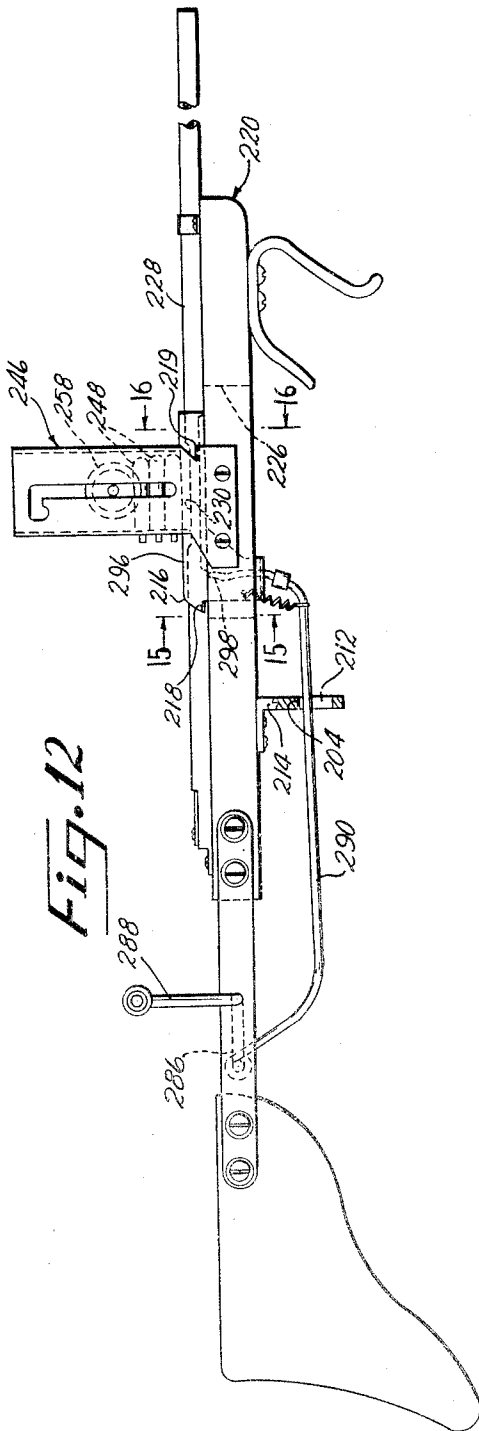
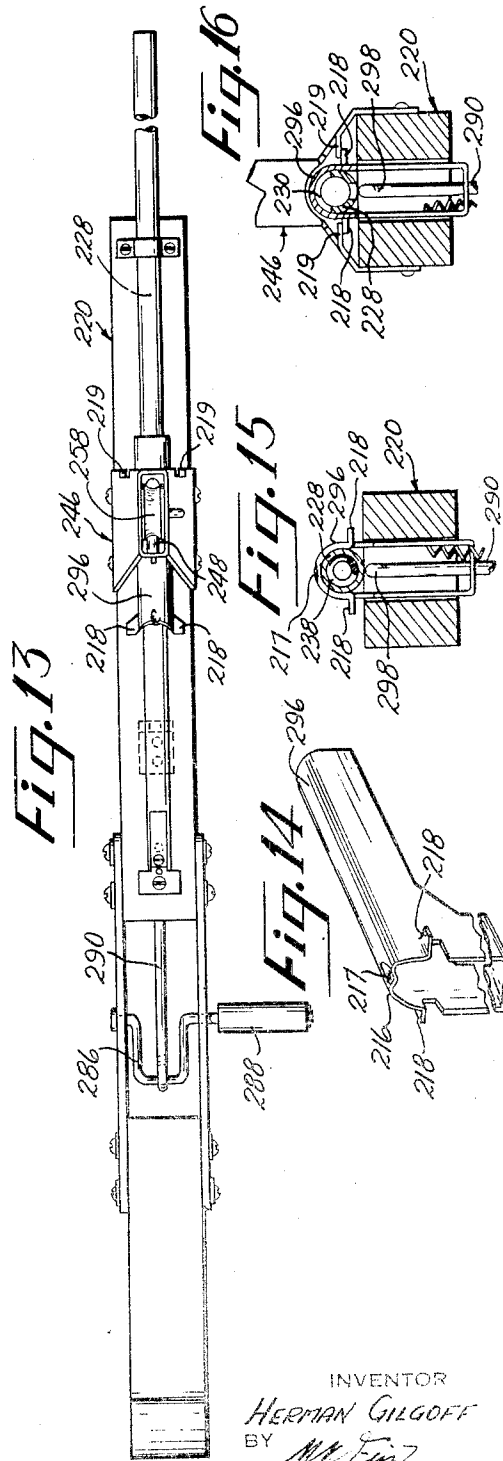
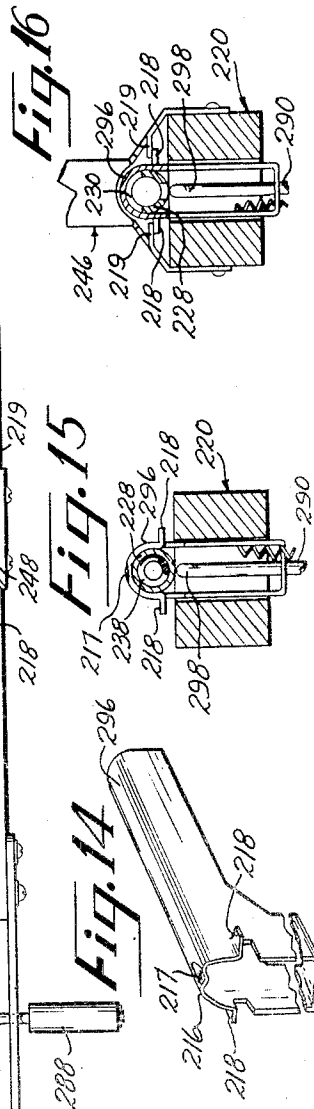
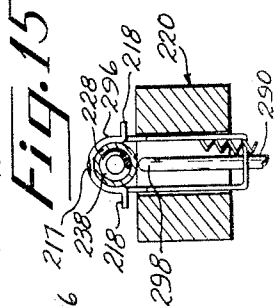
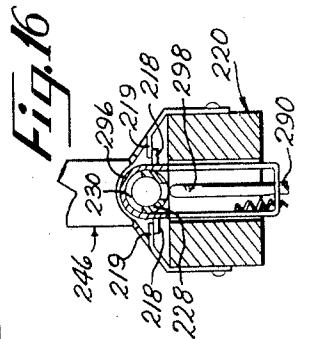
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CONTINUOUS FIRING TOY GUN

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3 Sheets-Sheet 3



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CONTINUOUS FIRING TOY GUN

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3 Claims. (Cl. 124-27)

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This invention relates to toys, and more particularly to toy guns.

An object of the invention is to provide a toy gun which is simple in mechanism and may be readily operated.

A further object of the invention is to provide a toy machine gun, by means of which a round of bullets may be fired by a simple rotation of a crank-mechanism.

Another object of the invention is to provide a toy gun, which is equipped with means for adjusting its firing range.

The above mentioned objects and advantages as well as other objects and advantages will be more fully disclosed in the following specification, reference being had to the accompanying drawings forming part of this specification, wherein:

Fig. 1 is a side elevational view of a toy gun according to the invention,

Fig. 2 is a top plan view of the toy gun shown in Fig. 1,

Fig. 3 is a fragmentary bottom plan view of the toy gun shown in Fig. 1,

Fig. 4 is a sectional view taken on line 4-4 of Fig. 1,

Fig. 5 is a sectional view taken on line 5-5 of Fig. 1,

Fig. 6 is a fragmentary sectional view taken on line 6-6 of Fig. 2 illustrating the mechanism of the toy gun in the same position as in Fig. 1,

Figs. 7-11 are views illustrating the mechanism of the toy gun in various positions,

Fig. 12 is a side elevational view of another embodiment of a toy gun according to the invention,

Fig. 13 is a top plan view of the toy gun shown in Fig. 12,

Fig. 14 is a perspective view of a slider of the toy gun shown in Fig. 12.

Fig. 15 is a sectional view taken on line 15-15 of Fig. 12, and

Fig. 16 is a sectional view taken on line 16-16 of Fig. 12.

Referring now to Figs. 1-11, 20 generally indicates a stock of the toy gun according to the invention. Said stock 20 has slots 22, 24, and 26 of different widths.

A gun barrel 28 having an upper bullet receiving aperture 30 and a lower longitudinal slot 32 is secured to the stock 20 by means of a screw 34 and a clip 36. Said receiving aperture 30 and longitudinal slot 32 are arranged in front of a firing spring 38, arranged within the gun barrel 28, as best shown in Figs. 6, 8, 9 and 10. The rear

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end of said firing spring 38 is in engagement with and preferably soldered to an abutting plug 40 arranged in the gun barrel 28 and held in its position by means of a set screw 42. As best shown in Figs. 6 and 10, said set screw 42 may be selectively screwed into one of a plurality of bores 44 of the gun barrel 28, whereby the firing strength of the firing spring 38 may be adjusted.

46 generally indicates a bullet magazine secured to the stock 20 by screws. Said bullet magazines 46 may hold a plurality of bullets 48 in a stack one above the other. The bullets 48 may be inserted into the magazine 46 through a bore 50 arranged in the rear wall 52 of the magazine 46 as shown in Fig. 4. Said bore 50 communicates with a vertical slot 54 of said rear wall 52 arranged for guiding engagement with a reduced portion 56 of each bullet 48. The bullets 48 in the magazine 46 are under the load of a weight 58 having an extension or handle 60 slidably engaged with a guiding slot 62 arranged in a side wall 64 of the magazine 46. The substantially vertical guiding slot 62 merges into a substantially horizontal locking slot 66, having a locking recess 67. During the loading of the magazine 46 with bullets, the weight 58 may be held in an inactive position by bringing its handle 60 into engagement with the recess 67 of the locking slot 66.

The bullets 48 may be ejected from said magazine 46 one by one into the gun barrel 28 through the bullet receiving aperture 30 of the latter by an ejecting device described hereinafter. An ejecting tube 68 having an inlet 70 and an outlet 72 is arranged above the gun barrel 28. Said ejecting tube 68 is held in its position by means of clips 74 screwed to said ejecting tube and to the stock 22. The inlet 70 of the ejecting tube 68 is in register with the open bottom of the magazine 46, the outlet 72 of said ejecting tube 68 is in register with the receiving aperture 30 of the gun barrel 28. The front end of the ejecting tube 68 is closed by a plug 76 secured to the ejecting tube by a screw. An ejecting plunger 78 slidably and reciprocally arranged in the ejecting tube 68 is under the action of a spring 80 arranged between a collar 82 at the rear end of the ejecting tube 68 and a set collar 84 secured to the ejecting plunger 78. Said spring 80 tends to hold the ejecting plunger 78 in the inactive position shown in Figs. 1, 6 and 9. The actuation of said ejecting plunger 78 for ejecting the lowermost bullet 48 from the stack of bullets will be described hereinafter.

A crank 86 connected with a handle 88 is ro-

tatably mounted in suitable bearings arranged on the stock 20. The crank 86 may be rotated within the slot 22. One end of a connecting rod 90 arranged within the slots 22, 24, 28 is swingably connected with said crank 86 at 92. The other end of said connecting rod 90 is slidably engaged with a bore 94 in a wall 95 of the slider 96 reciprocally mounted on the gun barrel 28 secured to the stock 20. The slider 96 embraces the upper portion of said gun barrel 28. The free end of the connecting rod 90 forms a loading finger 98. A spring 100 stretched between the slider 96 and the connecting rod 90 tends to urge the loading finger 98 upwardly, so that it may extend through the longitudinal slot 32 into the interior of the gun barrel 28 as shown in Figs. 9-11 when the arrangement of certain parts of the mechanism permits such an entry of the loading finger into the interior of the gun barrel. The uppermost position of the loading finger 98 is limited by an abutment of a stop 102 against the wall 95 of the slider 96 as shown in Fig. 10.

Apparently, a rotation of the crank 86 causes reciprocating strokes of the slider 96 connected with the crank 86 through the connecting rod 90. The slider 96 is arranged in such a relationship to the gun barrel 28, that it covers the receiving aperture 30 of the gun barrel 28, when it is in its rearward end position shown in Fig. 6 and that it uncovers said receiving aperture 30 when it is in its forward end position shown in Fig. 9. A screw 104 secured to the stock 20 passes through the slot 24 for cooperation with the connecting rod 90 in a manner to be described hereinafter.

A clapping element 106 is movably mounted on the stock by means of a resilient blade 108. Said clapping element 106 also forming a stop for the spring-loaded ejecting plunger 78 may be actuated by the crank mechanism 86, 90 in a manner to be described hereinafter.

The operation of the toy gun is as follows:

In order to load the magazine 46, at first the weight 53 is moved upwardly by gripping same at its handle 60, which is shifted along the vertical slot 62 into the horizontal slot 66 for engagement with the locking recess 67 of the latter, so that the weight 53 is held in its upper inactive position. Thereupon a plurality of bullets 48 are inserted through the hole 50 into the magazine, whereupon the handle 58 of the weight 53 is lifted out of the locking recess 67 and is displaced through the horizontal slot 66 into the vertical slot 62, so that now the weight 53 may act on the stack of bullets 48 for urging same downwardly. The lowermost bullet 48 rests in the ejecting tube 68 as shown in Figs. 1 and 6.

In the position of the various elements of the toy gun shown in Fig. 6, the ejecting plunger 78 is in its inactive position resting with its rear end against the stop formed by the clapping element 106. The crank is in a substantially horizontal position, the rear end of the connecting rod 90 contacting the lower surface of the clapping element 106. The connecting rod 90 is at a slight distance from the screw 104 and the loading finger 98 abuts against the lower surface of the gun barrel 28, so that the spring 100 is slightly stretched. The slider 96 being in its extreme rearward position closes the bullet receiving aperture 30 of the gun barrel 28. The firing spring 38 is expanded.

The firing of one bullet 48 after the other in the manner of a machine gun or automatic rifle is obtained by a rotation of the crank 86 by means

of the handle 88 in clockwise direction as viewed in Figs. 6-11. When the crank 86 is rotated into the position shown in Fig. 7, the rear end of the connecting rod 90 lifts the clapper element 106. Furthermore, said rear end of the connecting rod 90 comes into engagement with the rear end of the ejecting plunger 78, which is moved forwardly against the action of the spring 80, whereby it pushes forwardly the lowermost bullet 48. Moreover, the slider is shifted somewhat towards the front end of the gun barrel, but it has not yet uncovered the bullet receiving aperture 30 of the gun barrel. Furthermore, the connecting rod 90 comes into engagement with the screw 104 acting as a fulcrum for the connecting rod 90, whereby the loading finger 98 is drawn downwardly against the action of the spring 100.

During a further rotation of the crank 86 into the position shown in Fig. 8, at first the rear end of the connecting rod 90 becomes disengaged from the clapper element 106 which, by the action of the resilient blade 108, is returned into its original position making a clapping noise when hitting the surface of the stock 20. Thereafter, the ejecting plunger 78 is advanced further against the action of the spring 80. During said advance, the ejecting plunger 78 pushes the lowermost bullet 48 forwardly in the ejecting tube 68 until the bullet 48 is in register with the outlet 72 of said ejecting tube, whereupon the bullet drops through the bullet receiving aperture 30 uncovered by the slider 96 into the gun barrel 28. A guard 110 mounted on the ejecting tube 68 prevents the bullet 48 from sidewise leaving the toy gun during its transit from the ejecting tube 68 into the gun barrel 28. In the position shown in Fig. 8, the connecting rod 90 is still in engagement with the screw 104 and the loading finger 98 is still outside the gun barrel 28.

As soon as the crank 86 is further rotated into the position shown in Fig. 9, the rear end of the connecting rod 90 becomes disengaged from the ejecting plunger 78, so that the latter may be returned into its original position by the spring 80. At the end of this return movement, the rear end of the ejecting plunger 78 hits the stop formed by the clapper element 106, whereby again a noise is made. As soon as the ejecting plunger 78 reaches its original position, the stack of bullets 48 sinks downwardly under the action of the weight 58 in the magazine 46, so that another bullet 48 is in the ejecting tube 68. In the position shown in Fig. 9, the slider 96 is in its extreme forward position. The loading finger 98 now is at such a distance from the screw 104 and the connecting rod 90 is in such a position, that the spring 100 may bring the loading finger 98 through the longitudinal slot 32 of the gun barrel 28 into the interior of said gun barrel.

During a further rotation of the crank 86 into the position shown in Fig. 10, the ejecting plunger 78 remains in its inactive position resting against the stop 106. The connecting rod 90 becomes disengaged from the screw 104 and the loading finger 98 together with the slider 96 are moved rearwardly. During said rearward movement the loading finger 98 remains within the gun barrel 28 and pushes the bullet 48 against the firing spring 38 compressing and loading the latter. The reduced end portion of the bullet fits into the core of the firing spring 38. Furthermore, during the rearward movement of the loading finger 98, the bullet receiving aperture 30 is closed by the slider 96.

As soon as, during a further rotation of the

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crank 86, the crank mechanism reaches the position shown in Fig. 11, the connecting rod 90 comes again in engagement with the screw 104. Now, when the crank 86 is still further rotated from the position shown in Fig. 11 into the position shown in Fig. 6, the connecting rod 90 at first swings around the screw 104 acting as a fulcrum, whereby the loading finger 98 is withdrawn from the interior of the gun barrel 28, so that the loading finger 98 is disengaged from the bullet 48 and the compressed firing spring 38 is released thus firing the bullet 48.

When the crank 86 reaches the position shown in Fig. 6 and the rotation of the crank 86 in continued, the operations described above repeat themselves for the firing of one bullet after the other.

It is obvious, that the firing range of the toy gun depends on the strength of the firing spring 38. The more the spring 38 is compressed, the greater its strength. The compression of said spring 38 may be adjusted by inserting the screw 42 holding the plug 40 into one or the other of the bores 44.

Figs. 12-16 illustrate a somewhat simplified embodiment of a toy gun according to the invention. The firing mechanism comprising the crank mechanism 288, 286, 290, 298, 296 and a firing spring 238 (shown in Fig. 15) arranged within the gun barrel 228 mounted on the stock 220 is substantially identical with the firing mechanism of the toy gun described above in connection with Figs. 1-11. The toy gun shown in Figs. 12-16, however, is not equipped with an ejecting device. According to Figs. 12-16, the magazine 246 holding a stack of bullets 248 is secured to the stock 220 in such a manner, that its open bottom is in register with the bullet receiving aperture 230 of the gun barrel 228.

Moreover, the stock 220 is of somewhat different shape having a slot 226 receiving the lower extension of the reciprocable slider 296. The abutment for the connecting rod 290 acting as a fulcrum for the latter when cooperating with same is formed by the upper edge 204 of an aperture 212 of a bracket 214 mounted on the stock 220.

The firing mechanism including the crank mechanism 288, 286, 290, 298 and the firing spring 238 operates in the same manner as described above in connection with the firing mechanism of the toy gun shown in Figs. 6-11.

The charging of the gun barrel 228 with a bullet 248, however, is controlled by the reciprocable slider 296. When the slider is in the position shown in Fig. 12 (corresponding to the position of the slider 96 shown in Fig. 6), the slider still closes the magazine after the firing of a bullet. When, by means of a rotation of the crank 286 into the position corresponding to the position of the crank 86 shown in Fig. 8, the slider 296 is brought into such a position that it uncovers the bullet receiving aperture 230 of the gun barrel 228, the stack of bullets 248 sinks downwardly under the action of the weight 258, whereby the lowermost bullet of said stack enters the empty gun barrel 228 through the bullet receiving aperture 230. Now, during the return movement of the slider 296 from its extreme forward position into the position shown in Fig. 12, the front edge 216 of the slider 296 enters into the space between the bullet resting in the gun barrel 228 and the lowermost bullet of the stack of bullets 248 in the magazine 246, whereby the stack of bullets in the magazine is sepa-

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rated from the bullet in the gun barrel. In order to safely guide said front edge 216 of the slider 296 between the bullets, flaps 218 are arranged on the slider 296, which cooperate with guiding flaps 219 arranged on the stationary magazine 246. As may be best recognized from Fig. 16, said guiding flaps 219 hold the slider 296 downwards through the medium of the flaps 218 when the latter come into engagement with the guiding flaps 219. Moreover, the front end of the slider 296 may be provided with a slight dent 217 as shown in Fig. 14 so as to facilitate its entry between the bullets.

I have described preferred embodiments of my invention, but it is understood that numerous omissions and changes may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

For example instead of a rigid connection of the bullet magazine with the stock of the toy gun, the bullet magazine may be removably attached to the stock, if desired. Moreover, the means for urging downwardly the bullets in the magazine may be of a different construction and arrangement.

What I claim is:

1. A toy gun comprising: a stock, a gun barrel mounted on said stock, a firing spring arranged within said gun barrel, means for fixing the rear end of said firing spring relative to said gun barrel, said gun barrel having a longitudinal slot in front of the front end of said firing spring, a slider reciprocably mounted on said stock, a manually operable crank rotatably mounted on said stock, a reciprocable connecting rod swingably connected at one of its end portions with said crank, said slider having an opening slidably receiving the other end portion of said connecting rod, the free end of said connecting rod at said other end portion forming a reciprocable loading finger extending through said longitudinal slot into the interior of said gun barrel during its stroke toward the rear end of the gun barrel whereby it urges a bullet placed into the gun barrel against said firing spring compressing and loading the latter, releasing means associated with said slidable loading finger for automatically withdrawing same from the interior of said gun barrel when said slider and said loading finger are substantially in their rear position relative to said barrel whereby the loading finger is disengaged from the bullet and the firing spring is released for firing the bullet, and means associated with said slidable loading finger for automatically returning same into the interior of the gun barrel when said slider and said loading finger are substantially in their forward position relative to said barrel.

2. In a toy gun as claimed in claim 1, the upper portion of said gun barrel having a bullet receiving aperture in front of the firing spring, a portion of said slider extending upwardly and embracing a part of said upper portion of said gun barrel, and said slider being arranged for automatically closing said bullet receiving aperture of the gun barrel during its rearward stroke and for automatically opening said bullet receiving aperture of the gun barrel during its forward stroke after the release of the firing spring.

3. In a toy gun as claimed in claim 1, said releasing means including an abutment mounted on the stock for cooperation with the connecting rod, said abutment being arranged above, intermediate the ends of and adjacent said connecting rod and acting as a fulcrum for said connecting

rod at a predetermined interval during its reciprocating movements.

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