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SPRING FED MAGAZINE FOR TOY MACHINE GUNS

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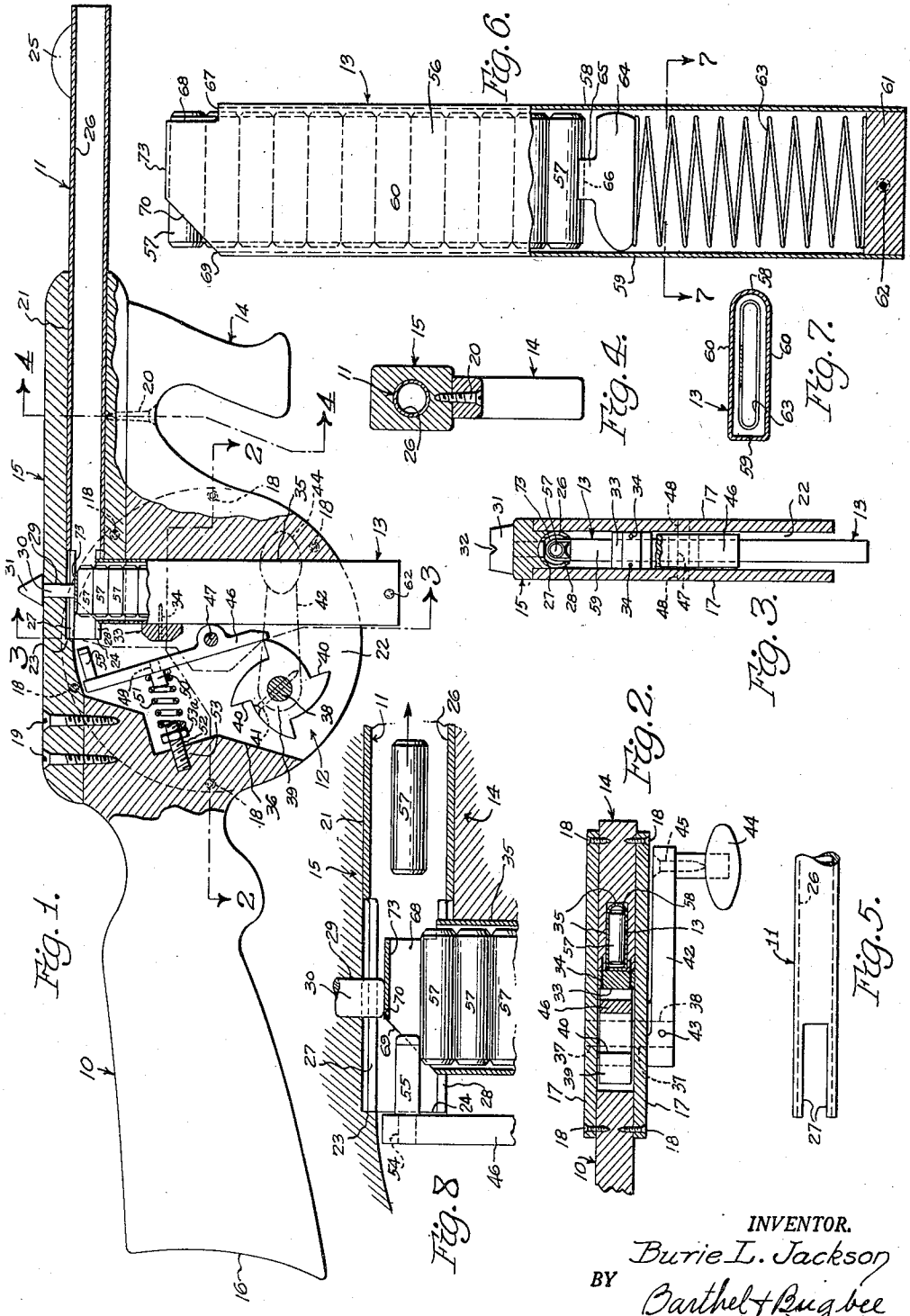


Fig. 1.

Fig. 8

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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SPRING FED MAGAZINE FOR TOY MACHINE GUNS

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1 Claim. (Cl. 124—52)

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This invention relates to toys and in particular to toy machine guns.

One object of this invention is to provide a toy machine gun which fires bullets in easily insertable and removable clips or magazines.

Another object is to provide a toy machine gun wherein the firing mechanism and magazine are so arranged with respect to the barrel that the firing pin passes partway through the magazine in order to hit and expel the bullet.

Another object is to provide a toy machine gun wherein the firing mechanism is operated by a crank and is housed in a compact space also containing the removable magazine for the bullets.

Another object is to provide a toy machine gun which is inexpensive to manufacture and which is simple and compact in construction yet which rapidly expels a clip or magazine full of bullets of wood or other suitable material accompanied by a loud noise as each bullet is expelled, simulating an explosion.

Another object is to provide a toy machine gun which may be fired while being held in any position whatever, due to the spring-fed magazine, which operates independently of gravity.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawing, wherein:

Figure 1 is a side elevation of a toy machine gun according to a preferred form of the invention, with the central portion thereof in vertical section to show details of the firing mechanism and bullet magazine or clip immediately before firing;

Figure 2 is a horizontal section along the line 2—2 in Figure 1;

Figure 3 is a vertical section along the line 3—3 in Figure 1;

Figure 4 is a vertical section along the line 4—4 in Figure 1;

Figure 5 is a top plan view of the rear end of the barrel of the toy machine gun shown in Figure 1;

Figure 6 is an enlarged side elevation of a bullet clip or magazine used with the toy gun of Figure 1, with the side wall thereof broken away to disclose the interior; and

Figure 7 is a horizontal section along the line 7—7 in Figure 6; and

Figure 8 is an enlarged fragmentary view of the upper central portion of Figure 1 showing the position of the parts immediately after firing.

Referring to the drawings in detail, Figure 1

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shows a toy machine gun according to a preferred form of the invention as consisting of a stock 10, a barrel 11, a firing mechanism 12, a bullet clip or magazine 13, a forward grip 14 and a barrel receiver 15, all of these assemblies being generally designated by reference numerals. The stock 10 is provided with the usual butt portion 16 to fit the shoulder of the user and is connected by disc-like side plates 17 to the forward grip 14 and barrel receiver 15, secured thereto as at 18, 19 and 20 respectively. The barrel receiver 15, contains a longitudinal bore 21 extending from the front end thereof into the cavity 22 in the space between the side plates 17. The barrel receiver 15 serves to receive the barrel 11 and has an abutment shoulder 23 at the rear end thereof for engagement by the rear end 24 of the barrel 11.

The barrel 11 is tubular and is provided with the usual front sight 25 and the bore 26 through which the bullets are expelled. The rear portion of the barrel 11 is slotted vertically to provide upper and lower slots 27 and 28 for receiving the upper end of the bullet clip or magazine 13, which fits into the space thus provided (Figure 3). The barrel receiver 15 is provided with a vertical hole 29 immediately above the top of the clip or magazine 13 for receiving a pin 30, the lower end of which projects downwardly into the bore 21 and serves as a stop for engaging and positioning the upper end of the clip or magazine 13. The upper end of the pin 30 is provided with an enlargement 31 forming a rear sight cooperating with the front sight 25 for aiming the gun, and having the usual notch 32 therein (Figure 3). The clip or magazine 13 is further guided and positioned by a bridge member 33 secured as at 34 to the forward grip 14 (Figure 2) and bridging a vertically extending groove 35 at the forward end thereof which receives the magazine or clip 13.

The firing mechanism 12 is housed in the cavity 22 between the side plates 17, the clip or magazine 13 and the forward end 36 of the stock 10. Journaled in the side plates 17 as in the bores 37 therein (Figures 1, 2 and 3) is a shaft 38 having mounted thereon a ratchet 39 having teeth 40 and held in position by a pin 41 passing through the shaft 38. The ratchet 39 is located between the side plates 17 and is rotated by a crank arm 42 pinned thereto as at 43 and having a crank knob 44 secured on the outer end thereof as by the fastener 45 (Figure 2). The teeth 40 of the ratchet 39 engage the lower end of a firing lever 46, the intermediate portion of which is

pivotally mounted upon a shaft 47 journaled in the bores 48 in the side plates 17.

Seated in the hole 49 in the lever 46 is a pin 50 which serves to retain in position a spiral compression firing spring 51, the opposite end of which is retained on and against the forward end 36 of the stock 10 by the pin 52 (Figure 1) seated in a socket 53 in the stock 10. By this means, the upper end of the firing lever 46 is constantly urged in a forward direction and the lower end in a rearward direction against the teeth 40 of the ratchet 39. Seated in a hole 54 in the upper end of the lever 46 (Figure 8) is a firing pin 55 extending in a forward direction and adapted to engage the bullet when the ratchet 39 is rotated to release the firing lever 46.

The clip or magazine 13 consists of a tubular member 56 (Figures 6 and 7) having a cross-section approximating the outline of the bullets 57 which are contained therein and fired by the gun. The bullets 57 may of course be of any suitable shape and material, those shown being, for example, of wood cut from dowel rod. The tubular member 56 for convenience is provided with a rounded forward end 58 and a flat rear end 59 with flat sides 60 interconnecting them (Figure 7).

The bottom of the tubular member 56 is closed by a plug 61 secured therein by the fastener 62 and serving as an abutment for the lower end of a spiral compression spring 63 of approximately flat-sided oval outline (Figure 7). The upper end of the compression spring 63 engages a lower side of a pusher member 64 from the upper side of which rises a plunger portion 65 (Figure 6) having a rest or groove 66 therein of arcuate cross-section corresponding in curvature to the curvature of the bullets 57. The upper end of the tubular member 56 is cut back as at 67 adjacent the forward end 58 to provide an aperture 68 with vertical edges opening into the bore 26 of the barrel 11, whereas the rear portions of the upper end of the tubular member 56 is cut away obliquely along a diagonal edge 69 to provide a rear aperture 70 into which the firing pin 55 moves.

In operation, the clip or magazine 13 is loaded with bullets 57 which are inserted through the aperture 70 one by one. The first bullet 57 engages the curved forward edge of the pusher member 64 and pushes it downward to compress the spring 63 before moving into the groove 66 in the plunger portion 65. The second and subsequent bullets are pushed down upon the top of the first bullet 57 as they are pushed forward into the aperture 70 (Figure 6), further compressing the coil spring 63. This procedure is repeated until a stack of bullets has been loaded into the magazine 13, the forward rounded portion of the pusher member 64 slidably engaging the inside of the forward end 58 as it is forced downward by the insertion of the bullets 57 above it.

The clip or magazine 13 is now inserted from below into the groove 35 (Figure 1) and pushed upward until its top end 73, which is of arch-shaped or arcuate cross-section, engages the lower end of the pin 30 and comes to a halt with the apertures 70 and 68 and the first bullet 57 in alignment not only with the barrel bore 26 but also with the firing pin 55.

The operator now places the butt 16 against his shoulder and aims the gun by means of the sights 31 and 25 with the forward grip 14 in his other hand. To fire the gun, he rotates the crank 42 and ratchet 39 by means of the crank knob 44, causing the spring 51 to be alternately compressed as the lower end of the firing lever 46 is forced forward by the ratchet teeth 40, cocking the gun. As he continues to rotate the ratchet 39, the firing lever 46 falls off the edge of the tooth 40, releasing the firing lever 46. When this occurs the coil spring 51 causes the upper end of the firing lever 46 to snap forward suddenly whereupon the firing pin 55 enters the aperture 70 and hits the rear end of the bullet 57 a sharp blow, expelling the bullet 57 from the space beneath the upper end 73 of the magazine or clip 13 (Figure 8) and shooting the bullet out through the bore 26 of the barrel 11. As the firing pin 55 reaches its extreme forward position, it is halted by the engagement of the upper end of the firing lever 46 against the rear end 24 of the barrel 11.

As the user continues to rotate the crank 42 and ratchet 39, the lower end of the firing lever 46 rises up the curved side of the next tooth 40, again moving the firing pin 55 to its rearward position (Figure 1) and again compressing the spring 51. When the firing pin is thus moved out of the aperture 70 in the clip or magazine 13, the compression spring 63 causes the pusher member 64 to push the stack of bullets 57 upward, moving another bullet into place against the upper end 73 of the clip or magazine 13 into alignment with the apertures 70 and 68 thereof and the gun is again ready to fire. When the lower end of the firing lever 46 slips off the straight side of the ratchet tooth 40 as the ratchet 39 is further rotated, the firing lever 46 and firing pin 55 are again released to expel the next bullet 57, under the urge of the coil spring 51. The bullets 57 are thus fired in rapid succession as the crank 42 is rotated, and firing continues as long as the crank is rotated or as long as any bullets 57 remain within the clip or magazine 13. The latter is then removed and reloaded in the foregoing manner and the gun is again ready for firing.

The force of the coil spring 51 may be adjusted so as to regulate the force with which the bullets are expelled or to compensate for variations in springs arising during manufacture or subsequent use. For this purpose, the pin 52 in the socket 53 is preferably threaded and provided with a nut 53*a* thereon serving as an adjustable abutment for one end of the spring 51. By screwing the nut 53*a* along the threaded pin 52, the force of the spring 51 may be increased or decreased as desired.

While I have shown and described my invention in deail, it is to be understood that the same is to be limited only by the appended claim, for many changes may be made without departing from the spirit and scope of my invention.

What I claim is:

For use in a toy machine gun having a bored barrel and resiliently-urged firing mechanism adapted to move a firing pin toward said barrel bore, a hollow magazine having a longitudinal passageway configured to receive a stack of bullets and having substantially parallel side walls with and arch-shaped portion interconnecting the upper ends thereof, said arch-shaped portion having a pair of apertures at opposite ends thereof communicating with said passageway and alignable with said firing pin and barrel bore respectively, said arch-shaped portion adjacent one end being cut away to form one of said aligned apertures with edges disposed obliquely to said side walls.

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