

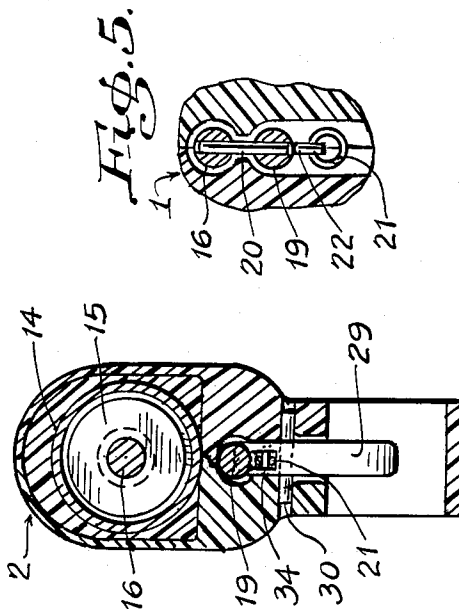
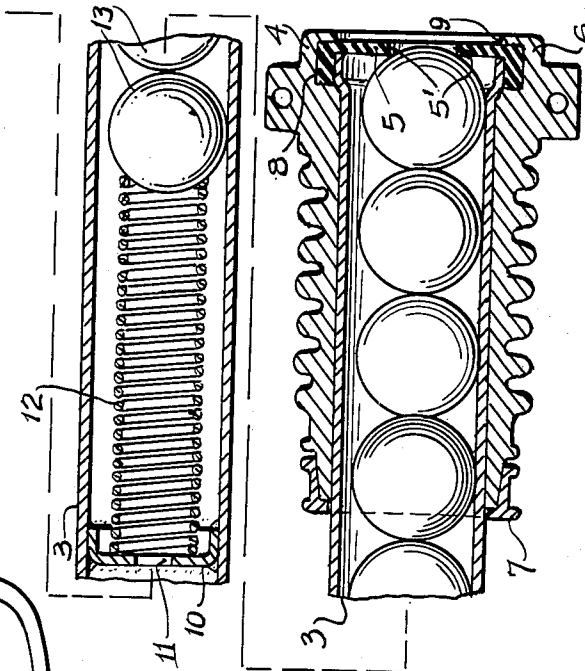
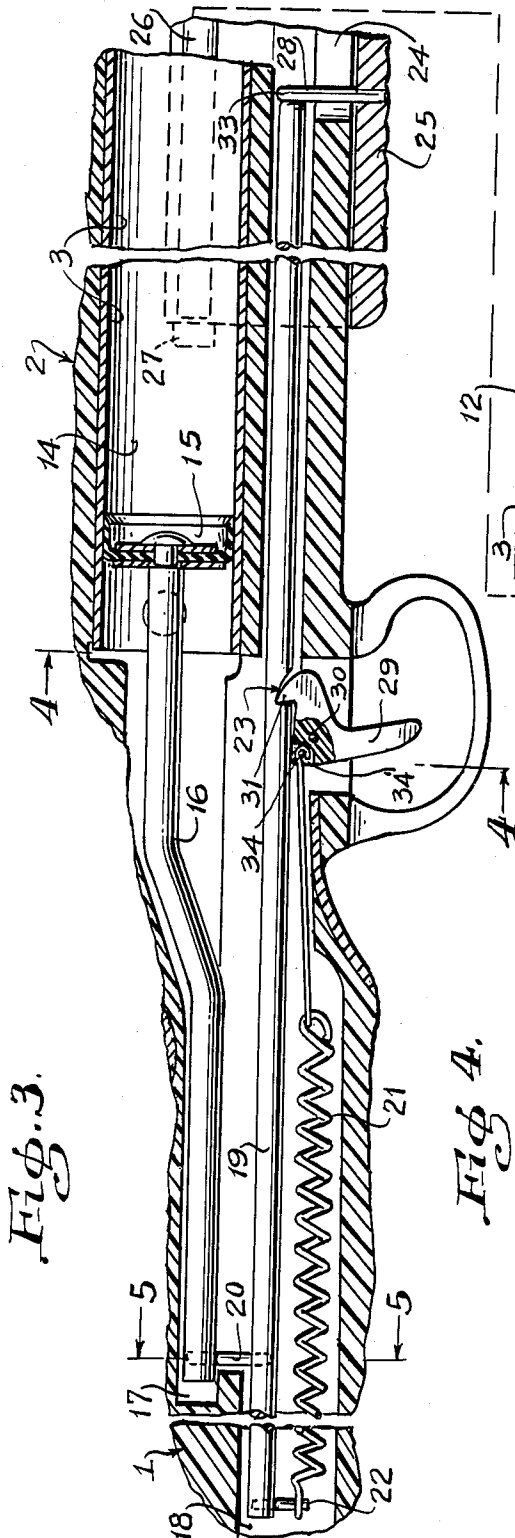
Dec. 6, 1955

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MAGAZINE TOY GUN

2,725,869

Filed June 9, 1952

2 Sheets-Sheet 2



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2,725,869

MAGAZINE TOY GUN

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Application June 9, 1952, Serial No. 292,551

3 Claims. (Cl. 124-14)

This invention relates to a toy gun of the muzzle loading magazine type and to mechanisms for cocking and firing said gun.

It is particularly designed to be applied to a pneumatic pump gun and to mechanisms for advancing the piston to create the pneumatic pressure which is the source of the muzzle velocity of the projectile.

This invention specifically relates to a type of magazine gun wherein the cylindrical barrel of the gun is adapted to contain a plurality of spherical ball projectiles positioned in a row, each of diameter smaller than the diameter of the cylindrical barrel in which they are contained. The muzzle of the barrel is closed by a rubber diaphragm having a central opening whose diameter is less than the diameter of the ball projectile. A spring may be mounted in the barrel so as to urge the balls against the diaphragm. A pneumatic pump gun is positioned so that the barrel of the pump gun connects with the barrel of the gun. The piston of the pump gun can be retracted under spring pressure and held by a latch under spring tension, the firing trigger releases the latch, and the spring advances the piston in the barrel and the generated pressure will fire one only of the projectiles.

These and other objects of my invention will be understood by those skilled in this art from the following description taken together with the drawings, in which

Fig. 1 is a horizontal section of the gun with the gun in the cocked and firing position;

Fig. 2 is the same section showing the gun after it has been fired;

Fig. 3 is an enlarged fragmentary detail of the latching and firing mechanism; with parts broken away;

Fig. 4 is a section taken on line 4-4 of Fig. 5;

Fig. 5 is a fragmentary section taken on line 5-5 of Fig. 3; and

Fig. 6 is a section taken on line 6-6 of Fig. 2.

The butt stock 1 connects to the tip stock 2 which carries the barrel 3. The muzzle 4 is closed by a rubber ring diaphragm 5 frictionally held in the retainer 6 which is frictionally held on the outside of the barrel 3 by the retaining ring 7 connected to the outside of the retainer 6 by any suitable means such as spot welding. The ring 5, having a central opening 5', is first pushed into the inside of the retainer 6 and wedges into the circular groove 8 and is thus held in place between the lip 9 of the retainer 6 and the edge of the muzzle 4.

Positioned at a suitable distance from the muzzle 4 is the spring retainer 10, spot welded or otherwise fixed in the barrel 3. The spring retainer carries a bore 11 and acts as an abutment for the coil spring 12. Balls 13 of a diameter smaller than the diameter of the barrel 3 but larger than the diameter of the opening 5' may be forced through the opening 5' to be positioned in a row. The spring 12 urges them against the ring 5 to close the opening 5'.

It will be noted that free air communication is established at all times through the opening 11 and through

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and over the spring 12 and over the balls 13 to the muzzle 4 closed by the sealed ring 5.

The barrel 3 is extended rearwardly of the spring retainer 10 to form the cylinder 14 of a piston pump. The piston 15 which may be constructed in any conventional manner, for this purpose, is actuated in the cylinder by means of a piston rod 16 which extends rearwardly of the piston, i. e., toward the tail stock. A suitable channel 17 is formed longitudinally of the tail stock to permit of the reciprocal motion of the piston rod 16.

Positioned beneath the channel 17 is a channel 18 which extends longitudinally of the butt and tip stock of the stock in the underneath portion of the stock from one end of the tail stock to the other end of the butt stock. Reciprocally mounted in the channel 18 is an actuating rod 19. The rod is connected at one end to the piston rod 16 by means of a cross rod 20 and is also connected to a tension spring 21 by means of a pin 22. The spring extends along and substantially parallel with the rod 19 in the channel 18.

The rod is notched at 23 at a point intermediate its ends. At the forward end of the underneath portion of the tip stock, a slot 24 is provided. A sliding sleeve 25 is slidably positioned by means of T slides 26 mounted in the interior surface of the sleeve 25, and slidably positioned in T grooves 27 extending along the exterior of the forward end of the tip stock. A pin 28 is vertically positioned in the sleeve to extend through the slot 24 into the groove 18 ahead (i. e., on the muzzle side) of the forward end 33 of the actuating rod 19.

A trigger 29 is pivotally mounted at a pin 30 mounted on the underneath side of the stock. The trigger carries a dog 31 which is adapted to engage the notch 23 to latch the piston 15 in position at the rearward end of its stroke. The spring 21 is connected to the pin 34 positioned in slot 34' in the trigger. Pin 34 is positioned above pivot pin 30 causing the trigger to tend to rotate counter-clockwise to urge the trigger into the latching position shown in Fig. 3.

The operation of the gun will be readily understood from the above. In the position shown in Figs. 1 and 3, the spring 21 urges the dog 31 so that it abuts the underneath side of the rod 19. After the balls have been inserted in the magazine 3, the sleeve 25 is retracted by sliding the sleeve backward and then, if desired, forward to its original position against the forward end 32 of the slot 24.

As the sleeve is brought back the pin 28 pushes against the end 33 of the rod 19 forcing it back in the groove 18, toward the tail stock. As the rod moves back, the piston rod is also moved backward, moving the piston 15 rearwardly in the barrel 14. When the notch 23 is in position to be engaged by the trigger 29, the spring 34 urges the dog 31 into the notch 23, to latch the rod 19 and the piston 15 in the retracted position. It will be observed that in this position the spring 21 has been extended so that it is now under tension.

The gun is thus cocked in the firing position. By pulling on the trigger as in any ordinary firearm, the dog 31 is withdrawn from the notch 23. The rod 19 and the piston rod 16 are thus released from the constraint of the latch and the spring 21 forces the piston 15 to advance in the barrel 14.

As the piston advances pressure is generated in the cylinder 14 and the magazine and barrel 3 so as to establish a uniform pressure in the barrel. The forward ball is pressed against the ring 5 with a portion of the surface of the ball being exposed to the atmosphere through the opening 5'. The gun is designed so that on the advance of the piston in the barrel, the pressure, which is generated in the gun, will overcome the resistance of the rubber at the furthestmost ball positioned against the rub-

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ber and the ball is forced through the rubber opening. As the ball discharges through the opening, the pressure in the barrel is immediately vented to atmosphere and the pressure drops to about atmospheric so that when the next ball in line abuts the ring, insufficient air pressure and spring pressure are present to advance the ball through the ring. Thus only one ball is discharged on each forward stroke of the piston.

It will be observed that, unlike the pump guns of the prior art, the piston need not be manually reciprocated to generate pneumatic pressure during aiming or firing of the gun to cause the development of pressure to discharge the projectile. The force necessary to generate the pressure to discharge the projectile may be stored as potential energy in the spring 21, prior to firing.

The gun may thus be aimed and fired steadily and the arm need not be disturbed to reciprocate the piston, by hand. The gun may be aimed and fired like a true gun and the projectile discharged with considerable precision of aim.

While I have described a particular embodiment of my invention for the purpose of illustration, it should be understood that various modifications and adaptations thereof may be made within the spirit of the invention as set forth in the appended claims.

I claim:

1. A pump gun comprising a stock, a barrel mounted on said stock, a pump cylinder mounted on said stock, a piston in said cylinder, an actuating rod connected to said piston and extending longitudinally of said stock, a notch in said rod positioned intermediate its ends, a trigger hingedly mounted on said stock, a dog on said trigger cooperatively positioned to engage said notch, a spring connected adjacent one end of said actuating rod and connected at the other end to said trigger, a sleeve slidably positioned on the tip stock end of said stock, a slot in said tip stock, and a pin connected to said sleeve and extending through said slot and positioned in front of the forward end of said actuating rod.

2. A pump gun comprising a stock, a barrel mounted on said stock, a pump cylinder mounted on said stock, a piston in said cylinder, an actuating rod connected to said piston and extending longitudinally of said stock, a notch in said rod positioned intermediate its ends, a trigger hingedly mounted on said stock, a dog on said trigger cooperatively positioned to engage said notch, a spring connected adjacent one end of said actuating rod and connected at the other end to said trigger, said

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spring being operable to rotate said dog into said notch, a sleeve slidably positioned on the tip stock end of said stock, a slot in said tip stock, and a pin connected to said sleeve extending through said slot and positioned in front of the forward end of said actuating rod, a rubber diaphragm mounted on the muzzle end of said barrel, a bore in said diaphragm centrally positioned and of a diameter less than the diameter of said barrel, and a spring mounted in said barrel between the piston and the diaphragm.

3. In a pneumatic toy pump gun of the muzzle loading magazine type, the combination of a stock, a pump cylinder mounted in said stock, a barrel rigidly mounted on said stock and in alignment with said pump cylinder, a helical spring in the barrel, an apertured disc fixed in the barrel and retaining said spring in the barrel, a piston slidable in the pump cylinder, means for moving said piston rearwardly to cock the gun, said means comprising a slider carried by and slidable on the tip stock, a rod connected to said piston and operated by said slider to move the piston to its rearward position, a trigger engaging the rod to hold the piston in cocked position, and a spring connected to said trigger and said rod, said spring being operable upon movement of said slider to place said trigger in cocked rod engaging position and being operable upon the release of the trigger to move the piston forward to compress the air in the cylinder and to transmit the compressed air into the barrel through the apertured spring retainer.

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