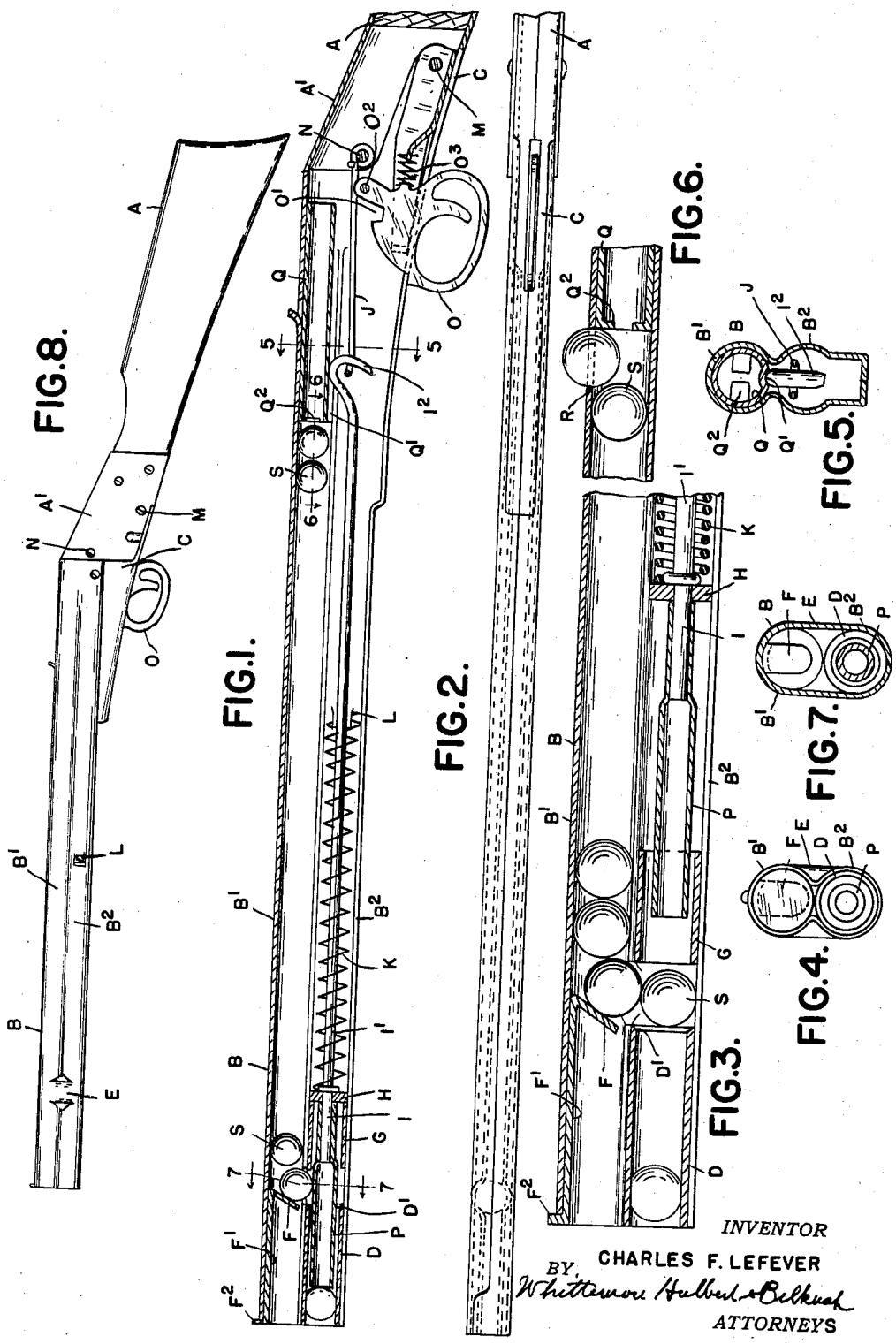
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TOY GUN

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TOY GUN

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The invention relates to toy guns of that type in which the projectiles used are soft balls expelled from the barrel by the combined action of a spring pressed plunger and air compressed between successive balls. Normally, one ball is held at the muzzle of the gun by friction and another ball fed into the firing barrel from a magazine is actuated by the spring pressed plunger, thereby compressing air between the balls which expels the one in the muzzle and also produces a report.

It is the object of the present invention to obtain a gun of this type having various advantages including simplicity of construction and efficiency in operation. The invention, therefore, consists in the novel construction as hereinafter set forth.

In the drawing:

Figure 1 is a central longitudinal section through my improved gun, showing the parts in unloading position;

Figure 2 is a bottom plan view thereof;

Figure 3 is an enlarged similar section through the muzzle portion, showing the parts in loaded position;

Figure 4 is an end elevation of the muzzle end;

Figure 5 is a cross section on line 5—5 of Figure 1;

Figure 6 is a horizontal section on line 6—6 of Figure 1;

Figure 7 is a cross section on line 7—7 of Figure 1;

Figure 8 is a side elevation.

A gun of the type above described is of the nature of a pop gun designed to produce a loud report, but with slight force on the projectile. To accomplish this it is essential that the projectile should be relatively light in mass and this I preferably accomplish by forming the balls of a composition of ground cork or other relatively light material. It is also necessary that the projectiles should frictionally engage the firing barrel so that one is held at the muzzle and forms a stopper, while a succeeding ball will compress the air against the first and finally expel it. I, therefore, form the balls of a diameter slightly in excess of the internal diameter of the firing barrel, while the yielding nature of the material of which the balls are formed permits of forcing them through the barrel, and forming an air tight fit therein. On the other hand, the magazine in which the balls are held is sufficiently larger in diameter to permit of successively feeding them into operative relation to the firing barrel.

In detail, A is the stock of the gun and B the outer or false barrel which has the appearance of a double barrel, one arranged above the other. This false barrel is formed from a single blank suitably fashioned and also having formed integral therewith the frame portion C. The upper barrel portion B′ forms the magazine for holding the balls and the lower barrel portion B^2 contains the firing barrel D. The latter is arranged in the muzzle portion and is secured in position preferably by spot-welding. Just in advance of the barrel D the false barrel has a portion E forming a channel through which the balls can pass from the upper magazine portion down into the lower barrel portion B^2. The balls are guided into this channel by an inclined deflector. This is preferably formed of a strip of metal having a portion F′ secured inside and to the upper portion of the barrel B′ preferably by spot-welding, and at its forward end having an upturned portion F^2 which forms a sight. In rear of the portion E the lower barrel B^2 has arranged therein a tubular bushing G which holds the balls from rolling rearward and also forms a stop or abutment for the head H on the plunger I. This plunger is formed of a rod I′ which extends rearward within the lower barrel B^2, being provided at its rear end with a hook portion I^2 engaged by the link J. A spring K surrounds the rod I′, its forward end engaging the head H, while its rear end is anchored preferably by engaging tongues L struck inward from the sides of the barrel B^2. The stock A, preferably formed of wood, has a frame portion A′ of sheet metal which embraces the frame C and is pivotally attached thereto by a cross pin M. Another pin N attached to the portion A′ engages the rear end of the link J and the arrangement is such that the breaking down of the gun will draw this link rearward carrying with it the plunger I and compressing the spring K. O is a combined trigger guard and sear formed of sheet metal, the sear portion having a notch O′ which when the plunger is drawn rearward will be engaged by the hook I^2 to retain the spring under compression. The member O is pivoted on a cross pin O^2 and a small spring O^3 normally holds it in position for engaging the hook I^2. The forward end of the plunger which projects beyond the head H is preferably formed of a tube P, the rear portion of which is sleeved upon the rod I′, while the forward portion is adapted to engage the projectile balls.

To guide the plunger I when drawn rearward there is arranged within the upper barrel portion

B' a tube Q which has a groove Q' on its underside for engaging the upper end of the hook I^2. The forward end of this tube has ears Q^2 struck inward to form a stop for limiting the movement of the balls in the magazine. Just in advance of this is an aperture R in one side of the barrel portion B' through which the balls may be inserted into the magazine, but which is so restricted in diameter as to slightly compress each ball during insertion. Thus when once in the magazine there will be no danger of a ball dropping out through the aperture R.

In operation the gun is loaded by inserting balls S through the aperture R into the magazine barrel B' until this magazine is completely filled. The forward ball will contact with the deflector F and will drop down in the portion E. However, in normal position of parts as shown in Figure 1, the tubular forward end P of the plunger will be extended into the firing barrel D and will hold the balls S from dropping down. To load the gun the stock A is turned downward on its pivot M which through the pin N and link J draws rearward the plunger I, compressing the spring K and engaging the hook I^2 with the sear O'. During this movement the plunger is guided by the sliding of the hook I^2 in the groove Q' of the tube Q. The rearward movement of the plunger withdraws the tubular portion P to the rear of the channel portion E of the barrel, thereby permitting one of the balls S to drop down into the lower barrel B^2 in rear of the barrel D and forward of the bushing G. The pulling of the trigger will release the hook I^2 from the sear and the compressed spring will propel the plunger forward striking the ball which is in alignment therewith and forcing it through the barrel D to the forward end thereof. The rear end of this barrel D is beveled or flared as indicated at D' so as to permit the ball to enter the tube, but because of the smaller diameter of the latter there is a fairly high frictional resistance to its movement. This is sufficient to hold the ball at the muzzle end of the barrel after the stopping of the plunger I by the striking of the head H against the stop G. If, however, a previous operation of the gun has lodged the ball S at the muzzle end of the barrel the forward movement of the succeeding ball will compress the air in the barrel D until it attains a pressure sufficient to overcome the frictional resistance and expel the forward ball. Thus with each succeeding operation a new ball is passed from the magazine into the channel E and in alignment with the barrel D and upon the pulling of the trigger will be forced through the barrel D to expel the proceeding ball and to take its place.

What I claim as my invention is:

1. In a toy gun designed for firing soft slightly compressible balls, a false barrel having a longitudinally extending central contraction therein giving the appearance of a double barrel one barrel above the other, the upper portion constituting a magazine for the balls, a firing barrel at the forward end of the lower portion of said false barrel and of an internal normal diameter slightly less than the diameter of said balls so as to deform the same while passing therethrough, a channel for the successive passage of balls from the forward end of said magazine into alignment with said firing barrel, a spring pressed plunger in the lower portion of said false barrel and in alignment with said firing barrel, a cooperating trigger and sear, means for retracting said plunger to compress the spring, a hook at the rear end of said plunger for engaging said sear and a longitudinally grooved member secured in the upper portion of said false barrel and forming a guide for said plunger.

2. In a toy gun designed for firing soft slightly compressible balls, a false barrel having a longitudinally extending central contraction therein giving the appearance of a double barrel one barrel above the other, the upper portion constituting a magazine for the balls, a firing barrel at the forward end of the lower portion of said false barrel and of an internal normal diameter slightly less than the diameter of said balls so as to deform the same while passing therethrough, a transverse channel for the successive passage of balls from the forward end of said magazine into alignment with said firing barrel, a spring pressed plunger in the lower portion of said false barrel and in alignment with said firing barrel, a cooperating trigger and sear, means for retracting said plunger to compress the spring, a hook at the rear end of said plunger for engaging said sear, and a tubular member secured in the upper portion of said false barrel and grooved on its underside to form a guide for said plunger, the forward end of said member having inturned lugs forming a stop at the rear end of said magazine, said magazine having an aperture in the wall thereof adjacent to said stop and slightly less in diameter than the normal diameter of the balls through which said balls may be introduced into the magazine.

3. In a toy gun designed for firing soft slightly compressible balls, a false barrel having an upper portion constituting a magazine for the balls, a firing barrel at the forward end of the lower portion of said false barrel and of a diameter slightly less than the normal diameter of the balls so as to deform the same while passing therethrough, a trigger controlled spring pressed plunger in alignment with said firing barrel and located in the lower portion of said false barrel, a transverse channel for the successive passage of balls from said magazine into alignment with and in rear of said firing barrel and a member secured in the forward upper portion of said false barrel having its rear end inclined to form a deflector for balls into said channel and its forward end projecting upward to constitute a sight for the barrel.

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