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TOY PISTOL

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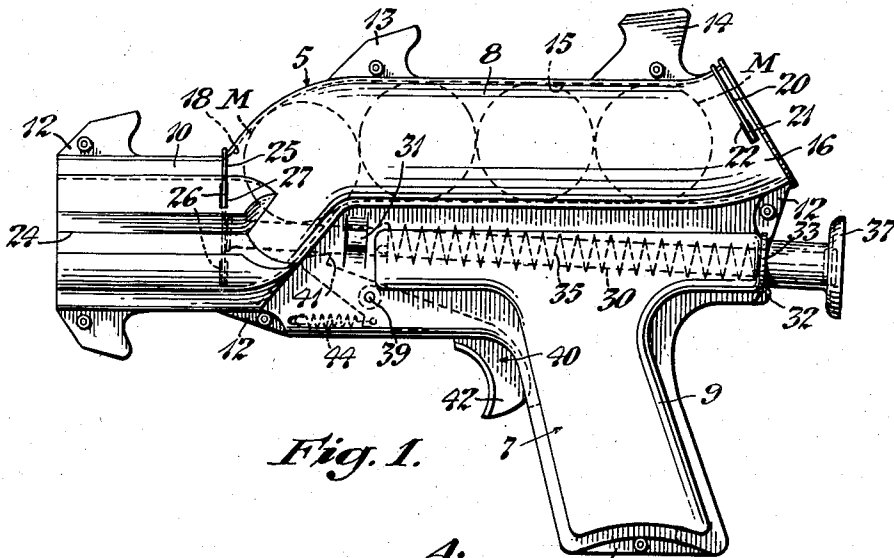


Fig. 1.

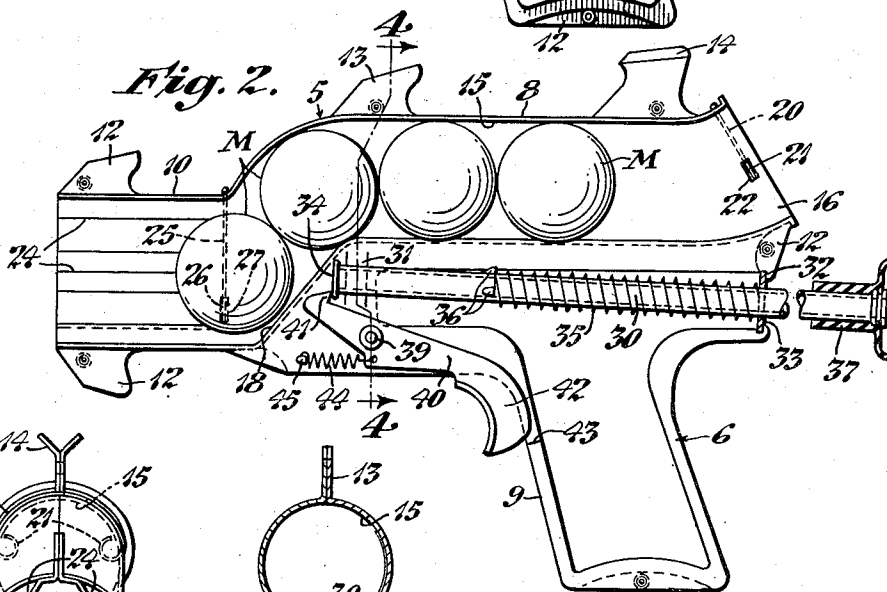


Fig. 2.

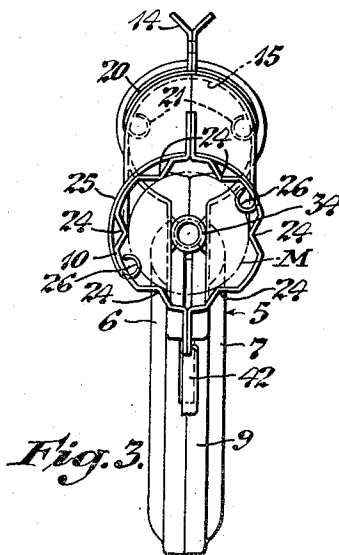


Fig. 3.

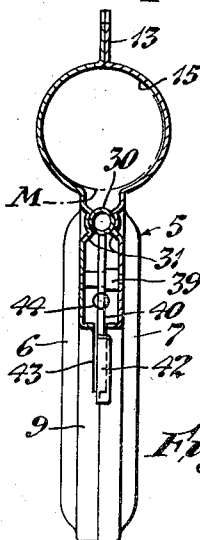


Fig. 4.

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UNITED STATES PATENT OFFICE

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TOY PISTOL

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2 Claims. (Cl. 124—27)

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This invention relates to the toy art, and more particularly to a toy pistol adapted to shoot spherical objects, such as ping-pong balls, or other light-weight harmless missiles.

One object of the invention is to provide a toy pistol which is of a light-weight hollow construction, and one which is composed of a minimum number of components adapted for economical mass production and quick assembly.

Another object is to provide a pistol of the type specified which includes a magazine for containing a supply or charge of the spherical missiles, a muzzle, and an inclined passage communicating between the magazine and muzzle through which the missiles can be successively advanced into the muzzle for ejection. A further object in this respect is to provide yieldable retaining means adjacent a rearward opening or mouth of the magazine through which the missiles are loaded, said means serving to retain the missiles within the magazine to prevent inadvertent displacement thereof.

Another important object is to provide yieldable holding means associated with the muzzle and operative to releasably hold each missile advanced into position to be propelled from the pistol, this means consisting simply in a U-shaped wire spring partly surrounding the muzzle wall and provided with looped ends passing through openings in the wall and disposed within the muzzle.

Another object is to provide, in a pistol of the character referred to, a simple yet highly efficient missile-propelling means, this means consisting of a spring-actuated plunger, the pistol also including a trigger-latch operative to retain the plunger in inoperative or cocked position and adapted, when pivoted manually, to release said plunger to permit actuation thereof to missile-propelling position, the plunger being provided with shock-absorbing means.

Another object is to provide a pistol of the type indicated in which the forward muzzle portion thereof is provided with circumferentially-spaced, longitudinal ribs on its interior, a missile being projected from the pistol sliding along these ribs and thus being guided thereby. By this means only portions of the spherical surface of a missile are lightly engaged during the "firing" of the same so that resistance to the forward motion of the missile is maintained at a minimum.

A further object is to provide a pistol of the type indicated which is capable of propelling missiles, even light-weight ones, such as ping-

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pong balls, through a considerable distance and in a straight path, and one which is of futuristic design to add to the appearance and enjoyment of using the toy.

Further objects of the invention are set forth in the following specification which describes a preferred embodiment of the toy pistol, by way of example, as illustrated by the accompanying drawings, in which:

Fig. 1 is a side elevational view of my toy pistol with the operating elements thereof in inoperative position;

Fig. 2 is a longitudinal sectional view thereof with the missile-propelling plunger thereof shown in cocked position;

Fig. 3 is an elevational view of the muzzle end of the pistol; and,

Fig. 4 is a cross-sectional view, taken on line 4—4 of Fig. 2.

Referring to the drawing in detail, my toy pistol comprises a casing 5 which is composed of two complementary casing sections 6 and 7. Except for being, respectively, right and left-hand, the sections 6 and 7 are of similar construction, each having a central body or breech portion 8, a handle or grip portion 9, and a forward muzzle portion 10. The breech and handle portions 8 and 9 are made concave so that when they are placed together with their open sides in juxtaposition these portions are made hollow. In a like manner, the muzzle portions are made substantially semi-cylindrical and together provide a substantially cylindrical muzzle 10. The two sections 6 and 7 are provided with fin-like flanges 12, which are herein shown as riveted together although they may be welded or otherwise joined. The sections 6 and 7 also have flanges at their upper ends which together provide forward and rearward sights 13 and 14, these flanges also being riveted together.

The upper portions of the casing sections 6 and 7 are formed with longitudinally extending channels which together provide a substantially cylindrical magazine 15, which is adapted to receive a plurality of missiles M which are inserted thereinto through a curved open end 16 of the casing. The casing sections 6 and 7 also have inclined channel-like portions which, when the sections are assembled, provide a sloping passage 18 communicating between the forward end of the magazine 15 and the rearward end of the muzzle 10. By this construction, the missiles M, which may be ping-pong balls, or similar light-weight spherical objects, are adapted to feed successively from the magazine 15 through the passage 18

into the muzzle 10. The missiles M may roll into the muzzle by gravity, or the pistol may be shaken to propel them to this position. It is desirable that the missiles loaded into the magazine 15 be retained therein so as to prevent loss thereof when the pistol is held with its muzzle uppermost. For this purpose, I provide a yieldable retainer element 20 which consists merely in a U-shaped piece of spring wire, which is contracted around the rearward end of the wall of the magazine due to its inherent resiliency. The ends of the spring element 20 are bent into loops 21 which pass through narrow openings 22 in the magazine wall to a slight extent. These loops are adapted to be forced radially outward by a missile M pressed into the magazine and to spring inwardly when the missile passes inwardly beyond the loops, so as to retain the missile within the magazine. This retaining means is simple in construction and highly efficient in preventing accidental displacement of the missiles loaded into the magazine.

It has been stated that the muzzle 10 is substantially cylindrical. However, it is slightly irregular in cross-section, as shown best in Fig. 3, the sections 6 and 7 being indented to provide inwardly directed, longitudinally extending, obtusely pointed ribs 24. The ribs 24 define a circle which is only slightly greater in diameter than that of a missile M to adapt the latter to be propelled through the muzzle 10.

Missiles M entering the rearward end of the muzzle 10 from the inclined passage 18 are releasably held in this position by means of a holder element 25. The element 25 consists of a U-shaped wire which partly surrounds the muzzle 10 and grips the latter. The element 25 is formed with loops 26 at its ends which project into the interior of the muzzle through narrow openings 27 in the wall of the muzzle, see Figs. 1 and 3. The distance between the loops 26 is slightly less than the diameter of a spherical missile M so that when a missile enters the rearward end of the muzzle it engages between the loops to spread the latter slightly, the holding element thus acting to lightly grip the missile to yieldingly hold the same in the muzzle. However, when the missile M is propelled forwardly the holder member 25 yields to permit ejection of the missile from the pistol.

The missiles M are adapted to be rapidly propelled from the muzzle 10 by means of a tubular plunger 30. The walls of the casing sections 6 and 7 are slit adjacent the rearward end of the muzzle and the metal bent inwardly to provide ears 31 which have curved inner surfaces (Fig. 4) together providing a bearing in which the forward end of the plunger 30 is slidable. The rearward end of the casing 5 is provided with slots 32 in which is held an annular washer 33 which serves as a bearing for the rearward end of the plunger. The forward end of the plunger is rolled or flared to provide an annular flange 34 adapted to engage the missile M disposed in the muzzle. The plunger 30 normally is urged forwardly to dispose its forward end 34 within the muzzle 10 by means of a compression spring 35 coiled around the plunger with one end engaging against lugs 36 thereof and its other end bearing against the washer 33. The plunger carries a rubber handle or knob 37 on its rearward end which projects from the casing 5, the knob facilitating drawing the plunger rearwardly to the cocked position illustrated in Fig. 2.

Pivoted on a transverse pin 39 is a trigger-latch

40 having a pawl tooth 41 at its forward end and a finger-piece 42 at its rearward end which projects outwardly through an opening 43 of the casing. The trigger-latch 40 is normally pivoted in a direction to maintain its tooth 41 elevated by means of a spring 44 connected between the latch and an ear 45 within the casing 5.

To operate the pistol, the magazine 15 is first loaded with the spherical missiles M by inserting the same through the open rearward end of the magazine. By holding the pistol inverted, with its muzzle end down, the missiles M roll toward the muzzle 10, the first inserted missile rolling down the inclined passage 18 and resting upon the forward end 34 of the plunger 30, which is urged forwardly by the spring 35 with the rubber knob 37 engaging against the washer 33.

To "shoot" a missile M from the pistol, the plunger 30 is drawn rearwardly by means of the knob 37 until the striker flange 34 engages against the bearing ears 31. At this juncture, the pawl tooth 41 of the trigger-latch 40 snaps upwardly so that when the knob 37 is released the trigger-latch engages the flange 34 to retain the plunger 30 in cocked position. As the plunger is drawn rearwardly, the leading missile M rolls down through the inclined passage 18 and into the rearward end of the muzzle 10, as shown in Fig. 2, where it is held by the holder element 25.

The pistol is held in the hand by the handle grip 9 and aimed toward a target, after which the trigger 42 is pulled rearwardly to release the latch pawl 41 from the striker flange 34. Upon release of the plunger 30 it is propelled forwardly by the spring 35, whereupon its flanged end 34 strikes the missile M, driving the latter from the muzzle 10 at a fast rate of speed, the holder element 25 yielding to permit such propelling of the missile. During the rapid ejection of the missile M, the latter moves along the ribs 24 to be guided thereby. The ribs serve as straight rifling to maintain the missile in a straight path so that it is shot accurately toward the target. Due to the impact force of the plunger 30, the lightweight missile is shot through a considerable distance. To repeat the operation, the plunger is again drawn rearwardly to cocked position, after which the next succeeding missile M rolls down the passage 18 into the muzzle 10 in position to be shot when the plunger is subsequently released. Thus the pistol can be repeatedly "fired" as long as a supply of the missiles remains therein.

It will be observed that the present toy pistol is highly efficient in shooting harmless spherical missiles, such as ping-pong balls, and that the balls can be shot accurately through a considerable distance, even though they are extremely light in weight. The pistol embodies a magazine for containing a plurality of the balls and, due to the peculiar arrangement of the inclined passage, the balls are capable of rolling automatically from the magazine into "firing" position. As a feature of the invention, yieldable detents or retainers are provided for retaining the supply of balls in the magazine and for holding the leading ball in position to be ejected from the muzzle of the pistol. The pistol is especially simple in construction, being composed of a minimum number of parts adapted for economical mass production and easy assembly, so that the pistol can be manufactured and sold at a low price. Besides, the principle of shooting ping-pong balls is especially enjoyable and fascinating to chil-

dren, and the futuristic design of the pistol is particularly appealing.

While the toy pistol has been herein disclosed as embodied in a preferred form of construction, by way of example, it will be apparent that various modifications might be made therein without departing from the spirit of the invention.

I claim:

1. A toy pistol adapted to shoot spherical missiles, comprising: a hollow casing having a hand grip at one end and walls defining a muzzle, a magazine having an open rearward end, and an inclined passage communicating between said muzzle and said magazine, said magazine being adapted to receive a supply of spherical missiles through its open end, said missiles being adapted to roll successively from said magazine through said passage into said muzzle; a U-shaped wire-spring element partly surrounding said magazine with its ends extending inwardly through openings in the wall of the magazine and normally partly obstructing said open end so as to retain the supply of missiles within said magazine, said spring element being adapted to expand transversely of the magazine to allow loading of the missiles into said magazine; yieldable holding means engageable with a missile in said muzzle to releasably retain the same therein; a spring-actuated plunger slidable in said casing and having an enlarged forward end, said plunger being adapted, when actuated, to move rapidly to a position wherein its forward end is disposed in said inclined passage so as to strike the rearward side of said missile disposed in said muzzle so as to propel the missile from said muzzle, said plunger being withdrawable to a cocked position, and a trigger-latch movable on said casing and provided with a pawl shoulder at its forward end adapted to engage said enlarged forward end of said plunger to releasably retain the same in cocked position, said trigger-latch being manually movable to release said plunger for actuation, and having an inclined cam edge at its forward end engageable by said enlarged end of said plunger to cam said trigger-latch under the same during cocking of the plunger.

2. A toy pistol adapted to shoot spherical missiles, comprising: a hollow casing having a hand grip at one end and walls defining a muzzle, a magazine having a substantially horizontal

opening at the extreme rearward end of the casing, and an inclined passage communicating between said muzzle and said magazine, said magazine being adapted to receive a supply of spherical missiles through its open end, said missiles being adapted to roll successively from said magazine through said passage into said muzzle; yieldable retaining means partly encircling said magazine and having inwardly projecting ends extending partly across said open end for retaining the supply of missiles within said magazine; yieldable holding means surrounding the casing and engageable with a missile in said muzzle to releasably retain the same therein; a spring-actuated plunger slidable in said casing and adapted, when actuated, to move to a position wherein its forward end is disposed in said inclined passage, rearwardly of said muzzle so as to strike said missile disposed in said muzzle so as to propel the missile from said muzzle, said plunger being withdrawable to a cocked position; and a trigger-latch movable on said casing and having a forward pawl shoulder at its forward end adapted to engage the forward end of said plunger to releasably retain the same in cocked position, said trigger-latch being manually movable to release said plunger for actuation, said casing having curved ears projecting inwardly and together defining a bearing in which said plunger is slidable, said plunger having an enlarged, forward striker end, said bearing a stop engageable by said striker end to limit the movement of said plunger to cocked position.

GLEN I. GRIFFITH.

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