

March 20, 1962

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3,025,634

TOY BALLOON EJECTING PISTOL

Filed Jan. 8, 1960

3 Sheets-Sheet 1

FIG. 1

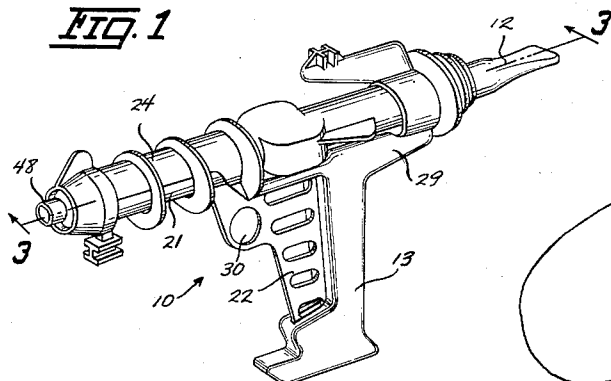


FIG. 2

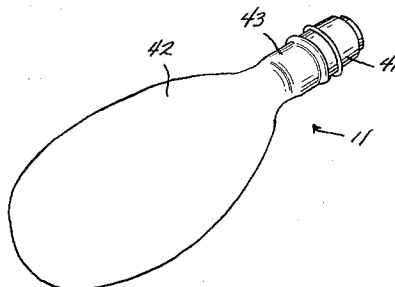


FIG. 3

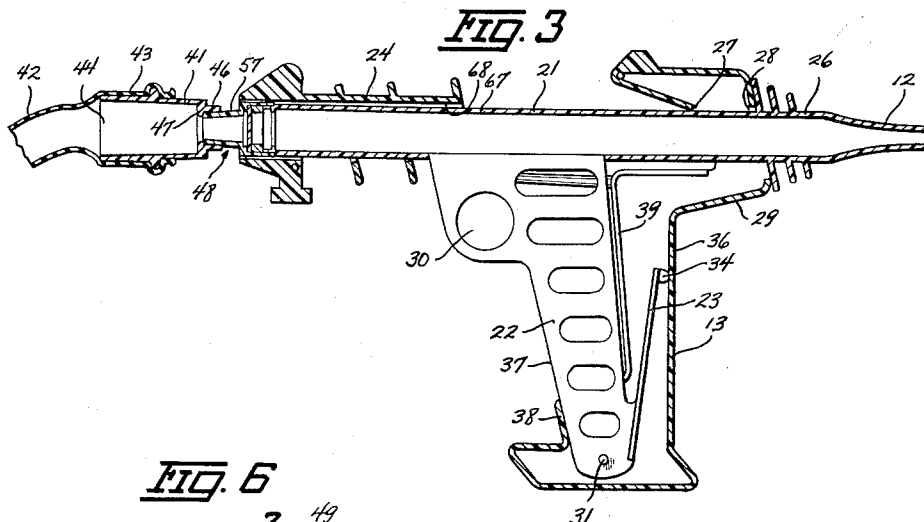


FIG. 6

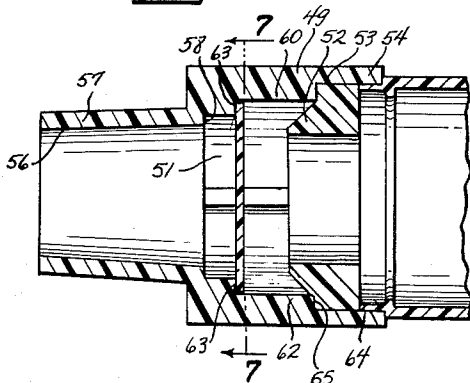
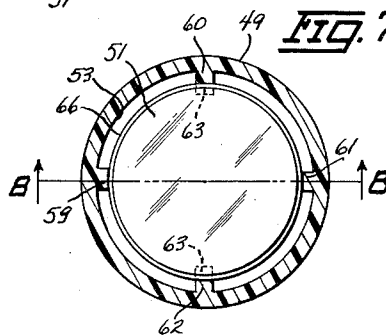


FIG. 7



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FIG. 4

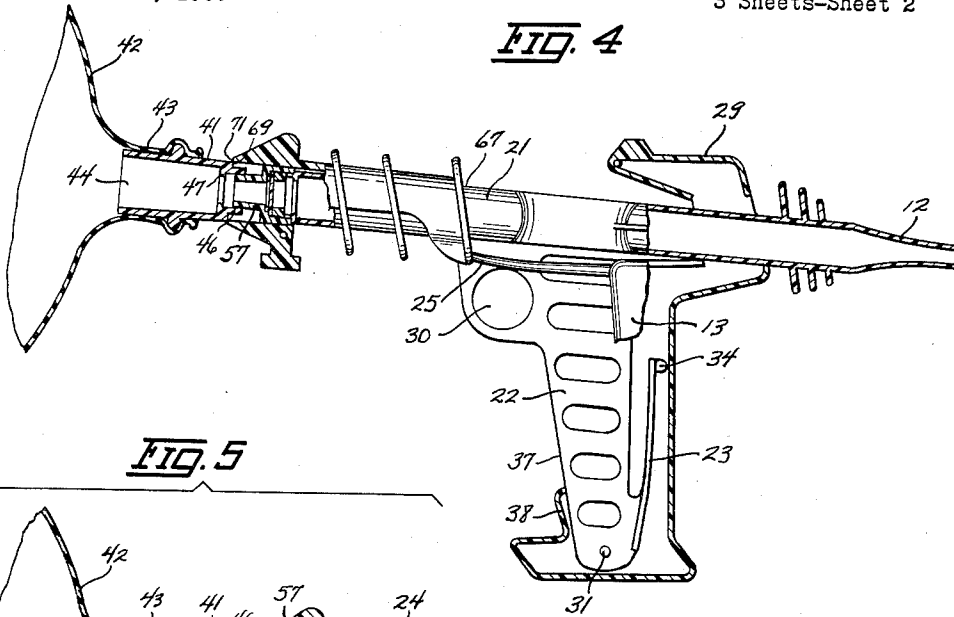


FIG. 5

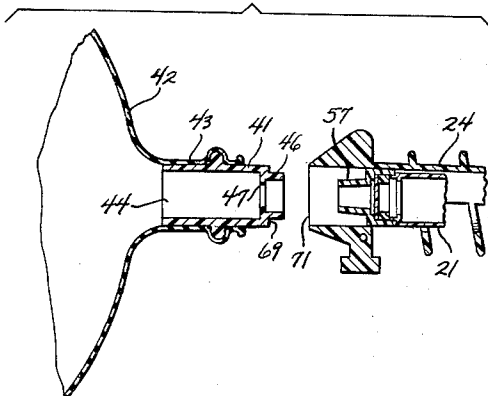


FIG. 9

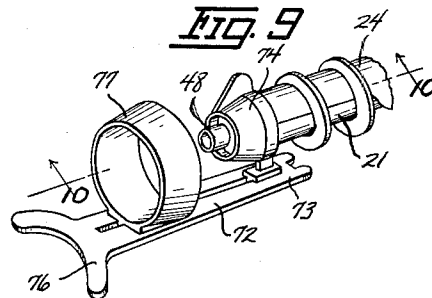


FIG. 8

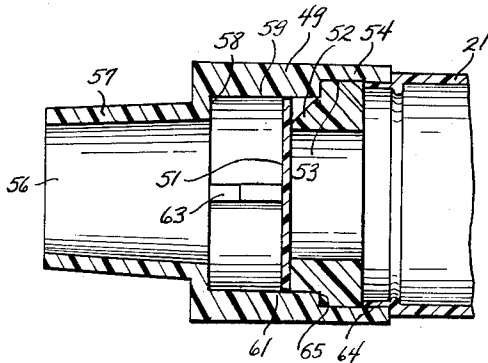
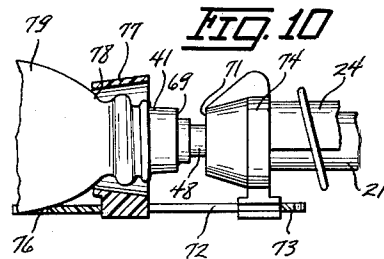


FIG. 10



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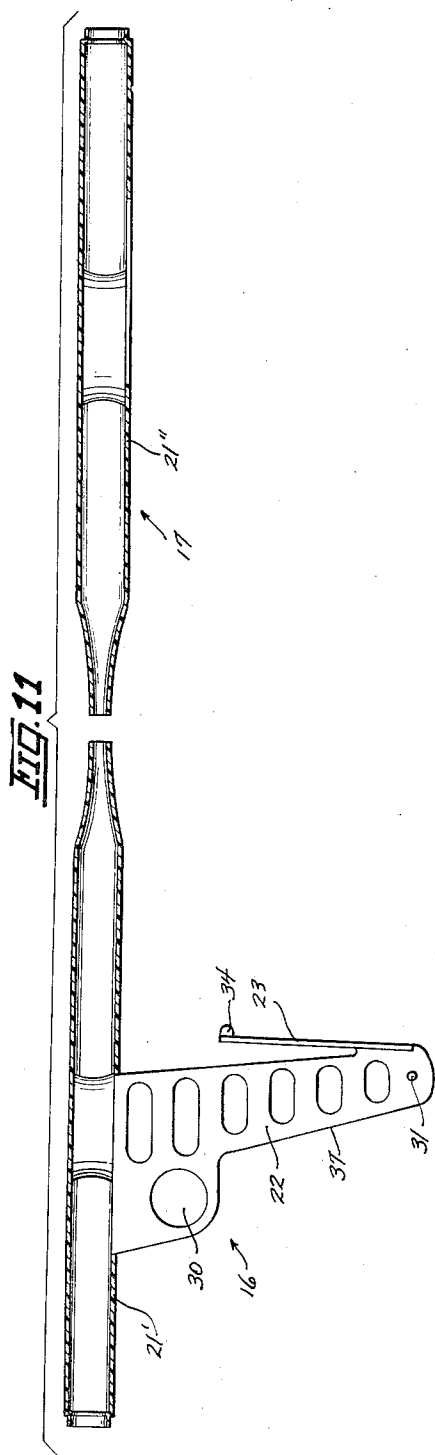
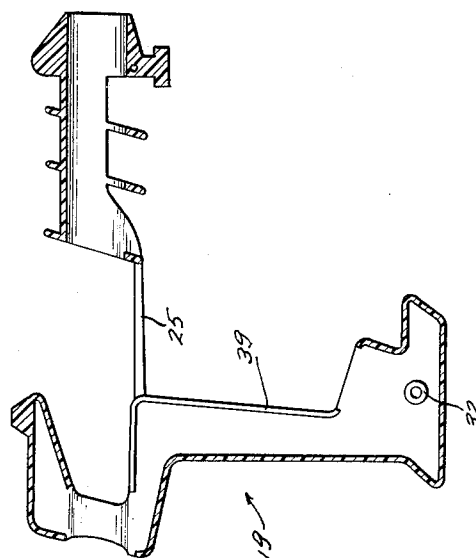
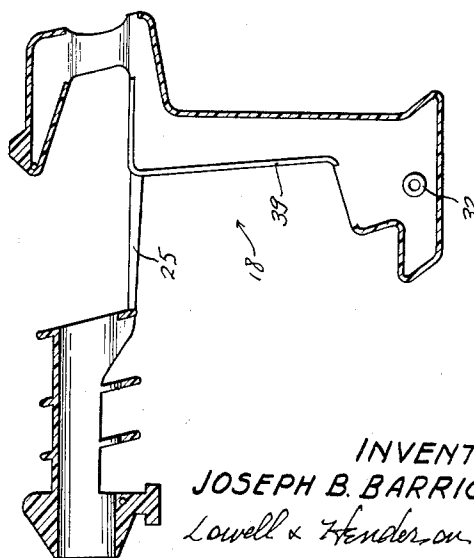
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TOY BALLOON EJECTING PISTOL

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5 Claims. (Cl. 46—88)

This invention relates generally to a toy pistol and in particular to a toy pistol of the hand-operated type, used in conjunction with a balloon to inflate and release the same for flight.

The invention is embodied in a pistol-like device made of plastic or the like, and which includes a substantially airtight tubular portion having a mouthpiece at one end and a valve at the other. An ordinary balloon is fitted at its throat with a whistle and the latter is force-fitted on the valve. Upon blowing through the mouthpiece, the balloon is inflated with the valve acting to prevent the air in the balloon from escaping. By pulling a trigger part of the pistol device, the combined balloon and whistle are separated as a unit from the pistol device, whereupon the air in the balloon rushes out. This action causes the balloon to take flight while the whistle operates to cause a shrill noise, until all the air has escaped and the balloon and whistle fall to the floor or the ground.

An object of this invention is to provide a novel toy of the pistol type, usable with a balloon, for entertainment purposes.

Another object of this invention is the provision of a pistol-like toy usable in conjunction with a balloon and whistle unit, for simulating a rocket launcher whereby the toy is used in inflating the balloon, and is also used in separating the balloon therefrom to give the effect of launching a whistling rocket.

An object of this invention is the provision of a pistol-like toy including a one-piece trigger and bore unit adapted for pivotal coaction with a one-piece muzzle and hand grip unit, and whereby the muzzle is forcibly flexed and moved, relative to the hand grip, on pivotal movement of the trigger, while being retained axially aligned with the bore.

Yet another object of the invention is the provision of an educational toy for simulating a rocket being launched, whereby a basic law of physics applicable to the jet airplane, rockets and the like can be practically demonstrated and easily explained to children and other users.

A further object of this invention is to provide an entertaining and educational toy which is simple and economical of manufacture, durable in use, and effective in operation.

These objects and other features and advantages of this invention will become readily apparent upon reference to the following description when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a perspective view of one embodiment of the pistol-like toy device of this invention;

FIG. 2 is a perspective view of a balloon and a whistle device usable with the device;

FIG. 3 is an enlarged cross-sectional view taken along the line 3—3 in FIG. 1 with some parts in side elevation for clarity, and with a fragmentary portion of a balloon and a whistle unit, also in cross-section, attached to the front of the device;

FIG. 4 is a sectional view similar to FIG. 3, showing the relationship of the parts when the trigger part of the device has been pulled, some parts shown in side elevation;

FIG. 5 is a fragmentary sectional view similar to FIG. 3, and showing the separation of the balloon and whistle unit from the front of the device due to the trigger action;

FIG. 6 is an enlarged fragmentary cross-sectional detail view of a valve unit at the front of the device, taken

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when air is being blown through the device into the balloon;

FIG. 7 is a sectional view taken along the line 7—7 in FIG. 6;

FIG. 8 is a sectional view taken along the line 8—8 in FIG. 7, showing the valve unit when air is trapped in the balloon;

FIG. 9 is a fragmentary perspective view of the front of the pistol device, showing a modification thereof;

FIG. 10 is a cross-sectional view taken along the line 10—10 in FIG. 9, and showing a balloon and whistle unit attached to the pistol device; and

FIG. 11 is a group of plan views of the four main components of the pistol device, showing the inside structure of these components.

Referring now to the drawings, this invention comprises a pistol-like device and a balloon-whistle device therefor, both indicated generally at 10 and 11, respectively, in FIGS. 1 and 2. The balloon-whistle device 11, hereinafter sometimes referred to as the rocket, is adapted to be force-fitted onto the device 10, hereinafter sometimes referred to as the launcher. By blowing through the mouthpiece 12 on the launcher 10, the balloon can be inflated. Then by grasping the hand grip 13 and pulling the trigger 22, the rocket 11 is forcibly separated from the launcher. The air within the rocket 11 rushes out therefrom, causing the rocket to move through the air while emitting a shrill noise.

The launcher 10 is made of plastic or the like and includes two inner parts 16 and 17 (FIG. 11), and two identical outer parts 18 and 19. The part 16 comprises one-half 21' of a bore member 21 (FIG. 1), the trigger 22 and a leaf spring 23, while the part 17 comprises the other one-half 21" of the bore member 21 and is complementary with the half 21'. The parts 18 and 19 are complementary and are adapted to receive therebetween the parts 16 and 17, combined as by heat or other sealing means. The parts 18 and 19 are also sealed together and form the hand grip 13 and a tubular muzzle 24 (FIG. 1), joined by a pair of relatively flexible connections 25 (FIG. 11).

Referring to FIG. 3, it is seen that the rear portion 26 of the substantially airtight bore member 21 extends through a pair of openings 27 and 28 formed in the upper front and rear, respectively, of the hammer-like part 29 of the hand grip 13. The trigger 22, provided with a finger opening 30, has a pivot pin 31 extended laterally from both sides thereof for insertion within bearings 32 (FIG. 11) formed in the hand grip parts 18 and 19. The trigger spring 23 has an upper tip 34 in engagement with the rear wall 36 of the hand grip 13, whereby the front edge 37 of the trigger is forced against, and stopped by, the front wall 38 of the hand grip 13. The remaining portions or edges 39 (FIGS. 3 and 11) of the hand grip front wall 38 are spaced apart when the outer parts 18 and 19 are combined, so as to form a slot for movement of the trigger 22 into and out of the hand grip 13, as will be seen hereinafter.

Having described the structural make-up of the pistol-like device or launcher 10, it is seen that it comprises generally one integral element including a bore member 21 and a trigger 22 pivotally and slidably mounted within another integral element including a muzzle 24 and a hand grip 13. Referring to FIG. 3, it is seen that the bore member 21 is coaxial with the muzzle 24 and has an outer diameter only slightly less than the inner diameter of the muzzle 24.

Looking now to the rocket 11 (FIG. 2), which is particularly adapted to be fitted onto the launcher 10 (FIG. 1), the rocket includes a whistle 41 about which any conventional balloon 42 can be frictionally attached, as at the neck 43 (FIG. 2). The whistle is tubular, being

open at one end 44 (FIG. 3) and having a restricted opening 46 at the other end separated by a protruding ledge 47 for causing a whistle-like sound upon the exhausting of air out of the balloon 42.

To enable the user to inflate the balloon 42 and to retain it inflated prior to operating the trigger 23 to separate or "launch" the rocket 11 from the launcher 10, a valve unit 48 (FIGS. 3 and 6-8) is provided. The unit 48 includes three parts; a tubular housing 49, a flexible circular diaphragm 51, and a tubular spacer 52.

The housing 49 (FIG. 6) is formed internally with a bore 53 at one end 54, and with a smaller bore 56 at the other nozzle-like end 57, the bores 53 and 56 being separated by a shoulder 58. Four radially spaced lands 59, 60, 61 and 62 (FIG. 7) are formed in the larger bore 53, with two diametrically opposed lands 60 and 62 having protruding seat portions 63. By this arrangement, the diaphragm 51 having an outer diameter slightly less than the inner diameter of a circle formed by the lands 59-62, is snugly inserted within the bore 53. The tubular spacer 52 is forcibly fitted into the bore 53 and up against the ends 65 of the lands 59-62, where it is retained by the force fit. The outer diameter of the nozzle end 57 is such that the restricted end 46 of the whistle 41 can be forced onto the end 57 in a tight fitting manner. As assembled (FIG. 2), the rocket 11 is in position to receive air through the bore member 21 of the launcher and through the valve unit 48 into the balloon 42.

The inflation of the balloon is accomplished by placing the mouthpiece 12 to the lips, and blowing into the bore member 21. At the valve unit 48, the air forces the diaphragm 51 to rock on the two valve seat portions 63 (FIG. 6). The rocking occurs due to the absence of seat portions at the two lands 59 and 61, thus permitting the air to fill the balloon 42. The valve unit 48 is a one-way valve so as to entrap air in the balloon. It may readily be seen that the air is retained in the balloon 42 by virtue of the diaphragm 51 (FIG. 8) being forced back against the stationary spacer 52. Thus, direct entrance of the air back into the bore 21 is prevented.

The balloon 42 having been inflated, the rocket 11 is now ready for launching. To accomplish this, the user grasps the hand grip 13 and inserts a finger through the opening 30 in the trigger 22. He then squeezes the trigger in the same manner one would in firing a pistol. The result is a pivotal movement of the trigger 22 (FIG. 4) toward the rear wall 36 of the hand grip 13 and against the bias of the leaf spring 23. This movement causes the bore 21 to move rearwardly, or to the right in FIG. 4, of and through the muzzle 24 and the hammer-like part 29 of the hand grip 13. As this pivotal movement continues, the top surface 67 of the bore 21 contacts the adjacent underside 68 of the muzzle 24, and due to the bending or flexing of the connections 25, the muzzle thus is flexed relative to the hand grip 13 and retained in coaxial alignment with the bore member 21.

As a result of the trigger action and the relative flexing or bowing action of the muzzle and the hand grip, the bore 21 is withdrawn within the muzzle 24. The whistle 41 is thereby moved toward and into the muzzle until a shoulder 69 (FIG. 4) at the end 47 of the whistle contacts the outer end 71 of the muzzle 24. Thus, further pivotal movement of the trigger 22 pulls the nozzle end 57 of the valve unit 48 out of the whistle 41 (FIG. 5) thereby separating the rocket 11 from the launcher 10. Of importance, the shoulder 69 makes a full line contact with muzzle end 71 so that an axial type separation occurs.

This allows for the most effective action of the rocket 11 by retaining the air therein for a complete and quick separation. In other words, by means of the flexing of the connections 25 during the trigger action, the muzzle 23 remains axially aligned with the bore 21 during the separation of the rocket 11 from the launcher 10. It may readily be seen that should such axial alignment not be maintained, the shoulder 69 (FIG. 4) of the whistle 41

would be cocked relative to the muzzle end 71. Thus, full line separation would not occur and a portion of the air in the balloon 42 would escape before complete separation is had, thereby reducing the effectiveness of the rocket 11.

After separation of the rocket 11 from the launcher 10, the thrust created by the air in the balloon rushing through the whistle 41 forces the balloon 42 into the air until the air is exhausted from the balloon. Simultaneously with the balloon movement, the outrushing air passing through the whistle 41 will cause a shrill noise, thus highlighting the simulated launching of the rocket 11. At this point, an interested parent may explain to the child using the toy that the action of the balloon is a practical demonstration of what occurs in a jet airplane or a rocket, in that the balloon is thrust forward due to the reaction force produced by the jet of air discharged rearwardly through the whistle 41. This then is a practical demonstration of a law of physics that for every force, there is an equal and opposite force.

Referring to FIGS. 9 and 10, a modification of the front of the launcher 10 is disclosed. This comprises an attachment including an elongated arm 72 secured at one end 73 to the collar 74 at the front of the launcher 10, and having a flat semi-circular element 76 at the other or outer end. A doughnut-like limiting member 77 is secured on top of the arm 72 and is axially aligned with the collar 74 and the valve unit nozzle end 57. When attached to the launcher 10, the purpose of the attachment is twofold. The limiting member 77 tends to prevent the neck 78 of a certain type balloon 79 from expanding away from the whistle 41, upon inflation of the balloon 79. Additionally, the element 76 acts as a rest for the balloon 79 (FIG. 10) and maintains it in a centrally supported manner for a more effective take-off. It will be appreciated that some balloons would tend to sag downwardly even when inflated although the launcher 10 be pointed upwardly, and that the prevention of such sagging would increase the chances that the rocket 11 would head upwardly or at least straight out, rather than downwardly.

Although one embodiment and one modification of the invention have been disclosed herein, other modifications may be made without departing from the scope of the invention as defined in the appended claims.

I claim:

1. In combination, a pistol-like toy and a balloon device adapted to be attached to said toy, inflated and separated therefrom, said toy comprising bore means through which air can pass substantially only in one direction, trigger means integral with said bore means, hand grip means to which said trigger means is pivotally connected, and muzzle means flexibly connected to said hand grip means and through which said bore means is slidably inserted, said balloon device including a tubular element to which a balloon is attached, said tubular element being attachable in a force-fit manner to said bore means at an end thereof outside of and adjacent said muzzle means, said balloon being inflatable by air being forced in said one direction through said bore means, said trigger means being pivotally movable toward said hand grip means whereby said bore means is movable relative to said muzzle means, and whereby said tubular element contacts said muzzle means and is forced out of engagement with said bore means.

2. In combination, a pistol-like toy and a balloon device adapted to be attached to said toy, inflated, and separated therefrom, said toy including a tubular muzzle element, an elongated bore member open at both ends, a one-way valve unit inserted in said bore member at one end thereof, separate pivotally connected means integral respectively with said muzzle element and said bore member, said means adapted to maintain said bore member coaxially aligned with and slidably inserted through said muzzle element, said means pivotally movable relative to each other for withdrawing the valve unit from a

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first position outside of said muzzle element to a second position within said muzzle element, said balloon device including a tubular element and a balloon secured at the neck thereto, said tubular element releasably attached to said valve unit in said first position whereby air blown through said bore member at one open end inflates said balloon and is retained therein by said valve unit, said tubular element adapted to engage said muzzle element and be separated from said valve unit upon movement of the latter from its first position to its second position, whereby the air in said balloon causes said balloon device to move quickly away from said toy.

3. A pistol-like toy comprising a bore member having a bore formed therein through which air can be blown, a trigger integral with the bore member, a hand grip element, a muzzle element flexibly connected to said hand grip element, said trigger member pivotally mounted to said hand grip element, and said bore member being coaxial with and extended through said muzzle element in close relationship therewith, and a one-way air valve means secured to said bore member within said bore at one end thereof and protruded from said muzzle element, said trigger member pivotally movable toward said hand grip element to move said bore member into engagement with said muzzle element, said muzzle element upon engagement by said bore member adapted to be flexed relative to said hand grip element to cause said muzzle element to remain coaxial with said bore member, whereby said bore member and said valve means are retractable within said muzzle element upon said pivotal movement of the trigger member.

4. In combination, a pistol-like toy and a balloon device adapted to be attached to said toy, inflated, and separated therefrom, said toy comprising bore means through which air can pass substantially only in one direction, trigger means integral with said bore means, hand grip means to which said trigger means is pivotally connected, muzzle means flexibly connected to said hand grip means and through which said bore means is slidably inserted, said balloon device including a tubular element to which a balloon is attached, said tubular element being attachable in a force-fit manner to said bore means at an end thereof outside of and adjacent said muzzle means, said balloon being inflatable by air being forced in said one direction through said bore means, said trigger means being pivotally movable toward said hand grip means whereby said bore means is movable relative to said

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muzzle means, and whereby said tubular element contacts said muzzle means and is forced out of engagement with said bore means, and said muzzle means including an elongated arm member extending outwardly therefrom, the outer free end of said arm member having a portion disposed transversely of the longitudinal axis of said muzzle means, and a tubular member through which the tubular element of said balloon device can be inserted, said tubular member being mounted on said arm intermediate the ends thereof and disposed coaxial with the longitudinal axis of the muzzle means so as to surround the balloon where it is engaged with the tubular element.

5. A pistol-like toy for launching an inflatable balloon device comprising integral first means including a hand grip element and a tubular muzzle element flexibly connected to said hand grip element, said muzzle element including support means extending outwardly therefrom, integral second means including a tubular bore member through which air can be blown and a trigger member, said bore member coaxial with and extended through said muzzle element and adapted to receive an inflatable balloon device at one end thereof, whereby said balloon device, when inflated, is supported in a position longitudinally aligned with said muzzle means by said support means, said trigger member pivotally connected to said hand grip element, said bore member adapted to contact said muzzle element upon pivotal movement of said trigger member, whereby upon pivotal movement of said trigger member toward said hand grip element, said bore member is retracted within said muzzle element to cause said muzzle element to contact said balloon device, and said muzzle element is flexed and moved relative to said hand grip element and retained in coaxial alignment with said bore member to insure full line contact with said balloon device.

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