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J. P. GOWLAND  
MAGAZINE BLOW SHOOTER

2,681,055

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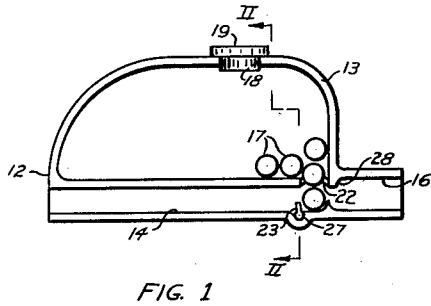


FIG. 1

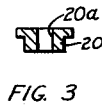


FIG. 3

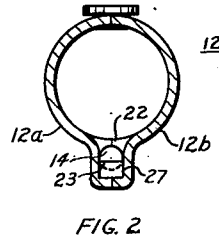


FIG. 2

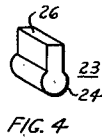


FIG. 4

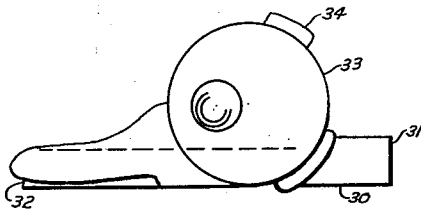


FIG. 5

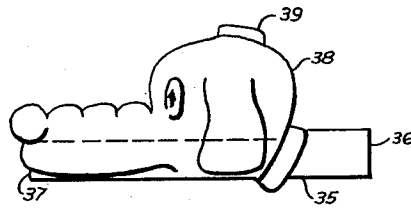


FIG. 6

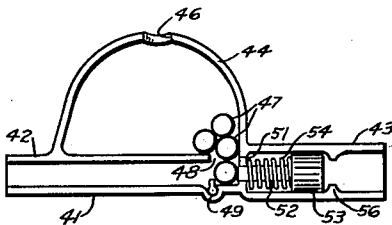


FIG. 7

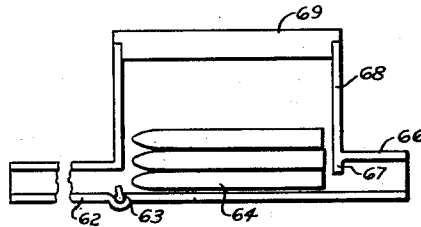


FIG. 8

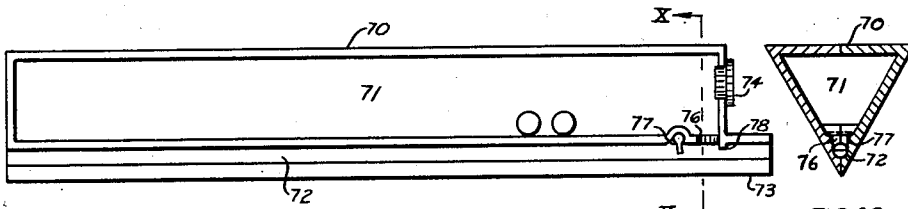


FIG. 9

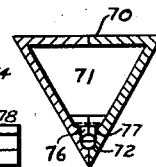


FIG. 10

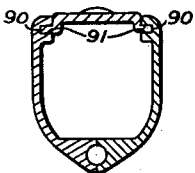


FIG. 11

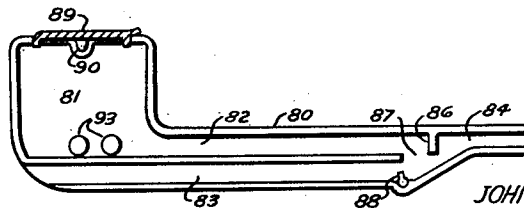


FIG. 12

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## MAGAZINE BLOW SHOOTER

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8 Claims. (Cl. 124—12)

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My invention relates to toys of the shooting type and has particular reference to a breath powered shooter for light weight amusement missiles.

Blow shooters for amusement purposes are generally of the pea shooter character. These are usually a plain tube wherein a pea, bean or other missile is projected by the pneumatic pressure of the human breath. Frequently the person using such shooters tries to effect successive shots by maintaining a supply of missiles in his mouth and loading the tube by action of the tongue. This avoids some of the delay of separate hand loading but is time consuming and presents the hazards of swallowing or choking on missiles stored in the mouth.

My novel shooter, by contrast, provides a magazine for missiles so that missiles need not be placed in the mouth. Furthermore, means are provided so that the missiles cannot reach the user's mouth regardless of inhaling or tilting or other action causing such a response in pea shooters. This freedom from swallowing or inhaling pellets or missiles makes possible the provision of extremely lightweight and harmless missiles such as plastic balls, balsa wood bullets, and the like.

It is a general object of my invention to provide an improved toy blow shooter.

Another object is to provide a blow shooter having a self-contained missile magazine.

A further object is to provide a blow shooter that automatically feeds missiles to the shooting position.

Still another object is to provide a blow shooter wherein the missile cannot be inhaled and which can be pointed at any angle prior to shooting without loss of missile.

Other objects and advantages of my invention will be apparent in the following description and claims considered together with the accompanying drawings, in which:

Fig. 1 is an elevation view of a molded half of blow shooter embodying my invention;

Fig. 2 is a sectional view along the lines II—II of Fig. 1;

Fig. 3 is a sectional view through a modified form of magazine plug;

Fig. 4 is a perspective view on an enlarged scale of the flexible restriction employed and illustrated in Figs. 1 and 2;

Fig. 5 is an elevation view of a modified form of complete blow shooter embodying the invention;

Fig. 6 is still another modification of a blow shooter embodying my invention;

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Fig. 7 is an elevation view of a molded half of a plunger type of blow shooter embodying my invention;

Fig. 8 is an elevation view of a molded half of a modification of my invention employing elongated missiles;

Fig. 9 is an elevation view of a molded half of a triangular rule modification of my invention;

Fig. 10 is a sectional view along the line X—X of Fig. 9;

Fig. 11 is a sectional view through a modification of the invention embodied in a pipe type of structure; and

Fig. 12 is an elevation view of a half molding of the pipe of Fig. 11.

Referring to Figs. 1, 2, and 4 there is illustrated a blow shooter 12 including a magazine 13 and a discharge tube 14, and a pressure opening or mouth tube 16. Missiles 17 may be placed within the magazine 13 by means of an opening 18 normally closed by a plug 19.

The magazine 13 and the tubes 14 and 16 are preferably molded in two halves designated as 12a and 12b in Fig. 2. In the particular embodiment illustrated the missiles 17 are maintained at a position above the discharge tube 14 so that they may feed into the discharge tube 14 by means of a communicating aperture 22.

It will be noted that tubes 16 and 14 are in effect a single tube having a pressure end at the tube 16 and a discharge end at the tube 14. Means must be provided however, to prevent the missiles 17 from rolling out of the tube 14 when it is inclined downwardly and accordingly I provide particularly in accordance with my invention a flexible constriction member 23. The member 23 is illustrated in detail in Fig. 4 and may include a rounded bead 24 from which projects a straight flange or web 26. The beaded part 24 may have a friction fit in a complementary cavity 27 formed transversely of the tube 14 in each half 12a and 12b. This flexible constriction may be formed of any suitable material such as rubber or other flexible plastic including vinyl materials having plasticizers, polyethylene, etc. The web 26 will resiliently yield to slight pressure.

Also to prevent the movement of missiles 17 into the mouth of the user a permanent constriction 28 is provided between the feed aperture 22 and the pressure end of tube 16. This constriction 28 may be molded or otherwise permanently formed in place.

In manufacturing the device of Figs. 1 and 2 each half 12a and 12b may be molded as a unit

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including the cavities 27 for reception of the flexible constriction 23. Each half of the feed aperture 22 is molded at the same time as well as the constriction 23 and the magazine aperture 16. The flexible constriction 23 may be inserted in one cavity 27 in one half 12a or 12b, the other half may be fitted to that one over the constriction 23, and the halves cemented together.

In use or operation of the device of Figs. 1 and 2 the plug 19 is manually removed and this plug may have a simple friction fit with the aperture 13 if desired. The missiles 17 may next be inserted into the magazine 13 and these missiles may be of any desired type including balls of organic plastic which may be suitably formed as by coining from a sheet of plastic material. When the magazine contains the desired supply of missiles 17 the device may then be used by inserting the tube 16 in the mouth of the user and blowing a puff of air into it. The pressure of the air upon the missile will overcome the flexible constriction 23 causing it to elastically deform, permitting the discharge of the missile from the tube 16. The missiles feed downwardly through the aperture 22 and into the tube 14 and are automatically in a position for being propelled from the entire shooter.

It will be apparent to those skilled in the art that the shooter 12 will be an automatic shooter as long as the user blows air through the tubes 16 and 14. As soon as one missile is ejected from its seat between the constrictions 23 and 23 another missile is permitted to drop down into the seat thus formed to be propelled outwardly. A continuous stream of missiles may thus be obtained. If it is desired to make the device of Figs. 1 and 2 into a one-shot shooter regardless of the amount of air blown through the tube in one continuous blast, the plug may be apertured as illustrated in Fig. 3 wherein a plug 20 may have an aperture 20a therein. This aperture will permit the air blast to divide itself with part flowing into the magazine 13 to thereby elevate and prevent the dropping of the next missile to its seat. A single-shot shooter may be thus obtained regardless of the breath control of the user. When continuous shooting is desired the user need merely to place a finger over the aperture 20a.

Illustrated in Fig. 5 is one form which the shooter may take wherein a shooter 30 may have a continuous tube having a pressure end 31 and an exit end 32 with a magazine 33 having a generally spherical shape. A magazine filler plug 34 may be positioned at the top of the magazine 33. In this particular illustration the filler plug 34 may form a part of the decorative scheme illustrated acting as a cap for the magazine 33 which may be decorated to appear as an animal's head.

Illustrated in Fig. 6 is a modification of the invention wherein a blow shooter 35 may have a tube therethrough having a pressure end 36 and an exit end 37. A magazine 38 may have a filler cap 38. In this case the discharge tube may be partially enclosed by a decorative member representing the nose of an animal.

The shooters of Figs. 5 and 6 may be formed in any suitable manner and may, for example, be organic plastic moldings that are longitudinally cemented together similar to the illustration of Fig. 2.

Illustrated in Fig. 7 is an embodiment of my invention employing a piston type of accelerator so that one shot operation is mechanically and positively assured. A shooter 41 may have a discharge tube 42 and a pressure tube 43. A maga-

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zine 44 having an aperture 46 may receive missiles 47. An aperture 48 may be provided between the magazine 44 and the discharge tube 42 permitting the missiles to feed into the tube 42. A flexible constrictor 49 may prevent the missiles from rolling out of the tube 42.

Formed between tubes 43 and 42 may be an apertured wall 51 through which a plunger 52 may normally project. A piston 53 may be disposed at the outer end of the plunger 52 and a return spring 54 may urge the piston against constriction 56.

In manufacturing the device of Fig. 7 each half may be separately molded and the piston and spring assembly may be laid in one-half as well as the flexible constrictor 49. Thereafter the second half may be cemented or otherwise fused or welded together to enclose the piston, plunger and spring, and the constrictor 49. To use the device missiles 47 are inserted through the aperture 46 and will feed through the aperture 48 to the tube 42. The user may thereupon insert the tube 43 in his mouth, blowing into it. This causes the piston 53 to move to the left as illustrated in Fig. 7 causing the plunger 52 to accelerate the missile 47 toward the muzzle of discharge tube 42. The plunger 52 will project over aperture 48 as long as air pressure is applied to the piston 53. Upon release of pressure the spring 54 will move the piston to the right in Fig. 7 permitting the next missile to drop into shooting position.

Illustrated in Fig. 8 is a modification of the invention employing elongated missiles. There is a discharge tube 62 which may have a flexible constriction 63 to hold elongated missiles 64 from sliding out of the tube. A pressure tube 66 may communicate with the tube 62 and may have a fixed constriction 67. A magazine 68 opening into the tube 62 may hold a supply of the missiles and may have a removable cap 69.

The operation of the device of Fig. 8 is similar to that of Fig. 1 and a blast of air in the tube 66 will project the missile 64 out of the discharge tube 62 after overcoming the flexible and deformable constriction 63. The next missile 64 will then fall into shooting position.

The embodiment of Figs. 9 and 10 illustrates the adaptability of the invention to items of utility. An item ideal for schoolroom use is there illustrated, namely, a triangular rule and the incorporation therein of my blow shooter will not interfere with the utilitarian aspects of the rule. By careful design and use of suitably opaque construction materials the fact that the triangular rule incorporates the invention may be scarcely detected. Accordingly, a triangular rule 70 may be hollow to define a magazine chamber 71 and at one apex of the triangle there may be provided a discharge tube 72 and a projecting pressure tube 73. To render the blow shooter less detectable the pressure tube may be a simple aperture in the triangular rule if desired. A filler cap 74 may be provided and an aperture 76 may communicate the magazine 71 and the discharge tube 72. A flexible constriction 77 may be provided between the feed aperture and the discharge end and a rigid constriction 78 may be provided between the feed aperture and the pressure opening. The entire device may be formed in two halves as illustrated in Fig. 10.

The operation of the device of Figs. 9 and 10 is similar to that of Fig. 1 with missiles feeding through the aperture 76 to the discharge tube 72.

Referring to Figs. 11 and 12 the invention may be embodied in a structure 80 having the outline

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of a smoker's pipe. The bowl of the pipe may form a magazine 81 from which leads a feed tube 82 formed in the pipe stem. A discharge tube 83 may be formed below the feed tube in the stem and may have an outlet below the magazine or bowl. An inlet tube 84 may be formed at the bit end of the pipe stem and may communicate with the discharge tube 83. A permanent constriction 86 may form a wall between the inlet tube 84 and the delivery end of the feed tube 82 and also constricts the passage between the inlet and discharge tubes 84 and 83 to prevent movement of missiles to the inlet.

An aperture 87 may communicate the feed tube 82 and the discharge tube permitting missiles to drop into the discharge tube. A flexible constriction 88 may be disposed in the discharge tube 83 adjacent the feed aperture 87 to prevent missile from rolling or sliding out of the discharge tube. The magazine 81, the bowl of the pipe, may be provided with a cover 89 pivoted on a pair of trunnions 90 disposed in a complementary pair of cavities 91.

The pipe may be formed in molded halves and the flexible constriction 88 and a trunnion of the cover 89 may be disposed in their respective cavities in one half. The other half may next be fitted over the one half and cemented to it. The cover 89 will pivot freely inasmuch as the trunnions are greatly removed from the cementing or fusing line of the two halves and hence will be free of cement or other impeding material.

To operate the device of Figs. 11 and 12, the lid 89 may be rotated and missiles 93 placed in the bowl portion 81 which acts as a magazine. The pipe 80 may be tilted upwardly causing missiles 93 to roll to the aperture 87 so that one may seat between the flexible restriction 88 and the permanent restriction 85. Thereafter the user may insert the inlet tube 84 in his mouth and deliver a puff of air therein. This causes the missile 90 to be pneumatically driven down the discharge tube 83 to its outlet disposed beneath the bowl. Thus the pipe shape is functionally suited to incorporation of my invention therein, the feed tube 82, the discharge tube 83, and the inlet tube 84 constituting the stem of the pipe and the bowl acting as the magazine.

While I have described several presently preferred embodiments of my invention it will be apparent to those skilled in the art that various modifications could be made therein without departing from the true spirit and scope of the invention. I therefore include within the scope of the appended claims all such modifications.

I claim:

1. A blow shooter having the general outline of a smoker's pipe comprising: a pipe bowl that is hollow to act as a magazine for missiles; a pipe stem connected to the bowl and defining two generally parallel tubes except for the bit portion of the stem which defines a single inlet tube, one of the said parallel tubes communicating with the magazine to act as a feed tube and the other of said parallel tubes being open to atmosphere below the bowl to act as a discharge tube; means defining a feed aperture between the feed tube and the discharge tube; a permanent constriction disposed between the inlet tube and the discharge tube; and a resilient constriction disposed in the discharge tube between the feed aperture and the opening to atmosphere, and having a straight bead with a relatively thin web projecting therefrom, said bead of the web fitting a mating enlargement in a recess in the tube wall.

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2. A blow shooter comprising: a tube and magazine structure wherein the magazine communicates with a feed aperture in the tube intermediate a discharge end and a pressure end, said tube and magazine structure characterized by construction from separate parts sectioned longitudinally of the tube; a transverse slot with an enlargement at the bottom and formed in a portion only of the partial circumferential extent of the tube wall of each separate part intermediate the feed aperture and the discharge end and each slot disposed in registration to form a continuous slot when the separate parts are assembled; and a resilient beaded web in said tube secured in said slot with the bead in the enlargement of the slot, to partially obstruct the tube to prevent a missile moving to said discharge end but which resiliently deflects to let an impelled missile pass to the discharge end, said separate parts permitting insertion of the web during assembly of said parts to simply secure the web in position.

3. A blow shooter as defined in claim 2 wherein the web is disposed in the circumferential part of the tube opposite the feed aperture.

4. A blow shooter as defined in claim 2 wherein the web is disposed in the circumferential part of the tube adjacent to the feed aperture.

5. A blow shooter as defined in claim 2 wherein the bead of the web is straight and the outer edge of the web is parallel to the bead.

6. A blow shooter as defined in claim 2 wherein the magazine is provided with a permanent aperture so that an impelling air blast will divide between the tube and the magazine to prevent missiles falling from the magazine into the tube.

7. A blow shooter comprising: a tube and magazine structure wherein the magazine communicates with a feed aperture in the tube intermediate a discharge end and a pressure end, said tube and magazine structure characterized by construction from separate parts sectioned longitudinally of the tube and characterized by said feed aperture being elongated in the direction of the tube axis so that elongated missiles may be disposed in the magazine to feed into the tube; a transverse slot with an enlargement at the bottom and formed in a portion only of the partial circumferential extent of the tube wall of each separate part intermediate the feed aperture and the discharge end and each slot disposed in registration to form a continuous slot when the separate parts are assembled; and a resilient beaded web in said tube secured in said slot with the bead in the enlargement of the slot, to partially obstruct the tube to prevent a missile moving to said discharge end but which resiliently deflects to let an impelled missile pass to the discharge end, said separate parts permitting insertion of the web during assembly of said parts to simply secure the web in position.

8. A blow shooter comprising: a tube and magazine structure wherein the magazine communicates with a feed aperture in the tube intermediate a discharge end and a pressure end, said tube and magazine structure characterized by construction from separate parts sectioned longitudinally of the tube and characterized by said magazine being elongated and of triangular cross section and with the tube disposed within the outlines of the triangle so that said blow shooter may also act as a triangular straight edge; a transverse slot with an enlargement at the bottom and formed in a portion only of the partial circumferential extent of the tube wall of each separate part intermediate the feed aperture and the discharge

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end and each slot disposed in registration to form a continuous slot when the separate parts are assembled; and a resilient beaded web in said tube secured in said slot with the bead in the enlargement of the slot, to partially obstruct the tube to prevent a missile moving to said discharge end but which resiliently deflects to let an impelled missile pass to the discharge end, said separate parts permitting insertion of the web during assembly of said parts to simply secure the web in position.

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