

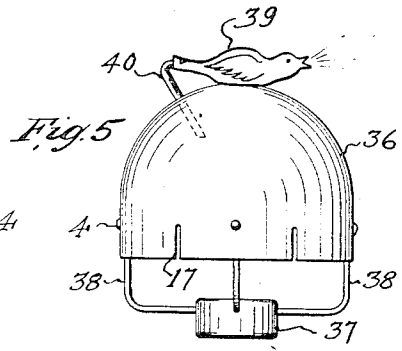
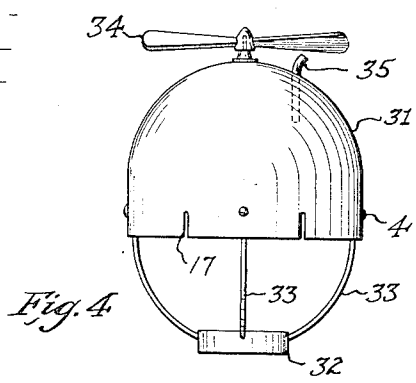
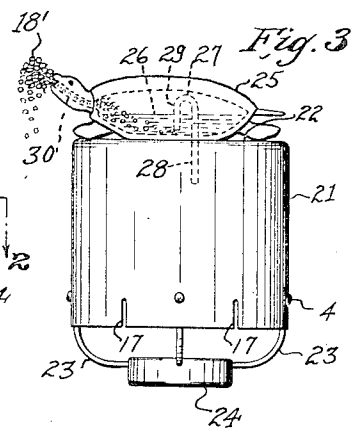
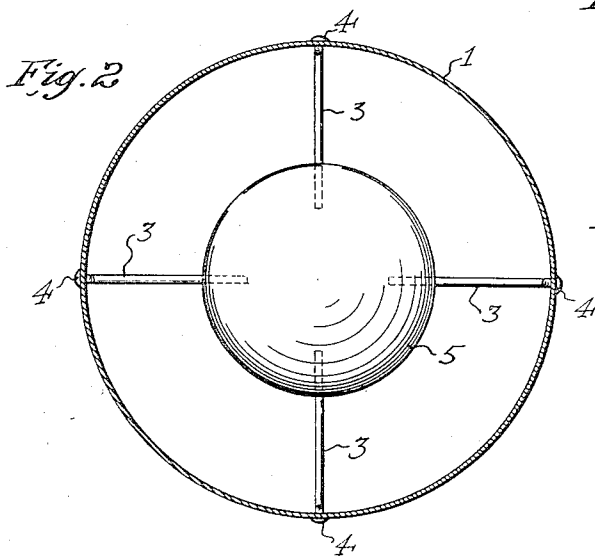
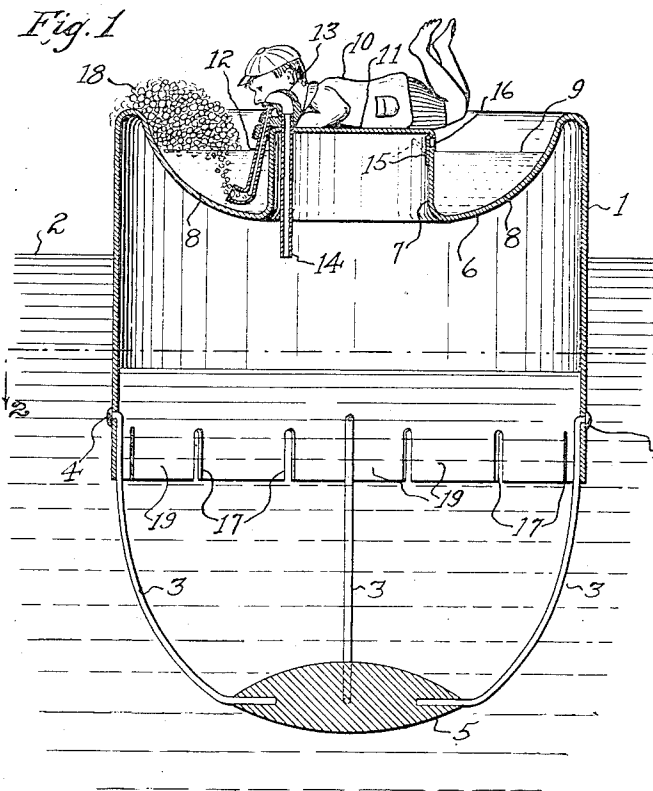
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TOY

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TOY

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The invention relates to a novel toy adapted to float upon the surface of water in a bath tub, basin or other container and to produce interesting effects by use of pneumatic pressure.

The principal object of the present invention is to provide a novel floating toy. One form of the invention comprises essentially a substantially hollow casing adapted to be placed upon the surface of a body of water, the said casing being designed to gradually settle to a predetermined depth into the water while the trapped air within the hollow interior of said casing slowly escapes through a relatively small aperture of the casing while water simultaneously enters the lower portion of the casing for displacing the air, the escape of said trapped air under pressure being arranged to produce interesting and pleasing effects.

Another object of the present invention lies in the provision of a novel toy of the above character which is so constructed and arranged as to provide a receptacle for holding soapy water or other liquid, through which the escaping air is caused to pass, thereby producing a mass of soap bubbles so disposed as to create a pleasing and interesting effect.

Still another object of the present invention is to provide a novel toy of the above character capable of maintaining itself in an upright and stable position during the settling movement of the toy in the water, said toy being designed to permanently trap a limited quantity of air to thereby limit the depth of immersion of the toy and prevent the complete sinking of the same.

Still another object of the present invention lies in the provision of a novel toy of the above character which is of simple, rugged construction and which possesses great stability in the water in use and of relatively light mass or weight so as to be easily ported and lifted from the water to restart its operation, thereby enabling the same to be used satisfactorily by small children as well as by older persons.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a vertical sectional view taken through one form of the novel floating toy of the present invention.

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a view in elevation of a somewhat modified form of the invention.

Fig. 4 is a view in elevation of another modified form of the invention; and

Fig. 5 is a view in elevation of still another form of the invention.

Similar characters of reference are employed in all of the above described views to indicate corresponding parts.

Referring now to Figs. 1 and 2 of the drawing, wherein one form of the novel toy of the present invention is illustrated, the reference numeral 1 designates a hollow casing or body forming a diving bell and which is illustrated as of circular cross-section as viewed in plan, the said casing being closed at its top and open at its bottom and being adapted to float upon the surface of a body of water 2. The hollow casing or body 1 may be made of any suitable material, such as celluloid or other cellulosic products, synthetic resin, sheet metal etc.

The upper portions of a number of supporting members or wires 3 extend upwardly adjacent the interior surface of the lower portion of the casing 1, and the upper end portions of the supporting members 3 project outwardly through apertures provided in side walls of casing 1 and are preferably headed over as at 4, thereby securing the upper ends of these supporting members 3 to the lower portion of the casing 1. Four of the supporting members or wires 3 are illustrated in the drawing, although it is to be understood that a greater or lesser number of these members may be used. The supporting members 3 are illustrated as extending downwardly and inwardly of the casing 1 and have their lower end portions securely embedded in a mass or weight 5 of a preferably heavy metal, such as lead or cast iron or other suitable material.

The weight 5 is illustrated as of circular shape in plan although this weight may have any other desired shape and is positioned so that its vertical axis coincides with the vertical axis of the casing 1. The weight 5 is of sufficient mass in the case of the light weight casing illustrated to cause the center of gravity of the complete toy to lie below the center of buoyancy of the same when the toy is placed upon the body of water 2. In other words, the weight 5 is of sufficient magnitude and is placed at a sufficient distance below the bottom of casing 1 so as to hold this casing in an upright position when the same is placed in the water but it is obvious that the casing may be proportioned and de-

signed to maintain itself in an upright floating position even in the absence of the weight 5.

The top 6 of casing 1 is illustrated as of substantially dish-shape, the same being formed with a central upstanding hollow cylindrical portion 7 that is open at its bottom so as to communicate with the interior of the casing and is closed at its top. Owing to the dish-shape of the top 6 and to the presence of the cylindrical portion 7, there is provided an annular receptacle 8 adapted for receiving a limited quantity of soapy water or other liquid 9. Owing to the dish-shape of the top 6 and to the presence of the upstanding cylindrical portion 7, the liquid 9 is prevented from spilling out of the receptacle 8 even though the casing 1 be accidentally jarred or tilted considerably in use. Owing to the approximate V-shaped cross-section of the receptacle 8, the liquid 9 has a relatively large surface area even though the volume of liquid 9 is relatively small. This is desirable as the relatively large surface area of liquid 9 gives the impression of a large quantity of liquid which is pleasing and attractive, whereas the actual small volume of this liquid prevents the casing 1 from being top heavy and enables the use of a relatively light weight 5.

The miniature figure or body of a boy 10 is shown resting upon the flat top 11 of the upstanding portion 7. The boy 10 is shown as holding a pipe 12 which extends downwardly into the liquid 9 in receptacle 8, the open mouth of the pipe being positioned below the surface of the liquid 9 in use. The pipe 12 communicates with the hollow interior 13 of the figure 10. A vertical tube 14 has its upper portion extending into the figure 10, the juncture between pipe 12 and the body 10 being sealed. Tube 14 extends downwardly through a conforming aperture provided in the top 11 of cylindrical portion 7 and its lower portion projects into casing 1 to a point somewhat below the dished top 6. The juncture between the upper portion of tube 14 and the casing 1 and body 10 is sealed to prevent the escape of air from casing 1 along the exterior of this tube. In use, in order for air to escape from within casing 1, it must pass through tube 14 into the hollow interior 13 of the figure or body 10, and from thence outwardly through the pipe 12.

An inwardly opening check valve 15 is illustrated as provided adjacent the top of the cylindrical central portion 7 of the casing top 6. The check valve 15 may be of leather or other suitable material, or the same may be of any suitable type, such as a spring pressed ball and is normally closed, thereby closing the aperture 16 provided in the wall of portion 7 of cover 6. It is to be understood that check valve 15 may be omitted, if desired. The lower portion of casing 1 is illustrated as provided with a plurality of angularly spaced slots 17 which extend upwardly for a distance from the bottom of casing 1.

In use, preferably some soapy water 9 is placed in the receptacle 8 provided in the dished top 6 of the casing 1, and the toy is then placed upon the surface of the body of water 2, which may be in a bath tub, basin or other receptacle. The presence of the weight 5 holds the toy in an upright position, thereby trapping air within the hollow interior of the casing 1. The toy tends to settle in the water, thereby causing the air confined within casing 1 to be compressed somewhat so that the same is gradually forced upwardly and out through tube 14, body 10 and pipe 12.

Since the air pressure within casing 1 is greater than that of the external air, valve 15 remains closed. Owing to the relative narrow internal diameters of tube 14 and pipe 12, the air can escape from casing 1 but slowly and produces a stream of air which flows up through the soapy water 9 in receptacle 8, thereby producing a mass of soap bubbles 18 as shown in Fig. 1, creating a very interesting and pleasing effect. The production of bubbles 18 may continue several minutes or even longer before the downward movement of the toy ceases in use.

As the air within casing 1 gradually flows out through pipe 12, the casing 1 descends lower and lower into the water 2, the air within this casing being displaced by water passing upwardly through the open bottom of this casing. When the casing 1 has descended sufficiently to cause the lower end of tube 14 to enter the water within the casing, the water acts to close the bottom of this tube 14 against further egress of air, so that the remaining air within casing 1 is trapped therein, thereby serving to prevent further settling of this casing and serving to cause the toy to float indefinitely. After the casing 1 has reached the lowest point of its downward movement, no more air passes outwardly through pipe 12 and consequently no additional soap bubbles 18 are formed.

In order to continue the production of the soap bubbles 18, the toy is lifted bodily out of the water in order to permit a recharging of the casing with new air either through the open bottom or by the admission of air through the valve controlled opening 16 in those cases where such air opening is used. As soon as the casing 1 begins to move upwardly, the water within the interior of this casing, due to the action of gravity, tends to move downwardly and outwardly thereof, thereby creating a region of reduced pressure within casing 1, resulting in the automatic inward or opening movement of valve 15, thereby uncovering opening 16 and permitting air to enter the interior of casing 1. The further casing 1 is lifted, the more air will enter the same through opening 16 until it again becomes completely filled with air, whereupon the toy may again be released or placed upon the surface of the water 2 in the event that the toy has been completely lifted out of the water, whereupon the previously described action will be repeated, i. e. air will be discharged outwardly through pipe 12 while water enters the bottom of casing 1.

The presence of the slots 17 enhances the stability of casing 1 in the water, since the depending tongue-like portions 19 of the casing 1, formed by the presence of slots 17, act as vanes for engaging the water to prevent accidental tilting of the casing 1. Also, the presence of the slots 17 facilitates the lifting of the casing 1 out of the water since they tend to break up the suction effect created by the air within the casing 1. The slots 17 are particularly valuable when the valve 15 is not used. It is to be understood, however, that these slots may be omitted entirely, if desired. Also, it will be apparent that instead of using the curved wires or rods 3 for supporting the weight 5, the side walls of casing 1 may be continued downwardly and inwardly so as to support the weight 5 in which case a suitable aperture or apertures, such as the slots 17 would be provided in the lower portion of the side walls of casing 1 in order to permit the entrance of water thereinto in use.

It will be apparent that the small stream of

air escaping from within the casing of the toy in use, may be employed for other purposes than that illustrated in Fig. 1. For example, in Fig. 3 a casing 21 is shown, which casing is of substantially cylindrical shape having a flat closed top 22 and an open bottom. Wires 23 are illustrated as serving to support a cylindrical weight 24 from the bottom of casing 21. A small figure of a turtle 25 is illustrated as attached to the upper surface of top 22 of casing 21. The turtle 25 has a hollow interior adapted to receive a quantity of liquid, such as soapy water 26.

A bent tube 27 is illustrated as contained within the hollow interior of the turtle 25. Tube 27 has a relatively long leg 28 extending downwardly through aligned apertures provided in the bottom of turtle 25 and in the top 22 of casing 21, the lower portion of this leg projecting for a distance into the casing 21. The lines of juncture between the leg 28 and the edges of the apertures provided in the turtle bottom and in the top 22 for receiving this leg 28 are sealed so as to prevent the escape of air from within casing 21 except through the tube 27. Tube 27 has a short depending leg 29 which projects into the soapy water 26 within the turtle 25. When the casing 21 is placed upon the surface of a body of water, the weight 24 causes the same to settle, thereby compressing the air within casing 21 and forcing the same upwardly through leg 28 and then downwardly through leg 29 of tube 27. This air escapes upwardly through the soapy water 26 thereby creating soap bubbles which pass outwardly through an aperture 30 provided in the neck of the turtle so that the turtle is caused to produce a mass of bubbles 18', creating a very pleasing effect.

When the water within casing 21 reaches the bottom of leg 28 of tube 27, no more air can escape from within casing 21 and the air remaining therein serves to retain the toy afloat. When it is desired to repeat the operation, it is merely necessary to lift the casing 21 upwardly, thereby causing the water within this casing to descend outwardly thereof and permitting air to enter through the slots 17 provided in the lower side walls of the casing.

In the form of the invention illustrated in Fig. 4, the casing 31 is illustrated as carrying a weight 32 by means of wires or rods 33. A fan or pinwheel 34 is illustrated as turnably mounted upon the casing 31 and is adapted to receive air directly thereupon from a pipe or tube 35 which extends downwardly into the hollow interior of casing 31. In use, as the casing 31 descends in the water, air trapped within this casing passes outwardly through tube 35 and causes rotation of the fan 34. When the water within the casing 31 reaches the bottom of tube 35, the downward motion of the casing stops and the propeller 34 comes to rest. By again raising the casing 31 so that air may enter through slots 17, or through the open bottom of casing 31 in the event that slots 17 are not used, the casing may again be released, thereby repeating the operation. The settling motion of the casing may consume several minutes or more, during which time the fan 34 continues to rotate.

In the form of the invention illustrated in Fig. 5, the casing 36 is illustrated as supporting a weight 37 by wires or rods 38. A bird whistle 39, as of the water filled type, is fixed upon the top of casing 36. A tube 40 is connected to the bird whistle 39 and extends downwardly for a distance into the interior of casing 36 so that as this casing

descends in use, air passing outwardly through tube 40, will cause the bird 39 to produce musical sounds simulating those of a real bird. As before, when the water within casing 36 reaches the bottom of tube 40, the settling action of casing 36 stops.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, as defined by the following claims, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In a water toy of the character described, having a mass sufficiently light to permit it to be lifted out of the water manually by a child in order to permit it to be charged with operating air admitted through its bottom portion and having a density greater than water, a hollow casing having an upper portion provided with a relatively small air passage for conducting air from the interior of said casing to the exterior thereof for doing work, said casing having an apertured lower portion adapted to admit operating air to the casing when the toy is lifted clear of the water, and when the toy is lowering itself in the water to admit water into the interior of said casing for displacing the air therein outwardly through said air passage as said casing gravitates in the water, and a weight member connected with the lower portion of said casing to effect gravitation of the latter in the water.

2. In a toy adapted to slowly gravitate in water, a casing open at its lower portion and closed at its upper portion, a weight suspended from the lower open portion of said casing for retaining said casing in an upright position in the water and for causing said casing to slowly gravitate in the water, the upper portion of said casing having an inverted U-tube forming an air conduit extending therethrough for conducting air from the interior of said casing outwardly thereof as water enters said casing interior and compresses and displaces the air contained therein, means carried by the upper portion of said casing adapted to be actuated by air discharged through said conduit.

3. A toy of the character described adapted to float on water, a casing open at its bottom and closed at its top, a weight suspended from the bottom of said casing for retaining said casing in an upright position in the water and for urging said casing downwardly in the water, rigid supporting members extending between the lower portion of said casing and said weight for suspending the weight from said casing, said casing having its closed top of such shape as to provide an exterior liquid receiving receptacle, the top of said casing having an air conduit extending therethrough for conducting air from the interior of said casing outwardly thereof to a point below the surface of liquid within said exterior receptacle, whereby air passes up through such liquid producing bubbles, the open bottom of said casing enabling water to enter said casing and effect the displacement of air outwardly through said conduit during the settling motion of said casing, the top of said casing and said air conduit being so constructed and arranged as to permanently trap a predetermined quan-

tity of air within said casing to thereby limit the settling movement of said casing in the water, and an inwardly opening check valve provided in the top of said casing for facilitating the entrance of air into the interior of said casing when the latter is raised out of the water.

4. In a toy of the character described adapted to float on water, a hollow casing having an open bottom and a closed top, a weight suspended from the lower portion of said casing for holding the same in an upright position in the water and for urging the same downwardly, a hollow apertured body mounted on the top of said casing, said hollow body being adapted to receive a quantity of liquid, a bent tube contained within said hollow body, said tube having one leg thereof extending downwardly for projecting into the interior of said casing, said tube having another leg projecting downwardly into the liquid within said body, the settling of said casing in the water under the action of said weight serving to cause water to enter the open bottom of said casing and force the air therein outwardly through said bent tube and upwardly through the liquid in said hollow body, thereby producing bubbles which pass outwardly through an aperture of said body.

5. In a toy of the character described adapted to float on water, a hollow casing having an open bottom and a closed top, a weight suspended from the lower portion of said casing for holding the same in an upright position in the water and for urging the casing downwardly, an amusement device mounted on the top of said casing and a tube having its upper end positioned for cooperating with said amusement device, said tube extending downwardly through the top of said casing and having its lower end portion projecting a predetermined distance into the hollow interior of said casing, the settling of said casing in the water under the action of said weight causing water to enter the open bottom of said casing and effect the displacement of air from said casing through said tube, thereby operating said amusement device, the level of water within said casing rising until the same reaches the bottom of said tube whereupon the air remaining within said casing is permanently trapped therein and prevents further settling of said casing in the water.

6. In a toy adapted to slowly gravitate in water, a casing having an open lower portion, said casing having a closed upper portion provided with an air conduit for conducting air from the interior of said casing outwardly thereof as said casing gravitates in the water whereby water enters said casing to compress the air therein, means carried by the upper portion of said casing adapted to be actuated by the air emitted through said conduit, and the intake end of said air conduit projecting into the closed upper end of the casing interior so as to be sealed by water ascending within the latter thereby to trap a predetermined volume of air therein and thus arrest gravitational movement of said casing in the water.

7. In a toy adapted to slowly gravitate in water, a casing having an open lower portion, said casing having a closed upper portion to provide an exterior liquid holding receptacle, an air conduit extending from the casing interior through the upper portion of said casing, the outer end of said conduit extending into liquid contained in said holding receptacle whereby air discharged through said conduit bubbles through said liquid,

and the inner intake end of said conduit projecting into the closed upper end of the casing interior so as to be sealed by water ascending within the latter during gravitation of the casing, thereby to trap a predetermined volume of air therein and thus arrest gravitational movement of said casing.

8. A child's water toy having a weight sufficiently light to permit a child to repeatedly lift it from and replace it in the water in which it floats momentarily and capable of sinking bodily in the water from its initial floating position, comprising a casing operating in upright position with its lower end open to permit a ready charging of the casing with air when lifted momentarily from the water, means projecting below the casing providing a stop for limiting the sinking movement of the toy, a pneumatically actuated amusement figure positioned on top of the casing and a tube with a bore of relatively small cross sectional diameter having its intake end in the upper portion of the casing and below the top thereof and having its discharge end operatively connected to the figure to actuate the same from air in the casing while sinking in water.

9. An easily portable child's toy capable of sinking in water, provided with an open bottom chamber forming a diving bell, said toy disposed in upright position while sinking and having a mass sufficiently light to permit a child to raise the toy bodily from the water and thus permit the chamber to be recharged through the open bottom with a fresh supply of air, said chamber forming a reservoir of compressed air trapped therein above the water level and constantly decreasing in volume while the toy is sinking, said chamber provided with a vent for permitting a restrained escape of air from the reservoir and thus permit a gradual rise of the water level in the chamber to replace the escaping air and said sinking toy acting to maintain a substantially constant pressure on the trapped air, an amusement device operated by the air escaping from said vent, and said vent having its intake end opening into and located in said reservoir below the top thereof and operating when the water level reaches the intake end to close the same and thus form a closed buoyant chamber in the reservoir above the water level thus forming means controlled automatically when the toy reaches a predetermined level during its sinking movement for preventing it from sinking below said predetermined level thereby maintaining the toy readily available for withdrawal from the water by the child to expose the open bottom for air recharging.

10. A manually actuated child's toy including a compressed air chamber of relatively large volumetric capacity provided adjacent its lower portion with an intake opening of relatively large cross sectional area to permit quick recharging of the chamber with air and provided adjacent its upper portion with a discharge opening of highly restricted air discharging capacity and said chamber being otherwise closed, its contained air tending to restrain its rate of sinking in water and said restricted discharge opening permitting a gradual and constrained lowering of the toy while floating with rise of water level in the chamber to replace the air discharged and indicating means actuated by said discharge of air through said discharge opening.

11. A toy for floating in and for slowly sinking in water, said toy provided with an air cham-

ber having an open bottom and adapted to form a reservoir of compressed air above the water level therein, said chamber having relatively large volumetric capacity compared to the volume of the toy thereby to provide an air chamber of large capacity, said chamber provided with an escape vent for regulating the release of the air from the reservoir and thus regulating the rate of sinking movement of the toy.

- 10 12. A pneumatic toy having a density to cause it to sink in still water, said toy comprising an open bottom casing having its center of mass located below its center of maximum buoyancy to hold the casing in upright position when float-
15 ing and sinking and to permit water gradually to enter the open bottom as the casing sinks, said casing providing above the water level therein a large chamber of air under substantially con-

stant pressure, said casing operating by virtue of its tendency to sink to maintain said pressure and said pressure acting at any given instant of time to maintain the toy at a definite level determined by the volume of air in the casing at that time, and means for permitting and regulating a restrained escape of air from said chamber.

13. A toy capable of initially assuming a floating position in still water including a compressed air chamber and comprising means for permit-
10 ting it to sink slowly in liquid beyond said initial position and the weight of the toy acting to create pressure on the air in the chamber and an amuse-
15 ment device in fluid communication with said air chamber and including visually noticeable means operated by the compressed air in the chamber.

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