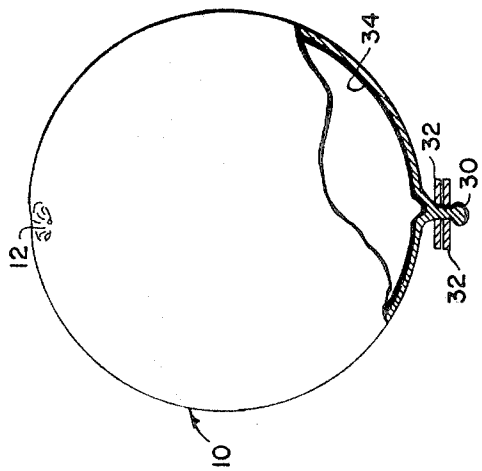
Oct. 12, 1971 T. R. COPSTEAD 3,611,623

TOY BALLOON AMUSEMENT DEVICE

Filed Feb. 26, 1970

FIG. 3



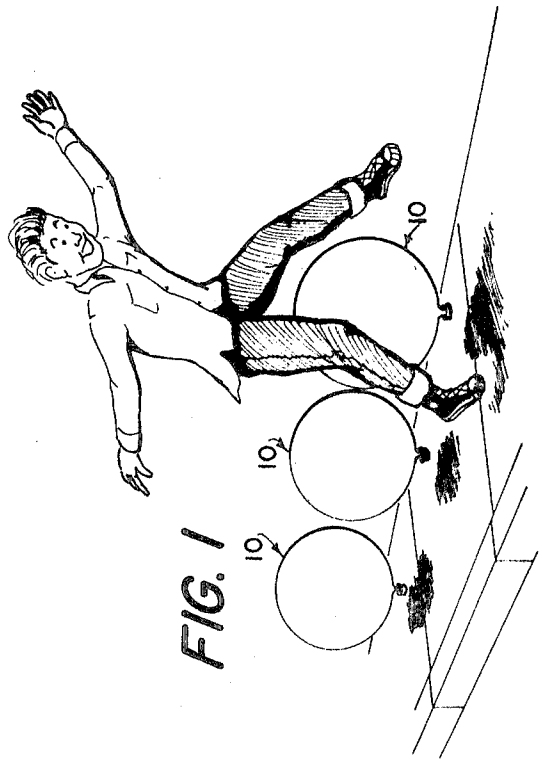


FIG. 1

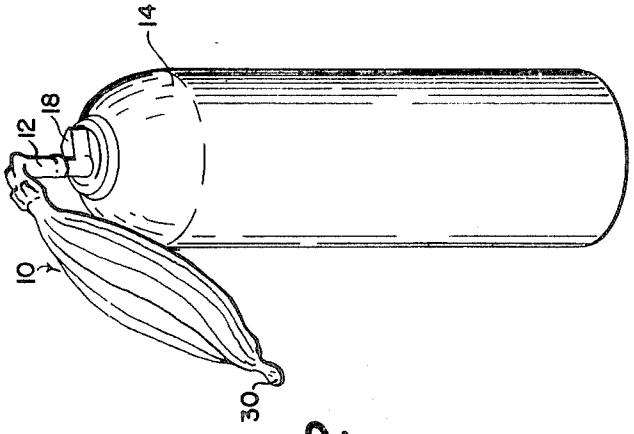
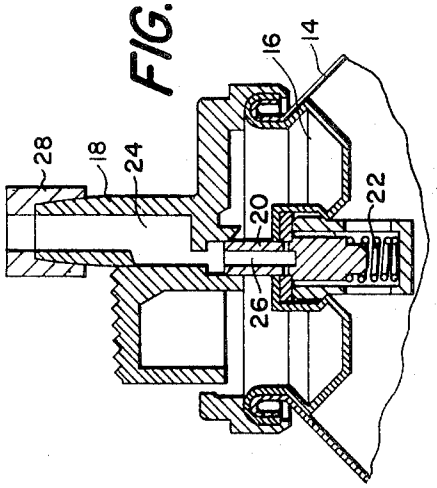


FIG. 2

FIG. 4



INVENTOR
TERRANCE R. COPSTEAD

BY

RICHARDS & SHEFTE
ATTORNEYS

United States Patent Office 3,611,623 Patented Oct. 12, 1971

3,611,623

TOY BALLOON AMUSEMENT DEVICE

Terrance R. Copstead, Charlotte, N.C., assignor to Electronic Data Controls Corporation, Forsyth County, N.C.

Filed Feb. 26, 1970, Ser. No. 14,413
Int. Cl. A63h 3/06
U.S. Cl. 46—90 8 Claims

ABSTRACT OF THE DISCLOSURE

An amusement device which includes an inflatable toy balloon, and an aerosol-type container charged with a supply of helium under pressure. The container includes a discharge valve fitted with an adapter for receiving the neck portion of the balloon to permit inflation of the balloon, and the container is charged with a supply of helium that is measured to substantially counterbalance the weight of the balloon so that when the entire contents of the container is discharged into the balloon, the balloon will be in a state of gravitational equilibrium. The balloon may be formed with a resilient nipple for selectively receiving washer-like ballast elements with a friction fit to thereby permit adjustment of the balloon weight through a predetermined range, and the interior walls of the balloon may be coated with a liquid sealant to prevent leakage of helium therethrough.

BACKGROUND OF THE INVENTION

There are a large number of familiar uses for balloons, both as sources of amusement and as items of decoration or the like for parties, celebrations and similar occasions. These balloons are usually inflated with air since air is readily available as an inexpensive inflating source, but it is also quite common to inflate balloons with a lighter-than-air gas, principally helium, to provide the balloon with lift whereby it will rise when released.

When helium or a similar gas is used as an inflating source, it is normally contained in large commercial tanks which have a volumetric capacity that is sufficient to inflate hundreds of toy balloons. Recently, it has also been proposed in U.S. application Ser. No. 796,095, filed Feb. 3, 1969, to supply helium in a relatively small aerosol-type container that is packaged as a consumer item with a supply of about fifteen toy balloons, the container having a helium capacity designed to inflate this supply of toy balloons.

Regardless of how the helium has been supplied, it has heretofore always been the practice to inflate a number of balloons with an arbitrary volume of helium which will insure that the balloon is inflated and that it will possess the characteristic lift associated with helium balloons.

The present invention introduces a new concept for balloons which includes filling a balloon with a measured quantity of helium calculated to cause the balloon to actually float in a generally suspended condition.

SUMMARY OF THE INVENTION

According to the present invention, a toy balloon is inflated with a quantity of lighter-than-air gas which is measured to substantially counterbalance the weight of the balloon and thereby cause the balloon to reach a state of gravitational equilibrium. Preferably, the balloon is provided with means for selectively adjusting the weight of the balloon through a predetermined range, and the quantity of gas, usually helium, is measured to substantially counterbalance a balloon weight within this predetermined range.

In what is considered to be the most practical embodiment of the present invention, a relatively thick-walled balloon is packaged together with an aerosol-type container provided with an adapter for receiving the neck portion of the balloon and with a conventional selectively operable discharge valve for discharging the contents of the container into the balloon, the container being charged with a measured quantity of helium which, when completely emptied from the container and into the balloon, will substantially counterbalance the weight of the balloon as mentioned previously. By virtue of this package arrangement, the purchaser of the package simply places the balloon on the container adapter and exhausts the entire contents of the container into the balloon, and the balloon will then be in the aforementioned state of gravitational equilibrium and ready for a substantial number of novel uses.

Since it would not always be possible under all conditions to anticipate exactly what quantity of helium will be needed to counterbalance the weight of the balloon, the present invention also provides for supplying the balloon with ballast elements that can be selectively attached to and removed from the balloon to vary the weight thereof through a predetermined range, and the helium content of the container is measured to counterbalance a weight somewhere within this predetermined range.

Preferably, the balloon is formed with a projecting, resilient nipple, and the ballast elements are washer-like elements formed with a central opening therein that is designed to positively engage the projecting nipple of the balloon with a secure friction fit. In this way, the ballast elements can be readily attached to and detached from the balloon to selectively adjust the overall weight thereof.

Finally, the present invention provides for covering the interior surface of the balloon with a thin film of liquid sealant to prevent the helium from leaking through the wall of the balloon after inflation thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a child playing with a balloon conforming to the present invention;

FIG. 2 is a perspective view of the container having the balloon received thereon in a position to inflate the balloon by exhausting the contents of the container;

FIG. 3 is an enlarged view of the inflated balloon, partially cut away to illustrate the sealing film on the interior surface of the balloon; and

FIG. 4 is a side elevational view of the upper portion of the container, illustrating the discharge valve and adapter member of the container.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 2 of the accompanying drawings, a toy balloon **10** is illustrated having the neck portion **12** thereof fitted onto a container **14** preparatory to inflating the balloon **10** by discharging the contents of the container **14** thereinto.

As best seen in FIG. 4, the upper portion of the container **12** is provided with a conventional discharge valve **16**, and an adapter cap member **18**. Since the details of the discharge valve **16** and the adapter cap member **18** form no part of the present invention, reference is made to the aforementioned U.S. application, Ser. No. 769,095, which includes a complete description of these elements. In understanding the present invention, it is sufficient to note that the discharge valve **16** is provided with a valve stem **20** that is biased towards its closed position to seal the container **14** by a coil spring **22**, and the adapter cap member **18** is fitted to the container **14** so that the central passageway **24** therein com-

municates with the central opening **26** in the valve stem **20**. The adapter cap member **18** also includes an enlarged sleeve **28** having an external diameter designed to receive the neck portion **12** of the balloon **10** with a tight fit, and the adapter cap member **18** can be pressed downwardly to depress the valve stem **20** and selectively open the container **14**. Thus, when the neck portion **12** of the balloon **10** is fitted onto the adapter cap member **18** as illustrated in FIG. 2, it is only necessary to then depress the adapter cap member **18** to inflate the balloon **10**.

According to the present invention, the container **14** is charged with a quantity of lighter-than-air gas, preferably helium, which is measured to substantially counterbalance the weight of the balloon **10** when the entire contents of the container **14** is discharged into the balloon **10** to inflate the same. Thus, the user of the amusement device of the present invention simply has to depress the adapter cap member **18** until there is no further flow of helium into the balloon **10**, and the result will be that the inflated balloon will reach a state of gravitational equilibrium without any guesswork on the part of the user as to how much helium is needed for the balloon **10** to reach this state.

It is, of course, apparent that a balloon which is in a state of gravitational equilibrium will provide a novel source of amusement for children in a number of ways, only one of which is depicted in FIG. 1 where a child is shown jumping over balloons **10** which are freely floating in a suspended disposition above a sidewalk.

In the preferred embodiment of the present invention, a conventioinal 16-inch diameter balloon (commonly referred to as a "punch ball") is used together with a container **10** having a volumetric capacity of 35 ozs. The balloon **10** has a dead weight of approximately 1 oz., and the container **10** is charged with a supply of helium at approximately 150 p.s.i. This measured quantity of helium, when it is discharged into the balloon **10** to inflate the same, will normally result in the balloon **10** substantially reaching the aforementioned state of gravitational equilibrium.

It will be noted, of course, that there are environmental factors (i.e., ambient temperature) which will affect the equilibrium of the balloon **10**, and which may in some cases result in the balloon **10** having a noticeable tendency to rise or fall rather than remain in a state of substantial equilibrium. Accordingly, the present invention also provides means for selectively varying the weight of the balloon through a predetermined range, with the measured quantity of helium being selected to substantially counterbalance a balloon weight within this predetermined range.

In the preferred embodiment of the present invention, the weight of the balloon **10** is varied by an exceptionally simple arrangement which is particularly suitable for use by children because of its simplicity and durability. As best seen in FIG. 3, the balloon **10** is formed with a resilient nipple **30** that projects outwardly from the surface of the balloon **10** as illustrated. This nipple **30** is formed of rubber and is therefore readily deformable and entirely safe for play. A plurality of washer-like ballast elements **32** are provided for use with the balloons **10**, these ballast elements **32** having a central opening therein formed to receive and engage the nipple **30** with a friction fit as illustrated in FIG. 3. Thus, to vary the weight of the balloon **10**, the user simply attaches or detaches ballast elements **32** from the nipple **30**.

Preferably, a 1 oz. balloon is packaged with four ballast elements **32**, each weighing approximately one-third of an ounce whereby the balloon weight can be varied through a range of 1 oz. to 2.33 ounces. Two of the ballast elements **32** may be attached to the nipple **30** of the balloon initially, and the quantity of helium in the container **14** is measured to counterbalance a corresponding balloon weight of 1.66 ounces. If the aforementioned environmental factors result in the inflated balloon having a slight tendency to rise or fall, one or both of the ballast elements **32** on the balloon **10** may be detached, or one or both of the extra ballast elements **32** may be attached to the balloon. It is to be understood, of course, that the ballast elements **32** may have any desired weight, or that other types of ballast may be used without departing from the scope of the present invention, the particular weights given above being for purposes of illustration only.

Finally, the present invention provides for effectively sealing the balloon **10** against slow leakage of helium through the walls thereof. It is known that helium, because of its usual rarity, sometimes tends to pass through minute openings in the greatly expanded walls of a rubber balloon, even though air would not pass through these openings because of their minuteness. Since the source of helium will be entirely expanded in initially inflating the balloon **10**, it is very desirable to contain the helium within the balloon **10** for an extended period. Accordingly, the present invention provides for introducing a small quantity of liquid sealant into the balloon **10**, preferably prior to packaging it for sale with the container **14**, and closing the opening in the neck portion **12** of the balloon **10** by folding it against itself and securing the fold with suitable tape or the like. The liquid sealant may then be spread over the interior surface of the balloon **10** prior to inflation thereof by squeezing the deflated balloon **10** (FIG. 2) progressively along the length thereof, or by first inflating the balloon **10** (FIG. 3) and then manipulating it to cause the sealant to be spread over the interior surface of the balloon **10**. In either case, it is possible to form a thin film of liquid sealant **34** over the interior surface of the balloon **10** to seal the same, the film of liquid sealant **34** being shown slightly exaggerated in FIG. 3 for clarity of illustration. Preferably, the liquid sealant should be of the type having high surface tension characteristics whereby the sealant acts to bridge any minute openings in the balloon walls and prevent leakage of helium therethrough. Glycerol is a typical example of a high surface tension liquid sealant which is entirely satisfactory for use in the present invention.

If a liquid sealant is used in the balloon **10**, it will of course, be necessary to take into account the weight of this sealant in arriving at the measured quantity of helium to be supplied in the container **14**.

The present invention has been described in detail above for purposes of illustration only and is not intended to be limited by this description or otherwise to exclude any variation or equivalent arrangement that would be apparent from, or reasonably suggested by, the foregoing disclosure to the skill of the art.

I claim:

1. An amusement device consisting of the combination of an inflatable toy balloon and a container charged with a pressurized supply of lighter-than-air gas, said container including adapter means for receiving the neck portion of said balloon, and including selectively operable valve means for discharging said gas into said balloon through said neck portion thereof to inflat said balloon, and said container being charged with a quantity of said gas measured to substantially counterbalance the weight of said balloon when the entire contents of said container is discharged into said balloon and thereby cause the inflated balloon to reach a state of gravitational equilibrium.

2. An amusement device as defined in claim **1** and further characterized in that said balloon includes means for selectively adjusting the weight thereof through a predetermined range, and in that said quantity of gas in said container is measured to substantially counterbalance a balloon weight within said predetermined range.

3. An amusement device as defined in claim **2** and further characterized in that said balloon contains a small quantity of liquid sealant, said sealant being capable of

covering the interior surface of said balloon to seal said balloon against leakage when it is inflated with said gas.

4. An amusement device as defined in claim 2 and further characterized in that said weight adjusting means includes ballast elements which are selectively attachable to and detachable from said balloon.

5. An amusement device as defined in claim 4 and further characterized in that said balloon is formed with a resilient nipple protruding therefrom, and in that said ballast elements have an opening therein formed to engage said resilient nipple with a friction fit.

6. An amusement device as defined in claim 5 and further characterized in that said lighter-than-air gas is helium.

7. A toy balloon formed with a resilient nipple projecting outwardly from the surface of the balloon having a washer-like ballast elements selectively attached thereto with a friction fit for adjusting the weight of said balloon through a predetermined range, said balloon being inflated with a quantity of lighter-than-air gas measured to substantially counterbalance a balloon weight within said predetermined range whereby said balloon may be caused to reach a state of gravitational equilibrium.

8. A toy balloon as defined in claim 7 and further characterized in that said balloon is inflated with helium, and in that the interior surface of said balloon is covered with a thin film of liquid sealant to prevent leakage of said helium through the wall of said balloon.

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