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2,178,551

AERIAL TOY

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Fig. 1.

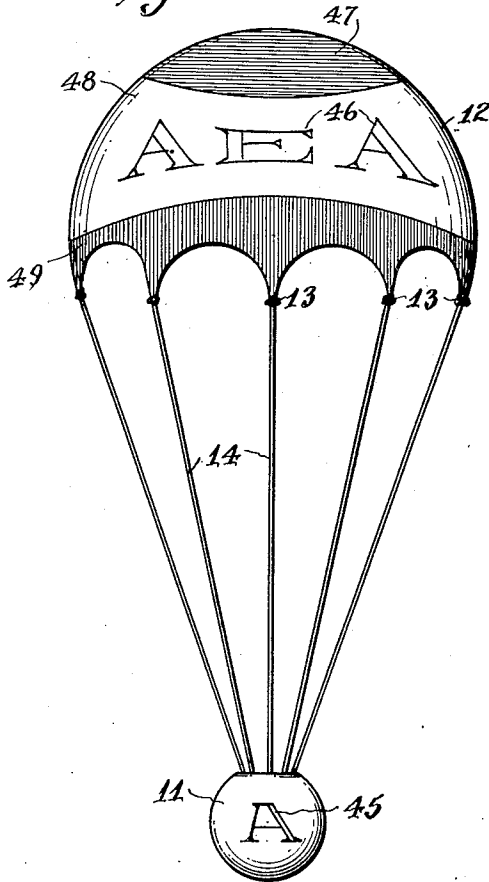


Fig. 2.

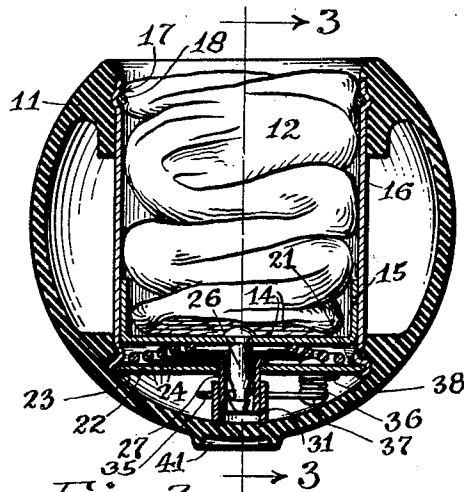


Fig. 3.

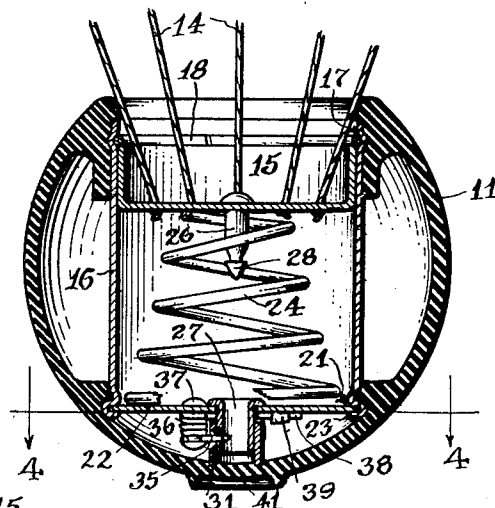


Fig. 4.

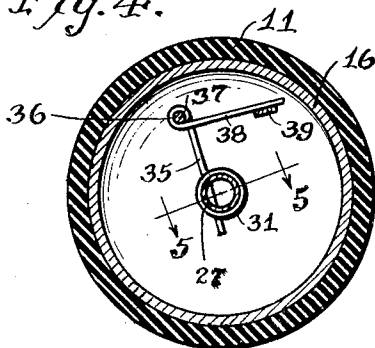
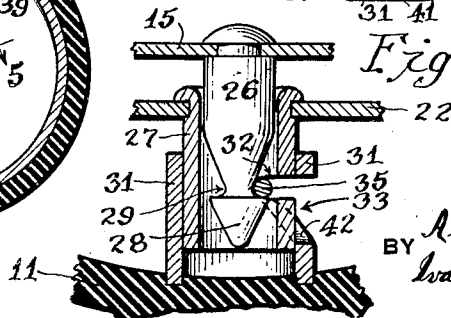


Fig. 5.



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AERIAL TOY

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5 Claims. (Cl. 46—86)

My invention relates to parachutes of the type which are thrown into the air while in a compressed or collapsed condition and which open out into parachute formation for the slow return descent and the invention has particular reference to a parachute suitable as a toy, or for advertising purposes and the same may be used as a signal device such as in aviation, the entire unit being contained within a spherical housing when the bag is collapsed, the spherical shape allowing for ease of projection into the air, after which the bag is positively expelled from the sphere where it unfolds into open position preparatory to its descent.

I am aware that toy parachutes have been made which are folded and confined within two hollow hinged half shells or hemispheres and when thrown into the air snap open to release the bag for descent, but there is no certainty that the shells will open properly or that the bag will unfold at the proper time. Even when satisfactorily opened, the awkward position of the shells, their uncertain, shifting center of gravity does not give a good performance for the desired descent.

I am also aware that toy parachutes have been made in which the bag is temporarily stored in a body part for projection into the air some times being shot like an arrow or dart while the bag is kept from escape by the resistance of the air, but when the bag is ready to open its body container falls to earth leaving the bag to descend slowly. Such a toy is not entirely satisfactory as there is much uncertainty of opening of the bag and danger of the relatively heavy parts falling without restraint.

The present invention contemplates what may be called a toy parachute or an aerial toy to distinguish it from full size parachutes capable of carrying a person and its usefulness covers many fields of purpose aside from that of a mere amusement device. In college football games, for example, the rooting section by throwing parachutes of the present invention into the air and which may have bags of their teams' colors, very effectively give inspiration to the players.

Such devices given as premiums, for example, may well prove valuable in advertising a product. Also on the airfield, toy parachutes of the type herein described are useful as signals giving landing notices, etc. Irrespective of the purpose to which the invention may be applied, its construction and operation are such as to adapt it

to many uses without fundamental change in its structure.

An object of the present invention is the provision of an aerial toy in which all parts are permanently secured together and after ascending as a single compact ball-like unit, return in parachute form as a unit, a spherical housing in which the parts are stored when compacted, becoming a balanced properly weighted gondola for the opened parachute bag which is positively ejected from the housing at the peak of the ascent.

A further object is the provision of a toy parachute consisting of a one piece rubber ball constituting a spherical housing adapted to be thrown in the air and in which is contained an air cylinder having a movable piston directly connected to the bag, the bag when collapsed being placed inside of the cylinder and against the piston, a catch device fully contained within the ball holding the piston in a depressed position within its cylinder to provide space for the bag, the catch device being released to unlatch the piston by pressure applied to the outside of the ball whereupon the piston positively ejects the bag at the proper time for descent.

Another object is the provision of a toy parachute of the character described in which a spring interposed between the piston and one end of the cylinder provides for the desired ejecting action, the fit of the piston within the cylinder giving the necessary delayed timing for the proper ejection of the bag from the spherical housing, the air holding action on the piston being enhanced by the imperforate one piece wall of the spherical housing.

Still another object is the provision of an advertising toy parachute which comprises a spherical housing adapted to contain a parachute bag on the outer surface of which may be suitable advertising matter which, however, is hidden from view when the bag contained within its housing is thrown aloft but which is positively ejected from the housing for the return descent, the bag in opening suddenly displaying the hidden advertising matter, the sudden appearance of this material bursting upon the sight providing a very effective means of advertising.

A further object of the invention is the provision of a toy parachute suitable for use for signal purposes as a means of conveying various forms of intelligence such as would be of value for the Government signal corps or as landing or other signals for airplanes, the bag of the parachute being adapted to be compactly con-

fined in a spherical housing which may be thrown from an airplane or otherwise projected into the air whereupon the parachute bag is positively ejected into open parachute formation, the bag being composed of various colors or designs or containing suitable insignia for the purpose of imparting information to parties having a knowledge of the signals being displayed.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is a front elevation of a toy parachute embodying the present invention, the parachute being fully extended as when descending;

Fig. 2 is a longitudinal sectional view on an enlarged scale showing the collapsed bag fully contained within the spherical housing;

Fig. 3 is a view similar to Fig. 2 being a section taken substantially along the section line 3—3 of that figure and showing a different position of the movable parts but with the bag removed;

Fig. 4 is a plan sectional view as taken substantially along the line 4—4 in Fig. 3; and

Fig. 5 is an enlarged fragmental sectional detail of the catch device as viewed in the plane indicated by the line 5—5 in Fig. 4 and showing the parts in locked position.

As a preferred embodiment of the invention there is shown in the drawing a hollow spherical housing 11 made of rubber or other flexible material. This sphere is slightly flat on top where it is open, thus providing access to the inside. A parachute bag 12 of suitable fabric such as silk, cotton or the like, is tied at spaced corners 13 to supporting lines or cords 14, the ends of which extend through the open top of the housing and into a hollow cup shaped piston 15.

Piston 15 has a close sliding fit inside of a suitable cylinder 16 located inside of the housing and secured thereto. The contacting parts of the housing may be vulcanized to the cylinder if desired as this is a permanent connection. At the open end of the housing the cylinder 16 is beaded outwardly to form an inner groove 17 which affords a seat for a split spring stop ring 18. When the ring is in its seat it forms a barrier at the open mouth of the housing extending across the inner surface of the cylinder and limits the outward travel of the piston 15.

At the bottom the cylinder 16 is beaded at 21 to form a seat for an end or bottom 22 and the terminal bottom edge of the cylinder wall is curled over and under the outer edge of the bottom as at 23 to form a tight joint between the cylinder and its bottom end. The cylinder bottom 22 forms a support for a coil spring 24 the upper part of which engages the lower surface of the piston 15. This spring provides the propelling force for moving the piston within its cylinder when it is ejecting the bag as will now be more fully described.

When the piston 15 is pushed in from its outer position, this being done by hand, it compresses the spring 24 and in its depressed position (Fig. 2) it is spaced only a slight distance above the cylinder bottom 22. It is locked in this position by a catch device illustrated in detail in Fig. 5. This leaves a space inside of the cylinder 16 for the storage of the folded and collapsed bag 12 and for the cords 14 as shown in Fig. 2.

A locking pin 26 is secured centrally of the piston

bottom wall being riveted at its upper end and projecting down below the bottom. A sleeve 27 is centrally disposed in the cylinder bottom 22 being riveted over at its top in an opening formed in the cylinder bottom wall. When the piston 15 is in its depressed position (Figs. 2 and 5) the locking pin 26 extends down into the sleeve 27. The pin 26 at its bottom end is formed with a conical head 28 and just above the head a small diameter waist section 29 tapers out and merges with the body of the pin.

The sleeve 27 extends into an outer concentric collar 31 the lower end of which is anchored in the flexible wall of the rubber housing 11. This collar constitutes a catch release for nullifying the holding action of the catch device when the piston is to be released from its depressed position. The sleeve 27 is slotted at 32 on one side and the upper edge of this slot is normally in alignment with the upper edge of a notch 33 cut into the collar 31 at one side.

A lower laterally extending leg 35 (Figs. 4 and 5) of a coil spring 36 is adapted to pass through both notch 32 and slot 33 where the leg under the spring action presses into the inner end of the slot. The coil spring 36 is coiled around a pin 37 the upper end of which is riveted in the cylinder bottom 22. An upper laterally extending leg 38 of the spring is held against a lug 39 struck out from the cylinder bottom (see also Fig. 3). This holds the spring under tension with the leg 35 extending across and inside of the sleeve 27.

In the inner position of the spring leg 35, it is in the path of the locking pin 26 when the piston 15 is pushed down into its depressed position. In passing into the sleeve 27 the conical head 28 of the pin strikes against and pushes back the spring leg 35 allowing it to snap over the head and enter into the waist section 29 of the pin, as shown in Figs. 3 and 5. This locks the parts in place since the inwardly held spring leg is caught between the wall of the slot 32 and the larger section of the head of the locking pin. It also holds the spring 24 compressed and the bag fully housed. This is the position of the parts up until the time the device is to be thrown into the air.

The spherical shape of the housing provides a convenient form for holding in one hand and is in effect merely a rubber ball as far as outside appearances. Just under the place where the collar 31 is anchored to the rubber there is formed in the round surface of the sphere an annular ridge 41 which constitutes a pressure button for the thumb or finger. At the time the ball is thrown, a slight digital pressure at this point actuates the catch release by sliding the collar inwardly, which action unlocks the piston 15 from its depressed position.

The notch 33 (Fig. 5) of the collar 31 is formed V-shaped and inclined walls 42, of the notch, wedge in behind and push out on the spring leg 35 as the collar moves up along the sleeve 27. As soon as the spring leg 35 moves from holding position, the locking pin 26 is drawn up by the spring 24 and the spring leg moves back into the end of the slot as the conical head clears the space. The wall of the spherical housing being flexible sufficient sliding of the collar is thus obtained.

The spring 24 does not immediately force out the piston 15. The snug fit of the piston within the cylinder 16 requires some time for the air to displace the vacuum in the cylinder under the piston. The imperforate rubber wall of the

spherical housing 11 which extends entirely around the outside of the cylinder precludes any entrance of air through the cylinder wall. A delayed timing results while the piston is slowly moving out and positively ejecting the bag 12 but the bag does not leave the housing until the parts have reached the zenith of their travel. At that time, however, the air, catching into the folds of the ejected bag, brings it into parachute formation for the slow return descent.

Where the device is to be sold as a toy for a child to handle a relatively weak spring 24 but of the right strength will be provided but if the parachute is to be used for signal purposes or is to be thrown greater distances a different spring of the proper proportions will be inserted. This will usually be done by the manufacturer to supply the required market. To change the spring 24 it is merely necessary to snap out the split stop ring 17 from its groove 17, take out piston and spring and replace the parts, finally locking them in assembled position by again inserting the stop ring.

Where the device is to be used for advertising purposes the proper wording or legend may be painted or otherwise applied to the outer surface of the spherical housing. The numeral 45 in Fig. 1 suggests this feature. In addition to this or instead of having the advertising in plain sight at all times on the housing, it may be applied to the bag as at 46 in Fig. 1. It is then concealed when the bag is housed in the ball but becomes very effective as a surprise when the bag opens for its descent.

In signal work or for certain game uses the bag may be formed with different colors as at 47, 48 and 49 and the particular colors and their arrangement on the bag surface will produce the results desired. Thus will be seen some of the varied uses of the invention. All of the device sections, being contained within a flexible rubber ball, can be thrown about without fear of any danger.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A toy parachute comprising a housing having an open end which remains open at all times, a collapsible bag, a cylinder secured in said housing with an open end at the opening in said housing, said cylinder being adapted to fully contain said bag when collapsed to condition the parachute to be thrown aloft, a piston slidably mounted in said cylinder and secured to said bag by cords, said piston having a depressed position out of the way of said collapsed bag when the latter is fully contained in said cylinder, means for holding said piston in its depressed position to permit said collapsed bag to remain fully within said cylinder and inside of the mouth of said housing opening, and means for moving said piston from its depressed position into a position at the open mouth of said cylinder while ejecting said bag from its housing and out through the open end of the housing so that it will open and provide for slow descent of the parachute.

2. A toy parachute comprising a hollow flexible housing having an open end which remains open

at all times, a collapsible bag, a cylinder secured in said housing in position to leave a space between it and a part of the flexible housing wall and having a closed end inside of and adjacent the inner wall of the housing and having an open end at the opening in said housing, said cylinder being adapted to fully contain said bag when collapsed to condition the parachute to be thrown aloft, a piston slidably mounted in said cylinder and secured to said bag by cords, said piston having a depressed position adjacent the closed end of said cylinder where it is out of the way of said collapsed bag when the latter is fully contained in said cylinder, a catch device mounted on a wall of said piston inside of a space adjacent a flexible part of said housing for holding said piston in depressed position, and spring means effective when said catch device is released by pressure against the adjacent flexible wall of said housing for moving said piston from its depressed position into a position at the open mouth of said cylinder while ejecting said bag through its housing opening so that it will open and provide for slow descent of the parachute.

3. A toy parachute comprising a hollow resilient spherical housing having an open end, a collapsible bag, a cylinder secured in said housing and having a closed end inside of and adjacent the inner wall of the housing and having an open end at the opening in said housing, said cylinder being adapted to fully contain said bag when collapsed to condition the parachute to be thrown aloft, a piston slidably mounted in said cylinder and secured to said bag by cords, said piston having a depressed position adjacent the closed end of said cylinder where it is out of the way of said collapsed bag when the latter is fully contained in said cylinder, a catch device secured to the closed end of said cylinder and engaging an extension of said piston for holding the piston in its depressed position, a catch release located between said closed cylinder end and the resilient wall of said housing at a position directly opposite its open end and movable by pressure against said resilient housing wall for nullifying the holding effect of said catch device, and means operable when the piston is released from said catch device for moving said piston from its depressed position into a position at the open mouth of said cylinder while ejecting said bag from its housing so that it will open and provide for slow descent of the parachute.

4. A toy parachute comprising a hollow resilient spherical housing having an open end, a collapsible bag, a cylinder secured in said housing and having a closed end inside of and adjacent the inner wall of the housing and having an open end at the opening in said housing, said cylinder being adapted to fully contain said bag when collapsed to condition the parachute to be thrown aloft, a piston slidably mounted in said cylinder and secured to said bag by cords, said piston having a depressed position adjacent the closed end of said cylinder where it is out of the way of said collapsed bag when the latter is fully contained in said cylinder, a catch device secured to the closed end of said cylinder and engaging an extension of said piston for holding the piston in its depressed position, a catch release located between said closed cylinder end and the resilient wall of said housing at a position directly opposite its open end, a pressure button formed in the exterior wall of said housing and located opposite said catch device for engagement by digital pressure to move

said catch release for nullifying the holding effect of said catch device, a removable stop ring located in the wall of said cylinder at the open end of said housing for limiting the outward position of said piston, and spring means confined below said piston and operable when the latter is released from said catch device for moving said piston from its depressed position into a position against said stop ring and at the open mouth of said cylinder while ejecting said bag from its housing so that it will open and provide for slow descent of the parachute.

5. A toy parachute comprising a hollow spherical housing of rubber adapted to be thrown aloft, said housing being flat on top and provided with an open mouth, a collapsible bag having connecting cords secured to its marginal edge, a movable disc mounted in said rubber housing and

connected to the cords of said bag, said disc having a depressed position permitting storage in said housing of the collapsed bag and its cords, an ejecting spring interposed between the bottom of said disc and said housing, a spring catch device for holding said disc in its depressed position while keeping said ejecting spring under compression, a catch release also located in said housing and operable by digital pressure against the wall of the housing to release the holding action of said catch device whereby said ejecting spring moves said housing while ejecting said bag so that it will open and provide slow descent of the parachute, and means for holding said disc inside of the mouth of said housing while descending.

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