United States Patent

[11] **3,600,842**

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[54] **BUBBLE-PRODUCING GLIDER TOY**
3 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **46/6,** 46/79
[51] **Int. Cl.** **A63h 33/28**
[50] **Field of Search** 46/6–8, 79, 80, 81, 74, 76, 77; 35/30, 34, 72; 229/4.5, 21, 93

[56] **References Cited**

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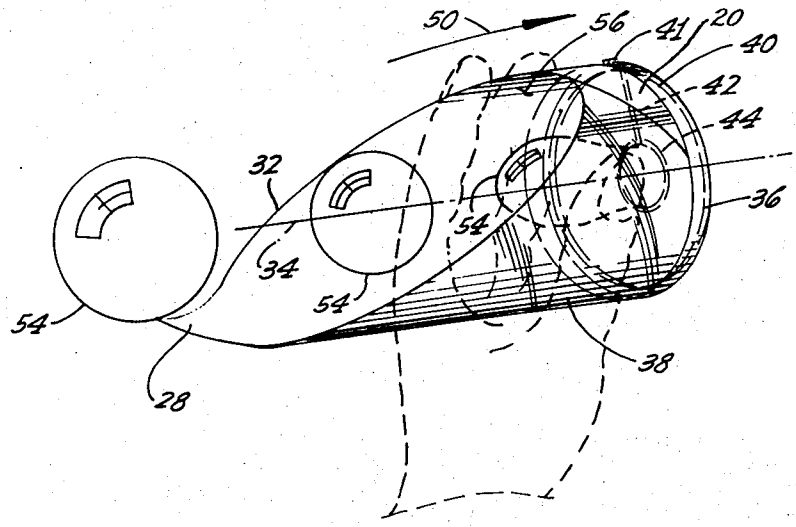
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Primary Examiner—Louis G. Mancene
Assistant Examiner—J. A. Oliff
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ABSTRACT: This glider toy is formed of a light plastic hollow cylindrical body the leading edge of which is circular and lies in a plane normal to the cylindrical axis. This leading edge is reenforced by a plastic band which serves to support at least one plastic strut which projects inwardly toward the cylindrical axis and supports a plastic bubble ring slightly forward of the leading edge of the cylindrical body but coaxially therewith. The trailing edge of the body is angularly disposed with respect to the cylinder axis. While the body may be formed of any lightweight material, such as paper, acetate, etc., thin sheet polystyrene is preferable.



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Fig. 1

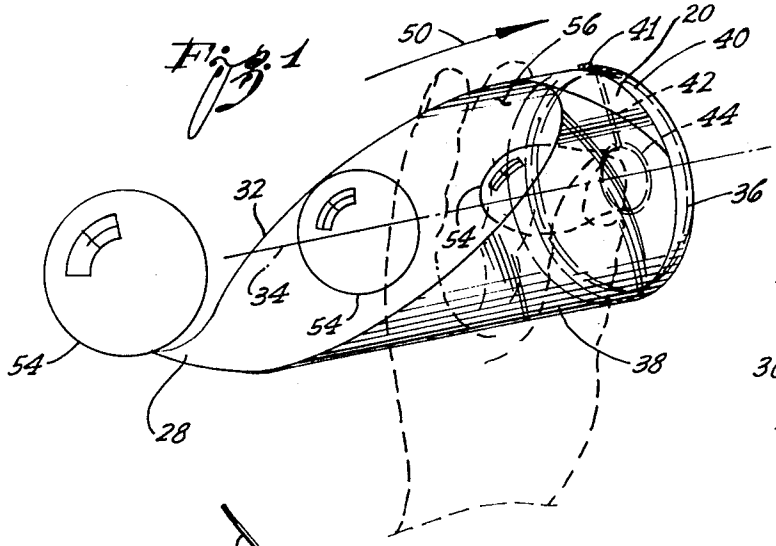


Fig. 4

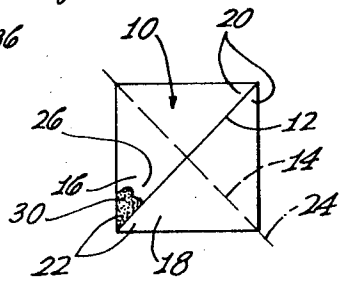


Fig. 2

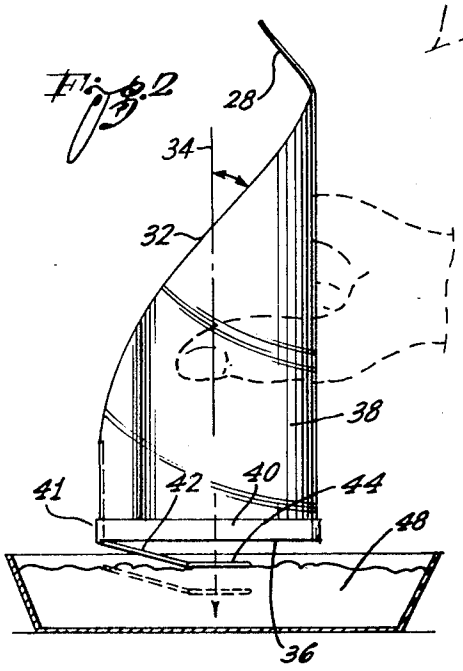


Fig. 5

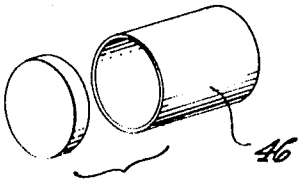


Fig. 3

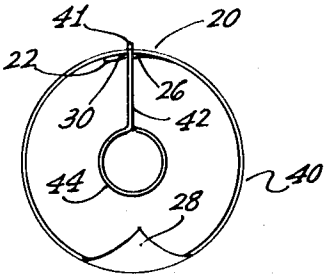
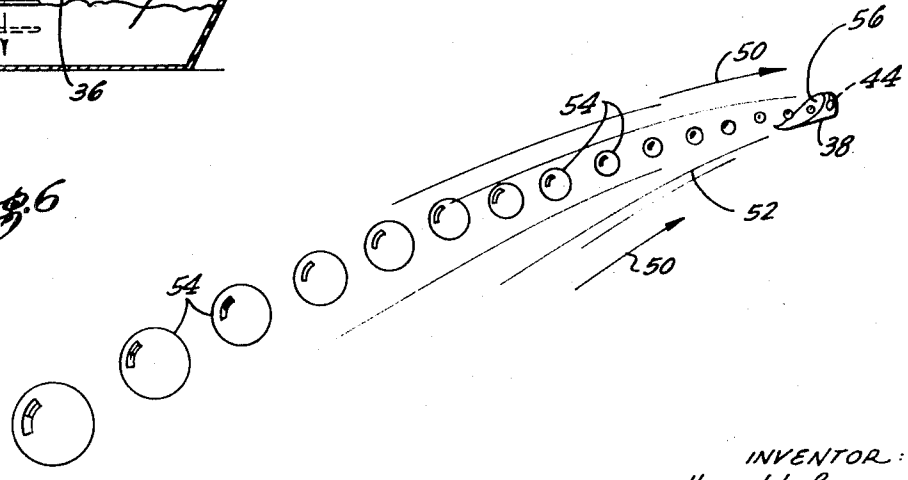


Fig. 6



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BUBBLE-PRODUCING GLIDER TOY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to lightweight toy gliders in general and in particular to such a toy which, in addition to gliding through the air, performs the further function of dispensing bubbles formed of a soap or glycerine film.

2. Description of the Prior Art

Gliders of many different configurations have been devised over the years and formed of various types of lightweight materials, such as paper and plastic sheets. Examples of such gliders may be found in the U.S. Pat. Nos: 2,154,487 to E. Bonnell; 2,529,979 to R. B. Turnbull; 2,744,355 to B. E. Del Mar; 3,010,250 to C. E. Huston, Jr.

It will be noted, however, that each of the gliders disclosed in these patents is substantially planar in its airfoil configuration. As such they present problems in packaging for shipment since each glider, being light in weight, is fragile and must be protectively boxed to prevent damage.

The use of rings to form and dispense soap or glycerine bubbles is, of course, old as shown for example in the U.S. Pat. to Warham, No. 2,118,748, and to Raspet, U.S. Pat. No. 2,514,009. While the Warham patent shows the use of a ring in conjunction with a cylinder, there is no suggestion in that patent that the cylinder therein disclosed might glide. The cylinder is simply a bubble blowing tube.

In a U.S. Pat. No. 3,002,314, issued in 1961 to I. Brottman, there is disclosed a rocket toy which comprises a tubular body of relatively thick-walled molded plastic, tapered at both ends, and provided with stabilizers and a bubble solution retainer means at its rear end. This toy is structurally relatively heavy since it is made of molded plastic material and is intended to be projected by means of a sling. As such it could not be classed as a glider. Moreover, it differs from the present invention in that its bubble dispenser is formed as an integral part of the tail section. The Brottman toy appears to be far more expensive to manufacture than the glider herein disclosed and claimed.

The expired U.S. Pat. to M. A. Brosseit, No. 2,409,471 discloses a toy airplane with provision for dropping spherical bubbles simulating bombs, but this is accomplished by providing air under pressure through the squeezing of a special bulb. The toy does not employ air passing through the body during the course of its movement to produce the bubbles, nor is it intended to glide through the air.

The choice, therefore, which has been offered by the prior art is either (a) a planar-type airfoil glider without bubble-dispensing means; or (b) a molded tubular rocket-type device which is too heavy to glide and is relatively expensive to manufacture—at least insofar as initial mold costs are concerned. This latter device cannot, therefore, be sold cheaply and in any event is not suitable to accomplish the objectives of the present invention. The planar type airfoil gliders of the prior art, on the other hand, not only do not dispense bubbles, but they present difficult problems in packaging. For example, if the packaging is not both large and rigid enough to protect the glider, the latter may be damaged during shipment and in handling,—unless, of course, the glider can be broken down into components and sold as an assembly kit. However, if the packaging is made large and rigid enough to protect the enclosed glider, the packaging may cost more than the glider itself.

SUMMARY OF THE INVENTION

The present invention comprises a glider which is constructed of a thin sheet of flexible material such as paper, polystyrene or mylar. This sheet is bent around into a cylindrical form with two of the opposite edges being brought together and secured to each other to form a light short length tube. The thus bent sheet may be formed by cutting a square sheet on its diagonal and then bending the sheet to superimpose the equiangular corners one upon the other. Thereby a tube is formed, the trailing edge of which lies in a plane disposed at an angle of approximately 45° with respect to the tube axis. Alternatively the tubular body could be integrally molded to such shape.

The leading edge of the tubular body is reinforced by a plastic ring which serves to provide some weight at the forward end and, in addition, supports one or more struts extending forwardly and radially inwardly toward the tube axis where they hold in coaxial alignment with the tubular body a bubble dispensing ring. The ring and supporting strut or struts provide additional weight at the forward end of the body, thereby enabling it better to glide freely through the air when thrown forward gently into a gliding path substantially initially coinciding with the axis of the tubular body. At the same time, if the ring has been dipped into a saponaceous solution, the air movement against the ring and leading edge of the body causes bubbles to be dispensed rearwardly from the ring and to pass through the tubular body and out of its open trailing end. Both the glide and dispensing of bubbles in this manner by the device of the present invention present an interesting and entertaining spectacle to those witnessing the same.

The device may be fully assembled at the plant of a manufacturer, in which case it must be either specially boxed to protect it because of its relatively fragile structure, or it may be sold as a kit comprising a flat sheet and the other components which can be packaged on a cardboard enclosed in a flat envelope. Because of its cylindrical shape, the device, if sold and shipped fully assembled, may be packaged in a relatively inexpensive cardboard tube which will protect it against damage during shipment and handling.

Because of the simplicity of its construction and small amount of relatively inexpensive material which is required to fabricate its components, the device can be produced at a very low cost so that it can be sold profitably at a price which would not deter people from purchasing it, particularly since it is novel in both appearance and function, and easily employed by even a very young child.

BRIEF DESCRIPTION OF THE DRAWING

In the accompanying drawing,

FIG. **1** is a perspective view of the glider toy as it is held for use and begun to be moved through the air just prior to its release for its glide;

FIG. **2** is a side elevation showing how the bubble ring is dipped into a saponaceous solution;

FIG. **3** is a front elevation of the glider;

FIG. **4** illustrates the sheet pattern after cutting and before bending to form the body;

FIG. **5** is a perspective view of a cardboard container for the glider; and

FIG. **6** is a reduced perspective view illustrating the glide and dispensing of bubbles by the device.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. **1** through **4** of the drawings, a glider constructed in accordance with the present invention may be formed of a square sheet **10** of any lightweight material such as paper, acetate, mylar or polystyrene, etc., although polystyrene of approximately one-sixteenth inch in thickness is presently preferred. This sheet **10** may be cut on one of its diagonals **12** or **14** to divide the sheet into two isosceles triangles **16**, **18**, thereby leaving two corners **20** and **22**, which are equiangular with respect to the perpendicular **24** of the triangles **16**, **18**.

To form the glider body shown in FIGS. **1** through **3**, the triangular sheet **16** or **18** is bent around to bring the corners **20** and **22** to overlap each other slightly. These edges may then be secured together by adhesive **30** which may be applied to the surface **26** prior to the sheet being bent in the manner above suggested. When the corners **20** and **22** are thus joined, the

body will appear as shown in FIGS. 1 and 2 with its trailing edge 32 lying substantially in a plane which intersects the axis 34 of the glider at an angle of 45° as seen in FIG. 2. The tip 28 may be bent upwardly as shown to improve the stabilizing of the glider in flight.

The leading edge 36 of the thus formed glider 38 is reinforced by securing about it a lightweight plastic annular reenforcement 40. This annular reenforcement 40 preferably has integrally molded therewith a plastic strut 42 the extremity 44 of which is formed as a bubble ring. The strut 42 is of such length and disposition relative to the annular reenforcement 40 as to dispose the bubble ring 44 coaxially with the axis 34 of the body 38 and normally to said axis and slightly forward of the annular reenforcement 40.

This glider assembly may be completely put together in a fabricator's plant and boxed in a tubular cardboard container 46 (FIG. 5) or it may be simply sold as a kit comprised of the flat sheet 10, the annular reenforcement 40 and the strut and bubble ring 42, 44, to be put together by the user.

However, the unit may be assembled to appear as it is shown in FIGS. 1 through 3, it is used in the following manner: The ring 44 is dipped in a saponaceous solution 48 (FIG. 2) and then the glider is moved forward in the direction of the arrows 50, FIGS. 1 and 6, and finally released to glide in a pattern 52 as shown in FIG. 6. As the glider body is moved forward in the direction of the arrows 50, bubbles 54 will begin to form on the trailing edge of the ring 44 (See: FIG. 1) and be released therefrom to pass through the hollow center 56 of the glider body 38. As the glide occurs, these bubbles 54 will appear in a trailing series as shown in FIG. 6. The combination of the glide of the body 38 and its simultaneous dispensation of bubbles through the hollow center 56 provide a fascinating spectacle to those witnessing the same. The glide is sustained for a period of time by the airfoil effect of the body and the stability imparted to the body by the previously mentioned tail tip 28.

I claim:

1. An airfoil glider toy adapted to be manually projected on a brief gliding flight through the air, said toy comprising an airfoil body, said body

a. being a rolled thin isosceles triangular sheet of relatively light in weight flexible material, the two equiangular corners of which sheet overlap and are secured to each other;

b. having a short cylindrical forward and a longer tail portion, said tail portion being an integral extension of the cylindrical portion with its trailing edge lines diverging to define a plane intersecting a vertical plane through the longitudinal axis of the cylindrical portion at an acute angle;

c. having a leading edge, an annular reenforcement on said leading edge, said reenforcement providing an increased rigidity for the leading edge of the body and some weight augmentation of the body at said edge, thereby to improve the gliding characteristics of the body, and

d. a bubble-dispensing ring, said ring being disposed slightly forward of the plane in which the leading edge of the body lies, and coaxially with the cylindrical portion of the body, said ring being held in such disposition by means of a lightweight strut secured to the annular reenforcement on the leading edge of the body; whereby when said ring is coated with a saponaceous solution, the projection of the body forwardly will result in the creation of bubbles and their dispensing rearwardly of the ring, thereby to pass through the hollow cylindrical portion of the body and out past the tail portion thereof.

2. A glider toy as described in claim 1, wherein the trailing tip is bent inwardly toward the longitudinal axis of the cylindrical portion.

3. An airfoil glider toy adapted to be manually projected on a brief gliding flight through the air, said toy comprising an airfoil body, said body having

a. a short cylindrical forward portion, a longer tail portion extending integrally from the cylindrical portion and having diverging trailing edge lines defining a plane intersecting a vertical plane through the flight axis of the cylindrical portion at an acute angle;

b. a trailing tip stabilizer on the tail portion bent inwardly toward the longitudinal axis of the cylindrical portion;

c. a leading edge, an annular reenforcement on said leading edge, a lightweight strut secured to the annular reenforcement, and a bubble dispensing ring secured by the strut slightly forward of the plane of the leading edge and coaxial with the cylindrical portion.