United States Patent

Kirk

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[54] SELF-PROPELLED AERIAL TOYS

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[52] **U.S. Cl.** .....**46/74 R,** 46/88

[51] **Int. Cl.** **A63h 27/06**

[58] **Field of Search** .....46/1 H, 74 R, 76 A, 87, 88, 46/89, 90; 124/16; 273/100

[56] **References Cited**

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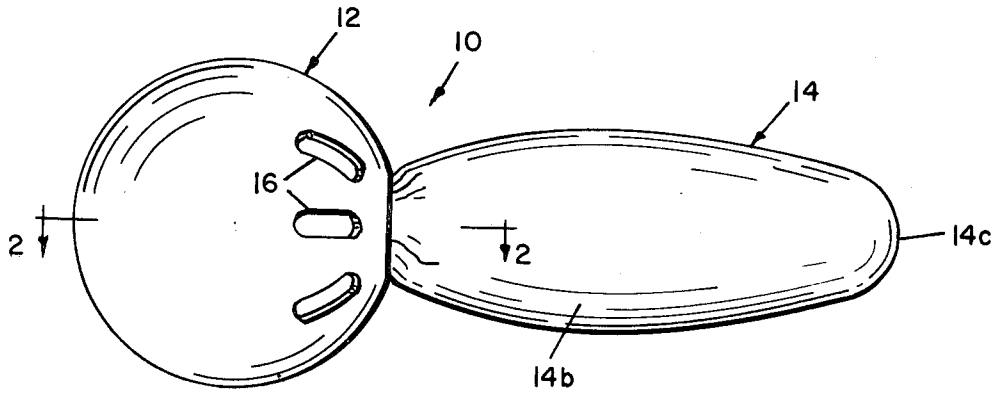
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[57] **ABSTRACT**

An elongated inflated baloon has its intermediate portion passing through and secured in an opening in the wall of a hollow body so that an inner end portion of the baloon is disposed inside the body and its outer end portion extends outwardly, while gas communication between the inner and outer portions is maintained through the intermediate portion of the inflated baloon. While the outer end portion is held by hand of a user, the baloon is introverted by finger pressure directed longitudinally inwardly against its outer end, thus increasing gas pressure inside the baloon and providing reaction force for its propulsion along with the body when the baloon is released.

4 Claims, 4 Drawing Figures



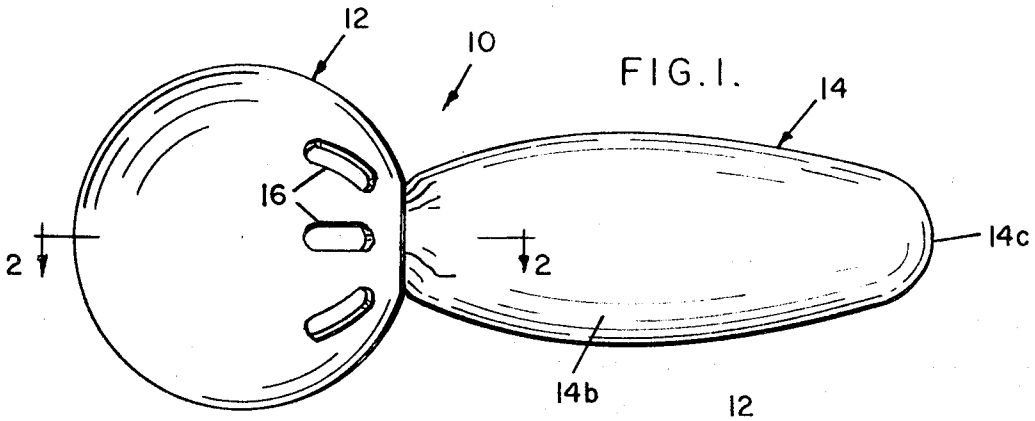


FIG. 1.

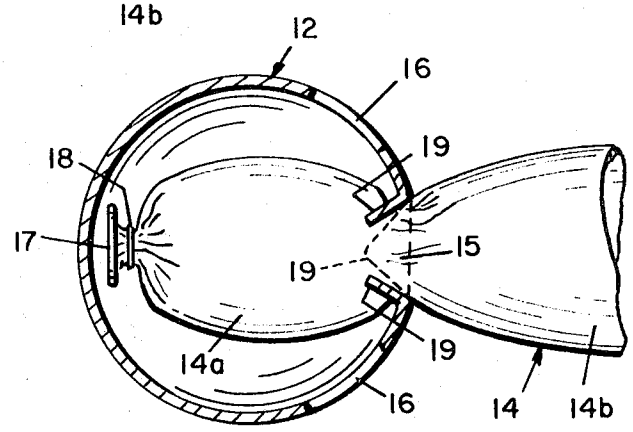


FIG. 2.

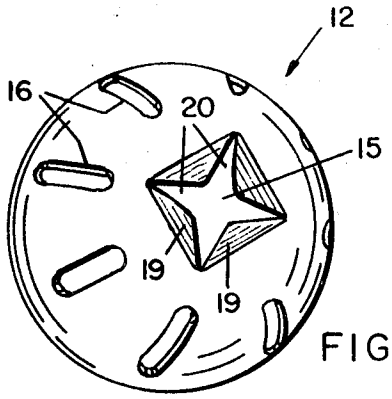


FIG. 3.

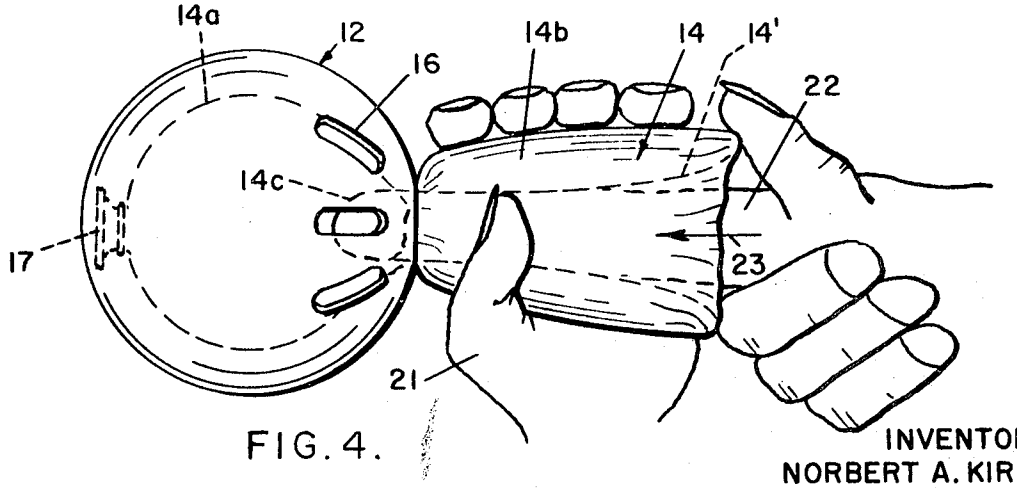


FIG. 4.

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SELF-PROPELLED AERIAL TOYS

This invention relates to new and useful improvements in amusement devices or toys, and in particular the invention concerns itself with an aerial toy or flying toy which is self-propelled by energy of an inflated baloon.

While it is old in the art to provide toys which are propelled by energy of an inflated baloon, the baloon used in such toys is of the jet type in which the inflating gas is discharged and the baloon must be re-inflated for each occasion of use. By contrast, it is the principal object of this invention to provide a flying toy in which the propelling baloon is sealed and inflated at all times, the energy of propulsion being derived by manual introversion of the baloon to increase the gas pressure therein and thus provide a reaction force for propulsion purposes. When this force is expended in the course of a single flight, the introverted baloon resumes its initial shape and is in readiness for the next flight without requiring any inflation at all.

The device of the invention is simple in construction, highly entertaining in operation, easy to use even by young children, and lends itself to economical manufacture.

With the foregoing more important object and features in view and such other objects and features which may become apparent as this specification proceeds, the invention will be understood from the following description taken in conjunction with the accompanying drawings, wherein like characters of reference designate like parts and wherein:

FIG. **1** is a side elevational view of the aerial toy of the invention;

FIG. **2** is a fragmentary view, partly in elevation and partly in section, taken substantially in the plane of the line **2—2** in FIG. **1**;

FIG. **3** is a perspective view of the toy body per se; and

FIG. **4** is a fragmentary side elevational view showing the manner in which the device is held and manipulated during use.

Referring now to the accompanying drawings in detail, the self-propelled aerial toy or flying toy of the invention is designated generally by the reference numeral **10** and consists of two principal components, namely, a hollow body **12** and an elongated baloon **14**.

The body **12** preferably is in the form of a hollow ball or sphere, which may be shaped to simulate a baseball or a football, or the like, and the body **12** has its wall provided with an opening **15** to receive the baloon **14** as hereinafter described. It is also provided with a plurality of vent apertures **16** communicating with the atmosphere.

The baloon **14**, as already stated, has an elongated form and is provided at one end thereof with an inflating neck **17** which may be tied or otherwise closed off as at **18** when the baloon is inflated by blowing air into it through the neck.

The inflated baloon **14** is connected to the toy body **12** by passing the baloon through the aforementioned opening **15** so that the inner end portion **14***a* of the baloon is disposed inside the hollow body **12**, while the outer end portion **14***b* of the baloon extends outwardly from the body, as will be apparent from FIGS. **1** and **2**. Preferably, means are provided for positively retaining the body **12** and the baloon **14** in assembled relation. Such means comprise a plurality of substantially triangular detents **19** which are formed integrally with the wall of the hollow body **12** at the edges of the opening **15** and project inwardly into the body in mutually convergent relation, the adjacent edges of the detents **19** being spaced apart to provide V-shaped notches **20**, as is best shown in FIG. **3**.

When the inflated baloon **14** is passed through the opening **15** into the hollow body **12**, the intermediate portion of the baloon becomes grippingly seated in the V-shaped notches **20** by the restrictive action of the detents **19** on that portion of the baloon. Nevertheless, the opening **15** is sufficiently large for the intermediate portion of the baloon to remain unobstructed and maintain air communication between the inner portion **14***a* and the outer portion **14***b* of the baloon.

Conveniently, the aforementioned detents **19**, formed integrally with the wall of the body **12**, may be bent inwardly during formation of the opening **15**, as will be clearly apparent.

When the body **12** and the baloon **14** are assembled as described, the toy is used by holding the outer end portion **14***b* of the baloon with one hand as indicated at **21** in FIG. **4**. The index finger **22** of the other hand is then pushed against the outer end **14***c* of the baloon so that by longitudinally inward pressure in the direction of the arrow **23**, the baloon becomes introverted or invaginated as indicated at **14'**. This introversion of the baloon may continue until the index finger **22** has passed through the opening **15** in the body **12**, thus in effect bringing the outer end **14***c* of the baloon inside the inner end portion **14***a* within the body **12**, as illustrated in FIG. **4**. The introversion of the baloon causes the gas pressure therein to be increased and the inner end portion **14***a* thereof to become expanded as shown by the dotted lines in FIG. **4**, such expansion being possible by provision of the vent apertures **16** in the body **12**, communicating with the atmosphere.

The device may then be pointed in a desired direction of flight and by simultaneously releasing both hands from the baloon and imparting a directional push thereto, the energy derived from the increased gas pressure inside the baloon will provide a reaction force for propulsion of the device in the desired direction of flight. When the flight is ended, the baloon will resume its initial form as in FIG. **1**, in which it is still inflated and ready for the next flight. The action of the device may be further enhanced if, at the introverting stage shown in FIG. **4**, the index finger **22** is given a partial turn or rotation, as a half-turn for example, which causes the introverted portion of the baloon to become axially twisted. Then, when the baloon is released, the axial twist will impart a rotative force to the body **12**, thus causing both the body and the baloon to rotate while in flight.

Although in the foregoing there has been described and shown the preferred embodiment of the invention, various modifications and equivalents may be resorted to within the spirit and scope of the invention as claimed.

What is claimed as new is:

1. A self-propelled aerial toy, comprising in combination a substantially spherical hollow body provided with an opening communicating with the interior thereof, and an elongated inflated balloon having an intermediate portion thereof secured in said opening so that in inflated outer end portion of the balloon is disposed exteriorly of said body and an inflated inner end portion thereof is disposed in the interior of the body, said opening being of such size that gas communication is maintained between the inflated outer and inner end portions of the balloon through said intermediate portion thereof which is secured in the opening.

2. The device as defined in claim **1** wherein said hollow body is also provided with vent apertures communicating with the atmosphere.

3. The device as defined in claim **1** wherein said opening in said body is provided with substantially V-shaped notches having the intermediate portion of said baloon grippingly seated therein, whereby to constitute means for securing the baloon in said opening.

4. The device as defined in claim **3** together with detents formed integrally with said body and projecting inwardly thereinto in mutually convergent relation, said detents being spaced from each other and defining said notches therebetween.

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