May 17, 1932. M. C. RANSEEN 1,858,460

AERIAL TOY

Filed July 21, 1928 2 Sheets-Sheet 1

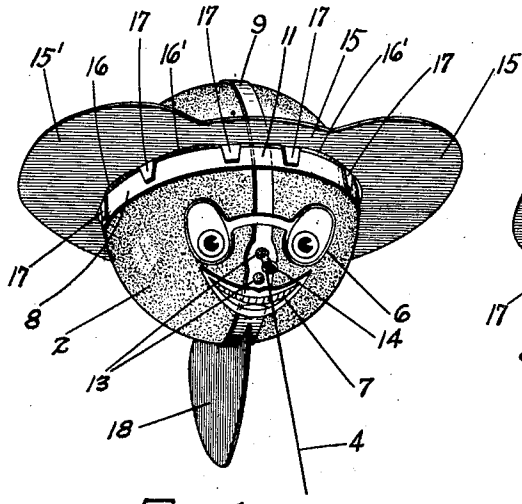


FIG. 1

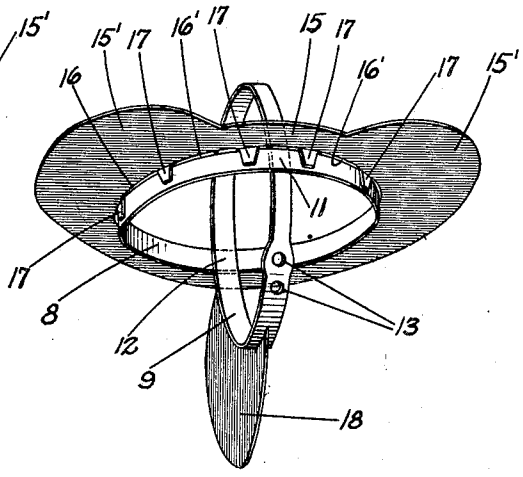


FIG. 2

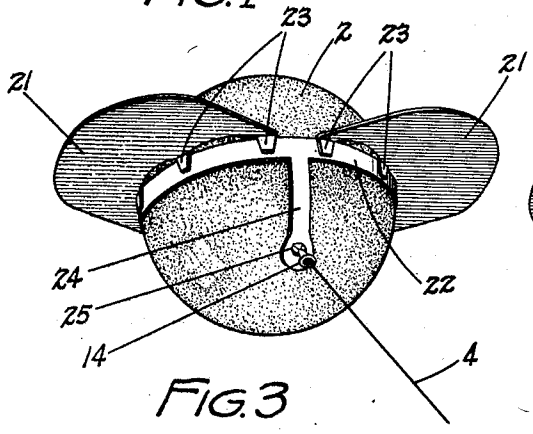


FIG. 3

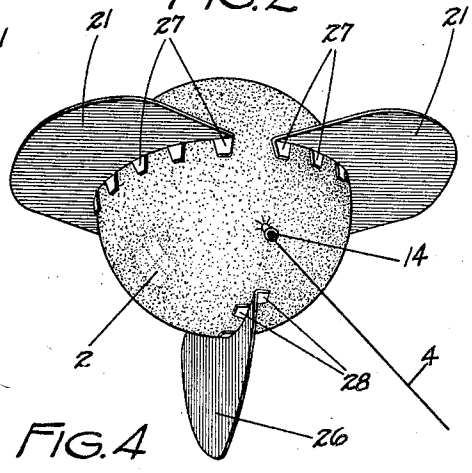


FIG. 4

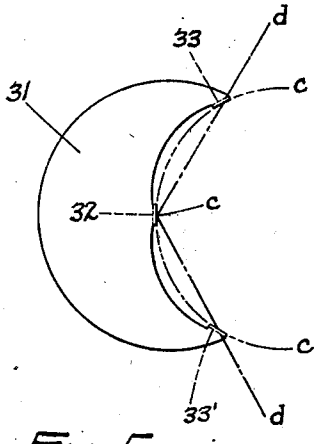


FIG. 5

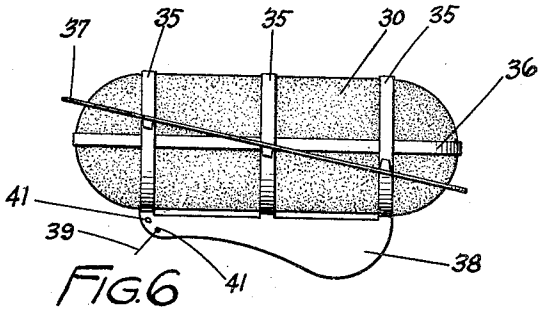


FIG. 6

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AERIAL TOY

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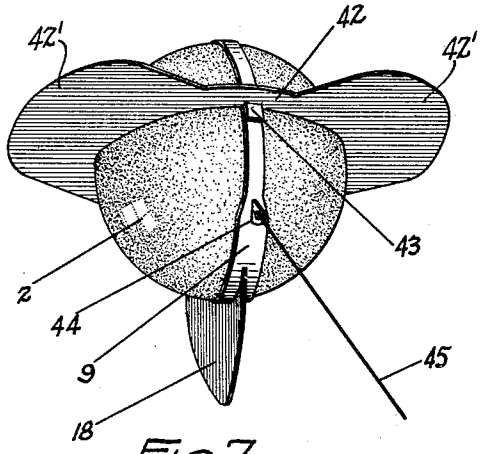


FIG. 7

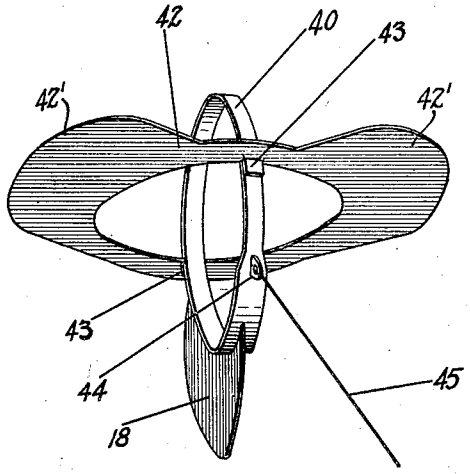


FIG. 8

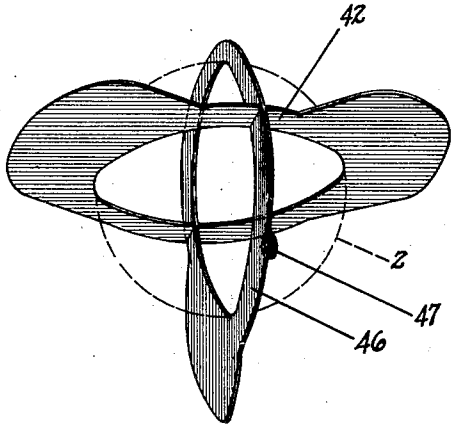


FIG. 9

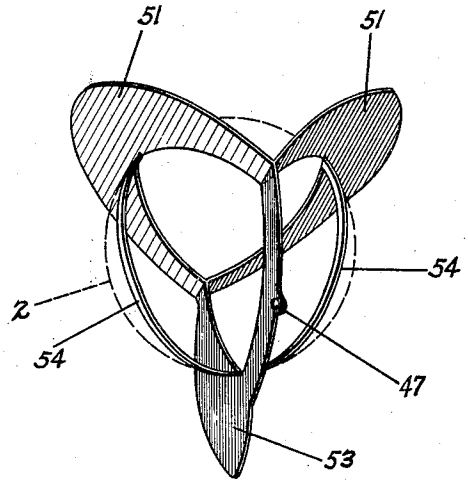


FIG. 10

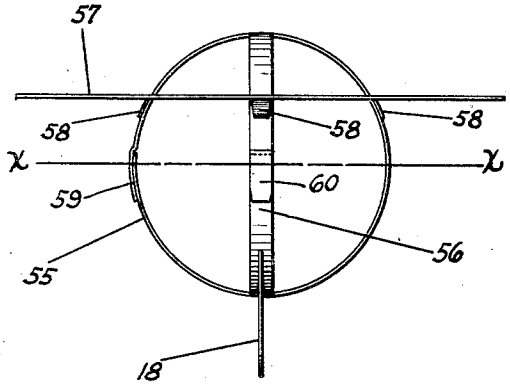


FIG. 11

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Patented May 17, 1932

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UNITED STATES PATENT OFFICE

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AERIAL TOY

Application filed July 21, 1928. Serial No. 294,413.

This invention relates to new and useful improvements in aerial toys, and more particularly relates to such a toy comprising an inflated member or balloon adapted to have a suitable wing structure attached thereto to cause it to rise when entrained.

An object of the invention is to provide an open, cagelike framework adapted to be detachably secured to a toy balloon, and having a wing structure thereon adapted to sustain the balloon in the air, when entrained by a cord, whereby the balloon may be used as a kite, thereby providing a combination toy balloon and kite which will be practical and pleasing to the eye.

A further object of the invention is to provide an attachment for toy balloons, comprising an open, foldable frame structure adapted to be secured to a balloon and having means for lifting and guiding the balloon, when entrained, and the elements of said frame structure being adapted to be folded and packed into a small package with a deflated balloon, and dispensed to the public with a few simple instructions, to enable a child to readily assemble the same.

A further object of the invention is to provide a device for sustaining a toy balloon in the air without the necessity of inflating the same with a special lighter-than-air gas.

A further object is to provide a wing structure for balloons, using a minimum amount of material and embodying a sustaining plane and stabilizing rudder, so constructed and assembled as to allow the convenient removal of the balloon from the structure to permit the substitution of another balloon, in the event of breakage.

A further object is to provide an enclosing structure for an inflated balloon, embodying sustaining wings and a stabilizing rudder, so constructed as to retain the balloon inside the structure, should the balloon become partially deflated.

A further object is to provide a wing member adapted to be attached to an inflated element having a spherical or curved surface, and the edge or portion of the member adapted to engage the element, being shaped to substantially coincide with the curved surface of the inflated element to which it is to be attached thus giving to the wing member an inherent rigidity, when attached to the inflated member.

A further object is to provide an inflatable member having a wing structure attached thereto and made of comparatively light material, the subsequent inflation of the inflatable member imparting rigidity to the wing structure.

A further object is to provide an attachment for a toy balloon comprising a peripheral band having a plane or wing member attached thereto, the peripheral band being adapted to limit the expansion of the balloon to prevent distortion of the plane or wing member.

A further object is to provide an attachment for a toy balloon, comprising an open supporting frame having a sustaining plane attached thereto, and the plane being adapted for relative adjustment on the balloon whereby the angle of the plane member with respect to the horizontal axis of the balloon may be varied, as desired.

A further object is to provide a device adapted for attachment to an inflated member, which comprises a wing structure embodying peripheral supporting bands adapted to encircle the inflated member, and said bands being comparatively narrow so as to cover only a small portion of the surface of the inflated member, thereby providing a structure which will be light in weight, has general utility of construction, may be easily and economically manufactured, and to which suitable ornamentations or appurtenances may be attached independently of the inflated member.

The particular object of the invention,

therefore, is to provide an attachment for an inflated member such as a toy balloon, comprising an enclosing structure having a wing thereon adapted to sustain or help to sustain the balloon in the air, when the latter is entrained by a cord.

Other objects of the invention will appear from the following description and the accompanying drawings and will be pointed out in the annexed claims.

In the drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

In the accompanying drawings forming part of this specification:

Figure 1 is a perspective view showing an inflated toy balloon with the invention attached thereto;

Figure 2 is a perspective view of the invention removed from the balloon;

Figure 3 illustrates an inflated member having an embracing structure embodying sustaining wings only;

Figure 4 is a view showing an inflated toy balloon having sustaining wings and a stabilizing rudder attached directly to the peripheral surface of the balloon;

Figure 5 is a detailed diagrammatic plan view illustrating another form of wing;

Figure 6 is a view showing an elongated type of balloon having a sustaining plane member and a stabilizing rudder mounted thereon;

Figure 7 is a view showing a modified form of enclosing structure embodying a sustaining plane member and a stabilizing rudder;

Figure 8 is a view showing the same structure with the inflatable member removed;

Figure 9 is a view showing another modification wherein the plane and rudder are integrally formed with the encircling bands;

Figure 10 is a modification, showing two wings angularly disposed; and

Figure 11 is a view, showing a modification, wherein the plane is arranged above the axis of the balloon.

In the selected embodiment of the invention here shown, for purposes of disclosure, there is illustrated in Figure 1, an inflated member or toy balloon 2 of the type universally sold in various colors, and here shown as being spherical in form. The invention is particularly adapted for use in connection with balloons which are inflated with oxygen or air, and which therefore, have no tendency to rise when inflated. Obviously, the invention may also be applied equally as well to balloons inflated with a lighter-than-air gas such, for example, as hydrogen gas.

The novel device featured in this invention consists of a wing structure adapted to be demountably secured to a balloon to provide means for sustaining the same in the air, when the balloon is entrained by a cord or string. The device comprises flexible, non-elastic peripheral bands 8 and 9, preferably arranged as shown in Figures 1 and 2, and secured together at points 11 and 12 or where they intersect each other, thus providing in effect, an open frame structure adapted to receive a balloon and to support it therein when inflated. The bands 8 and 9 may be made of a suitable light material such as paper.

The peripheral band 9 is provided with a plurality of apertures 13, adapted selectively to receive the usual neck or nozzle 14 of the balloon, as shown in Figure 1. When the neck 14 of the balloon is inserted in one of the apertures 13 from the inside of the structure, and the balloon is inflated until the enclosing structure or bands 8 and 9 restrict further expansion, the balloon will be securely held in the structure. The peripheral bands thus limit the expansion of the inflated member to substantially the diameter of the bands forming the enclosing structure, after which the neck 14 is suitably tied or secured to prevent the air leaking from the balloon. The particular arrangement of the bands and their diameters form an important feature of the invention. By thus arranging the bands, they prevent over-inflation of the balloon and consequently lessens the percentage of breakage. A cord 4 is secured to the balloon neck 14 by means of which the balloon and its retaining means may be entrained as a kite.

A plane member 15, preferably annular in form and of comparatively light material such as thin cardboard, is provided with an aperture 16 of substantially the same diameter as the peripheral band 8. Depending integral tabs 17 are provided on the plane member 15 around the marginal edge of the aperture 16, to provide means for attaching the plane member 15 to the peripheral band 8 as shown. The plane member 15 is provided at opposite sides with lateral sustaining wings 15′—15′. The entire marginal edge of the aperture 16 may be cut to fit snugly against the peripheral band 8, or, if desired, interstices 16′ may be provided as shown between the plane member 15 and the peripheral band 8. The tabs 17 fit snugly against the peripheral band 8, to which they may be secured in a suitable manner, thus rigidly securing the annular plane member 15 to the band 8.

By reference to Figures 1 and 2, it will be noted that the edge of the aperture 16 provides an arcuately formed attaching edge coinciding substantially with the periphery of the band 8 and with the curved surface of the balloon 2, thus providing an inherent rigidity to the plane member, permitting the structure

to be made of a comparatively lighter material.

To stabilize the structure while in the air, I prefer to provide at the lower rearward portion of the structure, a fin or rudder 18 as shown, of comparatively stiff material and suitably secured to the peripheral band 9 at substantially right angles to the plane member 15. It will thus be seen that an enclosing structure is provided for the inflated member, embodying a sustaining member 15 and a stabilizing rudder 18. This structure may be made of a material which only slightly decreases the natural buoyancy of the balloon. The rigidity of the structure will depend upon the inflation of the balloon 2 which controls the tensioning of the peripheral band 8, to which the plane member 15 is secured, and also the tension of the band 9.

If desired, the peripheral bands 8 and 9 may be constructed of a very light wood or a stiff cardboard, thus providing a rigid enclosing structure to which the plane member and the stabilizing rudder may be attached. If thus constructed, the sustaining plane member 15—15′—15′ will retain its rigidity independently of the inflatable member, and the structure may also be used as a kite, even though the inflatable member be practically entirely deflated. It will therefore be seen that a wing structure attachment is provided for an inflated member which is adapted to be demountably secured thereto, and, because all parts are fastened together as a unit, a structure is provided in which a balloon may readily be inserted and inflated, and from which the balloon may as readily be removed, in case of breakage, and another balloon substituted therefor, all parts of the structure remaining intact and in their co-respective positions, independently of the inflation of the balloon therein.

In a structure wherein the peripheral bands 8 and 9 are flexible, the various elements of the structure will assume their respective positions, when the inflatable member is inserted therein and inflated.

If desired, the plane member 15 may be attached to the peripheral band 8 of the enclosing structure before the balloon is inflated. Subsequent inflation of the balloon imparts rigidity to the plane member 15, through the tensioning of the peripheral bands 8 and 9, which bands limit the expansion of the inflated member and prevent distortion of the plane member 15, attached thereto. The apertures 13 in the band 9 provide means for adjustably regulating the angle of the plane member 15 with respect to a horizontal plane, thereby giving the plane member more or less of an angle to the wind. When the neck 14 is inserted in the lower aperture, the device will tend to rise to a higher altitude than when inserted in the upper aperture. The neck 14 may be quickly shifted from one aperture to the other by simply deflating the balloon. The apertures 13 therefore provide means for relatively adjusting the position of the plane member 15 to suit the velocity of the wind.

Figure 3 illustrates an inflated member having a pair of lateral sustaining wings 21 attached to a peripheral band 22 by means of tabs 23. These tabs may be integral with the wings as shown, or if desired, may be independently formed and suitably secured to the wings and band 22. A depending strap portion 24 is provided on the peripheral band 22, and has an aperture 25 adapted to receive the neck of the balloon. This simplified wing structure is frictionally supported on the inflated member 2, when the latter is sufficiently inflated. If desired, the wings 21 may be attached to the band 22 prior to inflating the balloon, and subsequent distending of the balloon imparts rigidity to the wings 21, the peripheral band 22 limiting expansion of the inflated member and preventing distortion of the wings attached thereto.

Figure 4 illustrates a structure comprising sustaining wings 21 and a stabilizing rudder 26 attached directly to the peripheral surface of the balloon 2 by means of integral tabs 27 and 28, respectively, as shown. This provides a simplified wing structure that is economical and may be quickly attached to a balloon. It is important, however, that the balloon be inflated so that the arc of its peripheral surface will coincide substantially with the arcuate attaching edge of the wing and rudder members.

Figure 5 is a diagrammatic plan view, showing a modified form, of the wing 31, having integral tabs 32, 33 and 33′ for attaching it to the surface of the balloon or to a peripheral band embracing the balloon. It will be noted that the tabs 32—33—33′ are tangent to an arcuate or curved line *c—c*. If preferred, the tabs 33—33′ may be formed tangent to the lines *d—c* and *c—d*, respectively, and thus an attaching edge other than on a straight line, is provided on the wing member.

A wing member having an attaching edge other than a straight line, whether it be arcuate or angular, is inherently more rigid than a wing having a straight attaching edge. The structural limitations of the preferred materials are such that a wing having a straight attaching edge necessarily must be made of a heavier and more rigid material to prevent the collapse of the same.

Figure 6 illustrates an elongated type of balloon 30, provided with an inclosing structure embodying peripheral bands 35 and 36, a sustaining plane member 37, and a stabilizing rudder 38, all attached to the peripheral bands as shown. Entraining means such as the cord 39, is attached to the forward end of the rudder 38, thus providing means for

utilizing the structure as a kite. Apertures 41 are provided in the rudder 38 in one of which the entraining cord 39 may be secured, as shown.

Figures 7 and 8 illustrate a modified structure wherein a comparatively rigid sustaining plane member 42 is provided which is adapted to receive the inflated member 2. This plane member 42 has lateral wings 42′ as shown. Tabs 43 are provided on the member 42 for attaching it to a peripheral band 40, encircling the balloon 2 at right angles to the plane member 42, as shown. A tab 44 is secured to the band 40 to which an entraining cord 45 may be attached, thus providing a fixed attaching means for the cord 45, independently of the inflatable member. A suitable rudder 18 may be provided, as shown.

In Figure 9, the apertured plane member 42 is provided with a complemental apertured member 46. These two members are secured together at substantially right angles to each other and form in effect, enclosing peripheral bands in which a balloon may be inflated and retained, as indicated in dotted lines. The plane member 42 in Figure 9 provides the sustaining means for the inflated member, and the member 46 serves as the stabilizing means. An aperture 47 is provided in the member 46 to which one end of a cord may be secured for entraining the device.

Figure 10 illustrates a modified form comprising wing members 51 angularly disposed cooperating with a rudder 53 to form an enclosing structure for an inflated member 2, indicated in dotted lines. Connecting members 54 serve to retain the members 51 and rudder 53 in their respective functional positions. These members further serve to prevent the wing members 51 from sliding up on the surface of the balloon, when the structure is utilized in a strong wind.

In the previous figures, the horizontally disposed sustaining plane members 15, 21 and 42 are shown attached to the balloon at substantially its greatest diameter. This diameter is represented as coinciding with the line x—x in Figure 11, and may be called a horizontal axis of the inflated member. In Figure 11 a plane member 57 is shown attached to peripheral bands 55 and 56 adapted to encircle the balloon at right angles with respect to each other. In the present instance I have shown the plane member 57 positioned above the horizontal axis x—x, but obviously it may be disposed below the axis x—x if desired. The plane member 57 is secured to the peripheral bands 55 and 56 by means of tabs 58, preferably integrally formed with the member 57. Each peripheral band 55 and 56 is constructed of suitable strip material having its ends overlapped and suitably secured together, the ends of the band 55 being connected at 59 and the ends of the band 56 at 60. If desired, the connecting ends of the bands may be gummed and dispensed disconnected, so that the purchaser may connect the ends of the bands so that the latter will fit the size of the particular balloon upon which it is to be attached. With a structure such as shown in Figure 11, the apertured plane member 57 may be attached to inflated members of different diameters, the larger the diameter of the inflated member the farther from the horizontal axis x—x of the balloon the plane member 57 will be located.

As an aid in merchandising the device and to make it more entertaining and attractive, and more pleasing to the eye, I may provide the structure with a visage such as shown in Figure 1. The visage here shown simulates a human face or caricature thereof, and embodies the eye member 6 and mouth member 7 suitably secured to the peripheral band 9. These members thus become a part of the enclosing structure and have no direct connection with the inflated member. If desired the visage may be simulation of a species of the animal kingdom or of any other suitable design which will be attractive and pleasing to the eye.

In the drawings I have shown the invention as applied to toy balloons, but it is to be understood that the principles embodied therein may be applied to larger inflated members such as commercial balloons, observation balloons, blimps and other like structures. It is obvious that when the invention is applied to structures having propelling means, the entraining means may be dispensed with, in which case the lateral wings and the stabilizing rudder will assist in maneuvering the craft when it is propelled through the air.

I claim as my invention:

1. The combination with an inflatable element, of peripheral bands secured together to provide an open frame adapted to receive said element, a wing member secured to one of said bands and a stabilizing member secured to another of said bands.

2. The combination with an inflatable element, of peripheral bands secured together to provide an open frame adapted to receive said element, a wing member secured to one of said bands, a stabilizing member secured to another of said bands, and means for relatively adjusting the effective angle of said wing member.

3. The combination with an inflatable element, of peripheral bands secured together to provide an open frame adapted to receive said element, a wing member secured to one of said bands and substantially horizontally disposed, and a stabilizing rudder secured to another of said bands and substantially vertically disposed, said bands, and wing and rudder members cooperating to sustain the device in flight, when entrained, regardless

of whether the element is fully or only partially inflated.

4. The combination with an inflatable element having an inflating neck by which it may be entrained, of peripheral bands secured together to provide an open frame adapted to receive said element, one of said bands having an aperture therein adapted to receive said neck, a wing member secured to one of said bands and a stabilizing rudder to another of said bands, said bands and wing and rudder members cooperating to sustain the device in flight, when entrained.

5. An aerial toy comprising an inflatable element, endless bands encircling said element and disposed substantially in right-angular relation, a wing member secured to one of said bands and substantially encircling it, said band preventing distortion of said wing member, when the element is inflated.

6. An aerial toy comprising an inflatable element, endless bands encircling said element and disposed substantially in right-angular relation, a wing member having a curved portion engaged with one of said bands, and means for securing said curved portion to the band, said band preventing distortion of said wing member, when the element is inflated.

7. An aerial toy comprising an inflatable element, endless bands encircling said element and disposed substantially in right-angular relation, a wing member having a concaved edge provided with means for securing it to one of said bands, and a stabilizing rudder secured to another of said bands.

8. An aerial toy comprising an inflatable element, endless bands encircling said element and disposed substantially in right-angular relation, a wing member having a concaved edge provided with means for securing it to one of said bands, a stabilizing rudder secured to another of said bands, and means also secured to one of said bands and simulating a figure or character to enhance the attractiveness of the toy.

9. An aerial toy comprising an inflatable element having a neck for the introduction of a suitable fluid into said element, an entraining cord attached to said neck, a frame for said element including a peripheral band having a wing member secured thereto for sustaining the toy when in flight, and means on said frame and associated with said neck to relatively adjust the position of the frame upon said element to vary the effective angle of said wing member.

10. An aerial toy comprising an inflatable element having a neck for the introduction of a suitable fluid into said element, an entraining cord attached to said neck, a frame for said element including a plurality of peripheral bands one of which has a wing member secured thereto for sustaining the toy when in flight, another of said bands having a series of apertures therein each of which is adapted to receive said neck, whereby the wing member may be relatively adjusted upon said element to vary the effective angle of said wing member.

11. An aerial toy comprising an inflatable element having an inflating neck by which it may be entrained, a peripheral band adapted to encircle the element, means on said band engaged with said neck to prevent displacement of the band on the element, and a wing member secured to said band, said band preventing distortion of said wing member, when said element is inflated.

12. An aerial toy comprising an inflatable element having an inflating neck by which it may be entrained, of an open frame comprising peripheral bands adapted to encircle the element and arranged in crossed relation, one of said bands being substantially horizontally disposed and another band being substantially vertically disposed, an aperture in said vertically disposed band adapted to receive said inflating neck, wing and rudder members secured to said bands and adapted to sustain and to guide said element when entrained, an eye-member secured to said vertical band above said neck, and a mouth piece also secured to said band below said neck, said eye-member, neck and mouth piece cooperating to simulate a figure or character to enhance the attractiveness of the toy.

13. The combination with an inflatable element, of a frame comprising circular bands arranged in angular relation and within which the element is supported, and a wing member on said frame adapted to sustain the element when entrained.

14. The combination with an inflatable element having a neck for the introduction of a suitable fluid into the element, of a band adapted to encircle the element, a wing member secured to said band and adapted to sustain and guide the element when in flight, and means for anchoring the band to said neck.

15. The combination with an inflatable element having an inflating neck by which it may be entrained, of bands encircling said element, one of said bands having an aperture adapted to receive said neck, a wing member secured to one of said bands, and a stabilizing rudder secured to the other of said bands, said bands, and wing and rudder members cooperating to sustain the device in flight when entrained.

16. The combination with an inflatable element, of an annular wing member adapted to encircle said element, when the latter is inflated, and means for attaching said wing member to the periphery of the element.

17. The combination with an inflatable element, of a wing member having an aperture therein adapted to receive said element, whereby the edge of said aperture may engage the periphery of the element, when the

latter is inflated, and whereby the wing member will be situated substantially in the medial plane of the element and means on said wing member for securing it to the periphery of the element.

18. The combination with an inflatable element having an inflating neck, of a wing member having an aperture therein adapted to receive said element, means provided on said wing member for securing it to the periphery of the element when the element is inflated, and means connected with said wing member and engaged by the inflating neck to anchor the wing member to the element.

19. The combination with an inflatable element having an inflating neck, of a band encircling said element, a wing member secured to said band and substantially encircling it, said band preventing distortion of said wing member, when the element is inflated, and means connected with said band engaged by the inflating neck to prevent relative movement of the band on the element.

20. The combination with a toy balloon having an inflating neck by which it may be entrained, of a device adapted to be mounted on the balloon and shaped to simulate a visage or image, balancing means on said device, and means for anchoring the device to the inflating neck whereby the device will be retained on the balloon in a set position.

21. The combination with a toy balloon having an inflating neck by which it may be entrained, of a device adapted to be mounted on the balloon and shaped to simulate a visage or image, balancing means on said device, means for anchoring the device to the inflating neck whereby the device will be retained on the balloon in a set position, and means for relatively adjusting the device upon the balloon.

22. The combination with an inflatable element, of a plane member having an aperture therein adapted to receive said element and configurated to coincide substantially with the periphery of the inflated element at its greatest diameter, and means for retaining said plane member on the element when the element is inflated, said retaining means permitting the plane member to be mounted upon and secured to the element substantially without folding the member.

23. The combination with an inflatable element, of an integral plane member having an aperture therein adapted to receive said element, said aperture being configurated to coincide substantially with the periphery of the inflated element at its largest diameter, and means for securing said plane member in position upon the element substantially without folding the member.

24. A device adapted for use in connection with a toy balloon to sustain the latter in flight when entrained, said device comprising a plane member formed from an integral piece of sheet material provided with an aperture adapted to receive a toy balloon, means whereby said member may be secured to the periphery of the balloon, when the latter is inflated, said member comprising oppositely extending plane portions connected fore and aft by narrow band-like portions, and said plane member being adapted to be mounted upon the balloon substantially without folding.

In witness whereof, I have hereunto set my hand this 19th of July, 1928.

MAURITZ C. RANSEEN.