Jan. 28, 1964 D. ALBERICO ETAL 3,119,196

AIRFLIGHT DEVICE

Filed July 11, 1961

FIG. 2.

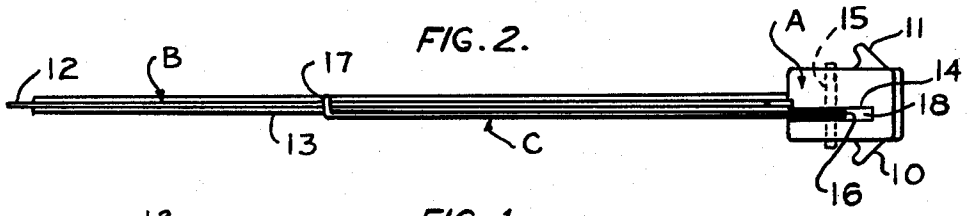


FIG. 1.

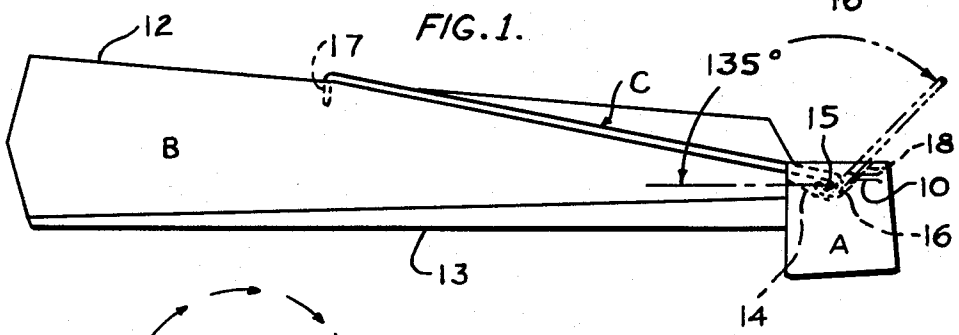
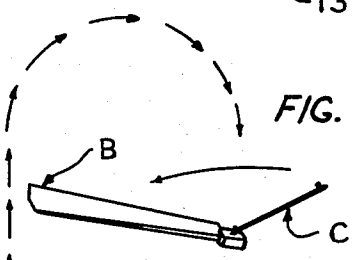


FIG. 4.



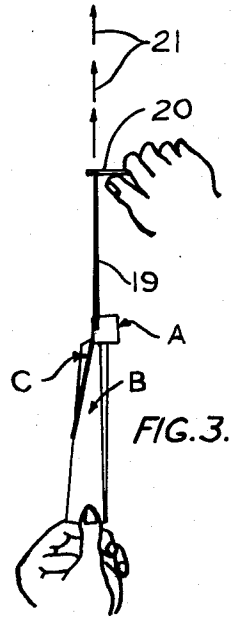


FIG. 3.

FIG. 6.

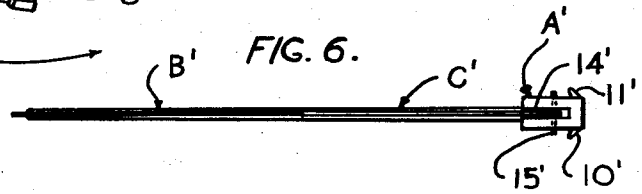


FIG. 5.

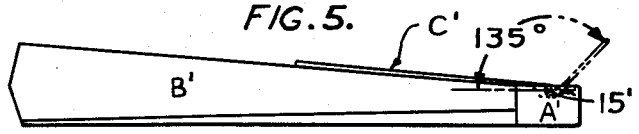
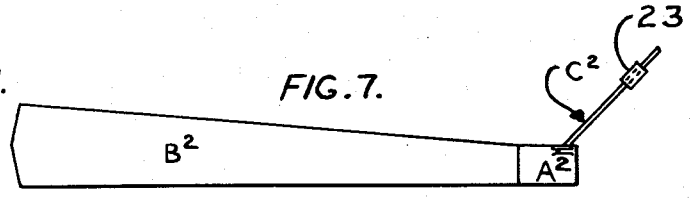


FIG. 7.



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AIRFLIGHT DEVICE

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This invention relates to an airflight device, and more particularly to an airflight device which will assume a whirling motion in descent through the air.

The device of this invention may provide an amusing and engaging toy which can be projected up into the air and allowed to descend in a controlled kind of whirling motion. The device also may be used for dropping objects from aircraft to the earth when suitably constructed for such purpose.

An object of the invention is to provide a device of such character that it will certainly assume a desired whirling motion when left to fall through the air.

Another object is to provide such a device which can be easily projected into the air in a substantially straight path, but which will assume a desired whirling movement on descent.

Another object is to provide such a device which is simple of construction and which can be fabricated at small cost.

Other objects and advantages of the device will become apparent as this specification proceeds.

The invention is illustrated in the accompanying drawings in which:

FIG. 1 is a view in side elevation of the device with the pivoted arm in rearward position ready for ascent;

FIG. 2 is a plan view of the device as shown in FIG. 1;

FIG. 3 is a schematic view showing the launching of the device into the air;

FIG. 4 is a perspective view showing the device in the position which it assumes after beginning descent;

FIG. 5 is a view similar to FIG. 1 but showing a modified form of the device;

FIG. 6 is a view similar to that of FIG. 2 but showing the modification of FIG. 5; and

FIG. 7 is a view in elevation of yet another modification of the device.

As illustrated in the drawings, the device includes a hub or body portion A, a wing B extending from the hub, and an arm C which serves to control the attitude of flight.

The hub and wing may be made of wood such as balsam wood, or may be moulded from a thermoplastic material, and the arm may suitably be formed of wire.

The hub A is a piece or portion which, as illustrated, is substantially rectangular in cross section along both vertical and horizontal axes, and although this form is preferred, it may be round or other shape if desired.

On one side of the hub is the projection **10** used for launching the device. This projection may suitably take the form illustrated when the hub and wing are made of thermoplastic materials. If the hub is of wood this projection may suitably take the form of a small pin or hook. Although it is necessary to have such projection on only one side of the hub, a second projection **11** may be provided on the other side also, to be used when desired.

Extending rearwardly from the hub A is the wing B which is an elongated thin blade **12** provided with a reinforcing rim **13** along its leading edge. This rim is somewhat thicker than the blade **12** and serves to strengthen the wing and keep it from vibrating in flight. The rim may be formed in the same piece as the blade **12**, or may be formed separately and attached to the blade.

It is a feature of the embodiment illustrated in FIGS. 1 to 4 that the wing is connected with the hub at a position such that its lower or rim edge is located above the bottom of the hub A and the top edge of the wing extends above the top edge of the top of the hub. For reasons not wholly clear to us this construction improves the attitude of flight of the device.

Turning again to the hub A, and referring to FIGS. 1 and 2, there is provided a slot **14** which extends longitudinally of the hub and just to one side of the wing blade **12**. Extending transversely of the hub and through the slot **14** is a pin **15** about which the arm C is to turn.

The arm C may be a plain wire and may be of a length which may be, very roughly, about half the length of the wing. At its forward end this arm has a loop portion **16** which is turned about the pin **15**. At its other end this arm is turned to form a hook **17** which fits over the top edge of the wing. The hook should be sufficiently close to hold the arm against vibration with respect to the wing, but should not be so tight as to make substantial friction between the arm and the wing which would hold the arm from free upward movement to disengage itself from the wing. As seen more clearly in FIG. 1, the arm C has its central portion lying along one side of the blade portion **12**, and the end of the hook **17** extends on the other side of this portion.

The slot **14** extends deeply enough into the hub to permit the arm to project freely toward the rear to permit the engagement of the hook portion **17** to engage the wing as above described. The forward portion of this slot **14** is inclined as shown at **18** in FIGS. 1 and 2, so that as the arm C is turned forwardly about the pin **15** it will be stopped by contact with the bottom of the slot at **18**. At this position of the arm it will be extending forwardly and upwardly at an angle of about 45 degrees with the vertical or making with the wing an angle of about 135 degrees. Although we have found it preferable to construct the stop so that the arm may turn to a forward position in which it makes an angle of about 135 degrees, or between 125 and 145 degrees, with the wing, benefit can be obtained from the arm when it is stopped between 95 and about 180 degrees from the rearwardly extending wing.

The launching of the device is illustrated in FIG. 3 where the rear portion of the wing is held by the left hand while a rubber band **19** is connected to a projection on the side of the hub and a pin **20** at the forward end of the rubber band is held by the right hand. When the band is stretched and the device released the device may be projected up into the air as indicated by the arrows **21**. With the arm C in its rearward position it is held against vibration and the device shoots up in a straight path without substantial wobbling. When it reaches its summit and begins descent the arm C then falls away from the wing, turning about the pin **15** to its forward position as shown in FIG. 4. In this position the arm C adjusts the balance of the device so that it whirls in a desired manner slowly descending to earth. Once the arm is turned to forward position and whirling is begun the arm C remains in this position until the flight is finished.

FIGS. 5 and 6 illustrate a somewhat different embodiment which is of simple construction. In this embodiment the hub A′ is provided with projections **10′** and **11′** and the wing B′ extends rearwardly from the hub but with the bottom edge of the wing B′ on an even level with the bottom of the hub and the top edge of the wing B′ on an even level with the top of the hub A′. The arm C′ is pivoted about pin **15′** in slot **14′** in hub A′, the slot being directly in line with the wing. Arm C′ extends rearwardly lying flat against the top edge of the wing. This embodiment of the device is projected as was described in connection with the embodiment of FIGS. 1 to 4, and performs in the same manner, with the arm A′ falling forwardly at the beginning of descent to its for-

ward position making an angle of about 135 degrees, or between 95 and 180 degrees with the wing.

FIG. 7 shows yet another embodiment of our invention wherein the hub A^2 and wing B^2 may be the same as in the other embodiments described but where the arm C^2 is permanently attached to the hub and extends forwardly and upwardly making an angle of about 135 degrees, or between 95 and 180 degrees with the wing. A weight 23 may be provided and adjustably positioned along the arm for further adjustment of the balance.

It is understood that many other embodiments of the invention may be made in accordance with the principles herein set forth and the skill of the art, and all such embodiments are considered within the scope of the invention.

We claim:

1. An airflight device comprising a hub, a wing projecting rearwardly from said hub, an arm pivotally connected to said hub and adapted to extend rearwardly of said hub during ascent of the device and during descent fall to a position in which it extends forwardly of said hub to thus control the flight of said device in further descent, and means associated with said arm for engaging said wing while the arm is in rearward position to hold said arm against vibration with respect to said wing while the device is in ascent.

2. A device according to claim 1 in which said means includes a hook on the end of said arm, said hook being adapted to extend about an edge of said wing during ascent of the device.

3. An airflight device comprising a hub, only a single wing projecting rearwardly from said hub, a rigid arm extending rearwardly of said hub during ascent of the device, means pivotally connecting said arm to said hub whereby said arm moves forwardly and about its pivot at the beginning of descent of the device, and stop means

for limiting forward movement of said arm about its pivot at a position in which said arm extends upwardly and forwardly of said hub and controls the attitude of flight of said device in further descent.

4. A device as set forth in claim 3 in which said arm describes an angle of between 95 and 180 degrees with said wing when in said last mentioned position.

5. A device as set forth in claim 3 in which said arm describes an angle of about 135 degrees with said wing when in said last mentioned position.

6. A device as set forth in claim 3 in which said arm extends rearwardly of said hub and lies flat against an edge of said wing during ascent of the device.

7. A device as set forth in claim 1 in which said arm describes an angle of between 95 and 180 degrees with said wing when in said forward position.

8. An airflight device comprising a hub, a wing projecting rearwardly from said hub, an arm pivotally connected to said hub and adapted to extend rearwardly of said hub during ascent of the device and during descent fall to a position in which it extends forwardly of said hub to thus control the flight of said device in further descent, and means associated with said arm for engaging an edge of said wing while the arm is in rearward position to hold said arm against vibration with respect to said wing while the device is in ascent, said wing having a stiffening rim on its edge which is opposite the wing edge engaged by said arm.

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