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B. C. MEYER ET AL

3,479,764

AERIAL TOY

Filed April 19, 1967

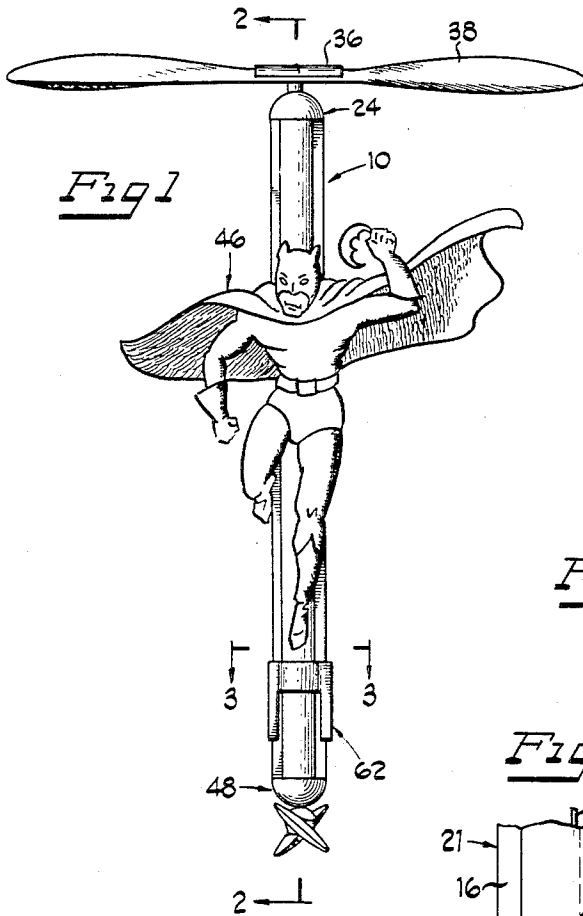


Fig 1

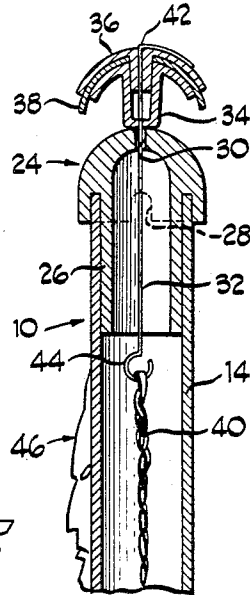


Fig 2

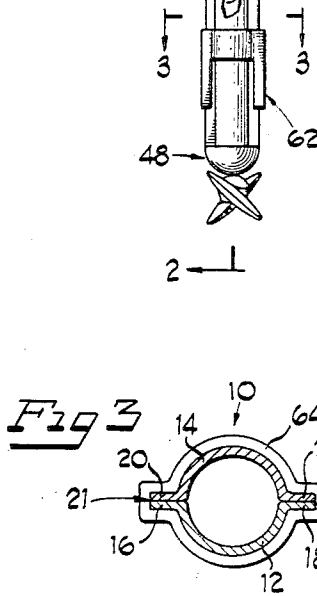


Fig 3

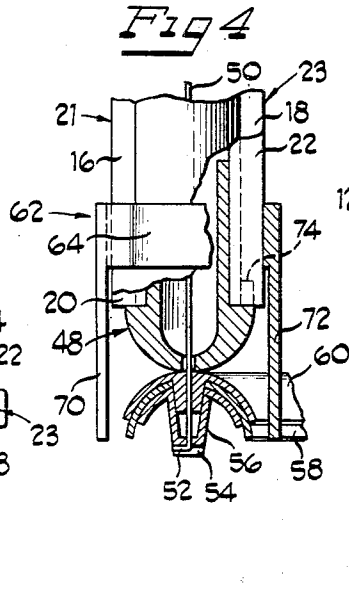


Fig 4

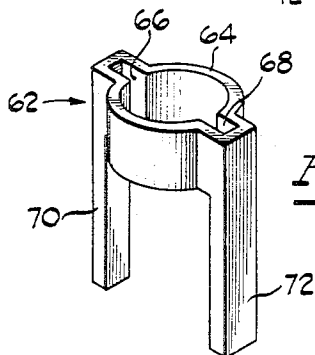
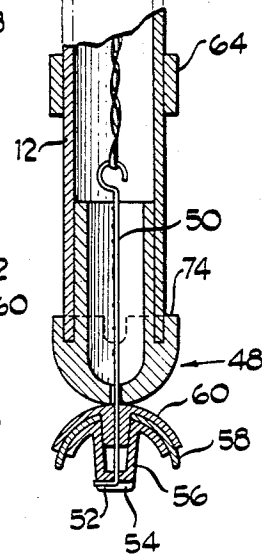


Fig 5

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AERIAL TOY

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2 Claims

ABSTRACT OF THE DISCLOSURE

A toy helicopter or the like comprising a tubular body with counter-rotating propellers at the end and containing a rubberband motor connected for driving the propellers in opposite directions. The tube is ribbed and has a fork-like latch slidable on the ribs and engageable with one of the propellers to restrain it while the other is turned to wind the rubber band motor.

BACKGROUND OF THE INVENTION

The invention belongs to the class of aerial toys, and particularly to the type comprising essentially one or more propellers with means for rotating, so that the device will rise by reason of the thrust developed by the rotation. The use of counter-rotating propellers on the ends of a tube containing a rubber band motor is well known, but leaves much to be desired in that it is very awkward to hold the tube and one end of the propellers when it is desired to wind the motor by turning the other propeller. It is accordingly a primary object of this invention to provide means for holding one of the propellers while the other is being wound.

SUMMARY OF THE INVENTION

An aerial toy comprising an elongated tubular body, a first bladed rotor rotatably mounted on the upper end of said body, a second bladed rotor rotatably mounted on the lower end of said body, drive means comprising a rubberband within the tubular body and interconnecting the first and second rotors, and a lock-out means for one of the rotors comprising an element non-rotatably secured to said body for axial movement along the body relative to a position of engagement with said one rotor.

BRIEF DESCRIPTION OF THE DRAWING

FIGURE 1 is a front elevation of the device;

FIGURE 2 is an enlarged vertical axial sectional view of the device on the line 2—2 of FIGURE 1 with parts in a different position;

FIGURE 3 is an enlarged horizontal sectional view on the line 3—3 of FIGURE 1;

FIGURE 4 is an enlarged front elevation of a portion of FIGURE 1 with parts in vertical axial section; and

FIGURE 5 is a perspective view of a part indicated in FIGURES 1 and 3, taken from above and to one side.

DESCRIPTION OF PREFERRED EMBODIMENT

The toy consists of a tube or body portion 10 composed of front and rear half sections 12 and 14 generally semi-circular in cross section as best seen in FIGURE 3, front section 12 having substantially diametrical longitudinal flanges 16 and 18 and rear section 14 having similar flanges 20 and 22, the sections being preferably made of suitable plastic material, and flanges 16 and 20 being suitably secured together to form a rib 21, as also are flanges 18 and 22 to form a rib 23, the whole forming a generally cylindrical tube having longitudinal side ribs running the length thereof.

At its upper end tube 10 has a cap 24 which closes the end of the tube and has a sleeve or plug portion 26

extending for a short distance into the tube. Cap 24 has notches at 28 into which ribs 21 and 23 may extend and having a bore 30 acting as a bearing for a wire shaft 32 on which is mounted a propeller hub section 34. Wire 32 extends through a second hub section 36 and a blade section 38 is clamped between hub sections 34 and 36. Wire 32 may be fastened to hub section 36 in any desired manner, in the present instance being bent laterally at 42 and pressed into hub 36, so that it cannot rotate without carrying hub section 36 with it, thereby rotating propeller blade 38. Wire 32 has a hook portion 44 with which the propeller drive means in the form of a rubber band 40 is engaged.

Hub section 34 is pulled rather strongly against cap 24 by the tension in band 40, and the cap acts as a thrust bearing as well as a radial bearing for propeller 38. Cap 24 is prevented from rotating with hub portion 34 by engagement of ribs 21 and 23 with notches 28.

A cap 48, which may be identical with cap 24, closes the lower end of tube 10 and a wire 50 extends through cap 48 and has a portion 52 which is bent laterally and engaged in a notch 54 in a hub portion 56, which in turn engages a lower propeller blade portion 58. A hub portion 60 is also engaged with blade portion 58 and bears against cap 48 to act therewith as a thrust bearing. Propeller blade portions 38 and 58 are formed for opposite rotation to thrust in the same direction, and the unwinding of motor band 40 will rotate one propeller in one direction and the other in the other direction, both being oriented to exert a net upward thrust on tube 10, so that the device will rise in the air so long as there is sufficient energy in band 40 and the tube body is aimed in an upward direction.

In the illustrated embodiment, a figure 46 is suitably mounted on the central portion of the tube 10. This figure is preferably of plastic and relatively flat in cross section. Further, the figure includes substantial portions thereof which extend outwardly on opposite sides of the tube, and such portions provide an air-foil for assisting the vertical flight of the toy and stabilizing the tube 10 against rotation during flight.

When the energy in the rubberband 40 is spent it becomes necessary to rewind the band, and this is done by holding one propeller and rotating the other. It is also necessary to hold tube 10, which operation can become quite awkward and irksome and this difficulty is overcome in the following manner.

A fork-like lock-out means or latch 62, seen as a whole in FIGURE 5, has a band or collar portion 64 slidably engaged about half sections 12 and 14 and having internal notches 66 and 68 frictionally engaged about ribs 21 and 23 respectively. Outwardly of notches 66 and 68, latch 62 has downwardly extending fingers 70 and 72 spaced apart sufficiently to pass outside of cap 48 and into the path of propeller 58 and its attached parts, so that when band portion 64 is slid downwardly on tube 10 fingers 70 and 72 pass on either side of propeller 58 and hold it against rotation. Tube 10 is then held in one hand and propeller 38 rotated with the other. Latch 62 cannot be removed from the tube 10 since it cannot pass a shoulder 74 on cap 48, as best shown in FIGURE 2.

In the operation of the aerial toy, band portion 64 of latch 62 is slid down into contact with shoulder 74 so that fingers 70 and 72 engage the sides of propeller 58 to prevent it from turning. Tube 10 is then grasped in one hand and propeller 38 is turned with the other until band 40 is sufficiently wound. Propeller 38 is then held with this same hand while the other hand grasps propeller 58. Latch 62 is then slid upwardly on tube 10 by the fingers of the latter hand while still holding propeller 58. The device is then aimed in the desired direction and both propellers are released, whereupon it will

go to a height dependent upon the amount of energy that it was possible to store in band 40.

As previously indicated, collar 64 has frictional engagement with ribs 21 and 23 on tube 10, in order to prevent the lockout 62 from dropping into engagement with propeller 58 during the flight of the toy.

While the invention has been described in connection with a specific device, it should be understood that variations and modifications might be made without departing from the principles of this invention.

We claim:

1. An aerial toy comprising an elongated tubular body, a first bladed rotor rotatably mounted on the upper end of said body, a second bladed rotor rotatably mounted on the lower end of said body, drive means comprising a rubberband within the tubular body and interconnecting the first and second rotors, and a lockout means for one of the rotors comprising an element secured to said body for axial movement along the body relative to a position of locking engagement with said one rotor, said lockout means is non-rotatably secured to said body by means including a rib extending lengthwise of said body and an inwardly facing groove in the lockout means slidably engaging said rib.

2. An aerial toy as set forth in claim 1, wherein said tubular body is formed with diametrically opposing ribs extending lengthwise on the outer surface of the body, and said lock-out means comprises a collar having diametrically opposing grooves frictionally engaging said ribs, and a pair of spaced-apart leg portions extending from said collar in the direction of one of said rotors and adapted to straddle the hub of said one rotor to prevent rotation thereof.

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