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V. STANZEL

3,550,314

ASTRONAUT FIGURE TOY WITH SIMULATED WEIGHTLESS ACTION MECHANISM

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2 Sheets-Sheet 1

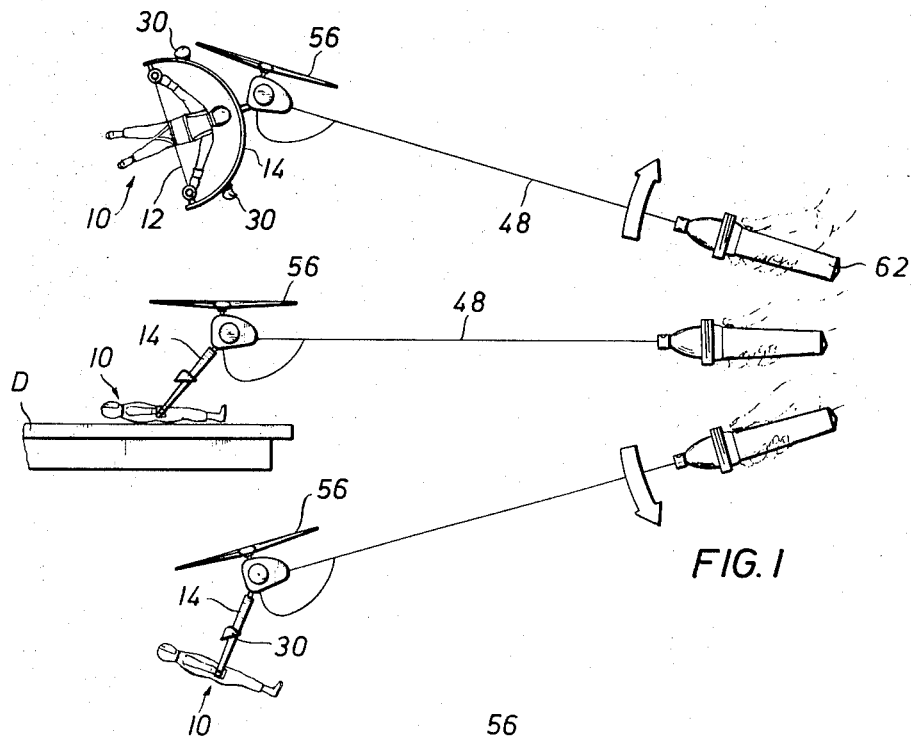


FIG. 1

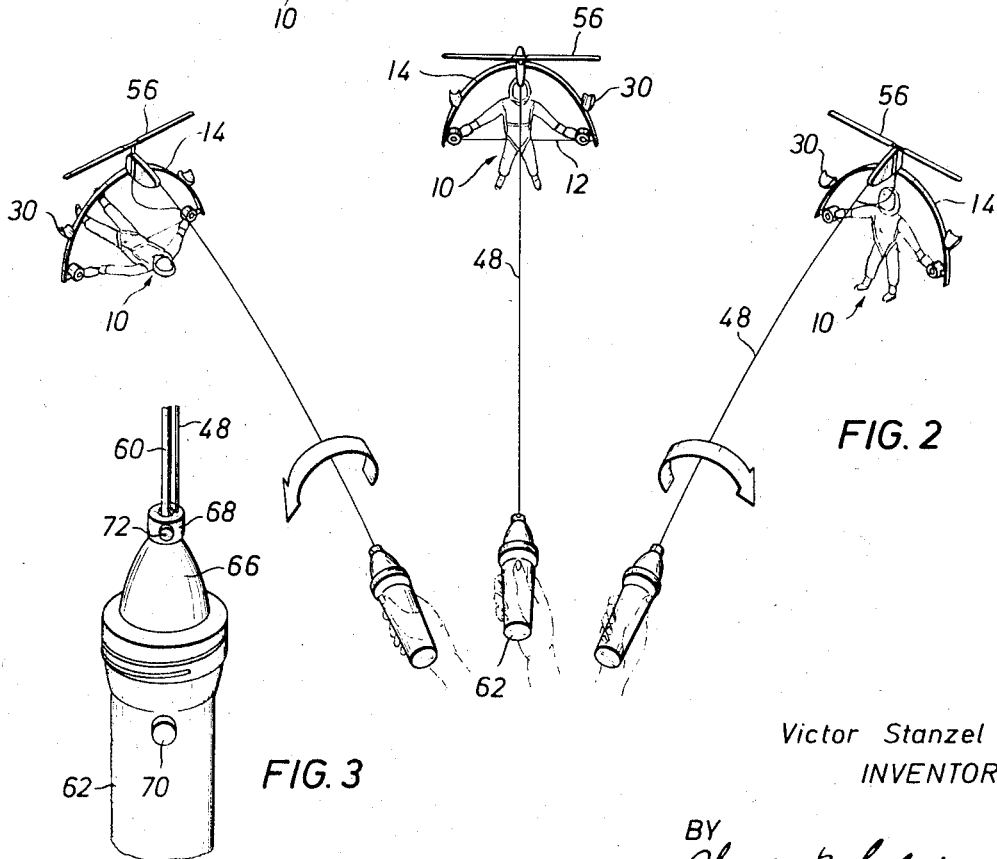


FIG. 2

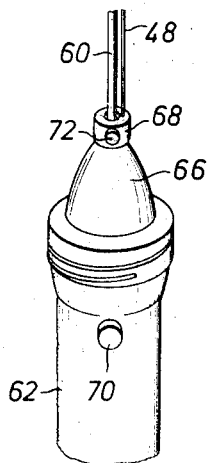


FIG. 3

Victor Stanzel
INVENTOR

BY
Charles E. Lightfoot
ATTORNEY

Dec. 29, 1970

V. STANZEL

3,550,314

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2 Sheets-Sheet 2

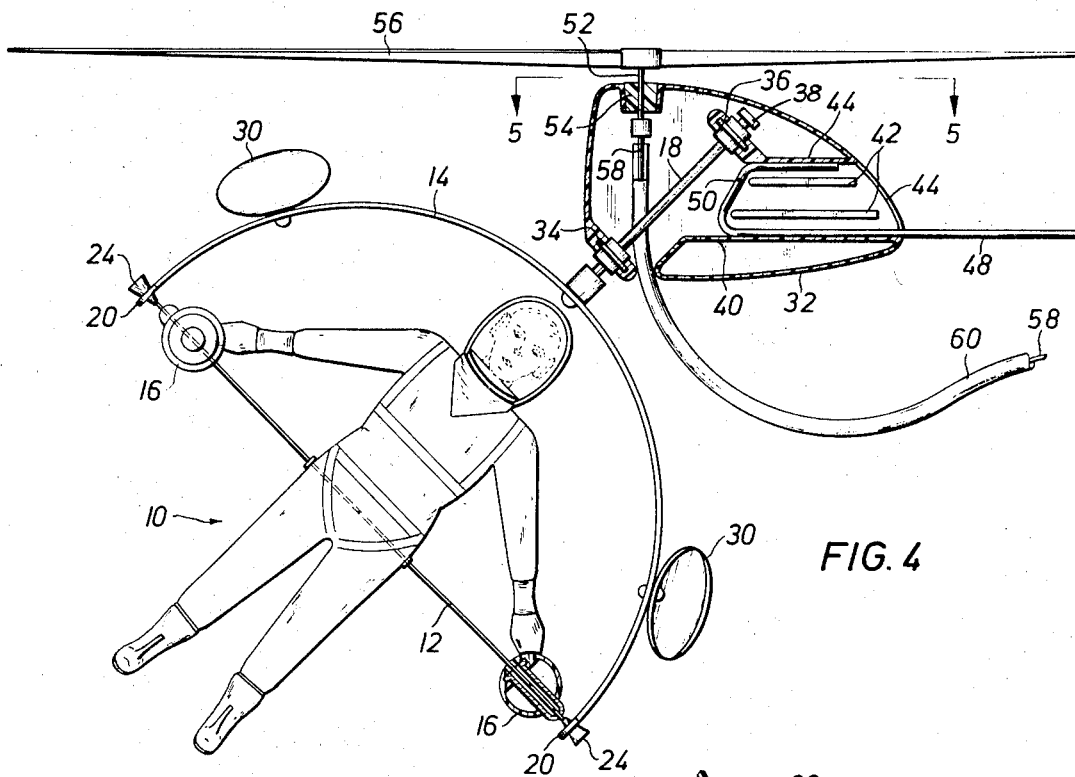


FIG. 4

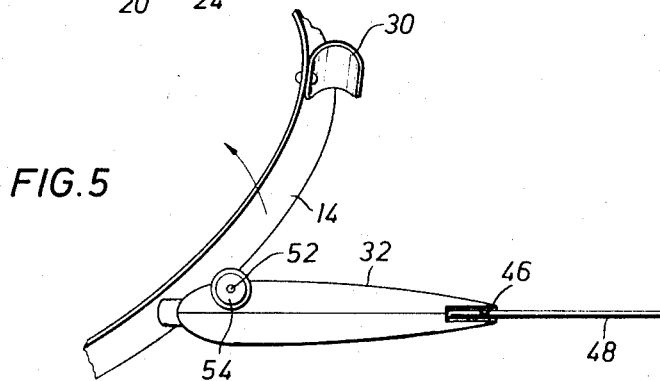
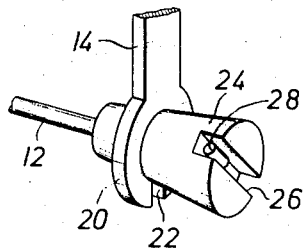


FIG. 5

FIG. 6



Victor Stanzel
INVENTOR

BY
Charles E. Lightfoot
ATTORNEY

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3,550,314

ASTRONAUT FIGURE TOY WITH SIMULATED WEIGHTLESS ACTION MECHANISM

Victor Stanzel, P.O. Box 171, Schulenburg, Tex. 78956

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7 Claims

ABSTRACT OF THE DISCLOSURE

An animated figure toy carried at the end of an elongated flexible support on a rotatable frame upon which the figure is mounted for rotation on an axis substantially normal to the axis of rotation of the frame. The invention includes propeller means rotatably connected to the frame at a location to lift the frame upon rotation of the propeller means, and the frame has deflector means positioned to be affected by the current of air from the propeller means to cause the frame to turn, whereby the figure performs tumbling or oscillating movements giving the semblance of the movements of an astronaut in space under weightless conditions.

BACKGROUND OF THE INVENTION

The invention relates to animated figure toys, and more particularly to a figure toy which is mounted and supported in a manner to perform movements simulating the movements of an astronaut under weightless conditions in space.

The effects of the reduction or loss of gravity on objects in space is well known and many experiments have been carried out by astronauts in space and under gravitational conditions simulating those pertaining in space to familiarize the astronauts with the conditions under which they must work.

Due to the loss of gravity astronauts often appear to be floating in space and their movements under such conditions sometimes appear slow and deliberate and at other times they appear to be tumbling or rolling about in a more or less uncontrolled manner.

The present invention has for an important object the provision of a figure toy which is mounted, operated and controlled to give the appearance of an astronaut moving about as in space.

Another object of the invention is to provide an animated figure toy which is aerodynamically supported and which includes aerodynamically operated means for causing the figure to move in a manner resembling the movements of an astronaut in space.

A further object of the invention is to provide a figure toy of the kind mentioned having power means for operating the same and means for manipulating the toy to vary and control the movements of the figure.

A still further object of the invention is to provide an animated figure toy of the type referred to which is easily operated and whose manipulation requires a certain degree of skill to cause the figure to perform in a desired manner.

SUMMARY OF THE INVENTION

Briefly described the toy of the invention comprises a figure, such as one resembling an astronaut in appearance and which is mounted in a nearly balanced condition on a supporting frame for rotation about an axis. The frame is also mounted for rotation about an axis substantially normal to the axis of rotation of the figure and the frame is rotatably carried on a body attached to an elongated, filiform support, and provided with a propeller or rotor located to aerodynamically lift the body and frame upon rotation of the propeller. The frame is provided with de-

flectors or air scoops positioned to be effected by the flow of air from the propeller to aerodynamically rotate the frame whereby the figure is caused to rotate on the frame whereby the figure performs rotating and tumbling movements while being moved about by the propeller.

The invention includes flexible cable means for rotating the propeller and power means for driving the cable which is located for manipulation by the user. Means is also provided for initially positioning the toy with the propeller located to lift the figure upon rotation of the propeller, so that the figure will take off vertically. The filiform support is attached in a manner to permit its manipulation to tilt the axis of the propeller to direct the flight of the toy.

BRIEF DESCRIPTION OF THE VIEWS OF THE DRAWINGS

FIG. 1 is a side elevational view, on a reduced scale, of a preferred embodiment of the invention, showing the same in several different positions of its operation and illustrating the manner in which it is manipulated in use;

FIG. 2 is a plan view of the invention as illustrated in FIG. 1;

FIG. 3 is a fragmentary perspective view of the control handle and power source housing of the invention;

FIG. 4 is a side elevational view of the toy figure of the invention and its mounting and actuating means, the figure being shown at one of its positions of movement;

FIG. 5 is a cross-sectional view, taken along the line 5-5 of FIG. 4, looking in the direction indicated by the arrows; and

FIG. 6 is a detail view, on an enlarged scale, showing details of structure of the figure mounting means of the invention.

DETAILED DESCRIPTION OF A PARTICULAR EMBODIMENT OF THE INVENTION

Referring now to the drawings in greater detail, the invention is illustrated herein in connection with a toy figure representing an astronaut with mechanism for supporting and manipulating the same to cause the figure to perform movements representing those of an astronaut under conditions of weightlessness, due to the absence of gravitational effect, such as might occur when travelling in space.

The figure of the invention, designated generally by the numeral 10, may be of any desired character, such as a simulated astronaut, suitably attired, which is rotatably mounted on a wire or cross-bar 12, attached to a yoke-like frame 14. The figure 10 may be conveniently mounted on longitudinally spaced apart bearing elements 16, connected to the arms of the figure, as though held in the hands, and through which the wire 12 passes to rotatably support the figure in a more or less centrally, balanced condition thereon.

The frame 14 may be formed of a flat strip of suitable flexible, spring-like material, of a length to assume an arcuate shape when secured to the end portion of the cross-wire 12, and is suitably attached at its midpoint to a radially extending shaft 18, by which the frame is rotatably mounted.

For the purpose of easily connecting the cross-wire 12 to the ends of the frame, the frame is provided at its ends with eyes or rings 20, best seen in FIG. 6, which are formed with radial slotted openings, such as that shown at 22 through which the wire 12 may be passed radially into and out of the eyes, and the wire carries at each end a tapered connector element or plug 24, which fits into the central opening of the eye and through which the wire 12 may be extended. The connector 24 is formed at its outer end with a cross-slot 26 and the wire 12 may

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be bent at its end to fit into the cross-slot as seen at 28 to secure the wire to the connector.

In assembling the toy the wire with the figure 10 mounted thereon and the connectors 24 at each end is attached to the frame by flexing the frame and inserting the wire through the slotted openings 26, whereupon the connectors 24 will enter the central openings of the eyes 20 to hold the wire in place under the force exerted by the flexed frame.

The frame is also provided with curved deflectors or air scoops 30 suitably attached thereto at locations peripherally spaced from the point of attachment of the shaft 18, and which face in opposite directions from the plane of the frame.

The shaft 18 is rotatably carried on a hollow body or fuselage 32, of somewhat laterally flattened shape within which the shaft is mounted in suitable bearings 34 and 36. The shaft is provided with a knob 38 at its outer end by which it is held against longitudinal displacement in the body. The body 32 may be conveniently formed of sheet like material, such as plastic, by molding, or otherwise, and is provided internally in its lower portion with a fold, or rebent portion 40, above which the side walls of the body each have inwardly extending ribs 42. Above the ribs 42 the body also has a cross-wall 44, upon whose forward end the bearing 36 may conveniently be carried. At its rear end the body has a slotted opening 46, through which a support wire 48, having a rebent portion 50 at its end, may be inserted between the ribs 42 of the side walls into engagement with the fold 40 and cross-wall 44 and the inner ends of the ribs 42, to hold the body attached to the support wire.

In assembling the support wire with the body, the rebent portion 50 is pushed into the opening 46 between the ribs 42 which are then snapped back into the bend or bight of the wire to hold the wire attached to the body.

A propeller shaft 52 is rotatably extended into the top of the body 32, through a suitable bearing 54, and to whose outer end a propeller or rotor blade 56 is connected to lift the body somewhat after the manner of a helicopter in flight, when the toy is being operated. The shaft 52 is connected at its inner to the outer end of a flexible driving cable 58 which extends through a flexible tube 60 to a source of power for rotating the cable.

The power source by which the toy is operated, may be an electric motor, not shown, contained in a casing 62, which may be of a type to be conveniently held in the users hand, such as a flashlight casing, in which batteries of the usual type may be placed for the operation of the motor. In the present illustration the casing 62 has a generally conically shaped nose 66, best seen in FIG. 3 provided at its apex with a rotatable collar 68 through which the cable 58 and its flexible tube 60 extend, the cable being connected to the motor shaft within for rotation thereby while the tube is non-rotatably carried.

The support wire 48, which may be of any convenient length is attached at one end to the collar 68, so that the support wire may be moved to any desired position about the tube 60 by rotation of the collar. The casing 62 may have a switch button 70 by which the operation of the motor is controlled, and the collar 68 may have an indicator mark or protrusion 72 which is so positioned that when the indicator is aligned with the button 70 the propeller 56 will be located to lift the body 32 vertically upon rotation of the propeller.

In the operation of the toy the casing 62 is held in the user's hand in the manner shown in FIGS. 1 and 2 and the collar 68 is rotated to position the indicator 72 in alignment with the switch button 70, so that the propeller will be above the body, whereupon operation of the button 70 the cable 58 will rotate the propeller to lift the body upwardly. Due to the flexibility of the support wire 48 the body will rise in the air and the downward current of air from the propeller on the deflectors 30 will

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cause the frame 14 to turn, thus tending to rotate the figure 10 with the shaft 18 as an axle. At the same time, because of the angular position of the shaft 18 relative to that of the propeller shaft 52, the figure 10, which is nearly balanced on the wire 12, but which may be slightly biased to a generally upright position by weighting the feet, will rotate on the wire 12 as the frame turns, imparting a movement to the figure somewhat resembling the motion of an astronaut in space.

As the frame is rotated the deflectors or scoops 30 are moved to positions to be differently affected by the downward air current of the propeller 56, thus causing the frame to rotate completely around at times, or to make a part turn in one direction followed by a part turn in the other direction, which may cause the figure to rotate forwardly on the wire 12, or backwardly on the same, or to oscillate thereon. The movements of the figure may at times be rapid and at other times slow and may be tumbling or oscillating, giving the appearance of weightless motion in space, such as might occur to an astronaut.

In the operation of the toy the movements of the figure are difficult to anticipate, but may be controlled and varied to some extent by manipulation of the casing 62. Thus, by swinging the casing from side to side the figure may be moved about generally, and by rotating the casing, as indicated in FIGS. 1 and 2 the support wire may be twisted to exert a torque on the body 32 tending to shift the position of the propeller, thus varying the movements of the figure.

By providing a suitable object, such as the simulated dock D, shown in FIG. 1, at which the figure is to be landed, the user may test his skill in manipulating the device.

It will be apparent that the cross-wire 12, with the figure 10 rotatably mounted thereon may be readily removed from the frame 14, for convenience in packaging the toy or for the purpose of substituting a different figure, by flexing the ends of the frame inwardly and slipping the wire out through the slots 22 of the eyes.

It will thus be seen that the invention, constructed as described above, provides an animated figure toy which is capable of varied operations, whose action in use gives the appearance of the movements of an astronaut under the weightless conditions of travel in space, and which requires considerable skill in manipulation to cause the figure to perform a desired sequence of movements.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. An animated figure toy comprising:
 - a toy figure,
 - support means having an axis,
 - means mounting the figure on the support means for rotation about said axis,
 - means mounting said support means for rotation about an axis disposed in angular relation to said first named axis,
 - propeller means rotatably mounted on said support means in position to exert an upward pull on said support means upon rotation of said propeller means and
 - power means for rotating said propeller means.
2. The figure toy as defined in claim 1 wherein said figure is mounted in a substantially balanced condition for rotation on said first named axis.
3. The figure toy as defined in claim 1, wherein said support means includes,
 - an elongated flexible support member extending to a location remote from said propeller means and said power means includes,
 - an elongated flexible power transmitting element having a driving connection with said propeller means to rotate the propeller means upon axial rotation of said element and extending to said location.

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4. The figure toy as defined in claim 1 wherein said support means includes,

a flexible, elongated frame member, and
 a support element connecting the ends of said frame member to hold the frame member in a bowed condition and upon which said figure is rotatably mounted.

5. The figure toy as defined in claim 4, wherein said means for mounting said support means for rotation is attached to said frame member midway of the length of the member.

6. The figure toy as defined in claim 1, wherein said propeller means is mounted for rotation on an axis disposed in angular relation to the axis of said support mounting means.

7. The figure toy as defined in claim 1 including means

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on said support means positioned to be exposed to the flow of air from said propeller means to exert a rotative force on said support means.

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