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TOY AEROPLANE

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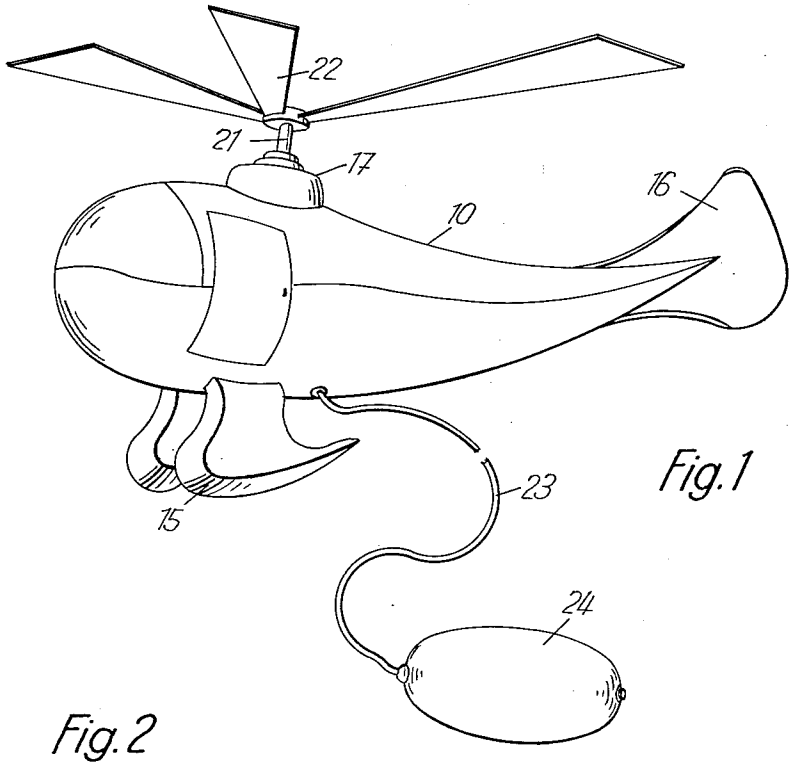
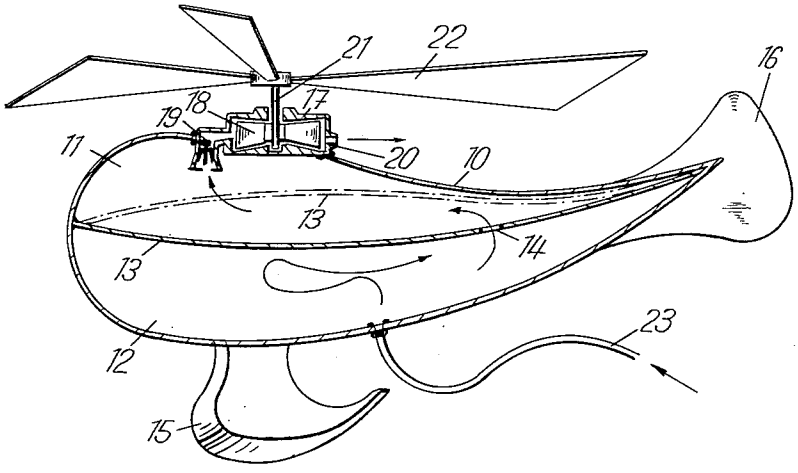


Fig. 1

Fig. 2



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TOY AEROPLANE

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This invention relates to toys, and more specifically to a toy aeroplane of the helicopter type adapted for actuation by means of a propeller.

There are already known in the art toy aeroplanes in which the actuation of the propeller is effected by means of the initial tension of a rubber-twist-rope secured to the propeller and the fuselage. However, the fact that in such toy aeroplanes there is no actual flying going on, that the rotation of the propeller has to be done by hand prior to every performance, and that the so-called flying always comes to an end so quick, makes the playing with a toy of this type quickly tiresome.

That is why already suggestions have been made to actuate the propeller of the toy aeroplane by means of a flexible cable provided at its free end with a crank winch. The cranking then results in revolutions of the propeller, so that the aeroplane is lifted from the ground and enabled to fly. However, in a construction like this it is necessary that the cranking is done very quickly to make the aeroplane fly, which in the long run is very fatiguing. But as soon as the cranking is stopped the propeller comes to a standstill and the aeroplane drops down instantly, whereby the speed of the dropping is increased by the weight of the flexible cable.

The object of the invention is to overcome these drawbacks of known constructions and to provide a toy aeroplane, particularly of the helicopter type, which with simple means and without special effort is enabled to continue the flying long enough without dropping down suddenly.

The invention solves the problem by providing a fuselage of rigid shape with an air-bubble adapted for being filled with air by means of a handy long-hosed rubber-ball-air-pump and connected by means of an air-conducting passage via a check valve with a turbine driving the propeller, so that regular or irregular compression of the rubber-ball-air-pump supplies an essentially continuous air current to the turbine. Experience has taught that even temporary ceasing of the ball-actuation does not then stop the revolution of the propeller, so that the landing of the aeroplane takes place gently and that dropping down abruptly is reliably avoided. The fuselage may consist either of a shape-retaining flexible material, or of an elastic shape-retaining material, for example rubber or plastic material.

Additional features and advantages of the invention are disclosed in the following detailed description taken in connection with the accompanying drawing and with the appended claims.

In the drawing, which shows by way of example a preferred embodiment of the invention,

FIG. 1 is an elevational view of a toy aeroplane devised as a helicopter, and

FIG. 2 is a longiudinal, vertical cross section of the toy aeroplane of FIG. 1.

The toy aeroplane has a fuselage **10** which, although it may be of hard and rigid material, is supposed to consist in the embodiment illustrated in the drawing of a shape-retaining but somewhat flexible material. Arranged beneath the forward part of the fuselage **10** is a ski-type landing undercarriage **15**, while a rudder **16** is located at the tapered rear end of the fuselage **10**. Fastened preferably to the underside of the fuselage **10** is one end of a

hose-pipe **23** which has secured to its free end a rubber-ball-air-pump **24** provided with a check valve. Positioned on the upper side of the fuselage **10**, directly behind the pilot's cabin is a turbine **17**, which has a rotor **18** fastened to a shaft **21** carrying a propeller **22**. An air nozzle acting upon the rotor **18** opens, in airtight fashion toward the outside, into the fuselage **10** and is provided close to its opening edge with a check valve **19** acting upon the interior of the fuselage **10**. Extending between the turbine **17** and the fastening place of the hose-pipe **23** is a partition **13** consisting of elastic material. The result of this is that there are formed in the interior of the fuselage **10** by the partition **13** two air vessels **11** and **12**. As soon as the outside air is pressed by means of the hose-pipe **23** through actuation of the rubber-ball-air-pump **24** into the vessel **12** the partition **13** expands into the position indicated by the dot-and-dash line in FIG. 2. The result is an overpressure in the vessel **12**. A comparatively small opening **14** in the partition **13** permits the air to escape into the air vessel **11**. Also here a certain air pressure does now exist, which air pressure has to reach a certain value now and to maintain that value, for example the pressure value necessary to maintain the fuselage consisting of flexible material even after actuation of the rubber-ball-air-pump **24** in its predetermined physical shape. And it is only when through actuation of the rubber-ball-air-pump **24** the aforesaid inner pressure value is exceeded that the check valve **19** of the air nozzle leading to the rotor **18** of the turbine **17** opens, so that the propeller **22** is caused to revolve. The air escapes from the turbine **17** through a nozzle **20** arranged to point in the direction of the rudder **16**, so that a continuous force of repulsion is produced which likewise advances the aeroplane in forward direction. Apart from this the forward movement of the aeroplane may also be effected through a suitable inclination of the shaft **21** carrying the propeller **22**. Even at irregular actuation of the rubber-ball-air-pump **24** a continuous air current will keep the rotor **18**, and consequently also the propeller **22**, in revolution. Which also will be the case, at least to a certain degree permitting the leisurely landing of the aeroplane, when the rubber-ball-air-pump **24** is suddenly brought to a stop. Hence, the propeller **22** will come to a standstill only as soon as the afore-mentioned limit pressure value in the fuselage **10** has been reached.

It is also possible to provide in a per se rigid fuselage **10** correspondingly working air vessels or air bubbles. Or the entire may be devised as one single air-bubble.

However, the invention is not confined to the form of construction shown in the drawing but includes variations as required by the necessities of conditions. There may be provided, as an example, a plurality of actuated propellers arranged in vertical or horizontal positions. And there may likewise be provided a propeller in a channel traversing the fuselage **10** in longitudinal direction.

We claim:

1. A toy aeroplane of the helicopter type, comprising a fuselage of essentially shape-retaining material; a flexible longitudinally extending partition in the fuselage dividing the same into an air vessel of bubble-like form located within the lower portion of said fuselage and a second air vessel located within the upper portion of said fuselage, there being an aperture in the partition whereby said second air vessel is in communication with the air vessel of bubble-like condition within the lower portion of said fuselage; a turbine positioned on top of the fuselage; a check valve interposed between said turbine and said air vessel within the upper portion of the fuselage; a propeller connected with said turbine and adapted to be rotated by said turbine; a rubber-ball-air-pump provided with a check valve and a comparatively

long hose-pipe secured to said air vessel of bubble-like condition in the lower portion of the fuselage for inflation of the latter, so that regular and irregular actuation of the rubber-ball-air-pump results in the supply of an essentially continuous air current to said turbine for the actuation of said propeller.

2. A toy aeroplane as claimed in claim 1, wherein the fuselage carrying the turbine and the propeller is formed of flexible material.

3. A toy aeroplane as claimed in claim 1, wherein the fuselage carrying the turbine and the propeller is formed of elastic material.

4. A toy aeroplane as claimed in claim 3, wherein the fuselage is formed of rubber.

5. A toy aeroplane as claimed in claim 3, wherein the fuselage is formed of plastic material.

6. A toy aeroplane of the helicopter type, comprising a fuselage of flexible shape-retaining material, said fuselage being divided into two air vessels by a partition of elastic material, the upper air vessel being in communication with the lower air vessel by a small opening; a

turbine positioned on top of the fuselage; a check valve interposed between said turbine and said upper air vessel; a propeller connected with said turbine and adapted for revolution by said turbine; a rubber-ball-air-pump provided with a check valve and a comparatively long hose pipe secured to said lower air vessel for inflation of the latter, so that regular and irregular actuation of the rubber-ball-air-pump results in the supply of an essentially continuous air current to said turbine for the actuation of said propeller, the air from the turbine escaping through a nozzle to the rear of the fuselage, so that a continuous force of propulsion is produced to advance the aeroplane in forward direction.

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