June 24, 1930. F. J. McBRIDE 1,765,435

TOY AIRSHIP

Filed June 29, 1928

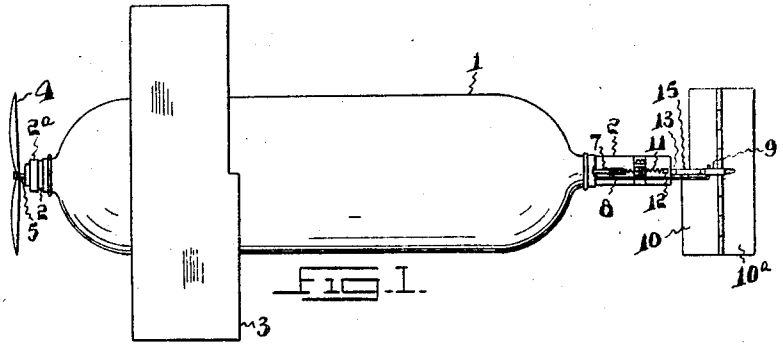


FIG. 1.

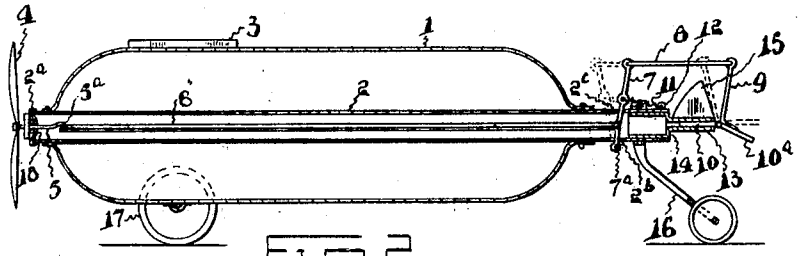


FIG. 2.

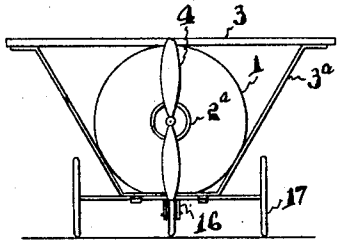


FIG. 3.

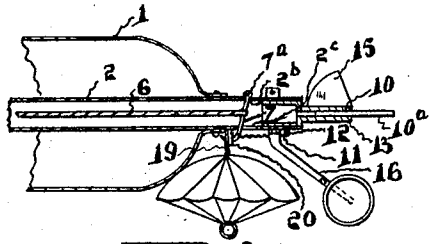


FIG. 4.

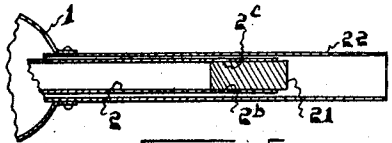


FIG. 5.

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UNITED STATES PATENT OFFICE

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TOY AIRSHIP

Application filed June 29, 1928. Serial No. 289,094.

This invention relates to toy airships combining the features of lighter than air and heavier than air constructions.

The object of this invention is to construct a toy airship of simple construction that will remain aloft for a long period of time and will travel without deviation in any desired direction. A further object is to provide means whereby the airship will automatically rise to a comparatively high altitude immediately after it is launched, and will automatically descend when the propelling force is expended.

I attain my objects by constructing an airship having a gas bag adapted to be charged with air or gas and provided with a propeller, wings, and a rudder for guiding its progress through the air. I also provide means operable by the propelling means whereby the course of the airship is directed upwardly at the commencement of its flight and downwardly at the end thereof.

The construction is hereinafter more particularly described and shown in the accompanying drawings in which

Fig. 1 is a plan view of the airship;

Fig. 2 a longitudinal section thereof;

Fig. 3 a front elevation thereof;

Fig. 4 a longitudinal section of the rear end thereof showing a modified construction; and

Fig. 5 a diagrammatic view showing the method of inflating the gas bag.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 is the gas bag of the airship, which is disposed about a central tube 2, preferably constructed of any suitable light material. The gas bag is restricted at either end thereof and forms an air-tight connection about the central tube when the said bag is inflated. Extending across the top of the gas bag 1 and secured to the top thereof is a wing or plane 3. Braces 3^a extend from either end of the wing and are secured beneath the bag 1. A cap 2^a is fitted over the front end of the central tube 2. A propeller shaft 5 of a propeller 4 is rotatably mounted in the cap 2^a, the shaft 5 passing through the said cap and having a hook-shaped end 5^a located within the tube 2.

A rubber band 6 is secured to the hook-shaped end 5^a and extends through the interior of the tube 2, its other end being secured to a lever 7 adjacent the rear end of the tube. The lever 7 passes through an aperture 2^b in either the upper or lower side of the central tube 2. A cross bar 7^a secured to the end of the said lever 7, which extends through the aperture 2^b, serves to prevent the said end of the lever from slipping back into the inside of the tube 2 and acts as a fulcrum for the lever. The other end of the lever 7 extends through a longer aperture 2^c in the other side of the central tube 2.

A rod 8 is pivoted to this end of the lever and extends backward to an upwardly extending post 9. This post is secured to an elevating rudder 10^a, which is hinged to a stabilizer 10. The rudder 10^a is adapted to be vertically moved so as to direct the course of the airship on a vertical plane.

A spring or rubber band 11 is secured to the lever 7 externally of the metal tube 2, and extends rearwardly to a post or lug 12 on the tube to which it is secured. This spring tends to exert a rearward pull on the lever in opposition to the forward pull of the rubber band 6. When the lever is pulled forward, the rudder 10^a is deflected upwardly, tending to cause the airship to rise. When the lever is pulled backward, the rudder 10^a is deflected downwardly, causing the airship to descend.

The airship is operated in the usual manner by rotating the propeller 4 and thus twisting the rubber band 6 until sufficient tension is obtained to cause the propeller to rapidly turn in the opposite direction when the airship is launched. This tension tends to pull the lever 7 forward against the pressure of the spring 11, thus deflecting the rudder so that the airship tends to rise. When the tension on the rubber band 6 is reduced after the ship has been in flight for some time, the spring 11 overcomes this tension and pulls the lever 7 backwards, thus deflecting the rudder 10^a downwards and causing the ship to descend.

The stabilizer is secured to a projection 13 on a plug 14 which is adapted to fit into the rear end of the tube 2. A vertical fin 15 is likewise secured to the rearward extension 13.

A tail skid 16 is adapted to be secured about the rear end of the central tube 2 and to this end in provided a circular end adapted to embrace the tube and lugs through which pass a bolt adapted to draw them together and thus firmly secure the tail skid to the tube 2.

Preferably wheels 17 are secured to the under side of the braces 3^a. To eliminate friction, thrust bearings 18 may be provided on the propeller shaft 5.

To overcome the propeller torque, the area of part of the wing 3 on one side of the airship is made smaller than the other side thereof; the stabilizer 10 is similarly constructed. This causes the airship to travel without the deviation which usually takes place.

A modified construction is shown in Fig. 4. In this case the lever 7 extends downwardly and is provided with a hook end on which a parachute 19 is supported. When the tension on the rubber band 6 is reduced, the spring 11 pulls the lever backward. The point of the hook end of the lever passes through a ring 20, the parachute being hung on the hook after it has been passed through the ring. When the hook is withdrawn through the ring the parachute is removed from the hook and descends. The removal of this weight from the airship likewise causes the airship to descend. This construction is preferred for use with toy airships of comparatively small, cheap construction. In this construction the elevating rudder 10^a will be rigid.

The method of inflating the airship is shown in Fig. 5. The plug 14 is removed from the end of the tube and likewise the lever 7. Another plug 21 is then inserted in the tube 2 and is adapted to close the end thereof and the openings 2^c and 2^b. An inflating tube 22 is loosely fitted over the central tube and the rear end of the gas bag 1 is pulled over the end of this inflating tube and secured thereto. Gas or air pressure is applied to the other end of the inflating tube and, as the bag is inflated, the tube 22 is gradually drawn along the tube 2, carrying the end of the bag secured thereto with it.

As the end of the bag nears the rear end of the central tube 2 the bag is tightly tied about it and the inflating tube 22 is removed. The lever 7, and the plug 14 carrying with it the stabilizer, the vertical fin and rudder, are then placed in position and the airship prepared for flight.

The word "spring" throughout the description and claims is used in the sense defined in the Practical Standard Dictionary as "An elastic body or contrivance that yields under stress and returns to its normal form when the stress is removed," and includes a rubber band.

What I claim is:

1. An airship including a gas bag; a propeller; means including a spring adapted to be tensed to rotate the propeller; a weight adjacent the rear of the airship; and means controlled by the propeller rotating means for releasing the weight.

2. An airship including a gas bag; a propeller; means including a spring adapted to be tensed to rotate the propeller; a lever to which one end of the rotating means is secured, said lever having a hooked end; a weight suspended on the hooked end; and spring means tending to swing the lever in the opposite direction to that in which the propelling means tends to swing it, the weight being adapted to be released when the latter spring means overcomes the tension of the propeller rotating spring.

Signed at Toronto, Canada, this 9th day of June, 1928.

FRED J. McBRIDE.