May 5, 1931. J. B. McDONOUGH, JR 1,803,506

TOY

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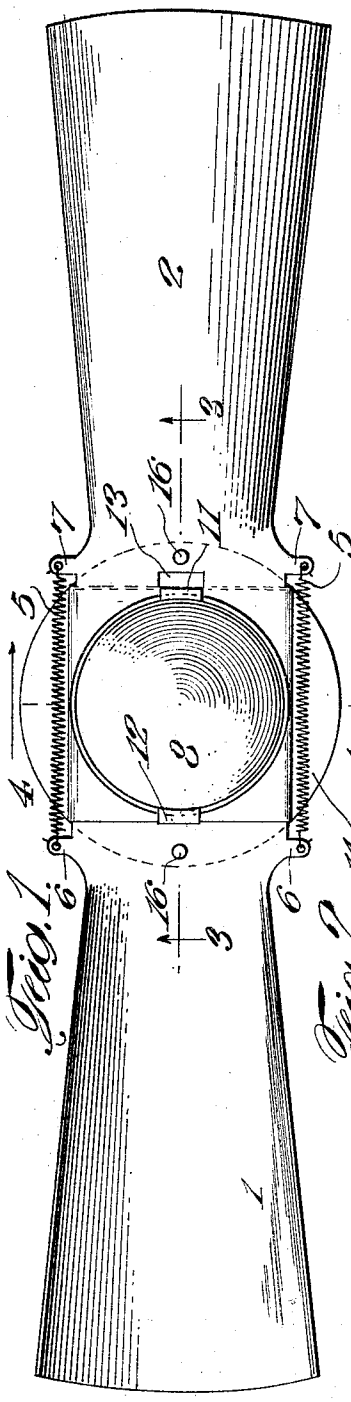


Fig. 1.

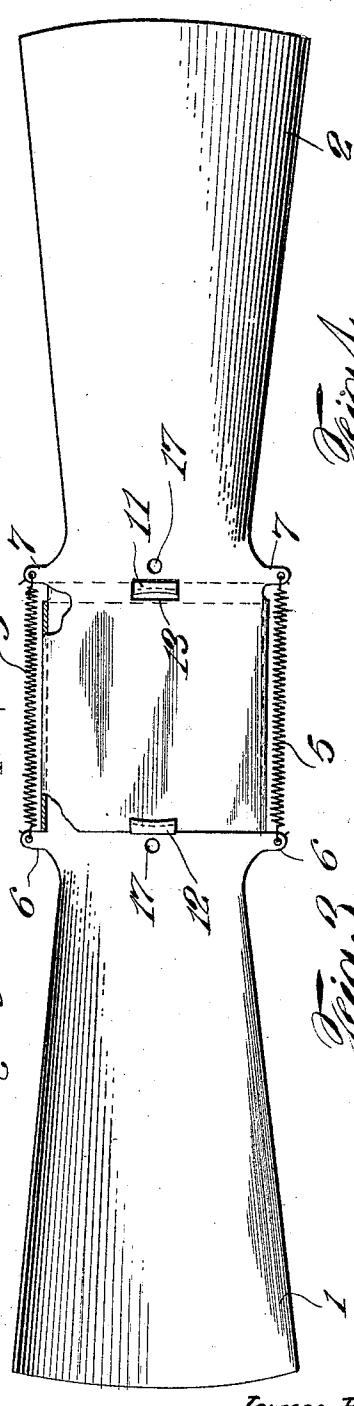


Fig. 2.

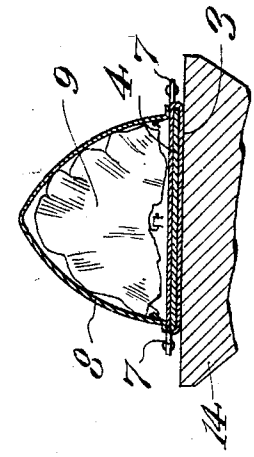


Fig. 4.

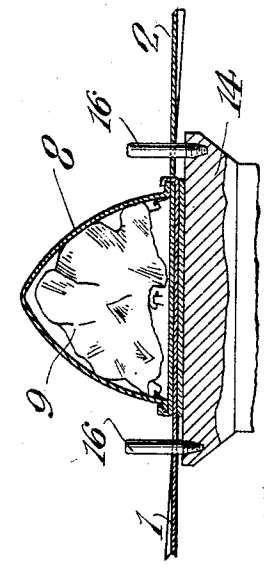


Fig. 3.

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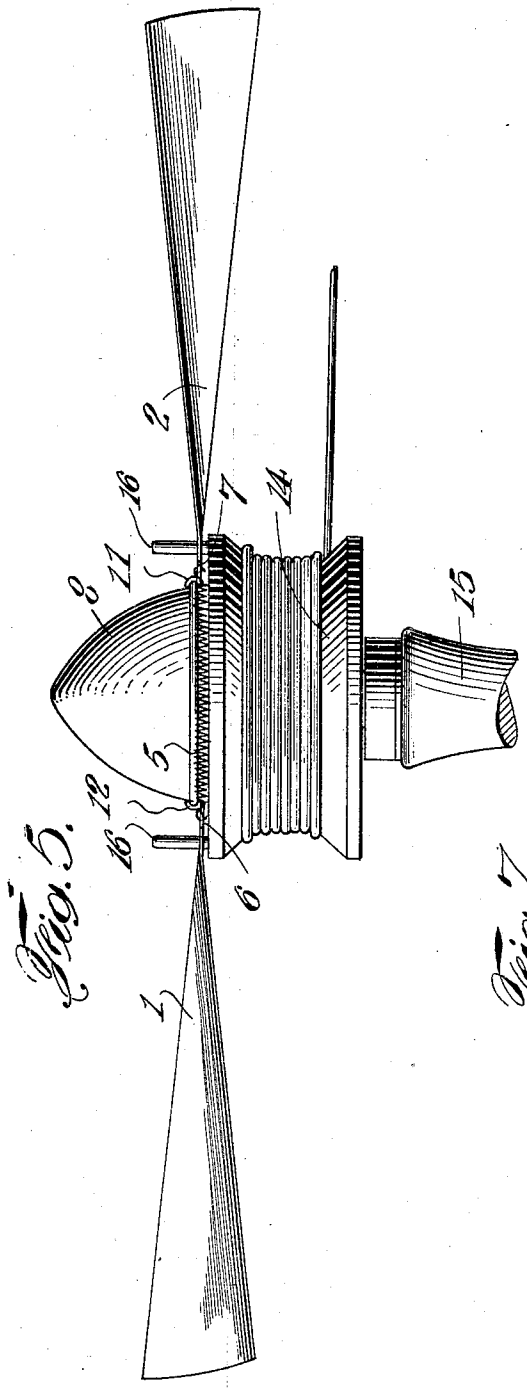


Fig. 5.

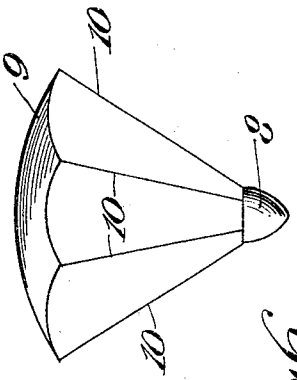


Fig. 7.

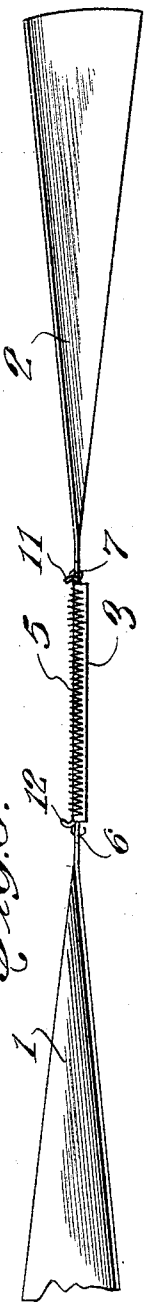


Fig. 6.

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Patented May 5, 1931 1,803,506

UNITED STATES PATENT OFFICE

JAMES B. McDONOUGH, JR., OF NEW YORK, N. Y.

TOY

Application filed September 28, 1929. Serial No. 395,773.

This invention relates to toys, and pertains more particularly to a flying toy of the helicopter type.

It is an object of the invention to provide a flying toy, which when actuated by the operator will ascend to a certain elevation depending upon the quantity of energy supplied. It is a further object to provide a parachute which may be secured to the elevating means during upward flight, but which may be released when said means is at or near the top of its flight.

Other objects and advantages of the invention will appear hereinafter.

A preferred embodiment of the invention selected for purposes of illustration is shown in the accompanying drawings, in which,

Figure 1 is a top plan view of the toy assembled and ready for operation.

Figure 2 is a similar view of the propeller with parachute removed.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a section on the line 4—4 of Figure 1.

Figure 5 is a side elevation of the assembly shown in Figure 1.

Figure 6 is a side elevation of the propeller shown in Figure 2.

Figure 7 is a side elevation of the parachute as it appears when descending.

Referring to the drawings, the toy comprises a propeller having a pair of blades 1 and 2 secured together, but mounted to permit longitudinal sliding movement therebetween. Preferably the blades are made of sheet metal and the inner ends thereof overlap as illustrated in Figures 3 and 4 and are held together by members 3 and 4 which are preferably formed integrally with the blade 2 and are bent around the side edges of blade 1, thus forming in effect a sheath in which blade 1 may slide.

Resilient means are provided for holding the ends of the blades in telescoped relationship. In the preferred embodiment illustrated such means comprise coil springs 5 secured to ears 6 mounted on blade 1, and ears 7 on blade 2. As illustrated, the ears 6 and 7 limit the extent to which the blades may be collapsed.

The parachute 8, during upward flight of the toy, is housed within the cap 9 and is secured thereto by a plurality of strings 10 which are preferably rather short, in order to prevent tangling. The cap 9 may be conveniently secured to the blades by means of lugs 11 and 12, lug 11 being part of blade 1 and lug 12 being part of blade 2. As will be observed, lug 11 projects upwardly through an aperture 13 in blade 2.

The actuating mechanism for the toy preferably comprises a spool 14 rotatably mounted on a handle 15 and adapted to receive a string by means of which the spool may be spun. On the upper side of the spool are a pair of pins 16 which are arranged to be received in apertures 17 in the blades.

In operation, the blades are placed on the spool with the apertures 17 fitting over pins 16, the springs 5 being stretched sufficiently for this purpose. As will be observed, this brings the lugs 11 and 12 sufficiently closely together to permit them to engage the edges of the cap 8, which is slipped into place with the parachute folded inside as illustrated in Figures 3 and 4.

The spool is then wound and spun, and as the increasing speed of rotation of the blades produces gradually increasing lifting effort, a point is eventually reached where the blades free themselves from the pins and fly upwardly. At the same time the centrifugal force of the rotating blades is sufficient to expand the blades against the pull of the springs 5 so that the cap 8 is retained in place. Gradually, however, as the energy of the blades is expended and speed of rotation is reduced, centrifugal force is reduced, and the blades gradually contract, eventually permitting the cap 8 to be released. As will be understood, by adjusting the tension of the springs 5, the cap 8 may be released at any desired point in flight.

If desired, the cap and parachute may be connected to the blades by a flexible connection such as a string or chain, so that the entire assembly may be permitted to descend slowly together, but preferably no such con-

nection is provided, the blades being permitted to drop freely and separately from the parachute.

It will be understood that the invention may be variously modified and embodied within the scope of the subjoined claims.

I claim as my invention:

1. A flying toy comprising, in combination, a pair of blades slidably mounted one upon the other, a parachute, a housing for said parachute, and means controlled by relative movement of said blades to detachably secure said parachute and housing to said blades.

2. A flying toy comprising, in combination, a pair of blades slidably mounted one upon the other, resilient means to urge said blades to contracted position, a parachute, a housing for said parachute, and means to detachably secure said parachute and housing to said blades.

3. A flying toy comprising, in combination, a pair of blades slidably mounted one upon the other, a parachute, and means for holding said parachute on said blades in one position thereof, but for releasing said parachute when said blades assume a different relative position.

4. A flying toy comprising, in combination, a pair of blades having overlapping ends longitudinally movable one upon the other, and adapted to expand under influence of centrifugal force, and resilient means to urge said blades to contracted position.

5. A flying toy comprising, in combination, a pair of blades having overlapping ends longitudinally movable one upon the other, and adapted to expand under influence of centrifugal force, resilient means to urge said blades to contracted position, a parachute, and means whereby the said expansion of said blades holds said parachute thereon.

6. A flying toy comprising, in combination, a rotating member, a parachute, and means operated by centrifugal force created by rotation of said member for securing said parachute to said member.

7. A flying toy comprising, in combination, a rotating member, a parachute secured thereto by means operated by centrifugal force created by rotation of said member, and means for automatically releasing said parachute as the speed of rotation of said member decreases.

8. A flying toy comprising, in combination, a rotating member, a parachute, a housing therefor, and means operated by centrifugal force created by rotation of said member for securing said housing and parachute to said member.

9. A flying toy comprising, in combination, a rotating member, a parachute, a housing therefor, means operated by centrifugal force created by rotation of said member for securing said housing and parachute to said member, and means for releasing said housing and parachute as the speed of rotation of said member decreases.

10. A flying toy comprising, in combination, relatively movable lifting blades, a parachute and means operated by relative movement of said blades to release said parachute.

11. A flying toy comprising, in combination, a rotary lifting member, a parachute separable from said member, means for securing said parachute to said member and mechanism for imparting rotation to said member and for holding said securing means in operative position.

12. A flying toy comprising, in combination, a rotary lifting member including relatively movable blades, a parachute separable from said member, means operated by relative movement of said blades to one position to secure said parachute thereto and operated by relative movement of said blades to another position to release said parachute therefrom and starting mechanism for imparting rotation to said blades including means for holding said blades in parachute securing position.

In testimony whereof, I have signed my name to this specification this 26th day of September, 1929.

JAMES B. McDONOUGH, JR.