L. A. CARTER.

TOY FLYING MACHINE.

APPLICATION FILED JAN. 17, 1910.

1,010,585. Patented Dec. 5, 1911.

Fig. 1.

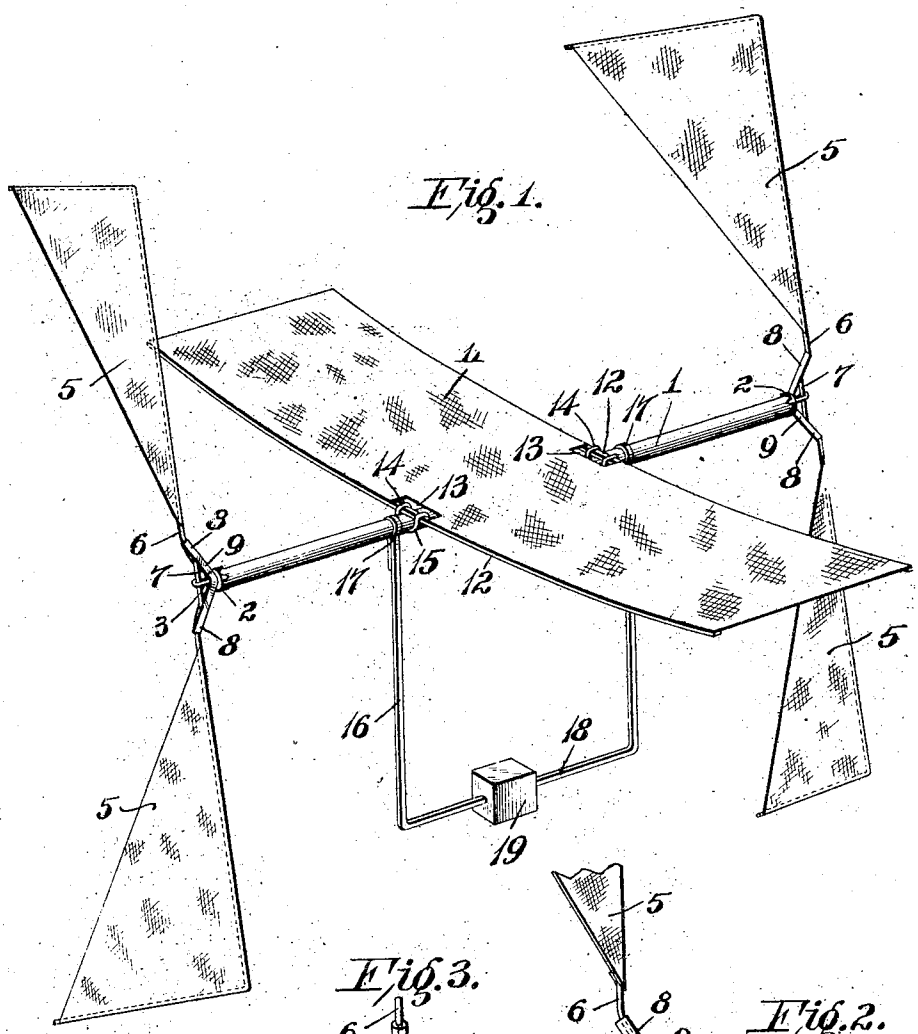


Fig. 3.

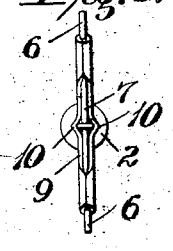


Fig. 2.

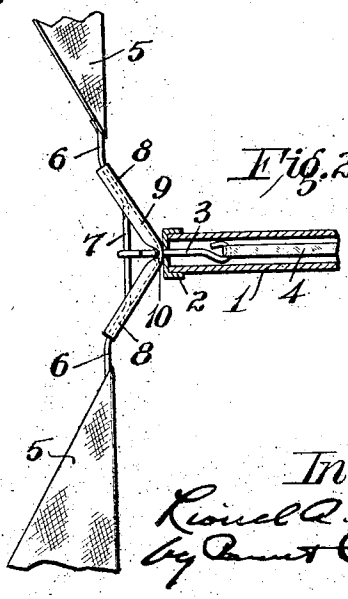
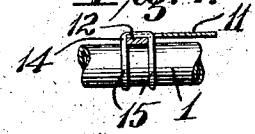


Fig. 4.



Witnesses:

Edgar T. Farmer.

G. A. Pennington

Inventor:

Lionel A. Carter

by Pennington & Pennington

Attys.

UNITED STATES PATENT OFFICE.

LIONEL A. CARTER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO OSCAR H. HYDE, TRUSTEE.

TOY FLYING-MACHINE.

1,010,585. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed January 17, 1910. Serial No. 538,355.

To all whom it may concern:

Be it known that I, LIONEL A. CARTER, a subject of the King of England, and a resident of the city of St. Louis and State of Missouri, have invented a certain new and useful Improvement in Toy Flying-Machines, of which the following is a specification.

This invention relates to flying-machines and more particularly to toy flying-machines.

It has for its principal objects to produce a simple and inexpensive device which is efficient and durable; to provide for the ready renewal of the parts; to provide for numerous adjustments in order to change the direction of flight; and to attain certain other advantages hereinafter more fully appearing.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawing which forms part of this specification and wherein like symbols refer to like parts wherever they occur, Figure 1 is a perspective view of a toy flying-machine constructed according to my invention; Fig. 2 is a fragmentary view, partly in side elevation and partly in longitudinal section, showing the preferred construction and arrangement of the hub portion for the propeller and connection with the motor element; Fig. 3 is a fragmentary edge view of a portion of the propeller; and Fig. 4 is a fragmentary view, partly in side elevation and partly in longitudinal section, showing the preferred form or arrangement for attaching the aeroplane to the body member.

The device comprises an elongated body member, preferably a tube 1. The tube may be constructed of paper or any other light weight material suitable for the purpose, which can be made sufficiently rigid. On the opposite ends of the tube 1 are detachably secured bearing pieces or ferrules 2. The ferrules 2 are perforated centrally and have the axial stem portions 3 of the propellers inserted therethrough. The inner end portions of the axial members 3 are hooked or looped and connected respectively to the opposite ends of a torsional spring, or preferably, an elastic rubber band 4.

The propellers at the ends of the tube each comprise two oppositely disposed blades 5. The blades of one propeller are set at an angle or pitch in a direction opposite to that of the blades of the opposite propeller, so that, as the two propellers are rotated in opposite directions, they act to propel the toy in one normal direction of flight in line with the axis of the tube 1. The blades 5 are preferably composed of triangular sheets of thin paper or other suitable material, which are secured along two sides to a wire 6 which is bent angularly at its opposite ends. The middle portion of the wire 6 is offset as at 7 and clamped between the pinched or rolled end portions 8 of a substantially V-shape hub piece or member 9. This member 9 comprises, preferably, a strip of sheet metal which is first folded longitudinally to constitute a channel which is substantially U-shape in cross section and then bent at its middle so that it assumes a substantially V shape with the side portions of the metal at the bend bulging outwardly as at 10. The sides of the end portions 8 are then pinched tightly about the angular portions of the wire 6 at the ends of the offset portion 7.

The axial stem members 3 are placed through a central perforation in the members 9 and have their outer ends hooked or looped about the middle of the offset portion 7 of the wire frames 6. By this arrangement, the rubber band 4 which connects the inner ends of the axial stems 3, draws the apex portions of the members 9 against the ferrules 2, whereby the parts are held intact on the tube 1, yet permitting the removal of the ferrules 2 and withdrawal of the stems 3 from the tube so that the rubber band 4 may be disconnected and replaced.

An aeroplane 11 is mounted transversely of the body member or tube 1. It comprises a rectangular sheet of thin paper or other suitable material which is secured along its edges to strips 12. The aeroplane is preferably curved slightly upward on each side of the tube 1 and the middle marginal portions on each side of the aeroplane are cut-out or slotted as at 13 whereby the strips 12 are exposed. A rubber band 14 is looped over each of these exposed portions 12 so that the two end loops 15 are drawn down on opposite sides thereof underneath the aeroplane. The tube 1 is placed through said

loops 16; and, by having the bands 14 small enough so that they have to be stretched and placed under tension when thus applied, the aeroplane is held firmly in position. Obviously, however, in some cases, a cord may be substituted for the rubber band 14 and looped tightly about the parts in the same manner. By this arrangement, the aeroplane is permitted to be shifted to different positions endwise of the tube 1. It also permits of readily removing the aeroplane from the tube and replacing it thereon.

Mounted on the tube 1 is a balancing frame comprising a bail 16 whose end portions 17 are looped around the tube 1 sufficiently tight to hold in place, but permitting the frame to be moved endwise of the tube. On the cross member 18 of the frame is slidably mounted a block 19.

In the operation of the device, one of the propellers is held stationarily with the tube and the opposite propeller revolved, thereby twisting the rubber band. After the rubber band has been sufficiently twisted, the toy is released and the untwisting of the rubber band will forcibly revolve the two propellers in opposite directions and the toy will be thereby propelled. By adjusting the aeroplane and balancing frame lengthwise of the tube 1 the toy may be made to travel in a horizontal plane and at an upward and downward inclination. Also, by tilting the aeroplane with respect to the balancing frame, the toy may be made to travel in a circle. Numerous adjustments may be effected by shifting the aeroplane or the balancing frame and the sliding weight thereon. So, too, the balancing frame may be dispensed with in some cases; and, also, both the balancing frame and the aeroplane may be eliminated from the device, in which case the toy will fly perpendicularly instead of horizontally.

Obviously, the device admits of considerable modification without departing from my invention. Therefore, I do not wish to be limited to the specific construction and arrangement shown.

What I claim as my invention and desire to secure by Letters Patent is:

1. A toy flying-machine comprising an elongated body member having a propeller at both of its ends, said propellers being oppositely rotatable but arranged and adapted to propel the machine in one direction, an aeroplane mounted transversely of said elongated body member and adjustable lengthwise thereof, and a balancing frame depending from said body member beneath said aeroplane and adjustable lengthwise of said body member.

2. A toy flying-machine comprising an elongated body member having a propeller at both of its ends, said propellers being oppositely rotatable but arranged and adapted to propel the machine in one direction, an aeroplane mounted transversely of said elongated body member, a balancing frame depending from said body member beneath said aeroplane, said aeroplane and said balancing frame being arranged and adapted to be tilted with respect to each other, and a weight movably mounted on said balancing frame and adjustable lengthwise thereof.

3. A toy flying-machine comprising a tubular body member having a propeller journaled at both of its ends, said propellers being rotatable about the axis of said tubular body member, a torsional spring-motor element connecting said propellers whereby the same are rotated in opposite directions, said propellers being arranged and adapted to propel the machine in one direction, an aeroplane mounted transversely of said tubular body member and adjustable lengthwise thereof, a balancing frame depending from said tubular body member and adjustable lengthwise thereof, said aeroplane being adapted to be tilted with respect to said balancing frame.

Signed at St. Louis, Missouri, January 15, 1910.

LIONEL A. CARTER.

Witnesses:
G. A. PENNINGTON,
J. B. MEGOWN.