

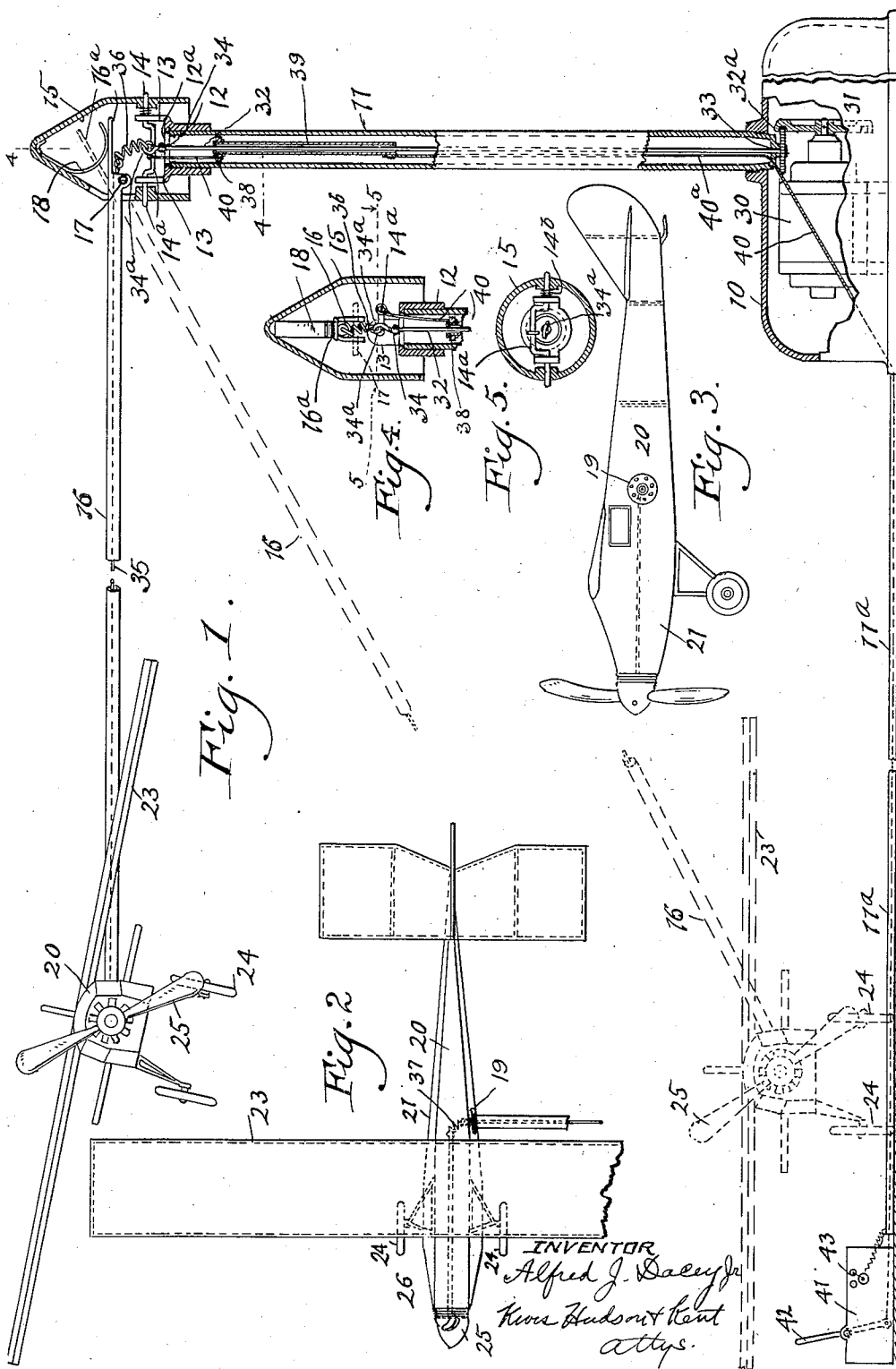
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AIRPLANE TOY

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UNITED STATES PATENT OFFICE

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AIRPLANE TOY

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This invention relates to airplane toys, and has particular reference to the type in which a miniature airplane is propelled around a pivotal point.

5 Numerous devices of this character have been proposed but, so far as I am aware, none of these have been capable of actually flying that is, lifting their own weight, for the reason that the driving mechanism was
10 mounted in the fuselage of the plane and was of such weight as to materially retard the flight of the plane.

15 An object of the invention is to provide an airplane toy which will be capable of actual flight.

Another object is to provide a toy of the character described, in which the propelling mechanism is located in the base of the stand-
20 ard around which the plane is adapted to fly.

Another object is to provide means under the control of the operator for producing upward and downward movements of the
25 plane.

The invention consists in certain novel details of construction and arrangement of parts which will be apparent from the following specification, describing a preferred embodiment of the invention taken in connection with the accompanying drawing illustrating the same, wherein—
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Fig. 1 is an elevational view, partly in section, illustrating an airplane toy constructed in accordance with the invention;

35 Fig. 2 is a plan view of a portion of the toy airplane illustrating certain portions of the driving mechanism;

Fig. 3 is a side elevational view of the airplane;

40 Fig. 4 is a vertical sectional view taken on line 4—4 of Fig. 1; and

Fig. 5 is a horizontal cross-sectional view taken on line 5—5 of Fig. 4.

Referring to the drawings in detail, the device comprises a base 10, upon which there is suitably mounted a standard 11, tubular in form, which is surmounted by an inner cap member 12, having a portion of its top cut away as indicated by the numeral 12a, and formed with a pair of upstanding apertured ears 13. The inner cap member 12 is
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free to rotate upon the end of the standard 11. A shaft 14 is carried by the ears 13, the ends of the shaft extending beyond the ears, and the mid portion of the shaft being formed as a crank 14a, for a purpose to be later described.
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The projecting ends of the shaft 14 serve as a support for an outer cap member 15, the latter being fixed to the shaft by any suitable means, whereby the outer cap 15
60 may be tilted with respect to the inner cap member and the standard 11 against the tension of a spring 14b, and may also rotate with respect to the standard 11, by reason of its connection with the inner cap mem-
65 ber 12.

The outer cap member 15 is slotted at one side to receive one end of a laterally extending tubular arm 16, which is mounted on a horizontally disposed pivot pin 17 at right
70 angles to the shaft 14, by means of which the arm is rendered capable of movement in a plane through the axis of the cap.

The extreme end 16a of the arm 16 extends into the cap beyond the pivotal point 17, and is engaged on its upper side by one end of a spring 18 mounted in the top of the cap, which tends to counterbalance the weight of the arm. The outer end of the arm 16 carries the toy airplane 20, which is suitably secured thereto, as by means of cooperating flanges 19.
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The airplane 20 is illustrated as being of the monoplane type, although other types might be utilized, and comprises a hollow fuselage 21, plane or wing 23, landing wheels 24 and propeller 25. The propeller is secured upon the shaft 26, extending through the fuselage to a point adjacent the point of attachment of the arm 16, which point may be approximately midway of the length of the
85 90 fuselage.

As stated above an object of the invention is to provide means for propelling the airplane, which means are mounted in the base rather than in the airplane itself, so that the weight of the airplane may be very materially reduced, and so that it may be capable of actual flight. To this end there is mounted in the base 10 an electric motor 30 having a driving pinion 31, which meshes with a
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pinion 32a carried at the lower end of a shaft 32 mounted in a suitable bearing 33 within the tubular standard 11 and provided with a bead 34 which engages the end of the standard 11 to serve as a support for the shaft 32. The shaft 32 terminates at its extreme upper end in a hook 34a.

A shaft 35, formed preferably of piano wire, is threaded through the tubular arm 16 and is adapted to be rotated by the shaft 32, by means of a flexible connection which may assume the form of a coil spring 36. The outer end of the shaft 35 is adapted to drive the propeller shaft 26 of the airplane through the medium of a flexible connection 37, which may also be in the form of a coil spring.

It will be readily appreciated that operation of the electric motor will cause rotation of the propeller of the airplane through the shaft 32, flexible joint 36, shaft 35, flexible joint 37 and shaft 26, and the plane will begin to move in a circle around the standard 11 supported on the landing wheels 24. As the speed is increased the plane will rise gradually until the arm 16 assumes the horizontal solid line position illustrated in Fig. 1.

Another feature of the invention contemplates the provision of means for controlling, to some extent, the flight of the airplane. This is accomplished by means of the crank portion 14a on the shaft 14, which may be rocked to tilt the cap 15 with respect to the standard 11, thereby causing the arm 16 to turn lengthwise and direct the nose of the airplane either upwardly or downwardly so that the airplane is caused either to ascend or descend according to the direction of movement of the crank portion 14a. The means provided for operating the crank 14a comprises a member 40 such as a stiff wire which is connected to the crank above the cutaway portion 12a of the inner cap 12. The member 40 extends a short distance into the tubular standard 11 where it is suitably connected to a bushing 38 rotatably mounted on the upper end of a relatively short tube 39 and held against longitudinal movement with respect thereto. The tube 39 surrounds the shaft 32 and is slidable with respect thereto. A flexible member 40a such as a cord or wire is secured adjacent the lower end of the tube 39 and extends through the standard 11 and a tubular extension 11a forming a part of the base and extending to a point beyond the circular path described by the airplane where it opens into a control box or station 41 and is connected to the lower end of a rocking lever 42 mounted in the box. The upper end of the lever 42 extends to the outside of the control box where it is readily accessible. It is also desirable that the switch for controlling the electric motor be mounted on the box 41, as indicated by the numeral 43, but this, of course, is not essential but merely a matter of convenience.

The provision of the rotatable bushing 38 and slidable tube 39 constitutes a swivel connection which permits adjustment of the crank 14a during rotation of the head or cap.

From the foregoing it will be readily appreciated that the invention provides an airplane toy of the character referred to which is capable of actual flight and wherein the flight may be, to some extent, controlled by the operator.

It will be appreciated that while the invention has been described in a preferred embodiment, modifications and changes might be made without departing from the spirit of the invention, and it is desired that only such limitations be imposed as are set forth in the appended claims.

Having thus described my invention, I claim:

1. An airplane toy comprising a base having an extension, a housing carried by the extension, a standard mounted on the base, a cap rotatably supported on the standard, an arm carried by the cap, an airplane mounted at the end of the arm and having a propeller, means mounted in the base for causing rotation of the propeller, mechanism for tilting the cap with respect to the standard, and means carried by the housing for controlling the operation of said first and second mentioned means.

2. An airplane toy comprising a base, a standard mounted on the base, a cap rotatably supported on the standard, an arm having one end pivotally supported within the cap, an airplane mounted at the opposite end of the arm, a propeller mounted in the airplane, means mounted in the base for causing rotation of the propeller, and means mounted within the cap for partially counterbalancing the weight of the arm and airplane.

3. An airplane toy comprising a base, a standard mounted on the base, a cap pivotally and rotatably supported on the standard, tension means for moving the cap in one direction about its pivot, an arm carried by the cap, an airplane mounted on the arm and having a propeller, means for causing rotation of the propeller, and means for causing pivotal movement of the cap against the tension means.

4. An airplane toy comprising a base, a standard mounted on the base, a cap pivotally and rotatably supported on the standard, tension means for moving the cap in one direction about its pivot, an arm carried by the cap, an airplane mounted on the arm and having a propeller, means for causing rotation of the propeller, means for causing pivotal movement of the cap against the tension means, said means comprising a crank shaft rigidly secured to the cap, and means for moving the crank shaft.

5. An airplane toy comprising a base, a

standard mounted on the base, a cap pivotally and rotatably supported on the standard, tension means for moving the cap in one direction about its pivot, an arm pivoted to the cap, an airplane carried by the arm and having a propeller, means for causing rotation of the propeller, and means for causing movement of the cap about its pivot in the opposite direction against said tension means comprising a member offset from the pivotal mounting of the cap, and means for causing movement of said member.

6. An airplane toy comprising a base, an airplane mounted to fly around the base, a propeller on the airplane, and means for causing rotation of the propeller and through said rotation flight of the airplane, said means being rotated outside the airplane.

7. An airplane toy comprising a base, an airplane mounted to fly around the base, a propeller on the airplane, means for causing rotation of the propeller, comprising a motor mounted outside the airplane, and means operable during flight to control the elevation of the airplane.

8. An airplane toy comprising a fixed support, an airplane mounted to fly around the support, a propeller on the airplane, means for causing rotation of the propeller, comprising a motor mounted outside the airplane, and means for varying the elevation of the airplane during flight, said means being located in the fixed support.

9. A toy airplane comprising a base, a standard mounted on the base, an arm carried by the standard and rotatable with respect thereto, an airplane carried by said arm, a propeller therefor for driving the airplane, and means for operating the propeller of the airplane, said means being mounted in the base.

10. An airplane toy comprising a base, a standard mounted on the base, a cap rotatably supported on said standard, an arm pivoted to the cap, an airplane carried by said arm and having a propeller adapted to drive the airplane, and means mounted in the base for causing rotation of the propeller.

11. An airplane toy comprising a base, a standard mounted on the base, a cap pivotally and rotatably mounted on the standard, an arm carried by the cap, an airplane carried by said arm and having a propeller adapted to drive the airplane, and means mounted in the base for causing rotation of the propeller.

12. An airplane toy comprising a base, a standard mounted on the base, an arm carried by the standard, an airplane carried by said arm, an airplane driving propeller mounted on the airplane, means mounted in the base for causing rotation of the propeller, and means for controlling the first mentioned means.

13. An airplane toy comprising a base, a tubular standard mounted on the base, a tubular

arm carried by the standard, an airplane mounted at the end of the arm, a propeller mounted on the airplane and rotatable driving connections mounted in the base and extending through the standard and arm for causing rotation of the propeller.

14. An airplane toy comprising a base, a standard mounted on the base, an arm carried by the standard, an airplane mounted on the arm and having a propeller for driving the airplane, and means mounted in the base for causing rotation of the propeller whereby the airplane is caused to fly in a circular path around the base.

15. An airplane toy comprising a base, a standard carried by the base, an arm carried by the standard and adapted to revolve about the axis of the standard, an airplane mounted on the arm and having a propeller for driving the airplane, and means mounted in the base for causing rotation of the propeller, whereby the airplane is caused to fly around the base.

In testimony whereof, I hereunto affix my signature.

ALFRED J. DACEY, JR.

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