

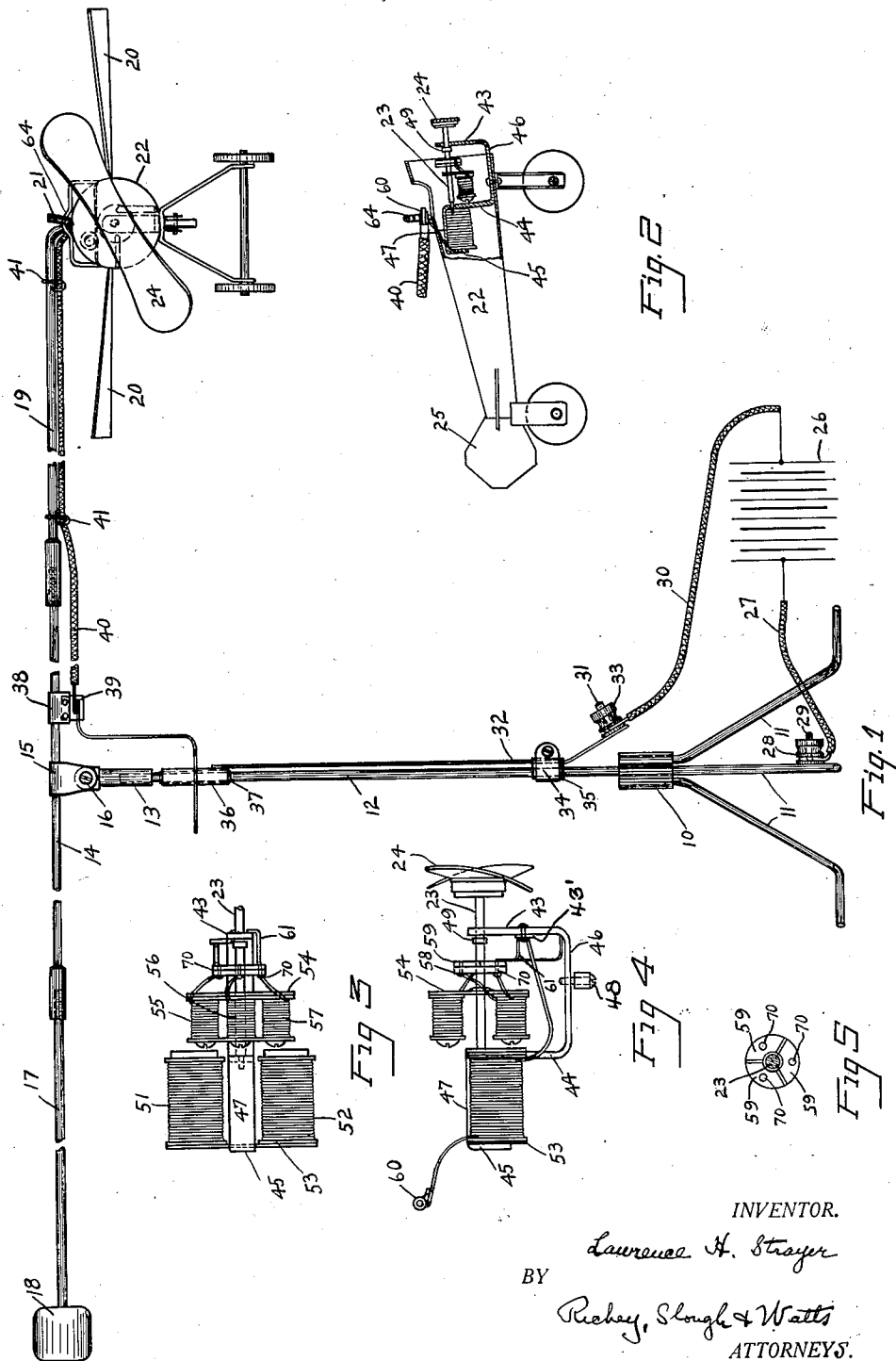
April 19, 1927.

1,625,167

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AERONAUTIC TOY

Filed March 31, 1924



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## UNITED STATES PATENT OFFICE.

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## AERONAUTIC TOY.

Application filed March 31, 1924. Serial No. 703,269.

This invention relates to an aeronautic toy, and more particularly to a toy of such character which is electrically operated.

An object of my invention is to provide a toy, preferably in the form of an aeroplane, which is mounted so that it can be rotated in a circle by an electrically driven propeller.

Another object of my invention resides in the mechanism provided for supporting and mounting a toy so that it can be electrically driven in a circle upon a stationary standard.

Still another object of my invention resides in providing a single frame for supporting the electrical mechanism for rotating the propeller of a toy, which frame is removably mounted within the body of the toy.

These and other objects, and the invention itself, will be more clearly understood from the following detailed description.

In the accompanying drawings in which an embodiment of my invention is disclosed—

Fig. 1 is a side elevation of a toy aeroplane mounted upon a standard and connected to be rotated from a source of electric supply;

Fig. 2 is a side elevation of the aeroplane partially in section showing the electrical mechanism mounted therein for driving the propeller;

Fig. 3 is a top plan view of the electrical driving mechanism and supporting frame removed from the toy;

Fig. 4 is a side elevation of the same; and

Fig. 5 is an end elevation of the commutator.

Referring to the drawings by characters of reference, a portable supporting standard is provided which consists of a base 10, having downwardly extending legs 11 and an upwardly extending supporting rod 12 secured thereto. A cap 13 fits over the upper end of the rod 12, being free to rotate thereupon. A sectional supporting arm 14 extends transversely above the rod 12 and the rotatably mounted cap 13, and a bracket 15 secured thereto is pivotally connected to the cap 13 by a pivot pin 16 which extends horizontally. This arrangement permits the arm to pivot in a vertical plane relative to the cap, and to rotate in a horizontal plane with the cap relative to the standard.

A section 17 forms one end of the trans-

verse supporting arm and is jointed into the end of the central arm section, so that it can be easily removed or attached. The outer end of the arm section 17 is provided with a weight 18, preferably formed as a lead ball. The section 19 forms the other end of the transverse arm and is jointed into the end of the central arm section, so that it can be easily removed or attached. The outer end of the arm section 19 is bent in the form of a hook 21 so that a toy can be suspended therefrom. The ball 18 is of such weight that the sections of the arms on each side of the cap 13 will substantially counterbalance each other when the device is assembled and in operation.

A toy, preferably in the form of an aeroplane, is suspended from the hook 21 and includes a hollow body 22, a propeller shaft 23 which extends from one end of the body, and a propeller 24 which is secured to the end of the shaft. A rudder 25 extends from the other end of the body, and wings 20 extend from the sides of the body.

Batteries 26 are provided to rotate the propeller shaft, and a wire 27 leads therefrom and is clamped in contact with a post 28 which is secured to one of the legs of the standard by a nut 29. Another wire 30 extends from the batteries and is clamped in contact with a post 31, secured to the end of a connector wire 32 by a nut 33. The connector wire 32 extends adjacent the supporting rod 12 and is secured thereto by a clamp 34, a non-conducting bearing member 35 being provided intermediate the rod and the clamp. A conductor bearing 36 encircles the rod 12 adjacent its upper end, and a non-conducting bearing 37 is provided intermediate the rod and the bearing 36. The upper end of the connector wire 32 is secured to the conducting bearing 36 by soldering or other suitable methods.

A clamp 38 is secured to the transverse arm adjacent its pivotal connection with the cap 13, and a member 39 formed of insulating material is suspended from the clamp 38. A conductor wire 40 is secured to the member 39 and is bent at one end so that it extends downwardly and outwardly into contact with the conducting bearing 36. The wire 40 is free to rotate with the arm 14, and at the same time its bent end will remain in contact with the conducting bearing 36 which is carried upon the stationary sup-

porting standard. The wire 40 extends parallel to the arm section 19 and is retained therewith by hooks 41 which are attached to the arm.

5 A one-piece frame is mounted longitudinally within the body of the aeroplane, being formed of strip material which is bent to provide a support and bearing for the rotatable propeller shaft and for the electrically operated mechanism for rotating the  
10 shaft. The frame is bent to form reverse U-bends comprising vertical members 43, 44 and 45 and horizontal portions 46 and 47. A threaded bolt 48 is screwed through  
15 the bottom of the body, into the base portion 46 of the frame member, thereby removably securing the frame within the body. The propeller shaft 23 extends through  
20 openings in the vertical portions 43 and 44 of the frame and is maintained in such position by a collar 49 secured to the shaft, the vertical portions thus providing bearings for the shaft.

Coils 51 and 52 of an electro or field magnet are secured upon each side of the frame  
25 intermediate the vertical portions 44 and 45 thereof. A yoke 53 is secured across one end of the coils and is soldered, or otherwise secured, to the vertical portion 45 of the  
30 frame, thereby rigidly securing the coils to the frame. An arbor 54 is fixed to the propeller shaft 23 and carries armatures consisting of spools 55, 56 and 57.

One end of the wiring of each of the  
35 spools extends to and is secured to a commutator 58 by means of pins 70. The commutator is secured to this propeller shaft to revolve therewith and is provided with a  
40 three part contact plate 59, each of the sections being connected through a pin 70 to one end of the wiring of the respective spools. The other ends of the wiring of the spools may be connected to the frame  
45 through the shaft 23 on which the spools are mounted.

Coils 51 and 52 are interwired, one end of the wiring extending to a terminal 60 and the other end of the wiring extending and being connected to a brush 61 secured to the  
50 frame portion 43 and insulated therefrom by means of an insulator 43'.

A resilient brush 61 is mounted on the frame and is insulated therefrom by the washer 43'. The brush bears against the  
55 sections of the commutator as the same revolves to feed current to the proper spools of the armature. The entire motor is operated in a conventional manner and the frame is used as a return for the current from the  
60 motor to the arm 19 through the bracket 64 and hook 21.

The aeroplane body is provided with an upstanding eye 64, into which the hooked  
65 end of the arm 14 extends to suspend the same and through which the return current

passes from the frame 43 to the arm 19. The terminal 60 provides a socket into which the end of the conductor wire 40 is inserted.

It will be noted, when the weight and aeroplane are secured to the respective ends 70 of the arm 14, that the aeroplane being slightly heavier than the weight will rock the arm 14 about the pivot 16 so that the aeroplane will rest on the floor or table on which the whole device is placed. As the  
75 electric current is applied and the propeller rotates and picks up speed, the aeroplane will move forwardly in a circular path about the standard 12. As the speed increases the curvature of the wings and inclination  
80 of the aeroplane will provide a certain amount of "lift" to the toy body and will cause the same to rise from the ground or floor in the same manner as the larger aeroplanes "take off." During this rise and  
85 consequent rocking of the arm 14 the contact end of wire 40 will at all times contact with the sleeve 36 to provide a complete circuit for the current to the motor of the plane from the battery and return. 90

In operation the wire 27 is grounded with the standard and the other wire 30 from the battery transmits current to the terminal  
95 60 through the connected conductors 32, 36 and 40. The current causes the coils and the armatures to interact in a conventional manner so that the armatures will rotate, and revolve the propeller shaft to which they are secured. The propeller shaft will  
100 drive the propeller which will cause the aeroplane and its supporting arm 14 to move in a circular path while the batteries are attached in operative relation. The aeroplane and the supporting arm rotate  
105 upon the stationary standard.

It will be observed that I have provided a toy in which the parts can easily be assembled or disassembled, and which are simple and inexpensive to manufacture.

Various changes may be made in the construction of the details described without departing from the spirit of my invention and the scope of the appended claims. 110

What I claim is:—

1. In an electrically driven toy, a supporting standard, an arm rotatably mounted on the top thereof, said arm also being capable of rocking vertically on said standard, a balance weight carried by one end of the arm, a toy body carried by the other  
120 end of the arm, a shaft rotatably mounted in said body, a propeller on said shaft, electrical mechanism carried by said body to rotate the shaft and propeller, a battery, and means carried by the arm and the standard  
125 for completing the electrical circuit from the battery to the electrical mechanism including an insulated contact sleeve carried by said standard and an elongated arm carried by said rotatable arm to rock therewith 130

cooperating with said contact sleeve for completing the electrical circuit from said battery to said electrical mechanism, said contact arm extending substantially parallel with said rotatable arm to make contact with said sleeve throughout both rotational and vertical movements of said rotatable arm.

2. In an electrically driven toy, a supporting standard, an arm rotatably mounted on the top thereof, said arm also being capable of rocking vertically on said standard, a balance weight carried by one end of the arm, a toy body carried by the other end of the arm, a shaft rotatably mounted in said body, a propeller on said shaft, electrical mechanism carried by said body to rotate the shaft and propeller, a battery, an elongated insulated contact sleeve fixed to said standard, and a rigid contact arm car-

ried by the rotatable arm to rock therewith in contact with the sleeve, said rigid contact arm maintaining contact with the sleeve during vertical movement of the rotatable arm to complete the electrical circuit.

3. In an electrically driven toy, a toy body, a frame removably secured within the toy body, a propeller shaft rotatably mounted in said frame and projecting exteriorly of said body, a propeller secured to the shaft exteriorly of the body, electrical mechanism carried by the frame to rotate the shaft when connected with a source of electrical supply, and a single means removably securing the shaft, propeller, electrical mechanism and frame to said body as a unit.

In testimony whereof I hereunto affix my signature this 22d day of March, 1924.

LAWRENCE H. STRAYER.