A. E. RITTENHOUSE.

SUPPORTING MEANS FOR SWINGING OBJECTS.

APPLICATION FILED FEB. 21, 1913.

1,090,118.

Patented Mar. 10, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

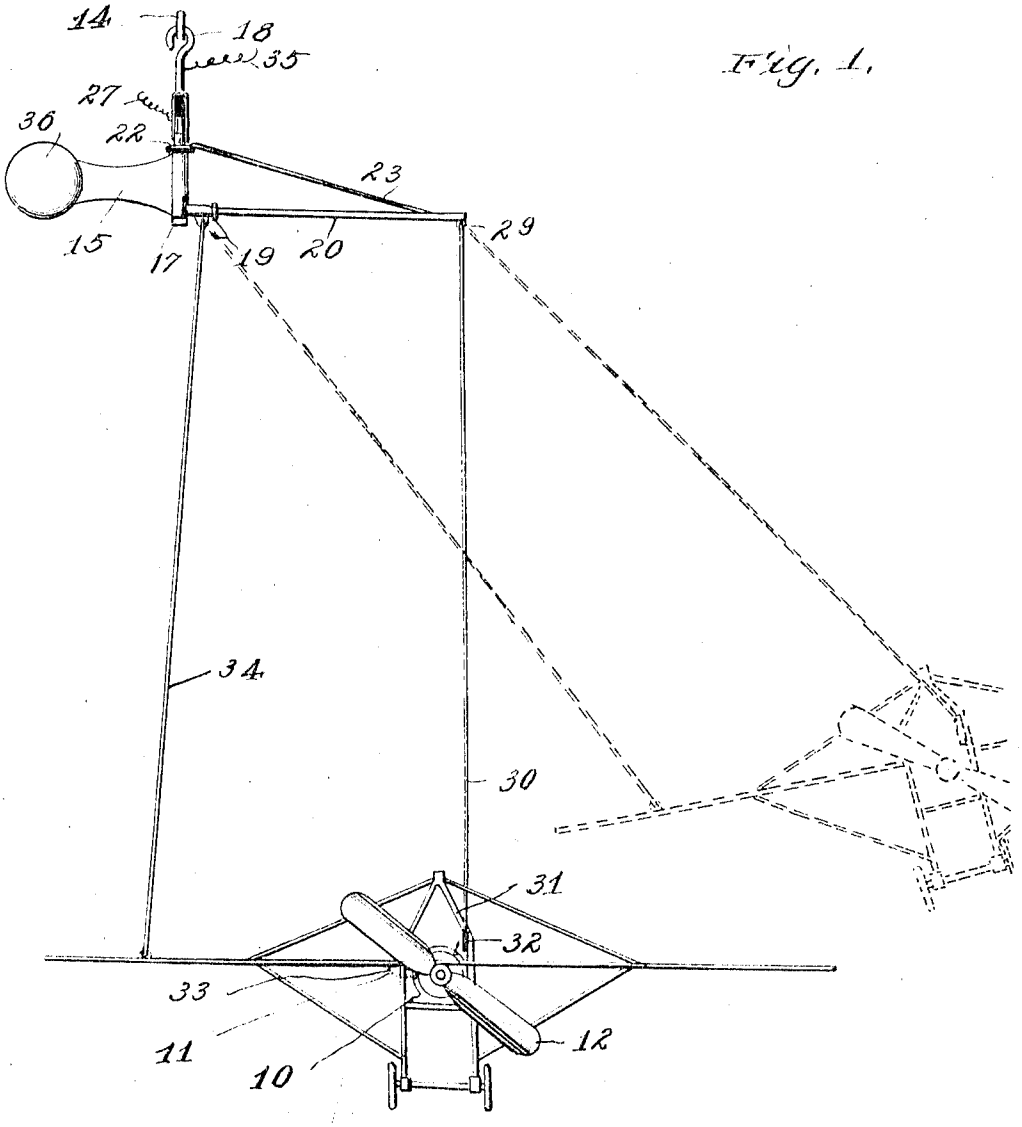
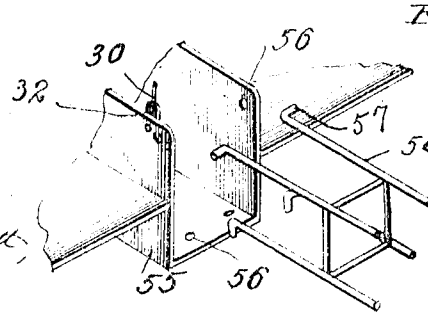


Fig. 5



WITNESSES

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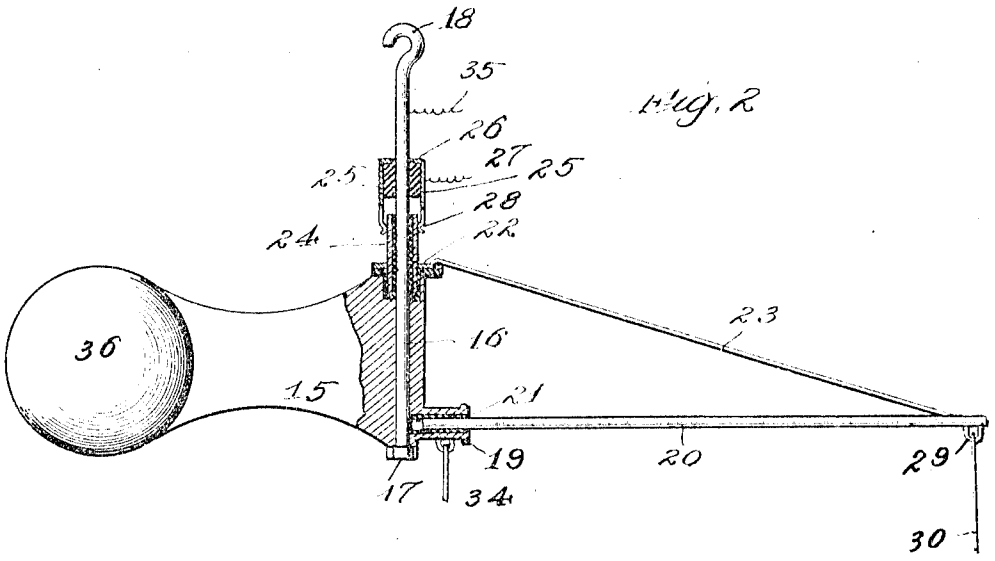


Fig. 2.

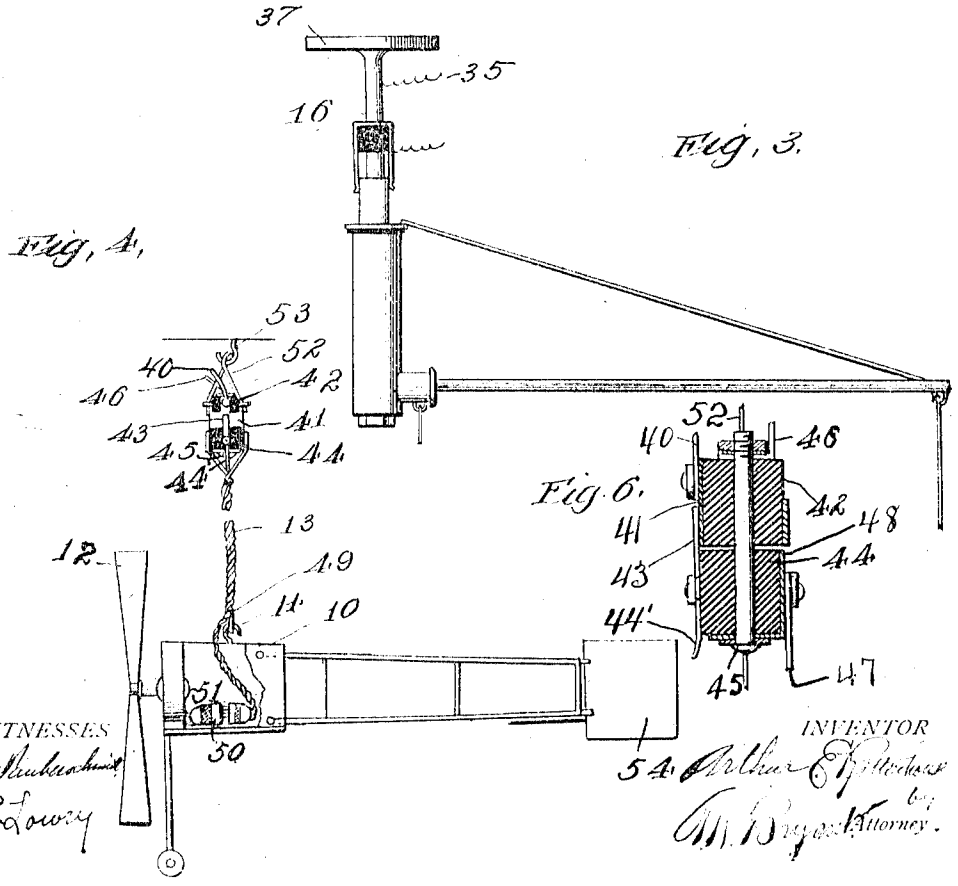


Fig. 3.

Fig. 4.

Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

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SUPPORTING MEANS FOR SWINGING OBJECTS.

1,090,118. Specification of Letters Patent. Patented Mar. 10, 1914.

Application filed February 21, 1913. Serial No. 749,976.

To all whom it may concern:

Be it known that I, ARTHUR E. RITTENHOUSE, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Supporting Means for Swinging Objects, of which the following is a specification.

This invention relates to improvements in supporting means for swinging objects, and is more especially adapted for suspending electrically operated toys.

An object of the invention is to provide means whereby an object, such for instance, as a toy aeroplane may be given a swinging motion which shall be continuous in its operation.

A further object is to provide the suspended object in such a manner that its motion will be in the nature of circular swinging turns and having the impelling force directly mounted upon the swinging object.

A further object is to provide a toy aeroplane with a motor driven propeller and through the agency of the support therefor conduct the electrically operating current to said motor.

A still further object is to provide a swivel means through which an electric current may be conducted through the supporting means to a motor operated swinging object.

A still further object is to provide a means for suspending a swinging object at one side of the center of the main support and whereby the object being propelled by power within itself travels in a substantially circular path, the diameter of which depends upon the speed of the traveler.

With these objects in view and others that will appear as the nature of the invention is better understood, the same consists of the novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings forming a part of this application and in which like reference numerals designate corresponding parts throughout the several views: Figure 1 is a side elevation of the device at rest, its position while in motion being illustrated in dotted lines. Fig. 2 is a side elevation partly in section of the supporting bracket. Fig. 3 is a side elevation of a bracket support rigidly secured and omitting the counterweight. Fig. 4 is a side elevation showing the object swung from an over-head support. Fig. 5 is a detail view of the manner of connecting two parts of the aeroplane together, and, Fig. 6 is a detail view of the swivel supporting member.

Referring in detail to the drawings, the aeroplane 10 is herein illustrated as the object adapted to be swung from the supporting means and said aeroplane is provided at its forward part with the electric motor 11 having the propeller blades 12 rigidly secured to the armature shaft thereof and an actuation of the motor being thereby adapted to turn said propeller blade.

It has been found that the suspending of the aeroplane from a single member, such as the twisted conductor member 13 shown in Fig. 4, does not permit of the actuation of the swinging object in circles of varying diameters, but rather such suspension allows the aeroplane 10 under the influence of the blades 12 to turn around substantially upon a central pivot as though pivoted directly to the hook 14' of the aeroplane. It has been found necessary in order to give circular paths to the movement of the aeroplane that the supporting means therefor be off-set from the center of the support, and for this purpose the electrical conducting brackets shown in Figs. 2 and 3 are employed.

For supporting the aeroplane from a stationary member such as the ring 14, the swivel arm 15 is provided with the hook 16 journaled therethrough and secured therein by the lower nut 17 and having the top terminal portion 18 adapted to engage said ring 14. Adjacent the bottom of said swivel arm, a tubular boss 19 receives the radial arm 20, which arm is insulated from the boss by an insulating bushing 21. Said radial arm is electrically connected to a washer 22 by means of a guy or supporting wire 23 connecting the same with the outer end of said radial arm. A tubular metallic member 24 preferably constructed of brass is rigidly-mounted upon the swivel arm and electrically insulated therefrom but electrically-connected to the washer 22, which washer is insulated from the swivel arm and surrounds not only the tubular conductor 24 but also the hook 16 centrally extending through the latter. The brushes 25 upon

either side of the hook 16 are rigidly secured thereto but insulated therefrom by the bushing 26. Said brushes 25 act as one set of terminals from the source of electrical supply such as batteries (not shown), the connection to said brushes being through the line wire 27 while the terminal resilient ends 28 of the brushes are adapted to engage the tubular conductor 24 whereby the current will pass through the wire 23, end of the arm 20, the loop 29 thereon, and the combined supporting and conducting wire 30 to the motor terminal 31, said members 30 and 31 being insulated from the frame of the aeroplane by the insulated block 32. The circuit in one direction from a line wire to the motor being apparent, it will be noted that the return circuit is effected through the other motor terminal 33 being attached directly to a portion of the metal frame of the aeroplane and thence communicating through the combined supporting and conducting wire 34 with said boss 19 and by which electrical connection is made with the hook 16 from the upper part of which a line wire 35 is secured.

With the aeroplane at rest and suspended from the arm and boss as above described, it is apparent that the support will be overbalanced so that to normally position the aeroplane and supporting arms horizontally, a counter-balance weight 36 is provided upon the outer end of the swivel arm 15 and which weight is sufficient to retain the aeroplane horizontally when the propeller thereof is inactive.

It may be desired to attach the support rigidly to a member rather than to freely suspend the same therefrom as effected by the hook portion 18, and for this purpose the portion 18 of the member 16 is eliminated and a plate 37 substituted therefor and by which the member 16 is rigidly secured, as to the ceiling of a room, in a vertical position. It is obvious that with this manner of support, the counter-balance weight 36 is unnecessary, and all of the remaining elements of the device are identical to those heretofore described.

The energizing of the motor being accomplished through the current conducted to the supporting wires 30 and 34, the propeller 12 starting its revolution impels the aeroplane at first around a circular path of substantially the same diameter as the arm 20 and upon gaining in speed, wider and wider circles are made, the aeroplane assuming the banked position in its flight as shown by the dotted lines in Fig. 1.

The positioning at one side of the central support being necessary to accomplish the circular path of the aeroplane, the same results whether the member 16 is rigidly supported vertically as shown in Fig. 3 or freely retained substantially vertical by means of the counter-weight 36 at all times and including the time when the aeroplane is making its flights. For the purpose of allowing the aeroplane to slightly tilt upwardly at its outer wing for the purpose of "banking" in rounding the curves, it is found advantageous to provide the wires 30 and 34 at a greater distance apart at their bottom points of attachment than at the tops thereof.

For suspending the flying object upon a single supporting and conducting member such as 13 shown in Fig. 4, there is provided the line wire 40 secured to the conducting collar 41 of an insulated cylindrical block 42 and with which a conducting spring 43 carried by a companion block 44 is adapted to contact, said spring 43 being connected with the conductor 44′ constituting one strand of the supporting cable 13. The bolt 45 passes centrally through the dielectric members 42 and 44 having its top electrically connected to the second line wire 46. said bolt 45 is connected with the conductor 47 of the cable through the connecting plate 48 secured to the exterior of the insulating member 44. The conducting of the current through the cable 13 being thus described, the aeroplane 10 is secured to said cable by means of the hook 14′ engaging a loop 49 mounted upon the cable 13 while the electrical coupler 50 connects up the members 44′ and 47 with the electric motor 51 which has the propeller blades 12 rigidly secured to its armature. The operation is believed to be apparent in that a connecting of the line wires 40 and 46 with a source of electrical power (not shown) thus completes the circuit with the motor 51 and operates the blades 12 for propelling the aeroplane, the dielectric members 42 and 44 acting as a swivel upon the bolt 45 and the spring 43 electrically connecting as a brush turning upon the outer surface of the energized collar 41. The swivel member is provided with a bail 52 by which the entire device may be suspended from a ceiling hook 53, said bail being the functional equivalent of the upper supporting portion 18 of the hook member 16 heretofore described while it is apparent that the hanging of the aeroplane upon the loop 49 takes all strain from the cord connecting between this point of attachment and the motor. It is also noted that a rudder member 54 is provided upon the aeroplane which may be frictionally or otherwise retained in adjusted positions so as to slightly give direction to the movement of the aeroplane.

Another feature of the aeroplane construction shown in detail in Fig. 5 consists of providing the main frame 55 thereof with perforations such as 56 for receiving the overturned ends 57 of the tail portion 58 of the aeroplane.

It is evident that while the present constructions are well serviceable as a toy, that the same structures may be employed in amusement devices and the aeroplane or other swinging object made of sufficient strength to support the weight of a desired number of passengers.

While the forms of the invention herein shown and described are what are believed to be preferable embodiments thereof, it is nevertheless to be understood that minor changes may be made in form, proportion or details of construction without departing from the spirit and scope of the invention as set forth in the appended claims.

Having thus fully described my invention and in what manner the same is designed for use, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A device of the class described comprising a supporting hook, a swivel member mounted thereon, an arm extending from said swivel member, a counter-balance upon the free end of said arm, a radial conducting arm secured to said swivel member and extending in a direction opposite to said first-named arm and being insulated from said swivel member, a swinging object, supports between said object and said swivel member and radial arm, and means for electrically connecting said radial arm and swivel member to the opposite leads of a source of electrical supply.

2. A device of the class described comprising a supporting hook, a swivel member mounted thereon, an arm extending from said swivel member, a counter-balance upon the free end of said arm, a radial conducting arm secured to said swivel member and extending in a direction opposite to said first-named arm and being insulated from said swivel member, a swinging member, an electric motor mounted in said swinging member, a propeller upon said motor, combined suspending and conducting wires connected to the opposite poles of said motor and secured to said radial arm and swivel member, and a line wire connected to said swivel member and radial arm.

3. A device of the class described comprising a swinging object, an electric driving motor positioned therein, a swivel member, a counter-weight arm upon one side thereof, and a supporting arm insulated therefrom upon the opposite side thereof, conductor and supporting wires secured between said swivel member and motor and between said arm and motor, and electrical lead wires connecting said swivel member and supporting arm with a source of electrical supply.

4. A device of the class described comprising an aeroplane, an electric motor therein, a propeller upon said motor, a suspended swivel, an arm suspended from said swivel, a counter-weight upon one end of said arm, conducting supporting wires between the opposite end of said arm from said counter-weight and said motor, and electric connections to said swivel member adapted for supplying current to said wires.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR E. RITTENHOUSE.

Witnesses:

RICHARD J. BOURKE,

CATHERINE SOMERS.