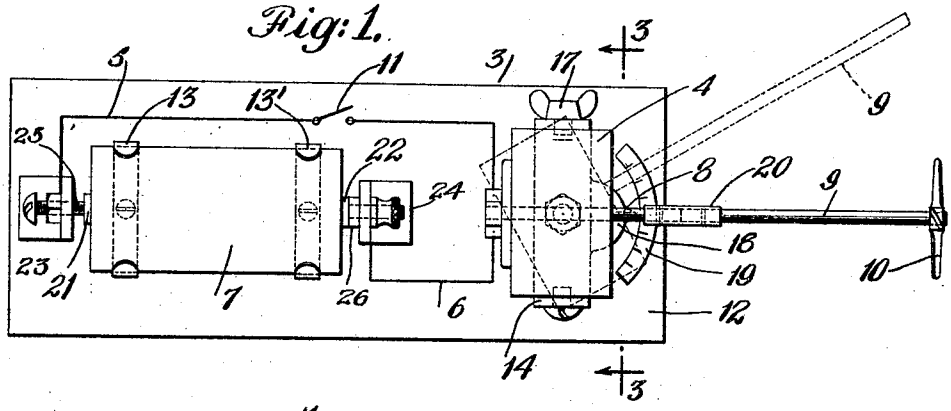
Aug. 4, 1925. 1,548,633

F. L. SAWYER ET AL

ELECTRICALLY PROPELLED TOY

Filed June 10, 1922

Fig:1.



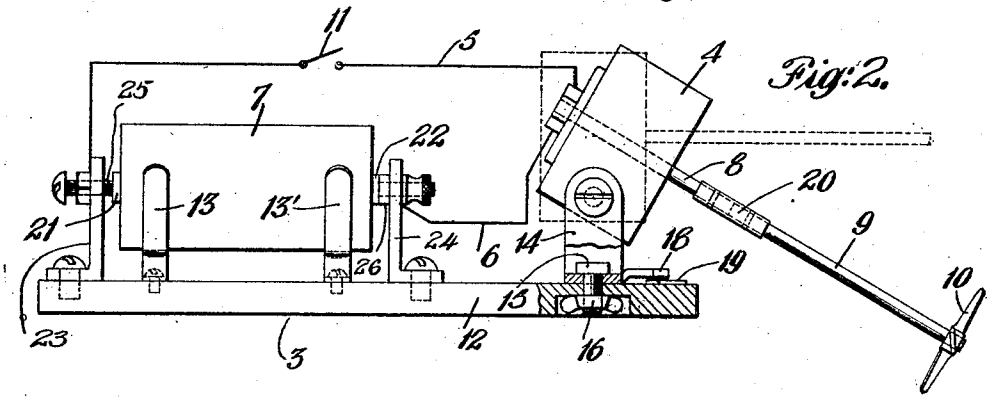


Fig:2.

Fig:3.

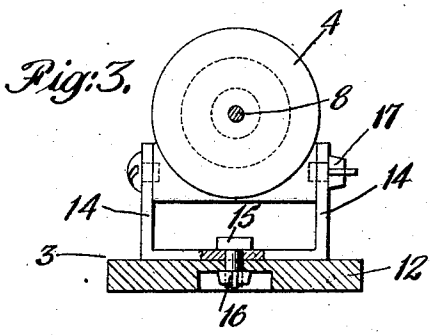


Fig:4.

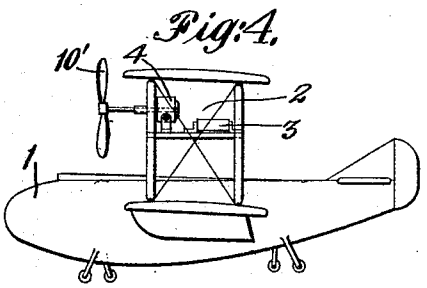
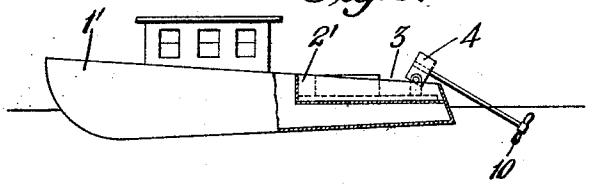


Fig:5.



INVENTOR
Commander Frederick L. Sawyer
BY Christian and Berger.
C. Campbell Hunnicke
ATTORNEY

Patented Aug. 4, 1925. 1,548,633

UNITED STATES PATENT OFFICE.

FREDERICK L. SAWYER, OF EVANSTON, ILLINOIS, AND CHRISTIAN BERGER, OF BROOKLYN, NEW YORK, ASSIGNORS TO SAID FREDERICK L. SAWYER, TRUSTEE, OF EVANSTON, ILLINOIS.

ELECTRICALLY-PROPELLED TOY.

Application filed June 10, 1922. Serial No. 567,487.

To all whom it may concern:

Be it known that we, Commander FREDERICK L. SAWYER and CHRISTIAN BERGER, citizens of the United States, and residents of Evanston and Brooklyn, respectively, in the county of Cook and county of Kings, respectively, and State of Illinois and State of New York, have invented certain new and useful Improvements in Electrically-Propelled Toys, of which the following is a specification.

This invention relates to electrically propelled toy boats or other toy vehicles.

Self propelled toy boats as usually constructed have been operated by a spring or in some instances the toy boats have been driven by an electrical motor connected to the house current. Both these forms of power propulsion are unsatisfactory, since in the first case, the speed decreases as the spring runs down and the power stored in a coil spring is of small amount and the boat in a relatively short time comes to a stop while in the second case there is the danger of electrical shock to the child due to the wires becoming wet. Regular dry cells and storage batteries cannot be used in small toy boats because of their size. The small flashlight cell has not sufficient power to operate the small toy motors at present manufactured. It has been discovered, however, that a motor can be specially designed and constructed which can be driven by the small cartridge battery of the flashlight type.

One of the objects of this invention is to provide a compact electrical power plant and source of electricity, the both forming a unit capable of being inserted into the hull of the small toy boat or toy vehicle and transferable from one toy to another.

Still another object of this invention is to provide a small toy boat or other toy vehicle with an electrical motor so mounted as to both propel and control the direction of movements of the toy, the mounting being adjustable to vary the direction of movement of the toy. Still another object of this invention is to provide a unit electrical power plant and source of supply having a driving shaft with removable propellers to permit the adaptation of the unit power plant and source of supply to drive either a water or air vehicle or the same vehicle by water or air propulsion. Still another object of this invention is to provide an electrically propelled toy having a readily removable source of supply which can be easily obtained and replaced at small cost without disconnection of any wiring.

Referring to the drawings:

Figure 1, is a plan view of the unit power plant embodying the principles of my invention.

Figure 2, is a view in elevation of the unit power plant.

Figure 3, is a detail sectional view of Figure 1 along the line 3—3, looking in the direction of the arrows.

Figure 4, is a side elevation of a toy hydro-aeroplane with the unit power plant placed therein and adjusted for air propulsion.

Figure 5 is a side elevation, partly in section, of a toy boat with the unit power plant placed therein and adjusted for water propulsion.

In carrying out our invention we propose to provide various kinds of toy boats or other toy vehicles such as hydro-aeroplane 1, or launch 1′, having spaces 2, 2′, therein to accommodate the removable unit power plant 3 and source of electrical supply 7. The power plant 3 is mounted on base 12 and comprises a motor 4 connected by wires 5 and 6 through contacts 21, 22 to unit cell 7. A switch 11 may also be provided. The motor driving shaft 8 carries removable propeller shaft 9 to which is attached propeller 10.

In order to provide a small, compact and efficient power plant we propose to employ a small toy motor 4 having permanent magnets for the field with small air gaps and well designed bearings to reduce friction and having as its source of electricity a small unit cell 7 of the cartridge type. With such construction we have found that a small boat may be driven continuously at a satisfactory rate of speed by such a unit cell for 6 or 10 hours with a rate of discharge of less than ⅓ of an ampere, a rate of discharge less than that of a pocket flashlight. The cartridge battery 7 has contact 21 at

the top thereof and the base 22 forms the other contact which is really the metallic shell or container of the battery. Spring contact arms 23, 24, are bolted to base 3 and carry contacts 25, 26 to engage contacts 21, 22. The cartridge cell 7, as generally made, has a protruding rim at the top in order to protect and prevent short circuits when the battery is not connected and in use and therefore the form of contact must be such as to permit of engagement with contact 21 of the battery without touching the rim of the container. The purpose of making one contact, to wit, 25 adjustable is to permit of such adjustment should different makes of cartridge cells be used for replacements and in which case the length may vary to a slight extent but sufficient to prevent contact. The cartridge battery 7 has spring cradle clips 13, 13′ to hold it in position with respect to contacts 25, 26. The battery may be removed by a pull disengaging it from the spring clips 13, 13′ which can be more readily done if the pull is exerted past the midpoint of the battery and to the right so that it pivots about the other contact and then can be easily removed. In fact if it is desired to shut off the power the the battery itself can be operated as a switch.

We also propose to mount the motor 4 on a universal joint to permit of its being rotated or of its being tilted in order that the unit power plant 3 when transferred from one toy boat to another having varying heights from the water line can be adjusted to drive the toy boat and to permit of the motor being adapted to drive either by air or water propulsion as well as to permit of the adjustment of the motor so that the toy boat can be driven either in a straight line or a circle, the size of the circle depending upon the adjustment of the motor in azimuth. We have shown such a form of mounting which consists of trunnion carriage 14 having bolt 15 through the center of the base and wing adjusting nut 16 therefor. We also provide wing adjusting nut 17 as one of the trunnions to frictionally hold the motor in any predetermined position of tilting. A pointer 18 is formed integral with the trunnion carriage 14 and we provide scale 19 secured to base 12 with graduations thereon to permit of the setting of the motor in order that the child may predetermine the size of the circle that the boat will make.

The operation of the toy is as follows:—

The particular hull or vehicle desired to be operated by the child is taken from the box and the unit power plant 3 is placed in space 2 recessed to receive base 12 without requiring securing means, the motor having been adjusted as desired either for motion in a straight line or for motion in circles by means of adjusting nut 16 as shown in Figure 1 in dotted lines, the size of the circle being determined by the indicator 18 and scale 19. Any desired superstructure may then be placed on the hull by the child and switch 11 being thrown, the little toy may then be placed in any body of water and operated. In case the child desires to use a land toy the motor unit power plant 3 may be placed in space 2 of the toy having first been adjusted for air drive by means of adjusting nut 17, see Figures 3, 2 and 4, the water propeller having been replaced by removing propeller shaft 9 from driving shaft 8 and an air propeller 10′ with its shaft being inserted in its place.

It will thus be seen that we have provided an electrically propelled toy that is cheap to manufacture and inexpensive to run, the power plant of which, being capable of transfer from one toy to another and which is capable of adjustment for air or water drive and to control the direction of motion of the toy, and one that is both instructive and amusing to the child.

What we claim is:

1. An electrically propelled toy comprising a toy vehicle and a unit electrical power plant consisting of a removable cartridge cell, a motor and propelling means, said cartridge cell and motor mounted on a removable base, means for adjusting said motor with respect to said base and means for adjusting said propelling means to drive said vehicle by either air or water propulsion.

2. An electrically propelled toy comprising a vehicle and a removable unit electrical power plant, said power plant consisting of a base, a cartridge uni-cell, a motor and propelling means carried by said motor, said uni-cell held by spring clips to said base and a rotatable trunnion carriage secured to said base for said motor, the pointer carried by said trunnion carriage co-operating with a scale affixed to said base to predetermine the degree of rotation of said trunnion carriage.

3. An electrically propelled toy comprising a vehicle, and a unit power plant therefor, said power plant consisting of a replaceable source of supply, a motor mounted on a rotatable trunnion carriage and removable propeller shafts carried by said motor.

4. A unit electrical power plant for a toy comprising in combination, a base, a replaceable cartridge cell secured to said base, a motor mounted on a universal joint on said base for adjustment of said motor in azimuth or elevation and propelling means carried by said motor.

5. A unit electrical power plant comprising in combination a cartridge uni-cell and a motor, said cell and motor mounted upon a base, spring clips attached to said base to hold said cartridge cell, an adjustable uni-

versal carriage secured to said base for said motor and propelling means carried by said motor.

6. An electrically propelled toy having a source of replaceable electrical supply, a motor, propelling means carried by said motor, said source of electrical supply being self contained and forming the bridging complement of the circuit and means to permit said source of supply to be operated as a switch.

Signed at New York in the county of New York and State of New York June A. D. 1922.

FREDERICK L. SAWYER.
CHRISTIAN BERGER.