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L. W. BROWN

TOY HELICOPTER

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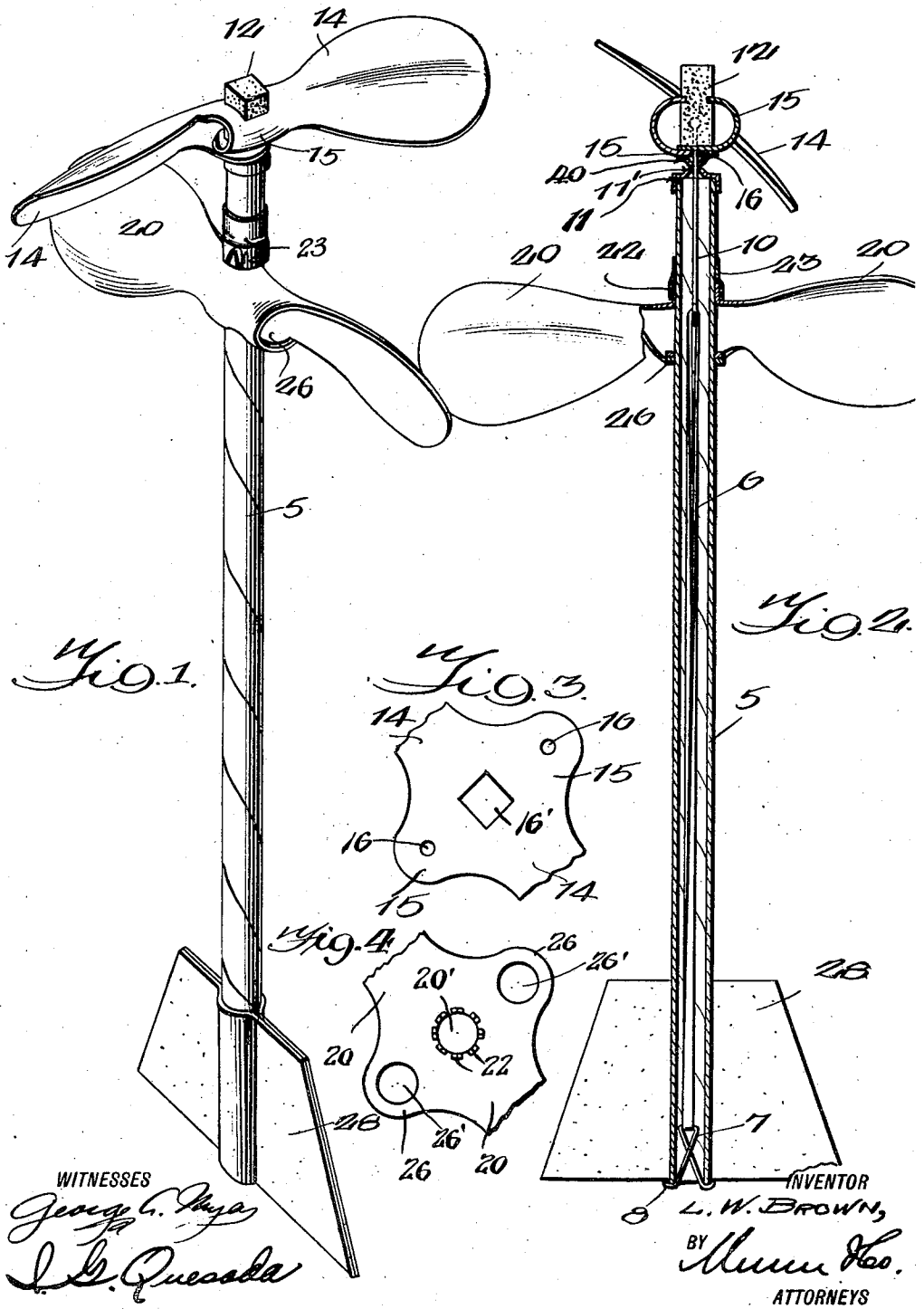



Fig. 1.

Fig. 3.

Fig. 4.

Fig. 2.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## TOY HELICOPTER.

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*To all whom it may concern:*

Be it known that I, LAWRENCE W. BROWN, a citizen of the United States, and resident of Clinton, in the county of Henry and State of Missouri, have invented certain new and useful Improvements in Toy Helicopters, of which the following is a specification.

This invention relates to toys and more particularly to a helicopter.

Briefly stated an important object of this invention is to provide a toy helicopter wherein front and rear plates are provided, the front or forward plate being connected to a source of energy and having a pitch opposite the pitch of the rear propeller whereby a more or less balanced power is produced.

A further object is to provide a toy helicopter wherein the hub of the foremost propeller acts as a bumper and as a gripping member when twisting the rubber band employed as a source of energy.

Further the invention forming the subject matter of this application aims to provide a toy helicopter which is extremely light and therefore will not break delicate objects which it may happen to strike while in flight.

A further object is to provide a toy of the character specified which is cheap to manufacture, durable in use and simple to operate.

Further objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a perspective of the improved toy helicopter.

Figure 2 is a longitudinal sectional view through the same.

Figure 3 is a fragmentary perspective of one of the propellers.

Figure 4 is a view similar to Figure 3 and showing a similar portion of the other propeller.

In the drawing wherein for the purpose of illustration is shown a preferred embodiment of the invention the numeral 5 designates a body or fuselage which may be of any determined material, such as paper or celluloid and the material from which the tubular body is formed is arranged in spiral formation as particularly illustrated in Figure 1 whereby to produce a more or less yieldable body. However, it should be noted that the body 5 is possessed of sufficient strength to withstand the longitudinal strain incident to the employment of the particular type of motor illustrated. Furthermore the body 5 is possessed of sufficient strength to withstand contact with the various objects.

As illustrated in Figure 2 the tubular body 5 receives a rubber band 6 employed as a source of energy and the rear end of the rubber band is anchored to the rear end of the body through the medium of an attaching member 7. It will be observed that the attaching member 7 is in the nature of a length of wire having its intermediate portion formed with a loop and its terminal portions formed with hooks 8 which engage the rear end of the body.

The forward portion of the rubber band is secured to a stem 10 and the stem 10 is extended through a cap 11 arranged on the forward end of the body 5. The cap 11 is bulged as at 11′ and the stem 10 is journaled by this bulged portion. The forward end of the stem 10 is secured to a hub 12 of the propeller generally designated by the numeral 14. Figure 1 illustrates that the intermediate portion of the propeller is provided with lateral extensions or ears 15, each having an aperture 16 for the reception of the stem 10. Also this intermediate portion is provided with an opening 16′ adapted to receive the hub 12. In positioning the propeller 14, the stem is extended through the opening 16 of each ear 15 and then moved to the position shown.

The hub 12 which is preferably formed of cork or other yieldable material extends beyond the intermediate portion of the propeller and thereby forms a bumper or contact member so that when the helicopter strikes an object damage will not occur. The drawing illustrates that a cone shaped washer 40 is arranged on the stem between the propeller and the cap 11 and thereby reduces friction between the parts to a minimum.

With reference to Figures 1 and 2 it will be observed that a second propeller 20 is fixed on the body rearwardly of the first named propeller, the intermediate portion of this propeller is formed with a central opening 20′ adapted to receive the body member 5. A plurality of tangs or extensions 22 encircle the opening 20′ and when the propeller is positioned so these tangs

may be confined beneath a sleeve 23. In this manner the propeller may be secured to member 5. In this case the intermediate portion of the propeller 20 is also provided with projections or bars 26 each of which is formed with an opening to receive the tubular body 5. It is thus seen that the rear propeller 20 is securely and positively connected to the forward portion of the body or fuselage and Figure 1 illustrates that the pitch of one propeller is opposite that of the other. Consequently a balanced power is produced.

To the rear end of the body member 5 there is secured a vane 28 which is adapted to serve for guiding or steering the device. This vane is also of such weight that it may balance the device when in flight.

In operation the tubular body 5 is held in one hand and the propeller is manually rotated for twisting the source of energy 6. In twisting the rubber band one of the propellers 14 is engaged by the forefinger of the operator, the winding being with the forefinger of the right hand.

When the toy is released both propellers will rapidly rotate and in opposite directions whereby to draw the body through the air. By reason of the light construction employed the toy will not damage fragile objects it may strike. In carrying out the invention the propellers 14 and 20 are made from a material such as paper, celluloid or light metal and the other parts of the toy may be made of any material.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that such minor changes in arrangement and construction of parts may be made as will remain within the spirit of the invention and the scope of what is claimed.

Having thus described the invention, what I claim is:—

1. A toy flying machine comprising a tubular body of a substantially uniform diameter throughout, a propeller arranged at the forward portion of the body, a hub secured to the propeller and terminating in advance of the intermediate portion of the same whereby to form a bumper, a stem connected to the hub, a rubber band connected to the stem and to the rear portion of the tubular body and forming a source of power to rotate the propeller, a second propeller secured on the body rearwardly of the first named propeller, and a vane secured to the rear portion of the tubular body.

2. A toy flying machine comprising a tubular body of a substantially uniform diameter throughout, a propeller arranged at the forward portion of the body, a hub secured to the intermediate portion of the propeller and terminating in advance of the intermediate portion of the same whereby to form a bumper, a stem connected to the hub, a rubber band connected to the stem and to the rear portion of the tubular body and forming a source of power to rotate the propeller, a second propeller secured on the body rearwardly of the first named propeller, a vane secured to the rear portion of the tubular body, said second named propeller being formed with a centrally arranged opening receiving the body and formed adjacent the opening with a plurality of forwardly directed attaching members.

3. A toy flying machine comprising a tubular body, a propeller arranged at the forward portion of the body, a hub secured to the propeller and terminating in advance of the intermediate portion of the same whereby to form a bumper, a stem connected to the hub, a rubber band connected to the stem and to the rear portion of the tubular body and forming a source of power to rotate the propeller, a second propeller secured on the body rearwardly of the first named propeller, a vane secured to the rear portion of the tubular body, said second named propeller being formed with a centrally arranged opening receiving the body and formed adjacent the opening with a plurality of forwardly directed attaching members, and a sleeve formed on said body and receiving said forwardly directed attaching members.

4. A toy flying machine comprising a tubular body, a propeller arranged at the forward portion of the body, a yieldable hub secured to the propeller and forming a bumper, a stem connected to the hub, a rubber band connected to the stem and to the rear portion of the tubular body and forming a source of power to rotate the propeller, a second propeller secured on the body rearwardly of the first named propeller, said second named propeller being formed with a centrally arranged opening receiving the body and formed adjacent the opening with a plurality of forwardly directed attaching members, a sleeve formed on said body and receiving said forwardly projecting members, and a cap secured on the forward portion of said body and having an opening receiving said stem.

5. A toy helicopter, comprising an elongated body member, a propeller rotatably supported at the forward end thereof, a second propeller rigidly secured to the body member adjacent and at the rear of the first named propeller, said propellers being so arranged that when rotated in opposite directions forward movement of the helicopter will occur, means whereby the propellers may be simultaneously rotated and in opposite directions, and means carried

directly on the rear end of the body member whereby the helicopter will be guided and balanced during flight.

6. A toy helicopter, comprising an elongated body member, a propeller rotatably supported at the forward end thereof, a second propeller rigidly secured to the body member adjacent and at the rear of the first named propeller, said propellers being so arranged that when rotated in opposite directions forward movement of the helicopter will occur, means whereby the propellers may be simultaneously rotated and in opposite directions, and a vane supported directly on the rear end of the body member and adapted to guide and balance the helicopter while in flight.

7. A toy helicopter, comprising an elongated tubular body member, a propeller rotatably supported at the forward end of said body member, a second propeller rigidly secured to the body member adjacent the forward propeller and at the rear thereof, said propellers being arranged so that when revolved in opposite directions forward movement of the helicopter will occur, means extending between the tubular member and the first named propeller whereby the tubular member and first named propeller may be rotated simultaneously and in opposite directions, and a vane supported directly on the rear end of the tubular member adapted to serve for guiding the helicopter and balancing the same during flight thereof.

8. In a toy helicopter, a body member, a propeller rotatably supported at the forward end of said body member, and an elongated hub for said propeller made of resilient material and adapted to serve as a bumper and thereby protect objects with which the same may collide.

9. In a device of the character described, a tubular body member, a rubber band within said body member and extending longitudinally thereof, a rotatable member secured to one end of said band, and adapted to rotate exteriorly of the tube, a clip secured to the other end of the band and disposed within the tubular member, and outwardly bent hook-shaped projections carried by the clip adapted to engage upon the associated end of the tubular member and secure the tube and band against rotation with respect to each other.

LAWRENCE W. BROWN.