Sept. 16, 1930. J. R. HARRIS 1,776,222

TOY AEROPLANE

Filed Oct. 14, 1927 2 Sheets-Sheet 1

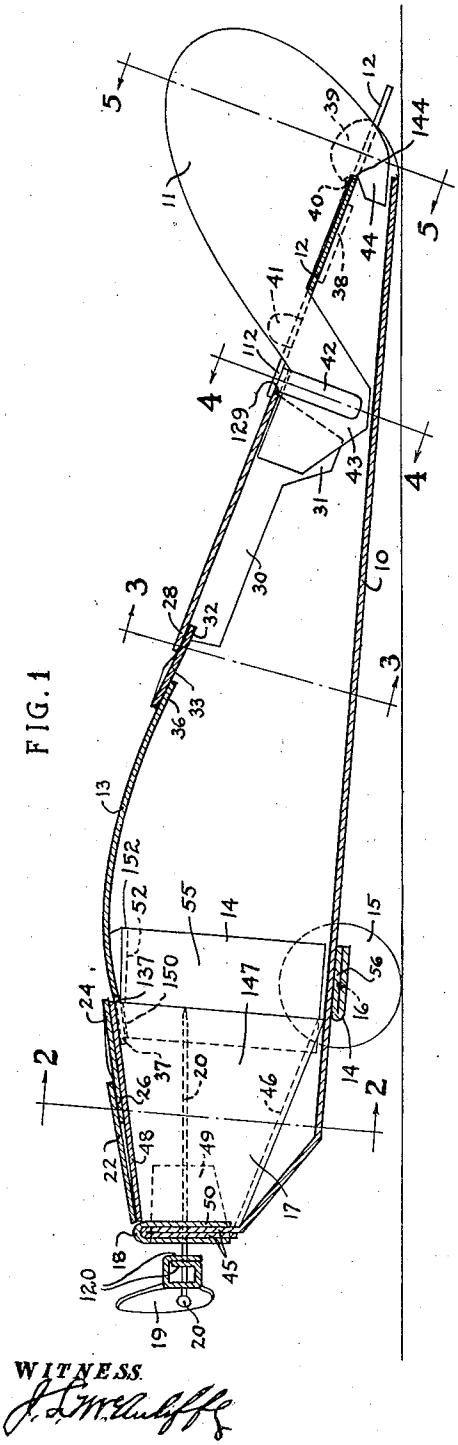


FIG. 1

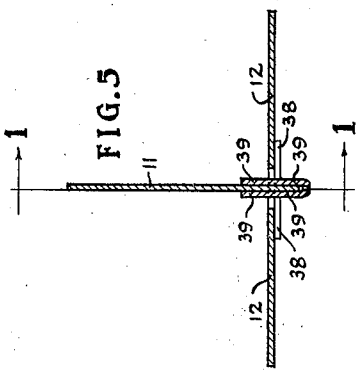


FIG. 5

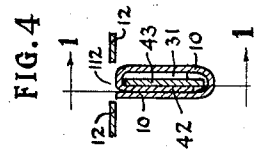


FIG. 4

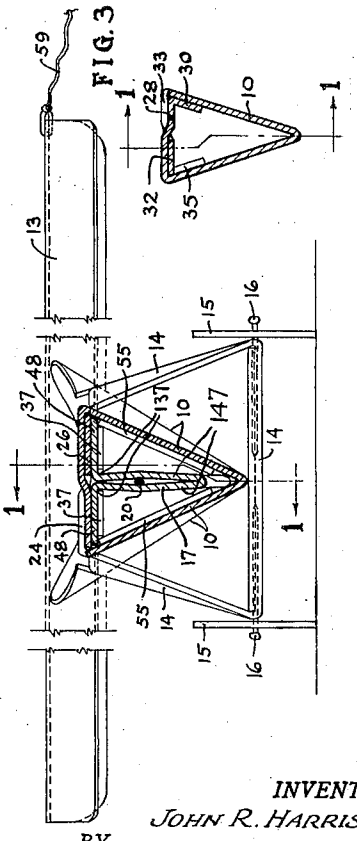


FIG. 3

FIG. 2

WITNESS.

INVENTOR
JOHN R. HARRIS

BY

ATTORNEYS

Sept. 16, 1930. J. R. HARRIS 1,776,222

TOY AEROPLANE

Filed Oct. 14, 1927 2 Sheets-Sheet 2

FIG. 6

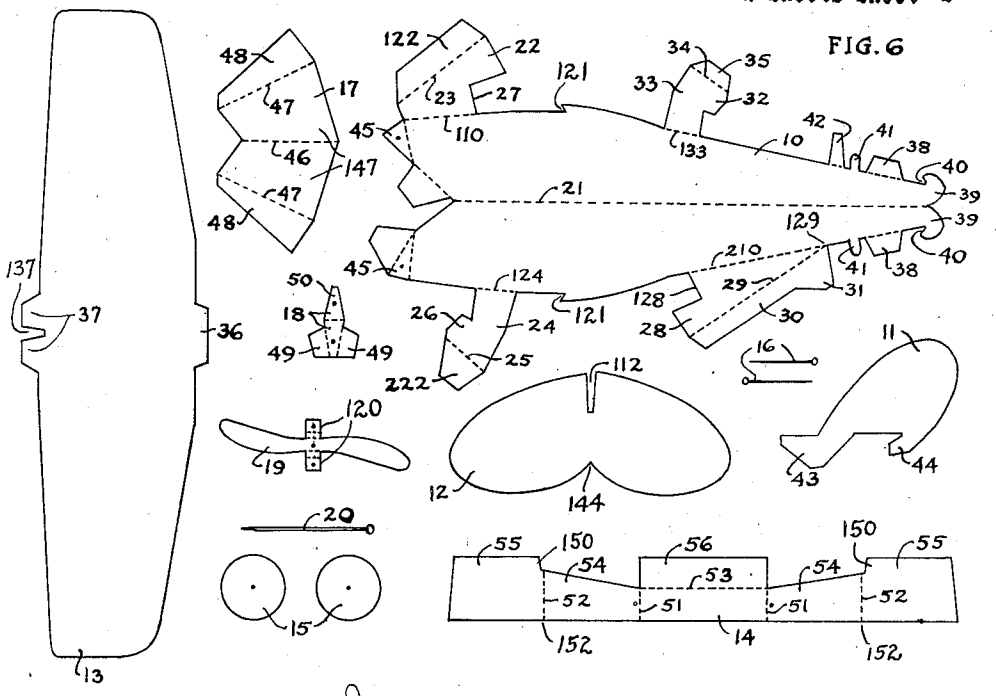


FIG. 7

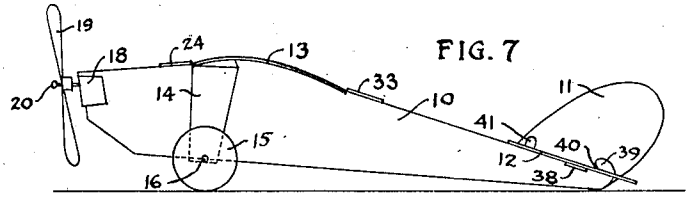


FIG. 8

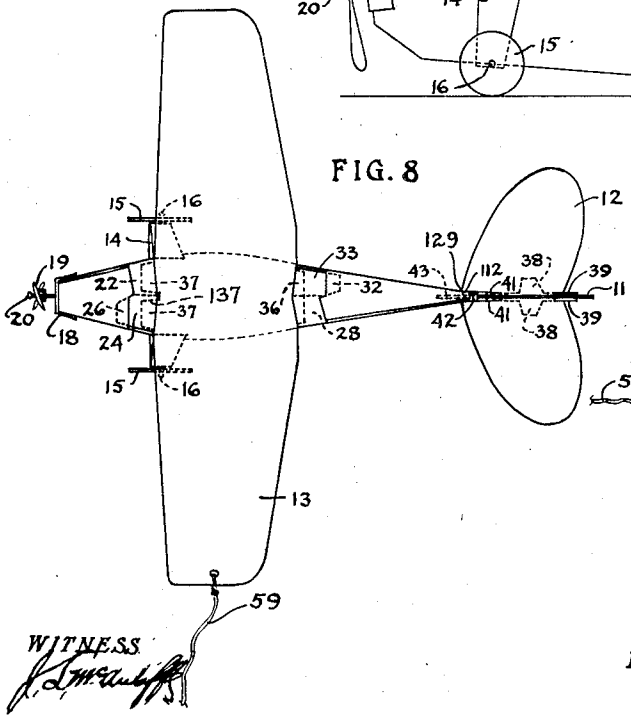
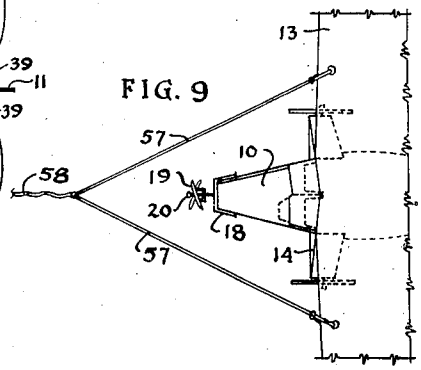


FIG. 9



WITNESS

INVENTOR
JOHN R. HARRIS

BY Munn & Co.

ATTORNEYS

Patented Sept. 16, 1930

1,776,222

UNITED STATES PATENT OFFICE

JOHN R. HARRIS, OF BROOKLYN, NEW YORK

TOY AEROPLANE

Application filed October 14, 1927. Serial No. 226,205.

My invention relates to a toy aeroplane, and more particularly to a toy aeroplane adapted to be taken in the hand and whirled in a circle to cause the propeller of the aeroplane to be turned by the resistance of the air.

The general object of my invention is to provide a scientific flying toy that is educational in the interest to be aroused in its construction, and which will furnish interest and amusement to adults as well as children.

A more specific object of my invention is to provide a toy aeroplane that may be assembled from blanks of sheet material, such as comparatively stiff cardboard, fibre, celluloid, wood veneer, sheet metal or the like, and having the several pieces composing the aeroplane folded and having interlocking members to securely hold the parts in assembled condition without the use of adhesives or adventitious fastening means.

A further important object of my invention is to provide a toy aeroplane so constructed that the propeller will rotate freely upon a substantially stationary shaft and will result in a pronounced hum simulating the hum of an actual aeroplane, and in which the speed at which the toy is whirled can be made to control the tonal pitch of the hum as well as the elevation to which the toy will climb.

The nature of my invention and its distinguishing features and advantages will clearly appear as the description proceeds.

Reference is to be had to the accompanying drawings forming part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a longitudinal, vertical section as indicated by the line 1—1 in Figures 2, 3, 4 and 5;

Figure 2 is a cross section on line 2—2 of Figure 1;

Figures 3, 4 and 5 are cross sections taken respectively on the lines 3—3, 4—4, and 5—5 in Figure 1;

Figure 6 is a diagrammatic plan view of the disassembled toy aeroplane showing the flat blanks of the parts before folding;

Figure 7 is a diagrammatic side elevation of the toy aeroplane;

Figure 8 is a plan view of the aeroplane showing a string attached near an edge of the wing for manipulating the toy above the level of the head; and

Figure 9 is a fragmentary plan view of the forward end of the plane showing a yoked string for manipulating the toy below the level of the head or for pulling the toy along on the ground.

In the illustrated example of my invention the numeral 10 indicates generally the body of the toy aeroplane, 11 the rudder, 12 the elevator, 13 the plane or wing, 14 the frame of the landing gear, and 16 the pins passing through the frame of the landing gear to constitute axles. To produce the realistic hum simulating that of an actual aeroplane I provide a sounding board 17 in the nose of the aeroplane. On said nose is a metallic clip or nose lock 18 at the front of which is the propeller 19 turning on the pin 20 as a fixed shaft, said pin passing horizontally through clip 18 and between the sides of the sounding board 17.

The body 10 is formed from a blank as shown in Figure 6 of stiff cardboard or other suitable material, and is foldable along the horizontal medial line 21 to the generally triangular shape shown in Figures 2 and 3. At one side of the body 10 at the front is a foldable flap 22 having an additional score line for folding indicated at 23. At the opposite side is a locking tab 24 and a transverse folding line 25 to produce a lug 26 at the forward edge and adapted to enter into locking engagement with the flap 22 at the notch 27 therein. The flap 22 has a foldable edge flange 122 outside of the score line 23, which flange 122 is tucked into the interior of the body along one side of the surface thereof. Similarly at the opposite side of the body and outside of the score line 25, the tab 24 terminates in a foldable flange 222 which is tucked in along the opposite side of the body 10. The numeral 110 indicates the score line at the base of the flap 22. Similarly at the opposite side of the body 10 the numeral 124 indicates the score line at the base of the tab 24. The forward top-side of the body 10 is formed by that portion of tab 22 lying be-

tween the score lines 23 and 110, and that portion of tab 24 lying between the score lines 25 and 124. Similarly the portions of the rearward tabs 28 and 33, lying between the score lines 29, 210, 34 and 133 form the rear top side of the body 10.

On the body 10 toward the rear end is a flap 28 foldable along the score line 210 at one side of the body. Said flap 28 has a score line 29 outside of which is a bendable flap 30 with a broadened portion 31 at the rear end. The end of the flap 28 is recessed as at 128 to interengage at the lug 32 of the locking tab 33 on body 10 at the opposite side. Said tab 33 is foldable along the score line 133 and has a score line 34 near the outer end to produce a bendable terminal flange 35 which lies at one side of the body at the interior while the flange 30 lies at the opposite side. The wing 13 is formed at its rear end with a rearwardly extending projecting tongue 36 beneath the locked members 28 and 33. At the forward edge said wing 13 has a notch 137 formed by the spaced tongues 37 which notch engages with the folded sides 147 of the sounding board 17, and which lie beneath the locked members 22 and 24. Near the rear end of the body 10 the side flanges 38 are bent outwardly to lie beneath the elevator 12, said elevator having a notch 112 at the front edge to pass at each side of the rudder 11. Adjacent the flanges 38 are tongues 41 on the body 10 which project upwardly and lie at each side of the rudder 11 at the slot 112 of elevator 12. At one side of the body near the adjacent tongue 41 is a larger tongue 42 which is bent down over the forwardly extending member 43 of rudder 11 to lie at the interior of the body along the side thereof. Similarly from the opposite side, the broadened portion 31 of flange 30 is bent down over the forwardly extending member 43 of rudder 11 to lie at the interior of the body along the side thereof. Numeral 39 indicates the hook shaped terminal rear ends at the side of the body 10, at the front end of which the edge presents recesses 40 to hook over the elevator 12 at the recess 144 formed at the rear edge thereof. The numeral 44 indicates a forwardly extending hook at the lower edge of rudder 11 to engage beneath elevator 12 at the recess 144 thereof and lies between the terminals 39 of the body 10. On the body 10 at the front are tongues 45 foldable one over the other at the front of the nose of the aeroplane through which tongues 45 the pin 20 extends, said pin passing also through the metallic nose lock 18 which has side members 49 foldable along the sides of the body 10 and bent to lie alongside the converging sides of the body and thus forming a lock against the upward and sideward displacement of said nose lock. Between the side members 49 is a member 50 on the metal nose lock 18 which is bent downwardly over tongues 45 to lie at the interior of the body 10 alongside the tongues 45, thus forming a lock against a downward and forward displacement of said nose lock and the nose of the toy so that the fixed shaft or pin 20 with the loosely mounted propeller 19 will extend through the body of the nose lock 18, through the doubled over member 50 and through the tongues 45, and from thence between the folded sides 147 of the sounding board 17, said propeller 19, which is shown in Figs. 1 and 6, has projecting tabs 120 which are folded one within the other to assume a spaced relation to the main portion of said propeller 19, and forming thereby a two point bearing upon said fixed shaft 20. Said sounding board 17, which is shown in Figures 1 and 2 and in plan in Figure 6, has a central score line 46 for folding the material on itself to present the doubled sides 147, and score lines 47 to produce edge flanges 48 which are bent downwardly, as shown in Figure 2. The strip of material from which the landing gear frame 14 is formed has folding score lines 51 spaced at opposite sides to the center, and additional score lines 52 a short distance each side of score lines 51, and a side score line 53. That area or portion of the material between score lines 51 and 52 produces panels 54, the terminal edges outside of score lines 52 produce panels 55, and the material outside of the score line 53 produces a side flange 56. Terminal panels 55 of the material are turned over at the top of the frame 14, extending over the top of the folded sides of the body 10, so that the projecting portions 150 of the tabs 55 lock beneath the locking tabs 22 and 24 of the body 10 and the rear edge portions 152 lock into notches 121 of the body 10, as shown in Figs. 1 and 6. The flange 56 is folded over on the top side of the frame 14 and bears against the folded edge 21 of the body 10 at the under side thereof, thus affording a plurality of thicknesses to the pins or axle elements 16, upon which the wheels 15 rotate.

Numeral 57 indicates the bridle portion of the manipulating cord 58 for whirling the toy below the level of the head, or pulling the same along upon the ground, said bridle being attached to the plane 13 near the front edge, as shown in Figure 9. In Figure 8 I have shown a side string 59 secured to the wing 13 near an edge thereof for whirling the toy above the level of the head.

The pronounced hum resulting from the whirling of the toy aeroplane above described is produced by the freely revolving propeller 19 causing a series of vibrations in the fixed shaft 20 which are transmitted through the nose lock and front formation of the body of the toy and modulated by the fixed shaft 20 passing through the folded sides 147 of the sounding board 17, which sounding board further amplifies and trans-

mits the sound through the sides of the hollow body 10 and the wing 13 in which vibrations are also set up. The speed of whirling of the toy and the amount of pitch given to the propeller blades determines the revolving speed of the propeller and the tonal pitch of the hum resulting from the vibrations. When whirled at a low speed the resultant hum is of a lower tonal pitch than when whirled at a high rate of speed.

I would state furthermore that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the exact details herein illustrated since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

I claim:

1. A toy aeroplane including a hollow body, a propeller adapted to be rotated by the movement of the toy through the air, a fixed shaft on which the propeller turns, said shaft extending longitudinally through the nose of the toy, and a sounding board having folded portions in gripping relation to said shaft to anchor the shaft and set up vibrations in the sounding board by vibrations set up in said shaft by the turning of the propeller thereon, said propeller having a bearing at two points upon said shaft.

2. A toy aeroplane of the class described including a hollow body, a propeller on said body, a fixed shaft on which the propeller is loosely mounted, said propeller having a bearing at two points upon said shaft, said shaft extending into the body, and a sounding board in continuous contact with said shaft and subject to the vibrations set up by the propeller.

3. A toy aeroplane including a body, a rudder on said body, a horizontal elevator on said body under the rudder, and members integral with the body on opposite sides thereof, said members projecting laterally outward beneath said elevator and in contact therewith for preventing wobbling of the elevator.

4. A toy aeroplane including a body, a rudder on said body, a horizontal elevator on said body under the rudder, and integral members on the opposite sides of the body projecting laterally outward beneath said elevator and in contact therewith for preventing wobbling of the elevator, said body being also provided with integral members extending upwardly at each side of the rudder and near the front and rear thereof, said elevator having notches through which said upwardly extending members project.

5. A toy aeroplane of the class described including a body, a rudder on said body and having a forward extension within the body, and a member on said body to lie at the interior thereof, said member extending over said extension of the rudder.

6. A toy aeroplane of the class described including a body, a horizontally disposed elevator projecting laterally at each side of the body, a rudder on the body extending over the elevator, said rudder extending from the rear end of said body forwardly, and a downwardly and forwardly extending extension on the rudder extending within the body beneath the top thereof, means extending from the body on opposite sides of the rudder for holding the rudder in place, said rudder being formed with a hook-like member at the rear end extending forwardly beneath said elevator and terminating between the sides of the body at the interior thereof.

7. A toy aeroplane of the class described including a body, a landing frame extending about the body and beneath the same, and presenting a transverse bottom portion, axle elements extending into said landing frame at opposite sides, and wheels rotatable on said elements.

8. A toy aeroplane of the class described having a hollow body formed of sheet material, integral members on the opposite sides of the body and folded into interlocking engagement with each other, additional members in front of the first mentioned members and folded over the body at the top, said second mentioned members being interlocked and interengaged with each other, and having terminal edge flanges folded at the interior of the body and lying against the inner sides thereof.

9. A toy aeroplane of the class described including a hollow body, a propeller on said body, a shaft on which the propeller is mounted, said shaft extending into the body, and a sounding board subject to the vibrations set up by the propeller, said sounding board being formed of a single sheet of material folded on itself to present two side portions and flanges on said side portions, and serving to hold the sounding board in place in said hollow body.

10. A toy aeroplane of the class described, including a hollow body, a propeller carried by said body, a wing structure mounted on said body, said wing structure being formed at its front edge with a projection formed with a notch, a shaft on which said propeller is mounted, said shaft extending into said body, and a sounding board subject to the vibration set up by said propeller, said sounding board being formed from a single sheet folded to present two side portions between which said shaft extends, said side portions of the sounding board fitting into said notch whereby the sounding board will be held in place in said hollow body.

11. A toy aeroplane of the class described, including a hollow body, a propeller, a rudder and an elevator, said body having a

pair of hooked members at the rear and an opening formed by the two side members of the body a short distance forwardly of said hooked members, said elevator having a notch on one edge and a slot on the opposite edge, said rudder having a hook at the rear part interlocking with said body and with said elevator in said notch, said rudder also having a forward and downward extension positioned to extend through said opening in said body so that part of the extension will fit the under surface of the top of the body, and foldable means carried by the body positioned to fit on each side of said extension, whereby the extension is prevented from moving forwardly, rearwardly or laterally.

12. In a toy aeroplane of the character described, a body blank of sheet material folded on a central longitudinal line to form continuous side portions, each of said side portions being formed with integral front and rear top sections positioned in spaced relation to each other so as to present a wing-receiving space therebetween, said body blank when folded being triangular in cross-section immediately rearwardly of said wing space, said rear top section tapering toward the rear of the body blank and terminating at a point forwardly of the termination of said side portions, said side portions rearwardly of said rear top section being closely folded to retain in an upright position a rudder adapted to be inserted into the folded portion.

Signed at New York, in the county of New York and State of New York, this 11th day of October, 1927.

JOHN R. HARRIS.