Oct. 12, 1948. W. L. WEST 2,451,006

HELICOPTER ROUNDABOUT

Filed July 16, 1946 4 Sheets-Sheet 1

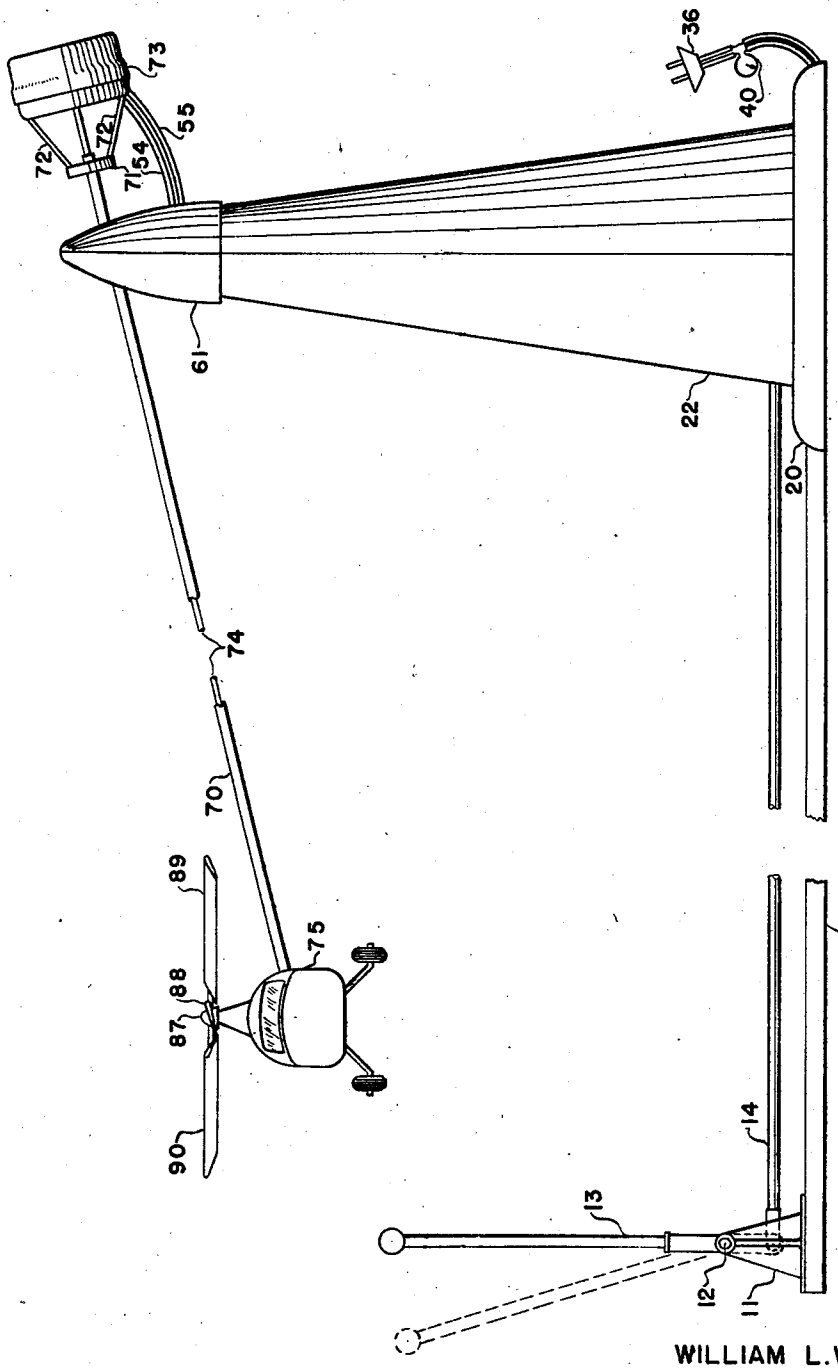


FIG-1

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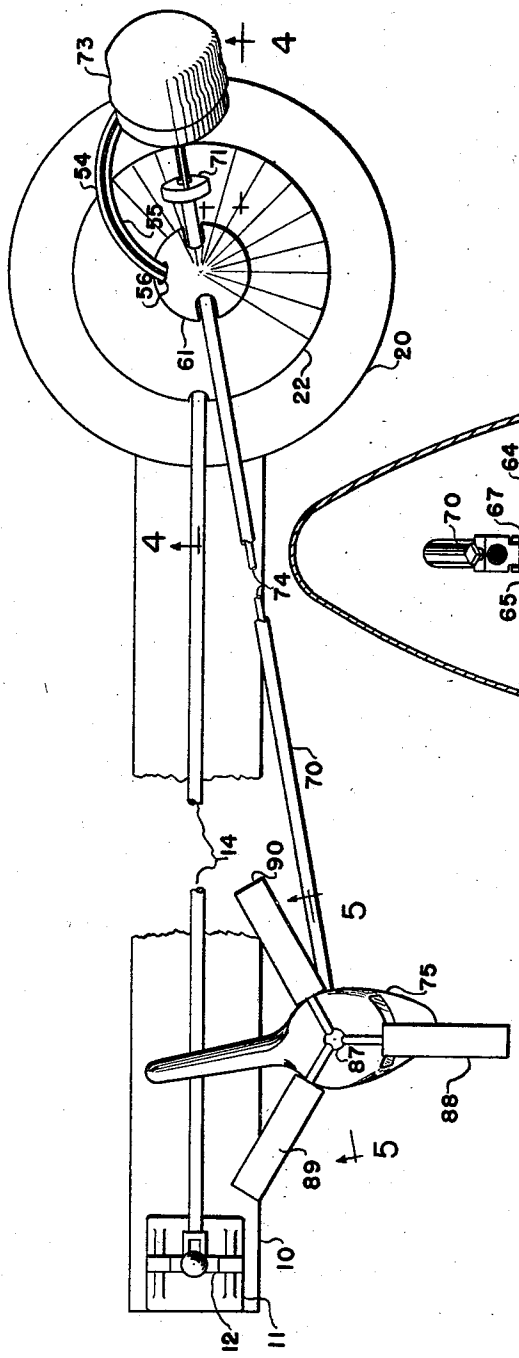


FIG-2

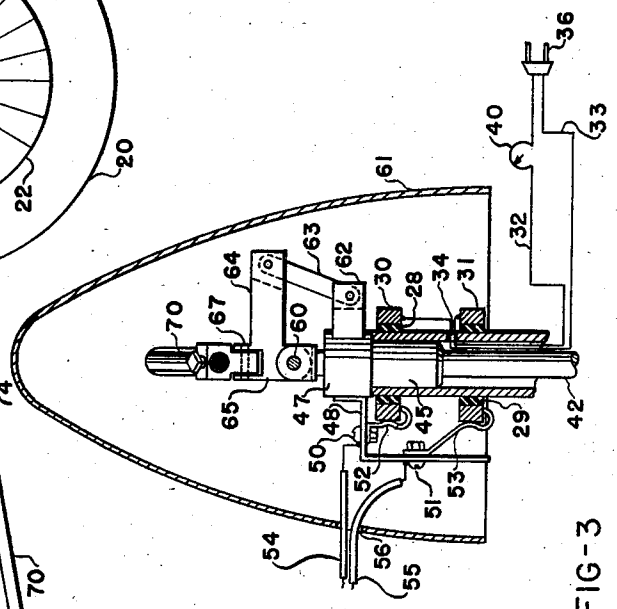


FIG-3

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HELICOPTER ROUNDABOUT

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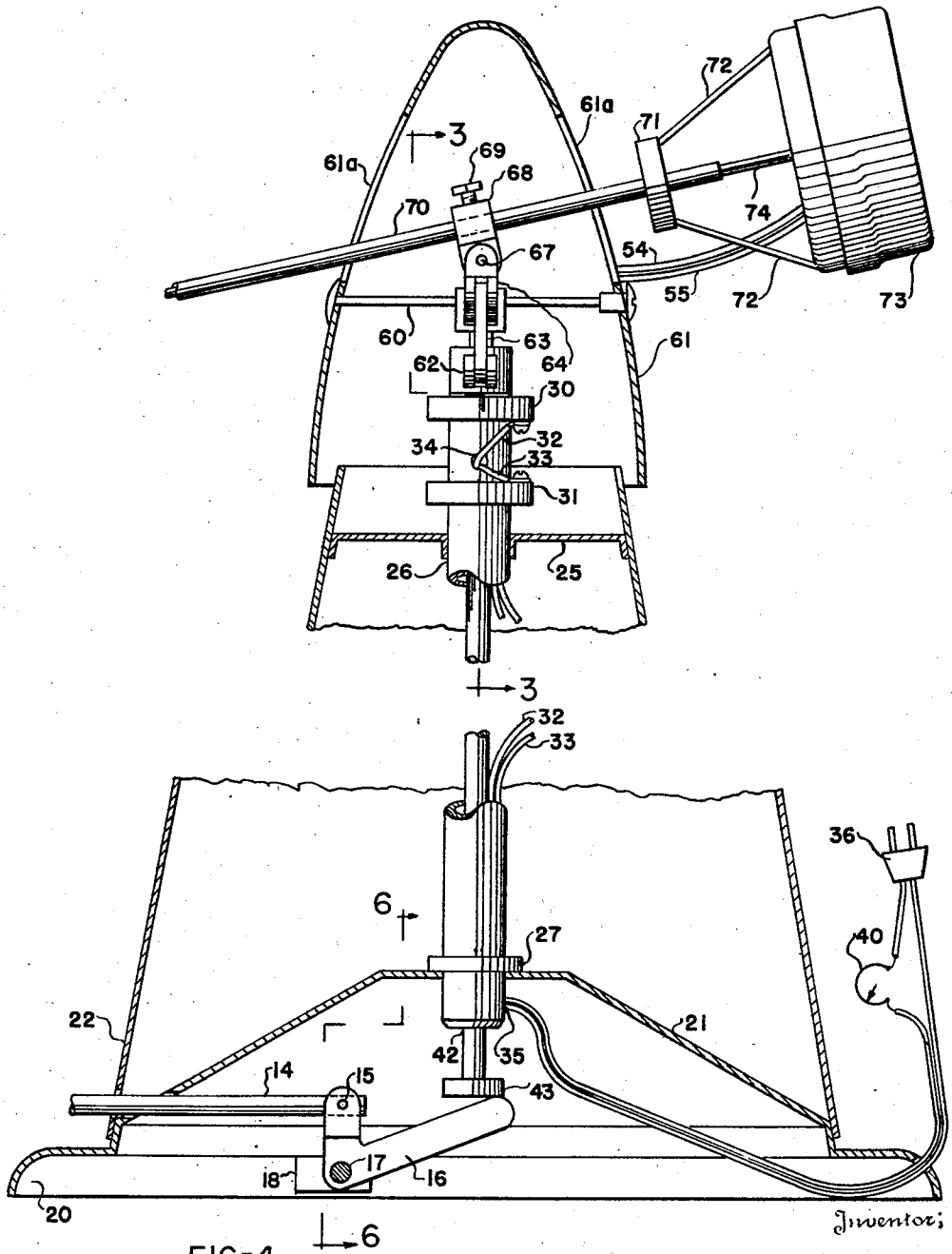


FIG-4

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HELICOPTER ROUNDABOUT

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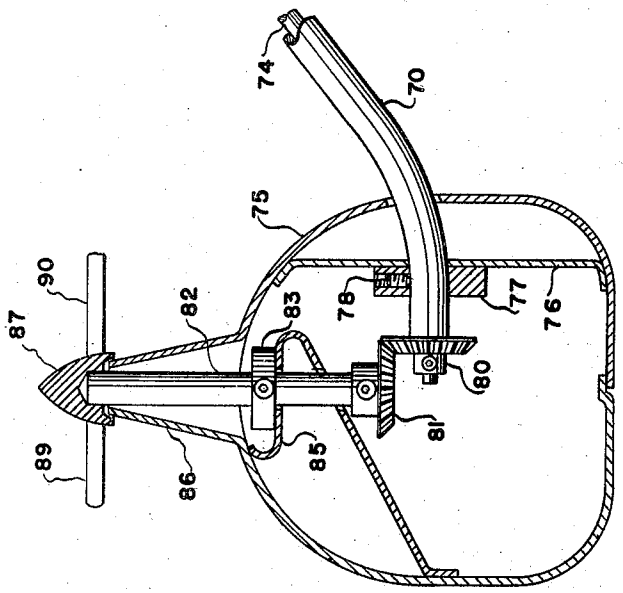


FIG-5

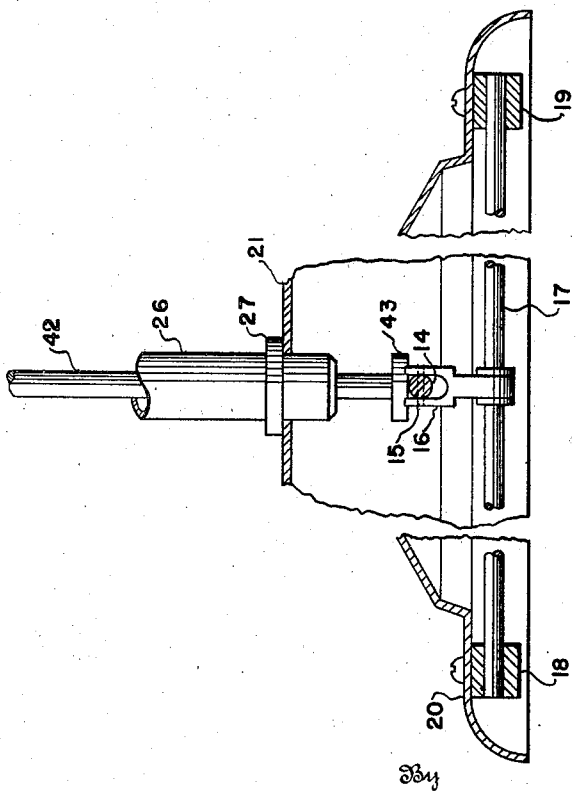


FIG-6

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Patented Oct. 12, 1948

2,451,006

UNITED STATES PATENT OFFICE

2,451,006

HELICOPTER ROUNDABOUT

William L. West, Belmont, N. C.

Application July 16, 1946, Serial No. 683,857

2 Claims. (Cl. 272—31)

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This invention applies to a roundabout and more especially to a roundabout embodying a toy helicopter.

It is an object of this invention to provide a roundabout having a toy helicopter mounted on one end of a suitable support and having a driving motor mounted on the other end with means for pivoting the support at a point to substantially balance the motor against the toy helicopter and remote controlled means for moving the support to regulate the angle of attack of the helicopter to raise or lower the nose of the helicopter, thereby making it fly either forward or backward.

It is another object of this invention to provide a roundabout comprising a stand having a vertically movable rod pivotally supporting a pipe having a torsion driving wire therein with a motor disposed on one end of the pipe and connected to the torsion wire for rotating the same and having a toy helicopter on the other end of said pipe with a vertically disposed shaft provided with rotor blades and with a driving connection between the torsion wire and the vertically disposed shaft of the rotor blades for imparting rotation to the rotor blades together with means for supplying electric current to the motor mounted on one end of the pipe and also having remotely controlled means for changing the angle of attack of the airplane, that is, raising or lowering the nose of the airplane to cause it to fly either forward or backward.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which:

Figure 1 is a front elevation of the apparatus;

Figure 2 is a top plan view of the apparatus;

Figure 3 is a vertical sectional view taken along the line 3—3 in Figure 4;

Figure 4 is a vertical sectional view through the stand portion of the apparatus with the central portion thereof being broken away and taken along the line 4—4 in Figure 2;

Figure 5 is a vertical sectional view taken substantially along the line 5—5 in Figure 2;

Figure 6 is a vertical sectional view taken substantially along the line 6—6 in Figure 4.

Referring more specifically to the drawings, the numeral 10 indicates an elongated base piece having a bracket 11 mounted on the outer end thereof in which is pivotally mounted, as at 12, a lever 13 and to the lower end of lever 13 is pivoted one end of a rod 14 whose other end is pivoted, as at 15, to a bell crank 16 pivoted on a transverse

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rod 17, whose ends are mounted in bearings 18 and 19 in a circular base portion 20, which is joined to the first-named base portion 10.

Base portion 20 has uprising therefrom a frusto-conical portion 21. The base 20 is adapted to receive a second frusto-conical member 22 which extends upwardly and forms a miniature tower. The upper portion of the frusto-conical member 22 has a plate 25 fitting therein and provided with a central aperture in which a pipe 26 is mounted. This circular plate 25 is fixed to the pipe 26 and fits up into the upper end of the frusto-conical member 22 to prevent lateral movement of the pipe. The lower end of the pipe has a collar 27 resting on the flat upper portion of member 21 and in this manner the pipe 26 is supported. The pipe 26 has suitable insulation bands 28 and 29 secured therearound and secured to these insulation bands 28 and 29 are bands 30 and 31 of suitable conductive material. To these bands 30 and 31 are connected wires 32 and 33 which pass through an aperture 34 in the pipe 26 and downwardly inside the pipe and passing out of an aperture, as at 35, and are connected to plug 36 which is adapted to be plugged into a suitable electrical outlet. In one of these wires is mounted a suitable rheostat 40 for controlling the speed of the driving motor which will be presently described.

Mounted for vertical movement in pipe 26 is a shaft 42 having an enlarged portion 43 adapted to rest on one end of bell crank 16. This shaft 42 is very much smaller in diameter than the inside diameter of pipe 26 so as to provide room within the pipe 26 for the wires 32 and 33. The upper end of shaft 42 has loosely fitting therearound a bushing 45 which slidably and rotatably fits in the upper end of pipe 26. The upper end of bushing 45 is enlarged as at 47 and has an L-shaped non-conductive member 48 extending outwardly and downwardly therefrom and in spaced relation to the exterior surfaces of the conductive bands 30 and 31. Mounted on member 48 is a pair of screws 50 and 51, which secure to said member 48, brushes 52 and 53 which are adapted to press against the conducting rings 30 and 31 and their lower ends are bent beneath the conducting bands 30 and 31 to prevent bushing 45 from rising when shaft 42 is raised. The wires 54 and 55 lead through an opening 56 in a dome shaped member 61. The wires 54 and 55 lead to a small electric motor 73.

The upper end of portion 47 is forked and has a long pivot pin 60 extending therethrough and whose ends abut against the interior walls of a

cone shaped member 61 and suitable screws are embedded in the ends of this pivot shaft 60 and penetrate suitable holes in the conical member 61 to support said conical member 61 having slots 61a through which passes a pipe 70 to be presently described. The member 47 also has a rigid arm 62 extending laterally therefrom to which is pivoted a link 63, whose upper end is pivoted to the outer end of an arm 64, which is integral with a member 65 whose lower end is penetrated by the pivot pin 66. The upper end of member 65 is also forked and has a pivot pin 67 therein, in which is pivoted a member 68 having a set screw 69 therein, and member 68 has a bore therein which slidably receives a small elongated pipe 70 and which is confined in position both angulary and laterally by the set screw 69. On one end of this pipe 70 is an enlargement 71 havings arms 72 extending therefrom which are secured to a small electric motor 73. Connected to the motor 73 is a torsion wire 74, which slidably penetrates the pipe 70. The end of the pipe 70 remote from the motor 73 penetrates the cabin portion of the fuselage of a toy helicopter indicated at 75. This toy helicopter has a wall 76 provided with a thickened portion 77 which is also penetrated by the pipe 70 and a set screw 78 confines the helicopter on the end of the pipe 70. The end of the torsion wire 74 projects beyond the end of the pipe 70 and has fixed thereon a beveled gear 80 which meshes with a beveled gear 81 on the lower end of a propeller shaft 82, which propeller shaft has a collar 83 adjustably secured thereon, which rest on a bracket 85 disposed on the interior of the cabin 75. The propeller shaft 82 extends upwardly inside an uprising portion 86 of the cabin and has a hub or spinner 87 secured on its upper end. To the hub or spinner 87 are secured three rotor blades 88, 89 and 90, which are in the form of an air foil so that when rotated will create a lift to lift the helicopter from a position of rest upwardly and these blades are of such pitch that they will also propel the helicopter forwardly or backward so that it will travel in a circle around its pivot point in member 68.

The normal setting of the pipe 70 with relation to its bracket 68 is such that the helicopter 75 has its nose in lowered position so that it will go forward. The angle of attack of the helicopter, that is, the nose of the helicopter can be raised by lever 13. When lever 13 is moved to the left in Fig. 1 and shaft 42 is moved upwardly, this causes stationary arm 62 with its pivoted line 63 to pivot member 65 on its pivot 60 which swings member 68 forwardly as viewed in Figure 4, which lowers the nose of the helicopter and causes it to go forward. Then lowering of the shaft 42 will raise the nose of the fuselage thus causing it to fly backward.

In the drawings and specifications, there has been set forth in a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a roundabout, a vertically disposed pipe, a vertically movable rod mounted in said pipe, a member pivotally mounted on the upper end of said rod, and having a lever extending therefrom, a bushing mounted in the upper end of said pipe and having a projection extending from one side thereof, a link pivotally secured to the projection and to the lever, a second member pivotally mounted in the upper end of the first member on an axis at right angles to the pivot of the first member to the upper end of the rod, an elongated pipe adjustably secured to the second member and having an electric motor on one end and having a toy helicopter on the other end, a driving shaft in said elongated pipe and extending from the motor to the helicopter and a driving connection between the driving shaft and the blades of the helicopter for imparting rotation thereto, the upper end of the vertically disposed pipe having a pair of insulated annular members mounted thereon and the bushing having a pair of brushes mounted thereon for engaging said insulated annular members, means for supplying electrical current to said annular members and wires leading from said brushes in contact with said annular members to the motor, remotely mounted means for supporting the lower end of said rod for raising and lowering said rod at will, raising of said rod tending to pivot the first member pivotally mounted on the upper end of said rod to tilt the second member backwardly or forwardly to thereby regulate the direction of travel.

2. In a roundabout, a vertically disposed hollow support, a vertically slidable shaft disposed in said support, an elongated pipe mounted intermediate its ends on the upper end of said vertically slidable shaft, a driving motor on one end of the elongated pipe, and a helicopter having a rotor on the other end of the pipe, a driving shaft connected to the motor and to said rotor for imparting rotation thereto, said vertical support having annular conducting rings disposed therearound, a bushing in the upper end of the vertical support having a pair of brushes contacting said rings, means for supplying electric current to the rings, the upper end of said slidable shaft having a bracket pivotally secured thereon, the upper end of said bracket having a second bracket pivotally secured thereon on a pivot at right angles to the first pivot, a lever on the first bracket, a link pivotally connected to the lever and to said bushing, means in the second bracket for mounting the elongated pipe intermediate its ends so that raising of the shaft will tilt the second bracket to vary the angle of attack of the helicopter, thereby controlling direction of flight.

WILLIAM L. WEST.

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The following references are of record in the file of this patent:

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