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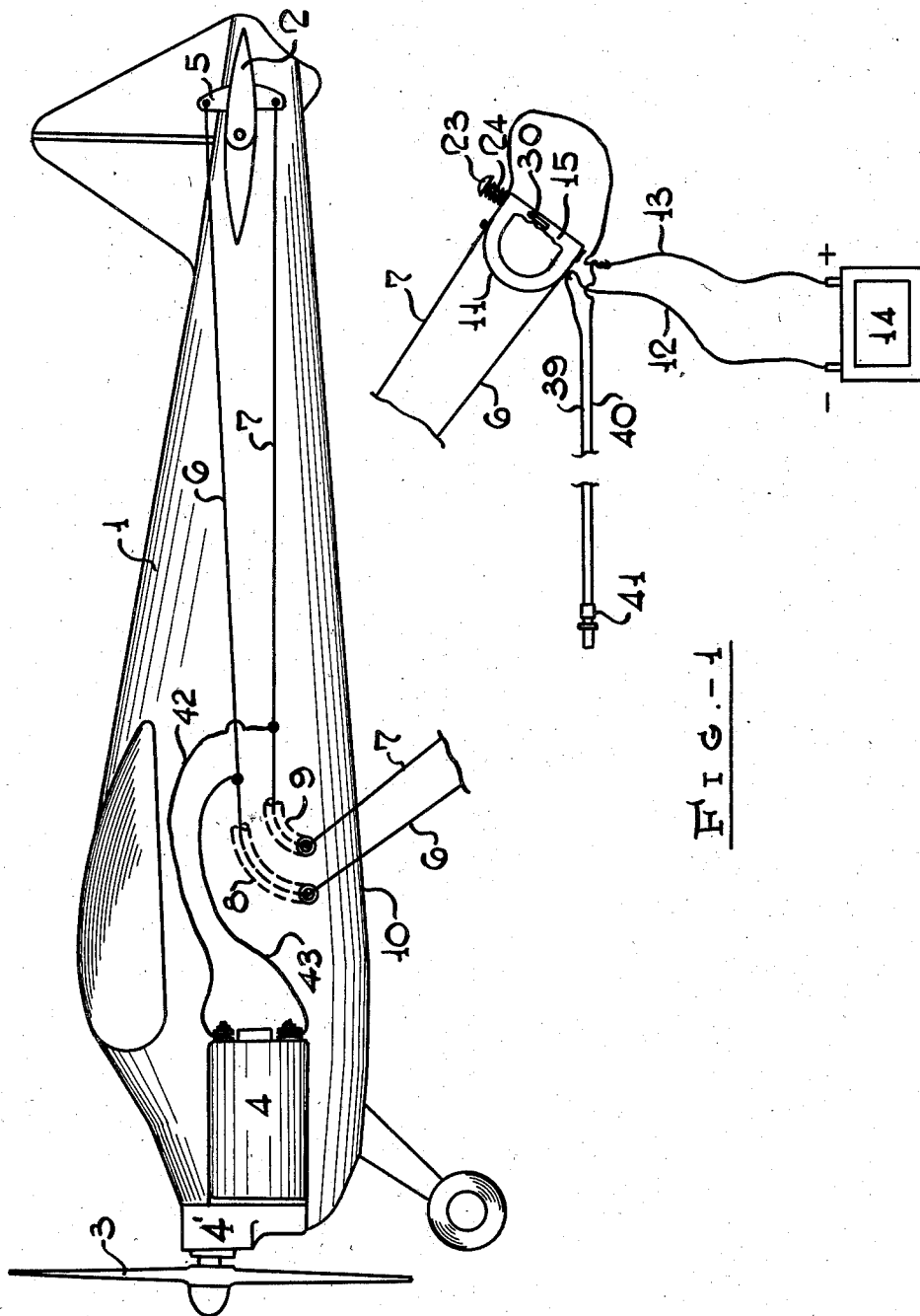
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2,439,054

MODEL AEROPLANE

Filed March 27, 1946

2 Sheets-Sheet 1



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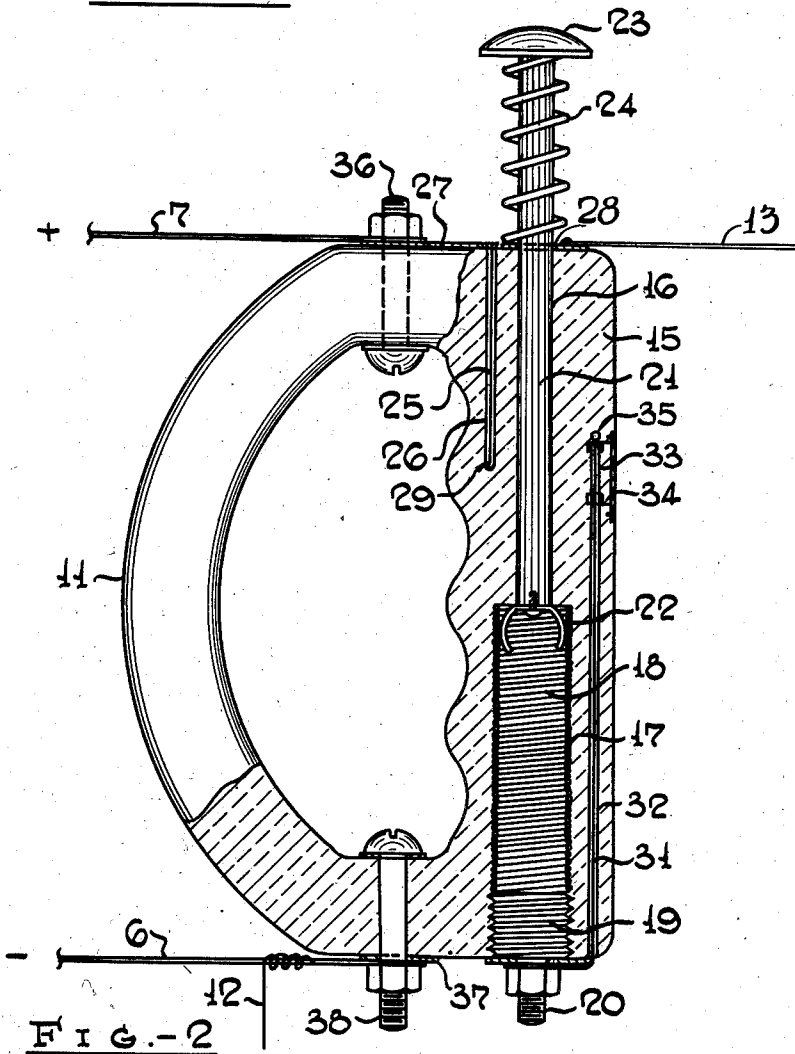
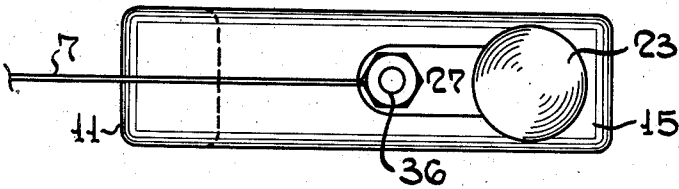
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## UNITED STATES PATENT OFFICE

2,439,054

## MODEL AEROPLANE

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6 Claims. (Cl. 46-78)

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The present invention deals with a motor operated model aeroplane. More specifically, it relates to an electrically driven model plane, the speed of which is controlled by a device held in the hand of the operator.

In the past, toy planes have been equipped with small gasoline driven engines. These are of the constant speed type, the only control being on the elevators of the plane operated by wires held in the hand of the operator. Such control merely affects altitude, the engine speed remaining the same. Usually these planes are run until they are out of fuel, whereupon they fall to the ground and often crash with demolition of both plane and motor.

An object of my invention is to provide a small electrical motor to drive the plane. Another object is to provide a means for controlling the speed of said motor by using conventional control wires which are simultaneously employed for operating the elevators. Another object is to enable the safe landing of the plane, so as to preserve intact the plane and its contents. Other objects will become apparent from the following description.

The invention may be more clearly understood by reference to the drawings in which Figure 1 is a side view of the plane and the controlling wires. Figure 2 is a side view, partly in cross-section, of the controller hand-grip, while Figure 3 is a top view thereof. Similar numbers refer to similar parts in the different figures.

Referring again to the drawings, numeral 1 represents a model aeroplane, the wing of which is omitted to more clearly show the assembly employed in the present invention. The plane has elevators 2 and propeller 3. Mounted in the front of the plane is miniature electric motor 4, preferably of the high speed type developed during the recent war, running at, say, 30,000 R. P. M. Directly connected to the motor is gear speed reducer 4' which reduces the speed to say, 7500-10,000 R. P. M. at the propeller shaft to which it is directly connected. This speed reduction not only gives the propellers a reasonable and safe airfoil velocity of flow, but also provides more power to the propeller shaft.

The elevators 2 have arms 5 to which are attached guide Phosphor bronze enamel-covered wires 6 and 7. These are run through curved guides 8 and 9 which are mounted permanently and in a fixed position in the plane, allowing the guide wires to project through opening 10 at the side of the plane. These wires, which are usually 35-50 ft. long, are led to controller hand-grip 11,

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the wires being firmly attached to the top and bottom of said grip, respectively. To wires 6 and 7, and in the vicinity of the controller hand-grip 11 are attached wires 12 and 13 leading to terminals of battery 14.

The grip portion 15 of controller hand-grip 11 is drilled to provide hole 16 in the top part, terminating in wider hole 17 at the bottom. In hole 17 is coiled resistance wire 18, held in place by set screw 19, terminating in binding post 20. In the upper narrower hole 16 is inserted rod 21, having sliding contact 22 on the bottom, sliding along resistance coil 18, and terminating in head 23 which is made to project above the top of grip 15 by spring 24. By pressing head 23, slide 22 cuts out more resistance in rheostat 18, thereby passing more current from battery 14 through wires 6 and 7, thus speeding up electric motor 4. A stop can be attached to the top of rod 21 to enable one to quickly find the correct resistance setting for optimum cruising speed.

In the upper portion of grip 15 is drilled hole 26 carrying wire 25 which is connected to bus bar 27. Sliding contact 28 rubs against rod 21. Wire 26 issues through hole 29 to the side of grip 15 and into one of the contacts of shut-off switch 30. From binding post 20, a wire 31 is run into hole 32 at the bottom of grip 15, terminating at fuse 33 which can be removed by removing plate 34. The fuse is inserted to prevent fusion of wires in the circuit in the event a short occurs. The other end 35 of fuse 33 is connected to the other terminal of shut-off switch 30.

Bus bar 27 on the upper surface of grip 15 is held in place by bolt 36 which also acts as a binding post for wire 7. Likewise at the bottom of grip 15, bus bar 37 is held in place by bolt 38 which also acts as a binding post for wire 6. Wires 39 and 40 are tapped into 6 and 7 and led into contact unit 41 capable of being plugged into a cigar lighter attachment of an automobile, which would supply the necessary power.

In the operation of the invention, plane 1 is laid on a level spot and wires 6 and 7 stretched out evenly and grip control 11 is held firmly in the hand. Then switch 30 is flicked to the "on" position and head 23 of rod 21 is gradually depressed, causing the propeller 3 to speed up. By turning grip 11, it is possible to put more tension on either wire 6 or 7, thus either raising or lowering the elevators and allowing the plane to take off. In taking off, head 23 is depressed as far as it will go to give motor 4 full power. When the required elevation is reached,

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head 23 may be allowed to come up to "cruising speed."

When it is desired to land the plane, pressure is gradually removed from head 23 and at the same time, wires 6 and 7 are manipulated so that the elevators allow the plane to drop to lower altitude. The plane is allowed to circle in this manner until the ground is reached.

Grip 15 is preferably made of insulating material such as wood, plastic, fiber, or the like.

It will be observed that conducting guide wires 6 and 7 are connected to motor 4 by conducting wires 42 and 43 which transmit electric current from the guide wires to the electric motor.

I claim:

1. A model plane adapted to fly, having a small electric motor mounted therein and connected to the propeller, two electrically conducting wires, insulated from each other, leading into the plane, electrical connecting means between said wires and said motor to allow operation of the motor by means of current passing through said wires, two cables, each attached in controlling relation to the elevators of the plane on one end and to each of the wires leading into the plane on the other, in such manner as to allow moving of the elevators by moving of said wires to effect any desired change of altitude of the plane while the motor is operating, a hand grip connected to the terminals of the wires outside of the plane, and a source of electric power to be fed to said wires.

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2. A model plane according to claim 1 in which the hand grip is provided with control means to vary the speed of the motor.

3. A model plane according to claim 2 in which the motor is provided with a speed reducer to which the propeller is attached.

4. A model plane according to claim 1 in which the source of electric power is a plug fitting into a cigar lighter in an automobile.

5. A model plane according to claim 1 in which the hand grip is provided with a variable rheostat connected to the guide wires, said rheostat having a movable contact, a rod attached to said contact and projecting out of the top of said grip, a head on said rod which may be depressed by the thumb when the grip is held in the hand, and means for retracting the head when the thumb is removed.

6. A model plane according to claim 5 in which the hand grip is provided with a thumb switch on the side of said grip for shutting off the electric power.

EDWIN MOSTHOF.

#### REFERENCES CITED

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

#### UNITED STATES PATENTS

| Number    | Name           | Date          |
|-----------|----------------|---------------|
| 1,769,414 | Brandon et al. | July 1, 1930  |
| 2,292,416 | Walker         | Aug. 11, 1942 |