

[54] **MODEL FLIGHT SIMULATOR**

[75] Inventors: **John Gerhard Horn, Taby; John A. Melin, Malmo, both of Sweden**

[73] Assignee: **Arbman Development AB, Stockholm, Sweden**

[22] Filed: **May 25, 1973**

[21] Appl. No.: **364,169**

2,526,371 10/1950 Laughead et al..... 35/12 L
3,053,533 9/1962 Weymouth..... 46/77

Primary Examiner—Louis G. Mancene
Assistant Examiner—Robert F. Cutting
Attorney, Agent, or Firm—Sughrue, Rothwell, Mion, Zinn & Macpeak

[30] **Foreign Application Priority Data**

Feb. 20, 1973 Sweden..... 73023756

[52] U.S. Cl..... **46/76, 46/12 P**

[51] Int. Cl..... **A63h 27/04**

[58] Field of Search..... 46/1 R, 76; 272/31 A;
35/12 B, 12 L, 12 P

[56] **References Cited**

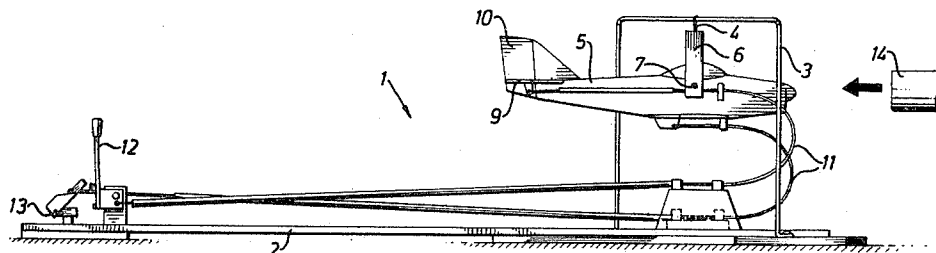
UNITED STATES PATENTS

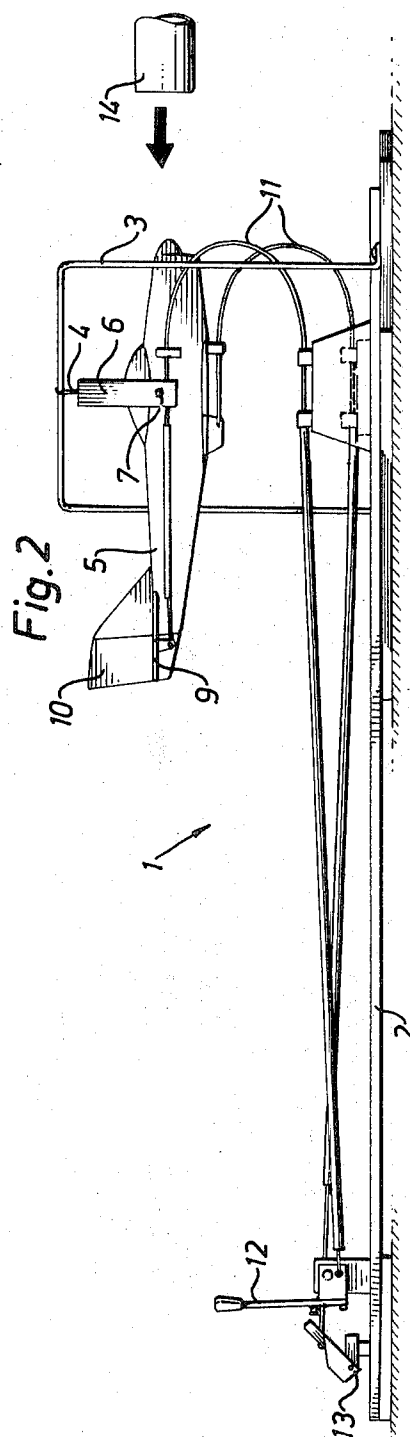
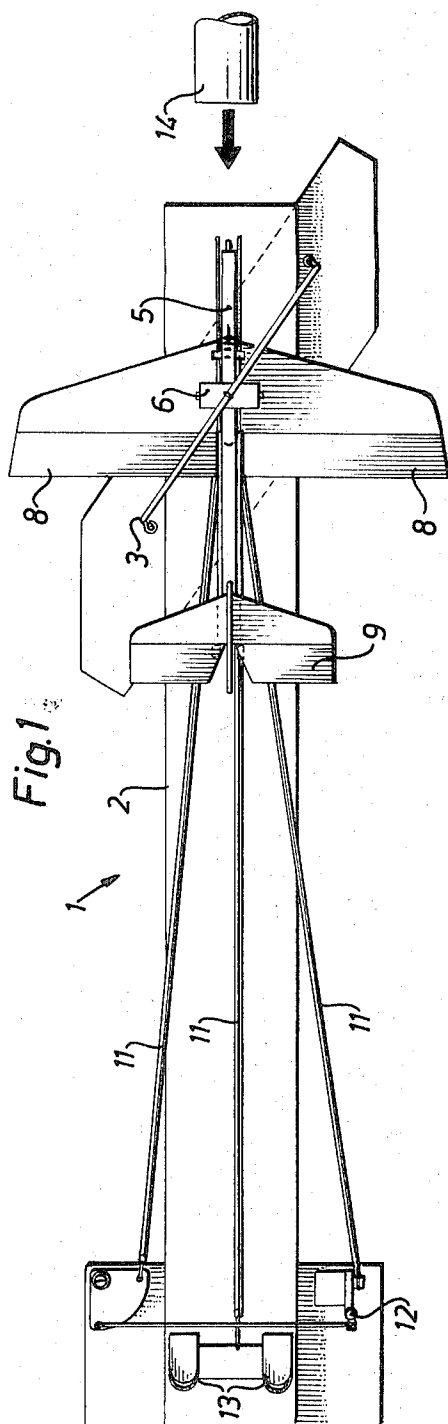
1,896,175 2/1933 Huffman..... 35/12 P

[57] **ABSTRACT**

A model airplane is provided with controls for operation of its steering means such as elevators, ailerons and rudders from a place outside of the airplane. It is supported or suspended in an air current generated by, for example, a vacuum cleaner.

5 Claims, 2 Drawing Figures





MODEL FLIGHT SIMULATOR

This invention relates to a model or toy flight simulator, the distinguishing features of which are that it comprises a model airplane intended to be supported or suspended movably in an air current generated by, for example, a vacuum cleaner and provided with steering means such as elevators, ailerons and/or rudders, as well as controls for operation of the steering means from a place outside the airplane.

A model airplane suspended or supported in an air current in the said manner will, particularly if the air current is turbulent and somewhat uneven as is the case when it is generated by a vacuum cleaner, continuously vibrate and move, which implies that training and skill on the part of the "pilot" will be required in order to achieve smooth and steady movements of the airplane. The airplane responds in the same way as a real airplane or a radiocontrolled model airplane to given manoeuvre movements. It can be made to move within given limits, for example a 30° deviation from the starting position, in response to a given deflection of the steering means. With moderate manoeuvre movements it is possible to simulate smooth flying with slow climbing and landing and with gentle turns. Fast manoeuvre movements are immediately reflected in corresponding movements on the part of the airplane.

In a preferred embodiment, the airplane is suspended so that it is pivotable around a vertical and a horizontal axis. The airplane is then appropriately suspended by a wire which forms the vertical axis of pivot and which carries a preferably yoke-shaped member which houses a transverse horizontal bearing axle running approximately through the centre of gravity of the airplane.

In order to achieve as realistic as possible a simulation of a flight, it is preferred that the controls comprise a lever pivotable around two axes for actuation of the elevators and ailerons and a preferably pedal-shaped member for actuation of the rudders. The lever and the said member respectively are then suitably connected by means of Bowden cables to their respective steering means. The ailerons on the model airplane should be connected in parallel so that when one of them moves up the other moves down and vice versa.

The simulator can be made as a unit, in which case the airplane is carried by a stand mounted on a plate, which plate also holds certain of the parts belonging to the controls.

A simulator according to the invention can appropriately be made available in the form of a construction kit.

FIG. 1 shows a plan view of the invention.

FIG. 2 shows an elevation view of the invention.

An elaboration of the invention will now be described with reference to the accompanying schematic drawing. A model or toy flight simulator 1 comprises a plate 2 which carries a stand 3 with a wire 4 which forms a vertically running axis of pivot for a suspended model airplane 5. The wire 4 carries a yoke-shaped member 6 which surrounds the fuselage and which houses a horizontal bearing axle 7 running through the centre of gravity of the airplane. The airplane is thus so suspended that it is pivotable around a vertical and a horizontal axis.

The airplane is provided with ailerons 8, elevators 9, and rudders 10. The ailerons and elevators are connected by means of Bowden cables 11 to a lever 12 at-

tached to the plate and pivotable around two perpendicular axes, whereas the rudder 10 is connected by means of a similar cable to a member 13 pivotable around a horizontal axis and provided with two pedals.

The plate is intended to be erected so that the airplane 5 is located in an air current from, for example, a vacuum cleaner 14.

Actuation of the lever 12 or the pedal 13 causes corresponding deflection of the respective steering means, enabling climbs, dives, banks, and turns to be simulated. The different movements can take place separately or be co-ordinated. In the different cases, the deviations from a balanced starting position amount to approximately 30°.

The simulator can appropriately be made in the form of a construction kit. The actual airplane can consist of a conventional model airplane which has been completed with suitably devised controls. Alternatively an airplane designed specifically for this purpose and made of, for example, sheet metal or plastic can be used.

The invention is variable in several different ways within the scope of the accompanying claims.

What is claimed is:

1. A model flight simulator comprising:

1. a model airplane having movable steering means for simulating airplane manoeuvres;
2. a horizontal transverse bearing axle defining an axis which runs approximately through the centre of gravity of the model airplane;
3. a yoke-shaped member connected to the bearing axle;
4. a wire connected to the yoke-shaped member to serve as a vertical axis for the model airplane; and
5. control means for operating the movable steering means on the model airplane from a place outside the airplane,

whereby the model airplane may be suspended by means of the wire and an operator of the model flight simulator may control the orientation of the model airplane with respect to a vertical and a horizontal axis on the model airplane while the airplane is subjected to an air current.

2. A model flight simulator as claimed in claim 1 wherein:

1. the movable steering means comprise elevators, ailerons, and a rudder and
2. the control means comprise a lever pivotable around two axes for actuation of the elevators and the ailerons and a pedal-shaped member for actuation of the rudder.

3. A model flight simulator as claimed in claim 2 wherein the control means further comprise:

- a first Bowden cable running between the lever and the elevators and the ailerons and
- a second Bowden cable running between the pedal-shaped member and the rudder.

4. A model flight simulator as claimed in claim 1 wherein the control means comprise a Bowden cable connected to the steering means.

5. A model flight simulator as claimed in claim 1 and further comprising:

1. a stand to which the end of the wire remote from the yoke-shaped member is connected, and
2. a plate on which the stand and the control means are mounted.

* * * * *