

A. O. PAULSON.

AIRSHIP.

APPLICATION FILED DEC. 1, 1909.

1,003,062.

Patented Sept. 12, 1911.

2 SHEETS-SHEET 1.

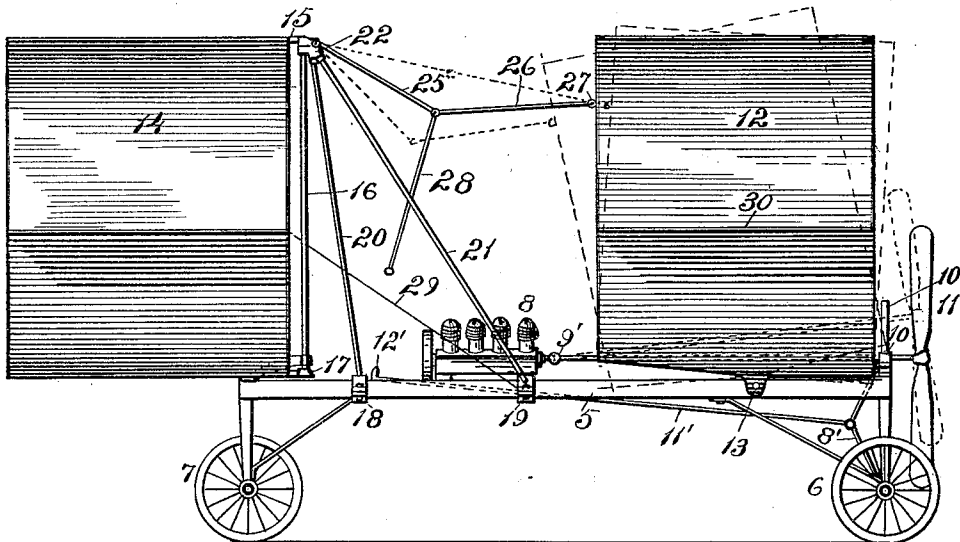


Fig. 1.

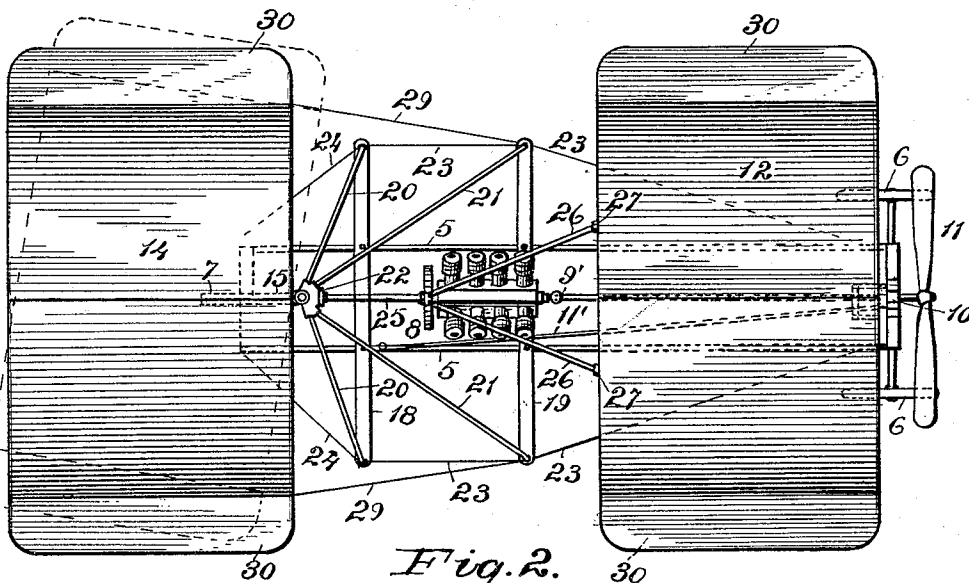


Fig. 2.

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Inventor:

A. O. Paulson.
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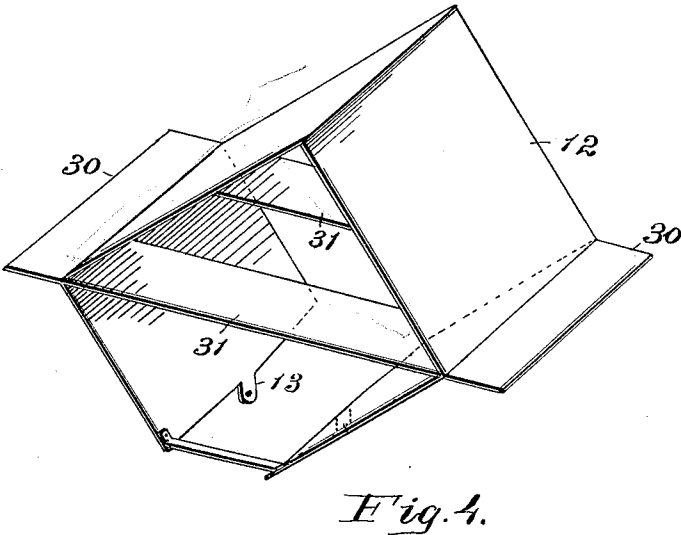
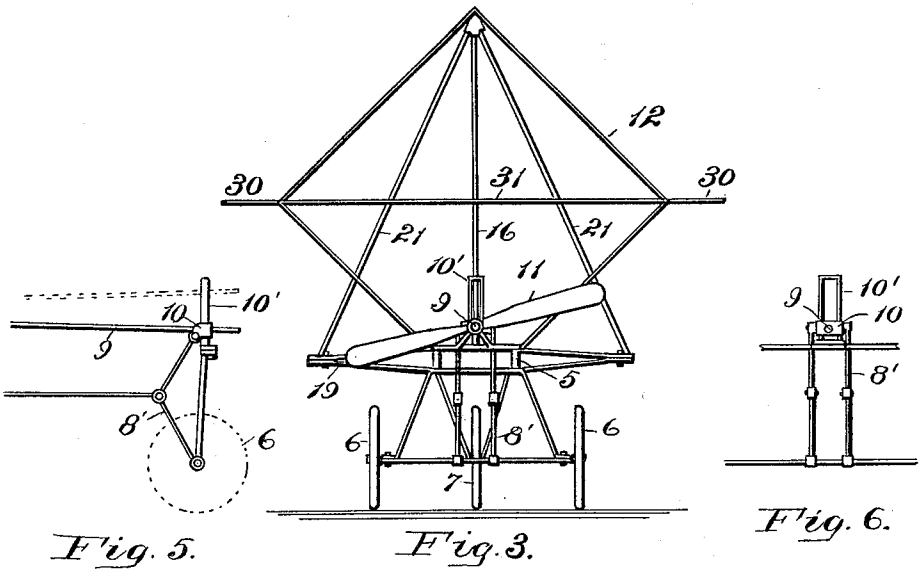
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UNITED STATES PATENT OFFICE.

ALBERT O. PAULSON, OF LOS ANGELES, CALIFORNIA.

AIRSHIP.

1,003,062.

Specification of Letters Patent.

Patented Sept. 12, 1911.

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To all whom it may concern:

Be it known that I, ALBERT O. PAULSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented certain new and useful Improvements in Airships, of which the following is a specification.

My invention pertains to airships, and it has special reference to the aeroplane type, in which I employ the box-kite formation as sustaining surfaces.

The object of my invention is to provide both lateral and fore and aft stability in an airship, and as it is well known in the art that the box kite possesses the most stable form for horizontal translation, I have adopted it together with certain improved features which at once renders it more available for vertical translation.

One of the great difficulties inherent in the box kite formation is the inability to change the direction or the angle of flight, and to this end I have provided a simple and efficient means whereby the structure may be directed through the air at any desired inclination from the horizontal, or it may be easily turned in either direction while in flight, without requiring any appendages, such as movable horizontal planes or rudders, as will now be set forth in detail.

In the drawings, Figure 1 is a side elevation of my improved airship. Fig. 2 is a top or plan view. Fig. 3 is a view of the front end of the airship. Fig. 4 is a perspective view of one of the box kite elements. Fig. 5 is a side view showing detail of mechanism for changing the angle of the propeller shaft; and Fig. 6 is an end view showing details of the mechanism for changing the angles of the shaft.

In constructing my invention I provide a frame, which in this instance comprises two horizontal parallel bars 5, a suitable distance apart, joined at their ends, and having, preferably, at the forward end two wheels 6, and a single wheel 7 at the rear end. The engine is mounted on this frame a little to the rear of the middle portion, and a shaft 9 extends forwardly through a vertically-movable bearing 10, terminating at a propeller 11, which is mounted thereon. The shaft has a universal joint 9¹ near the engine, so the forward end of the shaft may be raised or lowered, a pair of hinged links

8¹, having their lower ends journaled to the axle shaft, and their upper ends to the bearing 10, and the bearing 10 is adapted to move vertically in a guide 10¹. An operating bar 11¹ attached to the hinged connections of these links, extend back to the operator and has a handle 12¹ by means of which the shaft 9 may be raised or lowered.

The supporting surfaces are two box kites, mounted diamond-shaped and so mounted on the frame as to have an edge at the top and bottom. The forward kite 12 has its lower sides, or the corner thereof, cut away a width equal to the distance between the frame members 5, and approximately midway between its ends are downwardly-projecting ears 13 which are secured to the frame members by pivot pins, so the upper end of the box kite will swing fore and aft a limited distance.

The rear box kite 14 is similarly cut away at its lower corner or edge, and has at its upper corner or edge an arm 15 which has a socket to receive therein a vertical post or rod 16. The lower end of this rod rests in a gudgeon 17 on the frame, and an eye on the frame, (not shown), holds the lower end of the box kite in alinement. This construction permits the rear end of the box kite to swing laterally. In order to hold the rear box kite in position the frame members are provided with two cross pieces 18 19, which project beyond the frame a suitable distance, and posts 20 21 extend upwardly from the ends of these cross pieces converging at an eye 22 through which the vertical rod 16 passes. Suitable stay wires 23 24 extend from the end of these cross pieces to the frame fore and aft.

Toggle jointed levers 25 26, secured to the eye 22, on the rear kite, at 27, hold the front kite in position. An operating arm 28, hinged to a toggle jointed connection, extends down to the region of the operator, and the inclination or angle of the front box kite can thereby be regulated at will.

The rear box kite may be swung in either direction by means of cables 29, which are attached to the outer corners of the kite, and these cables extend down to the ends of the cross pieces 19 and thence to any point (not herein shown) within reach of the operator.

The box kites are similarly constructed, as each has a lateral rigid wing 30 at the

outer corners, and within is a pair of transversely-disposed supporting surfaces 31 in the form of blades, narrow fore and aft, as shown. It will thus be seen that while the

- 5 two kites are normally in alinement with each other, they may be adjusted independently of each other, the forward one to give the angle of flight, and the rear one to direct it laterally.
- 10 In order to provide a more efficient means to utilize the supporting surfaces while in vertical translation, the open or cutaway portion in the bottom of the kites affords means of admitting air, and by adding the
- 15 surfaces 30 31 a much larger efficient surface is obtained for practical work than would be possible if the kites were closed up as usually constructed. The structure can in this manner be made exceedingly
- 20 light and compact, assuring the utmost stability fore and aft and laterally, while utilizing every available surface for sustaining purposes while in flight.

The angled disposition of the sides of the

25 kite members from the vertical are at such inclinations as to afford the utmost stability, since they serve as dihedral angles more efficiently than if the sides thereof were vertical.

- 30 When the angle of the forward box kite is changed, or when it is desired to launch the ship, the relative angle of the propeller shaft may be changed by means of the operating bar 11¹, which is moved back or
- 35 forth at the will of the operator.

What I claim as new, is:

1. In an airship, a pair of pivoted box kite members fore and aft of each other, and suitably connected together, diamond-shaped or mounted so as to have an edge at
- 40 the top and bottom, the lower corner of each member cut away, and said members operatively mounted so that the angle and direction of flight may be governed thereby.

- 45 2. In an airship, a pair of box kite members fore and aft of each other and suitably connected together, diamond shaped or mounted so as to have an edge at the top and bottom, the lower corners of each cut
- 50 away to provide for the admission of air, narrow rigid horizontal fore and aft marginal wings or sustaining surfaces on each member, and interiorly a pair of horizontal, transversely-disposed sustaining surfaces.

- 55 3. In an airship, a pair of pivoted box kite members fore and aft of each other and suitably connected together, diamond shaped or mounted so as to have an edge at the top and bottom, the lower corners of
- 60 each cut away to provide for the admission of air, means connected with one of said members for changing the angle of flight, and means connected with the other for changing the direction of flight.

- 65 4. In an airship, a pair of pivoted box

kite members fore and aft of each other and suitably connected together, diamond-shaped or mounted so as to have an edge at the top and bottom, the lower corner of each member being cut away to admit air, fore

70 and aft horizontally-disposed sustaining surfaces along the side edges of each member and interiorly transversely-disposed surfaces, means connected with one of said members for changing the angle of flight,

75 and means connected with the other member for changing the direction of flight.

5. In an airship, a pair of parallel bars comprising a frame, a pair of pivoted box kite members thereon fore and aft of each
- 80 other, diamond-shaped, or mounted so as to have an edge at the top and bottom, the lower sides of said members cut away between the parallel pair of bars of said frame, and said box kite members opera-
- 85 tively mounted on the frame so that the angle and the direction of flight may be governed thereby, and propelling means on said frame.

6. In an airship, a frame comprising a
- 90 pair of longitudinal parallel bars and cross connections, a pair of box kite members mounted thereon fore and aft of each other, the lower corners of said members between the parallel frame bars being cut away, nar-
- 95 row fore and aft horizontally-disposed marginal sustaining surfaces on the side edges of each member, and interiorly a pair of transversely-disposed surfaces, and propelling means on said frame.
- 100

7. In an airship, a frame, comprising a pair of parallel longitudinal bars and end connections, a pair of pivoted box kite members fore and aft of each other mount-
- 105 ed thereon so as to have an edge at the top and bottom, the lower edge of each member being cut away between the frame bars, means connected with one of said members connections, a pair of pivoted box kite
- 110 connected with the other members for changing the direction of flight.

8. In an airship, a frame, comprising a pair of parallel bars and cross connections, a pair of pivoted box kite members fore
- 115 and aft of each other mounted so as to have an edge at the top and bottom, the lower corner of each member being open between the frame bars, fore and aft narrow marginal wings at the outer or side edges of each member, and horizontally-disposed sustain-
- 120 ing surfaces within the members, means connected with one of the members for changing the angle of flight, and means connected with the other members for
- 125 changing the direction of flight.

9. In an airship, a frame, a pair of tandem-fashion box kite members, the sides thereof at an angle of forty five degrees, the lower corners cut away, and provided with
- 130 horizontal sustaining surfaces within and

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without, the forward member hinged to the frame and adapted to swing to change the angle of flight, and the rear member hinged so that it is adapted to change the direction
5 of flight, and means on the frame for manually operating said members, and a propeller on the forward end of said frame.

Signed at the city of Los Angeles, State of California, this 17 day of February, 1909.

ALBERT O. PAULSON.

Witnesses:

J. S. ZERBE,
F. R. HAWLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."