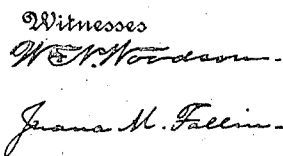


AIRSHIP.

1,040,608.

3 SHEETS--SHEET 1.

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H. H. Tracy, Attorne.

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AIRSHIP.

APPLICATION FILED MAY 27, 1911.

1,040,608.

Patented Oct. 8, 1912.

3 SHEETS-SHEET 2.

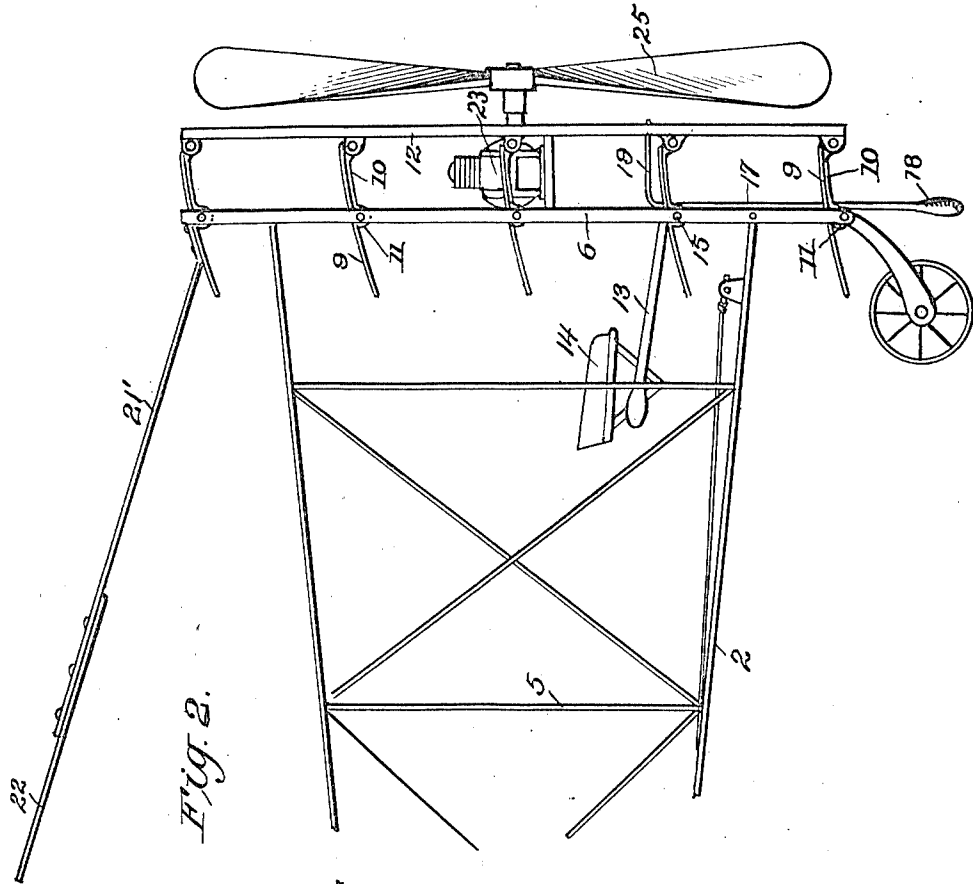
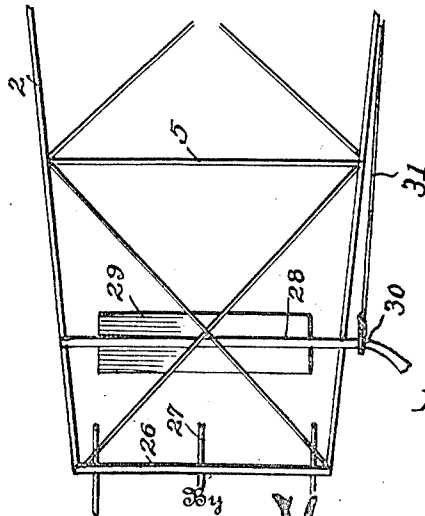


Fig. 2.



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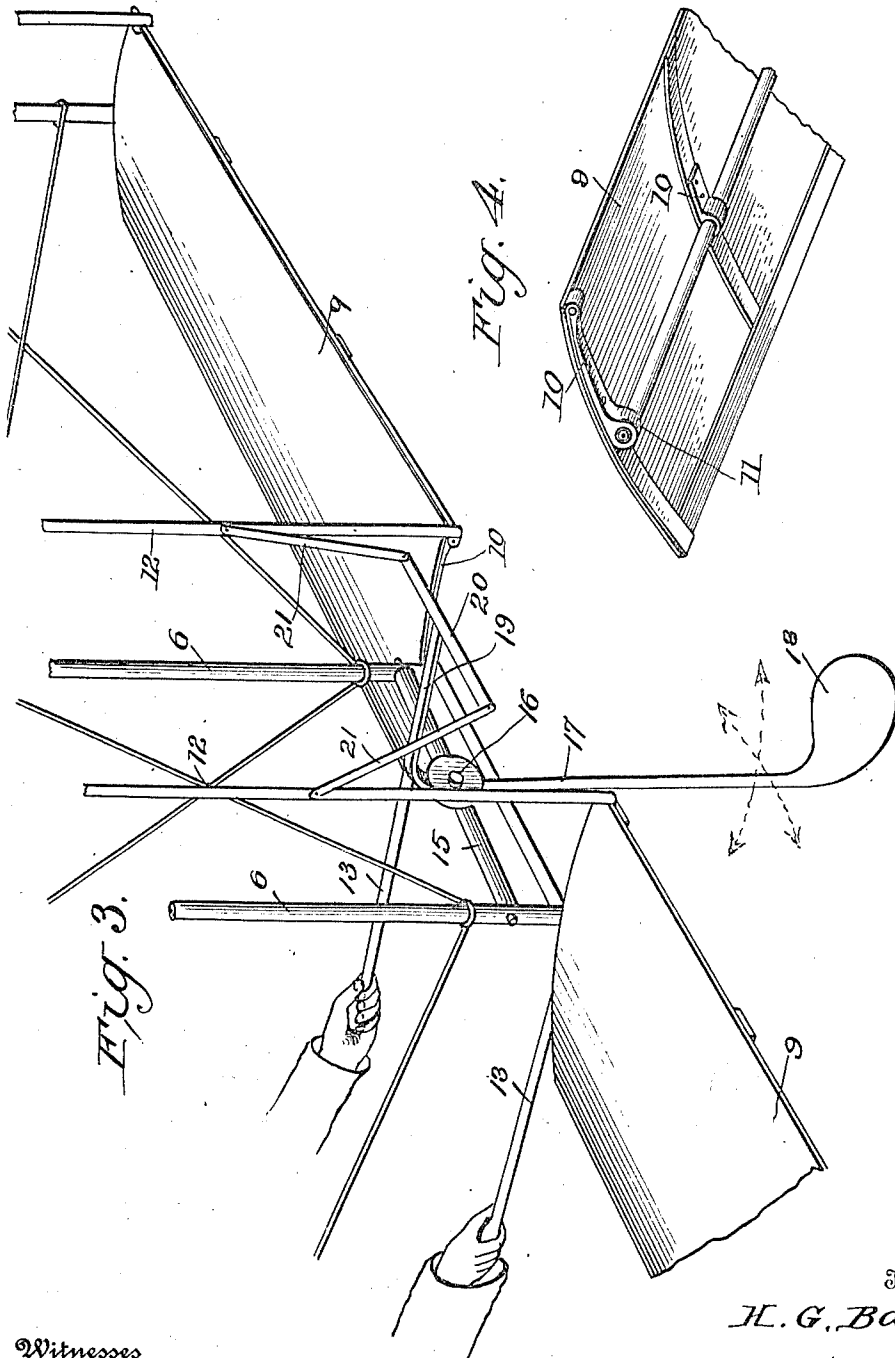
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UNITED STATES PATENT OFFICE.

HORACE G. BAKER, OF HARLAN, IOWA.

AIRSHIP.

1,040,608.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed May 27, 1911. Serial No. 629,804.

To all whom it may concern:

Be it known that I, HORACE G. BAKER, a citizen of the United States, residing at Harlan, in the county of Shelby and State of Iowa, have invented certain new and useful Improvements in Airships, of which the following is a specification.

This invention relates to airships of the monoplane, biplane and multiplane types, and aims primarily to provide novel controlling means for the sustaining planes.

One object of the invention is to provide in connection with the tiltable sustaining plane or planes of an airship of either of the above mentioned types, air current controlled means tending at all times to tilt the plane or planes to ascending position, manually operable means being provided for tilting the planes at the will of the aviator, and against the tendency of the air current controlled means for automatically tilting the planes. The provision of such automatic controlling means in connection with the manually operable controlling means, provides for automatically tilting of the plane or planes to ascending position should the aviator become disabled, or for any reason finds it necessary to neglect the manually operable controlling means.

It is another aim of the invention to provide gravity actuated means for automatically tilting the plane or planes to ascending position should the forward end of the airship drop or tilt downwardly. In this connection, the invention also aims to so construct the gravity actuated controlling means that should the airship tilt laterally, it will be automatically righted, due to the tilting of the lowered planes to ascending position.

The invention aims further to so construct the gravity actuated plane controlling means that it will be responsive to centrifugal force and will automatically tilt the planes when the ship is guided to the right or left so as to assist in guiding it.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which:—

Figure 1 is a perspective view of an airship of the multiplane type embodying the present invention. Fig. 2 is a side elevation thereof. Fig. 3 is a perspective view of two of the sustaining planes illustrating the manually operable and gravity actuated

controlling means therefor. Fig. 4 is a fragmentary perspective view of the under side of one of the planes. Fig. 5 is an end-view of one of the planes.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

In the drawings, the frame of the airship includes upper reach bars 1 and lower reach bars 2 connected and braced respectively by means of cross-bars 3 and 4, and the reach bars 1 and 2 at each side of the frame are connected by uprights 5. At their forward ends, the reach-bars 1 and 2 are secured to spaced uprights 6 which are located between other uprights indicated by the numeral 7. Bars 8 are secured to the uprights 6 and support the uprights 7 at their ends. The sustaining planes of the airship are mounted upon the bars 8, as will be presently explained.

The sustaining planes of the airship are indicated by the numeral 9 and each plane is preferably slightly curved from front to rear and is of greater length than width. Brackets 10 are secured to the under side or concave side of each plane and are mounted as at 11 to rock upon the rods 8. As illustrated in the drawings, the planes are arranged in two sets or series, one set being located between each of the uprights 6 and its corresponding upright 7. Rods 12 are pivoted to the forward corners of the planes of the two sets, and in this manner the planes of each set are connected for tilting movement. In order that the planes may be manually tilted, a hand-lever 13 is fixed to each one of a pair of the planes 9, at the inner or opposing ends of the planes and these levers extend rearwardly in spaced relation and terminate beside a seat 14 mounted in the frame of the airship immediately rearwardly of the planes. At this point it will be readily understood that the aviator by grasping both of the levers 13 in the manner illustrated in Fig. 3 of the drawings may tilt all of the planes or either set, at will.

The controlling means for the planes which is gravity controlled, includes a rock-shaft 15 journaled at its ends in the uprights 6 and pivoted as at 16 to this shaft between its ends is the upper end of an arm 17 having a weighted lower end 18. The arm 17 is provided at its upper end with a

forward extension 19 carrying a cross-bar 20 and rods 21 connect the ends of this cross-bar 20 with the adjacent connecting rods 12 in the manner illustrated in Fig. 3. It will be observed that the arm 17 may rock or swing with the shaft 15 and may also swing transversely in a plane with the axis of the shaft. At this point it may be stated that the levers 13 being free to swing, forward swinging movement of the arm 17 will result in the extension 19 being swung upwardly and the rods 12 correspondingly moved so as to elevate the forward sides of the planes 9. On the other hand, should the arm 17 swing rearwardly, the rear sides of the planes will be elevated. If the arm 17 swings to the right, the forward side of the right-hand plane will be elevated and the forward side of the left hand plane will be lowered, due to the transverse rocking movement imparted to the cross-bar 20. Rocking of the arm 17 to the left will of course serve to elevate the front of the left-hand plane and lower the front of the right-hand plane. Secured at its forward end to each of the uppermost planes 9 is an arm 21' which extends upwardly and rearwardly from the plane and carries at its upper end a flat vane 22, the vanes being also inclined upwardly and rearwardly with respect to the said planes 9. The function of these vanes 22 will be presently fully described.

The numeral 23 indicates the motor of the airship and 24 the motor shaft upon which is fixed the propeller 25. The engine 23 is mounted in any suitable manner between the uprights 6 and the shaft 24 extends forwardly between the rods 12 adjacent the uprights 6 and the propeller 25 revolves in advance of the planes 9.

At the extreme rear end of the frame of the airship there is arranged a transverse frame 26 in which are rigidly mounted a number of sustaining planes 27 which serve to sustain the rear end of the frame and steady the airship in its travel. A frame 28 is mounted directly in advance of the frame 26 and in this latter frame 28 are mounted a number of vertically disposed steering planes 29, the vanes being connected together for simultaneous swinging movement about their vertical axes. A cross-bar 30 is carried at the lower end of the shaft upon which the middle one of the vanes 29 is carried and at the ends of this cross-bar are connected cables 31 which are led forwardly and connected to the ends of a foot-bar 32 mounted in the frame of the ship immediately in front of the aviator's seat 14. A wheel 32 is carried at the lower end of the said shaft upon which the middle one of the vanes 29 is carried, and when this shaft is turned, to shift the vanes, and the machine is gliding over the surface of the ground, the wheel will serve to guide the machine. By placing the

feet upon the bar 32 the aviator may readily control the vanes 29 and guide the airship in its travel.

When the airship is traveling directly forwardly under normal conditions, the aviator will have hold of the levers 13 and will hold the planes at the proper angle. Should it become necessary for him to release his hold upon the levers he may do so and the air currents acting upon the vanes 22 will act to depress these vanes and elevate the fronts of the vanes of both sets, thus causing the machine to rise. Should the air currents acting against the vanes 22 fail to depress them to such degree as to elevate the fronts of the planes 9, the weighted arm 17 will swing forwardly, thereby swinging up the extension 19 thereof and causing such tilting of the planes. It will be understood at this point that due to the air currents acting against them, the vanes have a constant tendency to elevate the fronts of the sustaining planes. Should it be desired to steer the machine to the right, the foot-bar 32 is so swung as to properly shift the steering vanes 29 and as the machine swings around the centrifugal force acting upon the weighted arm 17 will cause this arm to swing to the left, thereby elevating the forward sides of the left hand set of sustaining planes and lowering the forward sides of the right hand set of the planes. This will materially assist the steering vanes 29 in causing centripetal movement of the airship. In fact, the ship may be readily steered by raising one of the levers 13 and depressing the other lever. Should the machine tilt laterally, while traveling in a straight line, the arm 17, in assuming a perpendicular position will serve to elevate the forward sides of the sustaining planes at the lower side of the airship and depress the corresponding sides of the planes at the other side thereof. This will of course result in the machine being immediately righted.

Having thus described the invention what is claimed as new is:—

1. In an airship, tiltable sustaining planes, and vanes carried by the planes and inclined upwardly and rearwardly with respect thereto.

2. In an airship, tiltable sustaining planes, an arm extending upwardly and rearwardly from each plane, and a vane carried by each arm.

3. In an airship, a sustaining plane, and a vane carried by the plane and inclined upwardly and rearwardly with respect thereto.

4. In an airship, a tiltable sustaining plane, and an upwardly and rearwardly inclined vane and direct connection between the vane and plane.

5. In an airship, tiltable sustaining planes arranged for corresponding and re-

verse movement, and a vane carried by each plane and inclined upwardly and rearwardly with respect thereto.

6. In an airship, tiltable sustaining planes, means connecting the planes for simultaneous reverse tilting movement and for simultaneous tilting movement in a corresponding manner, upwardly and rearwardly inclined vanes, and connection between the vanes and the sustaining planes.

7. In an airship, tiltable sustaining planes, means connecting the planes for corresponding tilting movement and for reverse tilting movement, means operable to tilt the planes correspondingly or in reverse manner, and air current controlled means tending to hold the planes against relative reverse tilting movement.

8. In an airship, a tiltable sustaining plane, and air current actuated means carried by the sustaining plane and arranged to automatically elevate the forward side of the plane.

9. In an airship, a tiltable sustaining plane, and air current actuated means carried by the plane tending to elevate the forward side thereof.

10. In an airship, a tiltable sustaining plane, and air current actuated means carried by the plane and tending to lower the rear side thereof.

11. In an airship, a tiltable sustaining plane, manually operable means for tilting the plane and air current controlled means carried by the plane and tending to tilt the same to ascending position.

12. In an airship, a tiltable sustaining

plane, a lever carried directly by the plane and manually operable to tilt the plane, and air current controlled means carried by the plane and automatically operable upon the release of the lever to tilt the plane to ascending position.

13. In an airship, a sustaining plane mounted for tilting movement, gravity actuated means automatically operable upon downward tilting of the front of the airship to tilt the plane to ascending position, and air current controlled means carried by the plane and also tending to tilt the plane to ascending position.

14. In an airship, a tiltable sustaining plane, a weighted arm connected therewith and arranged to tilt the plane to ascending position upon downward tilting of the front of the airship, and an air controlled vane carried by the plane and also tending to tilt the plane to ascending position.

15. An airship, a tiltable sustaining plane, a gravity actuated means connected with the plane and operable upon downward tilting of the front of the airship to tilt the plane to ascending position, air current controlled means carried by the plane and also tending to tilt the same to ascending position, and a manually operable lever for tilting the plane.

In testimony whereof, I affix my signature in presence of two witnesses.

HORACE G. BAKER. [L.s.]

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