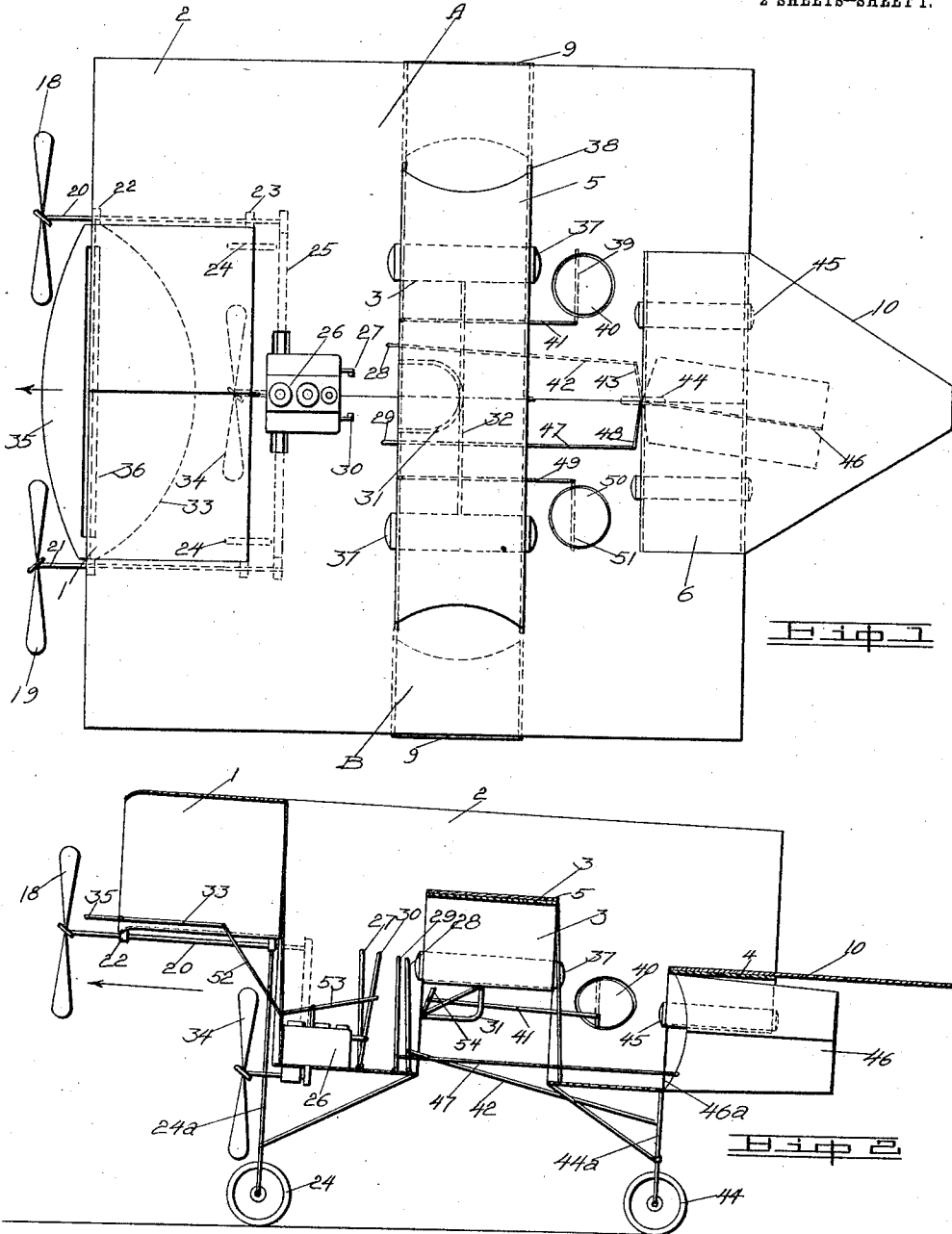


S. M. BROWN.
AEROPLANE.
APPLICATION FILED FEB. 28, 1912.

1,032,587.

Patented July 16, 1912.

2 SHEETS—SHEET 1.



WITNESSES
J. Mather
D. G. Hawk

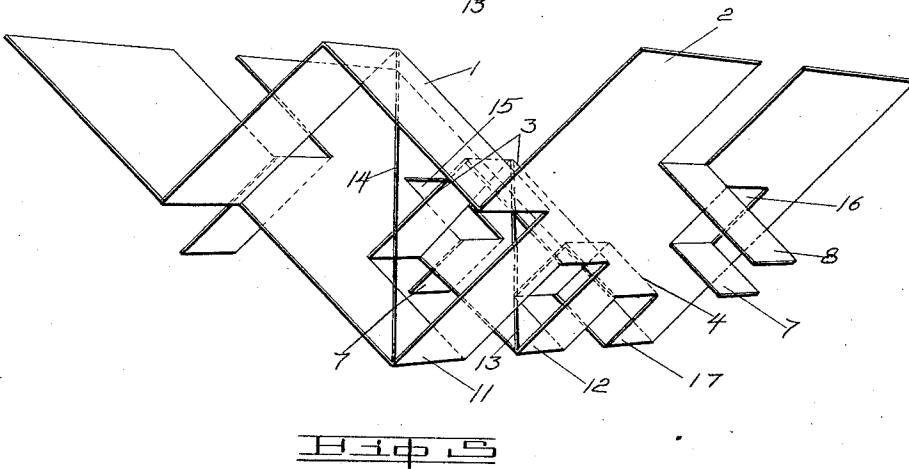
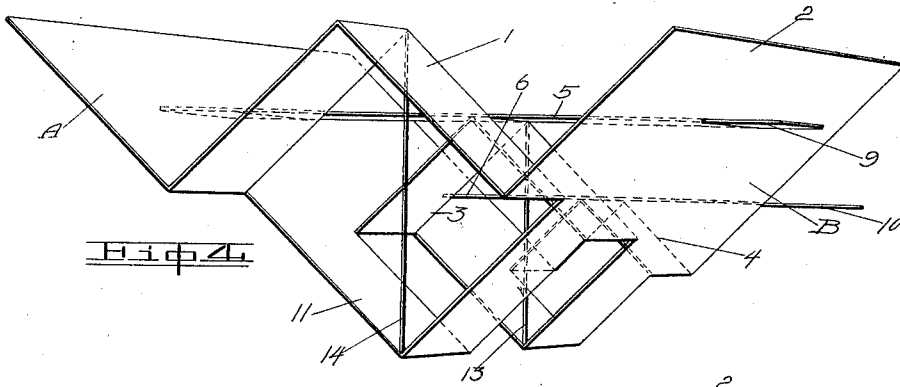
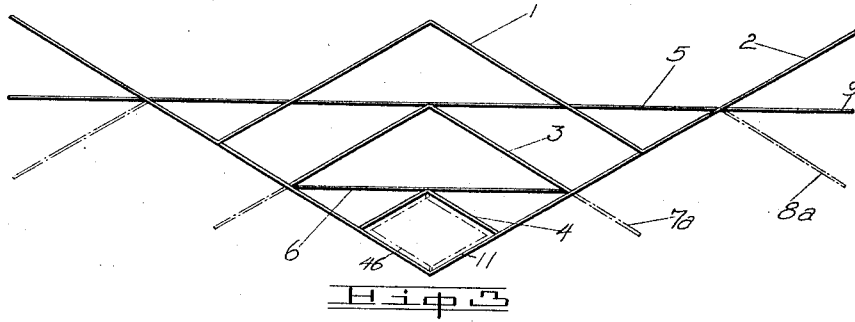
INVENTOR
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BY *J. H. Brock,*
ATTORNEY

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WITNESSES:

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SPENCER M. BROWN, OF PORTLAND, OREGON.

AEROPLANE.

1,032,587.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed February 28, 1912. Serial No. 680,428.

To all whom it may concern:

Be it known that I, SPENCER M. BROWN, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification.

This invention relates to improvements in aeroplanes, of the heavier than air type, and has for its object to provide a craft whose entire frame and structure, substantially, presents a sustaining surface to the air.

A further object is to provide an air craft which will automatically right itself in the air and whose sustaining surface is so arranged that the volume of air which ordinarily would become banked underneath the forward part of the machine, in its advance, is allowed to escape, so that each portion of the machine can contact with fresh air, which has the greater sustaining power.

A still further object is to provide an air craft, the body of which consists of oppositely disposed, upwardly inclined wings composed of a series of units formed in regular gradations and alternately disposed in truss-like arrangement, so that each portion of the surface is not only a sustaining surface and arranged to most effectively utilize the buoyancy of the air, but the one section is so disposed as to brace and sustain the other, thus forming a frame work of the sustaining surfaces.

I accomplished these and other objects by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is a plan view of my improved device. Fig. 2 is a vertical sectional view of Fig. 1. Fig. 3 is a front view of frame work, showing the sectional units in the outer portions of the wings arranged in conformity to those in the inner portion. Fig. 4 is a perspective view of the front portion of the frame, or wings. Fig. 5 is a perspective view of a plurality of sections.

Referring to the drawing in detail, A represents the right wing, and B the left, disposed at an angle of about 35 degrees from the horizontal. At a point near the middle of the front edge, each wing is broken into a section, whose width is approximately one-quarter that of its length, or such as is found to give it the greatest sustaining power; and the inner portions thereof are arranged in an inverted position, so that the apex of the angle formed by them, will

stand in line with the outer edges of the sections 1, and the sides will form a transverse brace to sustain the lateral strain upon the wings. The succeeding inner sections 11 are left in alinement with the outer portions or sections contiguous thereto, thereby forming a box-like arrangement, with the lower portion standing to the rear of the upper, which portions are sustained by the vertical stay 14.

The inner sections 3 succeeding sections 11, are inclined upwardly, in the same manner and for the same purpose as sections 1. But since the impact of the machine against the air, and the continuous advance of the machine brings the greater strain upon the front portion thereof, it is not necessary for the rear sections to be as large as those to the front. For this reason the sections are made to gradually decrease in area. 13 is a vertical support for sections 3. These in turn are followed by sections 12 alined with sections 11 and again the succeeding sections 4 are upwardly inclined, but of smaller area than sections 3. Following these are sections 17 alined with sections 11 and 12. It is obvious that the series may be continued with such variations as to dimension and angle as may be found most practicable.

The outer and rear portions of the wings may be broken into corresponding sections 7 and 8, as shown in Fig. 5, depending from the body of the wing at an angle corresponding to that of the previously described sections, leaving the spaces 15 and 16 through which the banked and exhausted air may escape, thus allowing the succeeding portions of the craft to contact with fresh air.

Transversely of the device, is positioned a lateral brace 5, which is secured at the apex of the sections 3 and extends horizontally through openings 38 in each wing to form the projecting sections 9. This brace has a broad surface and a thin front edge, so that it will offer the least possible head-on resistance to the air, and at the same time afford sustaining power to the craft upon air emerging through the openings in front. A similar brace 6, having the pointed rear projection 10, extends across the craft in like manner on the line of the apex of sections 4. The portions of these braces which project to the outer sides of the wings may be inclined downwardly, as at 8^a and 7^a respectively in conformity to the other described sections.

The apexes of sections 11, 12 and 17 form the keel of the craft, and within the angle thus formed is mounted the operative mechanism.

5 Near the front of sections 11 is fixed a motor 26, to which is connected the central propeller 34 mounted contiguous thereto in proper bearings. At the front edge of the machine, in each angle formed by the
10 union of each pair of sections 1 and 2, are mounted propellers 18 and 19 upon shafts 29 and 21 respectively, which operate in suitable bearings 22 23. From each of these shafts is extended a transverse shaft
15 25, which operatively connects the propellers with the motor 26.

Within the angles formed at the bases of sections 3 and sections 4 may be distributed fuel tanks 37 and 45, which communicate
20 through suitable pipes 32 with the motor, thus distributing the weight about the craft, but yet keeping it below the center of the sustaining surface.

At a suitable point below sections 3, in
25 the rear of the motor, is arranged the operator's seat 31 convenient to lever 27 which is connected with and controls the propellers. Adjacent thereto, also is the lever 30 which is connected, by means of the pivoted
30 rods 53, 52 and 33 with the horizontal rudder 35 hinged to the front edge of sections 7, by means of which the vertical angle of the craft is controlled. In the rear section of each wing is provided a further rudder
35 40 and 50 respectively, mounted in suitable openings, upon shafts 39 and 51 respectively, at points in advance of their rear portions. The shaft 39 is geared to shaft 41, which is operated and controlled by lever
40 54. The shaft 49 connected with the rudder 50, also is operated by a similar lever, though it is obvious that the two may be so connected, as to be operated in unison and in opposite directions by the same lever.

45 Mounted centrally beneath sections 4 upon a vertical shaft 46^a is a four-sided box-like rudder 46 mounted in conformity to the anterior sectional units and adapted to control lateral movements of the craft,
50 though it is obvious that it may be operated for controlling vertical movements. Upon said shaft 46^a is fixed the lateral arm 43, to which is attached the rod 47, with which is connected the controlling lever 28.

55 Beneath the rear portion of the device, in a suitable bracket is pivotally mounted the vertical shaft 44^a, carrying the traction wheel 44. From shaft 44^a a lateral arm 48 is extended, to which is pivotally engaged
60 the connecting rod 42, connecting it with lever 28, by means of which the course of the device upon the ground is controlled.

A bracket 24^a is suitably fixed beneath the front end of the frame, in each side of
65 which is mounted a traction wheel 24, in

the same horizontal plane with the rear wheel 44, for supporting it in normal position when on the ground.

In this device all structural parts are made of thin strong material, having a
70 broad horizontal surface, so that the least possible head-on resistance will be presented to the air, and that substantially every part will present a sustaining surface, which will carry at least its own weight.
75 The truss-like arrangement of the sections affords the greatest strength to the materials, while it makes every portion a sustaining surface and gives to the central quadrilateral sections a box-like structure,
80 thereby making use of the air in a way, which would be impossible with plane surfaces.

The disturbed air which banks and accumulates under the craft, will lose its buoy-
85 ancy and sustaining power. Hence it is important to allow it to escape through the openings between the various sections, so that the wings may contact with fresh, undisturbed air.
90

In Figs. 1 and 2 the wings are broken up into sections, only in the series leading along their longitudinal center. It is obvious that the remaining portions may be left intact in plane surfaces, or broken up into alternating
95 angularly disposed sections, having decreasing areas, as may be desired.

By this arrangement of the propellers, it is possible to navigate the craft after certain of them are disabled. It also is possible to reduce or increase the speed of any one or more of them to accomplish a change in the direction of the craft. It is obvious, moreover that by the upwardly inclined disposition of the wings with the motor and all
105 heavy parts arranged centrally upon or near the keel, the device will automatically right itself in the air, no matter in what position it may be placed with respect to the sustaining surfaces, whether in horizontal position, head-on, or the reverse.
110

Whether the wing is broken into sections or left in a continuous, unbroken surface its entire area is spread to the air, both when
115 advancing and at rest. Moreover, when the device tilts from one side to the other, the descending side presents a gradually increasing breadth of surface against the air, while the opposite wing is approaching a vertical position, losing its sustaining power
120 and causing the machine to automatically right itself.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—
125

1. An aeroplane comprising a pair of upwardly inclined wings united at their lower edges, each wing being broken into transversely disposed sections and each alternating section along the inner edge of each
130

wing being inclined upwardly to meet that of the other, thereby forming a truss-like frame work.

2. An aeroplane comprising a pair of upwardly inclined wings united at their lower edges, and each wing consisting of a series of segmental units arranged in regular gradations from front to rear the alternating sections along the inner edges being upwardly inclined, thereby forming a truss-like frame work for the wings.

3. An aeroplane comprising a pair of upwardly inclined wings united at their lower edges, each wing consisting of a series of segmental units arranged in regular gradations from front to rear the alternating sections along the inner edges being upwardly inclined, and a brace whose horizontal dimension comports with that of said sections, uniting the apex of the upwardly inclined central sections with the outer portions of the wings, thereby forming a truss-like frame work for the wings and each portion forming sustaining surface.

4. An aeroplane comprising a pair of upwardly inclined wings united at their lower edges, each wing consisting of a series of segmental units arranged in regular gradations from front to rear, the alternating sections along the inner edges being upwardly inclined, a quadrilateral rudder pivotally mounted in conformity to said angularly disposed sections to form a box-like rudder, and means for operating the rudder.

5. An aeroplane comprising a pair of upwardly inclined wings united at their lower edges, each wing consisting of a series of segmental units arranged in regular gradations from front to rear the alternating sections along the inner edges being upwardly inclined operative mechanism disposed longitudinally along the united ends of the lowermost sections, a plurality of propellers connected therewith and means for independently controlling the speed of the propellers whereby its equilibrium is maintained.

6. An aeroplane comprising a pair of upwardly inclined wings united at their lower edges, each wing consisting of a series of segmental units arranged in regular gradations from front to rear the alternating sections along the inner edges being upwardly inclined, operative mechanism disposed longitudinally along the united ends of the lowermost sections, a plurality of propellers connected therewith, means for independently controlling the speed of the propellers whereby its equilibrium is maintained, supplemental rudders for controlling vertical and horizontal movements, and means for operating said supplemental rudders.

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

SPENCER M. BROWN.

Witnesses:

W. G. KING,
I. N. MATLICK.