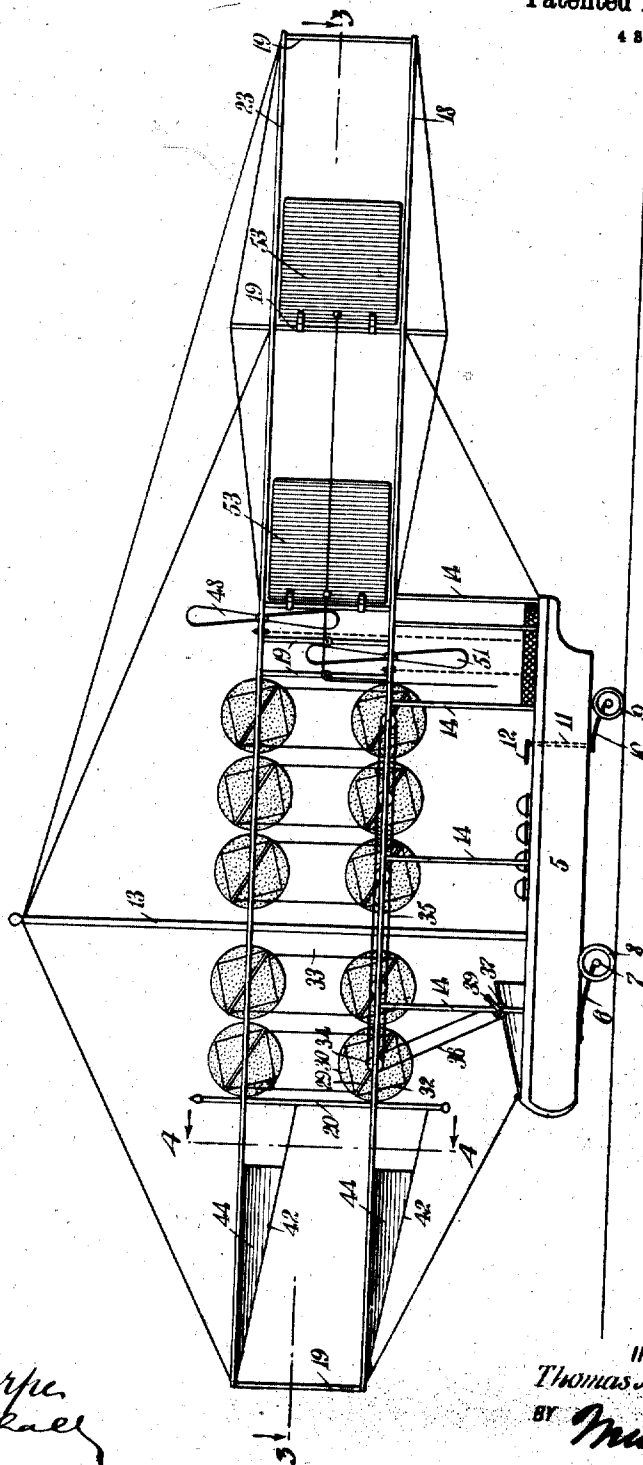


1,000,897.

T. M. CREPAR.
AIRSHIP.
APPLICATION FILED JUNE 21, 1910.

Patented Aug. 15, 1911.
4 SHEETS-SHEET 1.

Fig. 1.



WITNESSES:

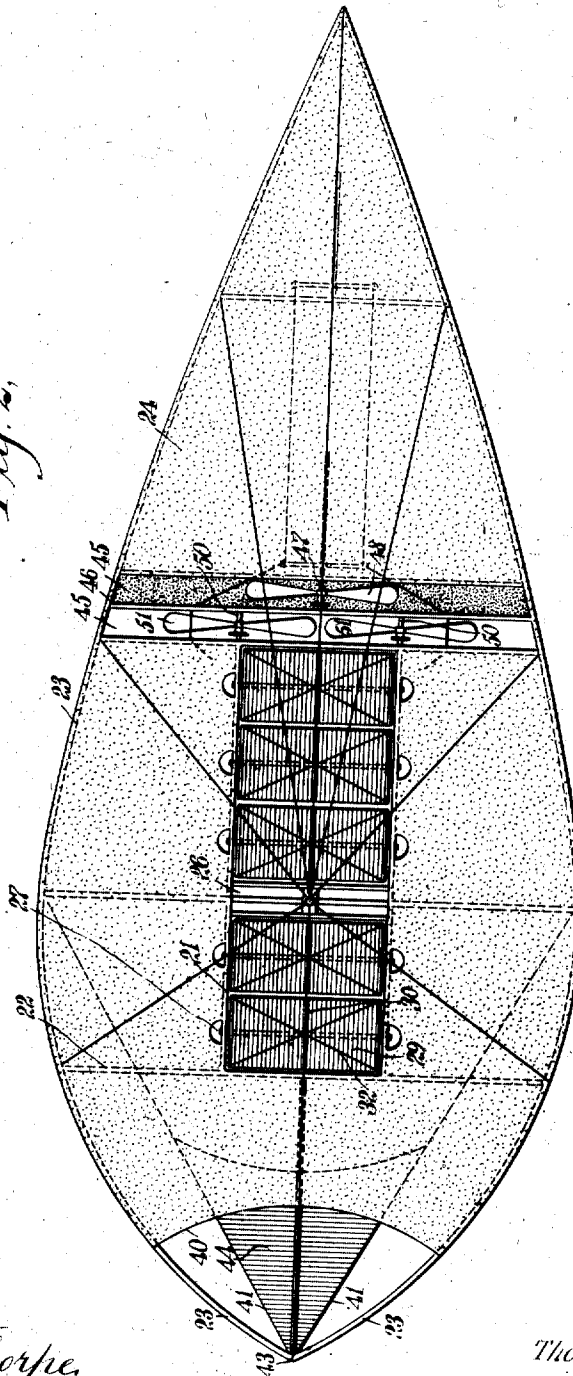
Edward Thorpe
E. B. Marshall

INVENTOR
Thomas M. Crepar
BY *Muirhead*
ATTORNEYS

1,000,897.

Patented Aug. 15, 1911.
4 SHEETS—SHEET 2.

Fig. 2.

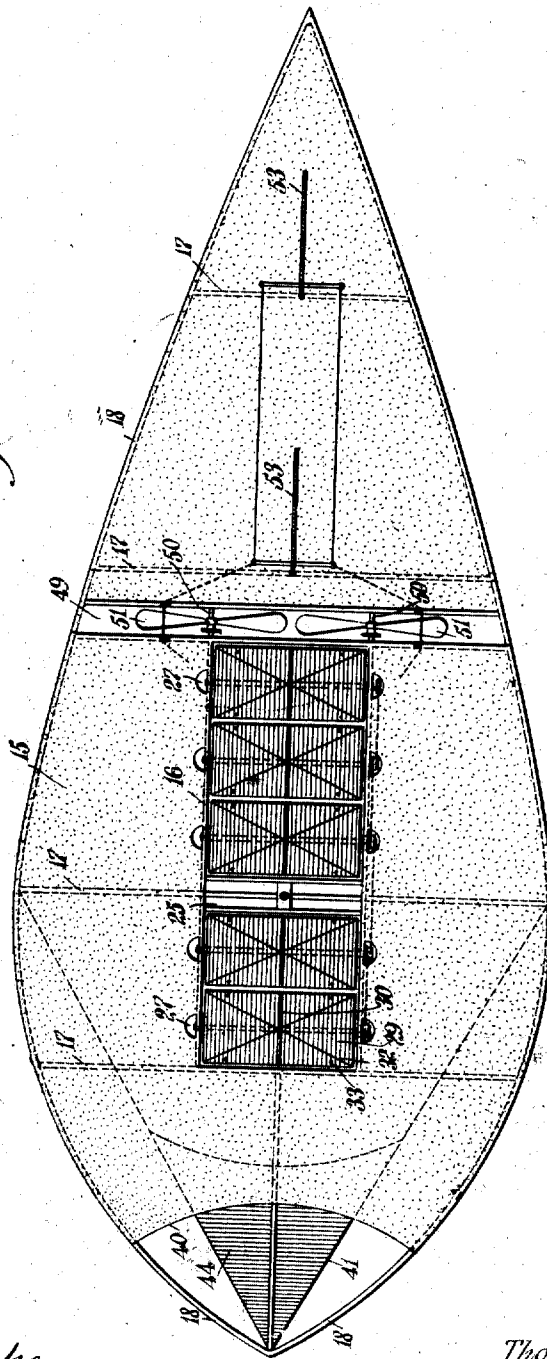


WITNESSES:

Edward Thorpe
E. B. Marshall

INVENTOR
Thomas M. Crepar
BY *Mumfles*
ATTORNEYS

Patented Aug. 15, 1911.
4 SHEETS—SHEET 3.



Edward Thorpe.
E. B. Munnell

INVENTOR
Thomas M. Crepar
BY *Mundele*
ATTORNEYS

T. M. CREPAR.
AIRSHIP.
APPLICATION FILED JUNE 21, 1910.

1,000,897.

Patented Aug. 15, 1911.
4 SHEETS—SHEET 4.

Fig. 4.

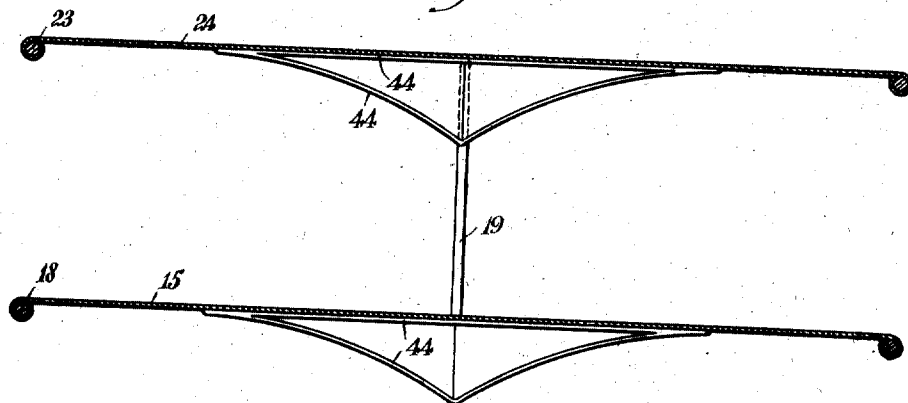
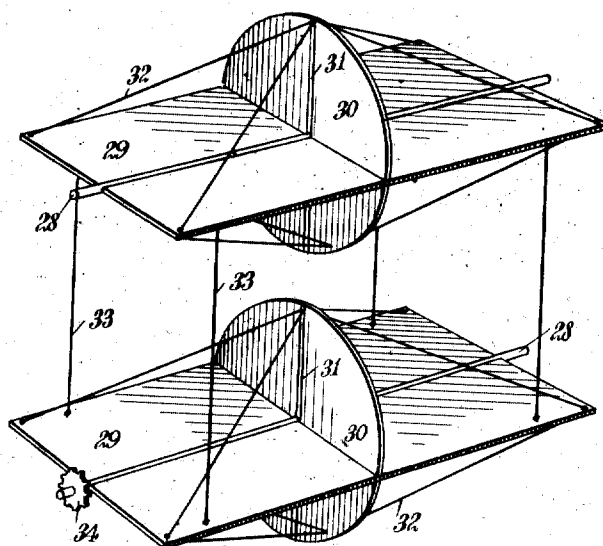


Fig. 5.



WITNESSES:

Edward Thorpe
E. B. Marshall

INVENTOR
Thomas M. Crepar
BY *Mundee*
ATTORNEYS

UNITED STATES PATENT OFFICE.

THOMAS MORTIMER CREPAR, OF DILWORTH, MINNESOTA.

AIRSHIP.

1,000,897.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed June 21, 1910. Serial No. 568,135.

To all whom it may concern:

Be it known that I, THOMAS MORTIMER CREPAR, a citizen of the United States, and a resident of Dilworth, in the county of Clay and State of Minnesota, have invented a new and Improved Airship, of which the following is a full, clear, and exact description.

My invention relates to airships, and it has for its object to provide one with a plane, the sides of which converge rapidly at its forward end, said sides converging slowly toward the rear, thereby forming an elongated tail, making the plane substantially fish-shape.

Another object of the invention is to provide two planes, one disposed above the other, there being central openings in each of the planes, and series of vanes being disposed in each of the said openings.

Further objects of the invention are to provide the vanes with keels, which are disposed immediately in the rear of the heads of the airship and which serve to prevent the airship from slipping laterally, the said vanes being provided with means by which they may be moved simultaneously; to provide members diverging rearwardly from a point at the extreme front of the ship and substantially on a horizontal plane, and a third member which diverges downwardly and rearwardly from the said points, the several members being inclosed at the sides, to form a head, open at the top and rear, for the airship; and to provide two rudders disposed tandem between the planes, with members by which they may be operated together or independently, and in connection with the steering rudder for steering the airship when on the ground.

Still other objects of the invention are to journal an axle in springs secured to the car, wheels being mounted on the axle; to make the front of the planes concave, the heads projecting rearwardly to the front of the said planes, and to provide a plurality of propellers coupled independently of each other to a main shaft.

Still other objects of the invention will appear in the following complete description.

In this specification I will describe the preferred form of my invention, it being

understood that the scope of the invention is defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side elevation of my invention; Fig. 2 is a plan view of my invention; Fig. 3 is a sectional view, on the line 3-3 of Fig. 1; Fig. 4 is an enlarged sectional view on the line 4-4 of Fig. 1, and Fig. 5 is an enlarged perspective view showing the means whereby the upper and lower vanes are coupled together.

By referring to the drawings, it will be seen that a car 5 is provided, which is substantially canoe-shaped, there being downwardly-disposed springs 6 which are secured to the bottom of the said car 5, an axle 7 being journaled in bearings in the said springs 6, wheels 8 being mounted on the axles. In the rear of the car is a steering wheel 9 mounted to rotate on a member 10, which is secured to a shaft 11 journaled in the car, there being a tiller 12 by which the steering wheel 9 may be operated. A mast 13 is secured in the car 5 and projects upwardly to a considerable height, there being also struts 14 which extend upwardly and to which the frame 16 of the lower plane 15 is secured. There are also additional transverse frame members 17 for the lower plane 15 and a frame member 18, which is secured to these transverse frame members 17 and which extends around the said frame 16. The sides of this frame member 18 converge rapidly at the bow of the airship, while they converge very slowly toward the rear of the airship, thereby forming an elongated tail, making the plane substantially fish-shape. Mounted on the mast, struts 19 and a flagstaff 20, there are members 21, transverse frame members 22 and frame members 23, which extend around the periphery of the upper plane 24. This upper plane 24, like the lower plane 15, has its sides converging rapidly at the bow, the sides converging very slowly toward the rear, forming an elongated tail. The frame members 16 of the lower plane 15 and the frame members 21 of the upper plane 24, surround central openings 25 and 26 re-

spectively, bearings 27 being disposed in the sides of the said openings 25 and 26, axles 28 being journaled in the said bearings and vanes 29 being mounted on the axles 28.

5 Mounted on the vanes 29 and extending longitudinally of the airship, are keel members 30, which are circular in shape and extend upwardly and downwardly from the vanes 29. Struts 31 project upwardly and
10 downwardly from the vanes 29, the struts being disposed against the keel members 30 and serving as braces. Guy lines 32 extend from the top and bottom of the keel members to the corners of the vanes. Each of
15 the upper vanes 29 is connected with a vane 29 immediately below it, by means of cords 33. By this means, when one of the lower vanes is operated, the upper vane moves therewith. At one side of each of the axles
20 28 of the lower vanes 29 there are secured sprocket wheels 34, the sprocket wheels 34 being connected together by sprocket chains 35 respectively, there being an additional sprocket chain 36 mounted on a sprocket
25 wheel 37 secured to a shaft journaled on one of the struts 14, the sprocket chain 36 being also connected with the sprocket wheel 34 secured to the shaft 28 of the lower vane 29 which is at the front of the airship. It will
30 therefore be seen that when the sprocket wheel 37 is rotated, by means of a crank 39, all the vanes 29 will be moved simultaneously in the same direction.

The fronts of the planes 13 and 24 are cut
35 away to form concave edges 40 at the bow of the airship. Secured to the frame members 18 and 23, at the bow of the airship, are cords 41. Two of these cords 41 are secured immediately in front of the planes
40 respectively, the cords diverging rearwardly and being secured to the planes at their sides. There are also additional cords 42, which are secured at the same point where the cords 41 form angles, 43, these cords 42
45 diverging downwardly and rearwardly respectively, relatively to the planes. Light material 44 is secured to the cords 41 and is disposed under the cords 42, thereby forming
50 heads, which extend rearwardly of the front concave portions 40 of the aeroplane. The upper portions of the heads are open, and the heads are also open at their rear. The keel members 30 are disposed immediately in the rear of the heads formed by the material
55 40 disposed over the cords 41 and 42.

In the upper plane 24 there are two transverse openings 45, which are separated by transverse frame members 46, a shaft 47
60 being journaled longitudinally of the airship in the rear opening 45, there being a propeller 48 mounted on the said shaft 47. In the lower plane there is a transverse opening 49, there being two shafts 50 journaled in the said opening, longitudinally of
5 the airship, propellers 51 being mounted on

these shafts respectively. The shafts 50 on the lower plane are connected with the main shaft of the car (not shown) by two sets of belting, one set being connected with each
70 of the said shafts 50, and there are two sets of lighter belting which connect the shafts 50 respectively with the shaft 47. It will be seen that by this arrangement any breakage of a belt will not seriously interfere with the operation of the propellers. In the rear
75 of the airship, between the planes, there are two rudders 53, which are disposed in tandem. As my airship is unusually long, it will be necessary to supply an extensive rudder surface, and in order to obviate any
80 difficulty which is occasioned by rudders which are of great length, I have provided the two rudders as shown in the drawings. These rudders are operated by independent cables, which run to the sides of the aeroplane and then are brought downwardly to
85 be operated by levers in the car. These operating levers are disposed side by side, and may be moved together or independently of each other, at the will of the operator. They may also, when desired, be
90 moved with the tiller 12.

The planes of my airship are of unusual length and the vanes are disposed in the central openings. When these vanes are open,
95 the planes with the central openings serve as a parachute to delay the descent of the airship, should its operating mechanism be impaired. With the vanes it is possible for the operator to lift his ship gradually and
100 steadily without any pitching, such as takes place with the forward plane of the Wright or Curtiss machines when used to cause an ascent or descent. It will also be understood that as the vanes are disposed in the center
105 of the planes, they will cause the airship to move more evenly than in other constructions. This is especially true where the vane may come in contact with lateral air currents, for when the vanes are disposed
110 together in the center of the planes, they will all come in contact with these air currents at substantially the same time or in case they should not, no great injury can be done, as pressure exerted on the vanes
115 respectively will be distributed evenly throughout the planes. It will also be understood that while all these advantages are obtained by the construction which I have described, with the vanes disposed in
120 the central openings, it is possible to prevent any sliding off of the wind by means of the rudder members which are secured to the vanes, the rudder members being disposed longitudinally of the airship immediately in the rear of the heads.

By mounting the rudders 53 independently of each other, not only is it possible to move one rudder independently of the other
130 to steer the ship, or both rudders together

when a quicker turn is desired, but it is also possible to move the rudders in opposite directions, so that they will serve as brakes and will check the movement of the airship through the air.

As the heads are constructed, they are secured firmly relatively to the frame members 18, 23, the planes 15, 24 being cut away as has been described, to form openings through which the air, cut by the heads, may be driven.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In an airship a plane having a transversely disposed head member, the front of the said head member projecting forwardly of the plane and substantially in alinement therewith, the rear of the member being spaced from the plane and extending rearwardly below the front of the plane to permit the air to pass between the plane and the head member.

2. In an airship a plane the front edge of the plane being cut away, and a transversely disposed head member spaced from the plane to permit the air to pass between the plane and the head member, the front of the head member being disposed in front of the bow of the plane with the rear of the head member extending rearwardly below the said bow.

3. In an airship a plane and a head, open at the top, and rear, disposed in front of the plane, the bottom of the head at the rear thereof being spaced from the plane and normally disposed below the level of the plane to permit the air to pass between the rear of the head and the plane.

4. In an airship, a plane, the sides of which converge rapidly at the bow, the sides converging slowly rearwardly forming an elongated tail, two members which diverge rearwardly from a point in front of the plane and which are secured thereto, another member which extends downwardly and rearwardly from the said point, and material disposed against the sides of the members to form a head, open at the top and rear.

5. In an airship a plane the bow of which has a cut-away portion, two members which diverge rearwardly from a point in front of the bow of the plane, another member which extends downwardly and rearwardly from the said point to a point below the plane, and material disposed against the sides of the members to form a head open at the top and rear.

6. In an airship two planes, one disposed

over the other, each of the planes having a concave front edge, and two wedge-shaped members disposed at the front of the edges respectively.

7. In an airship, a plane having a central opening, a series of vanes pivotally connected with the plane and disposed in the opening, upwardly and downwardly-disposed keel members on the vanes respectively, and means adapted to move the vanes simultaneously.

8. In an airship two planes, disposed one over the other, each having a central opening, vanes disposed in the openings and pivoted relatively to the planes, the vanes being disposed in two series one series in each of the openings, and means connecting the upper and lower vanes in pairs.

9. In an airship, two planes disposed one over the other, each having a central opening, vanes disposed in the openings and pivoted relatively to the planes, the vanes being disposed in two series, one series in each of the openings, means connecting the upper and lower vanes in pairs, and means adapted to operate one series of vanes simultaneously.

10. In an airship, two planes disposed one over the other, each having a central opening, vanes disposed in the openings which are pivoted relatively to the planes, the vanes being disposed in two series, one series in each of the openings, means connecting the upper and lower vanes in pairs, and keel members secured to the vanes.

11. In an airship, a plane having a central opening, a vane disposed in the opening and pivoted relatively to the plane, a keel member disposed longitudinally of the airship and secured to the vane, and a head disposed at the bow of the airship and in longitudinal alinement with the keel member.

12. In an airship, two planes, one disposed over the other, there being an opening in each of the planes, a propeller disposed in one of the openings, and two propellers disposed in the other opening, a main shaft, means connecting the said two propellers with the main shaft independently of each other, and means connecting the first-mentioned propeller with the said two propellers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS MORTIMER CREPAR.

Witnesses:

FRANK J. THOMAS,
RAYMOND B. TOMLINSON.