

J. R. PORTER.

AIRSHIP.

APPLICATION FILED OCT. 2, 1909.

1,016,359.

Patented Feb. 6, 1912.

2 SHEETS—SHEET 1.

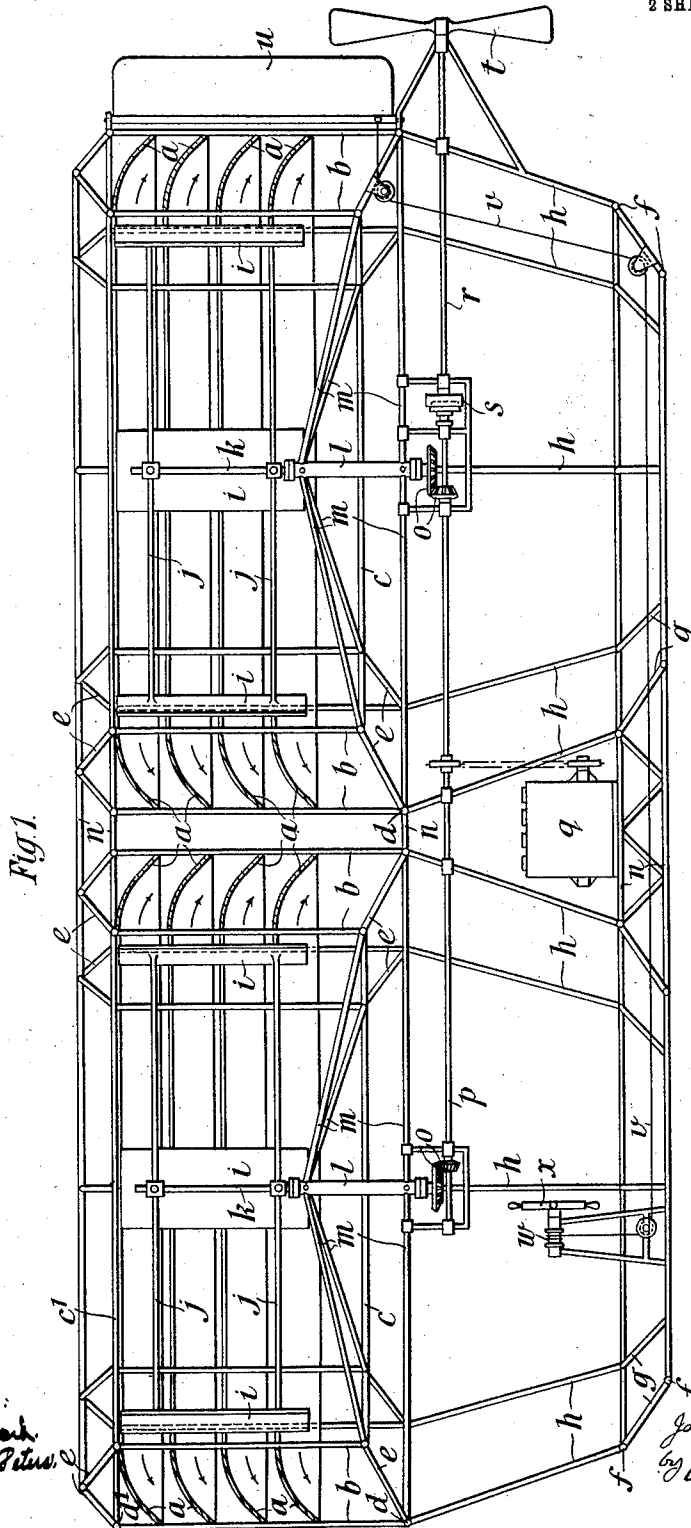


Fig. 1.

Witnesses:
Eugene Smith
Frank A. Peters

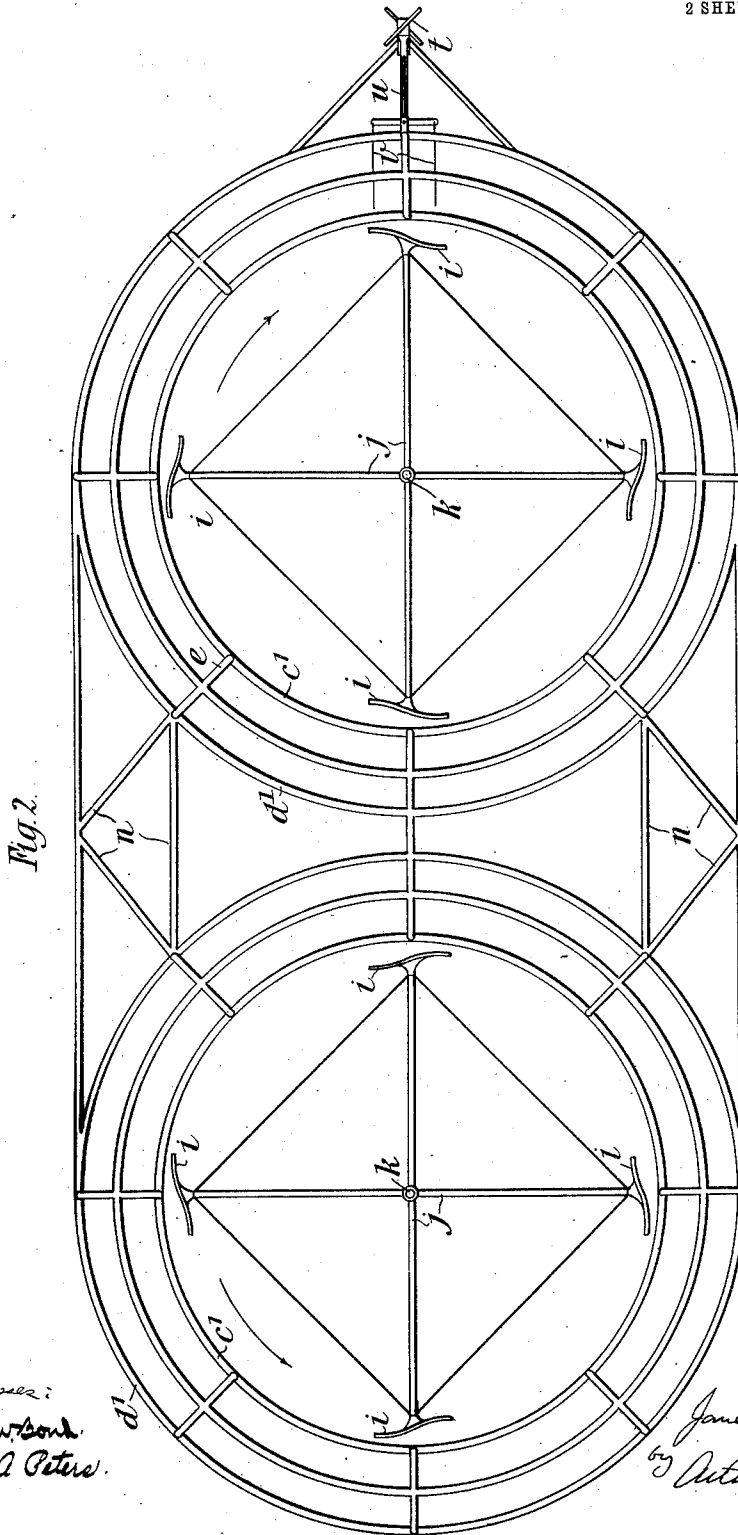
Inventor:
James R. Porter,
by Arthur Brown
his attorney

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JAMES ROBERTSON PORTER, OF LONDON, ENGLAND.

AIRSHIP.

1,016,359.

Specification of Letters Patent.

Patented Feb. 6, 1912.

Application filed October 2, 1909. Serial No. 520,657.

To all whom it may concern:

Be it known that I, JAMES ROBERTSON PORTER, a subject of the King of Great Britain, residing at 9 Gray's Inn Square, in the county of London and Kingdom of Great Britain, have invented new and useful Improvements in and Relating to Airships, of which the following is a specification.

This invention relates to airships of the heavier-than-air type and of that class in which a horizontal annular deflecting surface or aeroplane is employed together with means for forcing air against the under side of the said plane so as to deflect the air downward and support or lift the plane.

With apparatus of this class it has been usual to force the air in directions not radial with the center of the annular deflecting surface, for instance, by means of steam jets arranged tangentially or by means of a fan. These arrangements are, however, not satisfactory in practice.

According to this invention the air-ship is provided with an approximately horizontal annular surface or aeroplane or a series thereof superposed and means are provided for forcing air radially against the under side or sides of the said aeroplane or aeroplanes.

In order that the invention can be clearly understood reference is had to the annexed drawing, in which,

Figure 1 is a sectional side elevation of an airship constructed according to the invention and Fig. 2 is a plan thereof.

a, a are the superposed annular aeroplanes carried by a tubular framing comprising upright members b, b and inner and outer horizontal circular members c, c^1, d, d^1 , respectively connected together by members e, e . The aeroplanes a, a which are shown as being curved downwardly, are carried at the upper part of the airship, the lower part of the latter, which carries a suitable deck and comprising the circular frames f, f connected together by members g, g being attached to the circular frames d, d by upright members h, h . Within the space inclosed by the aeroplanes a, a is arranged the means for forcing air horizontally and radially against the inner edges of the said aeroplanes.

In the drawing I have shown a rotary fan having a series of vertical blades i, i supported by single or double arms j, j on a

vertical driving shaft k mounted in a bearing l carried by arms m, m from the frames c, d . Each of the blades i, i is in cross section of the form of a convex curve continued or followed by a concave curve so that when the fan is rotated air will be thrown off from the blades by centrifugal action into contact with the under surface of the aeroplanes a, a , or a single curved surface may be employed.

A great advantage resulting from a fan of the described construction is that there is practically no thrust on the bearings of the fan shaft owing to the air being thrown off peripherally.

Although I have described the air as being directed radially against the aeroplanes a, a by the fan shown in the drawing I may employ any other suitable means for the purpose.

In the drawing I have shown the airship as comprising two series of aeroplanes a, a and two fans for acting in conjunction therewith, the respective frameworks thereof being united or braced together by tubular members n, n . The two fans are preferably rotated in opposite directions by bevel gearing o, o from a horizontal shaft p driven by a suitable motor q , another shaft r , in alinement with the shaft p and adapted to be driven thereby through the medium of a clutch s , carrying an ordinary screw propeller t for driving the ship horizontally.

The operation is as follows:—Upon the fans being rotated, a horizontal radial current of air is produced by each fan for the full depth of the blades i, i and is deflected downward by the aeroplanes a, a with the result that an upward pressure is produced on the planes a, a , this upward pressure at any one point in a plane being completely balanced by a corresponding pressure at a point in the plane diametrically opposite. When the ship has reached the desired elevation horizontal motion thereof can be effected by altering the distribution of the weight carried thereby, but preferably by rotating the screw propeller t .

u is a rudder pivoted to the ship adjacent to the propeller t and connected by cords v or the like to a drum w designed to be rotated by a steering wheel x .

By arranging two sets of aeroplanes a, a as shown the motor q can be placed in a central position, thereby keeping the ship in trim and being at the same time in the

path of the air which is discharged from the adjacent portions of the two sets of aeroplanes, the air serving, in the case of an internal combustion motor, as a cooling agent.

Instead of arranging a series of aeroplanes in conjunction with each fan as described, one only may be employed and in place of two sets of aeroplanes, and accompanying fans I may form the ship of one set only or of more than two sets.

In place of the screw propeller *t* for driving the ship horizontally I may employ aeroplanes similar to the aeroplanes *a*, *a* but arranged vertically instead of horizontally with a fan similar to those shown or with other means for discharging air against their inner edges arranged in the space inclosed by them.

With an airship of the construction above described, should the available power fail, the aeroplanes will act as parachutes, and

being superimposed, will insure great stability as the ship descends.

I claim—

1. An airship having, in combination, a plurality of superposed non-rotary annular deflecting surfaces having a common axis, and a centrifugal propeller mounted centrally to force the air drawn from the underside against and between said deflecting surfaces.

2. An airship having, in combination, a series of non-rotary annular deflecting surfaces having a common axis, means for drawing the air from below the machine and forcing it against the deflecting surfaces, which in turn deflect it downward and cause the machine to rise, and a screw propeller for driving the machine forward.

JAMES ROBERTSON PORTER.

Witnesses:

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