C. D. BROWNE.

TRACTOR, PROPELLER, OR HELICOPTER FOR AIRSHIPS.

APPLICATION FILED JULY 11, 1913.

1,105,750. Patented Aug. 4, 1914.

FIG. 1.

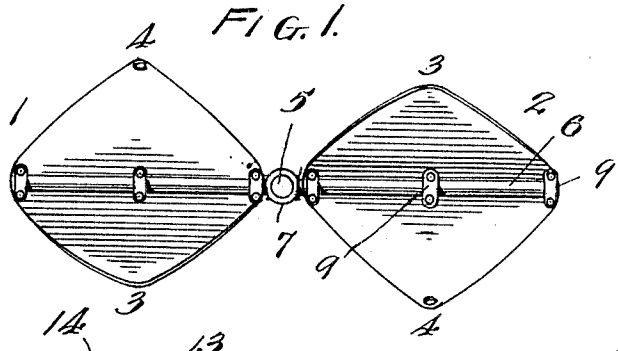
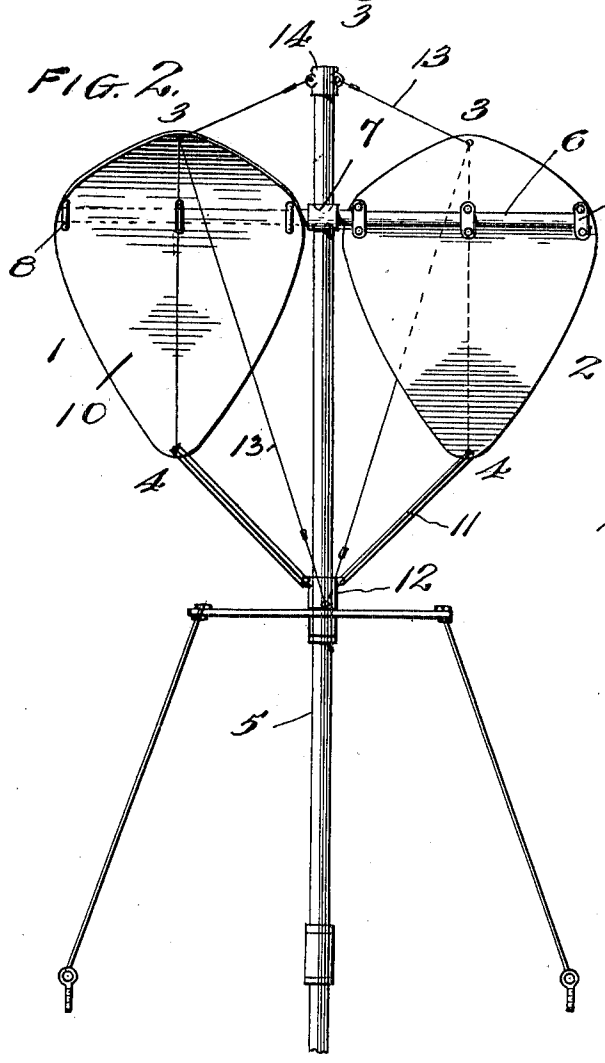


FIG. 2.



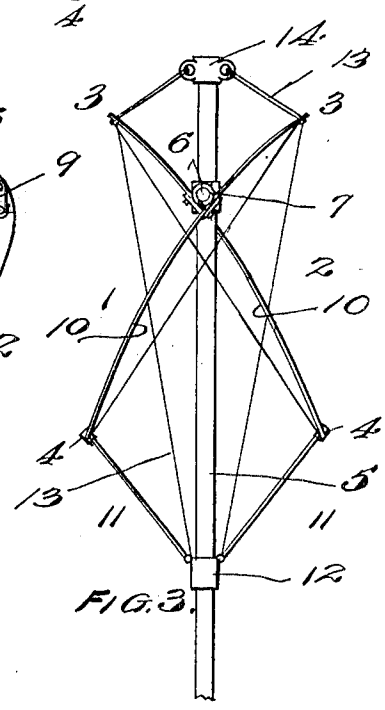


FIG. 3.

WITNESSES.

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TRACTOR, PROPELLER, OR HELICOPTER FOR AIRSHIPS.

1,105,750. Specification of Letters Patent. **Patented Aug. 4, 1914.**

Application filed July 11, 1913. Serial No. 778,599.

To all whom it may concern:

Be it known that I, CARL DRYDEN BROWNE, a citizen of the United States, residing in Hot Springs township, in the county of Napa and State of California, and whose post-office address is Colistoga, California, have invented a new and useful Improvement in Tractors, Propellers, or Helicopters for Airships.

My invention relates to improvements in tractors and propellers of the helicopter type, and is adapted especially for use in airships, and although the principle may be embodied in the propellers to be used in water, I have herein shown and described the invention as applied to air ships.

The primary object of the invention is to secure greater motive effect from a smaller expenditure of power and incidentally to overcome what is known as "slip loss" to increase the thrust and to add to the supporting surface of an air ship equipped with a helicopter of this character.

The invention consists in certain novel features and combinations and arrangements of parts as hereinafter more fully described and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles of the invention.

Figure 1 is a top plan view of a propeller of the helicopter type according to my invention. Fig. 2 is a side elevation of the propeller. Fig. 3 is another elevation of the propeller taken at right angles to Fig. 2, showing the edges of the blades.

In the preferred embodiment of my invention, and as illustrated in the drawings, I employ a pair of blades, vanes or wings, as indicated by the numerals 1 and 2. These blades are of suitable material such as magnalium or other similar light but strong metal, and as clearly seen in the drawings, especially Fig. 2, they are somewhat the shape of a diamond, having the upper points 3 and the lower points 4. In Fig. 2 it will be seen that the blades are curved, and they are arranged preferably at an angle of approximately 55° to the mast or shaft 5 with which they revolve. This shaft 5 is preferably of steel tubing, and forms the axis of rotation for the revolving propeller as a whole. The blades 1 and 2 are connected at diametrically opposite sides of the shaft 5, to the radial cross bar or arm 6. This cross arm also is of steel tubing, and is coupled at 7 to the shaft 5, and as will be seen, projects radially at the sides therefrom. The blades 1 and 2 are fixed to this cross arm by means of U-shaped bolts or clips 8 and securing plates 9, and it will be seen that each blade has two end securing bolts and an intermediate bolt to secure a rigid and fixed attachment to the cross arm 6.

It will be observed that the blades 1 and 2 are arranged so that their front or working faces 10 face in opposite directions, and preferably the blades are located with relation to the cross arm, so that approximately two-thirds of the blade is below the arm and the other one-third above the arm. The blades at their lower points 4 are connected by means of steel tubing 11 to a coupling or sleeve 12 on the shaft 5 to form a rigid and staple relationship between the sleeve 10 fixed to the shaft, and the lower end of the blade. To further stiffen and brace the blades I employ guy wires 13. These wires are shown extending from the upper ends 3 of the blades to the coupling sleeve 14 at the top of the shaft, others extend from the upper end 3 to the lower end 4 of the blades, and still others extend from the upper end 3 to the sleeve 12 on the shaft. By means of these wires and braces a rigid and compact arrangement is effected. The propeller is revolved clockwise, and the short forward point, and longer rearward point of the blades, in connection with the angle (55°) at which the blades are disposed to the plane of the shaft, provides an efficient propeller of this type which performs its functions in increasing the motive effect with a comparatively small expenditure of power.

Having thus fully described my invention what I claim is:

1. A propeller comprising a revoluble shaft, a cross arm, and a pair of approximately diamond-shape blades inclined to the axis of the shaft with their working faces in opposite directions, each said blade having an area located below the cross arm double the area above the arm.

2. A propeller comprising a revoluble shaft, a cross arm and a pair of curved blades extending at an angle approximately

55° to the axis of the shaft, each said blade having its greatest width at its point of attachment to the cross arm, and having an area below the arm approximating double the area above the arm.

3. A propeller comprising a revoluble shaft, a cross arm, and a pair of diamond-shape blades extending across the plane of the shaft approximately at an angle of 55° and having an area below said arm approximately double the size of the area above the arm.

CARL DRYDEN BROWNE.

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."