

J. BOWIE.
 PROPELLER FOR AERIAL VESSELS.
 APPLICATION FILED NOV. 3, 1911.

1,036,431.

Patented Aug. 20, 1912.

3 SHEETS—SHEET 1.

FIG. 1.

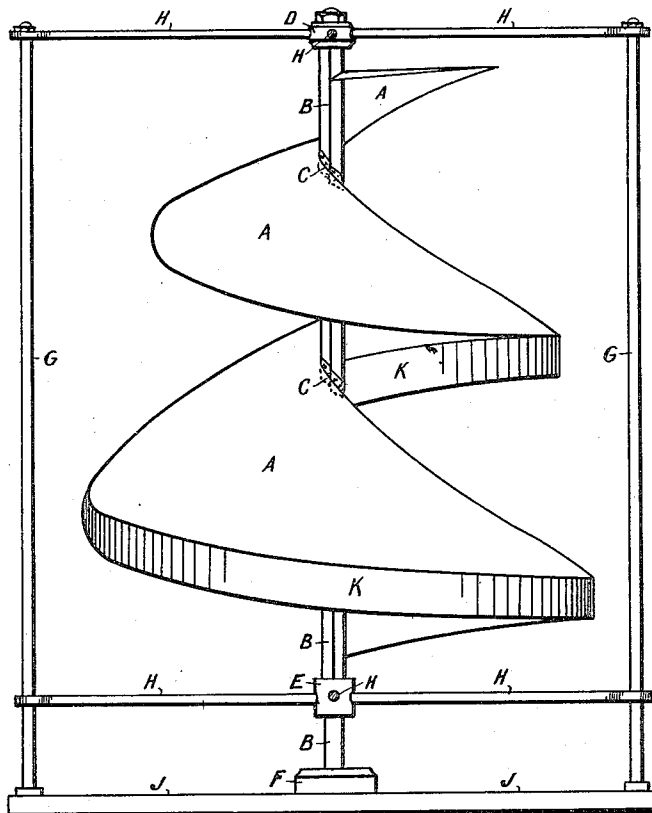
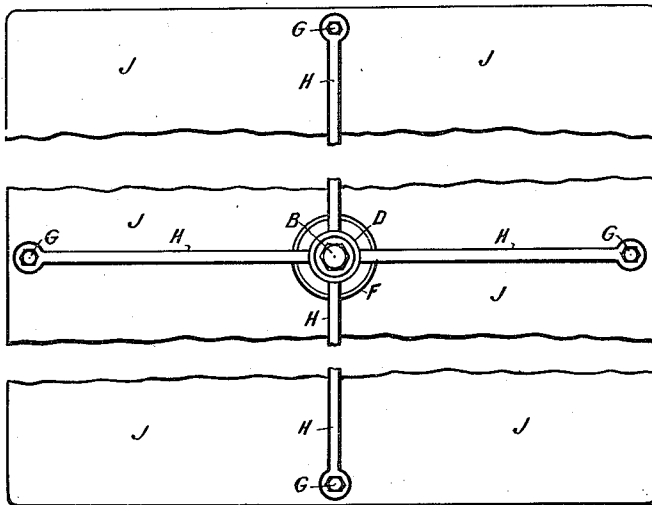


FIG. 2.



WITNESSES

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3 SHEETS—SHEET 2.

FIG. 3.

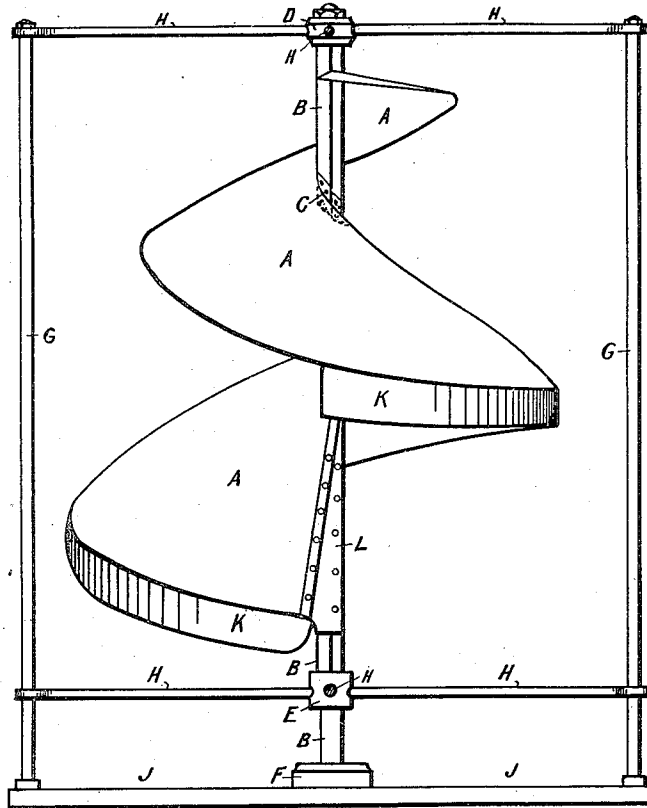
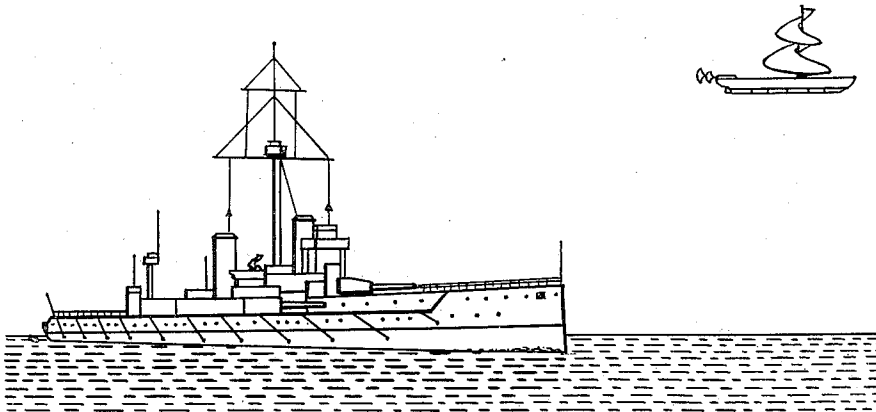


FIG. 4.



WITNESSES

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3 SHEETS—SHEET 3.

FIG. 5.

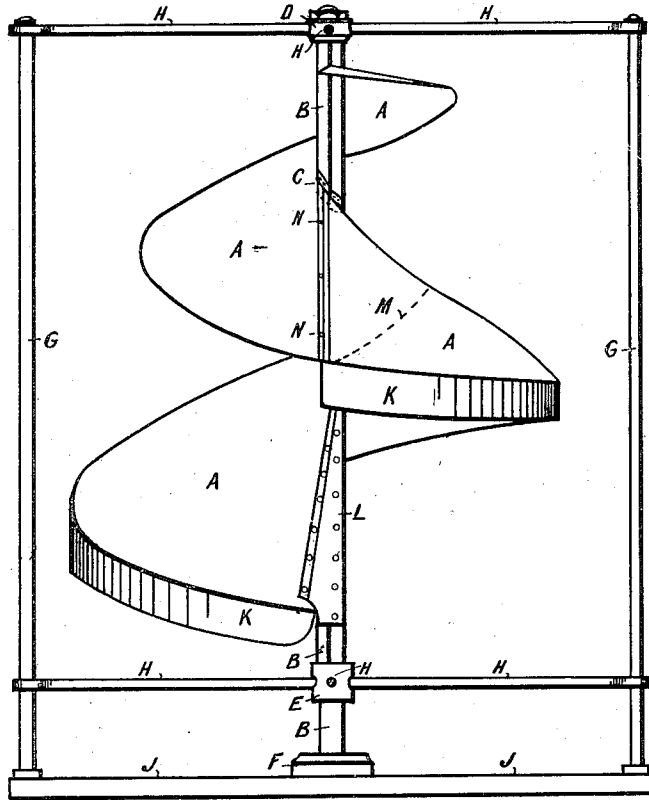
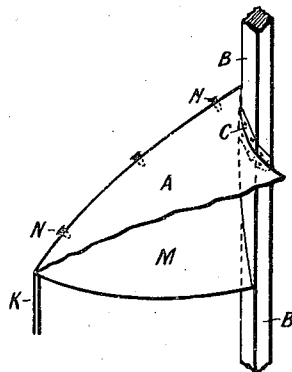


FIG. 6.



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PROPELLER FOR AERIAL VESSELS.

1,036,431.

Specification of Letters Patent.

Patented Aug. 20, 1912.

Application filed November 3, 1911. Serial No. 658,346.

To all whom it may concern:

Be it known that I, JAMES BOWIE, a subject of the King of Great Britain and Ireland, residing at Windermere House, Union Place, Edinburgh, Scotland, have invented new and useful Improvements in Propellers for Aerial Vessels, of which the following is a specification.

My said invention has for its object to provide an improved propeller, more particularly applicable for elevating or raising vertically aerial vessels.

In carrying out my invention the propeller consists of a screw-like device, made up of one or more convolutions. The inner edge, or edges, of the propeller are fixed to a vertical revolving shaft which may be connected directly to the motor. The pitch and breadth or depth of the screw-like device and the angle it forms with the shaft may be varied as found most suitable in practice. For example the angle that the surface of the blades makes relative to the shaft may be approximately a right angle at the top,—the angle gradually becoming more acute until it reaches a vertical or nearly vertical position at the bottom. To the outer edge of the propeller, or the lower part thereof, a curtain or screen is arranged to hang vertically, or approximately vertically. To the lower end of the propeller there is fitted a baffle plate which extends inward at right angles to the curtain or screen. To enable the propeller to act as a parachute, it is provided with a hinged plate, or shutter, which automatically opens when the propeller is driven in one direction, and automatically closes, or is mechanically closed, when the propeller rotates in the opposite direction.

In order that my said invention and the manner of performing the same may be properly understood I hereunto append three sheets of explanatory drawings to be hereinafter referred to in describing my invention.

Figure 1, is an elevation of my improved propeller, and Fig. 2, is a plan of the supporting stays and base plate, but with the propeller removed. Fig. 3, is an elevation at right angles to Fig. 1, and Fig. 4, is a general view showing a vessel, provided with my improved propeller, which has ascended from the deck of a warship. Fig. 5, is a

view similar to Fig. 3, showing the hinged plate, or shutter, and Fig. 6, is a view of a part of the propeller showing the hinged plate or shutter, in its operative position.

In these drawings the same reference letters are used to mark the same or like parts wherever they are repeated.

As shown in Figs. 1 and 3, of the drawings, the propeller consists of a screw-like device A, made up of two convolutions. The propeller A, is fitted to a vertically rotating shaft B, a part of which may be of square formation in cross section, and the propeller is secured to the shaft by means of brackets C. The shaft B, is supported in bearings D, E, and F, preferably of the ball or roller type, and also by means of the vertical and horizontal stays G, H, the former being fixed to the base or sole plate J. The propeller A, is provided with a vertically depending curtain or screen K, the object of which is to prevent the air escaping around the periphery of the propeller. A baffle plate L, (Fig. 3) is fitted at the lower end of the propeller A, and extends inward at right angles to the curtain K, so as to deflect the air, after it has traveled over the under surface of the propeller, in a downward direction. The propeller A, is provided with a hinged plate, or shutter M, said plate being hinged to the under surface of the top convolution, as shown in Fig. 5, and when closed, or in its operative position, bearing against stops N, on the lower surface of the upper convolution, as shown in Fig. 6, or these stops may be fitted to the upper surface of the lower convolution. In this way a complete convolution of the propeller can be utilized to act as a parachute and so serve to arrest or check a too sudden descent.

Any suitable number of these propellers may be employed depending on the size and weight of the vessel to be raised, further in addition to the vertical propeller, or propellers, one or more horizontal propellers may be fitted at the bow or stern, or bow and stern.

The material employed in the construction of the vessel and the propeller, is made as light as is consistent with safety, and the vessel is provided with a double bottom which may be subdivided into a number of watertight compartments provided with suit-

able valves, thereby serving as water ballast tanks in the event of the vessel alighting on the water.

Any suitable motive power may be employed to drive the propeller or propellers.

What I claim as my invention is:—

1. In a propeller for aerial vessels, in combination, a rotatable shaft, a screw-like propeller blade of one or more continuous convolutions secured thereto, a fixed baffle plate between one end of said blade and said shaft, and a plate swingingly secured to said blade and adapted to cooperate with said baffle plate to form an air pocket when the propeller rotates in one direction.

2. In a propeller for aerial vessels, in combination, a rotatable shaft, a screw-like propeller blade of one or more continuous convolutions secured thereto, said blade being provided with a curtain at its outer edge ex-

tending in a direction parallel to said shaft, said curtain extending from one end of said blade throughout one complete convolution thereof, a fixed baffle plate between one end of said blade and said shaft, and a plate swingingly secured to said blade and adapted to cooperate with said baffle plate to form an air pocket when the propeller rotates in one direction, said swinging plate being spaced from said fixed plate at a distance corresponding to one complete convolution of said blade.

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

JAMES BOWIE.

Witnesses:

GEORGE PATTERSON,
JAMES WHITELAW.