

D. H. BLAKE.

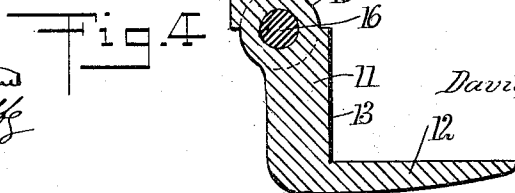
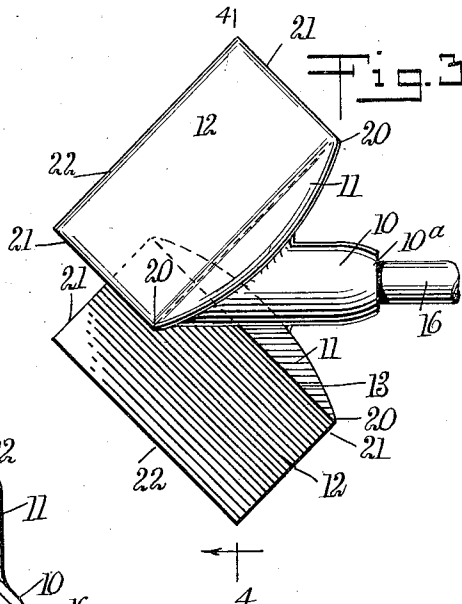
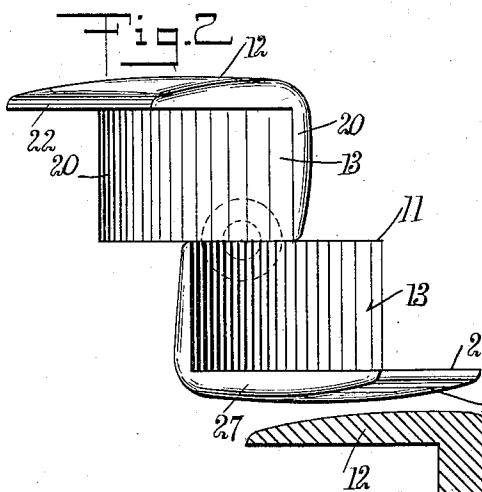
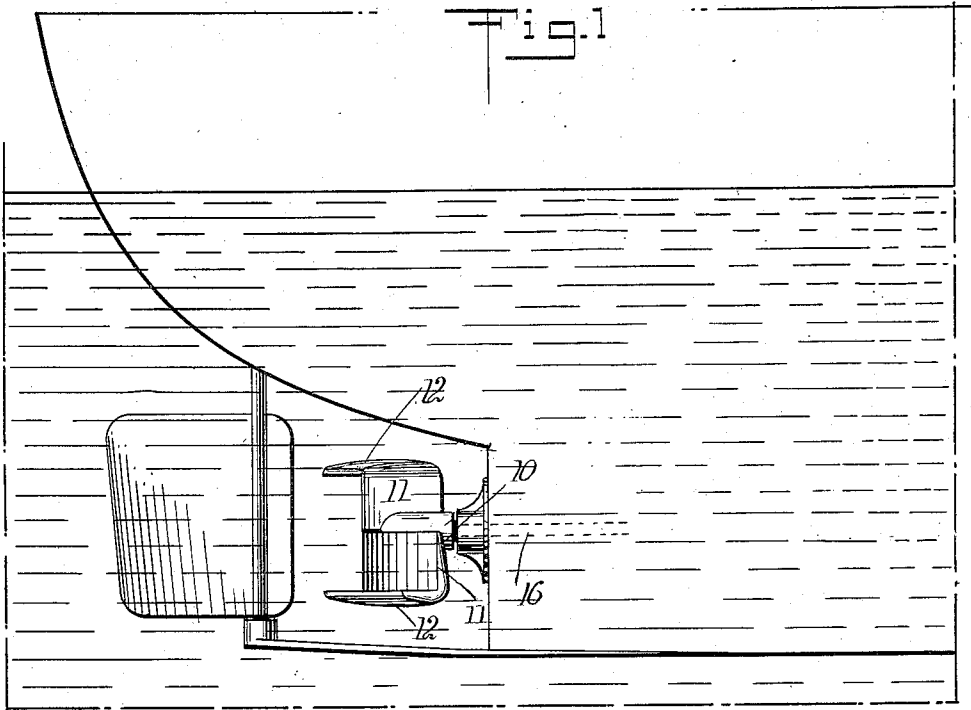
PROPELLER.

APPLICATION FILED APR. 10, 1912.

Patented July 23, 1912.

2 SHEETS—SHEET 1.

1,033,662.



WITNESSES

John A. Bergstrom
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INVENTOR

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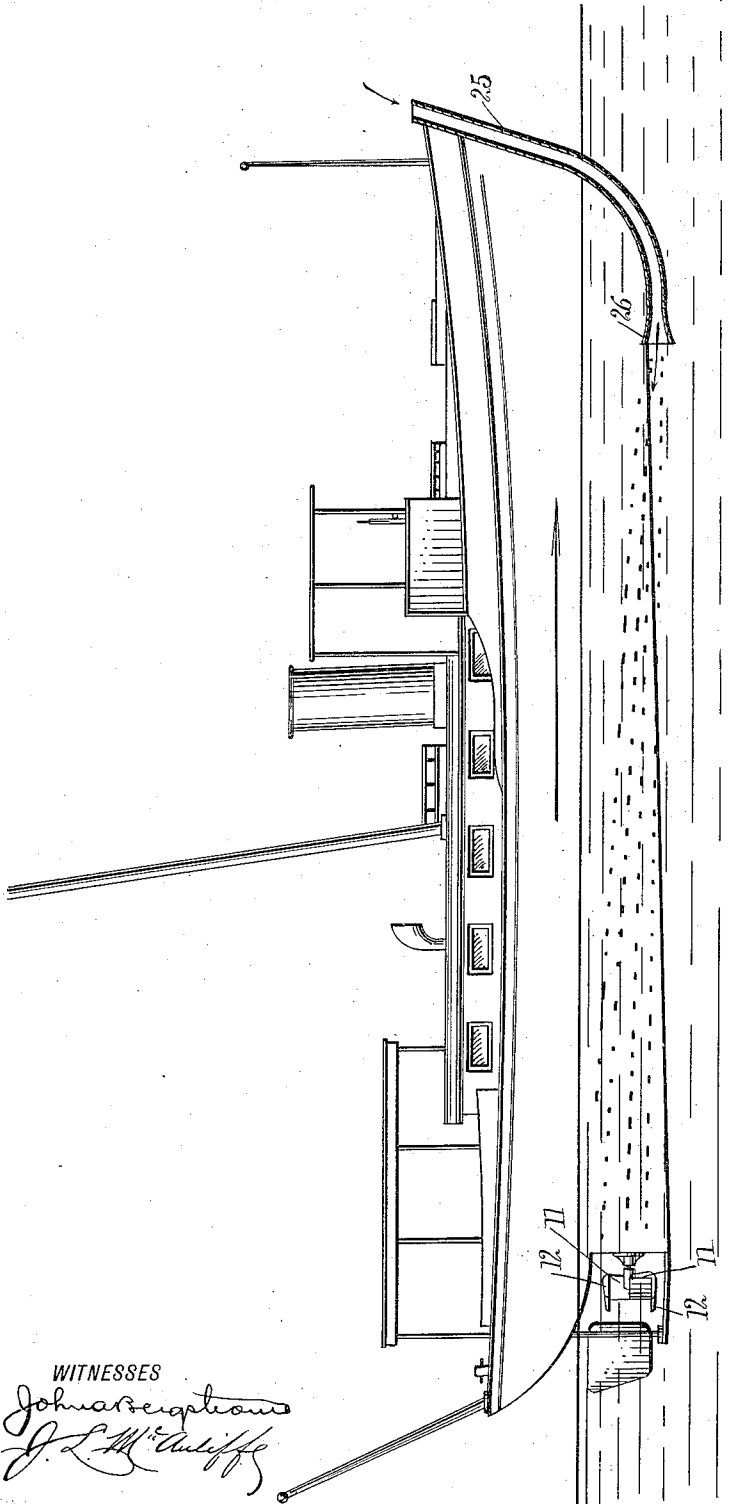
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WITNESSES

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Fig. 9.

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UNITED STATES PATENT OFFICE.

DAVID H. BLAKE, OF SAN ANTONIO, TEXAS, ASSIGNOR OF FORTY-EIGHT ONE-HUNDREDTHS TO JAMES W. HAPPLE, OF SANDERSON, TEXAS, ROBERT E. JOHNSON AND LE GRAND MERRIMAN, BOTH OF PECOS, TEXAS, AND CHARLES H. MERRIMAN, OF NEW YORK, N. Y.

PROPELLER.

1,033,662.

Specification of Letters Patent.

Patented July 23, 1912.

Application filed April 10, 1912. Serial No. 689,699.

To all whom it may concern:

Be it known that I, DAVID H. BLAKE, a citizen of the United States, and a resident of San Antonio, in the county of Bexar and State of Texas, have invented a new and Improved Propeller, of which the following is a full, clear, and exact description.

The invention relates to marine propellers, and has for an object to provide a form of propeller designed to give increased efficiency in proportion to its size, and to provide in connection with the improved propeller novel means of preventing a vacuum behind the propeller.

The invention will be particularly explained in the specific description hereinafter to be given, and then pointed out in the 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.

Figure 1 is a side elevation of a propeller embodying my invention, showing the same applied to a vessel; Fig. 2 is a front view of the propeller; Fig. 3 is a plan view; Fig. 4 is a cross section on the line 2—2 of Fig. 3; and Fig. 5 is a sectional view of my improved means for conducting air to the keel and stern of a vessel.

The improved propeller comprises a hub, tapered toward its front end, as at 10, and a pair of similar blades disposed on the hub at right angles to each other, and each consisting of two members 11, 12, at right angles to each other. The planes of the respective members 11 of the blades transect each other, as clearly shown in Fig. 3, and are disposed radially to the hub 10 and at an angle of about forty-five degrees to the axis of the hub, while the members 12 are parallel with the axis of the hub, and in planes parallel with each other. The members 11 and 12 of each propeller blade are so proportioned as to present surfaces substantially of equal area. Each member 11 presents at its rear face a straight flat surface 13 of substantially rectangular form, and each member 12 presents at its inner face a similar straight flat surface of substantially rectangular form. The radial members 11 extend for their full width to

the inner line, or a point where they join the hub 10, and the said blades are continuous with each other, the inner or base lines of the blades meeting on the median line of the hub 10. With the radial members thus formed and thus emanating from the median line of the hub, the two transecting members 11 will present surfaces extending to the axis and there is therefore no space for the passage of water adjacent to the axis. The forward surfaces of the radial members 11 taper toward the sides, providing thin edges 20, and presenting a front surface rounding toward each edge 20 of the said member. Similarly, the members 12 that extend parallel with the axis of the hub taper in three directions at their outer sides and are therefore of gradually reduced thickness toward the two side edges 21 and the free rear edge 22, so that the outer surfaces of the said members 12 are on lines tapering rearwardly in all directions from the juncture with the radial members 11. By forming the radial members 11 the full width to the center of the hub, and thus preventing all passage of the water at the hub, slip is prevented, and the churning of the water and lost motion of the propeller are minimized. Also the radial blades at their center give an effective propelling pressure against the water without dragging of the center of the propeller, and the entire volume of the water within the plane presented by the rear faces of the blades is forced backward.

The members 12 of the propellers constitute more than mere flanges, since they will have a propelling action themselves because of their relation to the axis of the propeller and to the radial members 11, as viewed in plan or in side view. Thus it will be seen from Fig. 3, that the inner edge of each member 12, or the line on which said member joins the radial member 11 is inclined to the axis of the propeller, and thus in the rotation of the propeller the blade 12 will have a propelling action somewhat after the manner of the propelling force exerted in sculling.

In connection with my improved propeller, it is desirable to prevent a vacuum in the rear of the blades, particularly since there is no direct space for the water to pass

through adjacent to the hub and between the blades. Therefore I provide an air tube 25, preferably located at the bow, and extending, as shown in Fig. 5, to the keel and 5 a short distance along the same. The lower end of the tube is preferably flaring, as at 26. When the vessel is advanced as under the action of the propeller, air will be drawn down through the tube 25 and discharged 10 at the keel 26, and pass along the vessel at the keel to the propeller. The air reduces the friction on the vessel and prevents a vacuum being formed in front of the propeller blade.

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

1. A propeller having blades at angles to each other and to the axis of the propeller, 20 the blades presenting planes having transecting base lines meeting at the median line of the hub of the propeller, said base lines extending laterally across the axis of the hub, the sides of the propeller rising approximately perpendicular to the said 25 median base line.

2. A propeller having blades at angles to each other and to the axis of the propeller, the blades presenting planes having

transecting base lines meeting at the median 30 line of the hub of the propeller, said base lines extending laterally across the axis of the hub, the sides of the propeller rising approximately perpendicular to the said median base line, and the blades furthermore 35 having rearwardly disposed flange members in parallel horizontal planes and extending rearwardly from the upper edges of the blades.

3. A propeller having substantially rec- 40 tangular blades disposed in transecting planes that meet at the median line of the hub of the propeller, said base lines extending laterally across the axis of the hub, the blades having parallel horizontal flanges 45 integral with the outer edges of the blades and approximately of the same area as the blades, the said blades at the back tapering toward the side edges and the flanges tapering on the outer sides toward both the sides 50 and the rear edge.

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

DAVID H. BLAKE.

Witnesses:

J. L. MCAULIFFE,

JOHN P. DAVIS.