No. 834,624. PATENTED OCT. 30, 1906.

A. S. LITTLEJOHN.

PROPELLER.

APPLICATION FILED JUNE 15, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

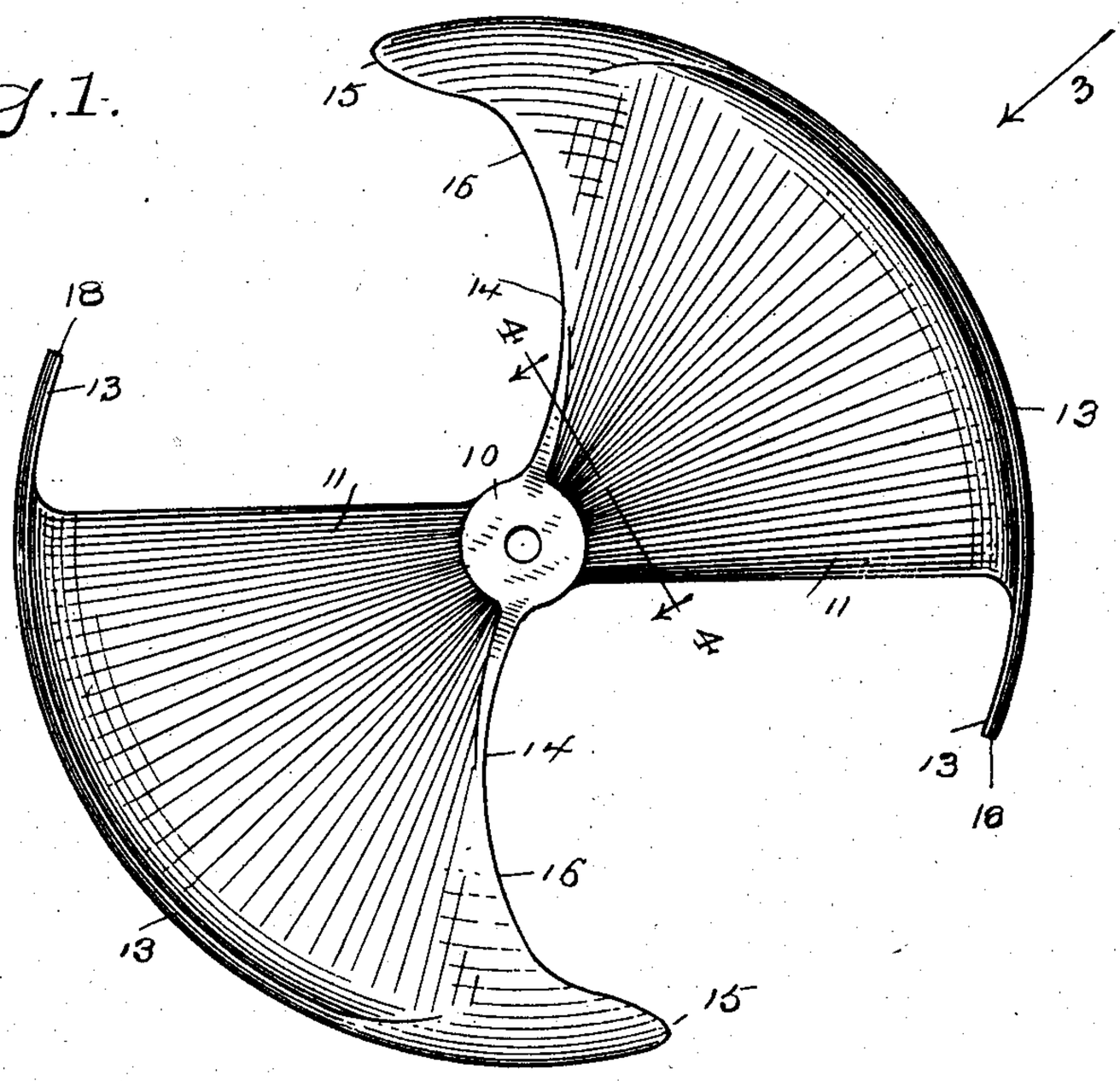
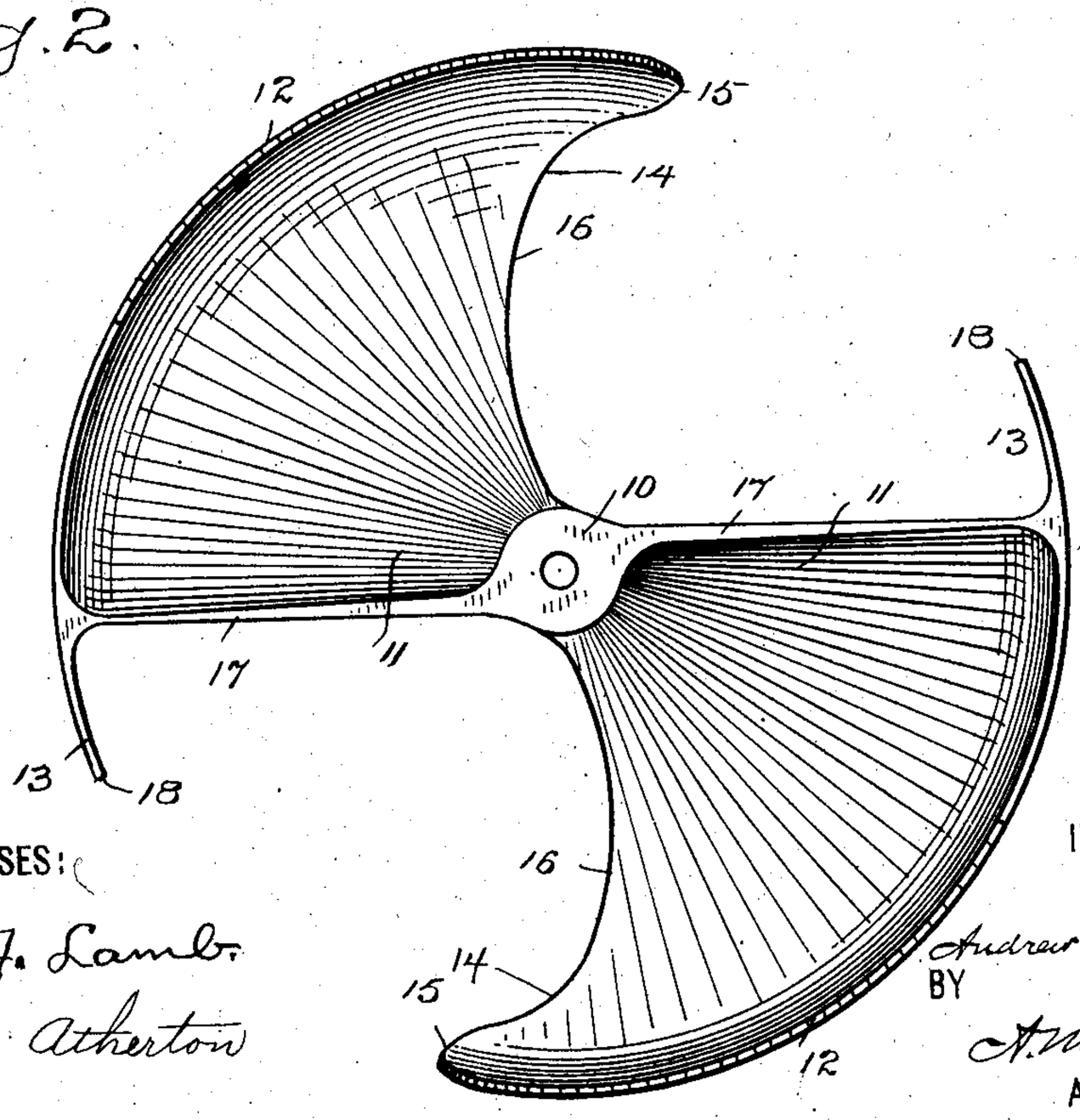


Fig. 2.



WITNESSES:

H. A. Lamb.

S. W. Atherton

INVENTOR

Andrew S. Littlejohn

BY

A. M. Wooster

ATTORNEY

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2 SHEETS—SHEET 2.

Fig. 3.

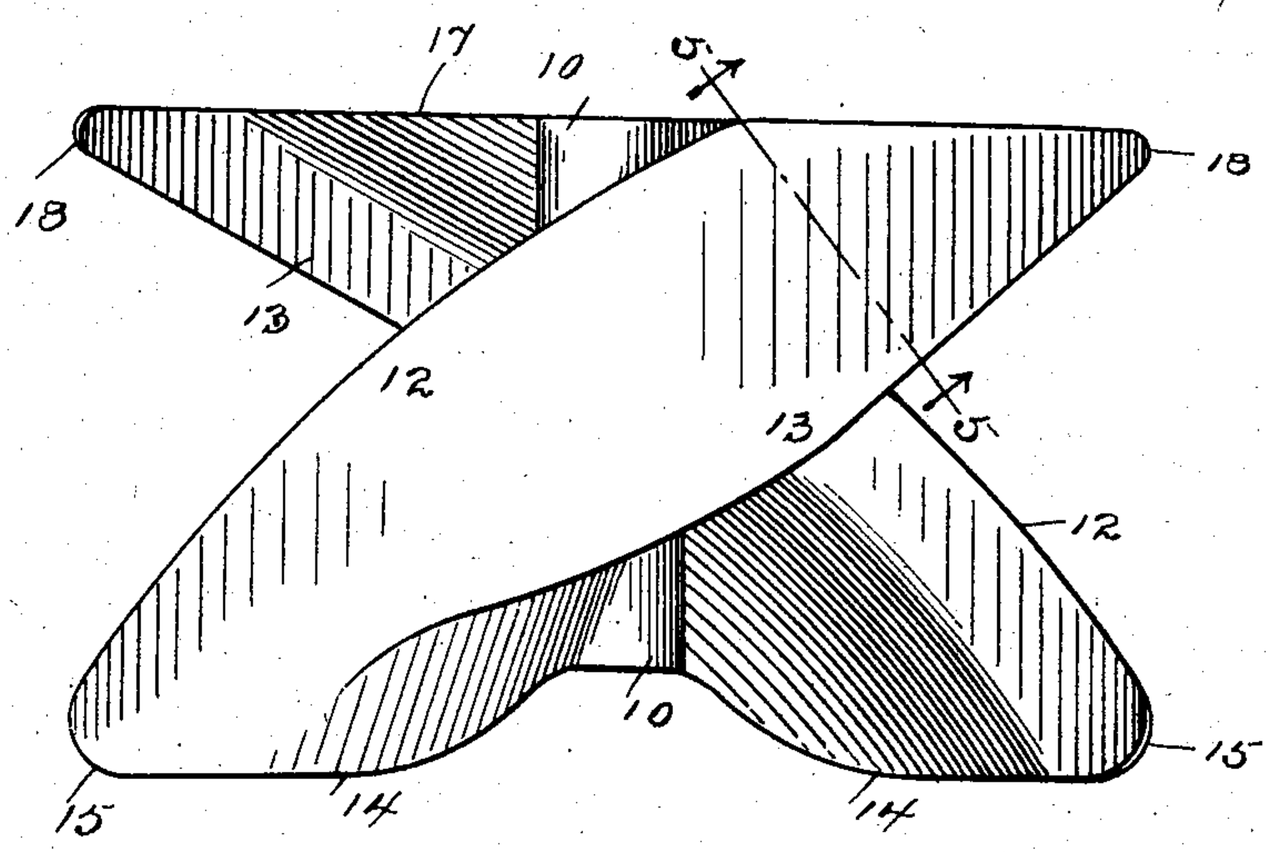


Fig. 4.

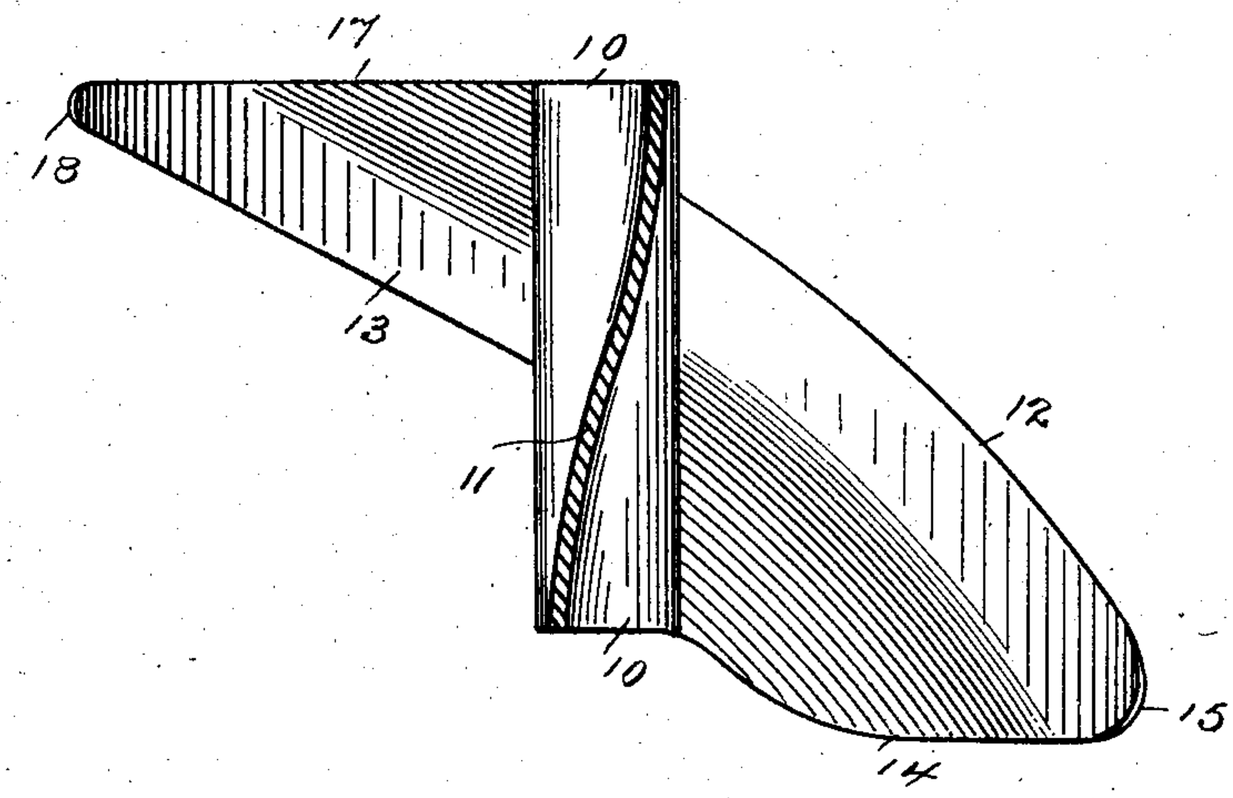
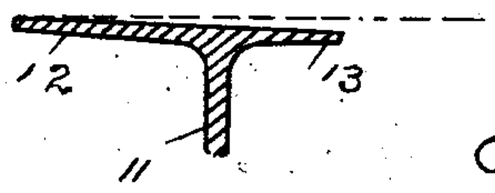


Fig. 5.



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UNITED STATES PATENT OFFICE.

ANDREW S. LITTLEJOHN, OF NEW YORK, N. Y.

PROPELLER.

No. 834,624. Specification of Letters Patent. Patented Oct. 30, 190

Application filed June 15, 1905. Serial No. 265,350.

To all whom it may concern:

Be it known that I, ANDREW S. LITTLEJOHN, a citizen of the United States, residing at New York city, county of New York, State of New York, have invented a new and useful Propeller, of which the following is a specification.

This invention relates to screw-propellers or propeller-wheels for vessels, and has for its object to provide a propeller of this type which shall be relatively short in proportion to its diameter, but shall have much greater thrust or driving power in proportion to its diameter than any other screw-propeller that has ever been produced, this for the reason that the configuration of the blades is such as to avoid churning of the water and to prevent the water from being thrown outward from the wheel radially. The essential principle of operation is that water is cut out at the front of the wheel, is carried through the wheel, and is delivered backward in spiral columns like twisted strands of rope, so that loss of power from radial movement of the water is reduced to the minimum and the power generated by the wheel is utilized to the maximum extent to drive the vessel forward or to reverse, as may be required. Two opposite blades comprise a complete wheel, although the pairs of blades may be duplicated, if preferred.

With the above and other objects in view I have devised the novel screw-propeller, of which the following description, in connection with the accompanying drawings, is a specification, reference characters being used to indicate the several parts.

In the drawings, which illustrate a two-blade propeller-wheel, Figure 1 is an elevation of my novel propeller looking toward the rear; Fig. 2, an elevation looking toward the front; Fig. 3, an elevation from the point of view indicated by the arrow 3 in Fig. 1; Fig. 4, a section on the line 4 4 in Fig. 1 looking toward the hub, and Fig. 5 is a section on the line 5 5 in Fig. 3 looking in the direction of the arrows.

My novel screw-propeller or propeller-wheel comprises, essentially, a hub (indicated by 10) and two opposite blades or wings, each consisting of a standing wall 11, which extends spirally from the hub, a driving-overhang, (indicated by 12,) and a reversing-overhang, (indicated by 13,) each extending laterally from the standing wall. At the forward end of each blade is a cut-water 14, which projects forward from the blade and cuts into the water, the point 15 first entering the water. The front edge of this cut-water forms a concave curve, as at 16, and starts from the hub slightly tangential to the axis of the hub. (See Fig. 1.) As the wheel rotates in driving, the cut-water is continually reaching into the water—that is, taking in water which is prevented by the driving-overhang from moving outward. The rear edge of each blade forms a straight line, as at 17, and starts from the hub tangential to the axis of the hub. (See Fig. 2.) The longitudinal configuration of each blade—that is, the configuration on a line cutting lines 16 and 17—is an ogee curve, the convexity being greatest near the hub and the curve flattening out toward the overhang. The action of the overhang is to hold the water that is taken in by the cut-water toward the hub and cause it to be pressed backward out of the wheel over the rear line 17 of the blade, the delivery of the water being in two spiral columns, which are twisted like strands of rope. The wheel takes in water at the front and delivers it in two spiral columns at the rear, which twist upon each other, so that the action of the wheel is to force water backward the reaction driving the vessel forward.

In reversing the action is substantially the same as in driving. The point 18 of the reversing-overhang enters the water and the rear line 17 of the blade cuts into the water in the same manner as the cut-water in driving. In order to increase the friction of the wheel upon the water and retard forward movement when reversing, I make the point 18 and the edge of the reversing-overhang 13 lower than the normal height of the overhang—that is, the radius of the wheel at the point and edge of the reversing-overhang is lowest, from which point the radius increases until the normal radius is reached, which may be at or back of the standing wall, as indicated in Fig. 5. The action of the reversing-overhang in pressing the water taken in by the wheel inward toward the hub and backward is the same as in driving. It is not intended, however, that the delivery of water at the rear of the wheel shall be as perfect as when driving, the principal object in reversing being to retard forward movement of a vessel.

Having thus described my invention, I claim—

1. A propeller comprising a hub and two opposite blades each consisting of a standing wall extending spirally from the hub and a driving-overhang and a reversing-overhang extending laterally from the standing wall, the edge of the reversing-overhang being of less length of radius than the driving-overhang.

2. A propeller comprising a hub and two opposite blades each consisting of a standing wall extending spirally from the hub, a cut-water projecting forward from the blade and a driving-overhang projecting laterally from the standing wall and cut-water, said overhang acting to prevent lateral movement of the water and to hold the water taken in by the cut-water toward the hub and cause it to be pressed backward out of the wheel in spiral columns, the edge of the reversing-overhang being of less length of radius than the driving-overhang.

3. A propeller comprising a hub, two opposite blades each consisting of a standing wall extending spirally from the hub, a cut-water extending forward from the standing wall and a driving-overhang and a reversing overhang extending laterally from the standing wall, the edge of the reversing-overhang being of less length of radius than the driving-overhang.

4. A propeller comprising a hub and two opposite blades each consisting of a standing wall extending spirally from the hub and having a cut-water extending forward therefrom, the front edge of each blade forming a concave curve and the rear edge of each blade forming a straight line, and a driving-overhang and a reversing-overhang extending laterally from the standing wall.

5. A propeller comprising a hub and two opposite blades each consisting of a standing wall extending spirally from the hub and having a cut-water extending forward therefrom, and a driving-overhang and a reversing-overhang extending laterally from the standing wall, the longitudinal configuration of each blade being an ogee curve, the convexity being greatest near the hub and the curve flattening out toward the overhang, the edge of the reversing-overhang being of less length of radius than the driving-overhang.

6. A propeller comprising a hub and two opposite blades each consisting of a standing wall extending spirally from the hub and having a cut-water extending forward therefrom, and a driving-overhang and a reversing-overhang extending laterally from the standing wall, the forward end of the cut-water and the rear end of the reversing-overhang being provided with points which enter the water in driving and reversing respectively, the edge of the reversing-overhang being of less length of radius than the driving-overhang.

7. A propeller comprising a hub and two opposite blades each consisting of a standing wall extending spirally from the hub, and a driving-overhang and a reversing-overhang extending laterally from the standing wall, the rear end of the reversing-overhang being provided with a point which enters the water in reversing, the radius at the point being shorter than the normal radius in order to increase friction and retard forward movement when reversing.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW S. LITTLEJOHN.

Witnesses:

CHAS. B. COLLINS,

J. WALTER WATTS.