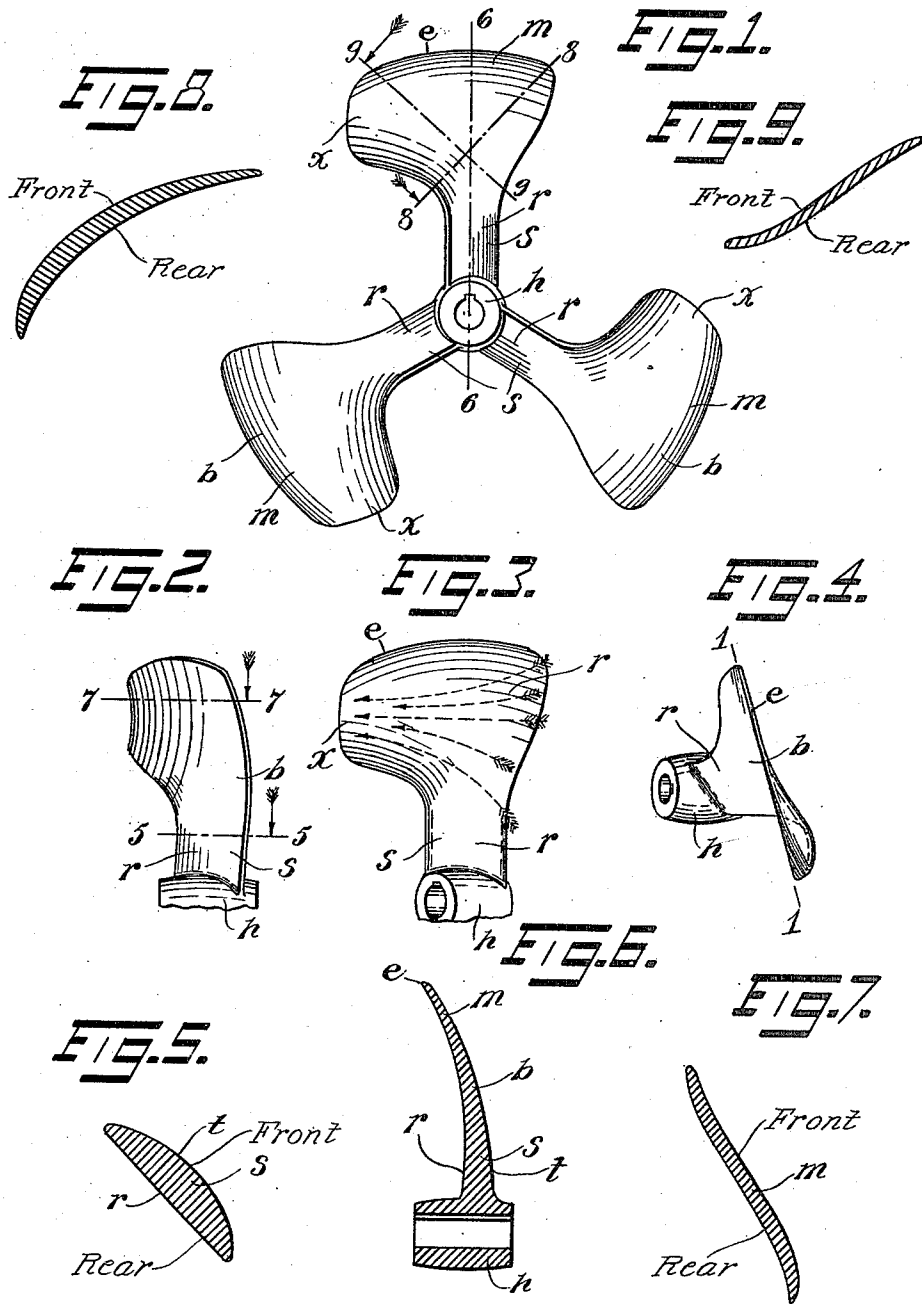


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PROPELLER.
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1,030,047.

Patented June 18, 1912.



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UNITED STATES PATENT OFFICE.

BYRON S. AMES, OF NEWBERRY, PENNSYLVANIA.

PROPELLER.

1,030,047.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BYRON S. AMES, a citizen of the United States, residing in Newberry, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

This invention has for its object to produce a form of propeller or propeller blade that will more efficiently cause the water to be consolidated at the axis of the helical twist of each blade, and will drive the vessel with a minimum of slippage, and with a minimum consumption of power.

In the accompanying drawing representing one embodiment of my invention, Figure 1 shows the propeller in rear elevation. Fig. 2 is a side view of one of the blades, Fig. 3 is a diagonal view of the blade, Fig. 4 shows the blade in end elevation, Fig. 5 is a section through the blade stem on the line 5—5 of Fig. 2, Fig. 6 is a longitudinal section through the blade on the line 6—6 of Fig. 1. Fig. 7 is a cross section on the line 7—7 of Fig. 2; Fig. 8 is a diagonal section on the line 8—8 of Fig. 1; and Fig. 9 is a section on line 9—9 of Fig. 1.

The propeller is shown as comprising a hub *h* and blades *b*, three of which are shown. Each of the blades is shown as comprising a stem portion *s*, and a blade portion *m*. The blade portion is shown provided with an extension *x*, that is on the rear portion of the propeller in its direction of rotation, and which is shown as of considerable extent. The blade and stem are curved in a longitudinal direction, as shown by the section of Fig. 6, which curve has its center at the rear of the propeller. But preferably the stem portion *s* does not partake of this curve but is practically straight, or extends radially outward from the hub. This stem portion preferably has the face *r* that is a continuation of this said curved line substantially in a plane, while the opposite face of the stem is curved. Thus, the stem is flat on its rear side and curved on its forward face. The blade is given a helical twist or pitch beyond the stem, and a line drawn from the outer extremity at the end of the extension, to the opposite side or front edge of the propeller at the outer end of the stem portion, and forming substantially a straight line 1—1, Fig. 4, and the inclination of this line, forming the edge *e*, would partake of the general pitch of the

blade as regards the axis of the hub. A section drawn from the outer front end or cutting edge of the blade to the inner extremity of the extension, and indicated by the line 8—8 of Fig. 1, is curved with its center at the rear as shown in Fig. 8. It will be further seen that the end of the propeller blade is given a less pitch line or angle than the intermediate portion of the blade, at the middle line of the extension. This will have the effect of throwing the water rearward and will overcome the tendency of centrifugal force to throw the water outwardly. It will be further seen that the extension *x* of the blade is curved on its rear face. With this form of blade the amount of slippage and loss of power is very greatly reduced, and the water will be carried along the face of the blades as indicated by the arrows in Fig. 3 and concentrated at the middle of the extension.

Having thus described my invention, I claim:—

1. A propeller comprising a stem and a blade portion, the stem extending radially outward with its edges substantially parallel and being substantially flat on the rear side and curved on the forward side, the blade portion being curved in its radial direction with the center of the curve at the rear, the blade having an extension on the outer end of the blade, the blade and extension having a helical twist beyond the stem.

2. A propeller comprising a stem and a blade portion, the stem extending radially outward and being substantially flat on one side, the blade portion being curved in the radial direction with the center of the curve at the rear, the blade having an extension at the rear side, the blade and extension having a helical twist beyond the stem, the blade and extension at the outer edge being substantially in a straight plane, the extremity of the extension being curved in a radial direction with the center of the curve at the rear.

3. A propeller comprising a stem and a blade portion, the blade portion being curved in its radial or longitudinal direction with the center of the curve at the rear, the blade having an extension at the rear side, the blade and extension having a helical twist beyond the stem, the blade and extension at the outer edge being substantially in a straight plane, the extremity of the extension being curved in a radial di-

rection with the center of the curve at the rear.

4. A propeller comprising a stem and a blade portion, the stem extending radially outward with its edges substantially parallel and being substantially flat on the rear side and curved on the forward side, the blade portion being curved in its radial or longitudinal direction with the center of the curve at the rear, the blade having an extension at the outer edge, the blade and extension having a helical twist beyond the stem, the blade and extension at the outer edge being substantially in a straight plane, the extremity of the extension being curved in a radial direction with the center of the curve at the rear.

5. A propeller comprising a stem and a blade portion, the stem extending radially outward with its edges substantially parallel and being substantially flat on the rear side and curved on the forward side, the blade portion being curved in its radial or longitudinal direction with the center of the curve at the rear, the blade having a helical twist beyond the stem, the blade and extension at the outer edge being substantially in a straight plane, the extremity of the extension being curved in a radial direction with the center of the curve at the rear, the blade on a line from the outer end of the extension to the cutting edge of the blade at its outer portion of the stem being curved and convex on the rear side.

6. A propeller comprising a stem and a blade portion, the blade portion being curved in its radial or longitudinal direction with the center of the curve at the rear, the blade having an extension at the outer edge,

the blade and extension having a helical twist beyond the stem, the blade and extension at the outer edge being substantially in a straight plane, the extremity of the extension being curved in a radial direction with the center of the curve at the rear, the blade in a section from the inner extremity of the extension to the outer front end of the inner extremity of the extension to the outer front end of the cutting edge being curved with the center on the rear side.

7. A propeller comprising a stem and a blade portion, the stem extending radially outward with its edges substantially parallel and being substantially flat on the rear side and curved on the forward side, the blade portion being curved in its radial or longitudinal direction with the center of the curve at the rear, the blade having an extension at the rear side the blade and said extension having a helical twist beyond the stem, the blade and extension at the outer edge being substantially in a straight plane, the extremity of the extension being curved in a radial direction with the center of the curve at the rear, the blade in a section from the inner extremity of the extension to the outer front end of the cutting edge being curved with the center at the rear side, and the section from the outer rear end of the extension to the forward side of the blade at its outer portion of the stem being curved in a direction the reverse of said latter curve.

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Witnesses:

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