

C. A. SWENSON.
PROPELLER.
APPLICATION FILED SEPT. 17, 1909.

997,587.

Patented July 11, 1911.

Fig. 1.

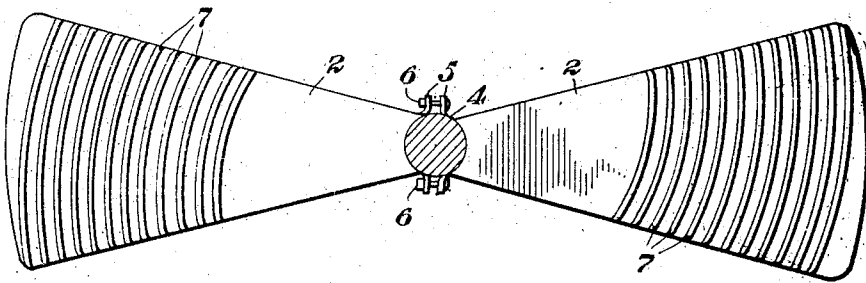


Fig. 2.

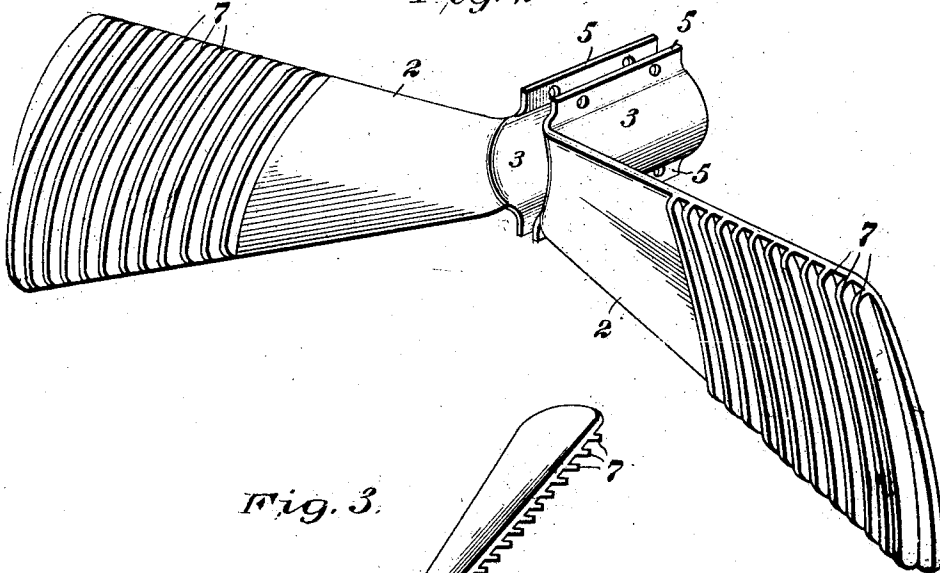
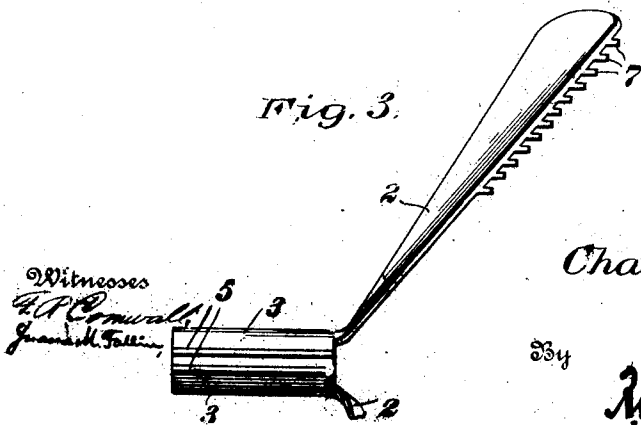


Fig. 3.



Inventor

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UNITED STATES PATENT OFFICE.

CHARLES ALFRED SWENSON, OF MEDFORD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
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PROPELLER.

997,587.

Specification of Letters Patent.

Patented July 11, 1911.

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To all whom it may concern:

Be it known that I, CHARLES A. SWENSON, citizen of the United States, residing at Medford, in the county of Medford and State of Massachusetts, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to propeller blades that are used for the propulsion of vessels through air, water or other fluid, or for the impulsion of air or other fluid, as in fans and centrifugal pumps, or for the generation of power.

The object of my invention is to provide a fluid propeller or like structure of a more effective form than those at present in use, and particularly to so construct the propeller blades that the lateral slip of fluid toward the tips of the blades shall be prevented, so that the air, water or other fluid will be forced directly rearward from the propeller blade, this novel construction further permitting the propeller blades to be pitched rearward or placed at less than a right angle to the shaft upon which the blades are mounted.

My invention is applicable to the propulsion of boats, air ships, or for use with fans, pumps, or water wheels.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawing, in which:

Figure 1 is a face view of my improved propeller; Fig. 2 is a perspective view thereof; and, Fig. 3 is a view showing the edge of one of the blades, the other blade being cut away.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

Referring to these figures, 2 designates the opposed blades of a two-bladed propeller or like structure. These blades in the illustration shown, are formed with shanks 3 which are semicylindrical in section and are adapted to be clamped upon a propeller shaft designated by the numeral 4. These opposed sections or shanks 3 are clamped upon the shaft in any desired manner, but I have shown them as being formed with marginal flanges 5 through which pass bolts 6.

The blades 2 have the usual form of propeller blades, each blade being set at a different angle to the opposed blade.

The novel feature of my invention consists in forming each blade with a series of ribs 7 which extend transversely across the face of the blade, preferably from one edge to the other. While I do not wish to limit myself to this, these blades are preferably curved approximately concentric to the shaft 4 so as to reduce, as far as possible, friction as they pass through the water or other fluid. The curvature of the ribs 7 is only approximately concentric to the shaft 4. Preferably the blades are sections of a spiral, the center of the spiral being the shaft 4. Each projection or rib therefore acts as a propeller in itself, by catching the water and throwing it directly astern.

As before stated, the ribs 7 are only approximately concentric to the shaft. Preferably, the ribs extend across the face of the blade, from one edge to the other thereof, at an angle to the longitudinal axis of the blade, so that the rearward or leaving end of each rib will be nearer to the tip or extremity of the blade than the forward or entering end of the rib. This particular inclination of the rib to the axis of the blade, combined with the angle which the rib has to the face of the blade, gives to each rib the effect of a small propeller in itself, and the blade has not only the general action of the screw, but each of the ribs thereon has a screw action which tends to force the water rearward off the edge of the rib. This is a most important feature of my invention, and acts to give my propeller a much greater power than is possible with propellers having smooth acting faces.

The screw propeller as now used, revolves at right angles to the shaft. A propeller or like bladed wheel having the ribs 7 thereon, may be pitched rearward and be used to better advantage than a propeller in which the blades are at right angles to the shaft, as the ribs prevent the water, air or other fluid from being thrown toward the tips of the blades by centrifugal motion. It will be obvious that with a smooth-bladed propeller, the fluid will have a tendency to slip laterally, and that the whole force of the screw will not be delivered in lines parallel to the axis of the shaft upon which the propeller turns. This is for the reason that the fluid

has a tendency not only to be projected rearward, but to be forced laterally or outward toward the tips of the blades. The ribs 7 or other projections on the face of my propeller, prevent this lateral movement of the water so that the propeller has a better "grip" upon the water or other fluid. There is no "slipping" of the water laterally or in the direction of the longer axes of the blades, and all of the force of the propeller is delivered in line with the shaft.

While I do not wish to be limited to the exact form of the projections or ribs 7, I preferably form them as above described, and the ribs should be as sharp-edged as possible, and as thin as is consistent with strength, in order to eliminate friction.

Blades constructed in accordance with my invention are designed for use on any device using the screw propeller principle, such as aero-nautical vessels, wind mills, marine propellers, electric fans, blowers, turbines, etc., and therefore, it will be obvious that I do not wish to be limited to the exact form of the propeller shown in the illustration,

nor to the details of construction, the number of blades, etc.

Having thus described the invention, what I claim is:—

A propeller of the kind described, comprising a shaft and propeller blades thereon, the face of the blades being slightly concaved and said blades being inclined rearward and outward relative of the shaft, each of said blades having on its face a series of outwardly projecting curved ribs, said ribs extending outward at an angle to the face of the blade but parallel to the axis of the shaft, and said ribs extending at an inclination to the longitudinal axis of the blade, the exit end of each rib being nearer to the outer extremity of the blade than the entering end thereof.

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

CHARLES ALFRED SWENSON. [L. S.]

Witnesses:

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