

W. B. & G. C. MAXWELL & E. BUCKMAN.
PROPELLER.

APPLICATION FILED OCT. 12, 1907.

Patented Dec. 6, 1910.

977,815.

Fig. 1

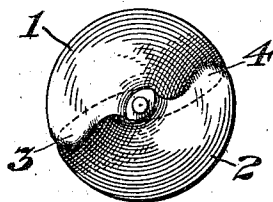


Fig. 2

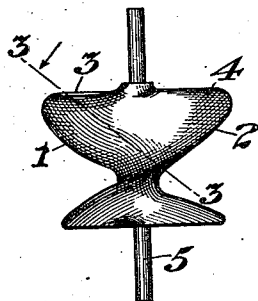
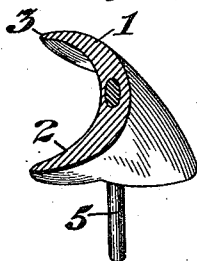


Fig. 3



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UNITED STATES PATENT OFFICE.

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PROPELLER.

977,815.

Specification of Letters Patent.

Patented Dec. 6, 1910.

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To all whom it may concern:

Be it known that we, WILLIAM B. MAXWELL, GROVER C. MAXWELL, and EDWARD BUCKMAN, citizens of the United States, and residents of the city of New York, county of Queens, and State of New York, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

10 This invention relates to an improved form of propeller which is adapted for use with vessels and other similar purposes.

The object of this invention is to provide a propeller of such a form, that when the same is operated as a propeller for a vessel it will rotate smoothly through the water and so produce the most efficient thrust for a given amount of power used in rotating the same. To accomplish this result we have provided a new and novel form of construction of propeller blade which will be more particularly pointed out hereinafter in connection with the illustration shown in the accompanying drawings.

25 In the several views like parts have been given the same reference numbers.

Figure 1 is an end view of a propeller embodying our invention. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

At 1 and 2 we have shown a pair of cooperating blades which are each provided at the forward end with entering edges 3 and 4, respectively, which are preferably curved slightly forward at the outer portion and at this point have their operating surfaces extending forward in the direction of rotation and disposed substantially perpendicular to the axis or shaft 5 of the propeller so that in entering the water all impact or sudden blow, which would be caused if the operating surfaces on these entering edges were at an angle, with the direction of rotation, is avoided. Starting from the point slightly in the rear of these advancing edges 3 and 4 the operating surfaces at their outer circumference begin slight curvatures which gradually merge into curves which are substantially spirals extending to the rear end of the blades. The leading end of the blade, as will be seen in Fig. 1, overlaps the following end of the opposite blade, and thus any loss in propelling power is prevented and a continuous thrust is provided, as the leading end of one blade advances in the water just

before the following end of the opposite blade recedes therein.

Referring to Fig. 3, it will be noted that all abrupt change in the operating surfaces of the blades is avoided and a smooth continuing surface is provided from the circumference of one blade to the circumference of the adjoining blade. This not only provides a more efficient operating surface but allows the water to pass smoothly and freely over the surface of the propeller as the same is rotated. At this point it may be noted that the term "progressing" is meant the forward or front surface of the blade, and the term "retreating" is intended to describe the rear face thereof.

The practical utility of this construction has been demonstrated in actual use and it has been found that not only does a propeller with this form of construction advance and recede in the water without producing any commotion but a greatly increased efficiency in the propelling power and resulting increase in the speed of the boat is obtained with the same amount of driving power than it has been possible to obtain with any of the well known forms of propeller blades which have been tested in connection therewith. It is thus believed that on account of the features of construction above described a perfect cooperation of the two blades of the propeller is obtained and a smooth operation of the same against the water is produced which produces the most efficient results.

As many changes could be made in the above construction and many apparently widely different embodiments of our invention designed without departing from the scope thereof, we intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted merely as an illustrative embodiment of our invention and not in a limiting sense.

What we claim is:—

1. A propeller comprising a pair of blades having their circumferences disposed in the form of spirals from their leading edges to their following edges, the progressing face of one blade and the retreating face of the other merging into a continuous curve which extends from the leading to the following edges respectively of said blades.

2. A propeller comprising a pair of spirally disposed blades, each of said blades

having a portion of its surface contiguous to
its leading edge disposed in a plane perpen-
dicular to the axis of rotation of said blades
and then merging gradually into a surface
5 curving rearwardly from said perpendicular
plane to its following edge, the circumfer-
ence of each of said blades describing an arc
of more than 180° whereby the leading edge
of each blade overlaps the following edge
10 of the other.

Signed at New York in the county of New
York and State of New York this 26th day
of Sept., 1907.

WILLIAM B. MAXWELL.
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Witnesses:

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