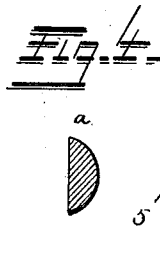
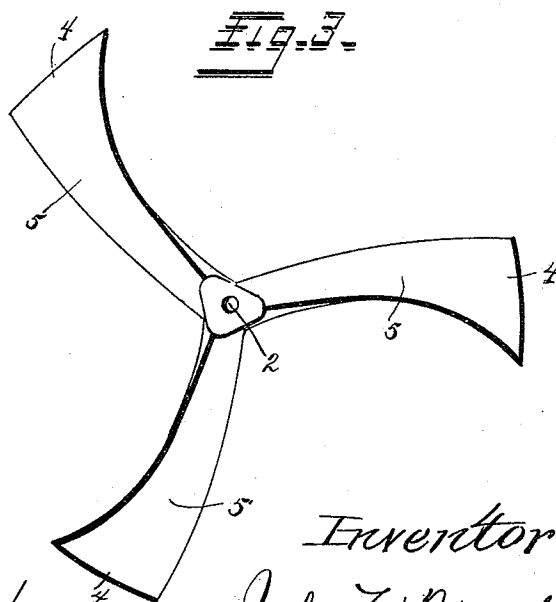
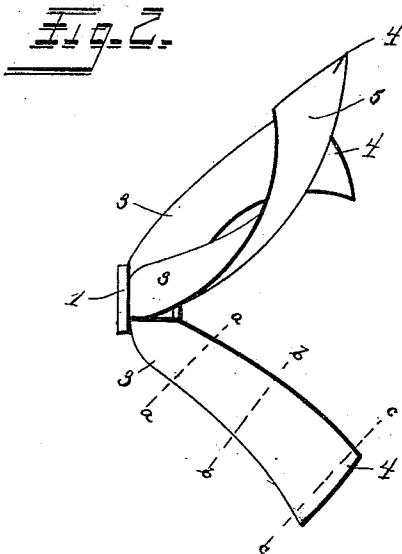
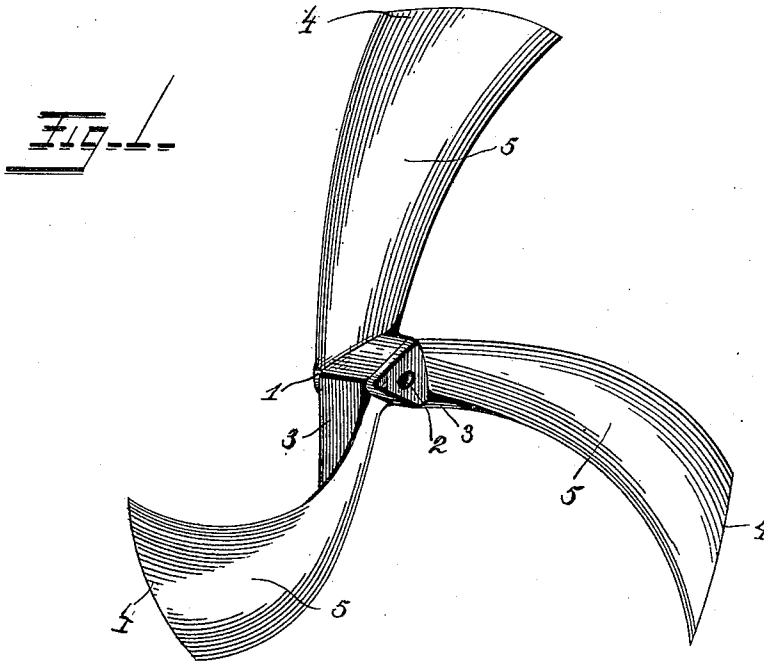


(No Model.)

J. W. MORTON.
SCREW PROPELLER.

No. 463,908.

Patented Nov. 24, 1891.



WITNESSES
W. J. Smith
C. S. Page

Inventor

John W. Morton
By *W. F. Fitzgerald*
Attorneys
Co

UNITED STATES PATENT OFFICE.

JOHN W. MORTON, OF STOWE, NEW YORK.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 463,908, dated November 24, 1891.

Application filed June 13, 1891. Serial No. 396,184. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. MORTON, a citizen of the United States, residing at Stowe, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Screw-Propellers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in a new and improved screw-propeller in which by the peculiar curvature and construction of the propeller-blades I obtain several novel and valuable results, as will be hereinafter set forth.

My invention will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 is a perspective view of my new and improved screw-propeller. Fig. 2 is a side elevation of the same. Fig. 3 is a face view of the propeller. Fig. 4 shows several sections of one of the blades, taken on the lines *a a b b c c c* on Fig. 2.

Referring to the several parts by their designating-numerals, 1 indicates the hub of my propeller, this hub having a central opening 2, through which the drive-shaft passes. To this hub are secured the inner ends of the propeller-blades 3. These blades increase in width outward, being wider at their outer than their inner ends, the blades curving rearwardly and outwardly, as clearly shown in the drawings. Each blade is slightly concave on its rear side, as shown by the sectional views, Fig. 4, and besides its general rearward and outward curve it has a spiral side curve, which curves its outer edge 4 outward. Both the outer and inner edge of each blade are on curved lines; but the curvature of the inner edge 5 is greater than that of the outer edge 4. The shape and curvature of each blade and their general relations to each other is clearly shown in the drawings. The rearward curve of the blades 3 gives a greater surface for resistance to the water than if the blades were straight, and through this rearward curve the blades, instead of throwing the water off at a tangent from their ends, force the water back, thereby not losing so much of the resisting

power of the water. Also, owing to the peculiar backward curvature of the blades, the water thrown from the blades is directed backward and also inward, bringing it together and thus giving it a much greater power of resistance, and thereby imparting a smoother and more even motion to the propeller, making light and speedy work for the engine through the greater speed which the propeller imparts. The water leaving the propeller-blades, as above described, lessens the tendency to break the water as thrown from the blades, which breaking lets the air onto the wheel, causing it to "slip" or "slide," and thereby losing power, besides jerking, and thus injuring both the machinery and boat.

My new and improved propeller further prevents "drawing" a swell, which drags and loads the stem of the craft down, thus interfering with her speed. The spiral side curve of the blades has a tendency to start the water first at the hub of the propeller, and thence on out to the end of the blades, this peculiar construction causing the propeller to act very easily and powerfully, and as the circle on which the blades act on the water begins with the small circle of the hub and extends out like a cone in diverging lines to the outer ends of the blades the influence of the propeller acts on a much larger circle than the real greatest diameter of the propeller, thereby acting on a much larger amount of water than if the blades were straight or of the usual construction. Also, the blades, being dished or concave on their rear sides, start the water gradually, imparting increasing motion to it as it travels along the blades to their rear ends. The propeller therefore gives the water an increasing motion and receives more power from it than if the blades were straight, this construction also lessening the liability of the blades "slipping." By combining the rearward and outward curves the propeller, acting on a circle of greater diameter than its real diameter, is enabled to do the work of an ordinary propelling-wheel of greater diameter with the motive power required for a smaller wheel.

It will be seen from the foregoing description, taken in connection with the accompanying drawings, that my new and improved

screw-propeller obtains a greater amount of power from the same amount of water with a small driving or engine power.

Where my propeller is made of small diameter, I preferably provide it with three blades, when it should be driven at a high rate of speed to obtain the best results, while where the propeller is made of larger diameter I preferably provide it with four of the described blades.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The herein-described screw-propeller, consisting of the hub 1, having a central opening 2,

through which the drive-shaft passes, and the propeller-blades 3, secured at their inner ends to said hub and increasing in width outward or away from their points of connection with said hub, said blades being slightly concave on their rear sides and having spirally-disposed side curves, which curve their outer edges 4 outward, substantially as specified.

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

JOHN W. MORTON.

Witnesses:

B. A. BARLOW,
WALTER L. SESSIONS.