No. 793,717. PATENTED JULY 4, 1905.

E. V. DIXON.

SCREW PROPELLER.

APPLICATION FILED FEB. 10, 1904.

FIG. 1

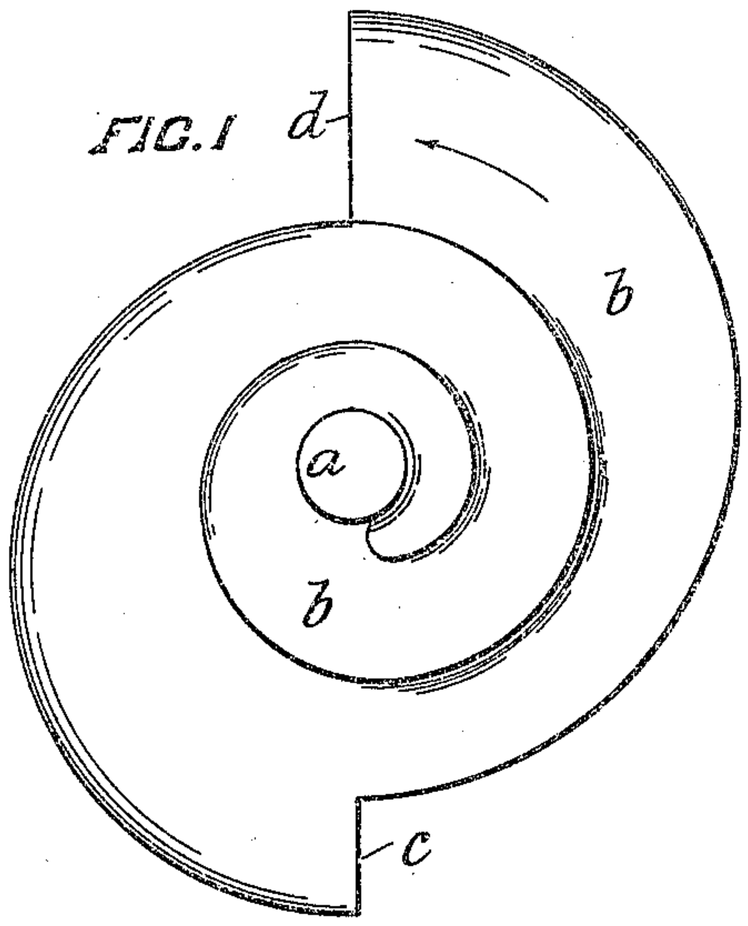


FIG. 2

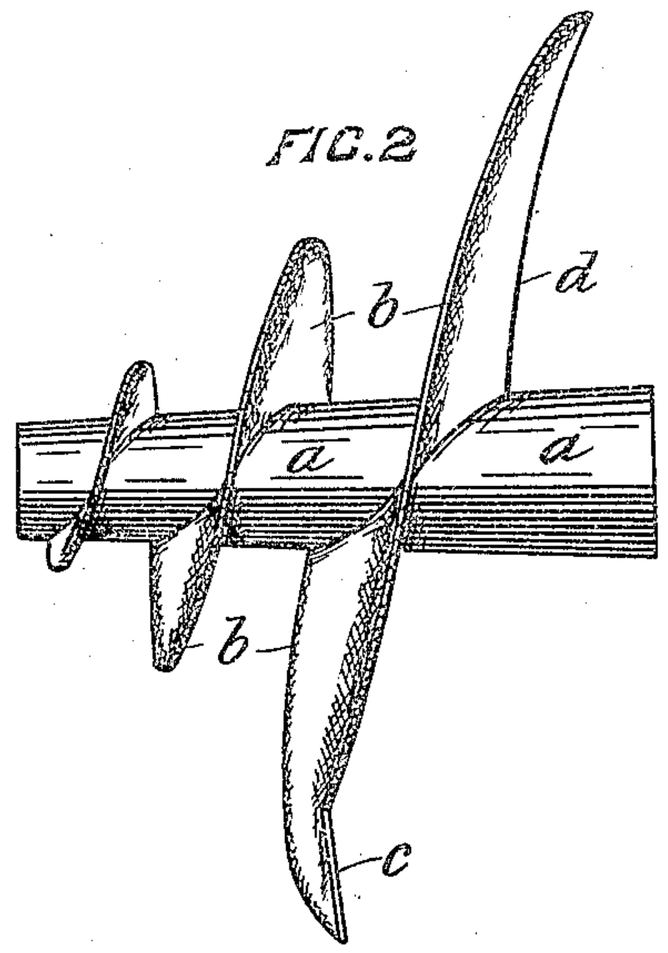


FIG. 3

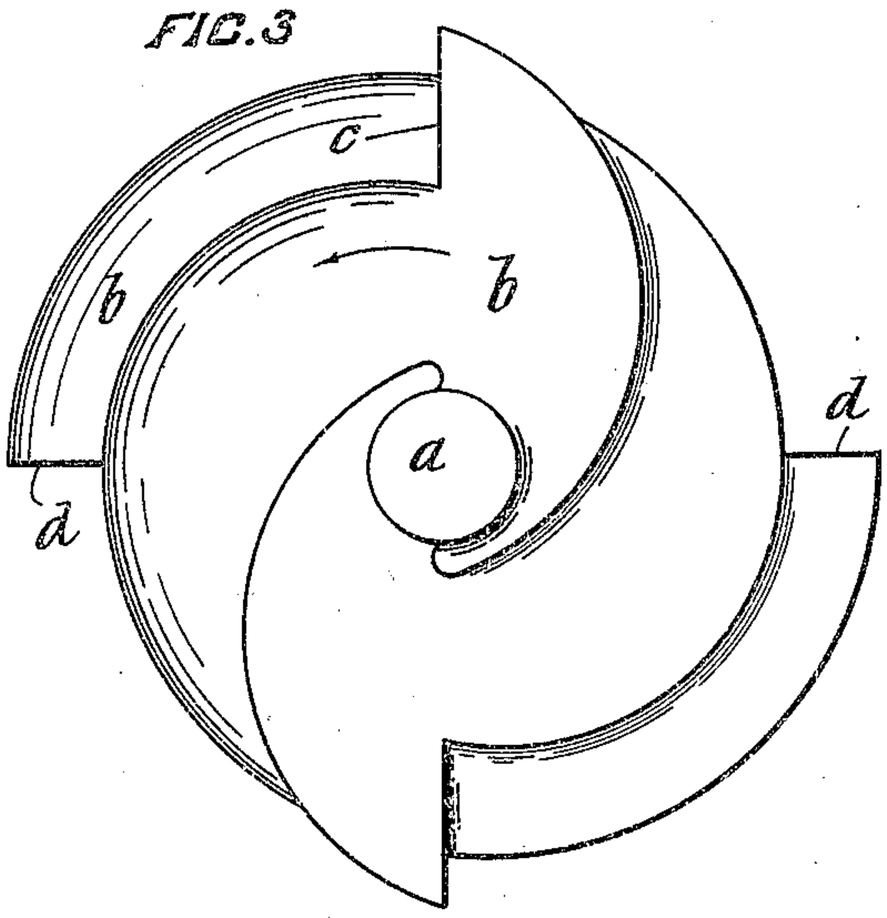
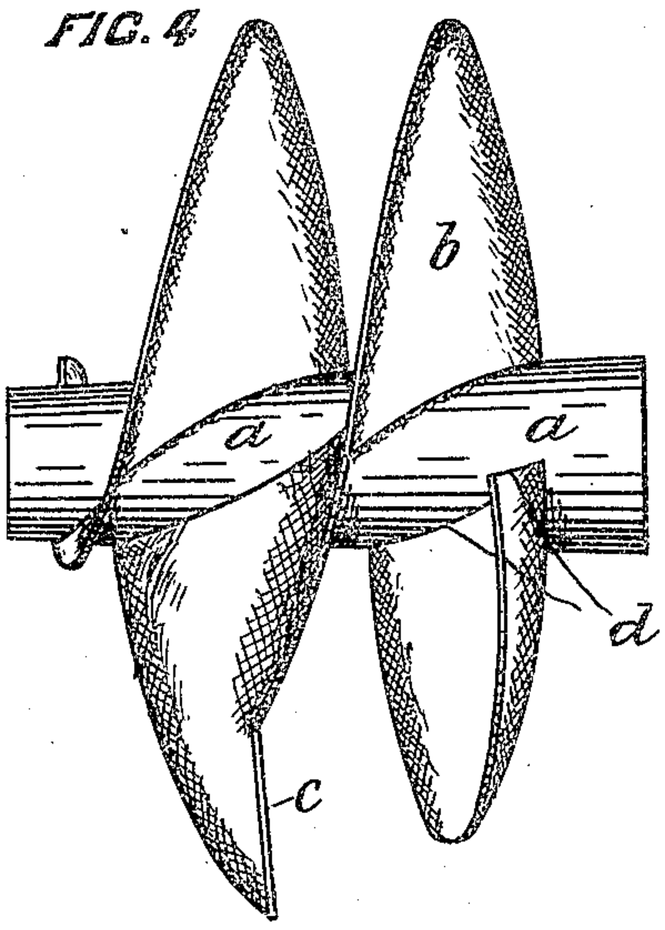


FIG. 4



Witnesses

W. M. Kuehne

John A. Percival

Inventor

Edward Verdon Dixon

BY Dikinson & L

ATTORNEYS

No. 793,717. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

EDWARD VERDON DIXON, OF OPOTIKI, NEW ZEALAND.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 793,717, dated July 4, 1905.

Application filed February 10, 1904. Serial No. 192,986.

To all whom it may concern:

Be it known that I, EDWARD VERDON DIXON, a subject of the King of Great Britain, residing at Opotiki, Auckland, in the Colony of New Zealand, have invented a new and useful Improved Screw-Propeller; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to an improved construction of screw-propeller of the spiral helical form for the propulsion of ships and boats and by means of which a better result is obtained than with the ordinary form of propeller or with other forms which consist in various modifications of the spiral helical form.

The present invention consists in constructing the propeller with a blade that is formed edgewise upon a boss in a continuous helical form, the pitch of which gradually increases toward the rear, while the depth of the blade also increases from the front to the rear in an approximately regular spiral. The rear end of the blade is formed with a radial edge, and at a desired point between the front and the rear and diametrically opposite to the base end the blade is gradually widened out to the same radius as the maximum radius of the spiral and is then brought suddenly inward to the normal radius, so as thereby to form a radial edge projection opposite the rear edge. The propeller may, if desired, be formed with two blades similarly shaped and secured upon the one boss; but in order that the construction of the propeller may be properly understood reference will be made to the accompanying sheet of drawings, in which—

Figure 1 is an end elevation of a propeller constructed with a single blade. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of a double-bladed propeller. Fig. 4 is a side elevation of the same.

Referring to Figs. 1 and 2, *a* is the boss, which is preferably formed taper and is adapted to be secured to the tail-shaft in any approved and known manner. *b* is the blade, which is formed helically upon the boss *a*, with its edge to the periphery of the boss. In the drawings the blade is shown as having approximately two and a half turns upon the boss, the pitch of the last turn being greater than that of the first. The radius of the blade starts from nothing at the front end of the boss and regularly increases in the form of a spiral to the rear end. At a point about two turns from the front end the blade is curved outward until it attains to a width equal to the maximum width of the blade at the rear end. It is then suddenly lessened to the normal width of the spiral, so as to form a radial edge *c*, and then again continued in the regular manner, so as to extend outward to the full width at the rear end, where it is formed with another radial edge *d*. The two radial edges *c* and *d* will thus be diametrically opposite, and the propeller will be evenly balanced when revolving.

The number of helical turns given to the blade forms no feature of this invention nor does the relative position of the radial edge *c* in the spiral length of the blade. Such may be varied at will, the only necessity being that the radial edges shall be diametrically opposite.

In Figs. 3 and 4 the same principle of construction is embodied; but in these figures the propeller is shown as being provided with two blades which start and finish diametrically opposite. These blades are each provided with the increased width and radial edge *c* at points in their spiral length; but these are arranged so as to be diametrically opposite one another and at right angles to the base edges of their respective blades. The propeller will thus be evenly balanced. In use the wide or base end of the blades will be in the lead, so that the radial edges *d* and *c* will act as cutting edges to obtain the grip of the water. The inner or driving face of each of the blades is formed with a slightly-concave surface, the concavity extending inward from the periphery of the blade to the boss and the outer face being formed correspondingly concave. The advantages to be derived from this construction of propeller are that the propeller is balanced on the shaft at every point, thereby equalizing the thrust. The second cutting edge or cut-water takes equal hold of solid water with the first, thereby obtaining a maximum grip of the water and a uniformly steady forward thrust. The propeller will

not churn the water and no vibration will be produced. In addition to these it will be found that when the propeller is lifted out of the water the knife-like edges of the blades will reënter without the jar given by the blades of an ordinary propeller.

What I claim as my invention, and desire to secure by Letters Patent, is--

1. A ship's propeller formed with a blade vertically arranged upon a boss and of spirally-increasing radius from its front to a point toward its rear end where it abruptly decreases in radius forming a radial edge extending inwardly toward the boss, the remainder of said blade having the increasing radius to the rear end ending in a radial edge extending inward toward the boss.

2. A ship's propeller formed with a pair of blades each vertically arranged upon a boss and of spirally-increasing radius from the front to a point toward its rear end where it abruptly decreases in radius forming a radial edge extending inwardly toward the boss, the remainder of each of said blades having an increasing radius to the rear end ending in a radial edge diametrically opposite the other radial edge.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWARD VERDON DIXON.

Witnesses:

E. BROOKE-SMITH,

CHAS. W. HARVEY.