

G. H. NITSCHKE.
SCREW PROPELLER.
APPLICATION FILED OCT. 21, 1911.

1,234,070.

Patented July 17, 1917.
2 SHEETS—SHEET 1.

Fig. 1.

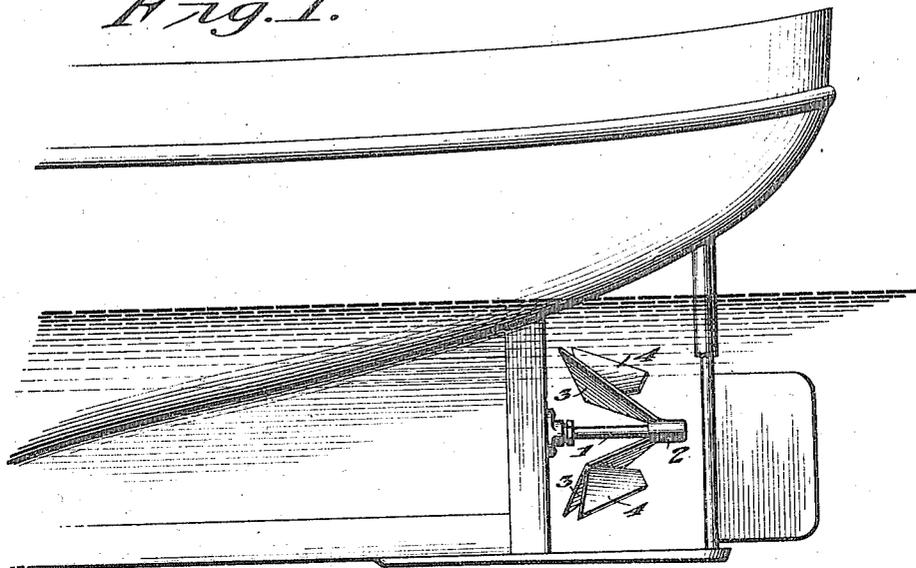
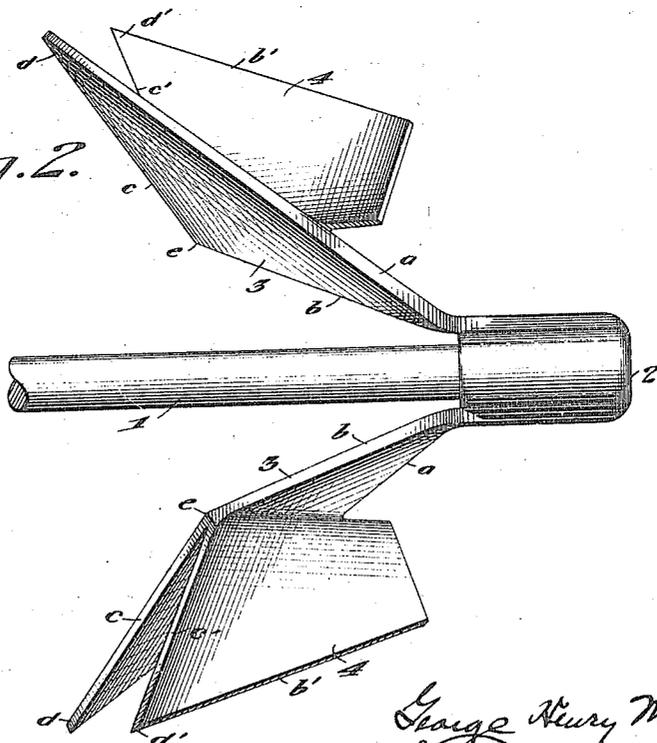


Fig. 2.



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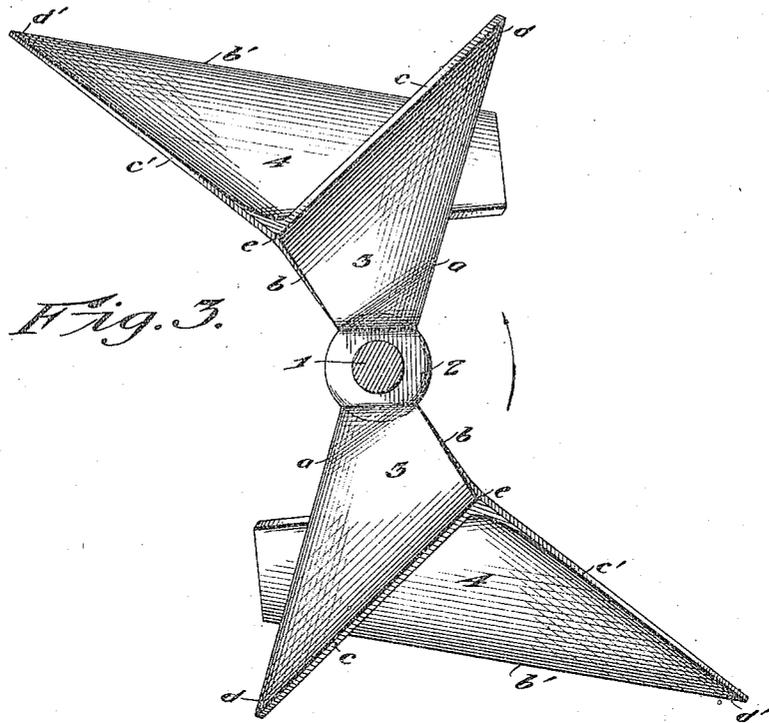


Fig. 3.

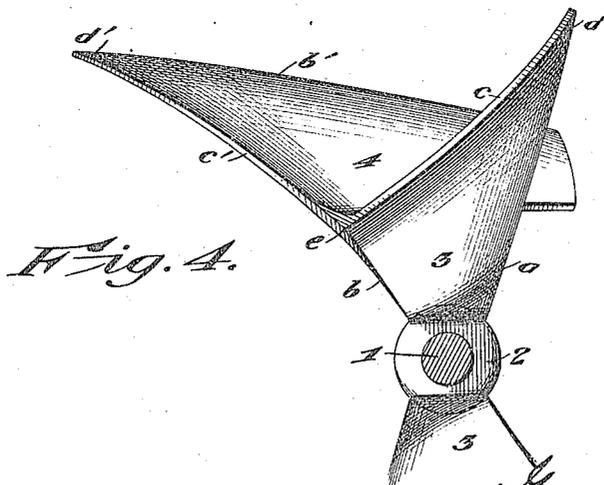
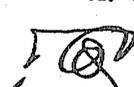


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE HENRY NITSCHKE, OF COLUMBUS, OHIO.

SCREW-PROPELLER.

1,234,070.

Specification of Letters Patent.

Patented July 17, 1917.

Application filed October 21, 1911. Serial No. 655,855.

To all whom it may concern:

Be it known that I, GEORGE HENRY NITSCHKE, a citizen of the United States, residing at Columbus, in county of Franklin and State of Ohio, have invented certain new and useful Improvements in Screw-Propellers, of which the following is a specification.

My invention relates to an improvement in screw propellers for water and aerial navigation and for ventilating purposes, and the object is to attain a maximum speed with a minimum expenditure of power, and a relatively low rate of revolutions.

In short, this invention consists in means for accomplishing mechanically what a fish does in swimming, the principle of action of the two being one and the same; and to this end it comprises primary blades which diverge from the central shaft in a tangential position coming to a more or less sharp angle at their ends in connection with supplemental blades extending outwardly from the primary blades in a direction approximating a right angle, and terminating at their opposite outer ends in more or less acute angles, both primary and secondary blades located at equidistant points from each other on the central shaft, and disposed obliquely to a plane transverse or at right angles to the axis of rotation.

My invention further consists in certain novel features of construction and combinations of parts which will be hereinafter fully described and pointed out in the claims.

In the accompanying drawings:—

Figure 1 is a view of the stern portion of a vessel showing my improved propeller attached,

Fig. 2 is an enlarged view of the propeller shown in Fig. 1,

Fig. 3 is a transverse section through the shaft looking rearwardly from a position forward of the propeller, and

Fig. 4 is a similar view showing the blades slightly curved instead of straight, as in the other forms illustrated.

The numeral 1 designates the propeller shaft, and 2 is a hub rigidly secured thereon from which the primary blades 3, 3, diverge. These blades are peculiar in design, being straight at the rear edge a from end to end and in the form of an obtuse angle e between the cutting edges b and c , so that at

the extreme outer end they are in the form of a sharp or acute angle d .

Secondary blades 4, 4, are preferably similar in design to the primary blades, except that the edge b' corresponding to edge b of the primary blade is disposed diagonally across and integral with the widest portion of the primary blade, extending from the obtuse angle diagonally rearward, with the edge c' corresponding to the edge c of the primary blade extending outwardly from the obtuse angle e of the primary blade, and terminating at its outer end in the acute angle d' .

While I have shown only two sets of these blades, it is obvious that more might be employed, and in this connection it might be mentioned that the propeller may be built of wood, metal, or fiber, according to the work it is designed to perform. It may be constructed in a solid piece, or in sections, so that if one part should become broken, it could be replaced.

While my experiments have shown an advantage in straight blades or paddles illustrated in Figs. 1, 2, and 3, it is obvious that they might be more or less curved, as illustrated in Fig. 4, without departure from the main features of my invention.

Also while I have not illustrated it, it is equally obvious that the blades might be disposed in just the reverse direction, or as if the shaft 1 were reversed endwise.

In action the propeller rotates as indicated by the arrow in Fig. 3. The sharp angles of the blades or paddles first enter and part the water gradually, thus with the least resistance to the rotary action of the shaft, whereupon the pressure increases upon the water, pushing backwardly upon it with violence, and in so doing pushing the water from the blades, one blade always following another interrupting the suction and repeating the action and the blades at equidistant positions on the shaft balancing and equalizing the strain.

It will be observed that both the primary and secondary blades or paddles are always presented to the resisting wall of water or to the air at an inclination so that a continuous and increasing push or pressure is exerted upon the medium in which the propeller is revolving from one end of each blade to the other, after which, instead of catching and holding the medium, it is per-

mitted to slide off without any retardation of the propulsive action of the propeller.

Thus with a propeller of this character, I am enabled to cheapen the cost and increase the speed of either water or aerial navigation.

In addition to the advantage of increased speed, I have found by actual experiments that a propeller of this type steadies the boat, and holds it and causes it to travel horizontally in the water, which in itself is a desideratum.

It is evident that more or less slight changes might be resorted to in the form and arrangement of the several parts described without departure from the spirit and scope of my invention, and hence I do not wish to be limited to the exact construction herein set forth, but:—

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A propeller comprising a hub, a main blade having a forward rake, and a secondary blade having a pitch, attached thereto intermediate of the hub portion and tip of the main blade, the secondary blade having a backward rake.

2. A propeller comprising a hub, a main

blade having a forward rake, and a secondary blade having a pitch, attached thereto intermediate of the hub portion and tip of the main blade, the secondary blade having a backward rake, and of such a length as to extend rearwardly beyond the primary blade.

3. A propeller comprising a hub, a main blade having a forward rake, and a secondary blade having a pitch, attached thereto intermediate of the hub portion and tip of the main blade, the secondary blade having a backward rake, and of such a length as to extend forwardly of the primary blade.

4. A propeller comprising a hub, a main blade having a forward rake, and a secondary blade having a pitch, attached thereto intermediate of the hub portion and tip of the main blade, the secondary blade having a backward rake, and of such a length as to extend beyond the primary blade in either direction.

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

GEORGE HENRY NITSCHKE.

Witnesses:
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LLOYD W. PATCH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."