

No. 842,278.

PATENTED JAN. 29, 1907.

G. E. WADE.

OSCILLATING BLADE OR FISH TAIL PROPELLER.

APPLICATION FILED MAY 7, 1906.

2 SHEETS—SHEET 1.

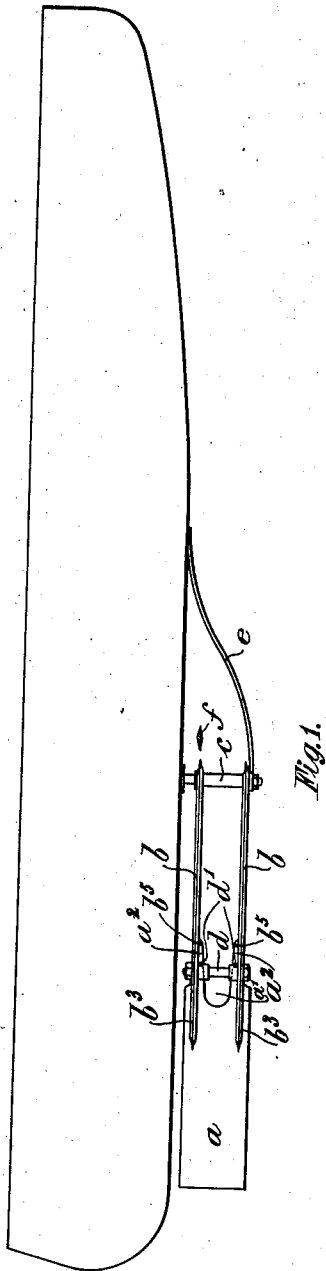


Fig. 1.

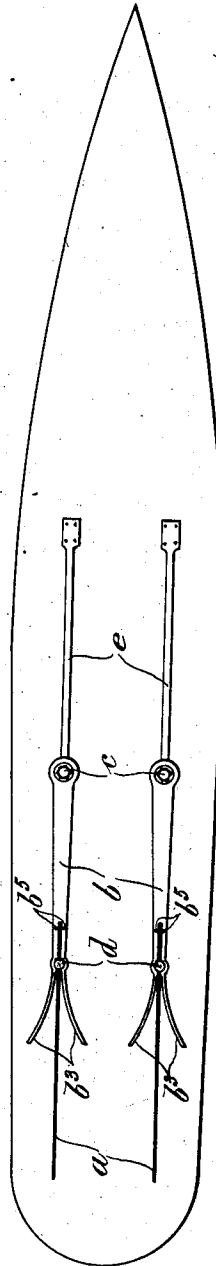


Fig. 2.

Witnesses
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Frederick Collins.

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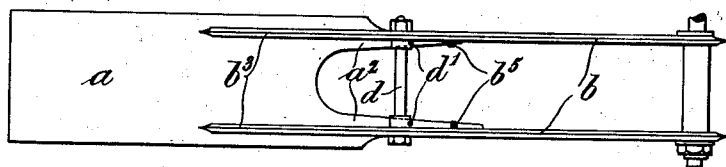


Fig. 3.

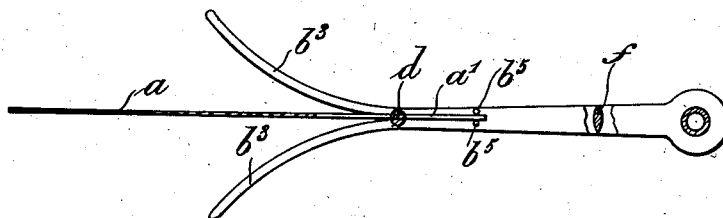


Fig. 4.

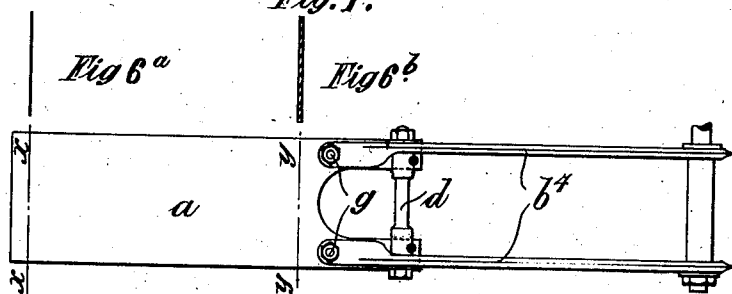


Fig. 5.

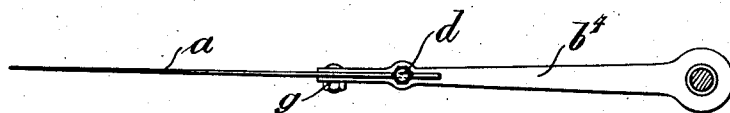


Fig. 6.

Witnesses
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Robert Owen Hughes.

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George Edward Wade
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UNITED STATES PATENT OFFICE.

GEORGE E. WADE, OF LONDON, ENGLAND.

OSCILLATING-BLADE OR FISH-TAIL PROPELLER.

No. 842,278.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed May 7, 1906. Serial No. 315,623.

To all whom it may concern:

Be it known that I, GEORGE EDWARD WADE, a subject of the King of Great Britain and Ireland, residing at 1 West Halkin street, London, England, have invented certain new and useful Improvements in Oscillating-Blade or Fish-Tail Propellers, of which the following is a specification.

This invention relates to oscillating-blade or fish-tail propellers for propelling vessels in water, and relates more particularly to the type in which a flexible blade is fixed or hinged at one end to the vessel in a fore-and-aft direction, and has for its object to provide a propeller in which the resistance offered to the progress of the vessel by the ineffective portion of the blade nearest the hinged or fixed end is reduced to a minimum.

According to the invention I provide a propeller having two distinct portions, one of which, the blade or effective portion proper, is attached to the other or ineffective portion, which is nearest the hinged or fixed end of the propeller, and I provide the ineffective portion of the propeller cut away and of such a shape as to offer the minimum of resistance during its lateral movement through the water. Moreover, I provide the blade proper cut away at its ineffective end, at which it is connected to the second portion above mentioned.

According to the invention also I provide curved lateral members about which the blade may bend and by which it may be reinforced and supported, while according to the invention also I provide the propeller of a graduated thickness, so that the blade may in use assume the shape by which great efficiency may result and by which the use of lateral supports may be dispensed with.

The invention is illustrated by way of example in the accompanying drawings.

Figures 1 and 2 are respectively elevation and plan looking upward, showing one form of propeller. Figs. 3 and 4 are respectively detail side elevation and sectional plan of Figs. 1 and 2 drawn to an enlarged scale. Figs. 5, 6, 6^a, and 6^b show a further constructional modification, Fig. 5 being a plan, Fig. 6 an elevation, Fig. 6^a a section on the line *x x*, Fig. 6, and Fig. 6^b a section on the line *y y*, Fig. 6.

In carrying the invention into effect according to Figs. 1 and 2 the effective portion or blade *a* is connected to a carrying-frame consisting of longitudinal members *b b*,

mounted on a vertical shaft *c*, which is oscillated by any convenient means within the vessel. The members *b b* are preferably sword-shaped in section, so as to cut through the water easily when moved in a lateral direction, and are connected at their free ends by a stay *d*. One end of the flexible blade *a* fits freely between the members *b b* and has a portion at *a'* cut away, as shown, so as to leave projecting parts *a² a²*, which pass through slots in the vertical stay *d* and are secured in position by pins *d' d'* passing through them and the stay *d*. It will be understood that when the shaft *c* is oscillated the members *b b* will move laterally, cutting through the water, and the blade *a* will be bent or flexed alternately to either side. The members *b b* are each forked at their free ends *b³ b³* to reinforce and support the blade in its oscillatory movement, and the parts *a' a'* are extended so as to pass between stops *b³* on the members *b b*. In Fig. 4 the sword-shaped cross-section of the longitudinal members is shown at *f*.

In the plan view, Fig. 2, two propellers are shown arranged side by side. The vertical shaft *c* may be steadied and the propeller protected by a suitable stay *e*. The propellers are oscillated so that they move inward and outward together in order to lessen the vibratory effect upon the vessel. Any suitable means may be employed to obtain this result, the movement being given by a motor or any other suitable power. The projections *b³ b³* are curved outward for the gradual reinforcement of the blade.

I prefer to provide the blade *a* of graduated thickness, as illustrated in Figs. 5, 6, 6^a, and 6^b, by which the use of supports, such as *b³*, may be dispensed with. The forked end parts *a'* of the blade *a* may pass through corresponding transverse slots provided in the bolt *d*, as in the modification of Figs. 5 and 6, and the blade may be secured in position on the longitudinal members *b⁴* by such means as bolts *g* passing through the respective forked or cut ends of the members *b⁴* aforesaid. The blade *a* may, however, be constituted of a number of laminæ or plates instead of a single plate of graduated thickness. I may provide the effective portion of the blade relatively long or of such length and thickness that in its use there may be a double curvature or a number of curvatures of the blade.

Although I have shown the propeller as

consisting of a flexible outer portion and a rigid inner portion, it is obvious that I may provide either portion flexible or the inner portion flexible and the outer portion rigid without departing from the invention. Also I may employ one or any number of such propellers in pairs or otherwise.

The propeller may be made of metal, wood, or any other suitable material.

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

1. An oscillating or fish-tail propeller consisting of a flexible propelling portion, the ineffective portion of which is cut away so as to reduce its resistance to the lateral movement of the propeller through the water, a blade-carrying portion so shaped as to offer but slight resistance to the water, and curved fork-like projections provided at the free end
15 20 of the blade-carrying portion for limiting the

movement of the flexible propelling portion substantially as described.

2. An oscillating or fish-tail propeller consisting of a flexible laminated propelling portion, the ineffective portion of which is cut away so as to reduce its resistance to the lateral movement of the propeller through the water, a blade-carrying portion so shaped as to offer slight resistance to the water, and fork-like projections provided at the free end of the blade-carrying portion for limiting the movement of the flexible laminated blade substantially as described.

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

GEORGE E. WADE.

Witnesses:

STANLEY WOOD,
FREDERICK COLLINS.