W. S. HULL.

SCREW-PROPELLER.

No. 187,633. Patented Feb. 20, 1877.

Fig. 1.

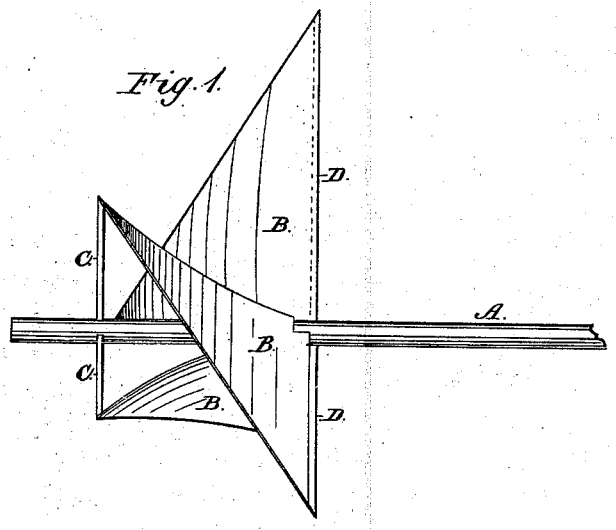
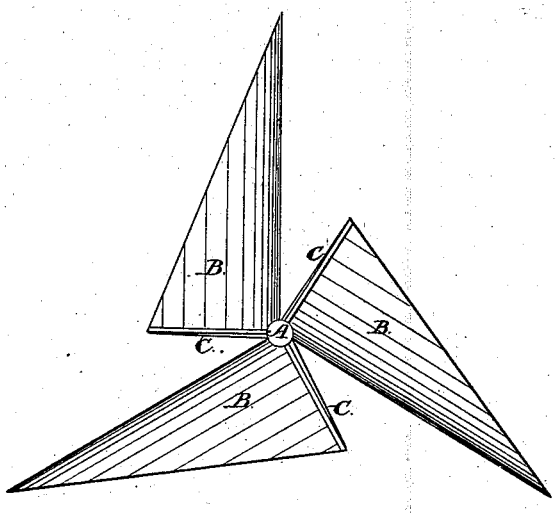


Fig. 2.



WITNESSES:

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WILLIAM S. HULL, OF HINDS COUNTY, MISSISSIPPI.

IMPROVEMENT IN SCREW-PROPELLERS.

Specification forming part of Letters Patent No. **187,633**, dated February 20, 1877; application filed November 7, 1876.

To all whom it may concern:

Be it known that I, WILLIAM S. HULL, of the county of Hinds and State of Mississippi, have invented a new and Improved Propeller; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side view, and Fig. 2 an end view.

My invention relates to a novel construction of propeller, designed to secure a greater driving capacity with a smaller expenditure of power, and adapted to operate either upon the air or water as a fulcrum.

The invention consists in a set of right-angled triangular vanes, blades, or fans, one side of each of which blades is attached to the propeller-shaft at right angles thereto, while the rear and less acute apices are deflected away from the said shaft, the laterally-projecting tapering blades thus constructed and arranged serving to distribute the work in ratio corresponding to the leverage throughout the length of the blades, and thus securing a greater motive effect from a smaller expenditure of power.

In the accompanying drawing, A represents a portion of the propeller-shaft, to which the blades are attached, which shaft is to be located in bearings, and rotated by connection with any suitable driving mechanism. B B B are the right-angled triangular blades, which are attached at their right angles to the shaft, and have one of their sides arranged radially, and extended therefrom at right angles, so as to form with the hypotenuse laterally-projecting tapering blades, the rear and less acute apices being deflected away from the shaft.

These blades B may, when employed to operate upon air, be made of very thin and light material, attached at their front sides to stiff laterally-projecting radial arms D D D, and at their rear deflected apices to corresponding radial arms C C C, or, when used to operate upon water as a fulcrum, may be cast in one piece, stiff enough to dispense with said arms C and D, and provided with a coupling at their right angles for direct attachment to the shaft. The taper or angle of the said blades will be about that shown in the drawing, or that formed when the shortest side of the blade is equal to two-thirds the length of the larger side at right angles to the shaft.

The blades I find, however, work well for a variation of fifteen degrees upon either side of the angle thus formed, and I therefore do not limit myself in this particular. The face of the blades which operates upon the fluid should be straight, or nearly so, in order to reduce as far as possible the friction incident to the curves of propellers, as heretofore constructed, and any number of blades may be employed in the construction of the propeller.

Propellers as heretofore constructed have generally their widest faces and largest propelling-surfaces at the extremity or long end of the lever, the effect of which is seen in the great expenditure of power required to propel, a large portion of which power expended is lost in carrying dead-water.

By means of the propeller-blades constructed as described, it will be seen that the resisting surface is distributed throughout the length of the blade in proper ratio to the leverage; and I am thus enabled to secure the maximum effect of the propelling power with the smallest amount of resistance.

By the same construction of blade, also, when arranged as described, I am enabled to employ the full width of the blade near the shaft, without the objection of a lack of clearance for the fluid operated upon, the deflection of the rear apex of the blade from the shaft permitting a free and easy passage of the fluid to the rear.

Having thus described my invention, what I claim as new is—

The combination, with the propeller-shaft, of a series of right-angled triangular blades, having their front sides attached to said shaft at right angles, and their rear apices deflected away from the same, substantially as and for the purpose described.

WILLIAM S. HULL.

Witnesses:

W. S. HAMILTON,

JNO. T. HALL.