C. T. P. WARE.

PROPELLER.

No. 10,091. Patented Oct. 4, 1853.

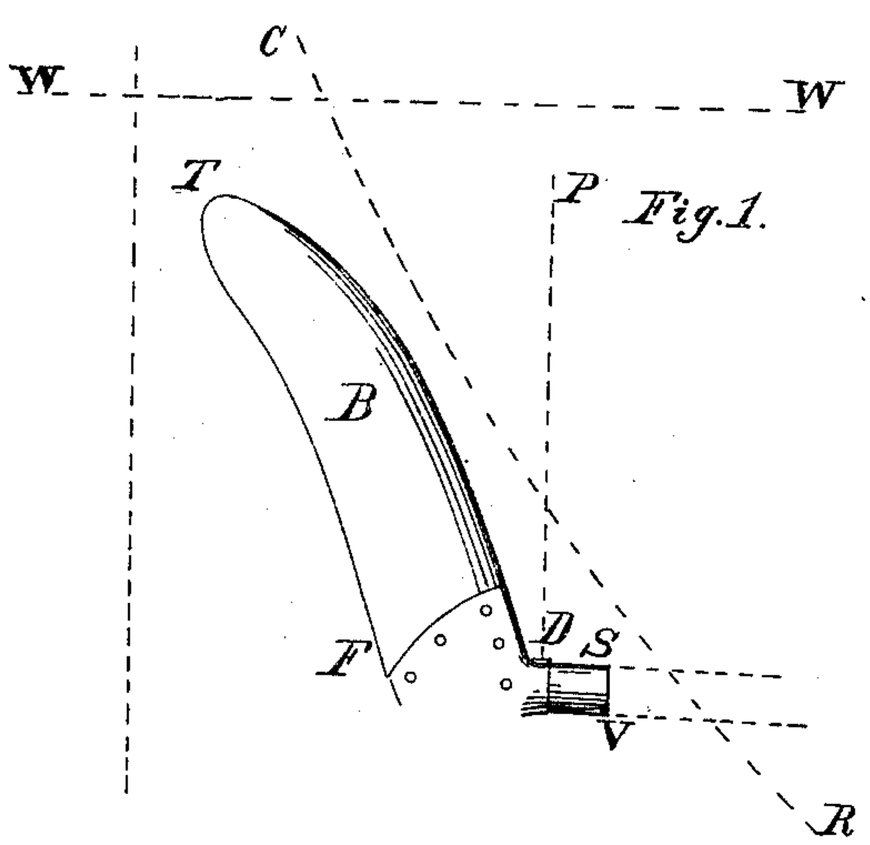

Fig. 1.

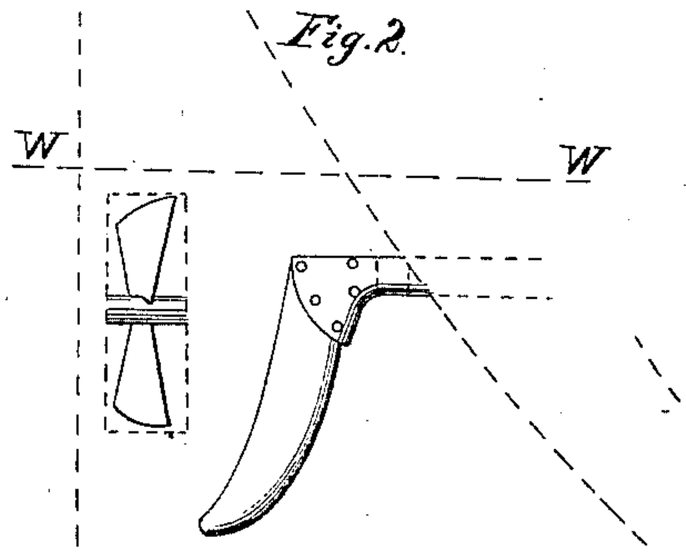

Fig. 2.

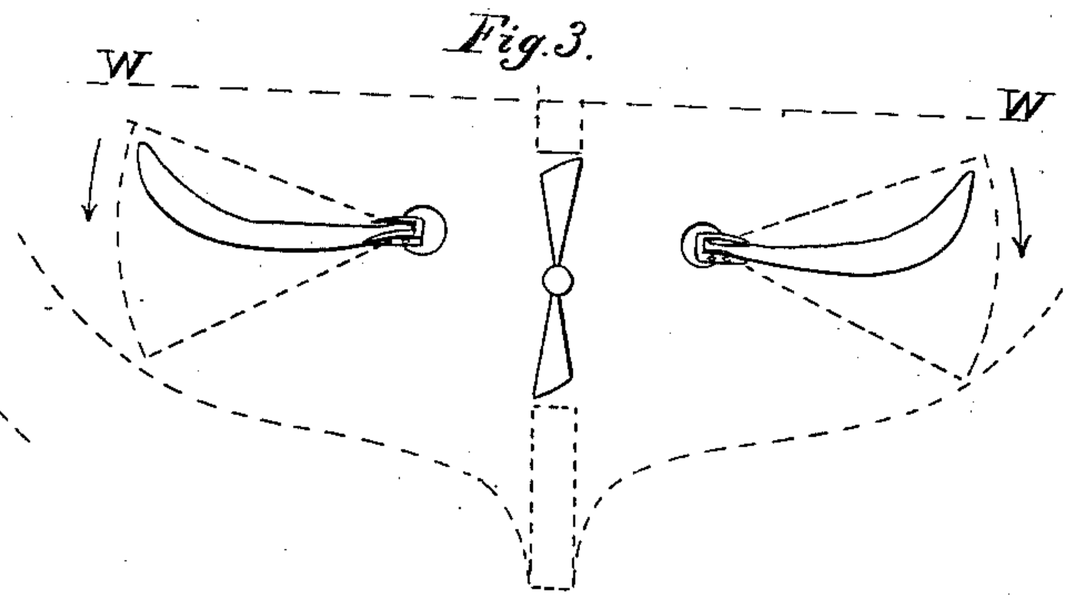

Fig. 3.

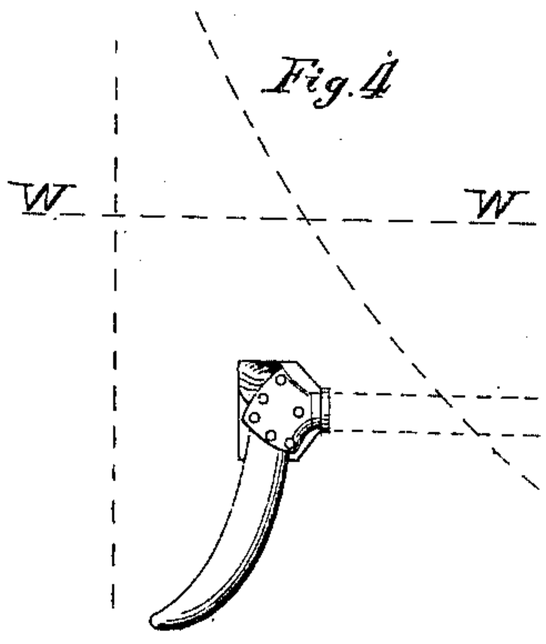

Fig. 4

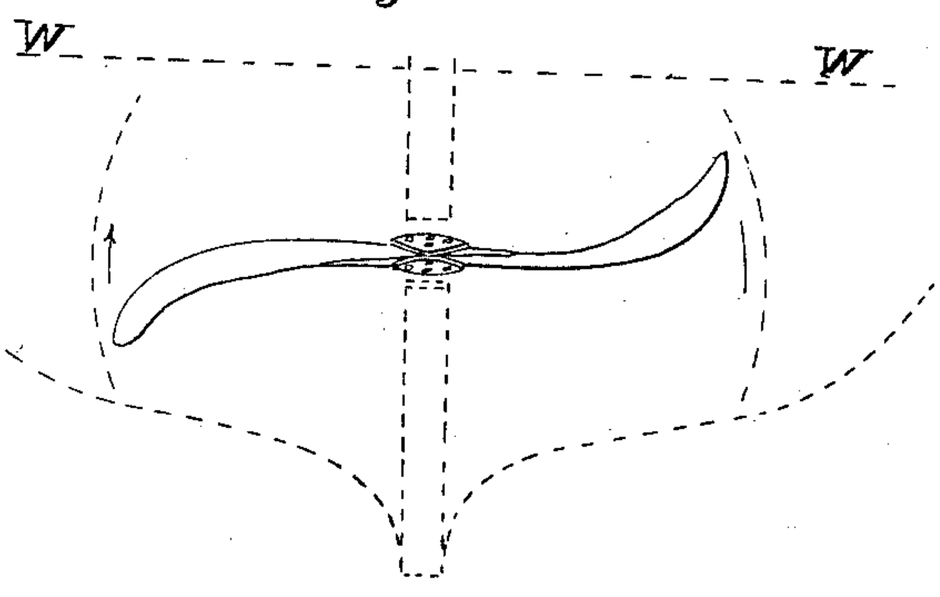

Fig. 5.

UNITED STATES PATENT OFFICE.

CHARLES T. P. WARE, OF NEW YORK, N. Y.

PROPELLER.

Specification of Letters Patent No. 10,091, dated October 4, 1853.

To all whom it may concern:

Be it known that I, CHARLES TREAT PAINE WARE, of New York, N. Y., have invented a new and Improved Mode of Propelling Vessels and the Like; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

To enable other to make and use my invention, I will proceed to describe its manner of construction and operation.

I construct my blades of india rubber, in any of its various forms of preparation, or of any other elastic or pliant material in combination with elastic ribs, or with inflexible parts. For example—in the accompanying drawings—taking the dotted curve, C R, as a boundary to the vessel's counter—(Figure 1)—B represents a blade in a certain position relative to the shaft S. The blade, decreasing in thickness from its point of junction with the shaft, at D, toward every point of its outer and inner boundaries, F T and D T, has its inner boundary D T much stiffer than F T, so that it shall yield much less to the resistance of the water than the outer boundary F T. The shaft, passing into the vessel at V, is acted on by alternate partial revolutions, the point T, when not opposed by any resistance, describing an arc of a circle, the plane of which circle is perpendicular to the shaft S. The resistance of the water, however, causing the outer boundary F T (and all that portion of the blade more remote from the perpendicular, D P, than the inner boundary, D T,) to yield readily, while D T retains a stiffer bearing against such resistance, the blade presses upon the resistance obliquely like the blade of a screw, the angle accommodating itself to the amount of such resistance, which, of course, is greatest toward the tip, T; so that the blade being forced around with great velocity, said tip, according to its degree of flexibility, will tend to be drawn through the water edgewise, exerting very little if any power of propulsion. But, at the point where the blade commences its return sweep, the checking of the momentum gained by the previous sweep causes the combined forces of such momentum, and of the motive power applied, to accumulate, as it were, at the extremity of the blade, and down along the outer boundary (F T) toward the shaft, whereby said extremity is thrown backward in a direction parallel to the shaft before it can again be drawn through the water by the succeeding sweep of the blade. The blade, being constructed with this view, may thus be made to combine the propulsive action of the paddle and the screw. I work the said elastic blades either on one shaft or more. Using more than one shaft, I work them on each side of the dead-wood, in which case a rotary propeller may be worked in the dead-wood, should such be deemed advantageous as an additional propelling agent, as seen in Figs. 2 and 3. W, W, shows the water line.

Where I use but one shaft, I run it out through the dead-wood, cutting away a portion of said dead-wood, sufficient only to allow the alternate sweeps of the blades free play near their junction—as seen in Figs. 4 and 5. In practical experiment I have obtained this motion effectually and direct from the engine by means of a crank working a lever on the shaft by a conencting rod—and have been further able to extend or diminish the sweep of the blades, according to the draft of the vessel, by lengthening or shortening the said lever.

I do not confine myself to the precise form of my blades or to their particular angle relative to the shaft, or to any particular method of giving to said shaft the partially rotating, or rocking, motion desirable for the efficient action of the blades as specified, as that action may be produced by various simple means of ordinary connecting gear now in use.

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

The employment of submerged elastic blades for the propulsion of vessels, constructed, operated and acting upon the water, substantially as set forth.

CHAS. T. P. WARE.

Witnesses:

I. D. W. BRINCKERHOFF,

C. C. HARRISON.