

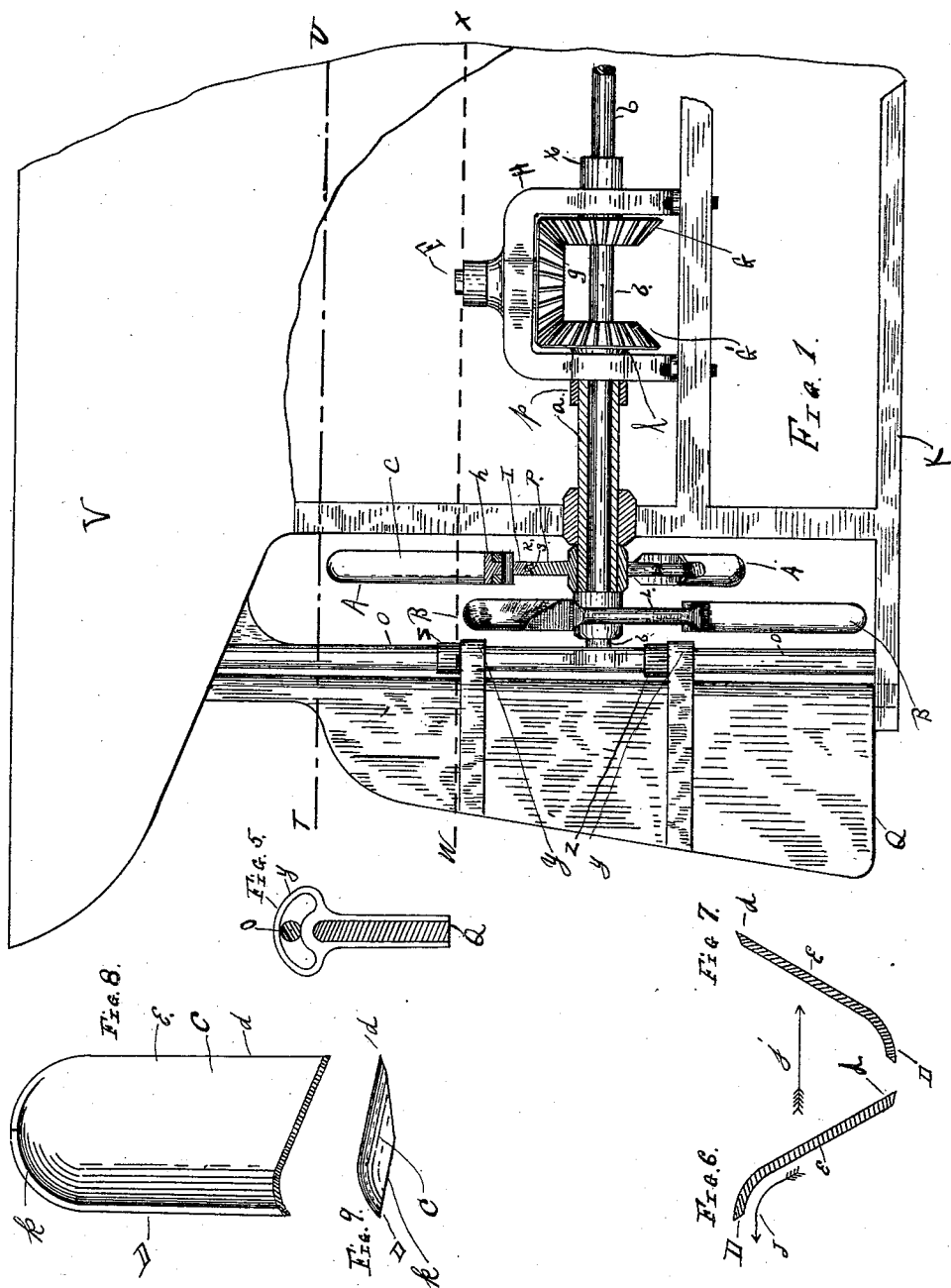
(No Model.)

2 Sheets—Sheet 1.

C. J. LOWE.
PROPELLER WHEEL.

No. 479,008.

Patented July 19, 1892.



Witnesses
S. M. Brown,
Louis. K. Shorspock.

Inventor
Chas. J. Lowe
By his Attorney McWilliams

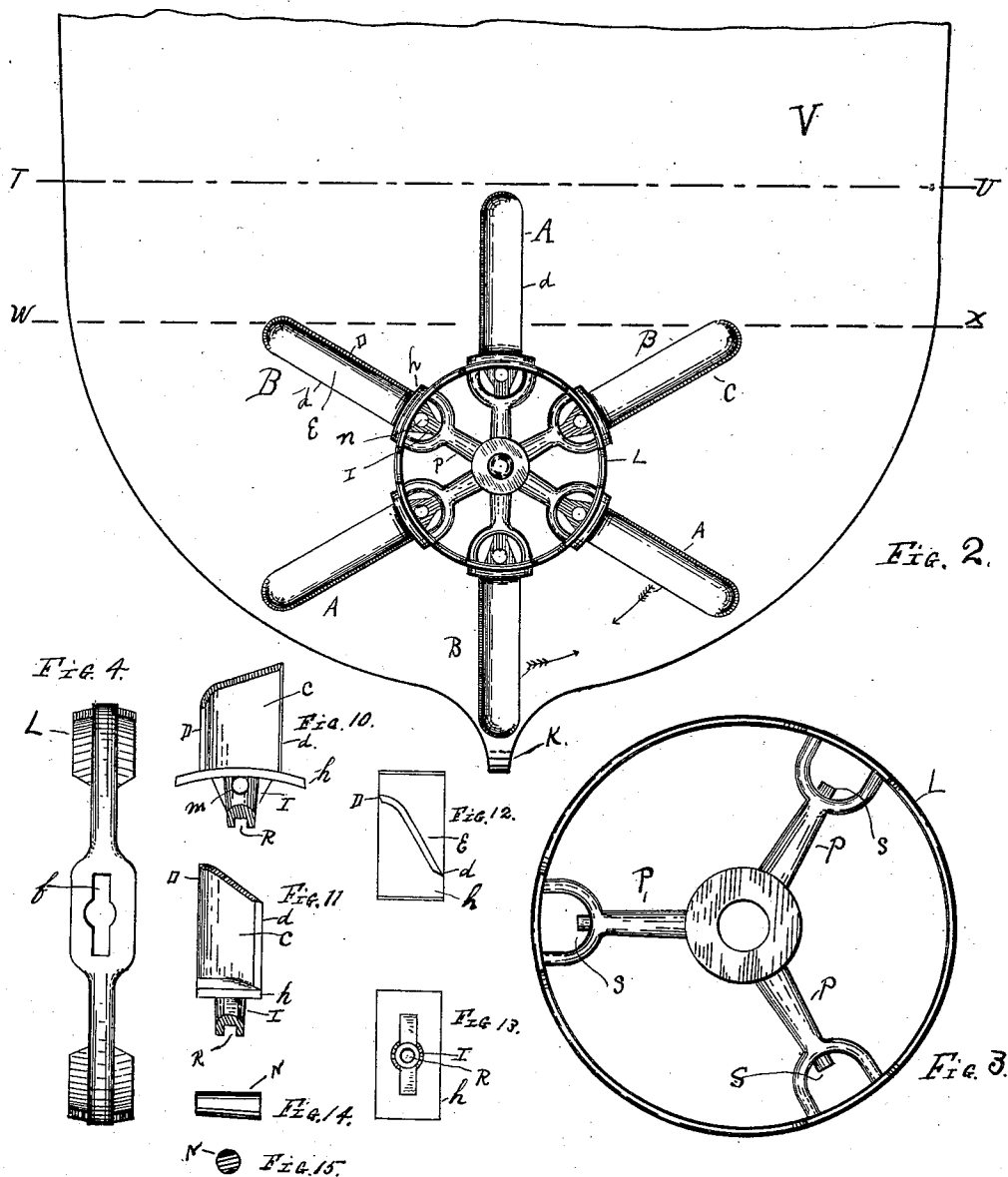
(No Model.)

2 Sheets—Sheet 2.

C. J. LOWE.
PROPELLER WHEEL.

No. 479,008.

Patented July 19, 1892.



Witnesses
M. Brown
Louis. K. Thorpe.

Inventor
Chas. J. Lowe
By his Attorney
W. Williams

UNITED STATES PATENT OFFICE.

CHARLES J. LOWE, OF CHICAGO, ILLINOIS.

PROPELLER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 479,008, dated July 19, 1892.

Application filed January 14, 1892. Serial No. 418,023. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. LOWE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Propeller-Wheels, of which the following is a specification.

The objects of my invention are, first, to provide a propeller-wheel that will give the greatest resultant of propelling force with the least expenditure of power; second, a propeller that will drive the vessel forward without tending to turn it out of its course when the blades of the propeller are only partly submerged; third, a propeller that will have a large scope of action reaching out into undisturbed water. I attain these objects by the construction illustrated in the accompanying drawings, in which similar letters refer to similar parts throughout the several views.

Figure 1 shows a side elevation of the vessel, showing the two propeller-wheels and the shafts driving the same. Fig. 2 shows an end elevation of the vessel. Fig. 3 shows an elevation of the central propeller-wheel L, to which the blades C are attached. Fig. 4 shows a side view of the same. Fig. 5 shows a plan view of a clip connection between the rudder Q and the rear post O. Figs. 6 and 7 show cross-sections of the propeller-blades A and B. Fig. 9 shows a top view of the outer end of a propeller-blade. Fig. 8 shows an enlarged view of the outer end of the blade, showing the shape of the tip of the blade. Fig. 10 shows an end view of the lower end of the propeller-blade. Fig. 11 shows a side view of the same; Fig. 12, a top plan view of the same; Fig. 13, a bottom plan view of the same. Fig. 14 shows a plan of the locking-pin N. Fig. 15 shows end of the same.

Propellers as made before were necessarily entirely submerged, since if half of the blade were out of water the action of the other portion would tend to turn the ship out of its course; but by making two sets of blades, one set A revolving in one direction and another set B revolving in the opposite direction, this turning action is entirely avoided. The rear wheel B is driven by the continuous engine-shaft *b* and the forward wheel A by the hollow shaft *a*. The shaft *a* is driven

in the opposite direction to the shaft *b* by means of the gears *G g G'*, *G* being fixed to the shaft *b*, *g* being an idle, and *G'* fixed to the shaft *a*, and the whole supported by the frame H. A collar *t* is fixed to the shaft *b* and a collar *p* to the shaft *a*, which, together with the gears *G G'*, take up the longitudinal strain on the shafts.

The propeller-blades C are made long and narrow, reaching from the keel K to the water-line T U when the vessel is loaded, and they project out of the water when the vessel is light. (Shown by the dotted line W X.) The object of this great length is to reach out as much as possible into water not disturbed by the vessel passing through it and to give as large an area or scope of contact with the water at as great a depth as possible. I thus get one result sought after by twin or triple screws.

The shape of the propeller-blade C is designed to give the greatest resultant of useful force. The forward edge *d* is made sharp to cut the water, and the central portion E is made flat that it may be serviceable in backing up, and the rear edge D is curved around, so as to be nearly tangent to the ship's course, (shown by the arrow J,) so the water will leave the blade of the wheel parallel to the ship's course, (this action shown by the arrow J,) which is a desideratum, while with the old-style blade the water leaves the wheel at an angle of about thirty degrees, and with an ordinary blade a large percentage of the force is expended in throwing the water out centrifugally, and a large part of the water passes over the ends of the blades, doing no useful work. Now by curving the outer end of the blade over a little (shown at *k*, Figs. 8 and 9) for the purpose of catching the water and directing the tendency to its being thrown outward over the end and the blades being narrow and long, the line of least resistance to the escape of the water is across the blade, more so than in a wide short blade. These propeller-wheels being so large, I prefer to make them in the manner shown. Each blade C is cast in one piece, with a flange *h* at its base and a projection I extending downward, fitting into a slot *f* of the wheel L, and this projection I is provided with a hole *m*, into which the key N is driven, locking the flange

h hard down on the rim of the wheel L. This projection I is provided with an aperture R at its lower end, which fits over a projection S on the arms p for the purpose of holding them more securely in position.

The arms of the wheel L are divided at their outer ends, one branch being inserted into the rim on each side of the junction of the blade C. It is desirable to have these arms P made round and as few in number and as small as possible to give little resistance to the flow of water.

What I claim is—

1. A propeller composed of two wheels revolving concentrically in different directions, the shaft of one passing through the shaft of the other, each blade of said wheels having an approximately straight surface across the forward and central portions d and E, for the purpose described, and curved more abruptly at its rear edge D to complete the turning of the water, substantially as and for the purpose set forth.

2. A propeller composed of two wheels revolving concentrically in different directions, the shaft of one passing through the shaft of the other, each blade of said wheels having an approximately straight surface across its forward and central portions d and E, for the purpose described, and curved more abruptly at its rear edge D, for the purpose set forth, and with the outer end R turned over, as and for the purpose set forth.

3. A propeller-wheel made of composite parts, consisting of the blade C, fastened to the integral wheel L, the key N, passing through a slot in said blade and underneath the rim of said wheel L, as shown, said blade having the projection I, fitting into the slot f of said integral wheel, and the aperture R, fitting over the projection S of the arms of said

integral wheel, said parts adapted to be placed and held together, substantially as shown and described.

4. A propeller composed of two wheels revolving concentrically in different directions, the shaft of one passing through the shaft of the other, each blade of said wheels being approximately straight in its length, and curved over at the outer end for the purpose of arresting the centrifugal action, substantially as described.

5. A propeller-wheel composed of composite parts, detachable blades C, a central hub-wheel L, the arms P of which are single at their insertion in the hub and divided at their outer end, a part being inserted into the rim on each side of the propeller-blade, substantially as shown and described.

6. A propeller composed of two wheels revolving concentrically in different directions, the shaft of one passing through the shaft of the other, and each blade of said wheels being approximately straight across the forward and central portions d and E and curved more abruptly at its rear edge D and approximately straight throughout its length and curved over at its outer end k, as and for the purpose specified.

7. A propeller-wheel composed of a central or hub wheel L, detachable blades C, secured to said wheel, substantially as described, said blades being straight across the forward and central sections d and E and curved at their rear edge D and straight in their length and curved over at their outer ends, as and for the purposes set forth.

CHARLES J. LOWE.

Witnesses:

S. M. BROWN,

LOUIS K. THORSPECK.