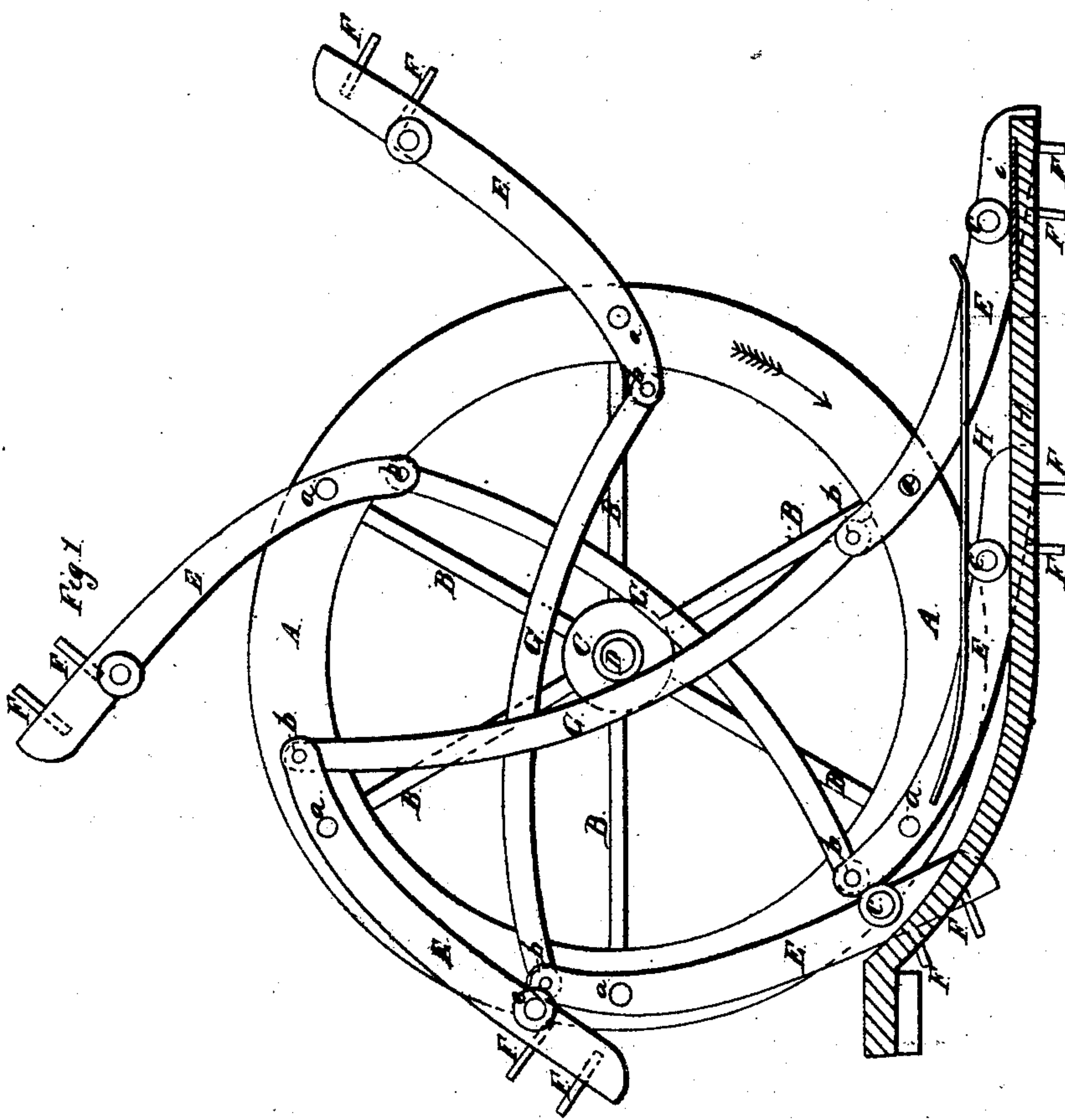
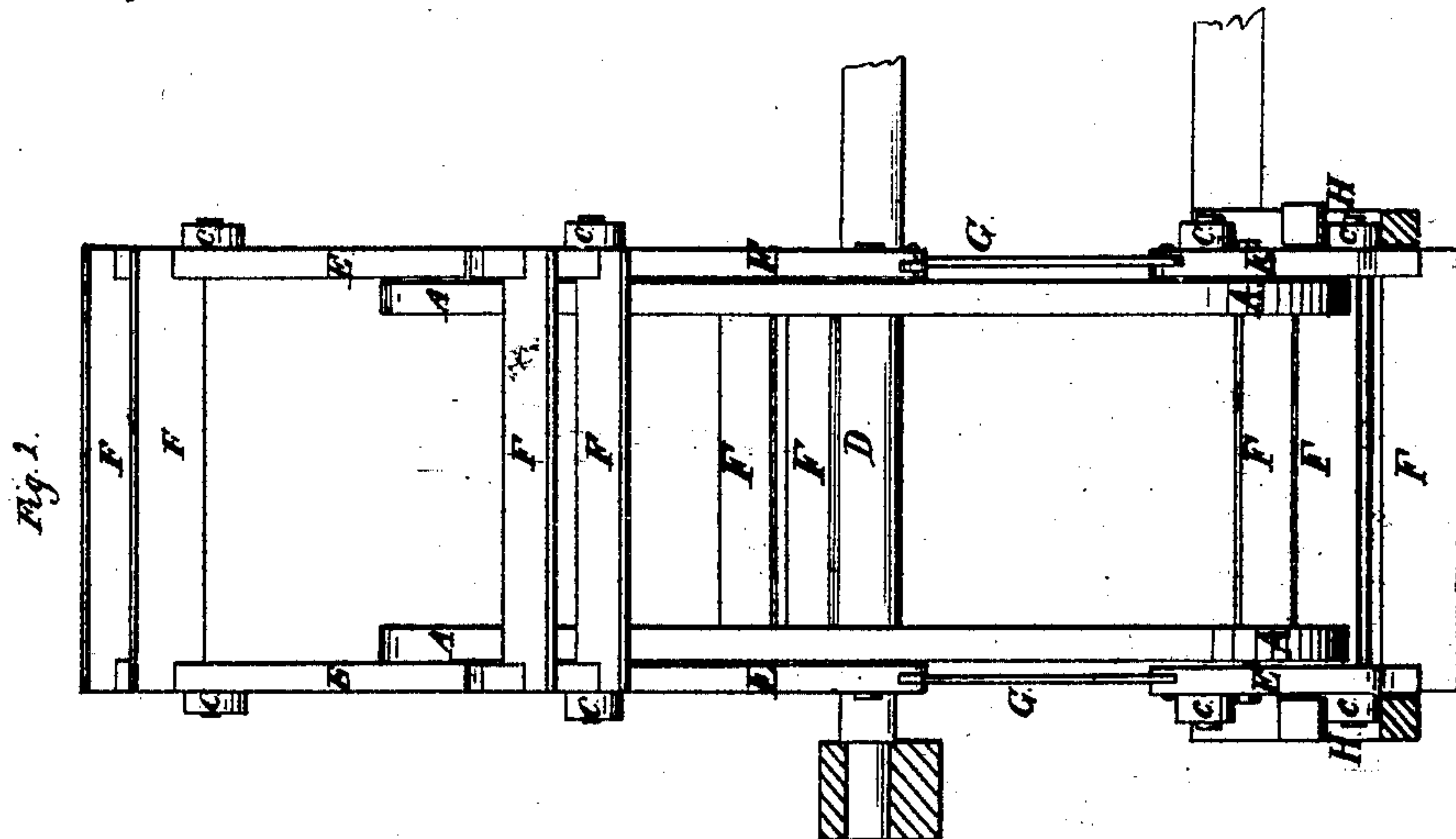


H. Ehrhart. Paddle Wheel.

N^o 21,826.

Patented Oct. 19, 1858.



UNITED STATES PATENT OFFICE.

H. EHRHART, OF MUSCATINE, IOWA.

IMPROVED PADDLE-WHEEL.

Specification forming part of Letters Patent No. 21,826, dated October 19, 1858.

To all whom it may concern:

Be it known that I, H. EHRHART, of Muscatine, in the county of Muscatine and State of Iowa, have invented a new and useful Improvement in Paddle-Wheels for Propelling Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of a paddle-wheel with my improvement. Fig. 2 is a side view of the same.

Similar letters of reference indicate corresponding parts in both of the figures.

This invention consists in a certain system of lever-like arms carrying the floats and combined together and with the wheel to operate substantially as hereinafter described, in combination with fixed guides attached to the vessel, so that the floats shall be kept vertical, or nearly so, and be compelled to move horizontally, or nearly so, in the water, and thus be caused to act with the greatest possible degree of propulsive effect.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A A are two rings, and B B arms connecting said rings rigidly with hubs C, such rings, arms, and hubs combining to constitute the body of the wheel.

D is the shaft.

E E are the lever-like arms, which are arranged in pairs, one of each pair being pivoted to each ring A by one of a number of pins *a*, and the two being connected together rigidly by one or more of the paddle-floats F F, which are supported by said arms at or near the extremities farthest from the pivots or fulcrum *a a*. There should be an even number of pairs of these arms E E, in order that two pairs may be pivoted to the wheel at diametrically opposite points at equal distances from the center thereof, and every two opposite pairs are connected together at the ends nearest the pivots or fulcrum *a a* by rods G G and joint-pins *b b* on either or both sides, the said rods being curved to enable them to pass the shaft. The lever-like arms may be curved or straight, but preferably curved, as shown in the drawings.

H H are guides, which are intended to be

attached and secured permanently to the sides of the vessel in any suitable manner on one or both sides of the wheel, to receive and form ways for the travel of anti-friction rollers C C, attached to the lever-like arms E E near the floats, the greater portion of said guides being horizontal, but the rear portion being curved upward. The horizontal portion of these guides should be below the body of the wheel and otherwise so arranged that the floats F F will be entirely submerged with the lightest draft of the vessel. Each of these guides has an india-rubber cushion at its entrance for the rollers C C to strike upon in entering, and by that means violent concussion on the guide is prevented.

The operation is as follows: The wheel in going ahead rotates in the direction of the arrow, and the arms E E in front in descending are extended from the body of the wheel by their own weight, aided by the weight of the arms at the back, so that the floats enter the water in a vertical position, and as they enter the rollers C C enter the guides H H. As the revolution continues the floats in the water being under the control of the rollers and guides are kept nearly vertical, and caused to move in a nearly horizontal position, and as they enter the water a distance equal to the length of the arms E E they have a long movement therein. The weight of the arms on the back or rising portion of the wheel assists the weight of those on the front or falling portion in counteracting the resistance of the buoyancy of the water to the descent of the floats therein. The wheel will operate nearly as well turned in the opposite direction, and hence can be used effectively in backing the vessel.

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

The within-described system of lever-like arms E E, carrying the floats F F, pivoted to the body of the wheel and combined with each other by the floats F F and rods G G, and operating substantially as described, in combination with the guides H H, for the purpose set forth.

H. EHRHART.

Witnesses:

W. H. BITZER,
S. D. MEYERS.