

No. 621,368.

Patented Mar. 21, 1899.

J. R. PARKS.
PADDLE WHEEL.

(Application filed Feb. 24, 1898.)

(No Model.)

Fig. 1.

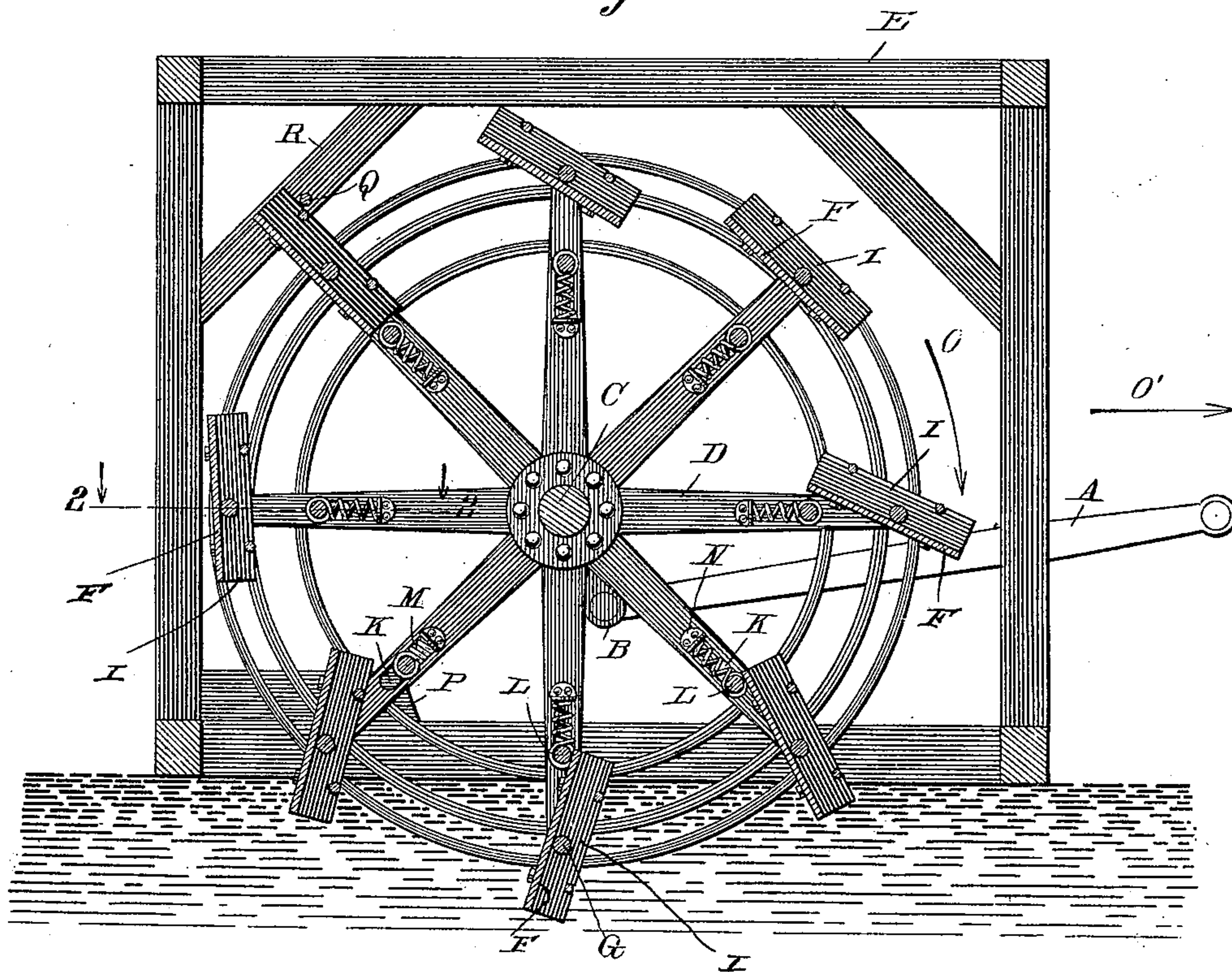
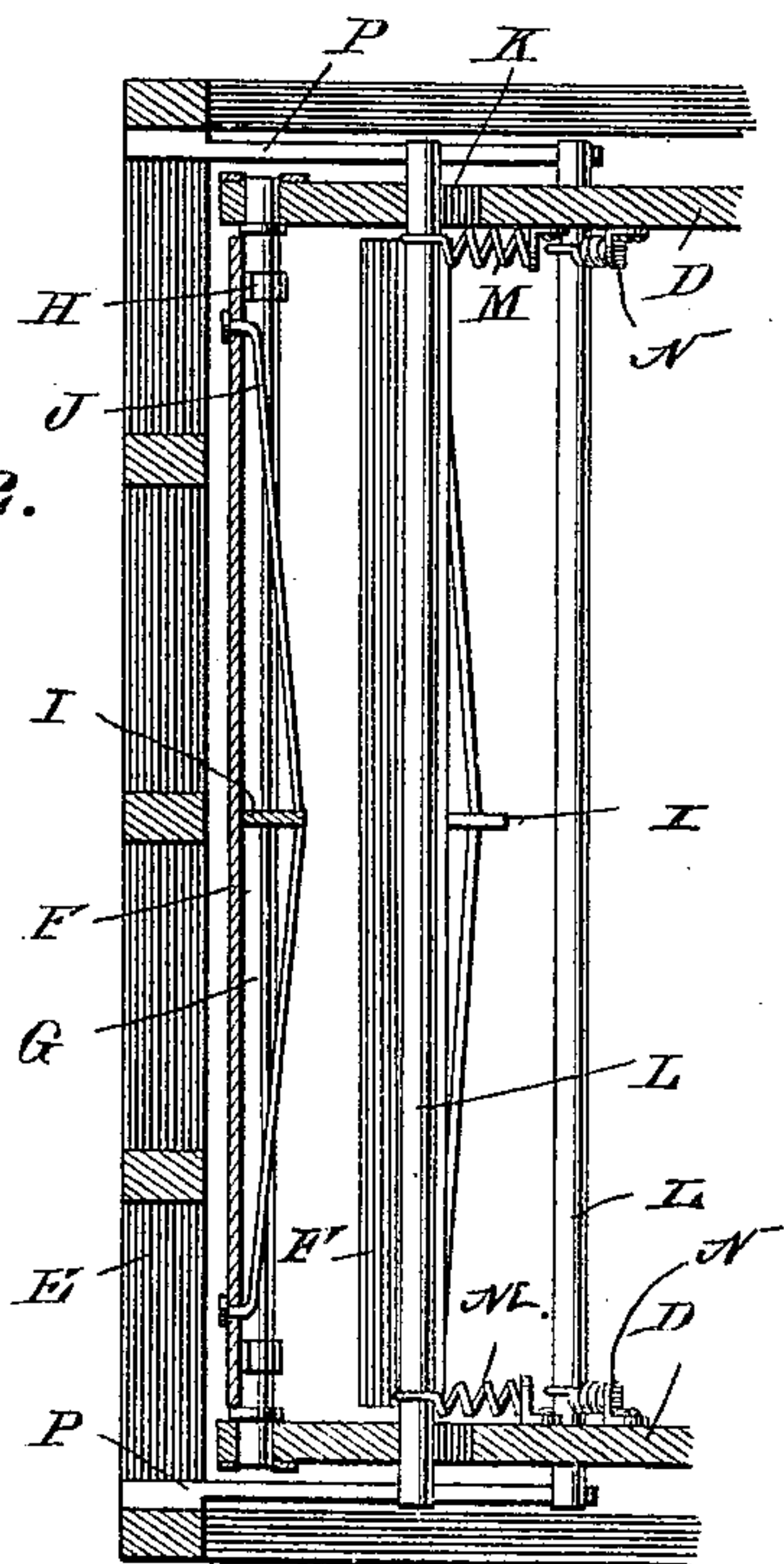


Fig. 2.



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JOHN R. PARKS, OF WABASH, ILLINOIS.

PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 621,368, dated March 21, 1899.

Application filed February 24, 1898. Serial No. 671,456. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. PARKS, a citizen of the United States, residing at Wabash, in the county of Wayne and State of Illinois, have invented a new and useful Paddle-Wheel, of which the following is a specification.

My invention relates to paddle-wheels designed for use on vessels for the purpose of propelling them through the water.

The object of my invention is to furnish a paddle-wheel for use on vessels which shall be provided with improved means for causing the pivoted blades with which the wheel is provided to be partially rotated during each revolution of the main wheel, so as to exert an even pressure upon the water, the blades during their operation upon the water being at all times held in substantially vertical planes, thereby utilizing more of the power expended to turn the wheel and relieving the upward pressure of the blade on the water at the point where the blade emerges therefrom.

With this object in view my invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically pointed out in the appended claims.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section through a paddle-wheel constructed in accordance with my invention inclosed within a suitable wheel-house. Fig. 2 is a partial horizontal section through the same on the line 2 2 of Fig. 1, looking downward.

Like letters of reference mark the same parts wherever they occur in both figures of the drawings.

Referring to the drawings by letters, A indicates the pitman which generally connects the piston-rod of an engine to the crank B of the shaft C of the paddle-wheel, said wheel being provided with duplicated spokes D at each end of a suitable hub.

The shaft C is journaled in bearings (not shown) and the wheel is inclosed within a

suitable wheel-house E. F indicates vanes or paddles, each of which is pivotally secured upon a cross-rod G, secured at its ends in the spokes D D, as best shown in Fig. 2, the connection between the paddle and the cross-rod being by means of clips or clamps H, a bridge I being erected centrally upon the inside of each paddle, and truss-rods J, secured in the paddles near each end, extending from said bridge and serving to strengthen and stiffen the paddles.

The paddles are mounted upon the cross-rods G to one side of the central longitudinal line thereof, so that the inner portion of the paddle is heavier than the outer and has a natural tendency to drop downward when free to do so.

Each of the spokes D is provided with a radially-arranged slot K, in which is located a cross-rod L, which projects beyond the spokes at each end, said cross-rod being connected to a spring M, which at its inner end is secured to a bracket N, attached to the inside of the spoke, the normal tendency of the springs being to force the cross-rods L to the outer ends of the slots K, in which position they will lie in the path of the paddles when rotated on their pivotal cross-rods, their projecting ends being in position to contact with the stationary cam-surface, to be hereinafter described.

The arrow O on the right-hand side of Fig. 1 inside of the wheel-house indicates the direction of rotation of the wheel, the outside arrow O' in the same figure indicating the direction of movement of the vessel on which the wheel is mounted. When operating the wheel in this direction, the paddle when its lower side strikes the water, as shown on the right-hand side of Fig. 1, will be prevented from rotating upon its pivotal cross-rod by reason of its inner edge coming in contact with the cross-rod L. The further movement of the wheel brings the paddle to and beyond a vertical position in the water, and while that part of the movement which withdraws the paddle from the water is taking place the projecting ends of the cross-rod L, against which the upper edge of the paddle has its bearing, comes in contact with a cam-surface P, attached to any rigid portion of the frame or wheel-house, which forces the cross-rod L

inward against the pressure of the spring M, until just as the lower or outer edge of the paddle emerges from the water its upper edge is released from the obstruction of the cross-rod L and assumes a position as shown in the left-hand lower corner of Fig. 1. The continuation of the rotation of the wheel brings the paddle referred to into a position (shown on the left of Fig. 1) at about its mid-height, in which position the paddle is vertical and parallel with the end of the wheel-house, said end of the wheel-house serving as a cam-surface to prevent the paddle being reversed in position when relieved of the obstruction of the rod L and the pressure of the water through which it is passed. The weight of the upper portion of the paddle now causes it to drop downward until in its further rotation it strikes against the cross-rod Q, secured in corner-braces R of the wheel-house, which contact tips the now outer (former inner) edge of the paddle backward, and the continued rotation of the wheel permits this longer end to drop inward again into the positions in which it is illustrated in Fig. 1, on the spokes lying between that upon which the paddle in contact with the cross-rod is mounted and that illustrated on the extreme right of Fig. 1, where the wider side of the paddle has again come in contact with the cross-rod L and is being held in position to properly strike the water and repeat all the steps of another revolution, as hereinbefore described.

From the foregoing description of the construction and operation of my invention it will be apparent that as the wheel is rotated the different paddles will strike the water and move therethrough at substantially a right angle to the line of motion to the vessel and that they will be released from this position by the action of the cam-surface against the spring-impelled cross-rods as they emerge from the water, and that by reason of the relative positions of the wheel-house and the cross-rod Q the blades are caused to consecutively assume the proper positions to perform their functions in the manner hereinbefore described.

With a wheel of the peculiar construction described the power expended to turn the

wheel is almost entirely utilized to propel the vessel, there being no tendency of the paddles to lift the water, nearly all the power being applied directly for the accomplishment of the desired purposes without waste.

While I have illustrated and described what I consider efficient means for carrying out my invention, I do not wish to be understood as restricting myself to the exact construction shown, but hold that any slight changes or variations, such as might suggest themselves to the ordinary mechanic, would properly fall within the limit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A paddle-wheel, comprising in its construction suitable spokes, paddles pivotally secured at the ends thereof the pivotal points being outside the centers of gravity of the paddles, stop-rods extending through and beyond the spokes parallel with the shaft, in radial slots provided in the spokes, and springs normally holding the rods outward, in combination with a rigid cam-surface for actuating the stop-rods inwardly, and a rigid cross-bar for tipping the paddles on their pivots, substantially as described.

2. A paddle-wheel, comprising in its construction suitable spokes, paddles pivotally secured thereto to one side of their center line, whereby one side is heavier than the other, cross-rods mounted in radial slots in the spokes in the path of movement of the wider side of the paddles when rotated on their own axes, springs tending to normally hold the stop cross-rods in positions to engage the inner edges of the paddles, said cross-rods projecting beyond the spokes, and a rigid cam-surface in the path of movement of the projecting ends of the stop cross-rods, whereby they are moved inwardly and the paddles released from engagement therewith, substantially as described.

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