# E. R. CLARK & R. HAMILTON.

## Feathering Paddle-Wheel.

**No. 206,704.** **Patented Aug. 6, 1878.**

*Fig: 1.*

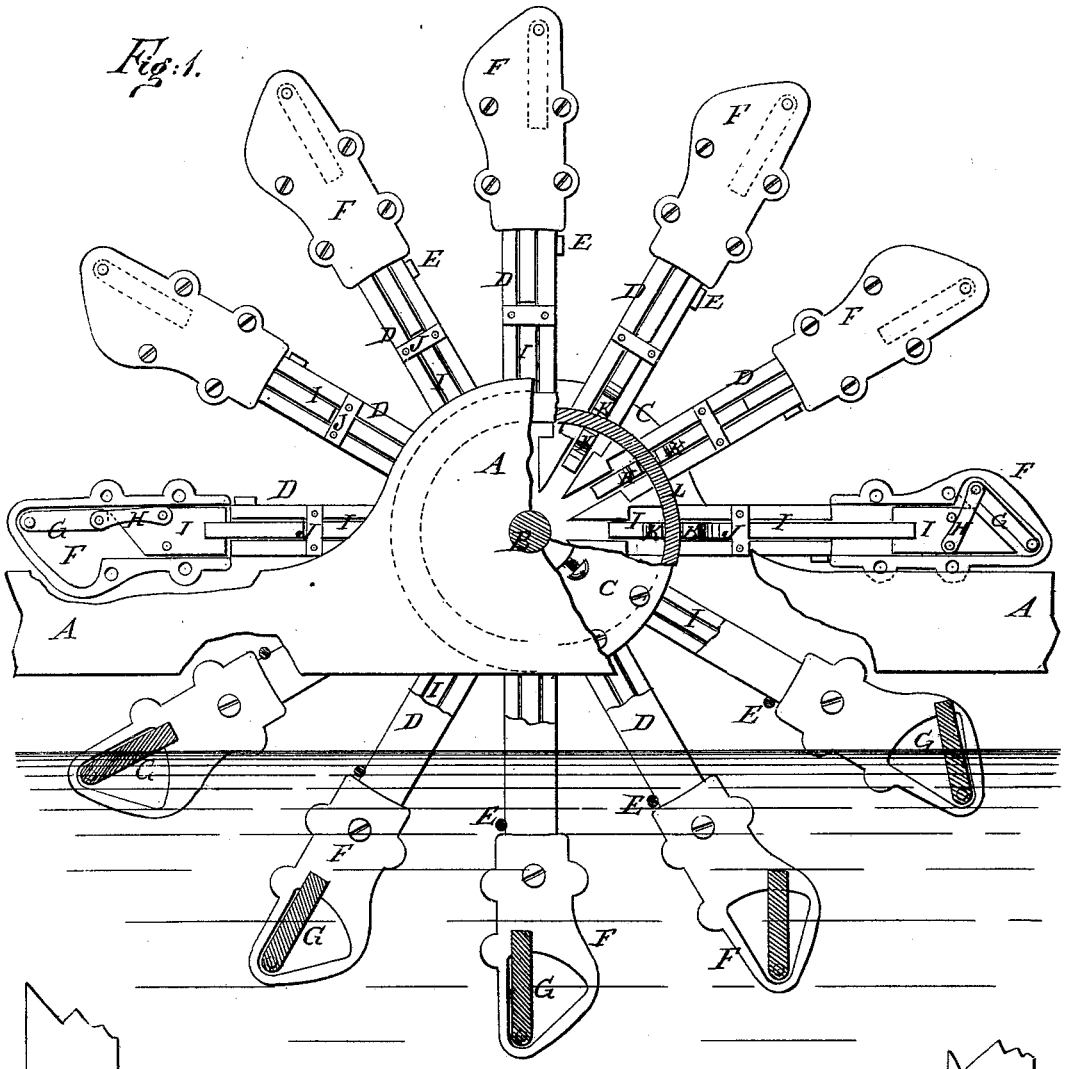
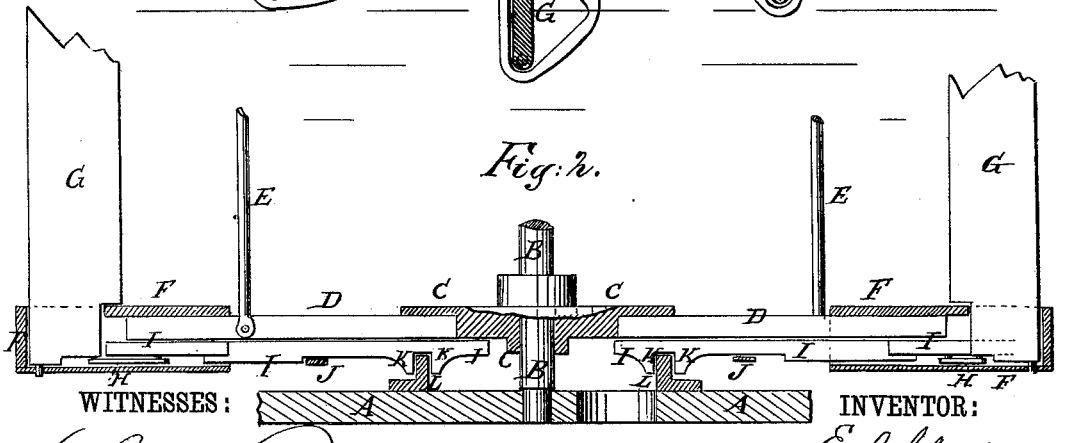


*Fig: 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ELIAS R. CLARK AND ROBERT HAMILTON, OF LA FAYETTE, INDIANA.

## IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. **206,704**, dated August 6, 1878; application filed June 29, 1878.

*To all whom it may concern:*

Be it known that we, ELIAS R. CLARK and ROBERT HAMILTON, of La Fayette, in the county of Tippecanoe and State of Indiana, have invented a new and useful Improvement in Paddle-Wheels, of which the following is a specification:

Figure 1 is a side view of our improved paddle-wheel, partly in section, to show the construction. Fig. 2 is a detail section of a part of the same.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved paddle-wheel, which shall be so constructed that the paddles will leave the water edgewise, so as not to lift the water, which will hold the paddle vertical while acting upon the water, which will cause the paddles to act upon the water as long as they remain in it, and which shall be simple in construction, reliable in operation, and not liable to get out of order.

The invention consists in an improved paddle-wheel formed by the combination of the hubs, the radial arms, the recessed metal heads, the paddles pivoted at their outer corners, the short connecting-bars, the sliding bars provided with the stops, and the eccentric flanges with each other and the shaft, as hereinafter fully described.

A represents the frame-work that supports the wheel. B is the wheel-shaft, which revolves in bearings in the frame-work A, and is driven from the engine in the usual way. To the shaft B are attached two hubs, C, which are made in the form of circular plates, and in the outer sides of which are formed radial grooves to receive the inner ends of the paddle-arms D. The arms D are securely bolted to the hubs C, and are connected in pairs and strengthened by cross-rods E. To the outer ends of the paddle-arms D are attached metal heads F, in the inner sides of the outer parts of which are formed triangular recesses to receive the ends of the paddles G. The recesses in the heads F are made with their rear sides straight and in line with the arms D to firmly support the paddles when acting against the water, their forward sides straight and inclined to allow the paddles to be turned so as to be kept vertical while passing out of the water, and their inner sides curved to allow the paddles to swing from one to the other of the said straight sides.

The paddles G are pivoted at their outer corners in the outer angles of the recesses of the heads F. To the inner corners of the paddles G are pivoted the ends of short connecting-bars H, the other ends of which are pivoted to the outer ends of the bars I. The bars I are placed and slide in longitudinal grooves in the outer sides of the paddle-arms D, where they are kept in place by plates J, attached to the said arms D.

Upon the outer side of each of the sliding bars I are formed, or to it are attached, two projections or stops, K, at such a distance apart as to receive the flange L between them. The flanges L are secured to the frame-work A, are eccentric with the shaft B or extended upon one side, and are so arranged as to keep the paddles G vertical while passing up through and out of the water, so that there will be no lifting of the water by the said paddles, and so that the paddles may be operated to propel the boat as long as they may be in the water.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

An improved paddle-wheel formed by the combination of the hubs C, the radial arms D, the recessed metal heads F, the paddles G, pivoted at their outer corners, the short connecting-bars H, the sliding bars I, provided with the stops K, and the eccentric flanges L with each other and the shaft A, substantially as herein shown and described.

ELIAS R. CLARK.
ROBERT HAMILTON.

Witnesses:
JOHN CUNNINGHAM,
W. M. APPLEBACH.