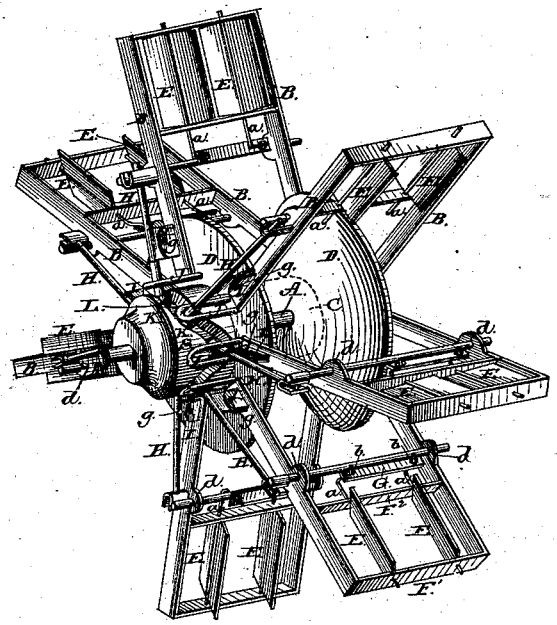
2 Sheets—Sheet 1.

W. WEBSTER.

FEATHERING PADDLE-WHEELS.

No. 187,436. Patented Feb. 13, 1877.

Fig. 1.



Attest:

W. G. Smith

Thos Mostell

Inventor:

William Webster

2 Sheets—Sheet 2.

W. WEBSTER.

FEATHERING PADDLE-WHEELS.

No. 187,436. Patented Feb. 13, 1877.

Fig. 2.

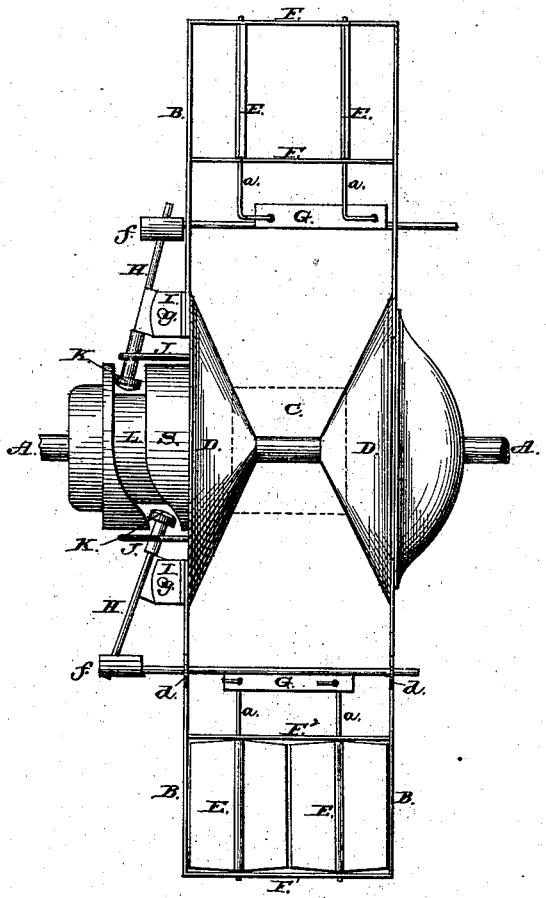
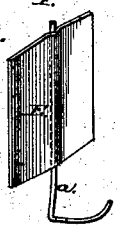


Fig. 3.



Attest:

W. G. Smith

Thos. M. Fell

Inventor:

William Webster

UNITED STATES PATENT OFFICE.

WILLIAM WEBSTER, OF MORRISANIA, NEW YORK.

IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. **187,436**, dated February 13, 1877; application filed November 28, 1876.

To all whom it may concern:

Be it known that I, WILLIAM WEBSTER, of Morrisania, in the county and State of New York, have invented a new and useful Improvement on Paddle-Wheels for Propelling Ships, Boats, and such other like purposes; and I do hereby declare that the following is a full, clear, and exact description and operation of the same.

The object of my invention is to provide a simple, strong, and durable feathering paddle-wheel, which shall be operated by positive force, and which shall not be liable to get out of order.

My invention consists in a novel construction and combination of parts, as will be hereinafter specifically pointed out in the specification and claim.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation; Fig. 2, a front section, showing one set of paddles passing through the water, and another set at the top of the wheel; and Fig. 3 a front section with the paddles in the position they assume when entering and leaving the water.

The same letters indicate like parts on all the figures.

A is the main driving-shaft; B, the radial arms of the wheel, constructed in the usual way. C is the drum or bush or enlargement of the shaft A, to strengthen the same, if required. D is the hub or side plates of the wheel, the same as those in use, constructed in any of the known ways. E are paddles. They are made or may be made of boiler plate-iron, or any material most suitable. They are bolted firm to their suspension-axis *a*, two or more of them being thus placed between the radial arms B B. The lower journals of the axis of the paddles are secured between metal plates or in journal-boxes F^1, or any other suitable way. The suspension-axis above the paddles pass through guide-boxes F^2 or otherwise, and are bent over and pass through openings *b* in the traversing-bar G, and are secured therein and to it in any proper way, but with sufficient looseness as to allow a movement in *b* to allow the ends of the axis to move from side to side in said openings.

The journal-boxes may be made in any of the known ways, and the ends of the axis attached to the traversing-bar G may also be connected to the same in various ways; but the principle on which the paddles are so arranged and suspended is, that they may be moved in their bearings so as to present their edges when out of the water, as seen in Fig. 2, and their faces or greatest surfaces to the water as seen in the same figure, and to assume their position at right angles to the radial arms B B when entering the water, as seen in Fig. 3.

The traversing-bar G is or may be secured to the radial arms B B passing through clasps or eyes *d d* on the arms of the wheel.

I do not limit myself to this peculiar mode of securing the traversing-bar, as many other ways may be employed to answer the same purpose, and yet moved backward and forward, and by being connected with the axis *a* of the paddles, as described, when the said bar G is so moved the paddles will assume the different positions presented in these drawings.

The way by which the traversing-bar is operated to make the paddles E assume the different positions represented during every revolution of the paddle-wheel, is described as follows: S is a stationary metal cylinder, or it may be called a drum. It is secured to the inside of the paddle-box around the main shaft A, and in this cylinder S is cut or cast a cam-groove, L. This groove is made to retain within it the ends of the reciprocating levers H, one reciprocating lever to move each set of paddles. The reciprocating lever H is firmly secured by an axis-pin, *g*, to a small upright standard, I, or otherwise, which is firmly bolted to the wheel. One end of this lever is secured to the traversing-bar G. The inner or other end of it has a friction-wheel or roller, K, attached to it to run in the cam-groove L of the cylinder S. J are two guide-bars, through which the lever H passes into or through, to keep them from having any lateral play.

Operation: When the shaft A is revolved the wheel will be revolved in the usual man-

ner, but the paddles will assume different positions during the revolution of the wheel, each paddle describing different angles when out of the water from that when they are in the water.

I do not limit my arrangement of the paddles to enter the water at any particular angle, but so arranged as to present their faces or greatest surface to the water after entering and while in it. W W in Fig. 1 is the water-line.

I claim—

The paddles E, provided with bent arms *a*, the vibrating bar G, the lever H, and the cylinder S, provided with a cam-groove, L, the whole arranged to operate substantially as described.

WILLIAM WEBSTER.

Witnesses:
W. G. SMITH,
THOS. M. FELL.