No. 785,286. PATENTED MAR. 21, 1905.

J. BEST.

PADDLE WHEEL.

APPLICATION FILED AUG. 2, 1904.

2 SHEETS—SHEET 1.

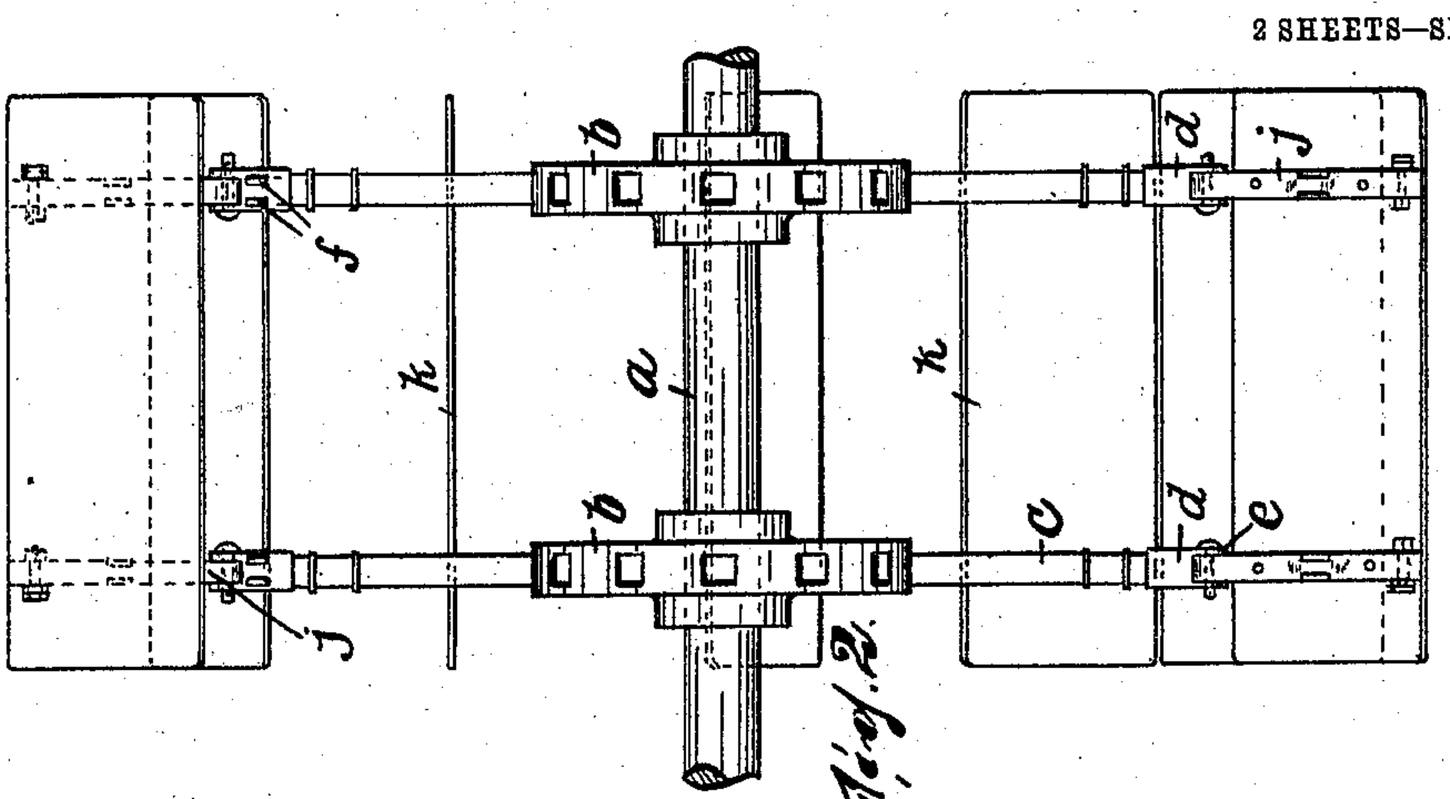

Fig. 2.

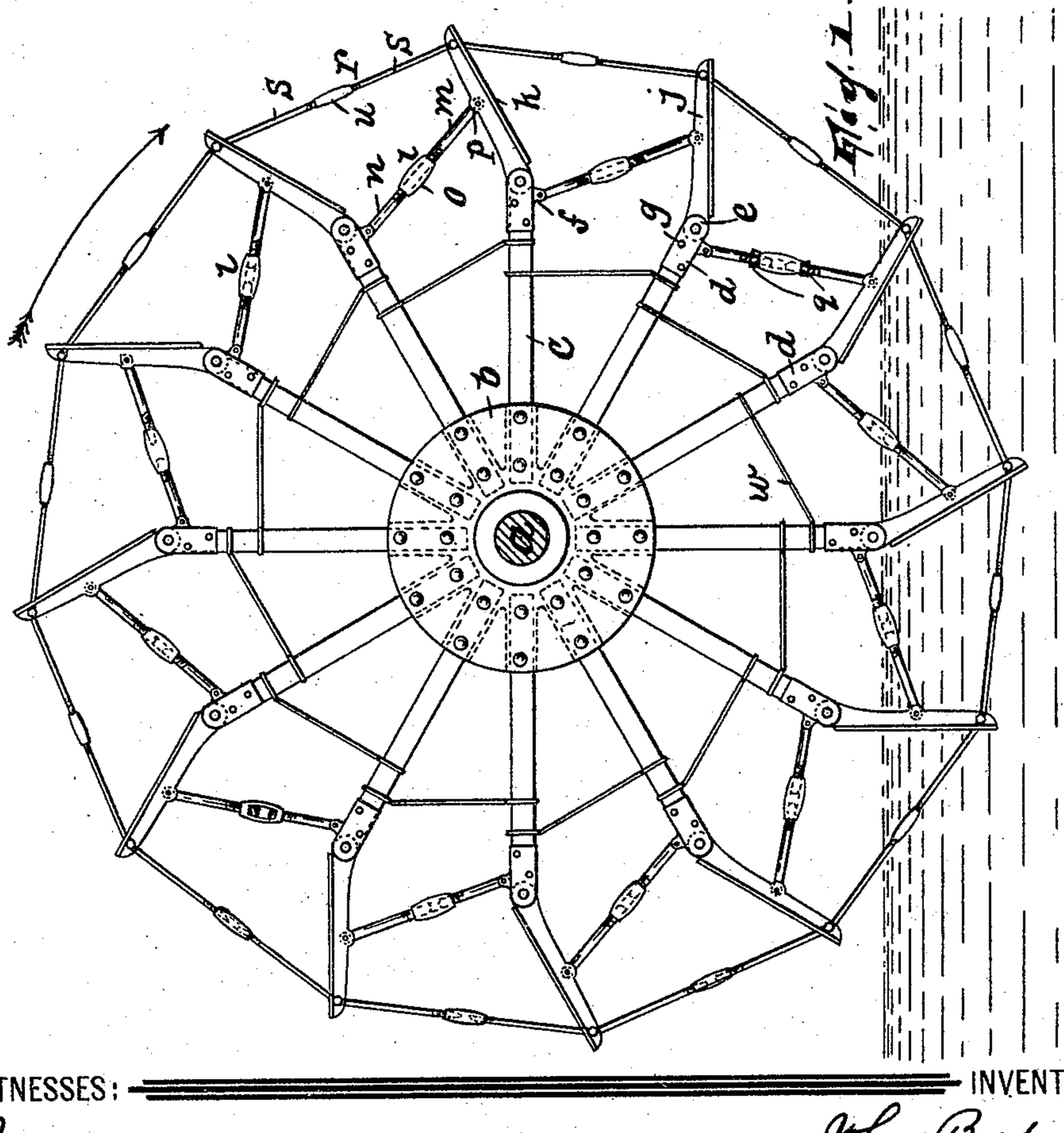

Fig. 1.

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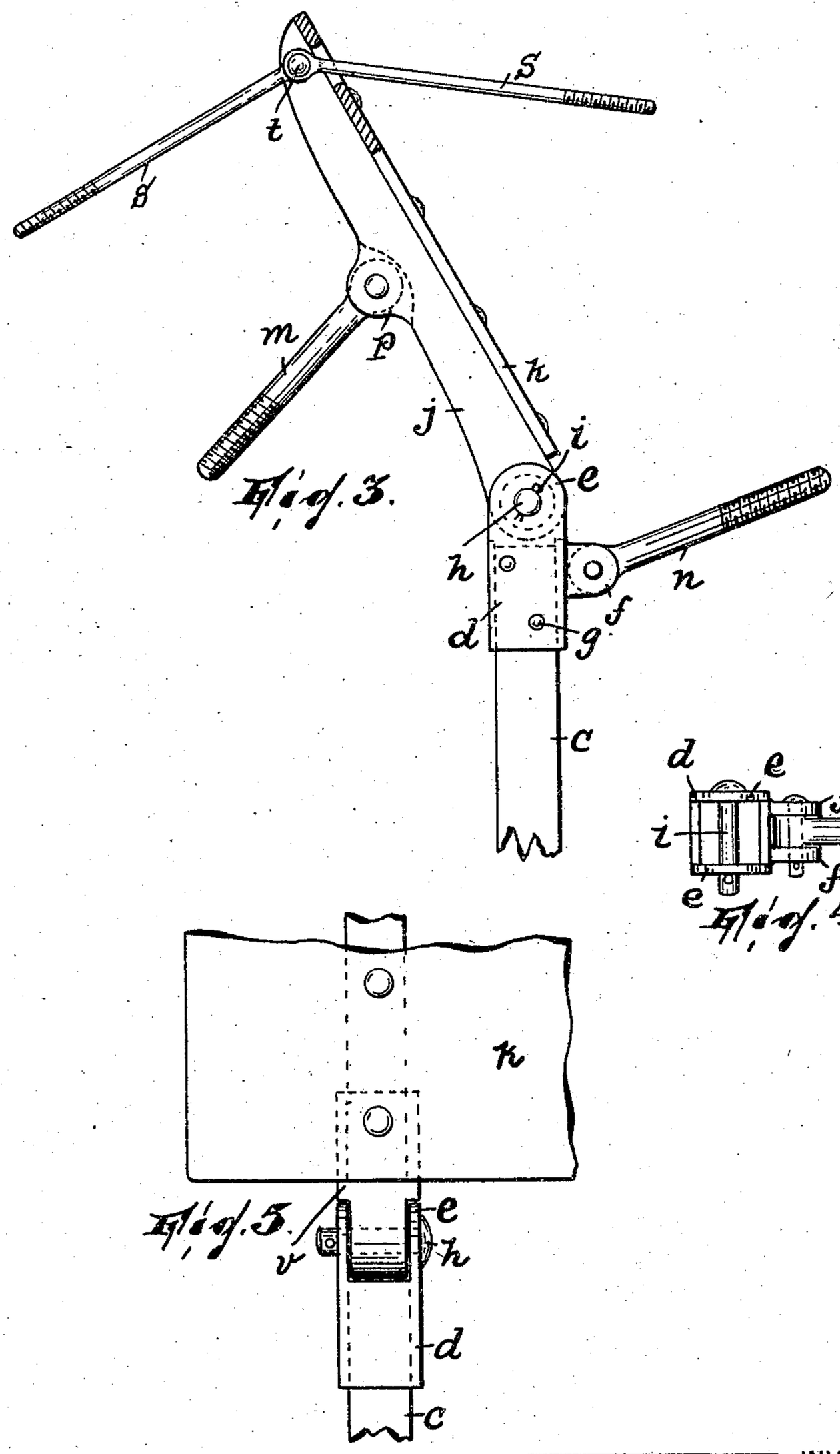

Fig. 3.

Fig. 4.

Fig. 5.

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No. 785,286. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

JOHN BEST, OF JEANNETTE, PENNSYLVANIA.

PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 785,286, dated March 21, 1905.

Application filed August 2, 1904. Serial No. 219,161.

To all whom it may concern:

Be it known that I, JOHN BEST, a citizen of the United States, residing in Jeannette, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Paddle-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to paddle-wheels; and it has reference particularly to paddle-wheels in which the blades or paddles proper are normally fixed—*i.e.*, non-feathering.

In the ordinary paddle-wheel having normally fixed blades or paddles said blades or paddles stand in radii of the wheel, with the result that they meet with undue resistance in leaving the water, as well as in entering it. Another type of paddle-wheel having normally fixed blades or paddles has been proposed in which each of said blades or paddles is arranged at an angle to the radius in which its corresponding spokes lie, so that when the wheel rotates it brings the paddles flat, or approximately so, against the surface of the water at the beginning of the stroke and causes them to leave the water substantially edgewise. This not only avoids the undue resistance with which the blades of ordinary paddle-wheels meet as they leave the water, but induces a buoying or lifting up of the vessel and a consequent decrease of draft, which is more or less, according to the speed maintained.

My invention consists in certain improvements in this last-mentioned species of paddle-wheels having fixed blades or paddles, such improvements having principally in view to make the wheel applicable to types of vessels varying in draft, size, or other features and to make possible the changing over of old wheels having radial blades or paddles into wheels having non-radial ones with the minimum of expense, inconvenience, and labor.

I have fully illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a view in side elevation of my improved paddle-wheel. Fig. 2 is a front view of the paddle-wheel, showing some of the paddles nearest the observer and their supporting-spokes removed. Fig. 3 is an enlarged detail view showing one of the blades or paddles and accessory mechanism. Fig. 4 is a plan view of a certain bracket in which each blade or paddle is pivotally supported, and Fig. 5 is a fragmentary view of the wheel, showing a modification.

a is the paddle-wheel shaft, and *b* suitable hubs fixed thereon and carrying radial spokes *c*. On the ends of these spokes are mounted metallic brackets *d*, which are preferably castings formed as sockets receiving the ends of the spokes, each being provided at its end with two lugs *e* and on one side with two other lugs, *f*. Said brackets *d* may be bolted or riveted in place on the spokes, as indicated at *g*. In each pair of lugs *e* is pivoted, by means of a pin *h*, which may be held in place by a cotter-pin *i*, an arm *j*. To each two corresponding arms *j* is secured a plate *k*, which may be of wood or metal, as desired, and which forms, with said arms *j*, the blade or paddle.

Mounted as above described the blades or paddles are pivoted to the spokes, and are hence adjustable to any angle relatively to the spokes, according to the nature of the craft.

In order to afford means for adjusting the paddles to any desired angle and for sustaining them firmly and positively where adjusted, the means now to be described is preferably employed.

l is a pair of adjustable braces which connects each paddle with the next following pair of spokes or other relatively rigid members, such as the brackets *d*, carried by said spokes. These braces comprise rods *m* and *n*, right and left hand threaded, respectively, joined by a turnbuckle *o*, the rod *m* being pivoted at its free end in a lug *p* on the corresponding arm *j* and the rod *n* being pivoted at its free end in the lugs *f* of bracket *d*. Lock-nuts *q* should be provided to hold the turnbuckles against loosening. In order to

further brace the blades or paddles, the ends of each two adjacent paddles may be connected by similar braces *r*, comprising right and left hand threaded rods *s*, pivoted on pins *t*, mounted in the arms *j* and connected by turnbuckles *u*. Should it be desired to make the arms *j* of wood instead of metal, they may be mounted in socket-pieces *v*, pivoted on the pins *h*. (See Fig. 5.)

That portion of the permanent or rigid structure of the wheel which comprises the spokes *c* is preferably braced by means of straps *w*, connecting the spokes, as best shown in Fig. 1.

A paddle-wheel constructed as herein described will be found to be not only light, durable, and strong in construction, but capable of varied adjustment without much inconvenience, according to the nature of the vessel to which it is to be applied or the particular conditions of the waters in which said vessel is to ply.

My invention can be readily applied to paddle-wheels having fixed radial blades by removing the blades, cutting off the ends of the spokes as far as necessary, and then attaching the brackets *d* thereto and the paddles and other parts involving my invention.

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

In a paddle-wheel, the combination of a hub structure, spokes projecting from said hub structure, blades or paddles, means for pivotally supporting said blades on the spokes, longitudinally-adjustable braces connecting each blade with one of the two next adjacent pairs of spokes, and adjustable bracing means connecting each two adjacent blades, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of July, 1904.

JOHN BEST.

Witnesses:
JAS. H. LAVUNCLE,
E. CLEAVENGER.