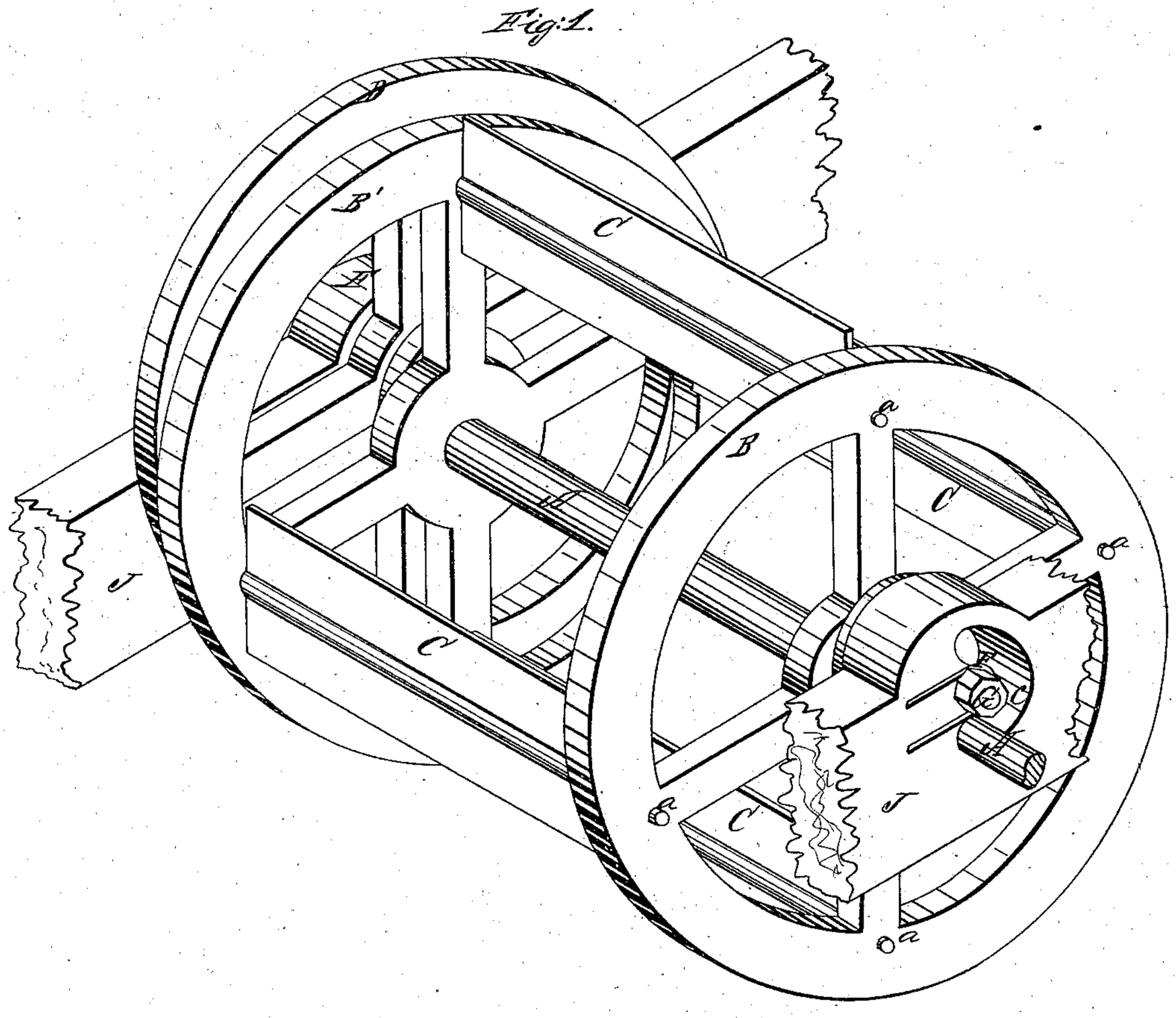
Sheet 1- 2 Sheets.

J. H. Hanchett,

Water Wheel,

No. 16,975. Patented Apr. 7, 1857.

Fig: 1.



Sheet 2 - 2 Sheets.

J. H. Hanchett

Water Wheel,

No. 16,975. Patented Apr. 7, 1857.

Fig: 2.

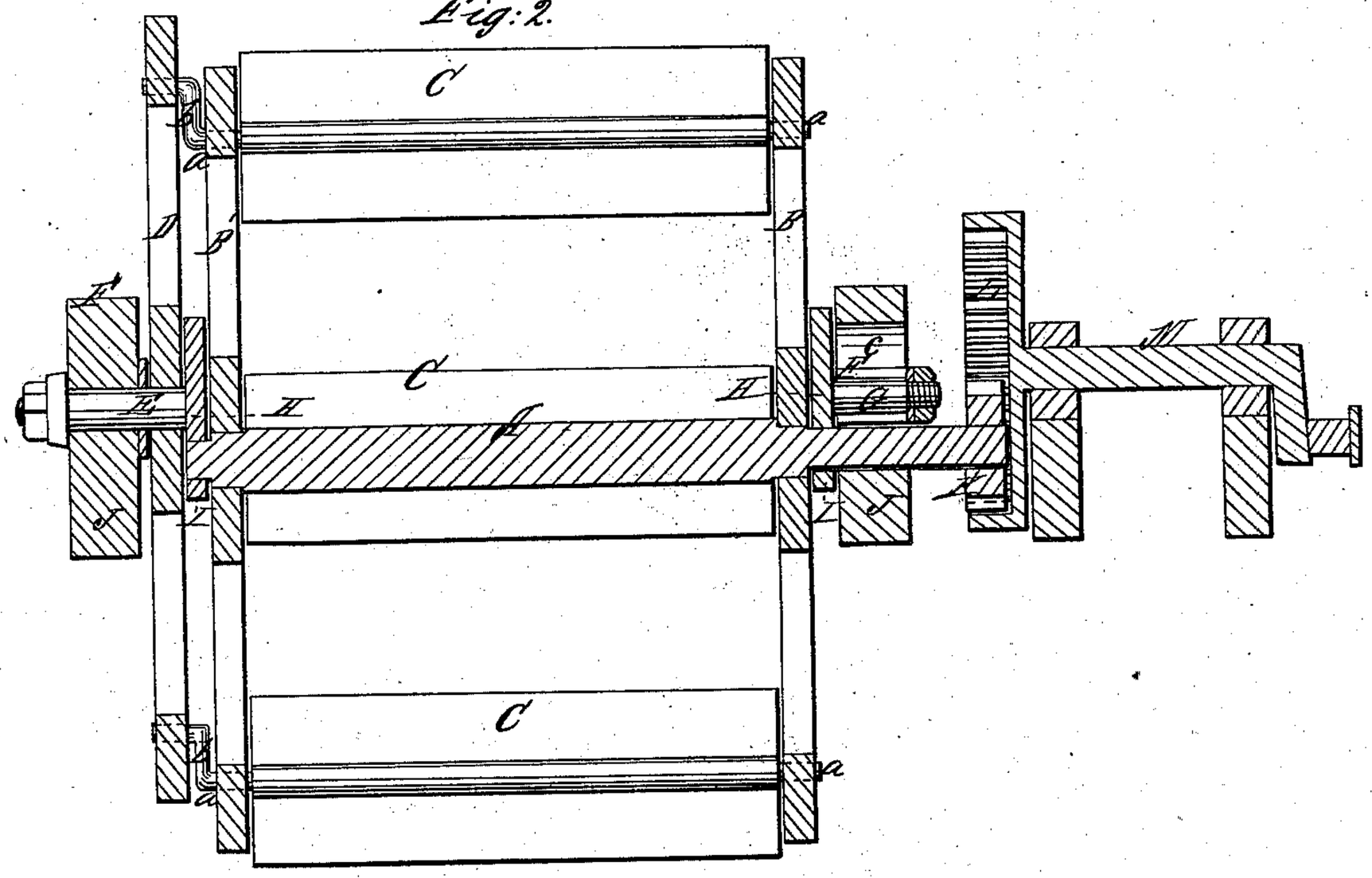
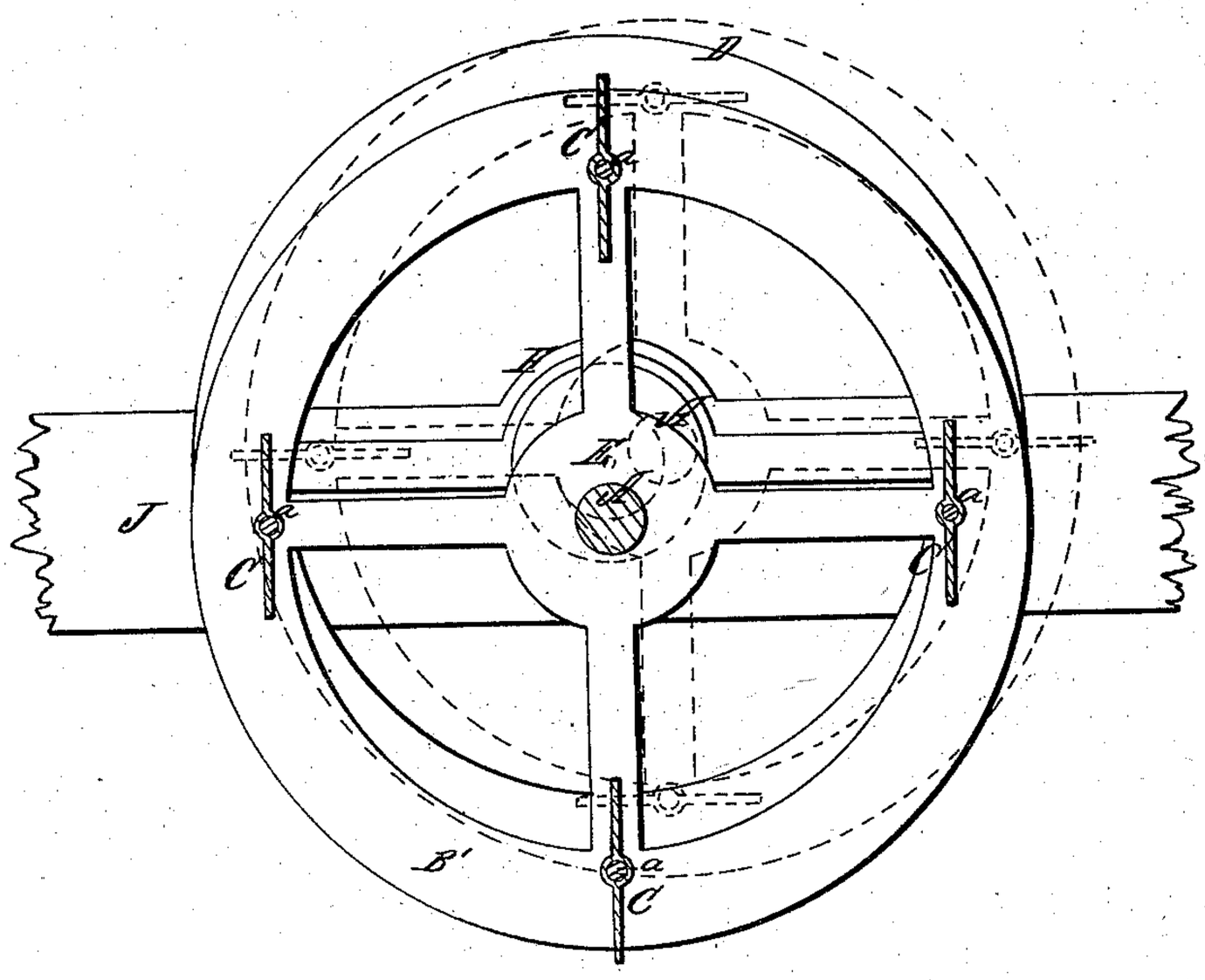


Fig: 3.



UNITED STATES PATENT OFFICE.

JAMES H. HANCHETT, OF BELOIT, WISCONSIN.

CURRENT AND PADDLE WHEEL.

Specification of Letters Patent No. 16,975, dated April 7, 1857.

To all whom it may concern:

Be it known that I, JAMES H. HANCHETT, of Beloit, in the county of Rock and State of Wisconsin, have invented a new and useful Improvement in Water-Wheels, (but Equally Applicable to Paddle-Wheels,) of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a perspective view of a feathering current wheel, embracing my improvement. Fig. 2, represents a vertical, longitudinal section of the same, showing the manner in which the wheel is suspended (by means of radius bars) and connected with the driving shaft; and Fig. 3, represents a vertical cross-section through the same, showing the position of the floats when the wheel is raised so that the radius bars are in a horizontal position.

My invention consists—

First, in suspending water and paddle wheels by means of radius bars so that they will be free to rise and fall by oscillating on the axes of the radius bars. A water wheel thus arranged will rise to allow obstructions to pass under it, and a paddle wheel, so arranged, will rise when it meets with sand-bars, or other analogous obstructions, to pass over them: after such obstructions are passed, the wheels resume their first positions. In all positions, whether rising or falling, the connection between the shaft of the wheel and the driving shaft is maintained.

Second. In making the axis of the radius bar also the axis of the float-holder (which turns the floats of the wheel), by which means the planes of the faces of the floats are maintained in a determinate relation to the radius bars, in all positions of the wheels, whether rising or falling.

The accompanying drawings represent a feathering current wheel embracing my improvement.

A horizontal shaft (A) has, attached to it at convenient distances apart, two circular frames (B and B′) which form the ends of the wheel and which support horizontal turning float-boards (C). These float-boards have central pivots (*a*) and are arranged at equal distances apart between the frames (B and B′) and turn in boxes near the outer edges of the frame. A second frame (D) which I call the float-holder whose axis is eccentric to the shaft (A) of the wheel is connected with the floats (C) by means of cranks (*b*) whose wrists are pivoted to this float-holder (D), and whose arms are attached to the pivots of the float-boards (C) in planes parallel to the faces of the floats. The eccentricity of the axis (E) of the float-holder (D) to the shaft of the wheel is equal to the length of the crank (*b*) by which the float-holder is connected with the floats. The floats are turned by the float holder as the wheel rotates, so that their faces are parallel to each other.

The manner in which the wheel is suspended, so that it is free to oscillate, is as follows: At each end of the wheel and in its supporting frame are located pillow-blocks (F) which support gudgeons (E G) to whose inner ends radius-bars (H) are attached. These radius bars, which are free to vibrate on the gudgeons (E G) as centers, carry pillow-blocks (I) at their lower ends for the support of the shaft (A) of the wheel. In these lower pillow-blocks (I) the journals of the shaft of the wheel turn while the wheel is free to oscillate with the radius bars (H) on the gudgeons (E G) as centers. In this instance as one (E) of the gudgeons forms the axis of the float holder, the radius bars (H) and the cranks (*b*) for turning the float-boards are both of the same length.

When the wheel is in its lowest position, the floats and radius bars are vertical; the wheel, as it rises and falls by oscillating on the axes of the radius bars, turns equally the radius bars and floats, so that their parallelism to each other is maintained in all positions of the wheel. The floats, whose inclination is changed by the rising or falling of the wheel, are maintained with their faces parallel to each other during the rotation of the wheel, by being turned by the float-holder, in the same manner that they were when vertical, when the wheel was in its lowest position. The shaft (A) of the wheel, in this case passes through a semicircular slot (*c*) in the frame (J) and has, attached to its end, a pinion (K) whose teeth engage with a wheel (L) toothed on its concave surface and attached to the end of a driving-shaft (M) which must be in a line with the gudgeons (E, G,) in order that the cogs may be in connection in all positions of the wheel whether rising or falling. If the connection between the shaft of the wheel and the driv-

ing-shaft is made by a universal joint, it is not important that the driving-shaft (M) and studs (E G) should be in line.

By the application of my improvement to current wheels they can be used in those streams in which there is drift-wood, logs or floating ice which would clog and render useless the ordinary current-wheel. The pressure of these materials under and against the face of my improved wheel, causes it to rise by swinging on the radius bars; the water-way beneath this becomes sufficiently enlarged to allow the drift to pass under and free the wheel, which then resumes its first position. The turning of the floats so as to continue parallel to the radius bars as the wheel rises, progressively increases the water-way beneath the wheel until the radius bars and floats attain a horizontal position, when the water-way has reached its maximum; being increased not only by the height to which the wheel has risen, but also, by the difference between half the width and the thickness of the float, (see Fig. 3,) the floats in this position, being turned within the sides of the wheel, are better protected from injury than when the wheel is down and they project below the sides.

The advantage of my improvement when applied to paddle wheels used in boats of light draft running in streams obstructed by bars, is that the dip of the paddle may exceed the draft of the boat, by which its propelling power is greatly increased in deep water and the boat is relieved from the weight of the wheel by its rising in order to pass over such obstructions when it touches the bottom in the shallow parts of the stream; by which the draft of the boat is materially diminished and it is enabled to pass the bars with great facility.

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

1. Suspending water and paddle wheels, by means of radius bars, substantially as described.

2. The method of maintaining the planes of the faces of the feathering floats of wheels that oscillate as herein described, in a determinate relation to the radius of oscillation of the wheel as described.

In testimony whereof, I have hereunto subscribed my name.

JAMES H. HANCHETT.

In presence of—
P. H. Watson,
Wm. D. Baldwin.