

Paddle Wheel.

No. 65023.

Patented May 21 1867.

Fig 2

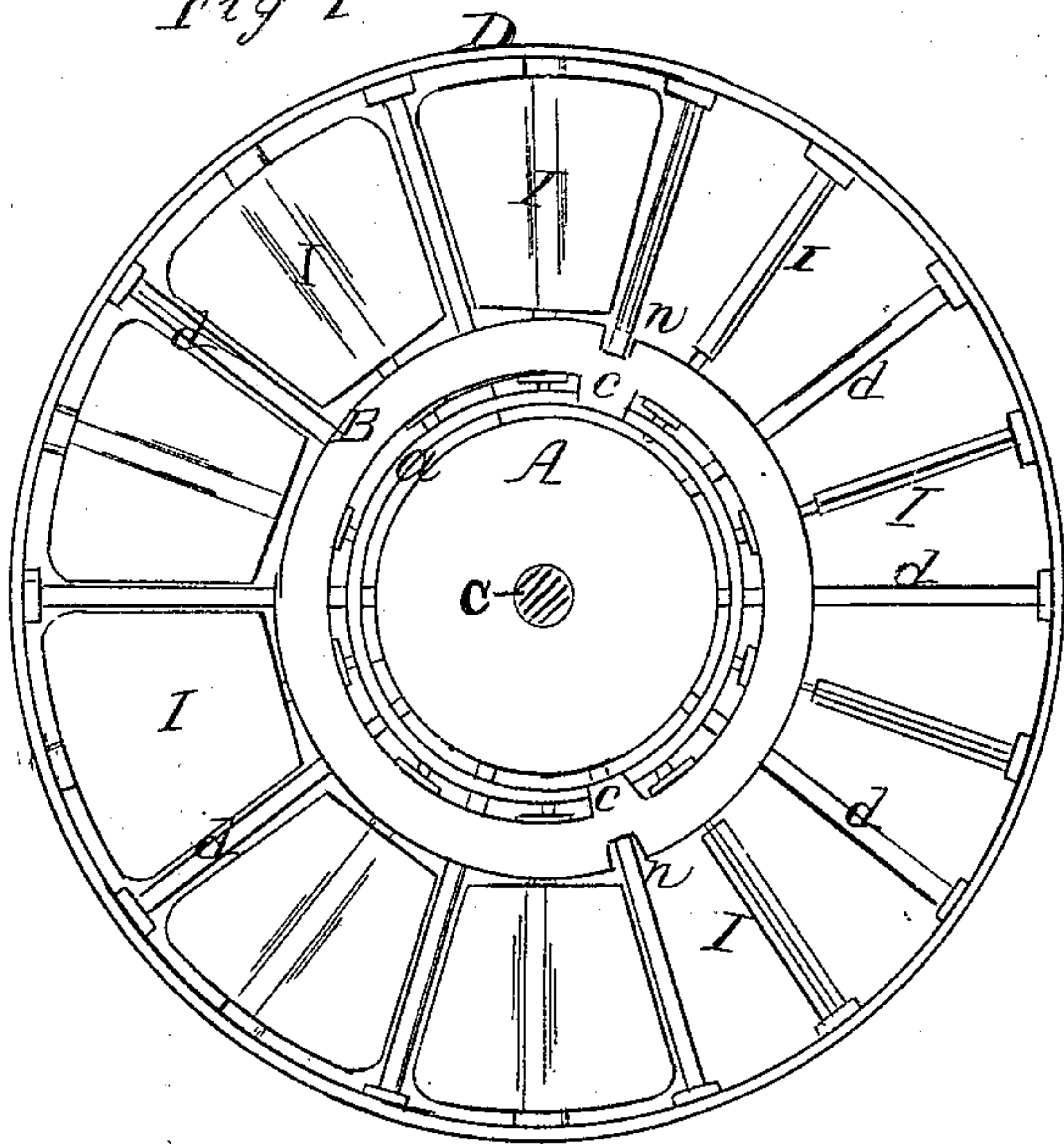


Fig. 2.

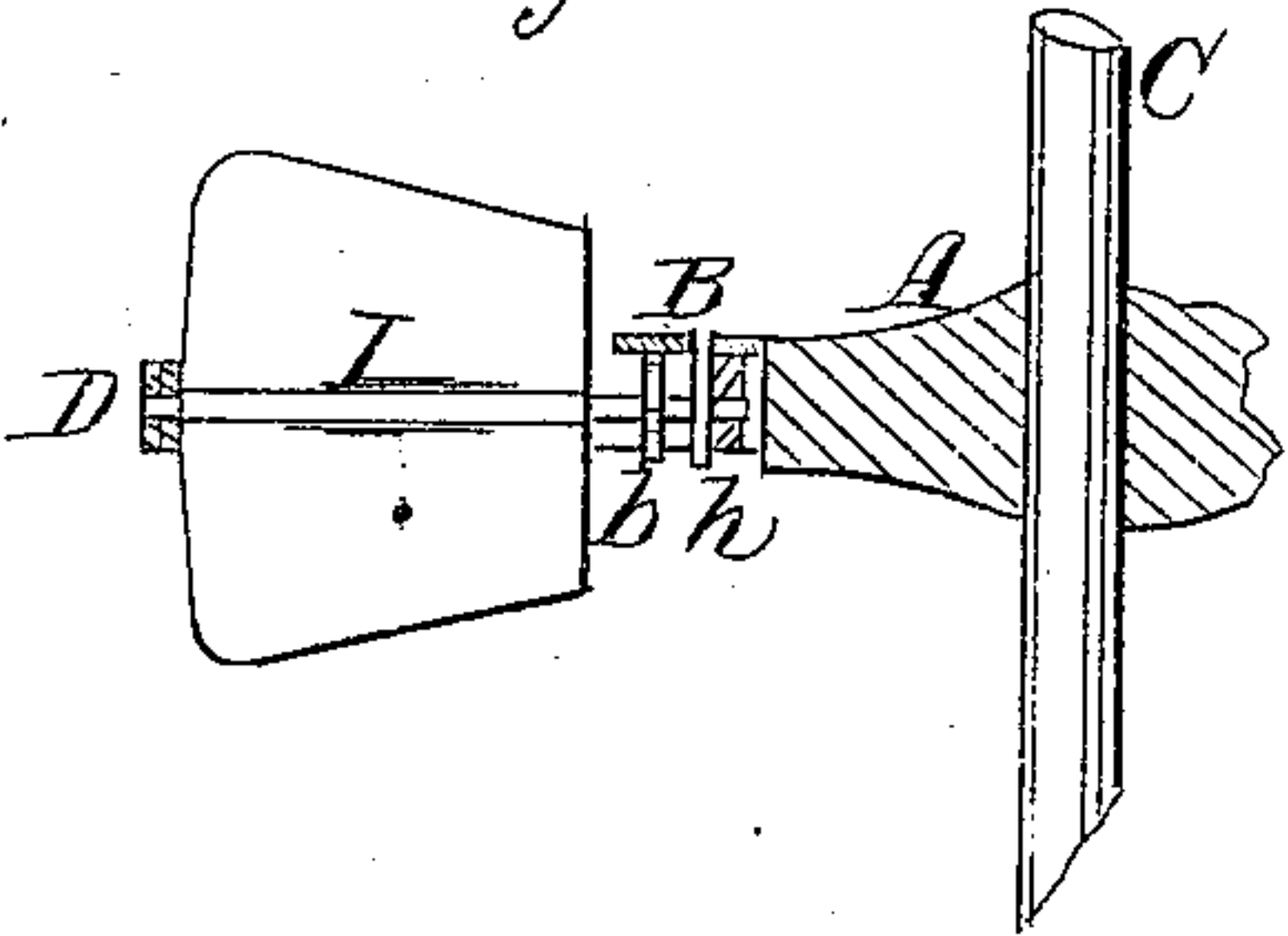


Fig. 3

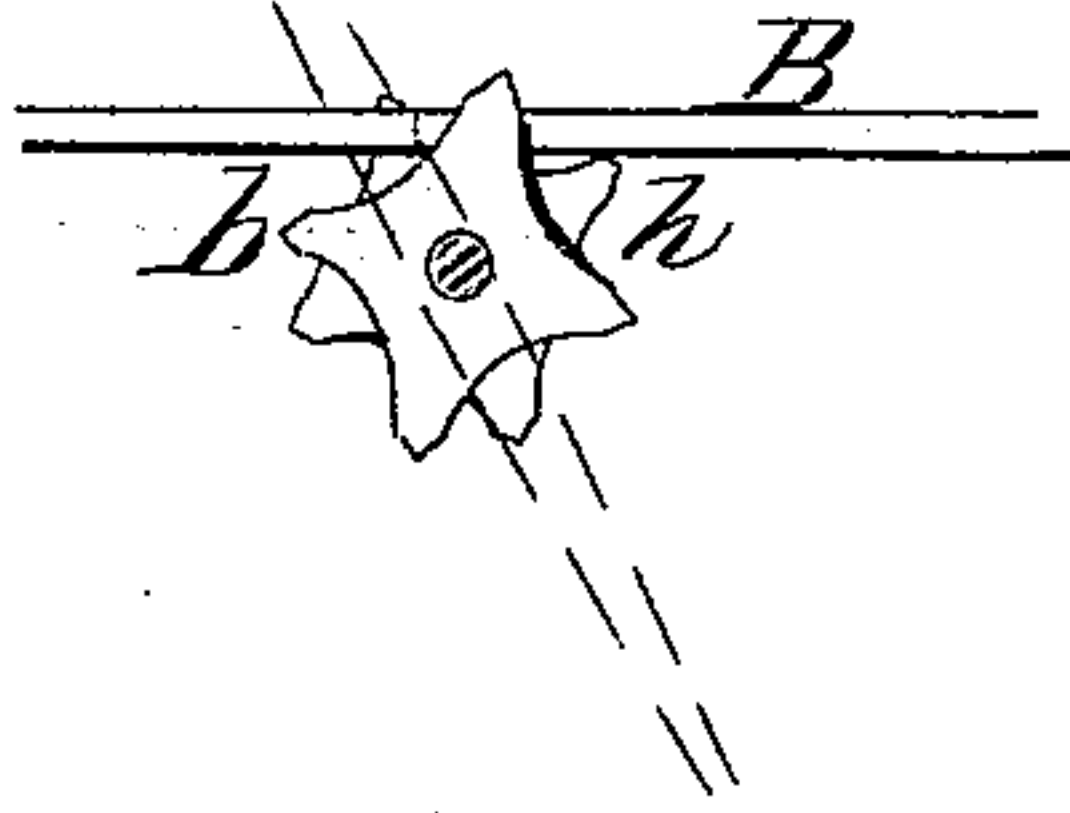
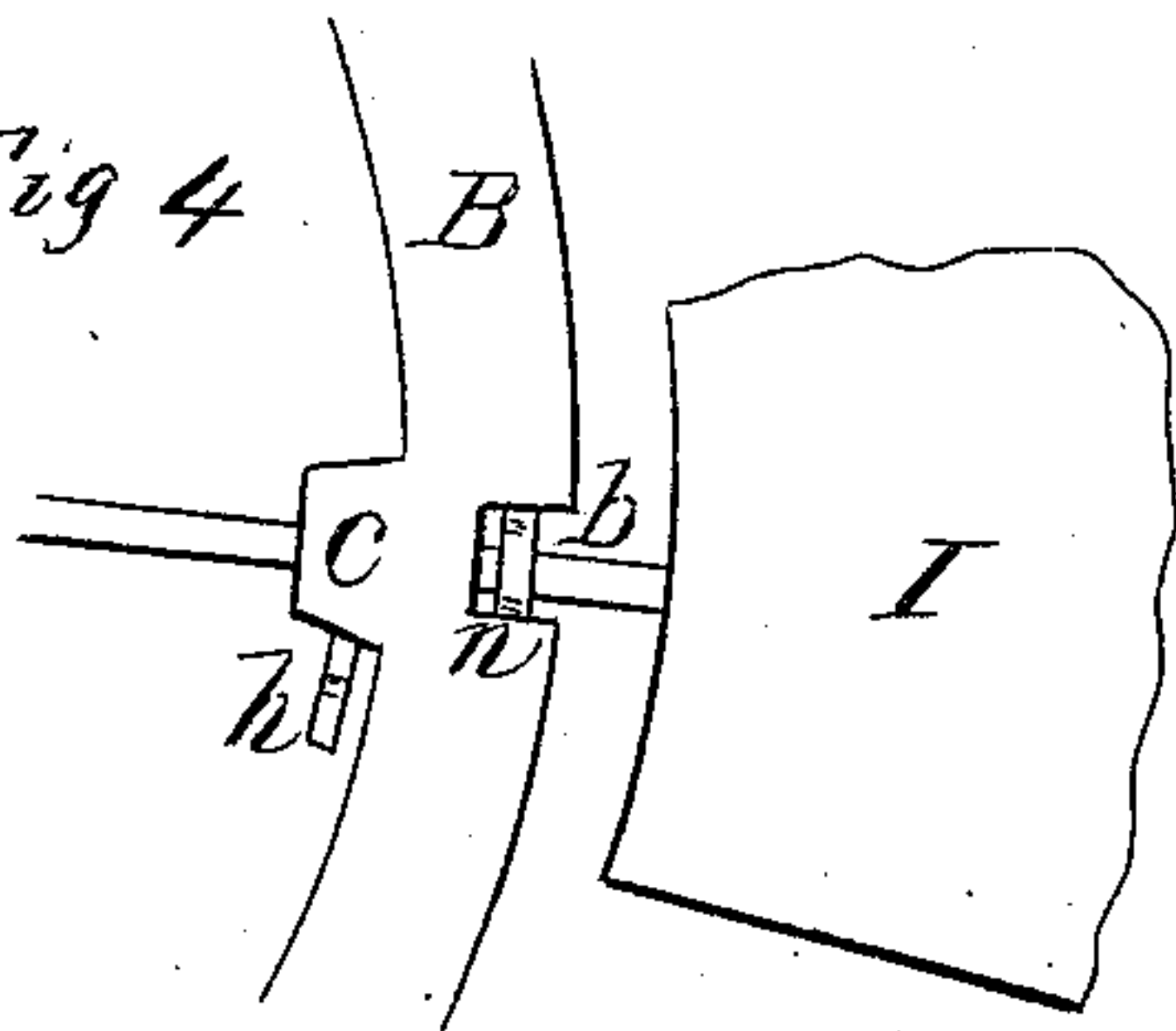


Fig 4



Witnesses
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ELIHU SPENCER, OF OTTAWA, CANADA WEST.

Letters Patent No. 65,023, dated May 21, 1867.

IMPROVED PADDLE-WHEEL.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ELIHU SPENCER, of Ottawa, in the county of Carlton, and Province of Canada West, have invented certain new and useful improvements in Feathering Paddle-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention consists in a novel manner of constructing feathering paddle-wheels for steam vessels, and of arranging the same for use.

Figure 1 is a top plan view of the wheel complete.

Figure 2, a transverse section of a portion of the same.

Figure 3, a side view of the feathering cams; and

Figure 4, a top view of a portion.

A represents the hub or central part of the wheel, mounted on a vertical shaft, C. From this hub A projects a series of radial rods, *d*, which support a ring, *a*, surrounding the hub, and also at their extremities another ring, D; these two rings *a* and D being placed edgewise, as represented in fig. 1. A flat ring, B, is secured permanently above the rods *d*, just outside of the ring *a*, as shown in fig. 1, this ring B being stationary. A series of buckets, I, is mounted between the rings *a* and D, and is hung on journals, so as to turn readily; these buckets being arranged radially around the hub A, as shown in fig. 1. To the inner end of the journal of the buckets is secured a cam, *b*, the shape of which is shown in fig. 3. This cam is so located as to be directly under the flat ring B, which has cut in it two notches *n*, as shown in figs. 1 and 4, into which notches the point of the cam *b* will enter as the wheel revolves, as will be hereinafter explained. On the opposite edge of the ring B is a projection, *c*, directly opposite to the notch *n*, and another cam *h* is secured to the journal of the bucket I, just inside of the ring B, so that, as the wheel revolves, one of the points of this cam *h* will strike against this projection *c*, as shown in fig. 4.

The result of this construction and arrangement of parts is as follows: The wheel being put in motion, the buckets I will remain in a horizontal position while passing from one to the other of the notches *n*, the two points of the cam *b* sliding along in contact with the under side of the ring, and thus holding the bucket I in that position. As they arrive at the notch *n* the point of the inner cam *h* first strikes against the projection *c*, which gives to the bucket an eighth of a turn, and immediately thereafter the point of the outer cam *b* enters the notch *n*, and striking against the edge of the ring B at one side of the notch, as shown in figs. 3 and 4, gives to the bucket another eighth of a turn, and brings it to a vertical position, in which position it is held by the two upper points of the cam *b*, which slide along in contact with the under surface of the ring B until they arrive at the notch on the opposite side of the ring, where the same operation is repeated, by which the bucket is brought into a horizontal position again, and so remains until it arrives at the first notch again.

Thus it will be seen that each of the buckets is feathered independently, as it passes the point where the projection *c* and notch *n* on the ring B are located. These notches and projections may be located at any desired point on the ring B, and thus the buckets may be made to assume the vertical position during such portion of the revolution of the wheel as may be desired. It is also obvious that the location of the notches and projections may be reversed; that is to say, the notch may be placed on the inner edge of the ring B, and the projection on the outside, and the effect be the same.

In applying my improved wheel, it may be used in the form of an ordinary paddle-wheel; but I prefer to locate it horizontally below the water-line, with its inner side fitting into a recess formed for it in the side of the vessel. By having a wheel thus arranged on each side, a vessel may be turned as on a pivot, by revolving the two wheels in opposite directions. This plan is especially useful in war vessels, as the wheels, being thus located some distance below the water-line, will be protected from injury from shots. Another advantage is, that with wheels thus located the rolling of the vessel will not raise the wheels out of the water, and hence there will be no danger of injuring or disarranging the machinery from that cause, as is so frequently the case with the ordinary paddle-wheels.

Having thus described my invention, what I claim is—

The pivoted buckets I, provided with the cams *b* and *h*, and arranged to operate in connection with the stationary ring B, having the notches *n* and projections *c* formed thereon, substantially as shown and described.

ELIHU SPENCER.

Witnesses:

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H. S. BOYD.