

J. S. MORGAN.  
Feathering Paddle-Wheels.

No. 158,509.

Patented Jan. 5, 1875.

Fig. 1.

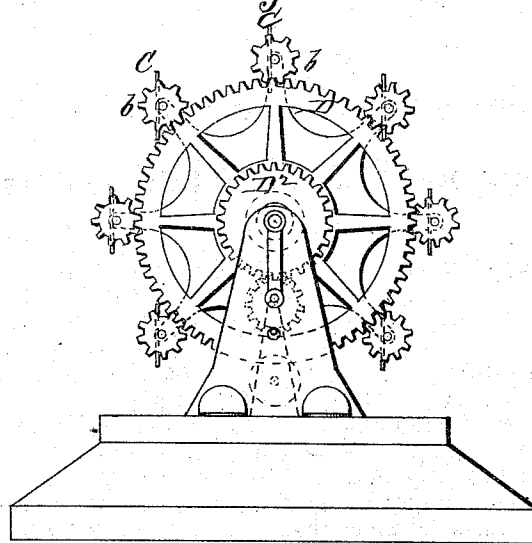
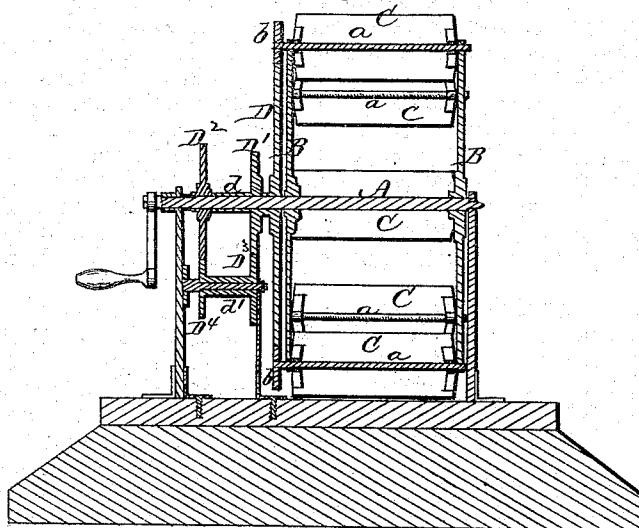


Fig. 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN S. MORGAN, OF HAZLETON, INDIANA.

## IMPROVEMENT IN FEATHERING PADDLE-WHEELS.

Specification forming part of Letters Patent No. **158,509**, dated January 5, 1875; application filed October 27, 1874.

*To all whom it may concern:*

Be it known that I, JOHN S. MORGAN, of Hazleton, in the county of Gibson and in the State of Indiana, have invented certain new and useful Improvements in Automaton Feathering Boat-Wheel; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of an automatic feathering paddle-wheel, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation of my wheel, and Fig. 2 is a longitudinal vertical section of the same.

A represents the central shaft of my wheel, upon which are secured two heads, B B, of any suitable construction. At regular intervals between these heads, at their outer edges, are placed the buckets or paddles C C, each being pivoted in the heads by means of a rod, *a*, fastened to the bucket and having its bearings in the heads. Upon one end of each rod *a* is secured a pinion, *b*, and all these pinions gear with a large cog-wheel, *d*, which is placed loosely on the shaft A outside of the paddle-wheel. This cog-wheel D has a sleeve or hub, *d*, extending from its center, upon which is secured a smaller cog-wheel, D<sup>1</sup>. A third cog-wheel, D<sup>3</sup>, is secured on the shaft A at the

outer end of the sleeve *d*. The two cog-wheels D<sup>1</sup> D<sup>2</sup> gear, respectively, with two cog-wheels, D<sup>3</sup> and D<sup>4</sup>, secured on a sleeve, *d'*, placed on a counter-shaft, *e*. This shaft, with its sleeve and cog-wheels, may be placed above or below or on either side of the cog-wheels D<sup>1</sup> D<sup>2</sup>, as may be most convenient.

The gear-wheels D<sup>1</sup>, D<sup>2</sup>, D<sup>3</sup>, and D<sup>4</sup> are relatively of such size that when the wheel is in motion the buckets or paddles C C will always retain a vertical position. As the wheel is revolved the cog-wheel D<sup>2</sup> revolves the wheels D<sup>4</sup> D<sup>3</sup>, and the wheel D<sup>3</sup> revolves the wheels D<sup>1</sup> D. The large wheel D, by means of the pinions *b b*, turns the buckets or paddles in such a manner that they will retain their vertical position while the wheel revolves.

The number of gear-wheels may be reduced by forming the wheel D<sup>1</sup> on the wheel D, and making the wheels D<sup>3</sup> D<sup>4</sup> in one wheel.

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

The combination, with the shaft A and heads B B, of the pivoted buckets or paddles C C, with pinions *b b*, the gear-wheels D D<sup>1</sup> placed loosely on the shaft, the gear-wheel D<sup>2</sup> secured to the shaft, and the gear-wheels D<sup>3</sup> D<sup>4</sup> placed on a counter-shaft, *e*, all constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of October, 1874.

JOHN S. MORGAN.

Witnesses:

E. J. HOWARD,  
P. H. CURTNER, M. D.