J. NOLAN.

Water-Wheels.

No. 137,146. Patented March 25, 1873.

Fig. 1.

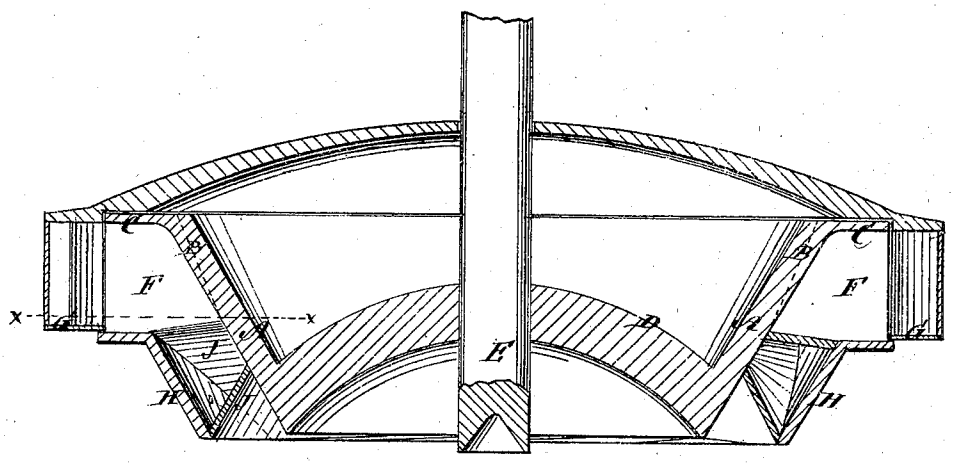


Fig. 2.

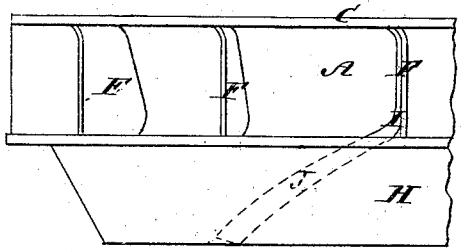
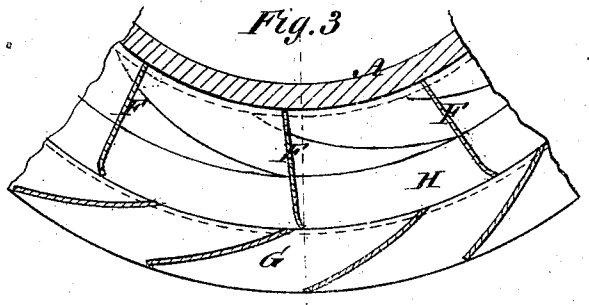


Fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN NOLAN, OF WADDINGTON, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **137,146**, dated March 25, 1873.

To all whom it may concern:

Be it known that I, JOHN NOLAN, of Waddington, in the county of St. Lawrence and State of New York, have invented a new and Improved Water-Wheel, of which the following is a specification:

My invention consists of the arrangement of an inside and an outside conical rim and buckets, hereinafter described, by which it is designed to have the water received by flat surfaces, at right angles to the direction in which it enters at the peripheries tangentially through chutes above the outer rim and below a horizontal flange of the inner rim, and to act mainly upon the periphery of the wheel in escaping over the lower portion of the buckets by being thrown upon the outer rim whereon it acts as upon the buckets.

Figure 1 is a transverse sectional elevation of my improved wheel; Fig. 2 is a partial side elevation; and Fig. 3 is a partial horizontal section taken on the line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A is the inner rim, which may be constructed either on the true conical line represented in the drawing, or the upper portion may be made more acute, as indicated by the dotted lines B. At the top is a horizontal flange, C, extending outwardly to inclose the buckets thereat. Below it connects with a concave disk, D, by which it is attached to the shaft E. F represents the upper portion of the buckets, which are vertical to the bottom of the chutes G, and sufficiently tangential to the axis of the wheel to be at right angles to the water-columns flowing through the chutes, so that the greatest resistance will be offered to it, and, consequently, the best effects obtained. The outer edges of the buckets are for this reason made to curve forward a little more than the inner edges do. Below the chutes the buckets join onto the outer rim H, and then turn backward by an abrupt curve at I, descending to the bottom in the parts J, and also descending from the inner rim to the outer one, so that at the lower ends they become vertical and tangential to the inner rim, being in the form of the convex side of a spirally-curved plate on the upper side, by which the water is thrown mainly upon the outer rim after it passes from the place where it acts directly on the buckets as it emerges from the chutes. The outer rim is parallel with the inner one, and thereby the water is discharged near the center of the wheel. The object of forming the upper portion of the rim A on the more acute line B is to increase the capacity of the wheel where the water is received upon the buckets.

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

The combination of the conical rims A and H, and the buckets F I J, all being constructed and arranged substantially as represented in the drawing.

JOHN NOLAN.

Witnesses:
S. J. DEWEY,
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