

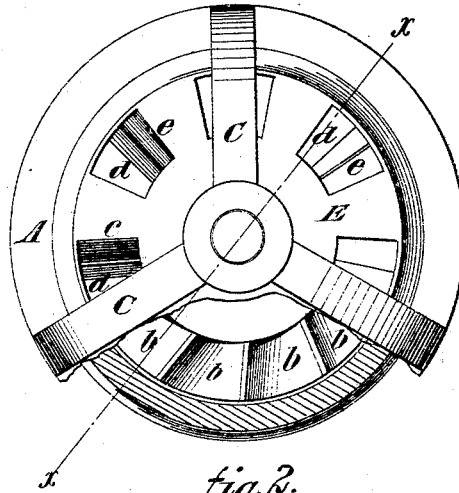
J. ANDREWS & W. BROWN.

TURBINE WATER-WHEEL.

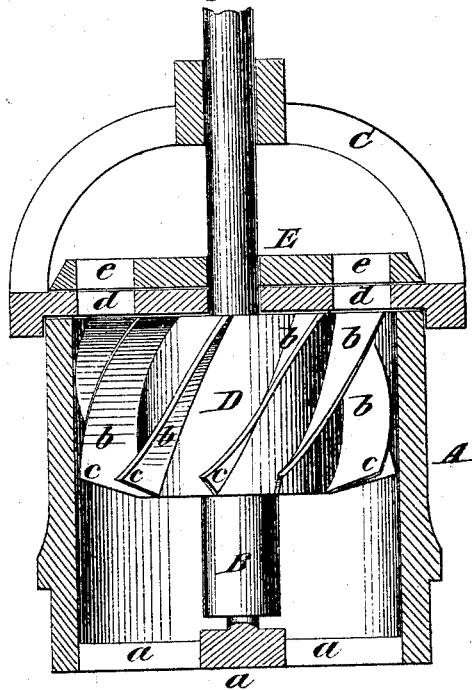
No. 185,467.

Patented Dec. 19, 1876.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

*Christave Dietrich*  
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INVENTOR:

*J. Andrews.*  
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# UNITED STATES PATENT OFFICE

JAMES ANDREWS AND WILLIAM BROWN, OF THOMASTON, GEORGIA.

## IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. **185,467**, dated December 19, 1876; application filed August 7, 1876.

*To all whom it may concern :*

Be it known that we, JAMES ANDREWS and WILLIAM BROWN, of Thomaston, Upson county, Georgia, have invented a new and Improved Turbine Water-Wheel, of which the following is a specification :

Figure 1 is a top view with a portion broken away to show the interior, and Fig. 2 is a vertical section on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The invention will first be fully described in connection with drawing, and then pointed out in claim.

A is the turbine-casing, having the cross-pieces *a a* supporting a step, upon which the shaft B rests. The shaft B passes through the upper portion of the casing A, and has a bearing in the spider or yoke C. A hub, D, is attached to the shaft B, and carries a number of spiral buckets, *b*, which are twisted in the form of a section of an auger-blade, and are cut at their lower ends at a slight angle, leaving the outer end of the lower edge higher than the inner or attached edge, as shown at C. In the top of the casing are a number of

apertures, *d*, that pass diagonally through the top, the sides of the apertures being inclined in a direction opposite to that of the buckets *b*. A circular gate, E, having apertures, *e*, corresponding with the apertures in the casing-top, is bored in the center to admit the shaft B, and is placed on the top of the casing A. It is capable of turning so as to partially or wholly close the aperture *d*.

The advantage claimed for our invention is that the wheel described having the spiral buckets and diagonal apertures in the top of the casing will yield a greater percentage of power than those now in use.

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

The described turbine-wheel, provided with buckets turned up and cut away at the escapement, substantially as and for the purpose specified.

JAMES ANDREWS.  
WILLIAM BROWN.

Witnesses :

CHAS. T. FOX,  
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