

*E. Emerson,*

*Water Wheel.*

*No. 105929.*

*Patented Aug. 2. 1870.*

Fig. 1.

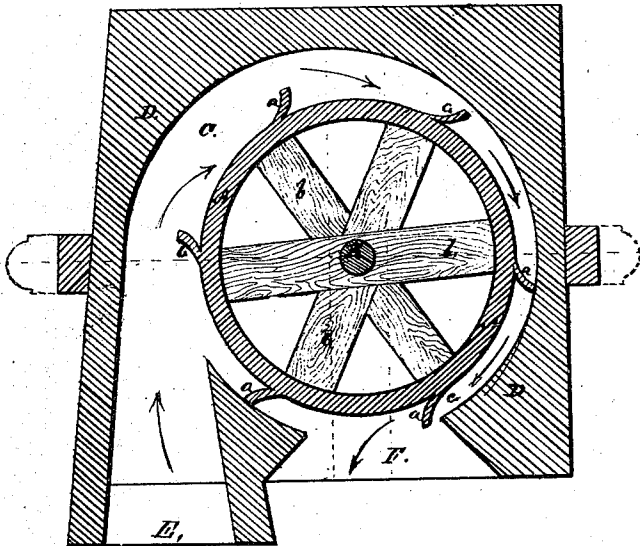
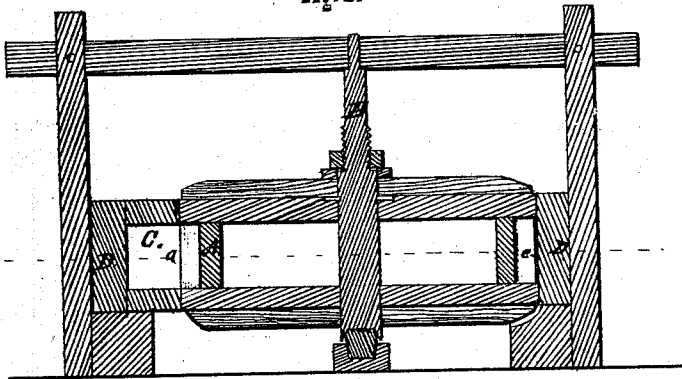


Fig. 2.



Witnesses.

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# United States Patent Office.

ENOS EMERSON, OF SMITHPORT, PENNSYLVANIA.

Letters Patent No. 105,929, dated August 2, 1870.

## IMPROVEMENT IN TURBINE WATER-WHEELS.

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, ENOS EMERSON, of Smithport, in the county of McKean and State of Pennsylvania, have invented a certain new and useful Improvement in a species of Turbine Water-Wheels known as Emerson's Champion Water-Wheel; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents a plan or top view of the wheel, with the cap or cover removed, showing the inlet and outlet, and the space where the water acts on the wheel.

Figure 2 shows a vertical front view of the same in section.

The object of my invention is a cheap, durable, and very efficient water-power for running any kind of machinery for milling or manufacturing purposes, and will run equally well out of or submerged under water; and

It consists in the form and construction of the wheel, the position of the buckets, and the space for confining and compressing the water to the rim of five-sixths of the circumference of the wheel.

To enable others to make and use my champion water-wheels, I will describe the construction and operation more fully, referring to the drawing and the letters marked thereon.

The body of the wheel A may be made of wood or of cast metal, the arms *b b b* made thin, and double-knife edged, so as to cut freely through the water when the wheel and case D, in which it runs, is submerged.

The leaves or buckets *a a a*, are made curved, and set inclined back, to go in the direction with the current of the water as it flows through the circular spiral passage, C, when it is confined in the case D, and compressed against the rim A, five-sixths of its circumference, the entrance E to the passage C being

at least five times greater than the space *c* at the outlet F, which is one-sixth of the size of the circumference of the wheel.

The wheel A may be made of any required size; the greater the diameter the greater will be the leverage, as the water is confined further from the center, and acts entirely on the circumference, or outside of the rim. The force of the same amount of water is much greater than when it is discharged centrally, and the wheel runs more steadily, by being compressed nearly all the way round, and, when submerged, comparatively loses but little of its force, thereby possessing great advantages over the ordinary turbine water-wheels in a cold, freezing climate, only requiring the vertical shaft B to be liberated from the ice to start the machinery.

My improved mode of constructing the champion water-wheel, and the case in which it runs, has been thoroughly tested for nearly two years, and demonstrates the fact that more force is obtained from a given quantity of water under the same head than from any other wheel that has ever yet come to my knowledge.

Having thus fully described my invention,

What I claim, and desire to secure by Letters Patent, is—

The wheel A, with its concave, back-inclined wings or buckets *a a a*, as constructed, when arranged to operate in the case D, having a water-passage, C, which diminishes in size from the inlet E to the outlet F, thereby compressing the flow of water onto a large portion of the circumference of the wheel, as herein described.

In testimony whereof I have hereunto set my hand in presence of—

ENOS EMERSON.

Witnesses:

P. FORD,  
CLARA FORD MCCOY.