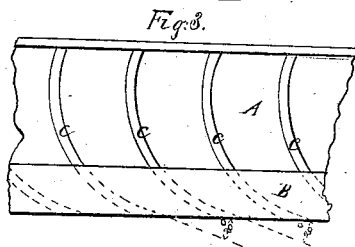
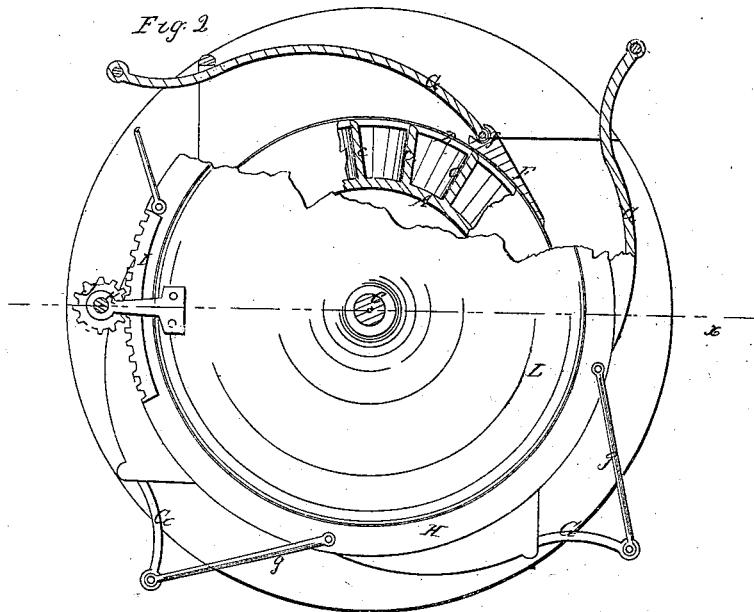
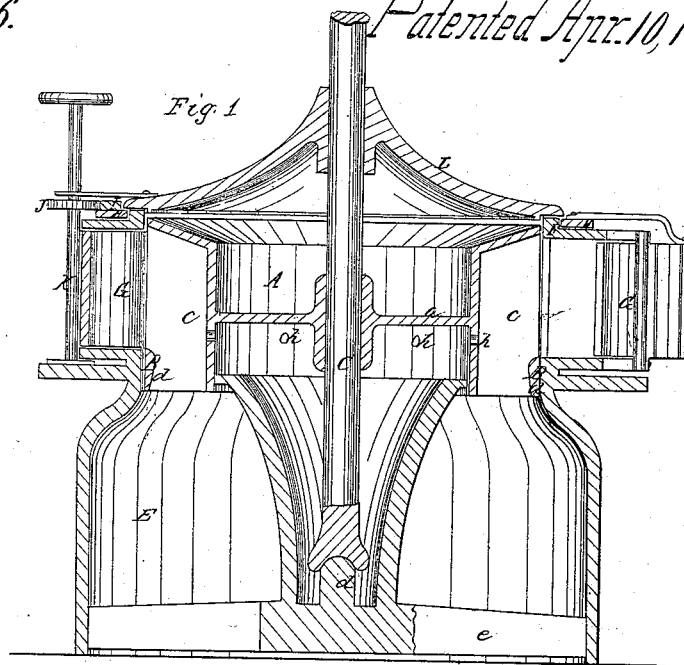


H. VanDewater, Water Wheel.

N^o 53,906.

Patented Apr. 10, 1866.



Witnesses
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Geo. F. J. J. J.

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By *[Signature]*
Attorney

UNITED STATES PATENT OFFICE.

HENRY VAN DEWATER, OF BUFFALO, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 53,906, dated April 10, 1866.

To all whom it may concern:

Be it known that I, HENRY VAN DEWATER, of Buffalo, in the county of Erie and State of New York, have invented a new and Improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same, partly in section; Fig. 3, a detached side view of a portion of the wheel.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved water-wheel of the class commonly termed the "Jouval turbine;" and it consists in a peculiar construction and arrangement of the buckets and their application to the wheel, and in a means for relieving the lower end of the wheel-shaft and step from the weight of the wheel, as well as in a peculiar arrangement of gates, all of which are hereinafter fully shown and described, whereby it is believed that many advantages are obtained over other wheels of the same class in use.

The wheel is composed of a hollow cylinder, A, having a central horizontal partition-plate, *a*, and an inclined flange, *b*, at its upper end, said flange projecting outward and upward from the top of the cylinder, as shown clearly in Fig. 1. The buckets *c* extend from this flange *b* down to the lower end of A, and are of cycloidal form, as shown in Fig. 3, and have such a position on the exterior of the cylinder A as to cause the water to be discharged from them at an angle of twenty degrees.

The outer edges of the buckets, at their lower parts, are encompassed by a band, B, the inner surface of which is inclined or beveled, as shown at *d* in Fig. 1, so as to cause the water to be discharged from the wheel at an angle of about five degrees.

C is the wheel-shaft, to which the wheel is keyed at the center of the partition-plate *a*. The lower end of this shaft rests on a bearing or step, *d*, at the lower end of an inverted con-

ical chamber, D, which rests on horizontal arms *e*, attached to the lower end of the draft-pole E.

At the upper end of the draft-tube the cylinder F is located, which encompasses the wheel. This cylinder is provided with four gates, G, which work at one end on rods *f*, and are connected at their opposite ends by bars *g* to a ring, H, which encompasses the upper part of cylinder F. This ring H has a toothed segment, I, attached to it, into which gears a pinion, J, on a shaft, K, and by turning this shaft the gates are opened and closed simultaneously, as will be fully understood by referring to Fig. 2.

In the cylinder A of the wheel, below the partition-plate *a*, there are made openings *h*, through which water passes into said cylinder and chamber D, the upper end of the latter being fitted as snugly as may be within the lower part of the cylinder. (See Fig. 1.)

The wheel is covered by a cap, L, which is bolted to the upper part of cylinder F. The wheel-shaft C passes up through the center of this cap, as shown clearly in Fig. 1.

By having the buckets *c* of the wheel curved as shown, and the band B beveled or inclined at its inner side, the water is made to act in the most favorable manner upon them, and a large percentage of the effective force of the water obtained. The lower bearing of the wheel-shaft is relieved from the weight of the wheel by the buoyancy or pressure of the water passing through the openings *h* and filling the lower part of cylinder F and chamber D.

The amount of water admitted to the wheel may be regulated with the greatest nicety by means of the gates, any proper number being used, according to the size of wheel, with the greatest facility, owing to the manner in which they are arranged, as there is a good leverage power obtained.

In the action of the water upon the buckets, it will be observed that the inclined flange *b* has a tendency to throw the water outward and downward, giving it the proper direction to act favorably upon the buckets.

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

1. The cycloidal buckets *c*, applied to the wheel, in connection with the inclined flange *b* at the top of the wheel and the band *B* at the outer edges of the lower part of the buckets, provided with an inner inclined or beveled surface, substantially as set forth.

2. Constructing the cylinder *A* of the wheel with a horizontal partition, *a*, in connection

with openings *h*, made in said cylinder below the partition, and the chamber *D*, in which the wheel-shaft *C* is stepped, substantially as and for the purpose specified.

HENRY VAN DEWATER.

Witnesses:

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