No. 82,225. PATENTED SEPT. 15, 1868.

J. HOYT.
WATER WHEEL.

Fig: 1

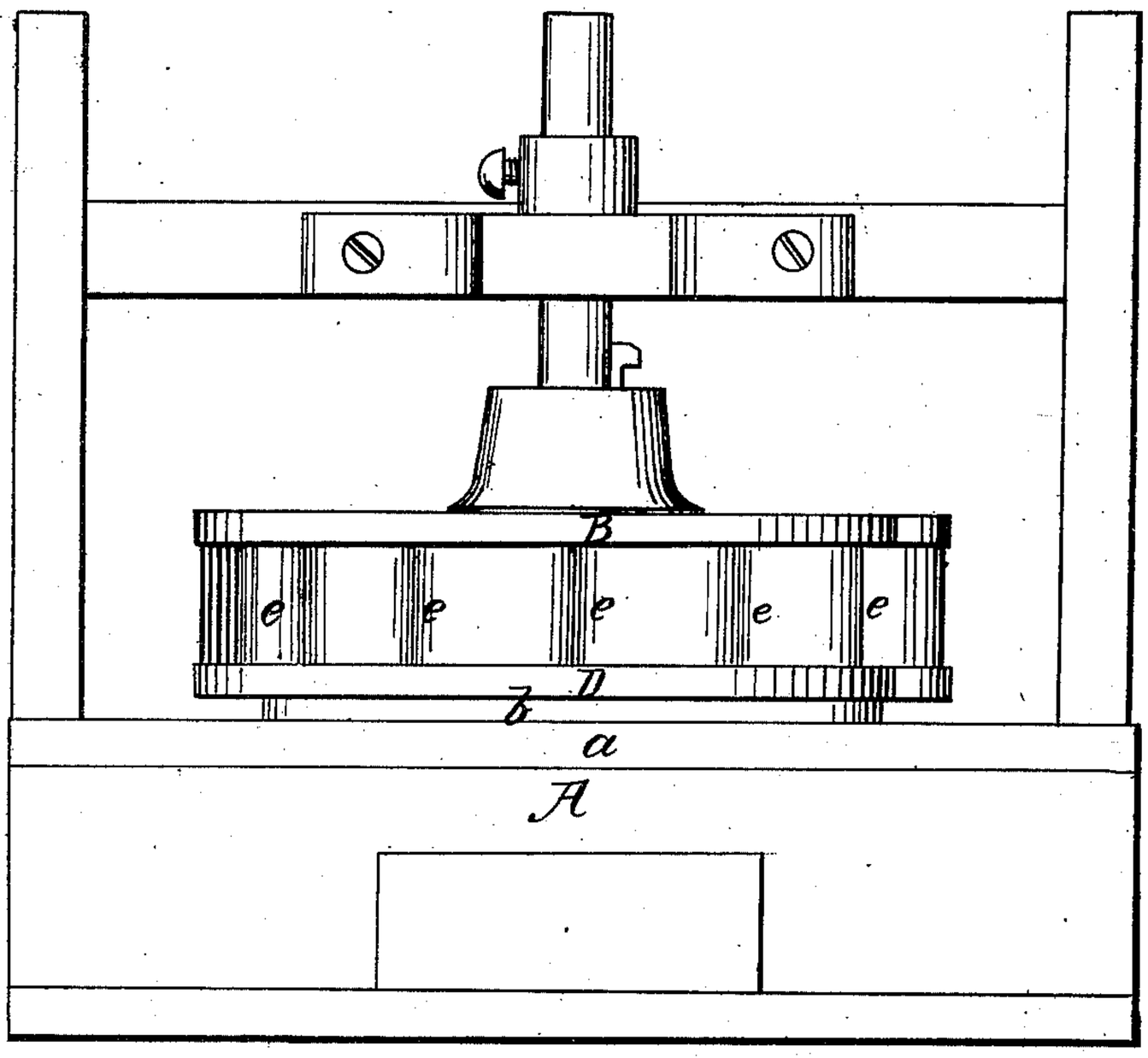
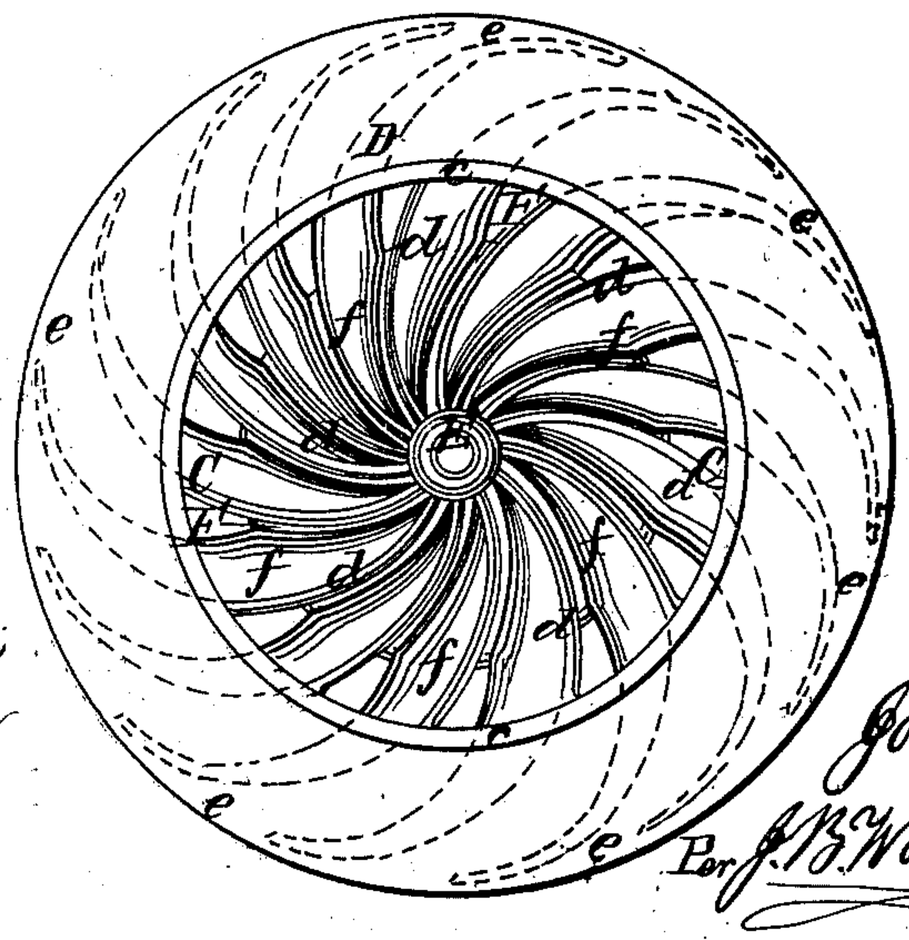


Fig: 2.



Witnesses;
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

United States Patent Office.

JOHN HOYT, OF HUGHSONVILLE, NEW YORK.

Letters Patent No. 82,225, *dated September* 15, 1868.

IMPROVEMENT IN 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, JOHN HOYT, of Hughsonville, in the county of Dutchess, and State of New York, have invented certain new and useful Improvements in Water-Wheels; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents an outside elevation of the wheel, showing a frame for supporting the upright shaft, and also the flume or box underneath for letting the water in to act on the wheel.

Figure 2 shows an under side view of the wheel, with its series of semicircular inclined buckets, of half the diameter of the wheel and cone-centre.

My invention pertains to the class usually known as turbine water-wheels, and it consists in the formation of a series of semicircular buckets, which circle would be half the diameter of the water-wheel; the back or convex side of the buckets or wings being vertical, the concave or front being bevelled, forming inclines of about twenty-two degrees, the central portion being cone-shaped, thus dividing the water centrally, so that the pressure acts equally on all of the bevelled curved wings, giving a greater rotating force, thereby increasing the power of the wheel. The water operating centrally on the under side of the wheel, supports the weight of the wheel and vertical shaft, so that no step or journal is required at the bottom, and consequently there is no friction or wear on a box or journal, as is the case with all of the horizontal water-wheels that have come to my knowledge.

To enable others to make and use my improved turbine water-wheel, I will describe it more in detail, referring to the drawings and the letters marked thereon.

The base-box or flume, A, over which the wheel is hung, may be made of metal or of wood, it being put together and secured sufficiently firm and strong to hold the pressure from the head of water necessary to drive the wheel, the top of the box, *a*, having a circular opening, the size of the opening C C in the under side of the central portion of the wheel, there being a raised rim or flange, *b*, on the top of the box *a*, which projects up and fits into a recess, *c c*, turned in the under side inner edge of the lower plate-rim, D, of the wheel, so that the water is confined, and can only pass out of the openings, *e e e e*, in the periphery of the water-wheel.

The buckets, or, more properly, the semicircular wings *d d d d*, start, all of them, at or near the centre E of the wheel, the convex or outside of their circles being vertical, the concave or inside of the curves being bevelled, so as to form inclined faces, *f f f f*, which terminate at the base of the wings *d d* on the vertical or rear side of them, thus forming an angle to each wing, of from twenty to forty-five degrees, according to the depth of the wheel and the number of the wings used for the wheel.

The vertical convex side of the semicircular wings, and the bevelled concave side of the same, starting at the centre, and terminating at the root of the next wing, also form a solid cone, F, in the centre, the base of which is upon the bottom of top plate B, and which divides the water in the centre, and throws the current outward in every direction, thus forcing the wheel very strongly in one direction, as the water passes out of the openings *e e e e* all around the periphery of the wheel.

It will readily be seen that a wheel constructed with the wings all reaching to the centre, and the centre forming a cone, so that the pressure underneath is equally divided to act on all of the wings alike, as above described, a central shaft or a journal and step may be dispensed with, and all of the wear and friction caused by them avoided.

The water being brought to act directly on the under portion of the water-wheel, and centrally, so that it perfectly balances the wheel on the water, the pressure is entirely upward, and enables it to run with less obstruction and exert more power, according to its size, than any other turbine or mode of constructing water-wheels that has ever come to my knowledge.

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

An outward-discharge water-wheel, constructed as described, namely, having a top plate, B, inverted cone F, buckets *d d*, and rim D, all constructed and arranged in relation to each other, substantially as herein described.

In testimony whereof, I hereunto subscribe my name in the presence of—

JOHN HOYT.

Witnesses:

CHAS. H. VAN VOORHIS,

A. S. HASBROOK.