I. Carter.

Turbine Water Wheel.

No. 99,532. Patented Feb. 8, 1870.

Fig: 4.

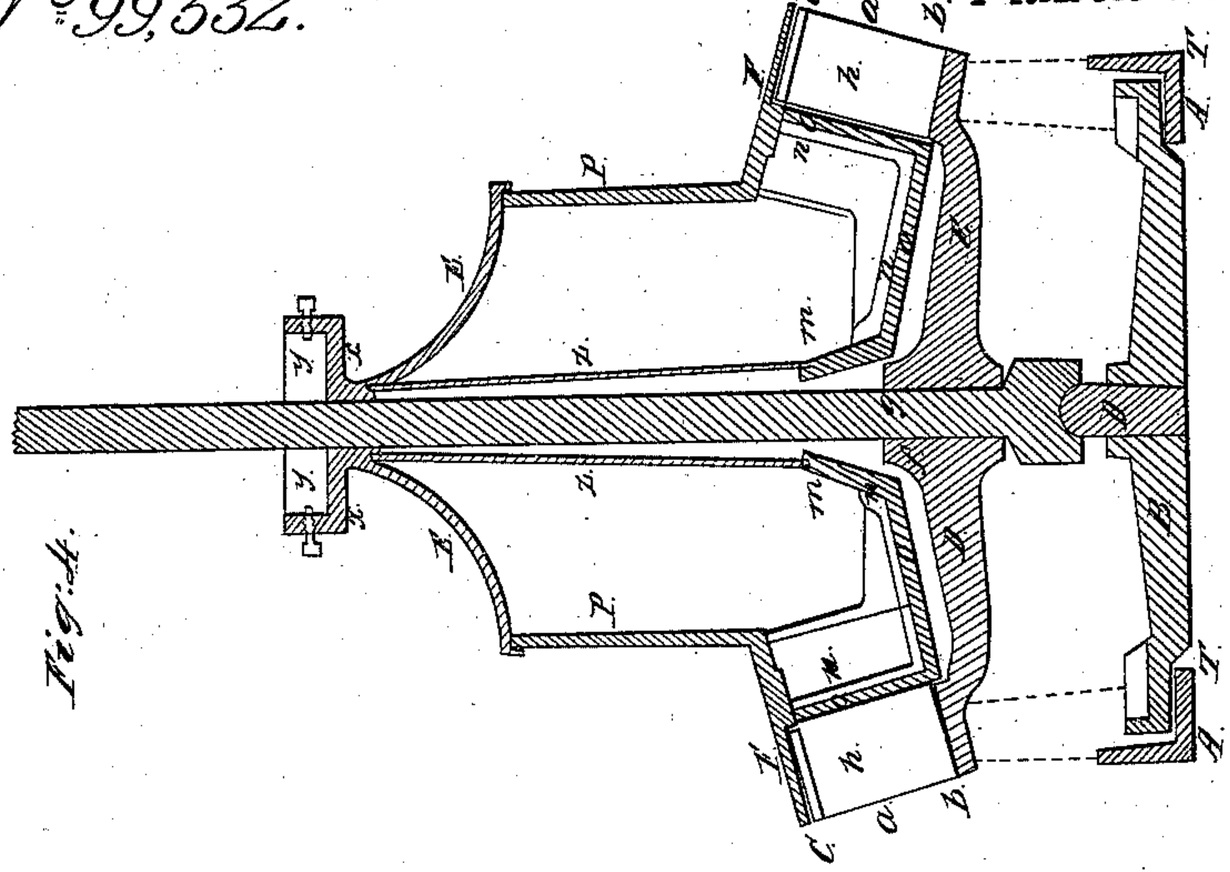


Fig: 2.

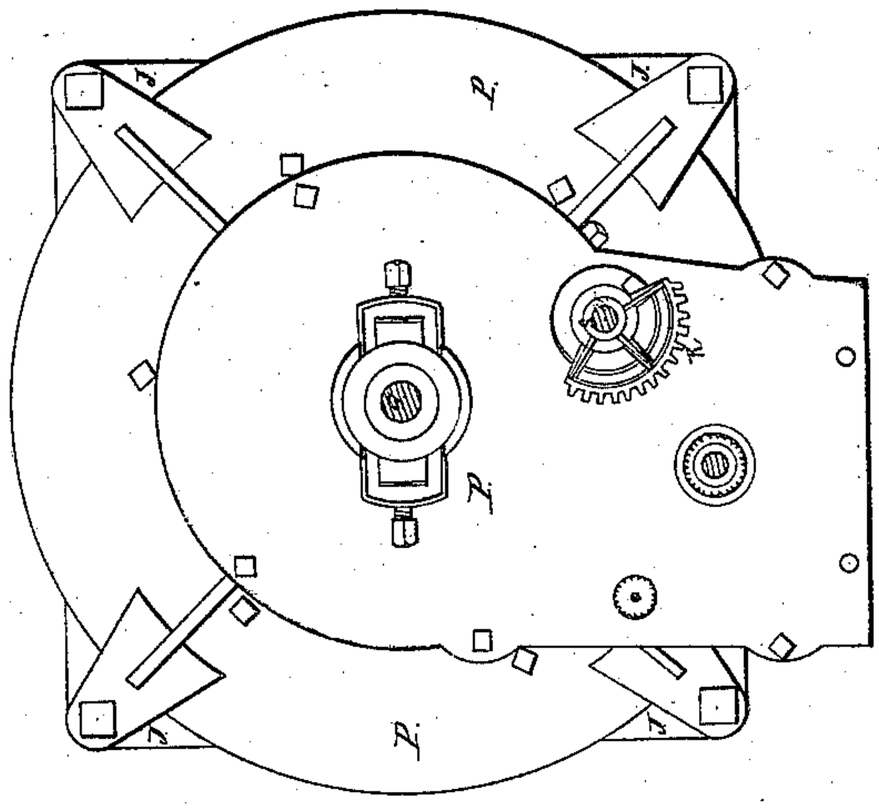


Fig: 3.

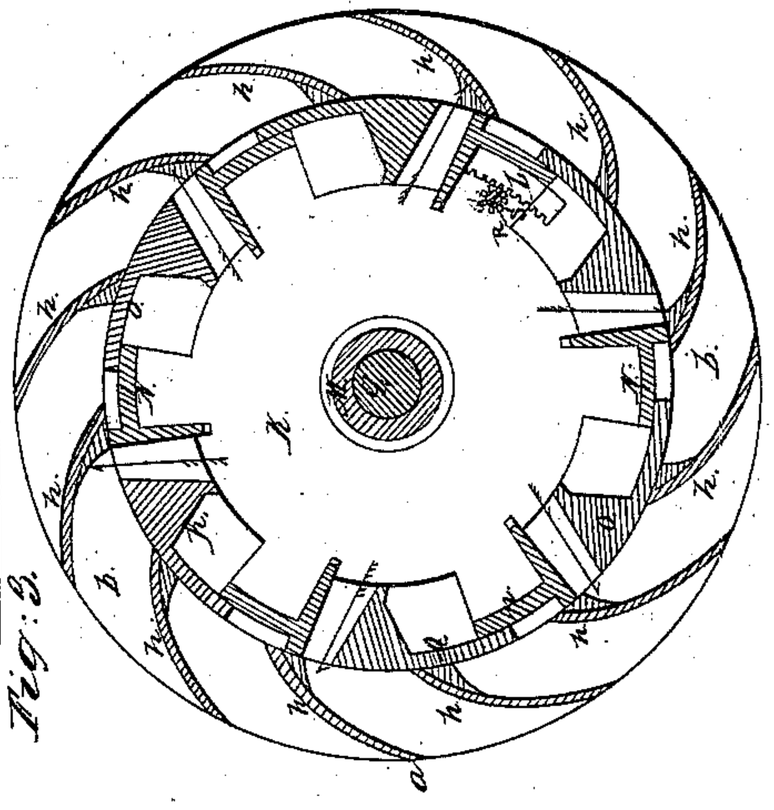
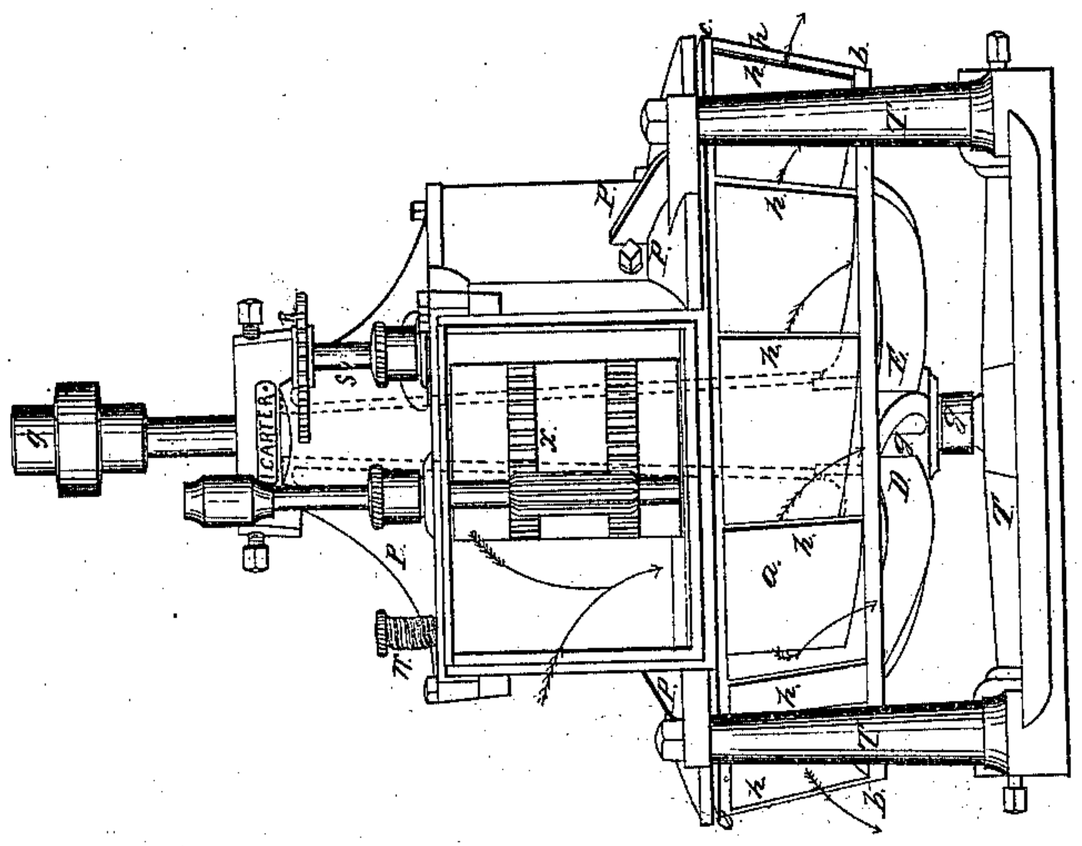


Fig: 1.



Witnesses:
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IRA CARTER, OF CHAMPLAIN, NEW YORK.

Letters Patent No. 99,532, *dated February* 8, 1870.

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, IRA CARTER, of Champlain, in Clinton county, in the State of New York, have invented a new and improved Water-Wheel, which I call Adirondack; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in so constructing a wheel, water-case, and adjustable ports, that the quantity of water applied to the wheel may be varied, without breaking the head or injuring the form of the parts through which the water is applied to the wheel.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

Figure 1 is a vertical front view, all set up, and showing the water-gate where the water is admitted into the case, and a portion of the wheel.

Figure 2 is a top view of the water-case, which covers the wheel and ports.

Figure 3 is a section of the wheel and adjustable ports, showing how the water is pitched into the wheel through the ports on line *a*.

Figure 4, on an additional sheet, is a vertical section of the whole, set up and split through the centre.

I construct my water-wheel with two bevelled rims, *b c*, united by twelve ellipse-curve paddles, *h h h*, fixed between the rims *b c*, in such an angle as to take up their length and have their ends flush with the rims inside and out.

I make the bottom rim *b* with arms, and a hub to admit a shaft, *g*, through the centre, and I make the top rim *c* enough larger than rim *b* to taper the wheel downward six inches to the foot, or three inches to the foot all around it, thus producing what I call a flaring wheel.

I bevel the rims to face at right angles with the taper of the wheel, and proportion it by the following scale, which may answer for all sizes:

I get the breadth of the rims by taking one-ninth of the outside diameter of top *c*. I get the breadth of the paddles *h h* by taking one-sixth of the outside diameter of the top rim *c;* and I get the length of the paddles by taking one-third of the inside diameter of the top rim *c*.

A, at fig. 4, is a square frame, consisting of four flat sills, united, at the corners, with four upright pillars, shown by dotted lines, for the water-case to rest upon.

B is a bridge-tree, regulated and secured at each end, by set-screws, to frame A. Said bridge-tree has a socket in the middle, holding a step-stud, on which shaft *g* turns, and so supports the weight of the wheel.

I construct the water-case P P with a round curb, having a flange at its base, which covers the wheel and ports, and rests upon the pillars of frame A. I make an opening in the curb of the water-case, and arrange thereto a horizontal slide-gate, operated by a rack-pinion and shaft, whereby the water is admitted into or shut out of the water-case.

E E is the cap or dome to the water-case, having, at its top, an oblong square box, containing a pair of boxes adjusted to shaft *g*.

I construct the adjustable ports by two convex flanges, *n o*, both having sectional rims, or rims with pieces cut out of them, the bottom flange *o* being permanently secured to the base of the water-case, and thus constitutes its bottom, said flange *o* having a hub, *m*, which passes up through the collar of flange *n;* flange *n* being made to work freely within the other, *o*, and both being employed in forming tapering ports by each having wings spreading apart as they extend inwardly. Flange *n* being operated by rack L, pinion R, and shaft S, thereby the ports can be expanded or contracted without injuring their shape.

z z is a tube, connected to *m* below and dome above, to keep the water from the shaft *g*.

The gate by which the water is admitted into the case should be thrown wide open when the wheel is running, in order to have the full pressure of the head in the case.

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

The flaring wheel, with ellipse-curve paddles, to which the water is applied inside, and discharges outside, in combination with the frame and water-case, having adjustable ports, substantially as shown and described.

IRA CARTER.

Witnesses:

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