Bodine & Hill,

Water Wheel,

No. 84,047. Patented Nov. 17, 1868.

Fig. 1

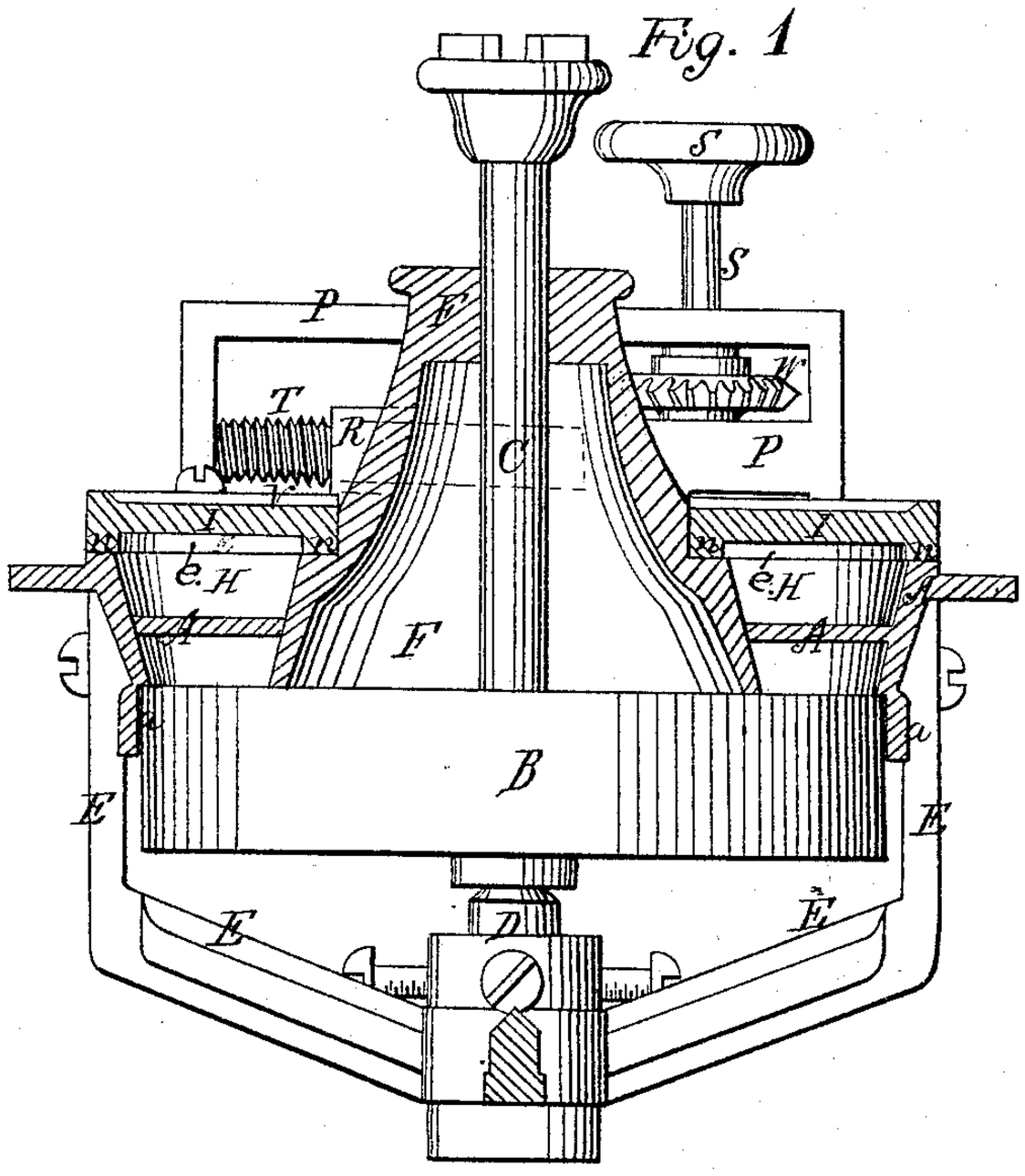
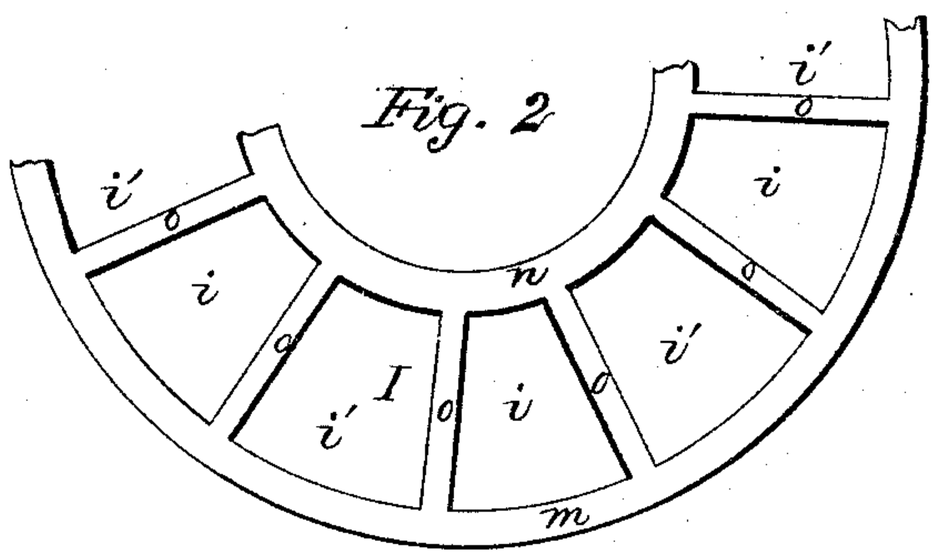


Fig. 2



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J. H. BODINE AND T. A. HILL, OF MOUNT MORRIS, NEW YORK.

Letters Patent No. 84,047, *dated November* 17, 1868.

IMPROVED WATER-WHEEL.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, J. H. BODINE and T. A. HILL, of Mount Morris, in the county of Livingston, and State of New York, have invented a new and improved Water-Wheel; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical axial section of wheel and curb.

Figure 2 is a bottom view of the gate.

In this invention the gate is made in a peculiar form, to adapt it to be opened and closed with less power, and a novel device is employed for the purpose of moving it. In addition to this, the curb is so constructed that as the step wears away, the joint between the wheel and the curb still remains water-tight

In the drawings, A represents the curb, having tight side walls, and so constructed that the water passes vertically to the wheel; B, the wheel, of the vertical-discharge pattern; C, the shaft; F, the central cone, surrounding the shaft above the wheel; D, the step; and E E, braces, by which the step and its socket, supports, and adjusting-apparatus are attached to the curb.

The curb is provided with an elongated rim or flange, *a*, around its lower edge, which encircles the upper part of the wheel B, the joint between them being water-tight.

This flange extends down over the sides of the wheel so far that if the step D should wear away and drop the wheel down a considerable distance, it would not affect its action, inasmuch as the flange would still cover its upper edge, and prevent the escape of the water around it.

The curb is covered by a flat circular plate, provided with suitable apertures around its outer edge, outside of the cone F, to admit the proper supply of water through the chutes H H to the wheel.

I is the gate, in the form of an annular plate, lying flat upon the cover of the curb, and encircling the cone F, being provided with a series of openings, *i i*, at suitable distances apart, to open or close the chutes H H to any required degree, as the gate is rotated in one direction or the other.

The openings *i i* are usually of the same size and dimensions as the solid parts *i' i'*, between them.

The solid parts *i' i'* are made concave on their under side, as seen at *e e*, fig. 1, and as shown by fig. 2, so that the only parts of the gate which bear upon the surface of the curb are the rings *m n*, at its edges, and the bars *o o*, which connect them.

The gate, thus constructed and operating, is opened and closed by the following apparatus:

A bevel-gear wheel, *w*, on an upright spindle, S, provided with a hand-wheel, *s*, serves to operate a horizontal screw-shaft, T. A block, R, screws back and forth along the latter shaft, as the hand-wheel above is turned, and, as it screws back and forth, moves the gate around by means of an arm, *v*, which is hinged or jointed to the gate at one end, and the block at the other.

This device not only operates with great power, but holds the gate so firmly in any required position, that it cannot be moved, except from above, by turning the spindle.

P P represent the frame, attached to the curb, which supports the screw-shaft and spindle.

The gate, thus constructed and operated, is one of the most firm and durable ever invented, while it can be opened and closed more easily than any other heretofore brought into use.

Having thus described our invention, we do not claim a water-wheel with side-feed and centre-vent, working in connection with flanges upon a curb having side gates and a tight cover, said flanges being for the purpose of directing the entire volume of water to the centre of the wheel; neither do we claim a combination of hand-wheel, shaft, and worm-screw, for the purpose of working the gate. The flanges *a a*, upon our curb, are intended to be used only in connection with a wheel having the top feed, its sides being cylindrical, and the side walls of the curb being water-tight; and the arrangement for operating the gate is limited to the particular combination of cog-gear, screw-shaft, and arm, described and shown.

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. The arrangement of the top-feed vertical-discharge wheel B, in connection with the flanges *a a*, upon the lower edge of a curb, which has the gate at its top, its side walls being water-tight, substantially as and for the purpose herein set forth.

2. The gate I, when cast with recesses or concaves, *e e*, on its under surface, substantially as specified.

3. The arrangement of wheel B, gate I, arm *v*, screw-shaft T, block R, working upon the screw-shaft, and spindle S, operating the screw-shaft by means of cog-gearing W, when said parts are constructed to operate in connection with each other in the manner and for the purposes above described.

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