I. MALLERY.

WATER-WHEEL.

No. 191,605. Patented June 5, 1877.

Fig. 1

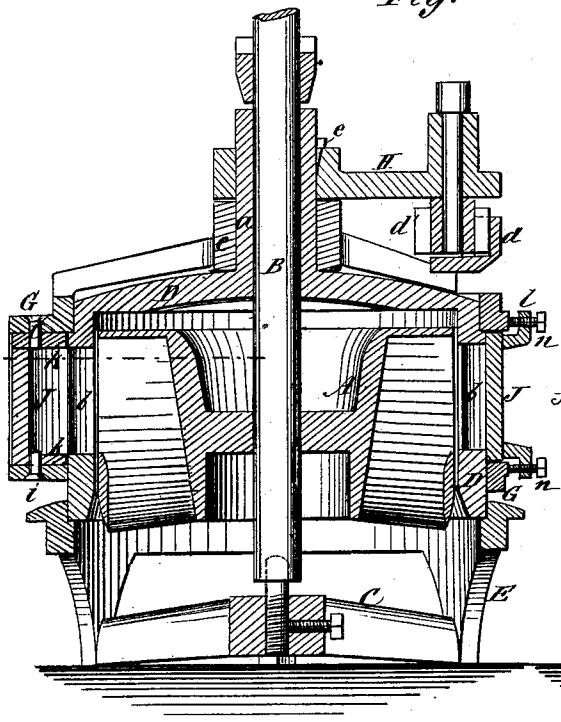


Fig. 2

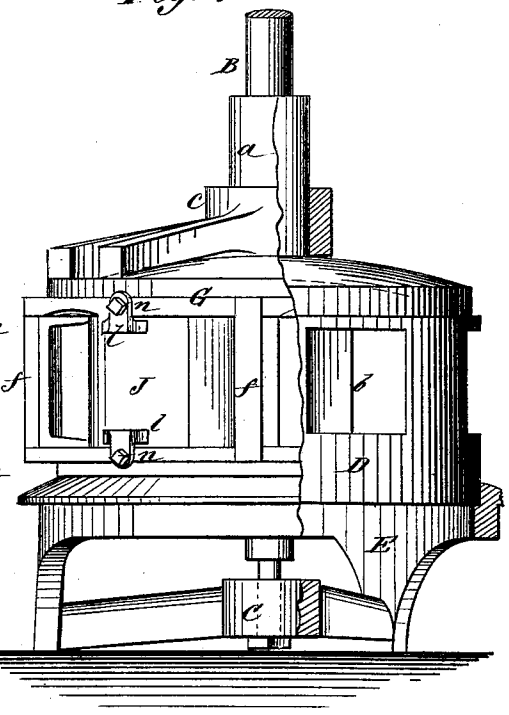


Fig. 3

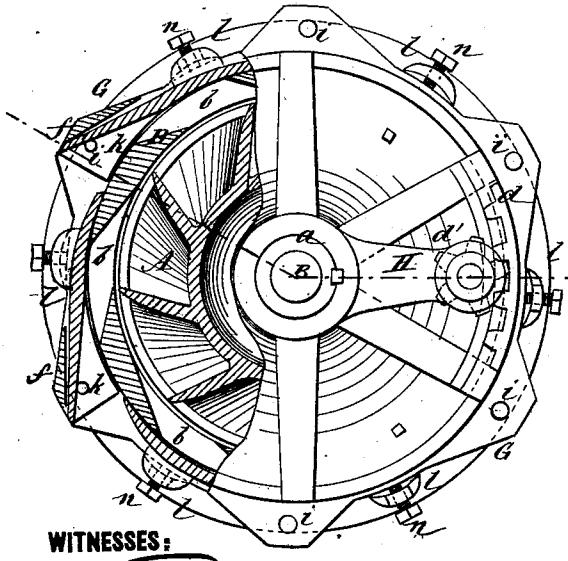
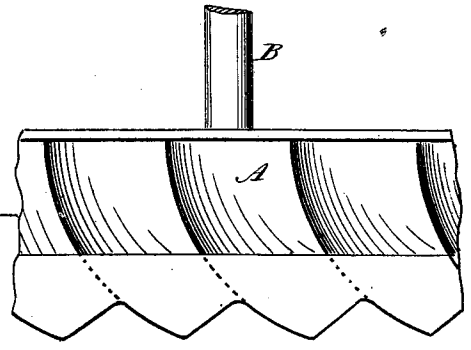


Fig. 4



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UNITED STATES PATENT OFFICE.

ISAAC MALLERY, OF DRYDEN, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **191,605**, dated June 5, 1877; application filed May 21, 1877.

To all whom it may concern:

Be it known that I, ISAAC MALLERY, of Dryden, in the county of Tompkins and State of New York, have invented a new and Improved Water-Wheel, of which the following is a specification:

This invention relates to downward-discharge turbine water-wheels; and the nature of my invention consists in the employment, in combination with a stationary chute-case and an independent adjustable frame, of a series of gates, which are pivoted to this frame and adjustable to the periphery of said case, as will be hereinafter explained.

In the annexed drawings, Figure 1 is a section taken vertically and centrally through the improved wheel. Fig. 2 is a side view of the wheel, with part of the chute-frame broken away to show the chute-case. Fig. 3 is a top view of the wheel, partly in section. Fig. 4 is a side view of the bucket-wheel.

Similar letters of reference indicate corresponding parts.

The letter A designates the bucket-wheel, formed of curved and inclined buckets arranged around a hub, and applied to a cap-ring and a skirting, as shown in Figs. 1 and 4. This wheel is keyed on a driving shaft, B, stepped on a bridge, C, and passed up through a tubular sleeve, *a*, which is cast on the top of a cylindrical chute or guide-case, D. This case D is rigidly secured to the base or bed-frame E, and constructed with oblique issues *b*, which direct the currents of inflowing water against the buckets of the wheel A, as indicated by the arrows in Fig. 1.

G designates a circular frame, which surrounds the case D, and is constructed with arms radiating from a central hub, *c*, that is free to turn on the stationary sleeve *a*. This frame G is adjustable about its axis by means of a rack, *d*, and a pinion spur-wheel, *d'*, which latter is on a shaft that is borne by an arm, H, fixed to the sleeve *a* of the chute-case.

The upper and lower rings of the frame G are connected together by obliquely-arranged blades *f*, which are applied to offsets of the rings, thus forming mouths, through which the currents of water flow.

J J designate the adjustable gates, which are constructed with tapered flanges *k k* on their upper and lower edges, and also with two ears, *l l*, near their curved ends. Each gate J is pivoted between the offsets of the frame G at *i i*, and its free end is adapted to impinge against the periphery of the case D, to which it can be adjusted by means of set-screws *n n* tapped through the ears *l l*, and bearing against the periphery of the frame G.

By means of the screws *n* the free ends of the buckets J can be adjusted so as not to leak, and at the same time not to cause undue friction on the chute-case.

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

The adjustable gates J, constructed with flanges *k k* and set-screws *n n*, and pivoted between the rings of adjustable frame G, in combination with the chute-case D and a wheel, A, substantially as described.

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