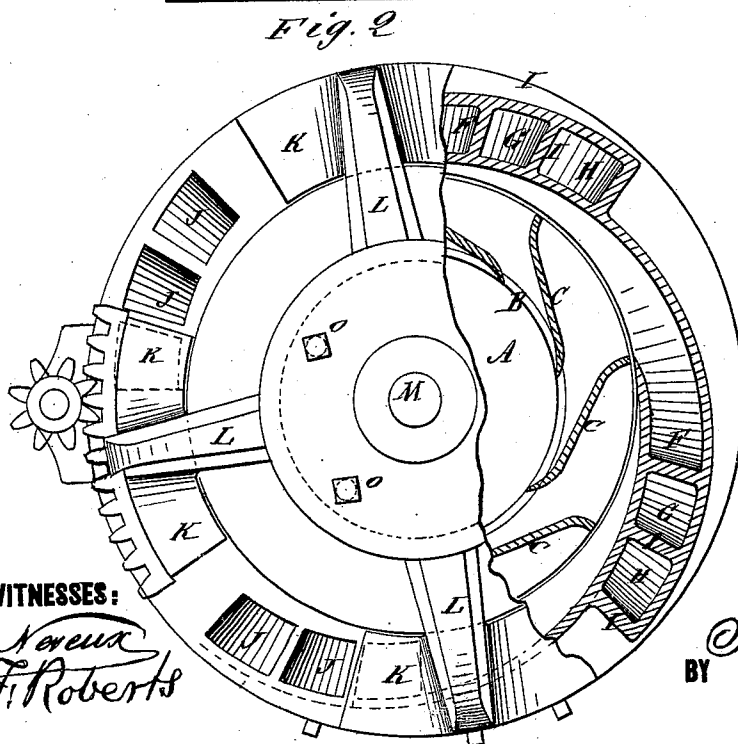
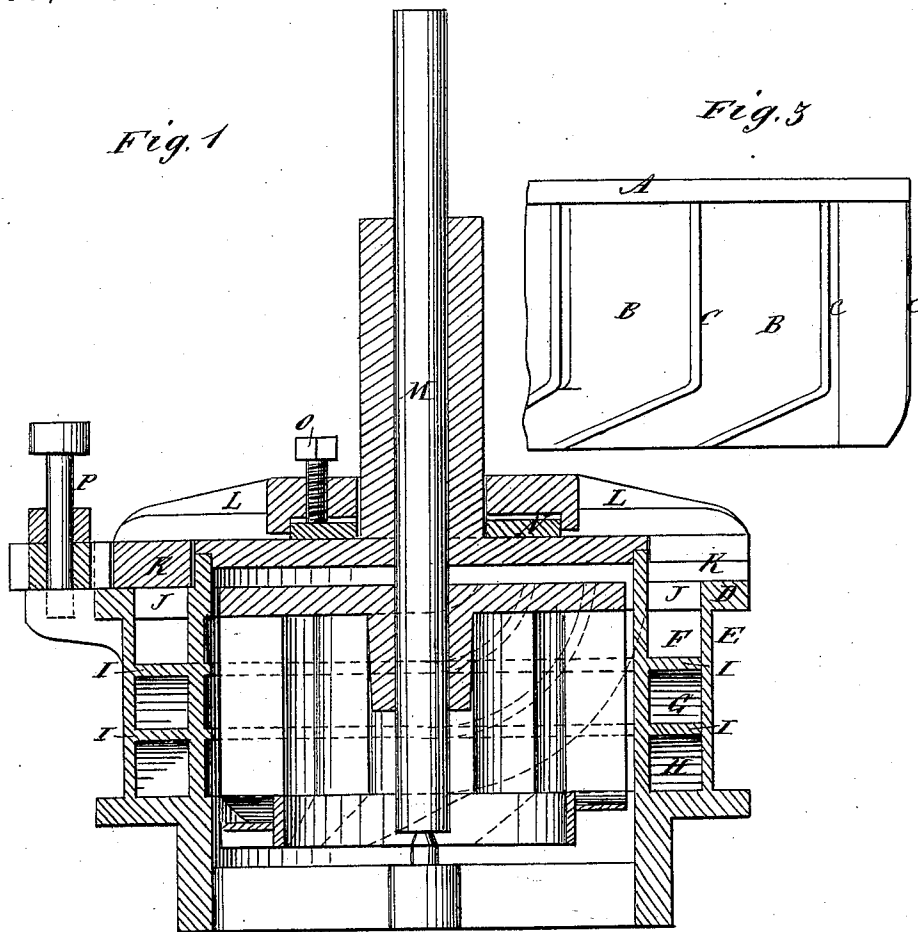


I. MALLERY.
WATER-WHEEL.

No. 170,633.

Patented Nov. 30, 1875.



WITNESSES:

C. Newell
Alex. F. Roberts

INVENTOR:

I. Mallery
BY *mmmm*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ISAAC MALLERY, OF DRYDEN, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **170,633**, dated November 30, 1875; application filed November 6, 1875.

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 turbine-wheels, having the chutes divided horizontally for the better application of the water when less than the full volume is to be used; and it consists of the case and the chutes, so arranged that the mouths of the latter open at the top of the case instead of the sides, as heretofore, together with a horizontal gate arranged on the top plate, which is much better than a vertical gate shutting down the sides of the wheel, because it saves considerable metal, and it enables the gate to be adjusted at any time to close perfectly tight without too much friction, whereas the other gate cannot be adjusted at all, and is liable to be sprung by the pressure of the water against the wheel-case, and bind so as to work very hard.

The invention also consists of a novel contrivance of the gate for adjusting it to close tightly without unnecessary friction; and it also consists of a wheel without horizontal divisions of the buckets, in combination with sectional or horizontally-divided chutes, all as hereinafter described.

Figure 1 is a sectional elevation of my improved wheel. Fig. 2 is partly a top view and partly a horizontal section, and Fig. 3 is a detail of the wheel proper in side elevation.

Similar letters of reference indicate corresponding parts.

A is the top, B the drum, and C the buckets of the wheel. D is the top, and E the sides of the case. F, G, and H represent the chutes, which are divided horizontally into three sections by partitions, I, and which I now propose to arrange to open up through the top of the case, as shown at J, Fig. 2, instead of opening out at the sides; and over these openings I arrange a horizontal rotating gate, K, on a spider, L, which turns on the shaft M for open-

ing and closing, the gate being in sections corresponding to the several groups of openings. The top D of the case, in which these openings are made, and the under side of the gate, fitting on it, will be turned off true, so as to fit nicely, and in order to lessen the friction as much as possible an adjusting bearing-ring, N, is fitted in the hub of the spider around the shaft, and with adjusting-screws O for lifting the gate off the case top D, except so much as is necessary to make the joint tight. Thus the gate can at any time be adjusted, so that it will close tightly without any unnecessary friction.

The gate is geared with a shaft, P, for opening and closing it. Heretofore it has been considered necessary, in the use of these horizontally-divided chutes, to divide the buckets accordingly—that is to say, to provide the buckets with a special discharge for each section of the chute; but I have found by practical tests that better results are obtained by having continuous buckets from top to bottom, the same as are used without the sectional chutes, and I therefore propose to combine sectional chutes with buckets of this form.

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

1. Horizontally-sectional chutes, having the mouth's opening in the top of the wheel-case, in combination with a horizontal rotating gate, substantially as specified.
2. The combination of the adjusting bearing-ring N and adjusting-screws O, with the horizontal gate, substantially as specified.
3. The combination of horizontally-sectional chutes, with a wheel having buckets, C, continuous from top to bottom, substantially as specified.

ISAAC MALLERY.

Witnesses:

T. B. MOSHER,
ALEX. F. ROBERTS.