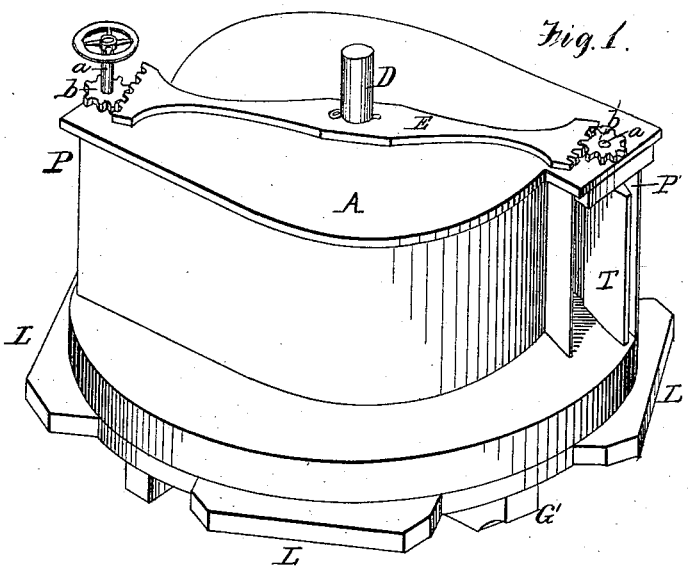
B. D. HOLMES.

TURBINE WATER-WHEEL.

No. 191,238. Patented May 29, 1877.

Fig. 1.



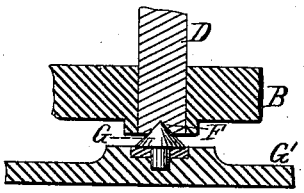


Fig. 4.

Fig. 2

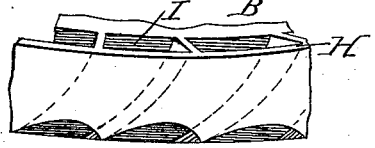
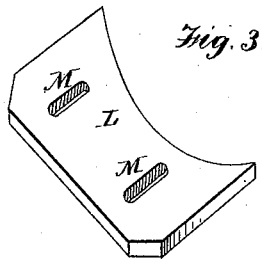


Fig. 3.



Witnesses
Chas. O. Gill
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UNITED STATES PATENT OFFICE.

BARRACK D. HOLMES, OF BUCYRUS, OHIO.

IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. **191,238**, dated May 29, 1877; application filed April 13, 1877.

To all whom it may concern:

Be it known that I, BARRACK D. HOLMES, of Bucyrus, in the county of Crawford and State of Ohio, have invented a new and useful Improvement in Turbine Water-Wheels, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improved turbine water-wheel, as will be more fully described hereinafter; the object being to furnish a wheel of advantageous construction, and a means of preventing lateral motion of the same; also, to furnish suitably-shaped inlets, and certain devices for operating them; all of which will be hereinafter specifically designated.

Figure 1 is a perspective view of a device embodying the elements of the invention. Fig. 2 is a detached view of a portion of the wheel. Fig. 3 is a perspective view of one of the followers; and Fig. 4 is a detached sectional view of the driving-shaft and its support.

In the accompanying drawings, A represents the flume, furnished in its lower portion with the turbine wheel B, the shaft D of which extends vertically upward through the center of the flume, and the horizontal oscillating bar E.

The lower end of the shaft D, below the wheel B, is provided with a socket, F, in which the pivot G, secured to the upper part of the frame G′, is placed, thus forming the lower support of the shaft, and furnishing a means which will insure a smooth and rapid motion to the wheel.

The wheel B is solid at its central parts, which parts are separated a proper distance from the annular band or periphery H by the plates which form, in connection with the vertical sides of the said band and solid center, the buckets I. The upper edges of these plates or buckets are placed nearly on a tangent to the arc of the solid center, and curve downward and outward, their central parts being concave, and the sides of the plates nearer the vertical portion of the center of the wheel being slightly elevated above the opposite side of same, so that water entering the buckets would flow down the plates and against the inside face of the band, thus causing the wheel B to revolve rapidly and with increased power.

The lower edge of the band H is scalloped adjacent the spaces between the plates, which scallops gradually merge into and correspond with the form of the lower surface of the plates, as shown.

To the lower surface of the casing of the flume A the followers L are movably secured, which followers are provided with the elongated guide-slots M to receive the set-screws, which slots and screws permit the followers to be moved horizontally, and the operator is thereby enabled to adjust them closely to the wheel and prevent any loss of motion or lateral movement.

The flume A is circular on two opposite sides, and on its remaining sides are provided the openings P, which are constructed on a tangent to the arc of the circle of the flume and provided with the centrally-pivoted gates T, the pivots *a* of which extend upward and are furnished on the upper surface of the flume-casing with the gear-wheels *b*, which mesh with the teeth constructed on the ends of the bar E, secured on the upper surface of the flume on the driving-shaft.

It is obvious that when one of the gates is opened its pivot *a* is turned, and with it the gear-wheel *b*. This communicates motion through the bar E to the pivot of the opposite gate and thereby causes the latter gate to open also. Thus the movement of one gate simultaneously operates the opposite one.

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

1. The wheel B, provided with the band or periphery H and plates I, the band being scalloped on its lower edge, and the plates I being concave and their sides nearer the solid center of the wheel slightly elevated above the opposite sides, substantially as shown and described.

2. In a water-wheel a follower for preventing lateral motion, and forming an adjustable casing around the wheel, substantially as set forth.

3. The followers L, provided with slots M, and suitable set-screws, substantially as described.

In testimony that I claim the foregoing improvement in turbine water-wheels, as above described, I have hereunto set my hand this 2d day of April, 1877.

BARRACK D. HOLMES.

Witnesses:

I. E. BARROWS,

B. J. KUHN.

750 words.