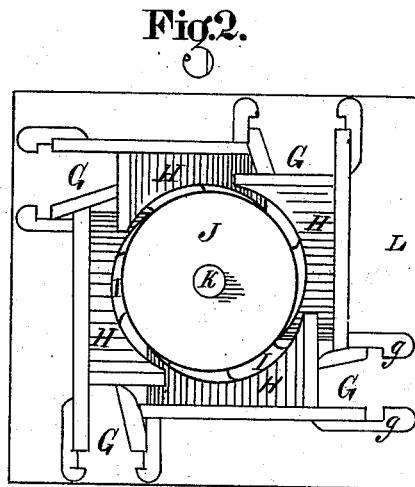
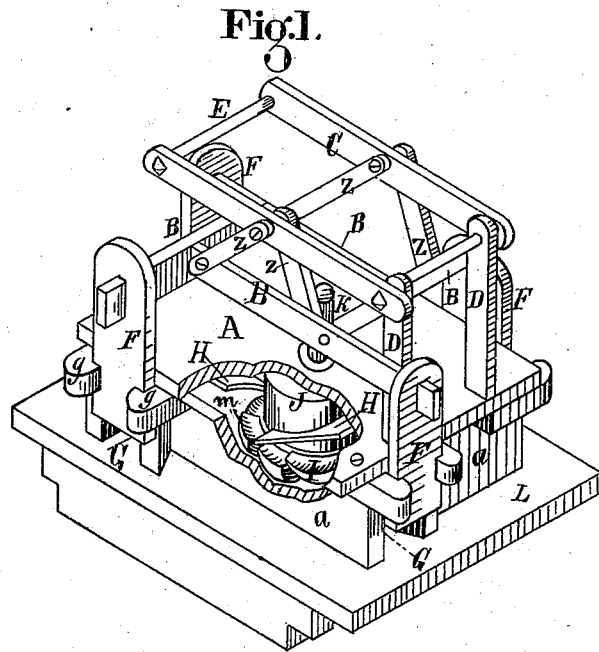


W. C. GROVES.
WATER-WHEEL.

No. 169,901.

Patented Nov. 16, 1875.



Witnesses;
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Inventor:
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UNITED STATES PATENT OFFICE

WILLIAM C. GROVES, OF LIBERTY, WISCONSIN.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 169,901, dated November 16, 1875; application filed September 15, 1875.

To all whom it may concern:

Be it known that I, WILLIAM C. GROVES, of Liberty, in the county of Vernon, State of Wisconsin, have invented a certain new and useful Improvement in Water-Wheels, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a sectional isometrical perspective view, and Fig. 2 a plan showing the lower side of the wheel.

Like letters of reference indicate corresponding parts in the different figures of the drawing.

My invention relates to that class of water-wheels which are known as turbine wheels; and consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a simpler, cheaper, and more effective device of this character is produced than is now in ordinary use.

The nature and operation of my invention will be readily obvious to all conversant with such matters from the following description.

In the drawing, L represents the bottom and A the top of the pen-stock, the sides of the same being shown at *aa*. The wheel consists of the cylinder J, having a series of inclined floats, I, arranged around its periphery, as shown in Fig. 1. This wheel is vertically

journalled at K in the top A, and supported in a step (not shown) beneath the bottom L. The bottom has a circular aperture at *m* to admit the wheel, the floats of the same being arranged slightly below the aperture.

Opening into the pen-stock are four gateways, G, closed by four vertically moving gates, F, arranged to work in the ways *g g*. These gates are framed together by the framework B, and are raised and lowered conjointly by the levers C, pivoted in the uprights D D, the levers being connected to the framework by the links *z*.

In the use of my improved wheel, flumes are so arranged as to conduct the water into the four gateways simultaneously when the levers C are elevated by means of the cross-bar E, and the gates are opened. The water, being thus let in at the four corners of the pen-stock at the same time, will be directed by the chutes H onto the floats I, without producing the "dead" water common in wheels of this character, having but one gateway. The floats I, being below the bed L, are also less liable to obstruction than when otherwise arranged.

Having thus explained my invention, what I claim is—

The gates F, frame B, levers C, and links *z*, combined to operate substantially as set forth.

WILLIAM C. GROVES. [L. S.]

Witnesses:

J. E. NEWELL,

JOSHUA S. GROVES.