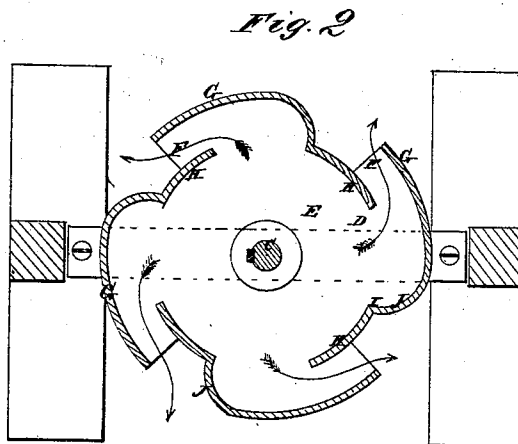
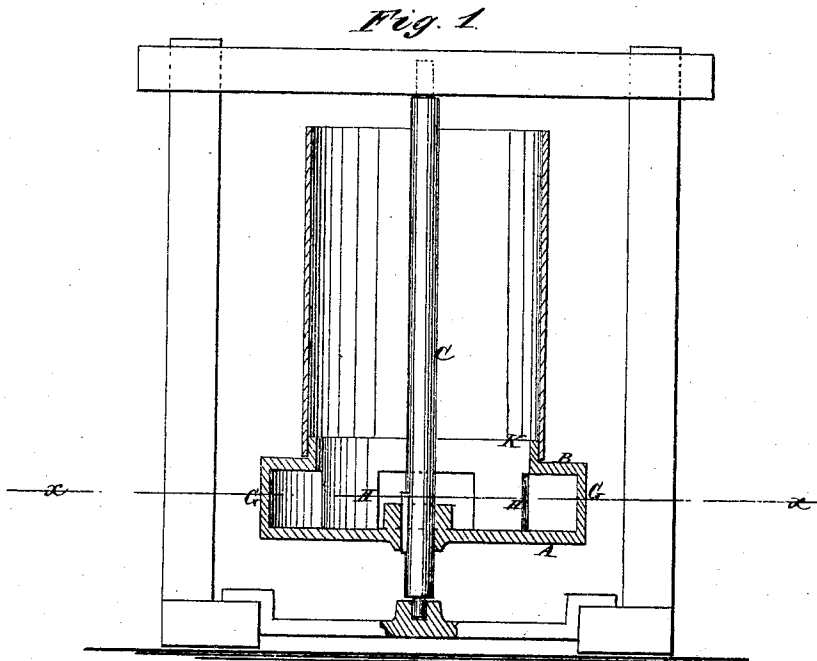


M. H. HEYLMAN.
Water-Wheels.

No. 145,346.

Patented Dec. 9, 1873.



WITNESSES:

A. W. Almqvist
Sturges

INVENTOR:

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UNITED STATES PATENT OFFICE.

MORDECA H. HEYLMAN, OF OSHKOSH, WISCONSIN.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **145,346**, dated December 9, 1873; application filed November 1, 1873.

To all whom it may concern:

Be it known that I, MORDECA H. HEYLMAN, of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented a new and Improved Water-Wheel, of which the following is a specification:

My invention consists of a horizontal reaction-wheel, receiving the water in the top and discharging at the periphery, having issues formed between parallel circles, in front of which, and at a distance suitable beyond them, to allow the water to freely enter the circle in which the issues are formed, is a curved or angular shoulder, from four to six times larger in area than the issues, against which the reactionary force of the water is delivered, in a manner calculated to give the best results in respect of power.

Figure 1 is a sectional elevation of my improved wheel; and Fig. 2 is a horizontal section taken on the line *xx* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A is the lower horizontal plate of the wheel, and B the upper one. The shaft C passes through the lower plate, and is fitted in a bearing below, in case the whole of the bottom consists of one plate, which revolves with the wheel, and the lower plate is keyed to the shaft; but when the bottom forms a joint at D, with a stationary part, E, which I propose in some cases, to relieve the wheel of much of the weight of the water, the shaft will be arranged in bearings above, and the wheel will be attached to it by a key. F represents the

issues, which I arrange between the outer flange, G, and the inner one, H, both of which are formed on true circles, concentric to each other, so that they are parallel. The flange H extends far enough inward from the issue to give direction to the water, and it extends forward about the same distance and joins the rear end of flange G at I, which is the inner termination of a short inward curve or inclination, J, of flange G, to form the shoulder fronting the issue for receiving the reactionary force of the water, which, being received in the direction of a true circle from the issue, is more effective and less obstructed by friction than in any other way. This shoulder is designed to be considerably larger than the issue—say, from four to six times—which gives better results than if smaller.

The water may be conducted to the wheel by a large tube revolving with it, as represented in the drawing, or the wheel may form a joint, by its flange K, with the bottom of a pen-stock, the wheel being placed under said bottom.

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

The concentric circular plates G H, forming the issue F, in combination with the shoulder J, whether curved, inclined, or radial to the wheel, substantially as specified.

MORDECA H. HEYLMAN.

Witnesses:

L. E. POND,
ELI SEELY.