T. R. Timby,

Water Wheel,

No. 3,763. Patented Sep. 27, 1844.

Fig. 3.

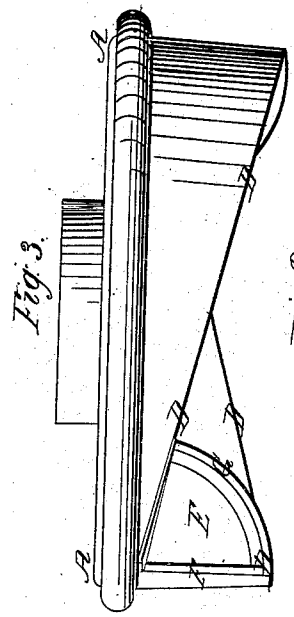


Fig. 2.

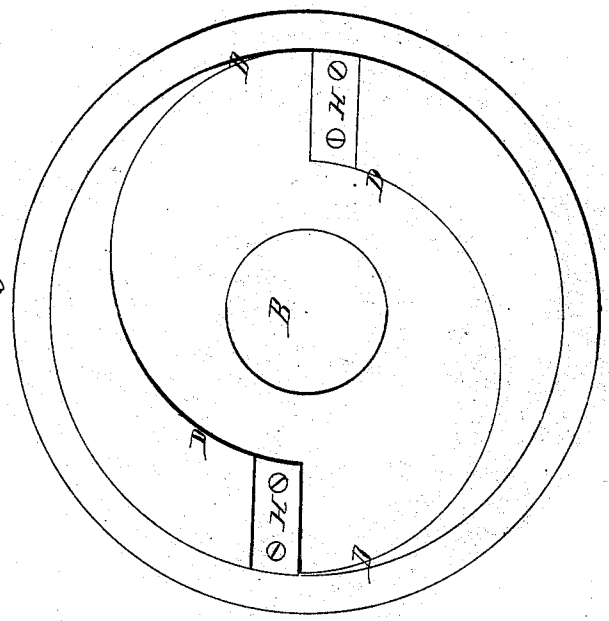


Fig. 4.

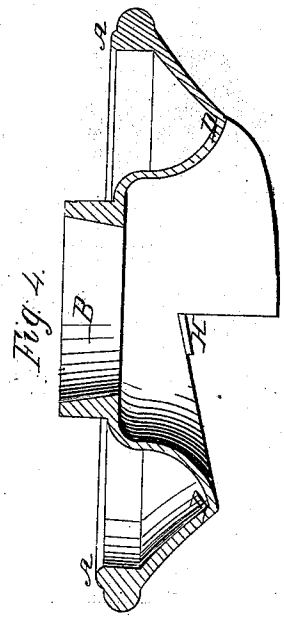
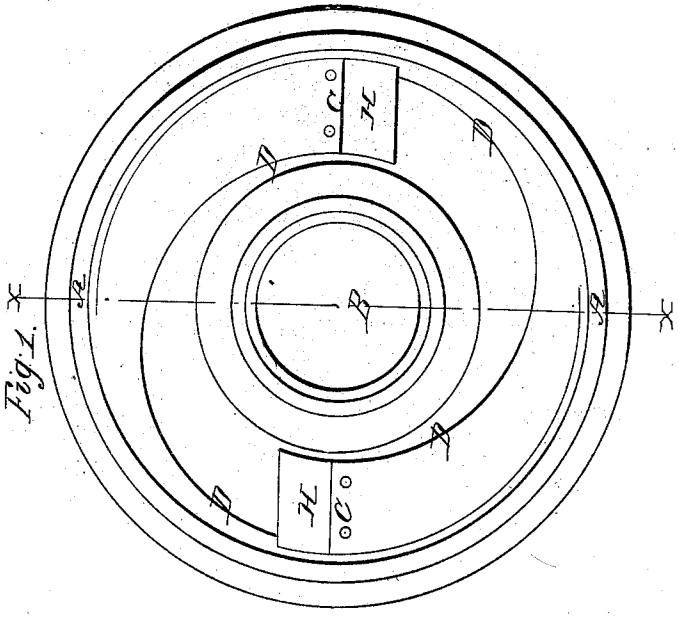


Fig. 1.



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UNITED STATES PATENT OFFICE.

THEODORE R. TIMBY, OF CATO, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **3,763**, dated September 27, 1844.

To all whom it may concern:

Be it known that I, THEODORE R. TIMBY, of Cato, in the county of Cayuga and State of New York, have made a new and useful Improvement in the Manner of Constructing a Water-Wheel of that Kind Usually Denominated a Reaction-Wheel; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawings, Figure 1 is a top view of my wheel; Fig. 2, a view of the under side thereof; Fig. 3, a side view, and Fig. 4 a vertical section of it in the line *x x* of Fig. 1.

From this wheel the water is to be delivered from two apertures only, placed opposite to each other. The number of apertures might be increased, but no advantage whatever would accrue from such increase; but, on the contrary, the peculiar form which I give to the channels along which the water is to pass would be rendered less perfect and effective. The rim A A on the face of the wheel is to run as nearly as may be in contact with the penstock, the shaft occupying its opening B. The two channels leading from the face of the wheel to the openings for the delivery of water approach the **V** form, the angle at their bottom constituting a spiral line commencing at that side of said channels which is toward the shaft and terminating at the delivery-openings on the opposite side or periphery, where the rim of the wheel is in a vertical or nearly vertical line. In Fig. 1, C C is the upper part of these channels, where they may form a horizontal plane, or nearly so. D D are the spirals formed by the line of the lower angles of the two channels, and E, Fig. 3, is one of the delivery-openings. F is the line of the periphery at this part, which, it will be seen, is nearly vertical. These openings are in the form nearly of a quadrant of a circle, of which the inner line G is a segment. D is the lower point of the angle of the channel. In Fig. 6 the outline of these channels is seen in the points directly intermediate between their upper ends and their delivery-openings—that is, in the line *x x* of Fig. 1. At this point the angle D is nearly in the center of the channels.

It has been found by careful comparison of this wheel with others of the same capacity and having the same number of delivery-openings, but where the channels did not descend in the peculiar spiral form that I have given to them, that there was a difference of effective power of fully one-fifth in favor of my wheel. The difference of its action was manifest, also, in the manner in which the water escaped from the delivery-openings. In the other wheels the water escaped in a direct line and was scattered much more widely than from mine. Its escape from this latter exhibited a twisting or revolving motion and a more compact stream than from the others. These results were the same on repeated trials in the presence of many disinterested witnesses.

It is a matter of considerable importance to be able to regulate the size of the delivery-openings, so as to proportion them to the quantity of water supplied or to the power required, and this I effect by means of two gage-plates on the upper sides of the delivery-openings E. These gage-plates are shown at H H. They are to be secured by screws or otherwise to the upper ends of the channels, and by increasing their thickness it will be manifest that the delivery-openings may be decreased to any required extent.

Having thus fully described the manner in which I construct my improved water-wheel and shown the operation thereof, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The peculiar spiral form which I give to the channels of said wheel from their upper ends to their delivery-openings, such form being in all cases substantially the same with that herein fully made known.

2. The lessening of the delivery-openings by means of gage-plates, whether effected in the manner set forth or in any other that is substantially the same.

In describing this wheel I have supposed the shaft to be placed vertically, but this position may be varied at pleasure without in any respect changing the principle upon which it operates.

T. R. TIMBY.

Witnesses:
THOS. P. JONES,
WM. BISHOP.