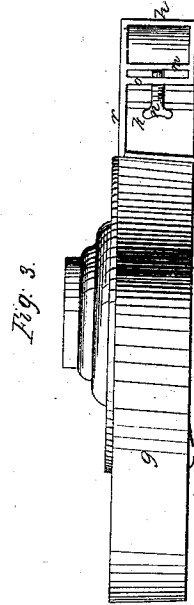
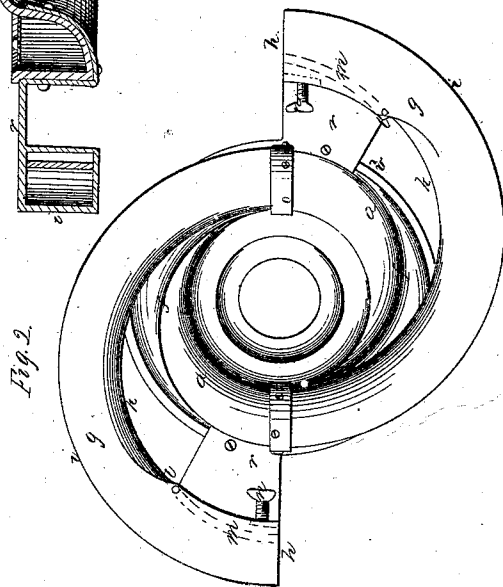
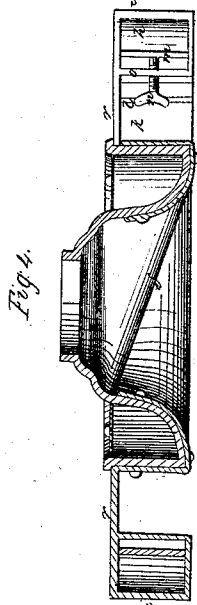
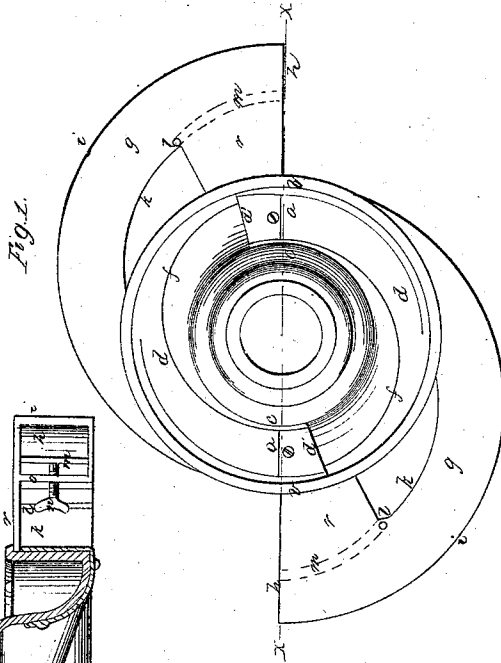


T. R. Timby,

Water Wheel,

N^o 1,074.

Patented June 7, 1845.



UNITED STATES PATENT OFFICE.

THEODORE R. TIMBY, OF CATO FOUR CORNERS, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 4,074, dated June 7, 1845.

To all whom it may concern:

Be it known that I, THEODORE R. TIMBY, of Cato Four Corners, Cayuga county, New York, have invented certain new and useful Improvements in the Reaction Water-Wheels patented by me on the 27th of September, 1844, and I do hereby declare that the following is a full, clear, and exact description of the principle thereof and manner of constructing and using the same, reference being had to the accompanying drawings, which make part of this specification, in which—

Figure 1 is a plan of the wheel; Fig. 2, a bottom view; Fig. 3, a vertical elevation, and Fig. 4 a vertical section taken at the line xx of Fig. 1.

The same letters are used in all the figures to indicate the same parts.

The nature of my invention and the chief characteristics which distinguish it from all other water-wheels before known consist in continuing the hollow arms through which the water passes and from which it issues in a curve eccentric to the curve of that part of the arms which receives the water, and which is concentric with the shaft, as fully stated in my Letters Patent referred to above, the inner and outer peripheries of the eccentric part of the arms being parallel with each other instead of approaching to each other for the purpose of gradually contracting the channel in the arms toward the issues as heretofore, this end being attained in my present improvement by means of a jointed or hinged shutter or valve regulated by a screw or other analogous device, by which the channel is not only gradually contracted, but is susceptible of the nicest adjustment, and at the same time affords the means of removing blocks of wood and other obstructions which frequently enter the channels and are wedged in with great force by the pressure of water, but which in my wheel may be removed with facility by simply opening the shutter or valve.

This wheel is mounted on a shaft in the usual manner and provided with a flume for admitting the water to the arms $a a$, which are formed between the two concentric circles b and c . The plate d , which constitutes the bottom of the water-channels at the commencement d' , gradually becomes the outer periphery by what is technically termed a "twisted

plane." The line f indicates the curve of the inner edge of this plane and the circle b the outer edge, and the inner face of this channel, which forms the connection between the line f of the plane d and the inner circle c , gradually becomes the bottom of the channel, which is curved, as represented in Fig. 4, the beginning of the bottom plate of one of the channels thus becoming the top plate of the other. Thus far I have described the wheel patented by me as above stated; but the part of these channels which I have described terminates at the line xx of Fig. 1, where the eccentric continuations $g g$ commence and extend around to the issues $h h$ half of a circle, the outer and inner peripheries $i i$ and $k k$ being parallel with each other, and the form of the cross-section the same as the parts first described; but at the point $l l$ the channels become square for the reception of the shutters or valves $m m$, (represented in Figs. 1 and 2 by dotted lines,) which are hinged at $l l$. These valves have the same curve as the inner periphery of the channels, and are set to any inclination by the set-screws $n n$, which pass through plates $o o$ extending from top to bottom, the plates $k k$ or inner peripheries of the channels not being continued beyond the hinges at $l l$. The extremity of the concentric arms are for the purpose of safety connected with the body of the wheel by means of the two plates $r r$, which are simply projections from the top plates of the arms.

The object and advantages of the eccentric continuation of the arms is to enable the water to descend and act by the force of gravitation on the inclined surfaces of the bottom of the channels in the concentric part of the arms, and then to act by centrifugal force on their eccentric continuation until it reaches the issues, when the reacting force comes into action, thus rendering available all the mechanical forces of the column of water.

The adjustable valves afford the means of regulating the capacity of the issues by gradually narrowing the channel, so important in reacting wheels, and by their combination with the channels, made of equal capacity from end to end, I am enabled, while attaining the advantages of gradually reducing the capacity of the channels, commencing at a sufficient distance from the issues, to remove

any obstructions which may enter them, and thus avoid a great source of inconvenience in wheels of this class.

Having specified the characteristics of this wheel and the manner of constructing the same, I wish it to be distinctly understood that I do not claim as my invention the form of the concentric part of the channels or water-passages in the arms, nor simply making the arms eccentric, nor the employment of regulating-valves at the issues of the channels, as these separately are well known; but

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

1. Combining with the concentric the ec-

centric continuation of the channels, for the purpose and in the manner substantially as herein described.

2. The employment of the hinged adjustable valves or shutters which regulate and gradually reduce the capacity of the issues and afford the ready means of removing obstructions from the channels or water-passages, in combination with arms having channels or water-passages of equal capacity from end to end, as herein set forth.

T. R. TIMBY.

Witnesses:

J. J. GREENOUGH,

T. A. DWIGHT.