

M. CHANDLER.  
Water-Wheels.

No. 145,987.

Patented Dec. 30, 1873.



Fig. 2

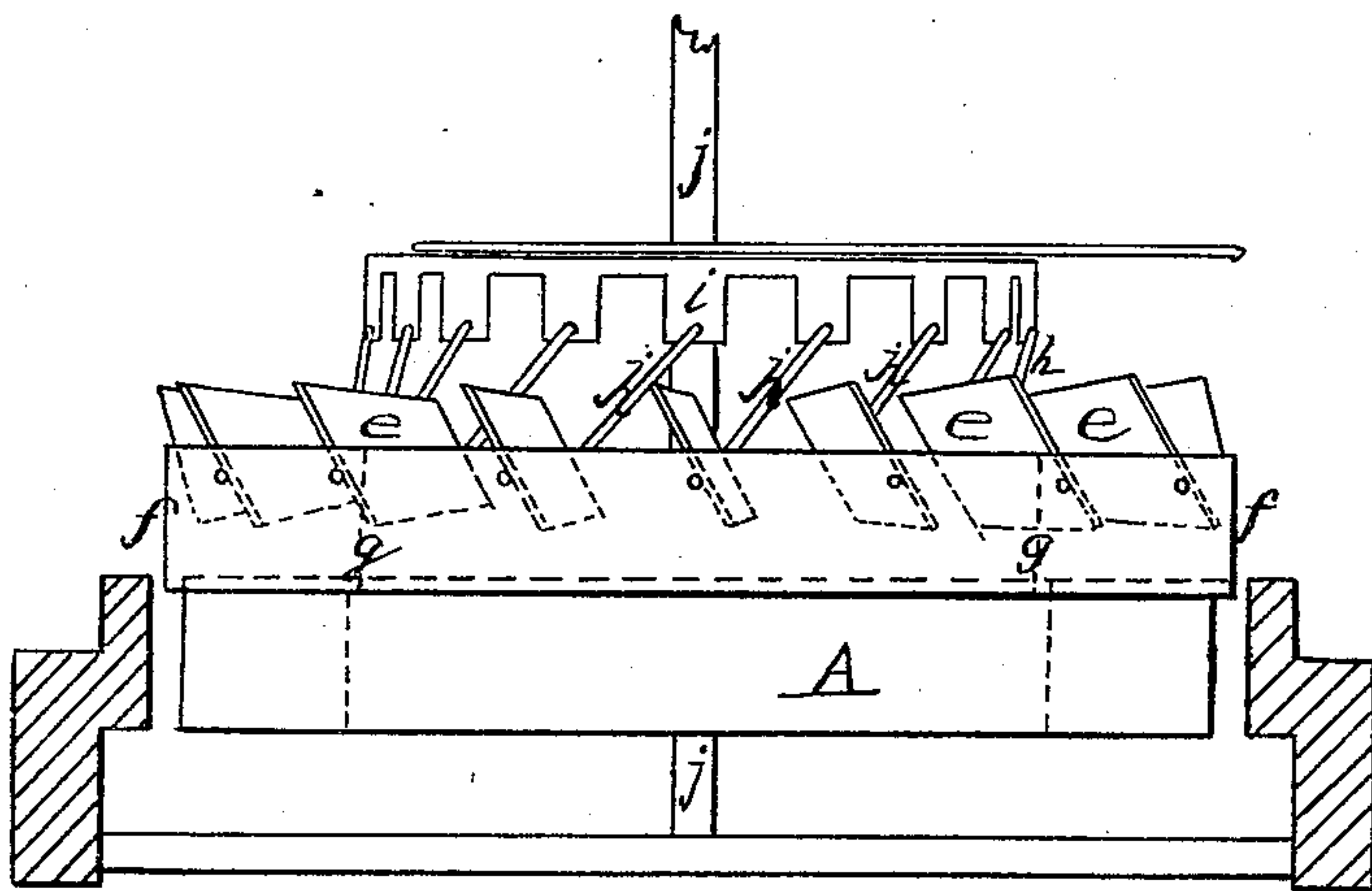


Fig. 1.

Witness.  
E. L. Heston  
D. P. Bass

Inventor.  
Moses Chandler  
Per Franklin J. Tracy  
Atty

# UNITED STATES PATENT OFFICE.

MOSES CHANDLER, OF EAST CORINTH, MAINE.

## IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **145,987**, dated December 30, 1873; application filed August 20, 1873.

*To all whom it may concern:*

Be it known that I, MOSES CHANDLER, of East Corinth, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Water-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 shows a side elevation; Fig. 2, a section through the buckets and gates.

The object of my invention is to produce a water-wheel which shall be adjustable to different heads of water, so that the power of the wheel may be regulated according to the amount of work to be performed. My wheel acts either as a percussion or reaction wheel, and will be understood on reference to the drawing, in which—

A shows the wheel revolving in a horizontal plane and taking the water from above. The buckets are peculiar in construction, enabling it, as stated, to be propelled either by percussion or reaction. They consist of two parts, (see Fig. 2,) the upper part *a* forming the percussion-bucket of the wheel. This upper part *a* consists of an inclined plate or surface, the lower end of which passing some distance under the succeeding percussion-bucket *a'*, thus enabling a sufficient number of buckets to be placed around the rim to allow the wheel to be driven to advantage by percussion; but in order that the wheel may be driven by reaction a different form of bucket must be used, having the outlet *b* smaller than the inlet *c*. The bucket surfaces *a* being parallel to each other this would not be the case; but I provide for this by securing to the under side of the buckets *a* a supplemental bottom, *b'*, converging toward the preceding bucket, and thus forming the required contraction in the outlet, and making, when said parts *a* and *b* are taken together, the wedge-shaped reaction-bucket B. In connection with the percussion-buckets *a* I employ a series of rolling

gates, *e e*, by which the quantity of water admitted to the wheel is not only regulated, but also directed in its passage, so that when the motive power is to be derived from percussion the angle at which the water shall strike the buckets may be determined by opening or closing the gates, they acting as chutes. These gates are pivoted upon radial arms within rims *f g* above the wheel, and are operated by links *h* extending to a disk or sleeve, *i*, upon the main shaft *j*, so arranged that lowering the disk opens the gates, while the weight of the water tends to close them upon the release of the disk, which may be controlled by a lever or other device, or the wheel may be made self-regulating and self-changing from percussion to reaction by a governor upon a shaft operating the disk.

The object of my wheel is not to economize water, but to sustain an equal pressure upon the wheel under varying heads. Thus, when the head is great and the velocity of the descending water in proportion, the wheel is driven by percussion, the gates being so arranged as to admit the water in jets. When the water is low the power of the wheel is sustained by increasing the volume of the water admitted, utilizing its weight instead of its velocity and driving by reaction. This is of great advantage in situations when the head of water runs with the season or time of day—as, for instance, in tidal power-wheels.

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

1. A horizontal water-wheel, having in combination with percussion-buckets *a* supplemental bottoms *b'*, forming together reaction-buckets B, as herein set forth.

2. In combination with said wheel A, as above described, the rolling gates *e e* with their links *h* and disk *i*, arranged to operate as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of July, 1873.

MOSES CHANDLER.

Witnesses:

DANIEL F. DAVIS,  
JOHN W. CHANDLER.