N. Johnson

Water Wheel.

No. 30,971. Patented Dec. 18, 1860.

Fig: 1

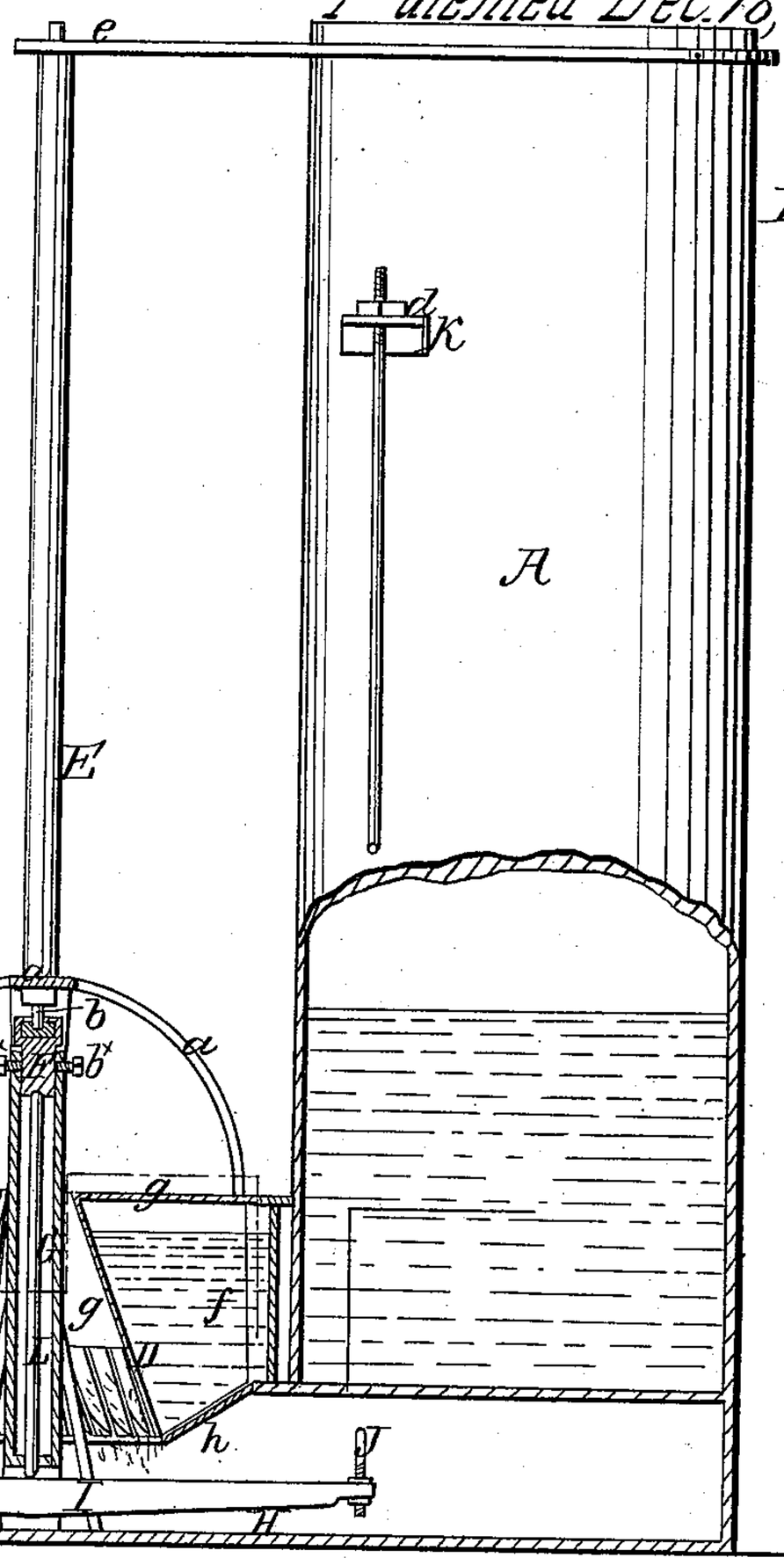
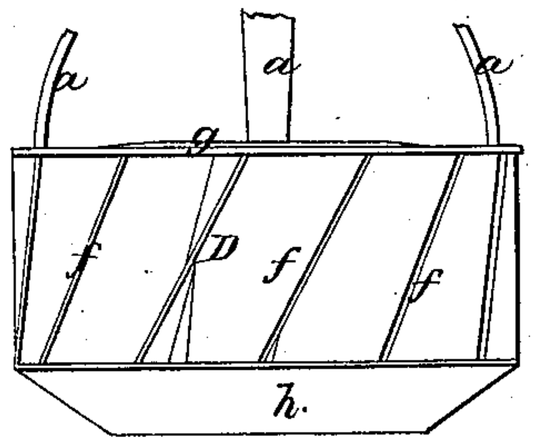
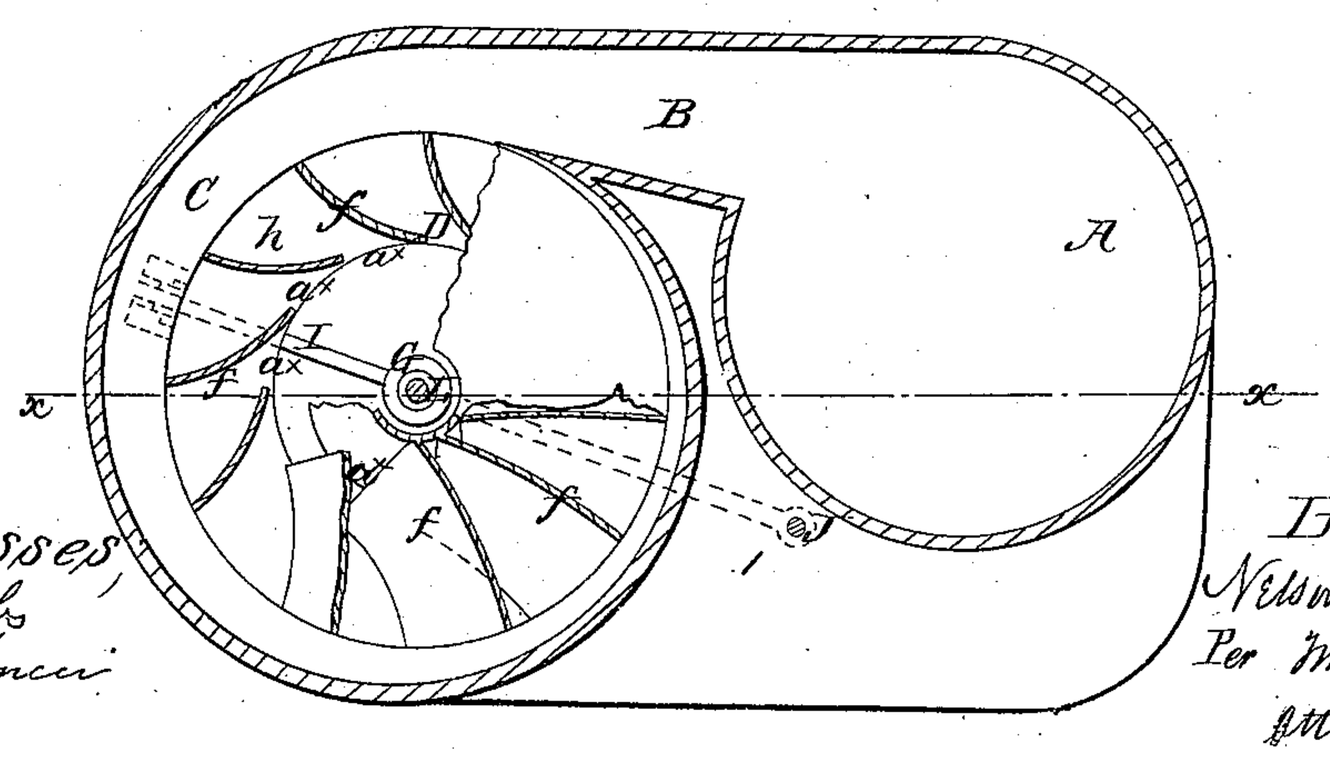


Fig: 2.

Fig: 3.





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UNITED STATES PATENT OFFICE.

NELSON JOHNSON, OF JASPER, NEW YORK.

WATER-WHEEL.

Specification of Letters Patent No. 30,971, dated December 18, 1860.

To all whom it may concern:

Be it known that I, NELSON JOHNSON, of Jasper, in the county of Steuben and State of New York, have invented a new and Improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a vertical central section of my invention taken in the line *x*, *x*, Fig. 3. Fig. 2 is a horizontal section of the same, taken in the line *y*, *y*, Fig. 1. Fig. 3 is a detached side view of the wheel.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to that class of water wheels which discharge the water at their centers, and are commonly termed center-vent wheels. The object of the invention is to obtain both the impact and the reacting force of the water in a way that will give a better result than any hitherto devised.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A represents an upright flume to the lower part of which a horizontal water passage B, is connected, said passage communicating with a scroll C. The form of this scroll is shown clearly in Fig. 2.

D represents the wheel the shaft E, of which is attached to the point of junction of two bows or bail shaped bars *a*, *a*, which are secured to the upper part of the wheel, and intersect each other at right angles. The shaft E, projects a little distance through the bars *a*, *a*, and is provided with a point *b*, which is fitted in a step F, said step being secured by set screws *b**, in the upper part of a vertical tube G, which is attached to a bed H, underneath the scroll C, as shown in Fig. 1. Through the lower part of the tube G, there passes a lever I, the fulcrum of which is at one end as shown at *c*. The opposite end of lever I, has a vertical rod J, attached to it, and this rod passes up through a guide K, and has a thumb-nut *d*, fitted on it, as shown in Fig. 1. Within the tube G, there is placed a vertical rod L, the lower end of which rests on the lever I, the upper end bearing against the bottom of step F. The upper end of the shaft E, is fitted in a guide *e*.

The wheel D, is formed of buckets *f*, the upper ends of which are attached to a circular plate *g*, which has the bail-shaped bars *a*, *a*, secured to it. The lower ends of the buckets are attached to an annular inclined or beveled rim *h*. The buckets are inclined at an angle of about 30° from a vertical line and they are of concave form in their horizontal section, as shown clearly in Fig. 2. The upper parts of the buckets *f*, are wider than their lower parts, and this arrangement causes the issues *a**, to gradually contract from their lower to their upper ends and a conical discharge opening is formed within the wheel as shown clearly in Fig. 1. These issues may be open from top to bottom, or they may be closed for a certain distance at their upper parts, as shown at *g*, in Fig. 1. By this arrangement of the buckets the water is made to act first by impact so as to obtain the best effect from that action, such result being due to the increased area of the upper parts of the buckets, and the restriction partially or wholly offered to its discharge at the upper parts of the buckets. The reacting force is obtained by the inclined position of the buckets, the concave form of the latter retaining the water and the gradually diminishing width causes the issues to gradually increase in width preventing the water from acting as a drag upon the wheel. This result is greatly favored or enhanced by the inclined or beveled annular rim *h*.

By regulating the wheel D, vertically through the medium of the lever I, and rod J, and adjusting it laterally by regulating the step F, through the medium of the screws *b**, the wheel may be kept in proper working position within the scroll C, and by having the step F above the wheel the shaft E, may be kept perfectly lubricated and made to run with less friction than if placed under water as usual.

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

The inclined buckets *f*, being of concave form in their horizontal section and of gradually decreasing width from top to bottom, in connection with the inclined or beveled lower rim *h*, essentially in the manner and for the purpose set forth.

NELSON JOHNSON.

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