T. Rose,

Water Wheel,

No. 24,057. Patented May 17, 1859.

Fig. 1.

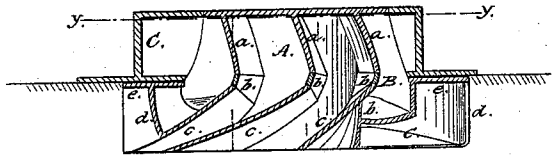


Fig. 2.

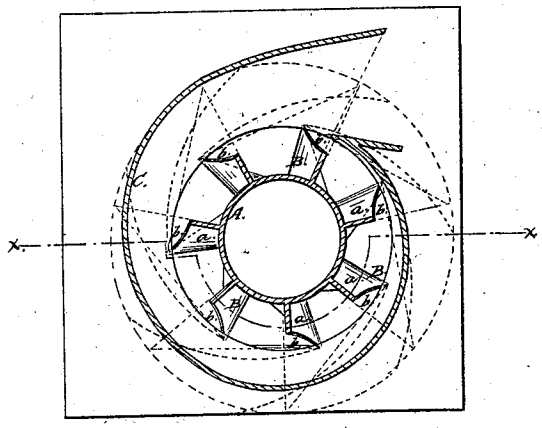
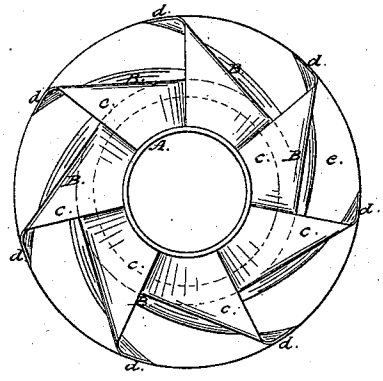


Fig. 3.



Witnesses;
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UNITED STATES PATENT OFFICE.

TIMOTHY ROSE, OF CORTLANDVILLE, NEW YORK.

IMPROVED WATER-WHEEL.

Specification forming part of Letters Patent No. **24,057**, dated May 17, 1859.

To all whom it may concern:

Be it known that I, TIMOTHY ROSE, of Cortlandville, in the county of Cortland 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 a part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line *x x*, Fig. 2. Fig. 2 is a horizontal section of same, taken in the line *y y*, Fig. 1. Fig. 3 is an inverted plan of the same.

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

This invention relates to an improvement in that class of water-wheels which rotate in a horizontal plane and are acted upon and propelled both by the impacting and reacting force of the water as it passes through the wheel. The invention consists in a peculiar construction of the wheel, as hereinafter fully shown and described, whereby a very large per centum of the maximum power of the water is obtained.

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

A represents a tube or cylindrical hub, to which the buckets B are attached, the shaft of the wheel (not represented) passing through the hub A, as usual. The buckets B may be described as being of three parts *a b c*. The parts *a* are somewhat inclined from a vertical position and extend down about half the length of the hub A, as shown clearly in Fig. 1. The parts *a* are slightly curved and their upper ends are narrower than their lower parts, as shown clearly in Fig. 2. The parts *b* of the buckets are connected to the lower parts *a*. These parts *b* are of triangular form and are inclined downward and outward from the hub A, as shown in Figs. 1 and 2. The parts *c* of the buckets are inclined surfaces of a slightly screw form, the surfaces *c* being inclined downward and inward, the inward inclination gradually decreasing from the upper to the lower ends of the surfaces *c*, the lower ends being nearly or quite horizontal, (see Fig. 1,) provided each with a vertical ledge or plate *d*, which extend upward as far as an annular plate *e*, the inner edge of which is in contact with the outer edge of the lower parts of the parts *a* of the buckets, the outer edge of said plate *e* extending as far as the outer ends of the plates *d*. (See Fig. 3.) Over this annular plate *e* a scroll C is placed. This scroll is of the usual form, gradually tapering from its outer to its inner end, as shown clearly by the dotted lines in Fig. 2.

The operation of the wheel is as follows: The water enters the scroll C in the usual way. The effect of the water on the wheel is as follows: The water acts by impact only on the parts *a* of the buckets B and on account of the increased width of the lower portions of the parts *a* is allowed to descend freely on the lower parts *b c* without causing any reaction on the wheel—that is to say, between the parts *a*. On account, also, of the increased width of the lower portions *a* the water is made to act in a greater volume on the lower portions of *a*, and is pressed or forced down on the bottom or lower parts *b c* with a greater effective force than could otherwise be obtained. The water acts on the parts *b c* by its gravity and velocity, in connection with which the inclination and curvature of the parts *b c* give the propelling power. In addition to the above, a power is obtained by the centrifugal action of the water on the plates *d* below the scroll C, the latter confining the first action of the water to the parts *a* only of the buckets.

The effect of the water on the wheel may be summed up thus: first, the blow or impact against the parts *a;* second, the whirlpool action principally on the parts *b;* third, the force due to the weight and velocity of the water as it passes over the parts *c;* fourth, the centrifugal force against the plates *d*.

In order to obtain the greatest effective force of the water it is essential that the issues or discharge orifices of the buckets should be of such dimensions as to allow the water to escape without permitting it to "drag" on the wheel. In this event the reacting power, instead of being an auxiliary would operate against the maximum power of the wheel. The issues, therefore, must have an area commensurate with that of the orifice of the scroll C. To obtain this result, and also to obtain the most effective centrifugal force of the water, the width of the parts *c* of the buckets is increased at their ends, thereby increasing the

diameter of the lower part of the wheel to an extent equal to plate *e* and permitting the water to act as long on the inclined parts of the buckets as it does on the upper parts *a*.

I am aware that buckets have been curved and arranged in various ways with a view to obtain both the direct and reacting power of the water; and I therefore do not claim, broadly, curved buckets for effecting such result irrespective of the construction and arrangement herein shown and described; but

I do claim as new and desire to secure by Letters Patent—

Forming the buckets B of four parts *a b c d*, arranged or disposed relatively with each other, the hub A, and annular plate *e*, and with a scroll C, specifically as herein shown and described, and for the purpose set forth.

TIMOTHY ROSE.

Witnesses:
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