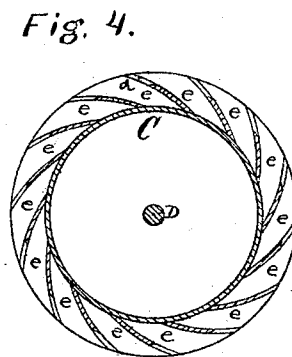
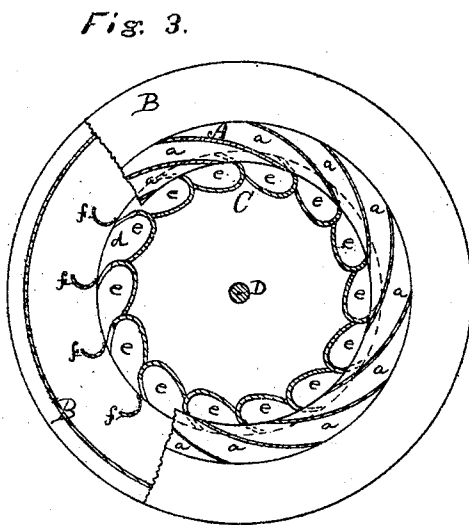
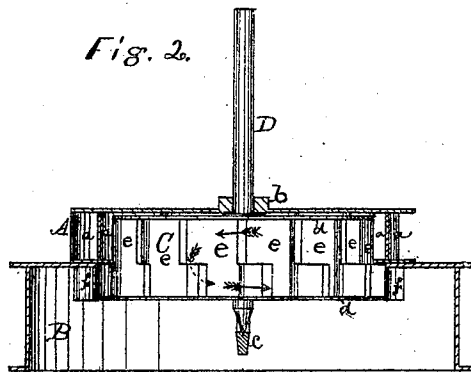
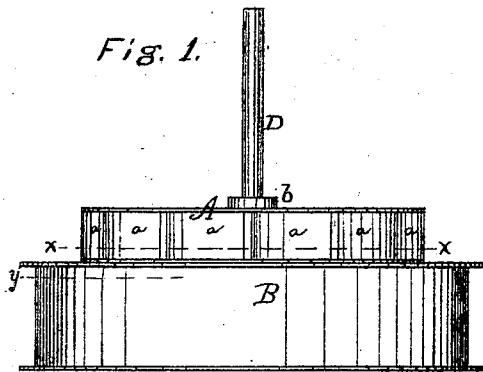


W. A. TERRY.

Improvement in Turbine Water-Wheels.

No. 131,233.

Patented Sep. 10, 1872.



Witnesses.

James Shepard.
C. A. Shepard.

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UNITED STATES PATENT OFFICE.

WILLIAM A. TERRY, OF BRISTOL, CONNECTICUT.

IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. 131,233, dated September 10, 1872.

To all to whom it may concern:

Be it known that I, WILLIAM A. TERRY, of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Water - Wheels, of which the following is a specification:

My invention consists, first, of the peculiar construction of the buckets, the same having both their mouths and discharge on the edge of the wheel, and at two different points of each bucket, as hereafter described. Second, it consists in the employment of guides, fixed immediately in front of the discharge end of the buckets, as hereafter described.

In the accompanying drawing, Figure 1 is a side elevation of a wheel and case embodying my invention; Fig. 2, a central vertical section, partly in elevation, of the same; Fig. 3, a horizontal section of the same, partly on the plane of line *xx* and partly on the plane of line *yy*; and Fig. 4, a horizontal section of a wheel embodying my invention.

A designates the chute-case, provided with chutes *a* of the ordinary form. The case A, instead of being mounted on the bottom of the flume as in the ordinary wheel, is mounted on the supplementary case B. The wheel C is fitted to revolve in the cases A and B in any proper manner. In the drawing and model it is supported by bearings *b* and step *c*, (Fig. 2,) in the ordinary manner. The wheel C is formed of two plates, *d d*, shaft D, and buckets *e*, the latter being deeper than the depth of the chute-case A, as shown in Fig. 2. The water passes through the chutes *a* into that portion of the buckets *e* which is immediately in front of said chutes, as in the ordinary wheel, but unlike the operation of other wheels, the water after striking the back of the buckets falls to the lower ends thereof, and from thence is discharged at the outer edge of the wheel upon nearly the same line but in an opposite direction as that by which it entered the buckets. The direction of the current through the buckets is indicated by darts in Fig. 2. In the drawing I have formed the lower portion of the wheel, through which the water is dis-

charged, of a larger diameter than that of the upper portion of the wheel, but this is not essential. I have also formed the buckets *e* each of a single piece, curved or bent, so as to meet each other, as shown in Fig. 3; but the buckets may be formed of thin partitions arranged around a drum, as shown in Fig. 4. Immediately in front of the discharge of the buckets *e* I arrange a series of fixed guides, *f*, the same being secured to the case B, and shown in Figs. 2 and 3. These guides may be straight or curved, as desired, their office being to throw the water away from the wheel, and prevent it from forming in a circular current around the same, which current has a tendency to retard the motion of the wheel. It is also believed that the force of the water flowing from the buckets by being thrown against the guides *f* will increase the velocity of the wheel. In Fig. 3 a portion of the case A B is removed in order to show a number of the guides *f*, the plane of their section and the case B being indicated by line *yy*, Fig. 1, the plane of section for the remaining parts being indicated by line *xx*, Fig. 1. These guides *f* are equally applicable to other wheels, being, if anything, more effective in a center-vent wheel than in others. Although the guides *f* are designed to be fixed when the wheel is in operation, they might be made adjustable, so as to be set to throw the water at a greater or less angle from the wheel when under different heads.

I claim as my invention—

1. The wheel C, consisting of the buckets *e*, arranged between two rings or plates, *d d*, which form the ends of the buckets, said buckets having their mouths and discharge both on the edge of the wheel and at two different portions of each bucket, the whole arranged substantially as described.

2. The series of guides *f*, fixed immediately in front of the discharge of the buckets, substantially as and for the purpose described.

WILLIAM A. TERRY.

Witnesses:

JAMES SHEPARD,
C. A. SHEPARD.