

W. C. EDWARDS.
Water-Wheels.

No. 138,621.

Patented May 6, 1873.

fig. 1

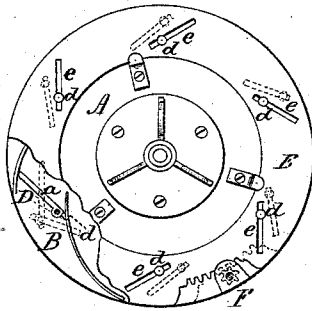


fig. 2

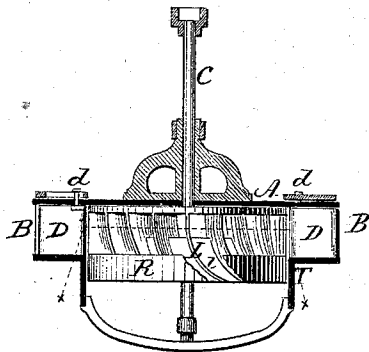


fig. 3

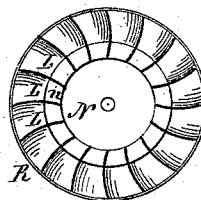
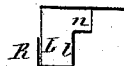


fig. 4



Witnesses

A. Tibbitts
J. H. Thumway

William C. Edwards
Inventor

By Atty,

John S. Edwards

UNITED STATES PATENT OFFICE.

WILLIAM C. EDWARDS, OF WEST WINSTED, CONNECTICUT.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **138,621**, dated May 6, 1873; application filed November 22, 1872.

To all whom it may concern:

Be it known that I, WILLIAM C. EDWARDS, of West Winsted, in the county of Litchfield and State of Connecticut, have invented a new Improvement in Water-Wheels; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a top view, a portion of the wheel broken away to show the chutes and gate; Fig. 2, a vertical central section of the case and side wheel; and in Fig. 3, a transverse section of the wheel only, on line *x x*, looking from the top.

This invention relates to an improvement in that class of turbine-wheels known as "central discharge," the object being to facilitate the opening of the gate and also the action of the water upon the wheel; and it consists in constructing the upper and lower section of the buckets without a division between, the upper section extending over a flange toward the center discharge, as more fully hereinafter described.

A is the case, in the center of which is arranged the wheel upon a shaft, C, with chutes B around the outside, conducting inward to the wheel, substantially in the usual manner. In each of these chutes a gate, D, is arranged, by preference pivoted centrally, as at *a*, Fig. 1. On the upper edge of the gate a stud, *d*, extends up through the case, and upon the upper side of the case a ring, E, is arranged near the outer edge over the gates, and in the said ring over each gate a diagonal slot, *e*, is formed, into which the said stud *d* sets. This ring is given a partial rotation by means of a pinion, *f*, or otherwise. Such partial rotation will, when the gates are closed, carry the slots *e* into the positions denoted in broken lines, Fig. 1; the studs *d* will move through the slots, and thereby be carried outward, causing the gate to turn upon its pivot, as denoted in broken lines, Fig. 1, and thus open the chute, and at

the same time form a division in the chute. By reversing the movement of the ring E the parts will be closed again. The buckets L are arranged around the outer edge of the wheel in substantially the usual manner, but extend from the top to the bottom, as seen in Fig. 2. At a distance of about two-thirds the width of the bucket, toward the center, I arrange a vertical flange or ring, *l*, and upon the upper edge of this an inwardly-projecting flange, *n*, as seen in Figs. 3 and 4, the upper portion of the bucket projecting inward over this flange *n*. The water passing into the wheel strikes the whole surface of the bucket, and so much of it as is inclined so to do will pass through the buckets over the flange *n* to the center, thence out through the central opening N. The remainder of the water will pass down through the buckets outside the flange *l*.

By thus constructing the wheel without the division between the upper and lower sections of the bucket I attain the full active force of the water, leaving the water free to its own natural course for exit.

As the escaping water must revolve with the wheel, thus causing no inconsiderable friction between the water and the case, as wheels are usually constructed, I avoid this friction by arranging around the buckets, at their lower extremity, a vertical ring, R, extending from their extreme lower edge up to the shoot, as seen in Fig. 2, which said ring runs in close proximity to the lower portion, Q, of the case, and the water will pass down inside this ring, and not come in contact with the case, the whole surface of the exit-opening revolving with the wheel.

I claim as my invention—

In combination with a succession of buckets, L, the internal vertical ring *l*, and the flange *n*, substantially in the manner and for the purpose described.

WILLIAM C. EDWARDS.

Witnesses:

R. L. BEECHER,
E. E. GILMAN.