G. H. DARLING.

WATER-WHEEL.

No. 170,065. Patented Nov. 16, 1875.

Fig. 1.

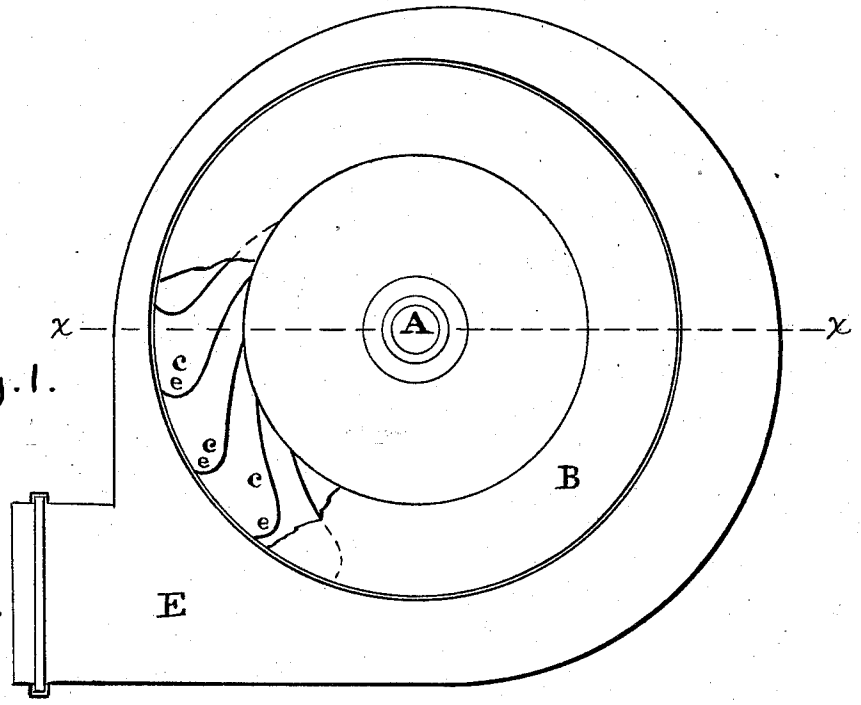
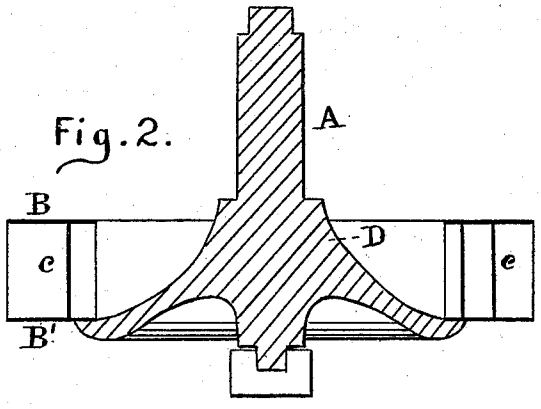


Fig. 2.



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GEORGE H. DARLING, OF CRARY'S MILLS, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **170,065**, dated November 16, 1875; application filed October 16, 1875.

To all whom it may concern:

Be it known that I, GEORGE H. DARLING, of Crary's Mills, St. Lawrence county, in the State of New York, have invented certain Improvements in Water-Wheels, of which the following is a specification:

My invention relates to that class of water-wheels commonly known as the turbine-wheel; and consists in providing the wheel at its periphery with buckets, so constructed and curved in shape as to catch the water and receive the full force thereof in its passage through the chute about the wheel, and guide it in a direction somewhat serpentine to the interior, so that no force is lost by the reaction of the water. It further consists in forming the body of the wheel with the lower side closed and the upper side open, and providing a conical formation about the center of the wheel, rising gradually from the floor of the buckets at their inner extremities, so that the water passing in the wheel is conducted upward and discharged above.

In the accompanying drawing, which illustrates my invention and forms a part of this specification, Figure 1 is a plan of my invention, a part of wheel being removed to show the buckets. Fig. 2 is a vertical section of wheel on the line *x x* of Fig. 1.

In the drawing referred to, A designates a vertical shaft, upon which is fixed the water-wheel in a horizontal position, said shaft being stepped below in the usual manner. B and B′ indicate the upper and lower plates or casing of the wheel, between which are fixed the buckets *c*, extending on an inward inclination a suitable distance. As shown in Fig. 1, the said buckets have, at their outward extremities, a short curve formed to catch the water and receive the full force thereof, and extending inward form a gradual curve in the opposite direction. The upper part B is formed, as shown, with a large opening about the center of the wheel for the discharge of the water upward. The conical formation, indicated by D, about the center of the wheel and the shaft, rises gradually from the floor of the buckets to the upper line of the wheel, its side surfaces from the base to the top being somewhat concave. By this construction the water passing into the chute E surrounding the wheel, as shown, first strikes the buckets directly at *e*, then bearing against them sidewise passes up the conical formation D in the interior and is discharged, the part D affording an easy passage upward. A saving is thus caused in the head and fall of water to the extent of the depth of the wheel, and a wheel constructed as shown is found to work equally well when entirely immersed.

Having described my invention I claim—

1. The turbine water-wheel, constructed with the central conical formation D, the open top and closed bottom, substantially as shown, for the purpose specified.

2. The combination of the chute E, and wheel provided with the interior conical formation D, buckets *c*, plates B and B′, the open top and closed bottom, as and for the purposes described.

Witness my signature hereto in the presence of two witnesses.

GEORGE H. DARLING.

Witnesses:

SAMUEL WILKINSON,

ALFRED COLLINS.

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