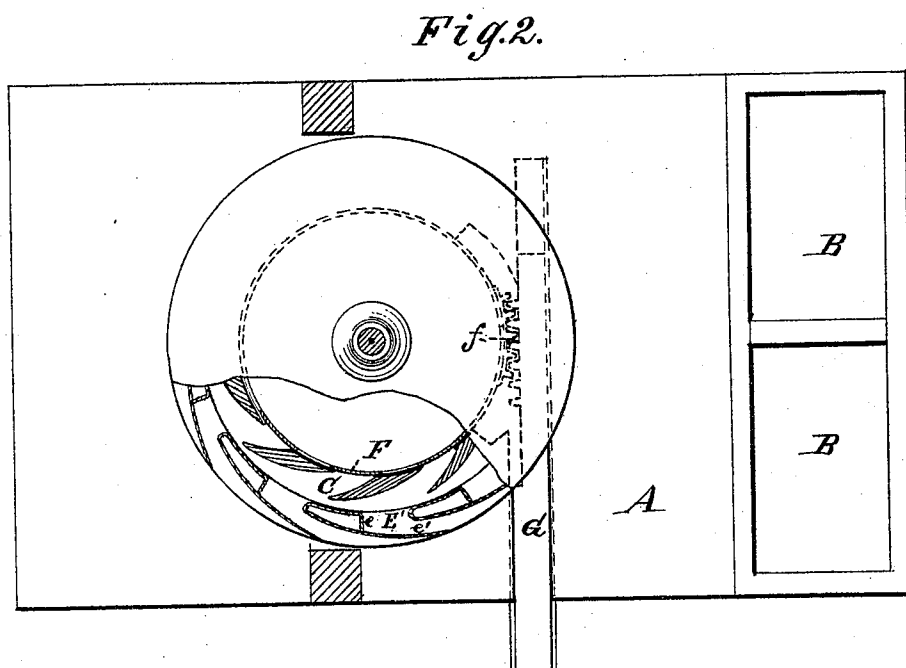
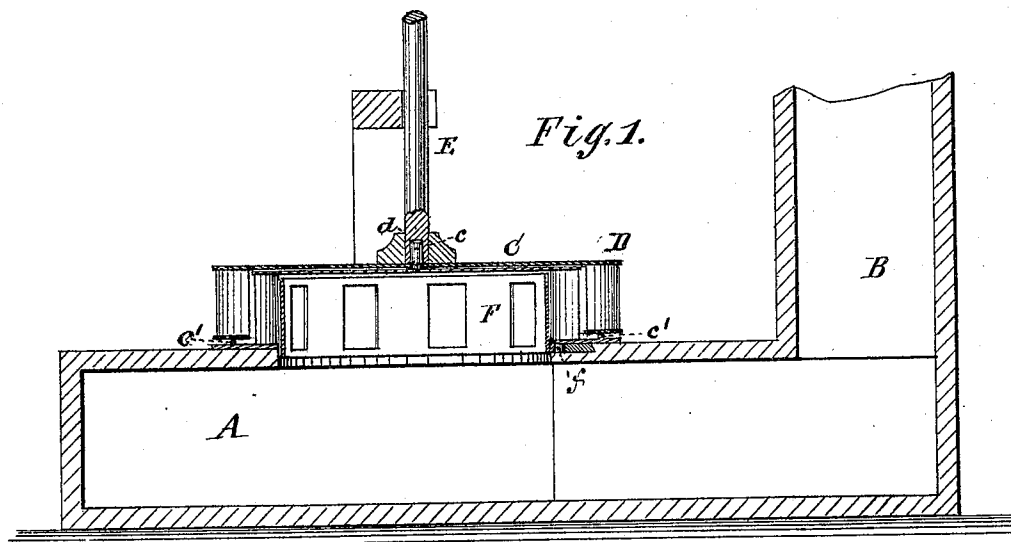


J. McGREW.
Turbine Water-Wheels.

No. 133,470.

Patented Nov. 26, 1872.



Witnesses:
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Inventor:
John McGrew
PER
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UNITED STATES PATENT OFFICE.

JOHN MCGREW, OF RAVENSWOOD, WEST VIRGINIA, ASSIGNOR TO HIMSELF
AND MARGARET J. SMITH, OF SAME PLACE.

IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. 133,470, dated November 26, 1872.

To all whom it may concern:

Be it known that I, JOHN MCGREW, of Ravenswood, in the county of Jackson and State of West Virginia, have invented a Turbine Reaction Water-Wheel, of which the following is a specification:

The invention consists, first, in combining with the inner chute of a turbine-wheel a series of peculiarly-constructed buckets, that, by their relation to the discharge apertures, utilize all the pressure of the water; second, it consists in providing the chute-ring with a vertical circular flange, by which great steadiness and uniformity of motion are secured to the wheel.

Figure 1 is a vertical central section, and Fig. 2 a plan view, partly broken away, of my invention.

A represents the chamber, in which the water is received through channel-ways B B; and C is the chute-ring, which is made fast to the top of chamber A, is provided with step c, on which the wheel turns, and has an upward annular flange, c', that guides the wheel and prevents it from wobbling on the step. D is the wheel, having shaft E, that actuates machinery connected therewith, and bearing d, that fits about the step c. E' are the buckets, angled so that the water that has passed over surface e' will press against the short arm e of the plane angle. The surface of this short arm is in area about one-eighth larger than the transverse area of the aperture through

which the water is discharged, so as to prevent any counter-pressure in a direction opposite to that in which the wheel is moved. F is an adjustable gate placed on the inside of chute-ring, and provided with spurs f on an arc of its periphery, which gear with a reciprocating rack, G, placed in the frame of chamber A.

The operation is as follows: The water enters through channel-ways B B, is received into chamber A, passes through gate F, and is guided by chutes of ring C toward and into the buckets. Here, pressing against the whole area of arm e, while all pressure opposite thereto is entirely removed by the discharge-aperture, the wheel is compelled to turn.

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

1. The combination of an inner chute-ring, C, with buckets E having a surface-area, e, bent at an angle to surface e', and slightly larger than the transverse area of the discharge aperture, as and for the purpose described.

2. The chute-ring C provided with the vertical annular flange c', as and for the purpose set forth.

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