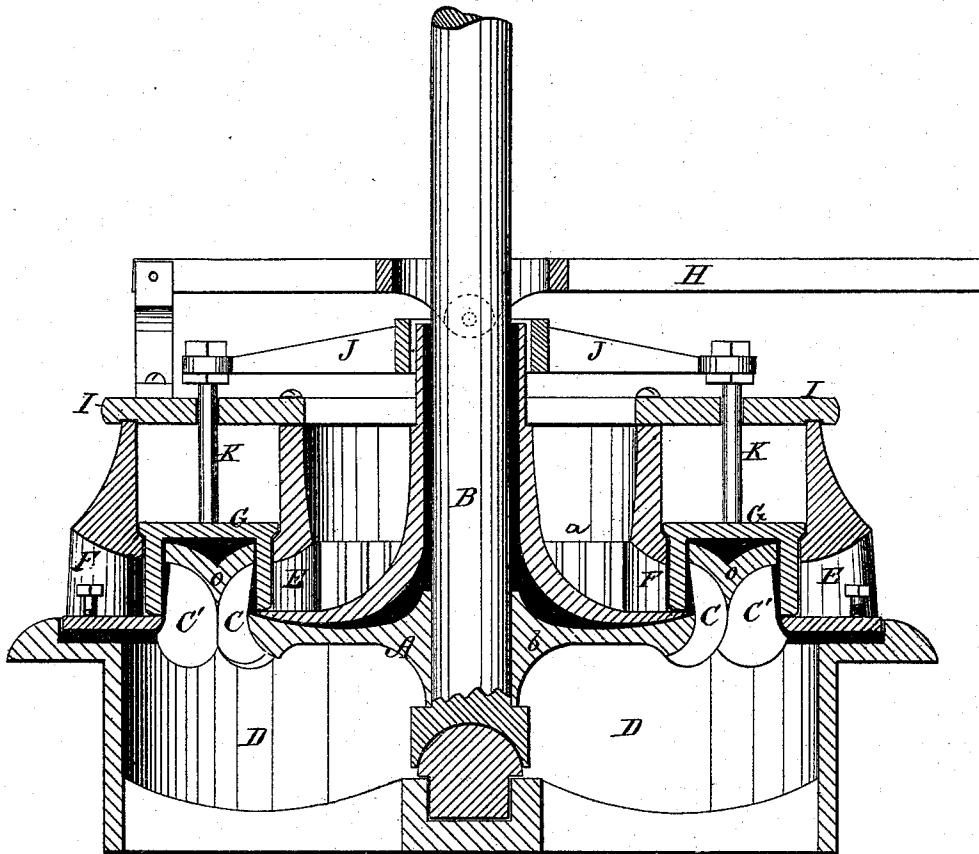


J. B. McCORMICK & J. L. BROWN.

TURBINE WATER-WHEEL.

No. 172,141.

Patented Jan. 11, 1876.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN B. McCORMICK, OF ARMAGH, AND JAMES L. BROWN, OF BROOKVILLE,
PENNSYLVANIA.

IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. **172,141**, dated January 11, 1876; application filed
November 27, 1875.

CASE B.

To all whom it may concern:

Be it known that we, JOHN B. McCORMICK, of Armagh, in the county of Indiana and State of Pennsylvania, and JAMES L. BROWN, of Brookville, in the county of Jefferson and State of Pennsylvania, have invented a new and Improved Turbine Water-Wheel; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which the figure is a vertical section.

The object of this invention is to increase the effective power of a turbine water-wheel, whereby a wheel of a given depth may utilize a larger proportion of the water than wheels of the same depth heretofore used.

It consists in a wheel having a double series of buckets, one of which is arranged to receive its water laterally and interiorly, and the other arranged to receive its water laterally and exteriorly, from a common flume, the said two series being also arranged together so as to discharge their water with a confluence, which reacts upon the wheel in the direction of its circumference, and utilizes a large per cent. of motive power.

The invention also consists in the combination of the said wheel, with other co-operating parts, as hereinafter more fully described.

In the drawing, A represents the wheel, which is attached to the shaft B, and provided at the bottom with a cup, which fits upon the step. Said wheel is provided with an upper rim, *a*, and a central support, *b*, which hold the two series of buckets C C'. C is the inner series, which receives water laterally from the interior, and C' is the outer series, which receives water laterally from the exterior. The two series are arranged inclinedly to the central shaft, so that their upper edges are nearer the center than their lower edges, and the buckets are curved, so that no part of their inside faces is a true circle, whereby the water is being constantly diverted, and a corresponding reacting force produced on the wheel. The outer edges of the outside series of buckets are slightly flared, whereby the centrifugally-escaping water is utilized, and the combined arrangement of the two series is such that they discharge their water confluently, which makes the reaction

of their water in the direction of the circumference of the wheel, securing thereby an important advantage.

The wheel, as thus described, rests with its cup upon the step of a base, D, which is provided with a circumferential flange, which serves as a support when the said base is placed in a hole in the bottom of the flume, and is provided also with a bridge-tree, in which the step is seated.

E is a set of chutes, which furnish water to the outer series of buckets, the said chutes being adjusted to the base D, upon which they rest, by means of set-screws. F is a second set of chutes, which fit around the wheel-shaft, and furnish water to the inner series of buckets. G is a double gate, the outer wall of which is arranged to pass down between the outer set of chutes and the outer series of buckets, and the inner wall of which is arranged to pass down between the inner series of buckets and inner set of chutes. H is a lever fulcrumed upon a support attached to the top casing I of the wheel, and pivoted in the middle to arms J, which are connected, through the rods K, with the double gate.

Both the lever and arms have a central hole, through which the wheel-shaft passes, and the device constitutes the means for adjusting the gate.

As thus described, it will be seen that, the gate being double-acting, a much greater percentage of power is available with the same-sized wheel.

Having thus described our invention, what we claim as new is—

1. A turbine water-wheel, having two series of buckets in the same plane, one of which receives its water from the interior, and the other from the exterior, and both discharging with a confluence, substantially as described.

2. The combination, with the wheel A, of the inner set of chutes E and the outer set of chutes F, substantially as described.

3. The combination, with the double wheel A and the two sets of chutes E F, of the double gate G, operated by a suitable mechanism, substantially as described.

JOHN B. McCORMICK.

Witnesses: JAMES L. BROWN.

CHAS. A. PETTIT,

SOLON C. KEMON.