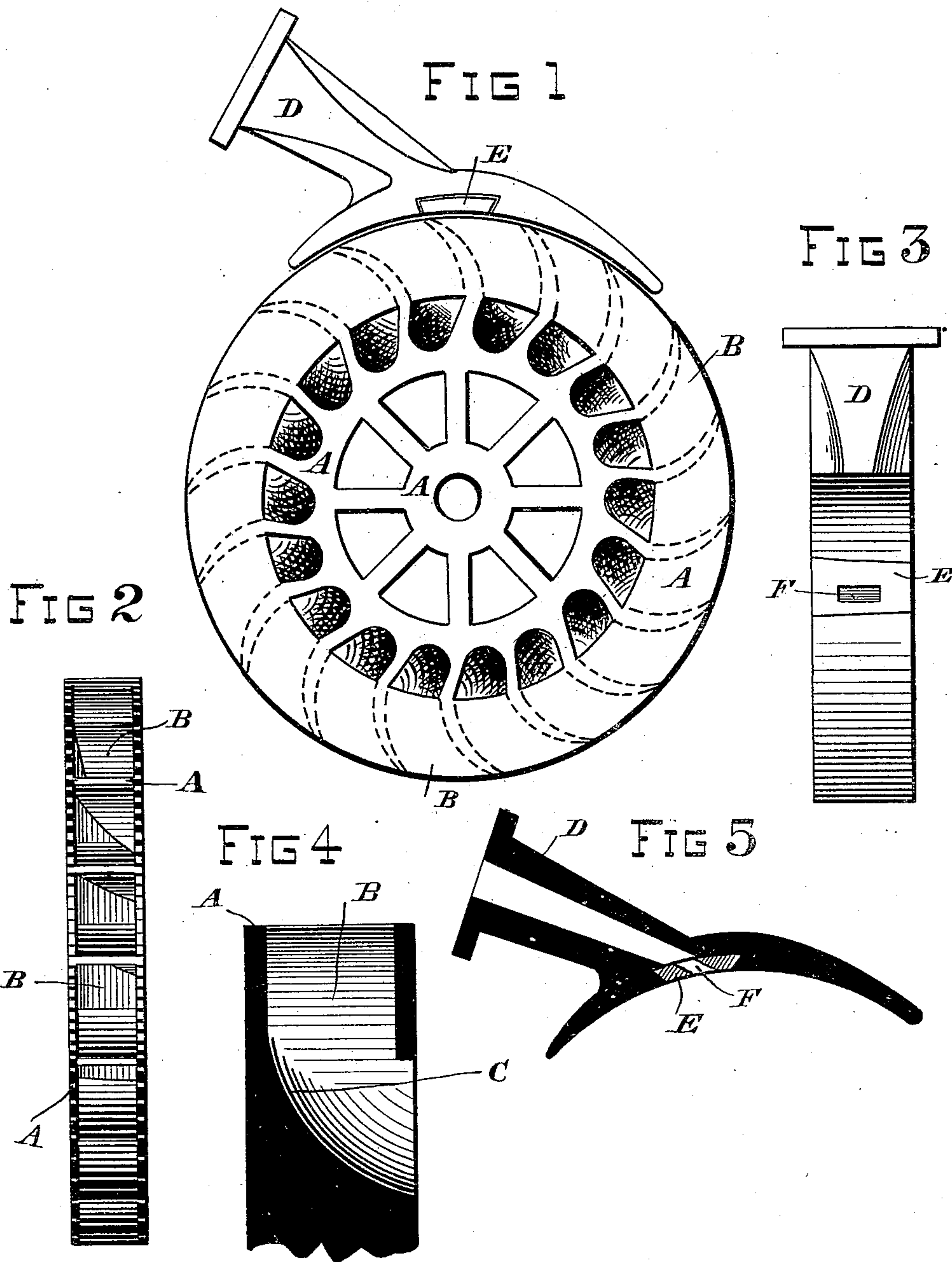


(No Model.)

J. J. COLLINS.
Turbine Water Wheel.

No. 238,763.

Patented March 15, 1881.



WITNESSES:

Wilmer Bradford
John Brizee

INVENTOR:

John J. Collins,
By C. W. M. Smith,
Attorney.

UNITED STATES PATENT OFFICE.

JOHN J. COLLINS, OF GRASS VALLEY, CALIFORNIA.

TURBINE WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 238,763, dated March 15, 1881.

Application filed August 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. COLLINS, of Grass Valley, in the county of Nevada and State of California, have invented a new and
5 useful Turbine Water-Wheel, of which the following is a specification.

My invention relates to improvements in turbine water-wheels in which the axis of revolution may be vertical or horizontal, as desired; and the objects of my improvements are,
10 first, to obtain as great a power as possible with the minimum of water employed; second, to provide a shoe for the chute for increasing or lessening the flow of water upon the
15 buckets, and the removing of the same when worn out by friction of the water or action of sand and gravel upon it. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

20 Figure 1 is a front elevation of the wheel and spout or chute. Fig. 2 is a side view of wheel; Fig. 3, a bottom view of spout; Fig. 4, a sectional detail view, showing one bucket; Fig. 5, a longitudinal sectional view of spout
25 or chute.

Similar letters refer to similar parts throughout the several views.

30 The outer portion of my wheel A I cast whole with the curved buckets B, and the hub and radial arms or spokes in the center thereof, as shown in Fig. 1, with the buckets opening on the periphery of the wheel and having their discharge outward at one side only. The construction of these buckets is such with reference to their curvatures C that the wheel
35 will not only receive the impact of the water, but its weight will also contribute to greatly

accelerate the speed without retarding in the least the outflow of the water, and especially will this be the case when the axis is horizontal. The water is distributed to the wheel
40 from the outside by means of the chute D. The position of this chute is such with reference to the rim of the wheel as to give free play to its motion with as little waste of water as possible through the opening necessary
45 for the action of the wheel. The face of the chute is provided with a slotted shoe, E, of metal, having beveled edges to fit the beveled sides of the slot in the chute, so that when one
50 shoe is worn by the friction of the water or gravel passing through the slot F another one may be easily substituted; also, shoes having larger or smaller slots can be readily exchanged, so as to direct a larger or smaller
55 stream upon the buckets of the wheel according to the head or pressure of the water to be employed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, 60 is—

In combination with a turbine water-wheel having buckets, as shown, the chute D, having adjustable and removable slotted shoes E, substantially as described, for the purpose set
65 forth and specified.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 9th day of July, 1880.

JOHN J. COLLINS.

Witnesses:

C. W. M. SMITH,
W. P. COLEMAN.