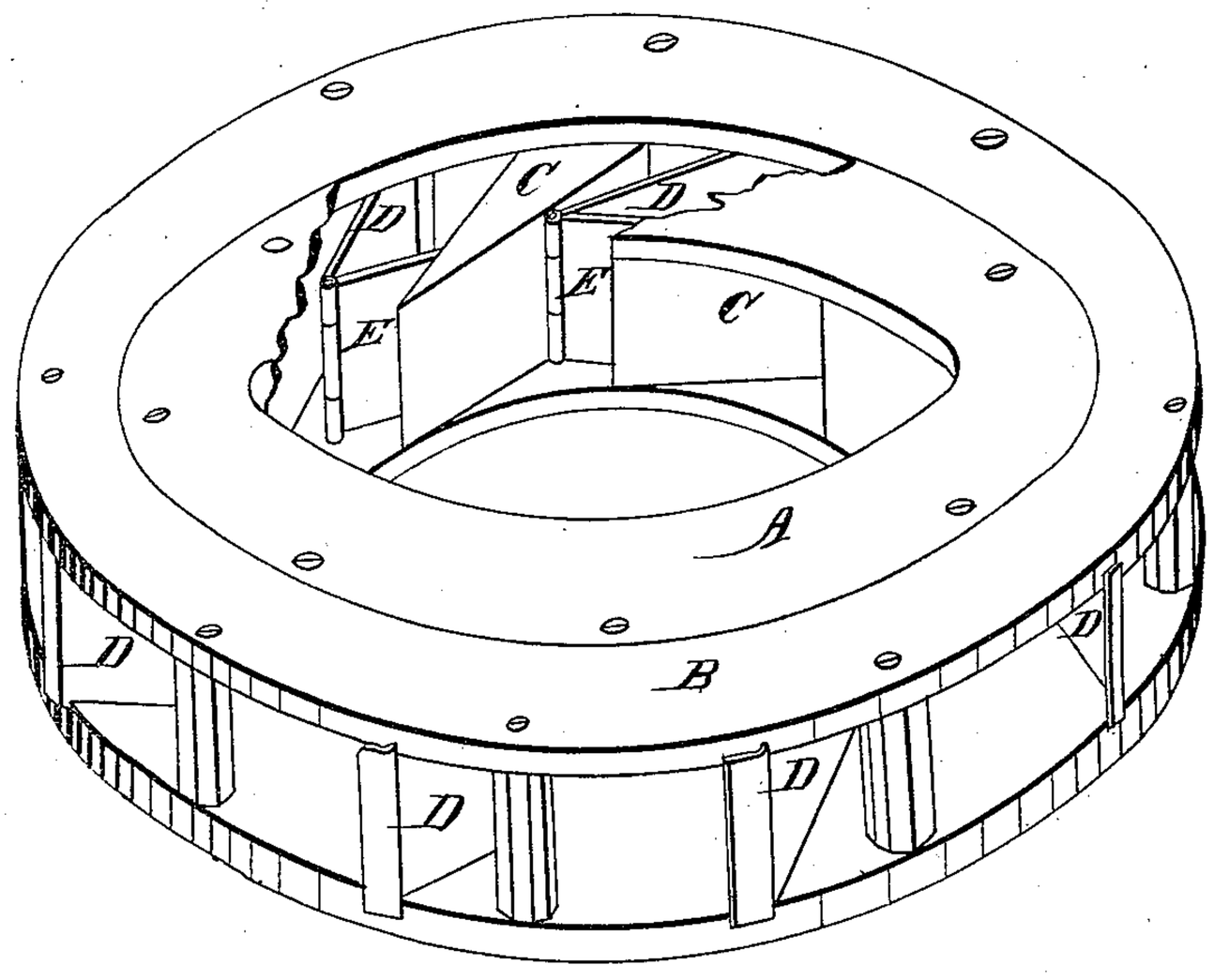
J. H. Hartsuff.

Water Wheel.

No. 70,561. Patented Nov. 5, 1867.



Witnesses

A. A. Boatman

A. H. Marr

Inventor

John H. Hartsuff

per

Mercer & Mason

United States Patent Office.

JOHN H. HARTSUFF, OF NEW CASTLE, PENNSYLVANIA, ASSIGNOR TO HIMSELF, R. W. CUNNINGHAM, AND R. C. DUNLAP.

Letters Patent No. 70,561, *dated November* 5, 1867.

IMPROVEMENT IN CURBS FOR WATER-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN H. HARTSUFF, assignor to myself, R. W. Cunningham, and R. C. Dunlap, all of New Castle, in the county of Lawrence, and in the State of Pennsylvania, have invented certain new and useful Improvements in Casing for Turbine Water-Wheels; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon. In the annexed drawings, making part of this specification—

A represents a wheel composed of two rims, which are placed a suitable distance apart, and separated by means of a series of wedges, C C, which are placed between them tangentially to their inner peripheries. This wheel is intended to be made stationary in the fore-bay of a mill-race, in a horizontal position, to encircle a turbine-wheel, and to be encircled by a wheel, B, somewhat similar in construction to itself. The wheel B is composed of two rims separated by standards placed at suitable distances between them, there being one standard for each wedge-shaped division C C of the wheel A. D D represent a series of tongues or gates, which are secured between the rims of the wheel B tangentially with reference to the inner periphery of the wheel A. These tongues extend in between the wedges C C, and have hinged on their inner ends the flaps E E. The loose end of each flap lies against the wedge C next to it. This outer wheel B is movable, having a partial rotary motion backwards and forwards. When it moves in one direction it closes up the water-space between the wedge-shaped divisions, and thus shuts it from the turbine-wheel which is within the wheel A. When it is moved in the other direction it opens the water-channels, allowing of its passage to the wheel. The flap E opens and closes with the tongues D. It will readily be seen that by the water pressing upon each side of the tongues D, said tongues will be so nearly balanced that the wheel B can easily be moved so as to open or close the water-channels. The object of these flaps is to produce this equilibrium of pressure for shutting against the divisions C. They allow water to press on one side of the tongue without allowing its passage, while the water presses upon the other side of the tongue in passing to the turbine-wheel within wheel A.

What I claim as new, and desire to secure by Letters Patent, is—

The tongues D D provided with the hinged flaps E E, and used in combination with the wheels A and B, constructed and operating as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of September, 1867.

JOHN H. HARTSUFF.

Witnesses:

JAS. DICKSON,

J. T. COOK.