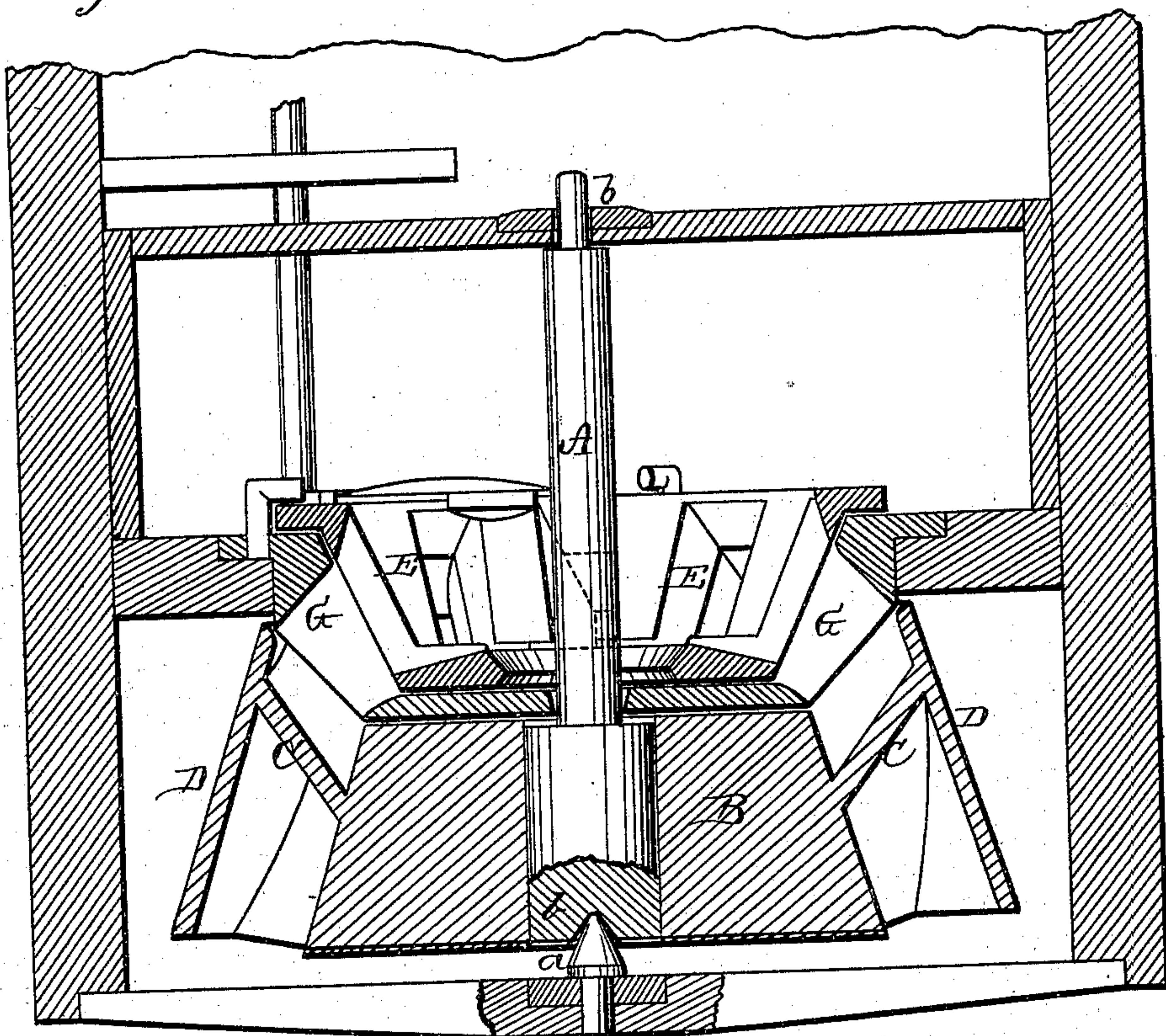


T. H. POWERS.  
WATER-WHEEL.

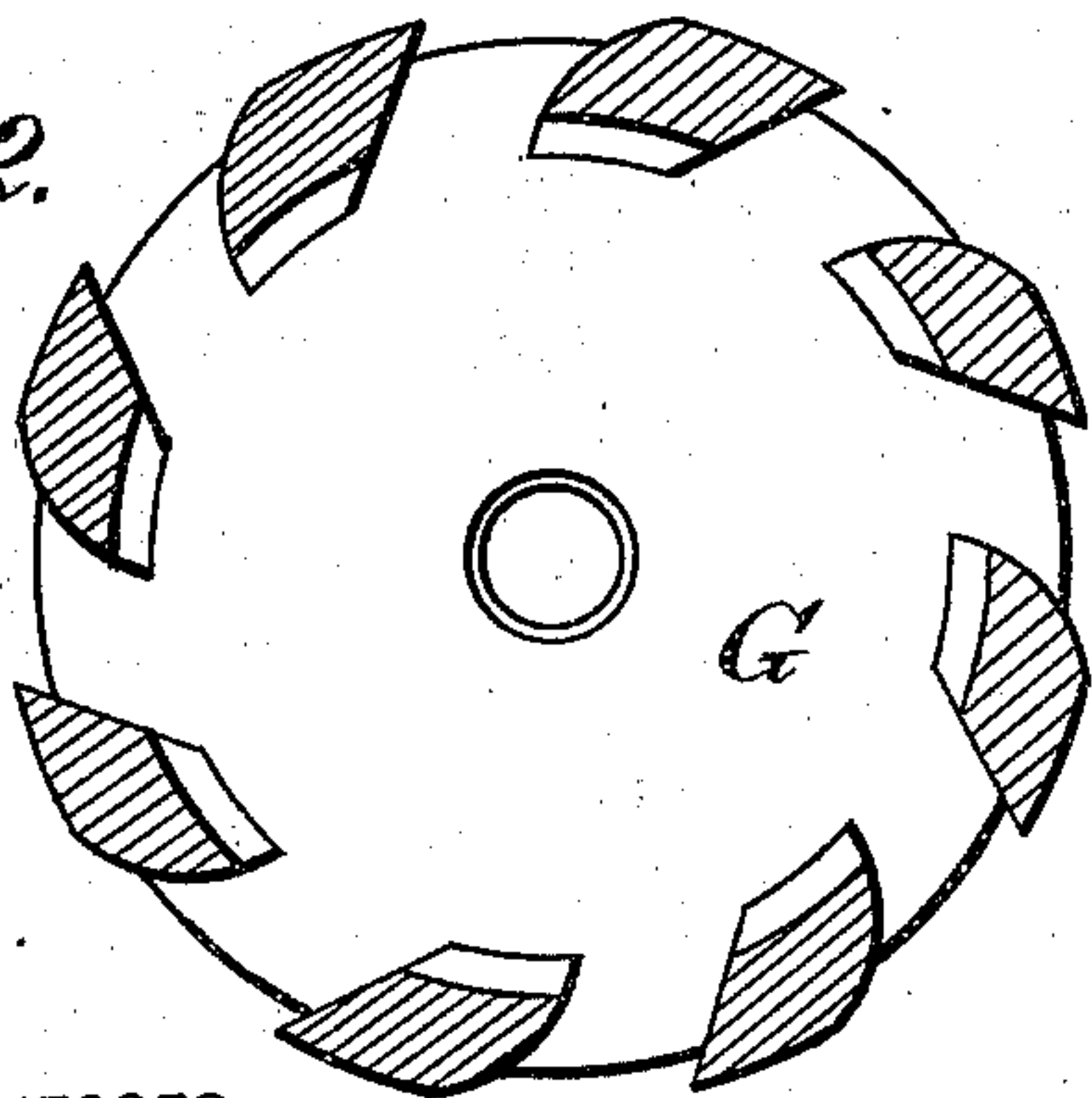
No. 173,664.

Patented Feb. 15, 1876.

*Fig. 1*



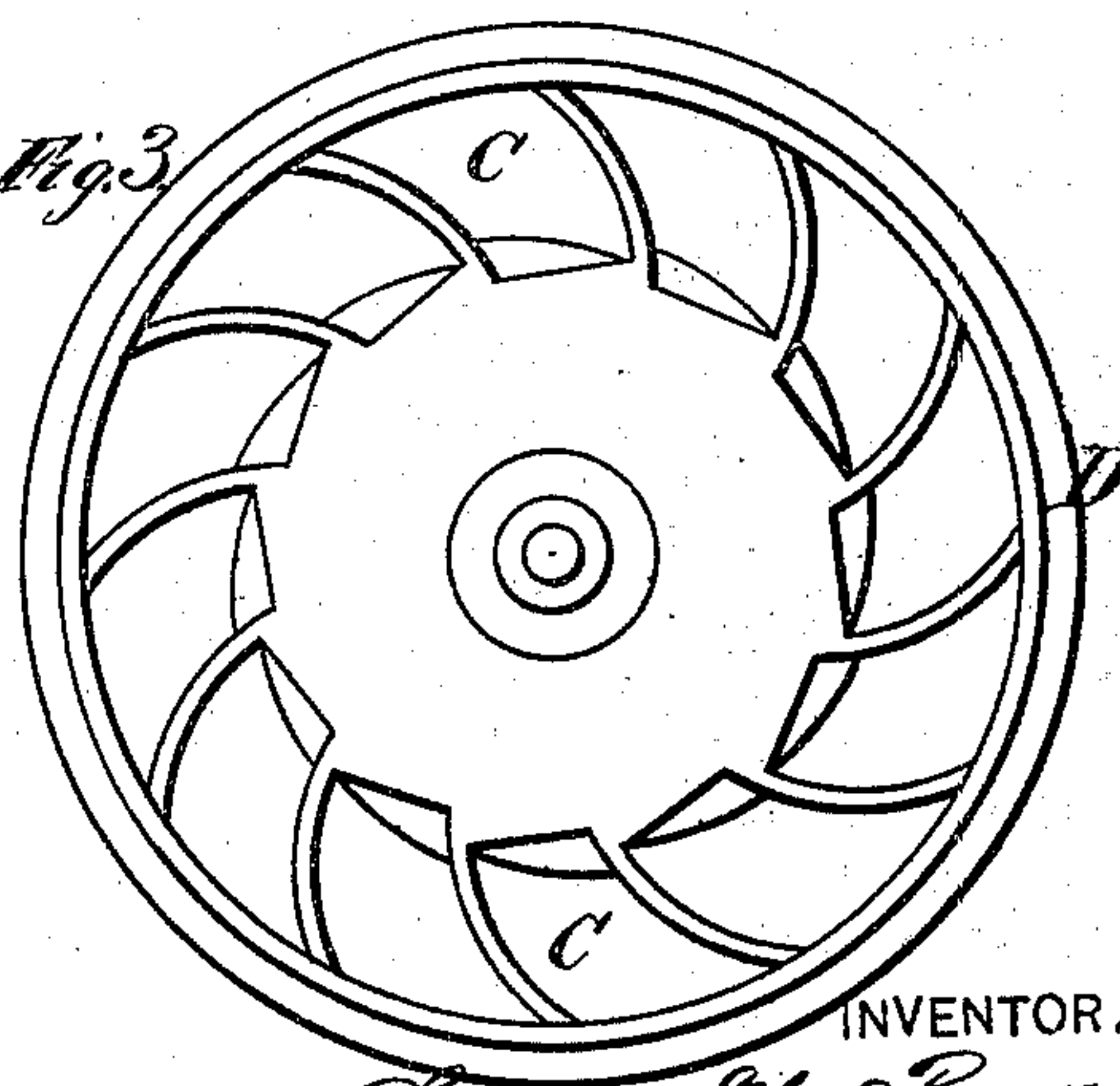
*Fig. 2.*



WITNESSES

*Robert Everett,  
E. H. Bates*

*Fig. 3.*



INVENTOR.

*Thomas H. Powers.*

*Chipman, Hooper & Co.*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

THOMAS H. POWERS, OF FILLMORE, MINNESOTA.

## IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **173,664**, dated February 15, 1876; application filed January 8, 1876.

*To all whom it may concern:*

Be it known that I, THOMAS H. POWERS, of Fillmore, in the county of Fillmore and State of Minnesota, have invented a new and valuable Improvement in Water-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical section of my water-wheel; and Fig. 2 is a horizontal sectional view of the same. Figs. 3 and 4 are plan views thereof.

My invention relates to water-wheels; and it consists in the construction and general arrangement of a conical wheel, with buckets and exterior case attached thereto, and a basket-rim, with interior gate placed above the same, all as hereinafter more fully set forth.

In the annexed drawing, A is the shaft or spindle of my wheel, resting on a pivot, *a*, and having a suitable upper bearing, *b*. On the shaft A is secured a conical hub, B, made larger at the bottom than at the top, and provided around its exterior surface with a series of buckets, C C, set at an angle of forty-five degrees, and extending above the hub on an incline for a suitable distance. Surrounding these buckets, and attached thereto, is a case, D, which runs with the wheel. Above the wheel, and attached to the flume, is a basket-shaped or spout rim, G, which fits down in the concave space formed by the hub, buckets, and surrounding case. The water passes through openings in this rim, and strikes the

buckets C C at their upper ends, and when the force is spent the weight of the water descends on the buckets to the bottom of the wheel. Furthermore, the centrifugal force produced by the rotary motion throws the water to the periphery of the wheel, increasing the power thereby. Within the rim G is a correspondingly-shaped gate, E, for letting on and shutting off the water, said gate being operated by the ordinary rack-and-pinion device.

The object of the spout-rim G is to direct the water, so that it will strike the top of the buckets at right angles. The centrifugal force will throw the water to the out edge of the buckets, but not off from the same, on account of the outside case D, and at the same time add to the momentum, as well as give it more leverage.

The water, after striking the buckets, as directed by the spout-rim, acts upon the buckets as weight, increasing the power of the wheel.

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

The water-wheel, consisting of the conical hub B, with buckets C extending above the same, and surrounding case D, in combination with the basket-shaped or spout rim G and gate E, all constructed and arranged substantially as and for the purposes herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

THOMAS HART POWERS.

Witnesses:

R. D. SMITH,  
O. CRAIN.