

(No Model.)

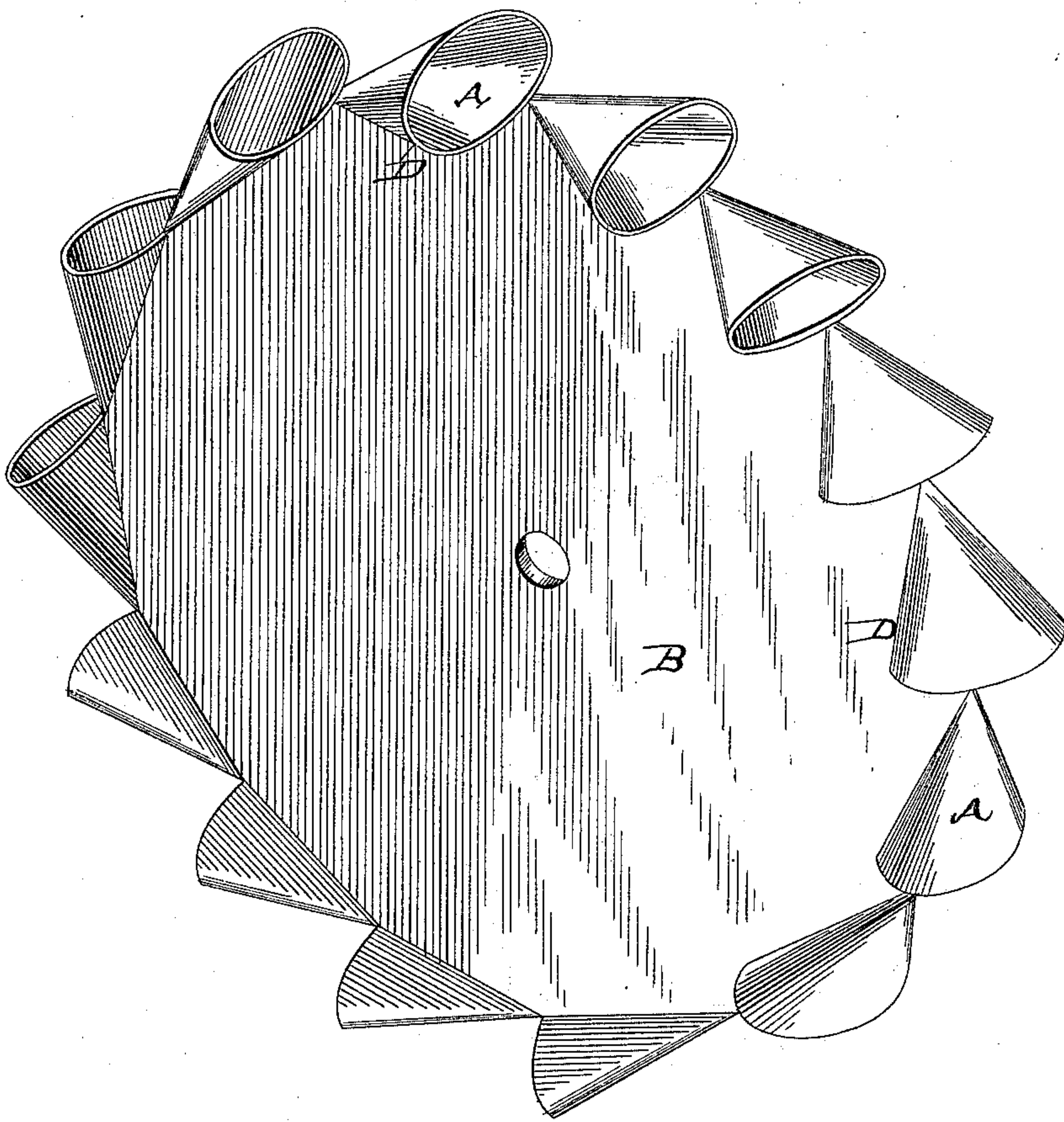
R. R. OGDEN.
WATER WHEEL.

2 Sheets—Sheet 1.

No. 335,713.

Patented Feb. 9, 1886.

Fig. 1.



Attest:

Elliott P. Hough.
G. E. Jones.

Inventor.

Russell R. Ogden.

By Chas J. Enoch,
his attorney.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

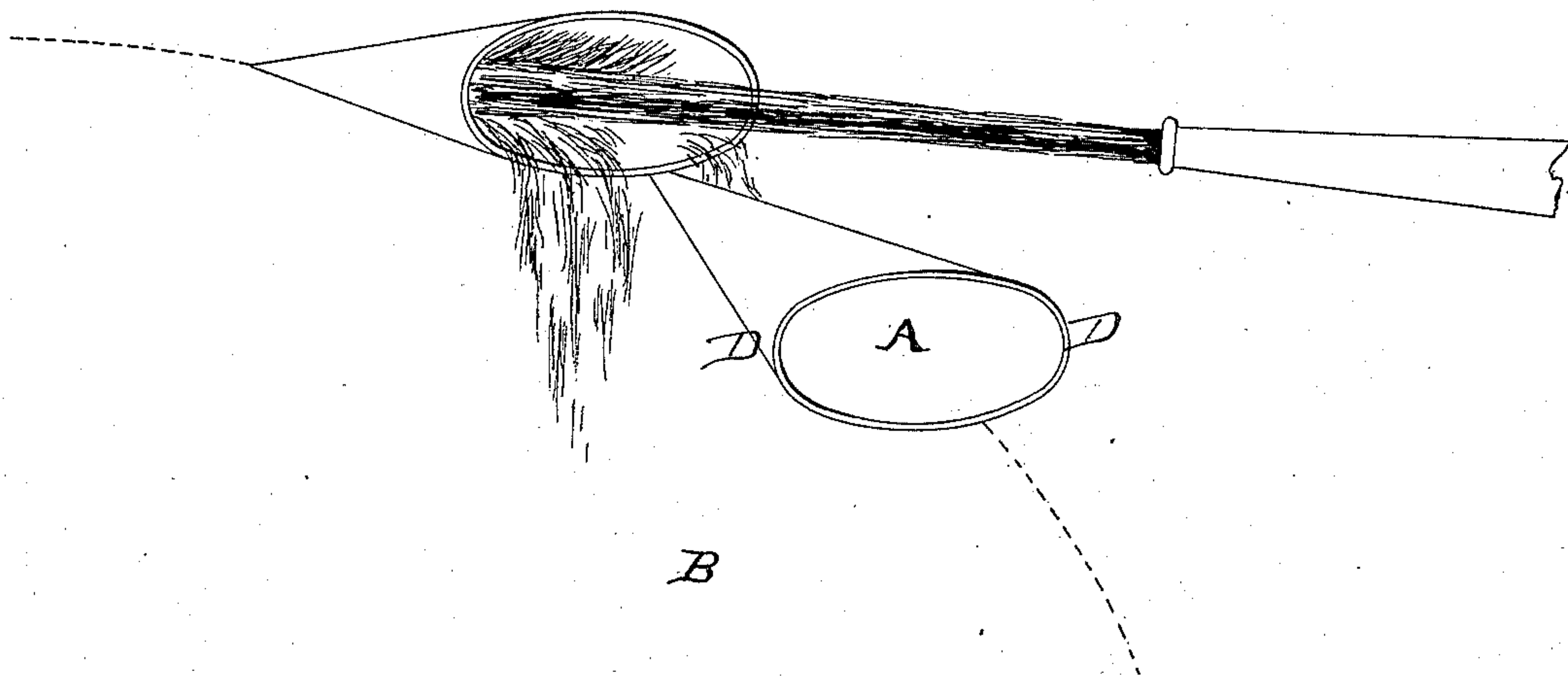


Fig. 3.

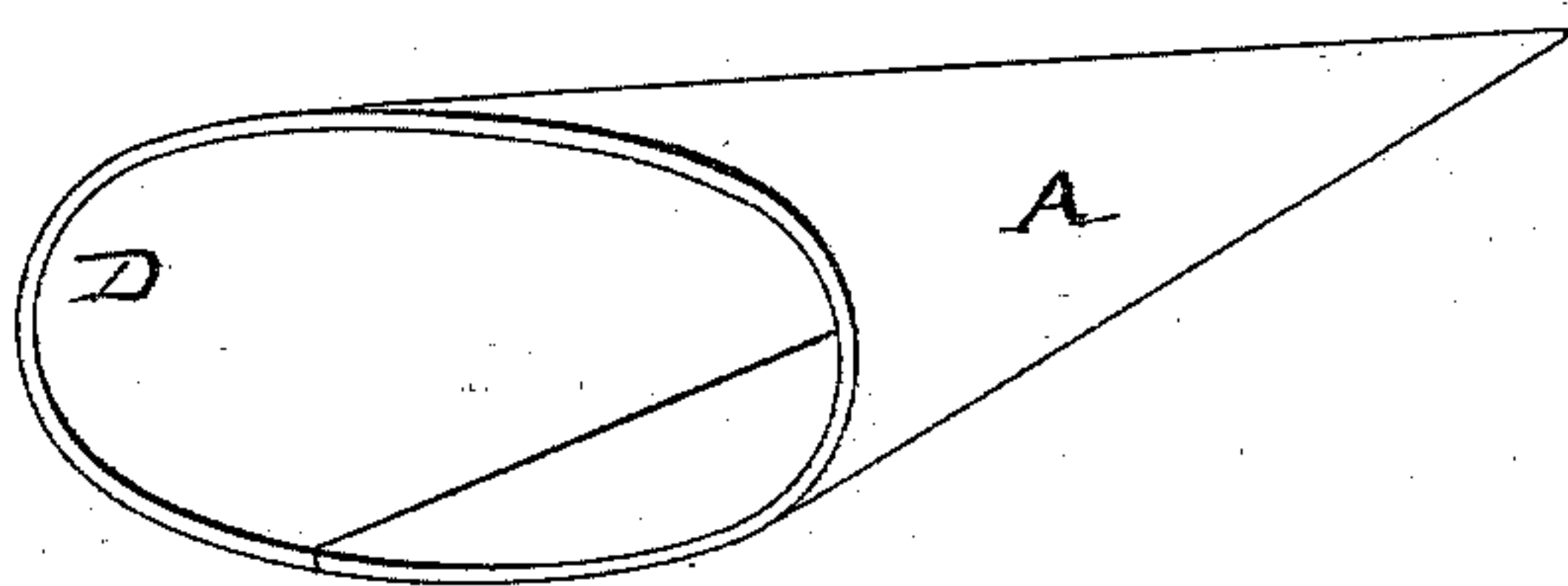
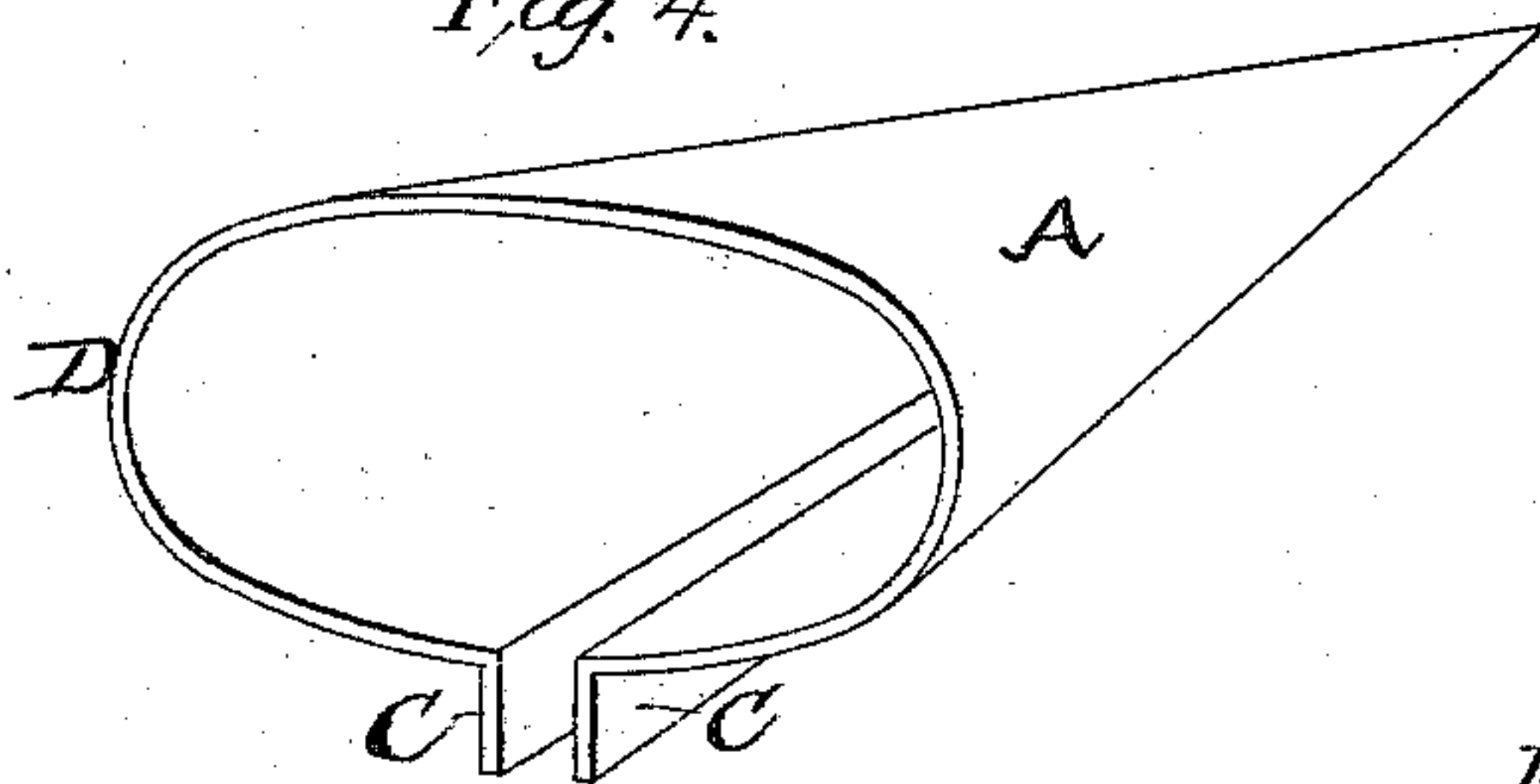


Fig. 4.



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UNITED STATES PATENT OFFICE.

RUSSELL R. OGDEN, OF BRADFORD, PENNSYLVANIA.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 335,713, dated February 9, 1886.

Application filed June 9, 1885. Serial No. 168,164. (No model.)

To all whom it may concern:

Be it known that I, RUSSELL R. OGDEN, a citizen of the United States of America, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Water-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of rotary hydraulic motors denominated "water-wheels."

The improvements relate to that class of wheels having around their periphery a series of buckets within and against which a stream of water is projected from a hydrant or other source, for the purpose of imparting rotary motion to the wheel, of which the wheel described in patent dated June 19, 1877, No. 192,304, to Stearns and Ogden, is an example.

The present invention consists in improvements in the construction of the buckets shown and described in said patent, whereby material advantages are secured thereover, as will be hereinafter described.

In the accompanying drawings, Figure 1 represents a perspective view of a wheel constructed according to my invention; Fig. 2, a perspective view of a portion of a wheel in operation. Figs. 3 and 4 represent perspective views of the buckets separately.

In the aforesaid patent the buckets arranged around the periphery of the wheel are of conical pyramidal form, the top walls or backs of the buckets flaring upwardly and outwardly. As contradistinguished therefrom, I make the buckets (the subject of this application) of flat, elliptical, or oval form at their mouth and throughout their length, whereby the stream of water can be supplied in a straight or nearly straight line, so as to directly strike the center of the bucket, avoid the creation of a backwater to impinge against the outer wall of the adjacent bucket, thereby preventing the retarding of the movement of the wheel, and also avoiding such an impact of the stream

with the upper edge of the mouth of the bucket as would result in the breaking up of the stream of water.

According to my present improvements the buckets A are constructed of elliptical form in cross-section and with curved sides, gradually tapering from the mouth to their rear. These buckets are attached to the periphery of the wheel B, either by soldering, brazing, or otherwise; or they may be formed with downwardly-extending flanges CC, which are riveted or otherwise securely attached to the face of the wheel, after the manner shown in the drawings. By forming the buckets of elliptical shape, as shown, the jet of water, as it passes from the hydrant or other source of supply, passes within the buckets in a straight horizontal line, and at once, and at its first impact therewith, squarely strikes the center and rear portion of the bucket. The force of the water thus travels and is exerted upon the buckets in a line directly corresponding with that in which each bucket travels when it reaches its uppermost position, instead of at a tangent thereto. Thus the entire working force of the jet of water as it strikes the several buckets is exerted directly upon the inner rear portion thereof. After the impact of the stream of water upon the center it rebounds against the low outwardly-flaring inner sides of the bucket, and produces a reacting force against the same, which materially assists the revolution of the wheel and insures the utilization of the utmost percentage of the power contained in the stream or jet of water employed. As the mouth of each bucket is of oval shape, and as it and the sides D thereof extend some distance across the periphery of the wheel, and as the top does not flare upwardly and across the mouth of the adjacent bucket, the water, as it discharges from the respective buckets, flows off on either side and drops down within the wheel-casing. None of it impinges against either the back or sides of the bucket in front; consequently there is no backwater produced to retard the operation of the wheel, such as is produced where the buckets are of conical pyramidal form and where the mouths are of circular shape.

Having thus described my invention, what I claim is—

1. A water-wheel having around its periphery a series of buckets of transversely-extending oval or elliptical shape in cross section.
2. A bucket for a water-wheel, having a transversely-extending elliptical or oval shaped mouth and curved sides and top and bottom gradually tapering from the mouth to the rear end.
3. The bucket herein described having a transversely - extending oval or elliptical shaped mouth and curved sides and top and bottom walls and downwardly - extending flanges to permit of their ready attachment to water-wheels, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

RUSSELL R. OGDEN.

Witnesses:

A. T. STONE,

F. J. CHAMBERLAIN.