

R. Hunt.

Turbine Water Wheel.

N^o 91,338, Fig. 1 Patented July 21, 1869.

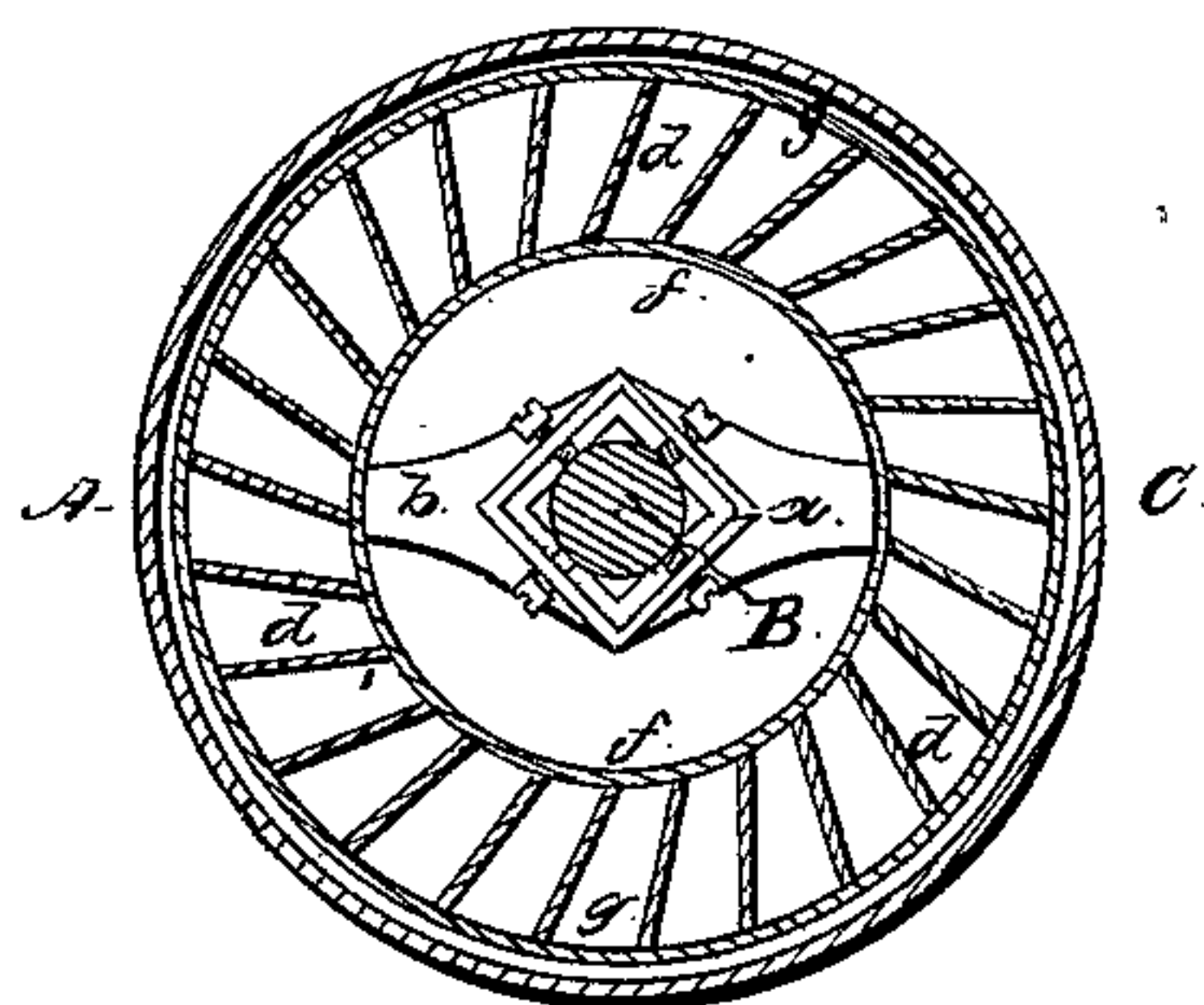
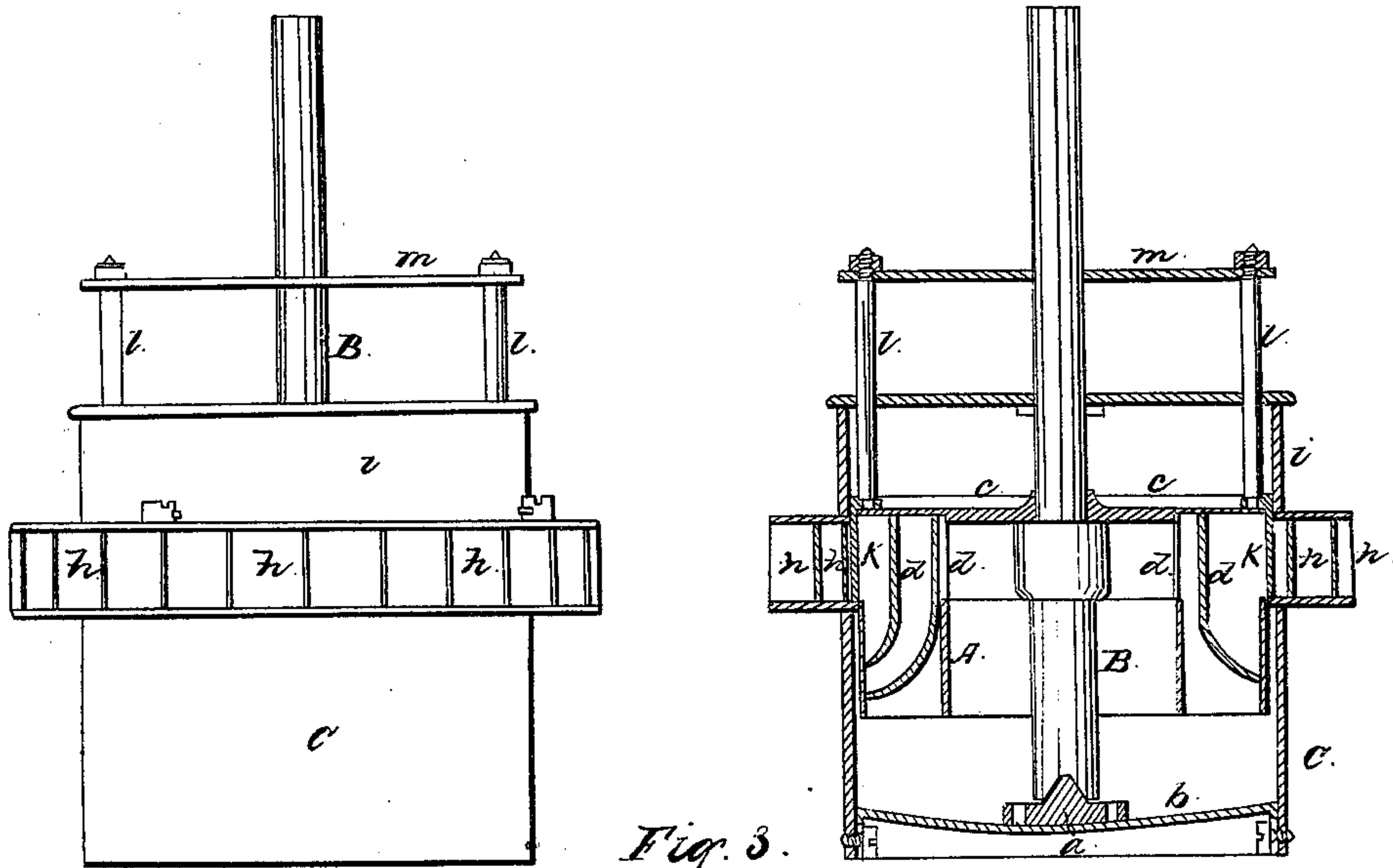
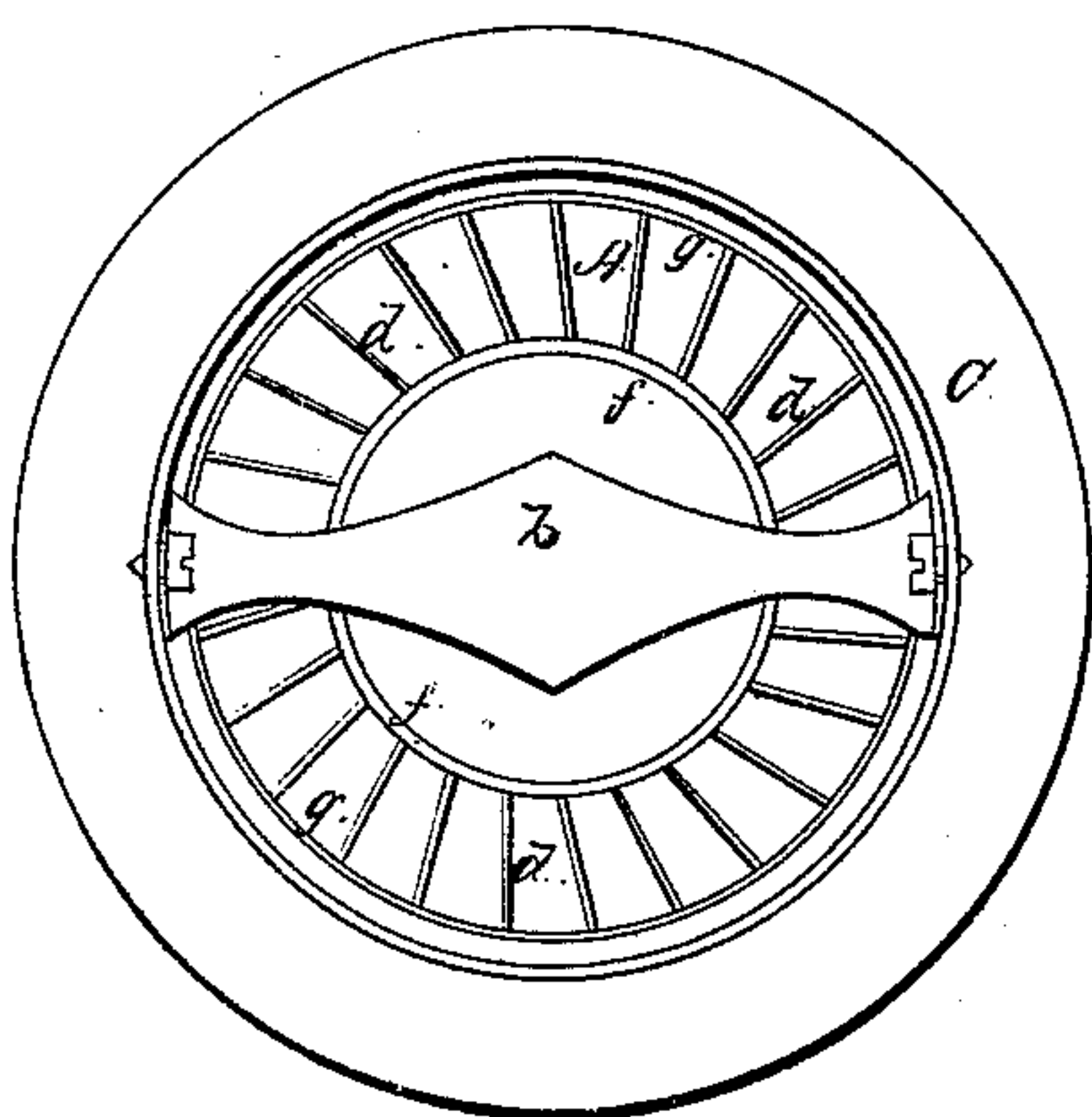
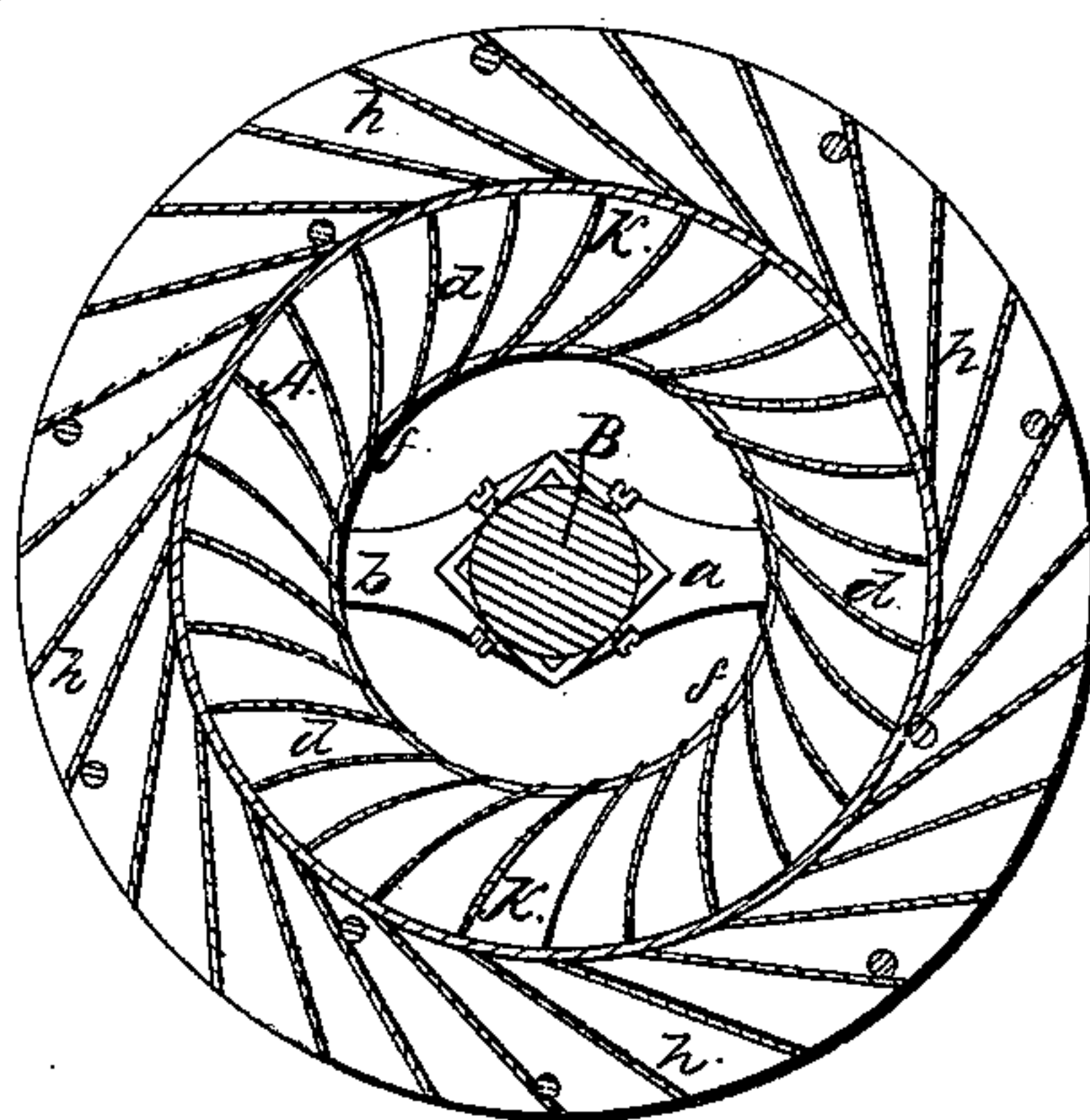


Fig. 4.



Witnesses:
S. N. Piper
J. C. Snow.

Inventor:
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by his attorney
R. H. Eddy

United States Patent Office.

RODNEY HUNT, OF ORANGE, MASSACHUSETTS, ASSIGNOR TO HIMSELF, JAMES B. WAITE, AND DAVID B. FLINT, OF SAME PLACE.

Letters Patent No. 91,338, dated June 15, 1869.

IMPROVEMENT IN WATER-WHEELS.

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

To all persons to whom these presents may come :

Be it known that I, RODNEY HUNT, of Orange, in the county of Franklin, and State of Massachusetts, have made a new and useful invention, having reference to Turbines, or Horizontal Water-Wheels; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front elevation,

Figure 2, a vertical section,

Figures 3 and 4 are horizontal sections, and

Figure 5, an under-side view of a turbine, embracing my invention.

This wheel not only has direct and reaction sets of buckets, arranged and made to communicate together, as hereinafter explained, but it has inner and outer rims to the lower set of buckets, and it also has inner vents to the upper set.

With such wheel I arrange and combine a gate, a series of inducts, a cap, and a draught-box, the whole being as hereinafter set forth.

In the drawings—

The wheel is represented at A, as provided with a vertical shaft, B, whose lower end rests in a step, *a*, applied to a bar, *b*, such bar being extended down directly across the lower part of, and fastened to the draught-box or case C.

The said draught-box projects below the wheel, and receives the water when discharged from it.

The wheel has a top-plate, *c*, immediately below which is a series of direct-action buckets, *d d d*, each of which opens at its rear into the air-interior chamber of the wheel. This chamber is concentric with the wheel.

The water-space of each direct-action bucket opens at bottom into that of one of a series of reaction-buckets, which are closed on their sides by two concentric rims, *f g*, and are open at bottom into the draught-box.

The wheel-case is provided with a series of inducts, *h h h*, extending around the upper set of buckets of the wheel, and there is above them and the wheel a hollow case, a cylindrical chambered cap, *i*, whose interior diameter is greater than the diameter of the wheel.

Such cap is intended to receive an annular gate, *k*, when raised from around the mouths of the direct-action buckets of the wheel.

The said gate encompasses the wheel, works against the inner-ends of the inducts, and is attached to two lifter-rods *l l*.

These rods extend up through holes in the top of the cap, and are fastened to a horizontal bar, *m*, which serves to enable a person to raise the gate, or close it, as circumstances may require.

In this turbine it will be perceived that the water, after having entered any of the direct-action buckets, and impinged thereon, will flow therefrom in two directions, that is to say, part of it will escape by the side-vent into the central chamber of the wheel.

By the force of gravitation the rest of the water will descend upon the reaction-bucket, immediately below the direct-action bucket, and, by its weight and the force in it, will operate on such bucket, to aid in revolving the wheel. The water will escape from the reaction-bucket into the draught-box.

The peculiar construction of the wheel renders it very efficient, the double-vent of the upper series of buckets causing them to clear themselves of air, and the water to impinge on the buckets to excellent advantage.

The peculiar arrangement of the gate, the series of inducts, the cap, and the draught-box, with the wheel made as described, enables the gate to be easily operated, relieves the wheel from the downward pressure of the water surrounding the wheel-case, and allows the discharged water and air to escape freely from the wheel.

From the above it will also be seen that the gate is arranged to play into and out of an annular space, immediately surrounding the wheel, and situated between it and the series of inducts.

Also, that such gate, while being lifted, passes into the cap, which not only answers as a receiver for the gate, but as an insulator of the top of the wheel, from the pressure of the column of water directly over it, when the wheel is at work.

I make no claim to a series of inducts surrounding a water-wheel; nor to the arrangement of a gate or gates, either therein or so as to encompass the series of inducts.

Nor do I claim the arrangement of a gate so as to surround a series of inducts, and extend between such a series of wheel-buckets surrounding the gate, and being arranged on a disk disposed below the series of inducts, the whole being as in the well-known turbine of Fourneyron.

In my wheel the educts are disposed outside of, and around the wheel, the gate being between the said wheel and the series of inducts, and provided with a cap or covered chamber, which answers the two purposes as set forth.

By having the series of inducts outside of, and around the wheel, and the gate to play between the two, and into and out of a covered chambered cap, I am enabled not merely to relieve the wheel from the downward pressure of the weight of the mass of water, which may be directly over it while the wheel may be in use, but to get the water in a greater body or amount to the wheel, and thereby obtain its useful

effect to better advantage than is the case with the arrangement of the inducts as in the Fourneyron turbine.

Furthermore, in my wheel and case the shaft is supported by a stop, fastened to the bottom of the case, or the draught-box thereof. This saves the necessity and expense of the induct hanger-tube, which, in the Fourneyron turbine, encompasses the shaft of the wheel, and serves to support the series of inducts.

I claim the wheel, made as described, viz, with the direct and reaction-sets of buckets arranged and communicating together, as set forth, and with the inner

and outer rims of the lower set of buckets, and with inner vents to the upper set, and an internal chamber, as explained.

I also claim the arrangement of the gate, and its cap, with the wheel, made as specified, and with the series of inducts, provided with a draught-box, as described.

RODNEY HUNT.

Witnesses:

A. J. JOHNSON,
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