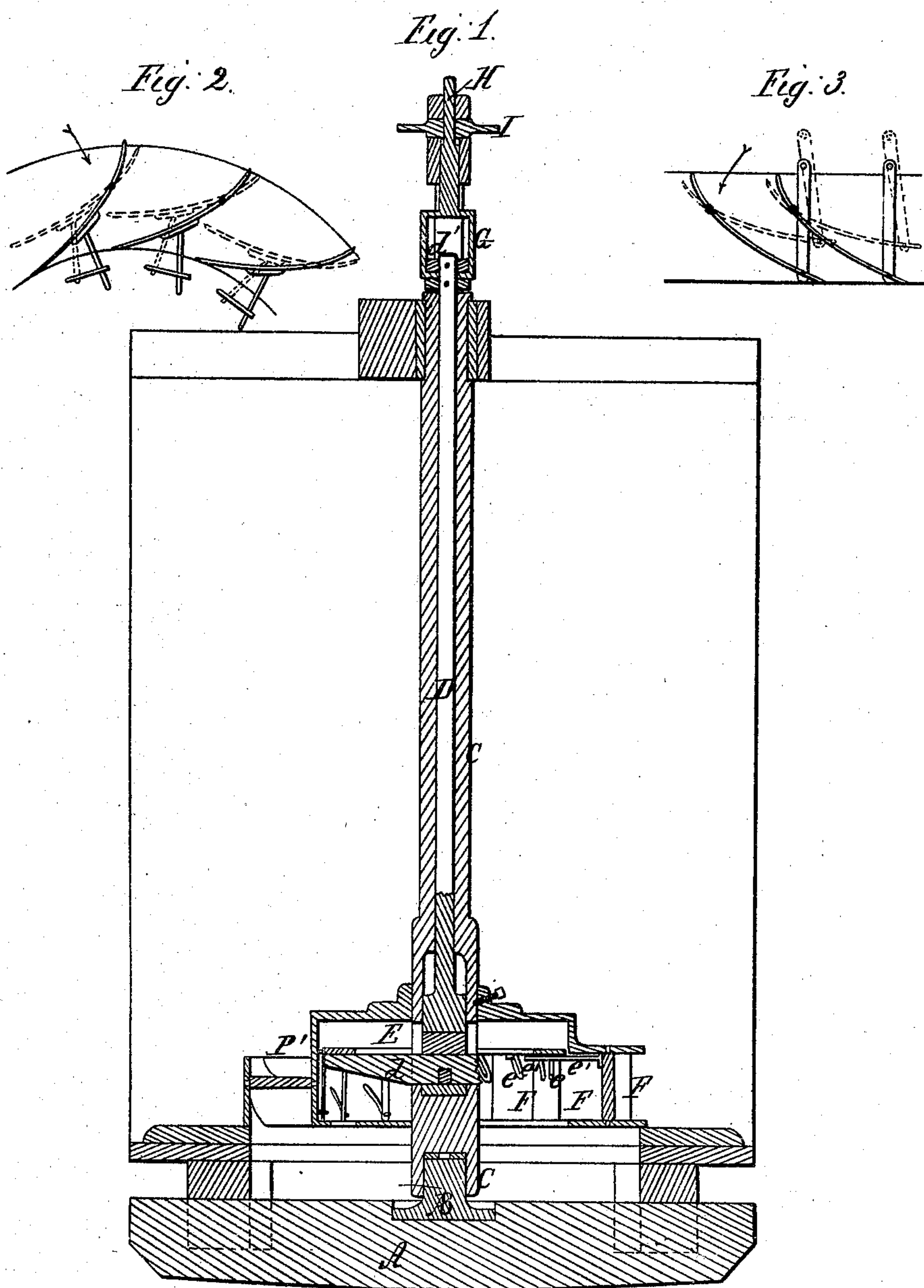


J. Newlin.

Turbine Wheel.

N^o 87,585.

Patented Mar. 9, 1869.



Witnesses;

*Joel Rayton
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United States Patent Office.

JESSE NEWLIN, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 87,585, dated March 9, 1869.

IMPROVEMENT IN TURBINE 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, JESSE NEWLIN, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Turbine Water-Wheels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 is a vertical central section through my improved turbine;

Figure 2 is a diagram, showing my improved method of adjusting the buckets of the wheel when arranged vertically relatively to the crown-plate; and

Figure 3, a similar diagram, with the buckets inclined to the crown-plate, and at right angles to the rim of the wheel.

My invention is equally adaptable to that class of turbines in which the water passes directly through the crowns of the wheel, (called "parallel-flow" turbines,) or to that class in which the water flows through the wheel at right angles to this axis; and

The object of my invention is to adapt the wheel to the head of water, by increasing or diminishing the area of the issues; to which end,

The improvement herein claimed, consists in a novel method of combining pivoted buckets with adjusting-devices, actuated by a rod moving endwise through the arbor of the turbine.

In the accompanying drawings—

A represents the frame, which supports the stop B on which the arbor C revolves. That portion of the arbor above the bottom of the turbine is hollow.

A rod, D, passes down through the tubular arbor, and its lower end is slotted to receive cross-arms *d*, which support a flanged plate, E.

Inclined loops or slotted brackets, projecting underneath this plate, receive pins *i*, projecting from the buckets F F, which are pivoted to swing, as shown in red in figs. 2 and 3, so as to vary the area of their discharge-orifices.

It is well known that with a supply or flow of water insufficient to fill the discharging-area of the buckets completely, turbines fail to develop their maximum per-

centage of power, and that their working-power is increased by diminishing the area of their discharge-orifices.

Various methods have been tried for regulating the flow, by flood-gates and valves within the turbine, but the results have heretofore not been satisfactory. As, by my plan, the miller is enabled at all times to adjust the escape of the water to the supply, and thus secure the full working-capacity of the turbine, its advantages are obvious.

The upper end of the arbor C turns in suitable bearings in the frame-work, while the lifting-rod D terminates in a box, G, being provided with a head or flange, *d*, to sustain it in the box, and yet allow it to revolve freely therein.

A screwed spindle, H, on the upper side of the box, is acted upon by a female screw, secured in a band-wheel, I, by which means the rod, and consequently the adjusting-plate, may be raised or lowered, and the area of the issues correspondingly varied.

On the left side of fig. 1, and in fig. 2, the buckets F are, as shown, pivoted to swing horizontally, while on the opposite side of fig. 1, and in fig. 3, the buckets F are shown as pivoted to play vertically.

In the latter case, the water enters the buckets directly through the crown of the wheel, and the flow is parallel to the axis, while in the former case, the flow is from the circumference inward.

It is unnecessary to describe the details of construction of the turbine, such details being well understood by skilful millwrights, and forming no part of the subject-matter herein claimed.

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

The combination, with the turbine, of the pivoted buckets, adjusting-plate and lifting-rod, substantially as set forth.

In testimony whereof, I have hereunto subscribed my name.

JESSE NEWLIN.

Witnesses:

CHAS. B. COLLIER,
WM. B. DAYTON.