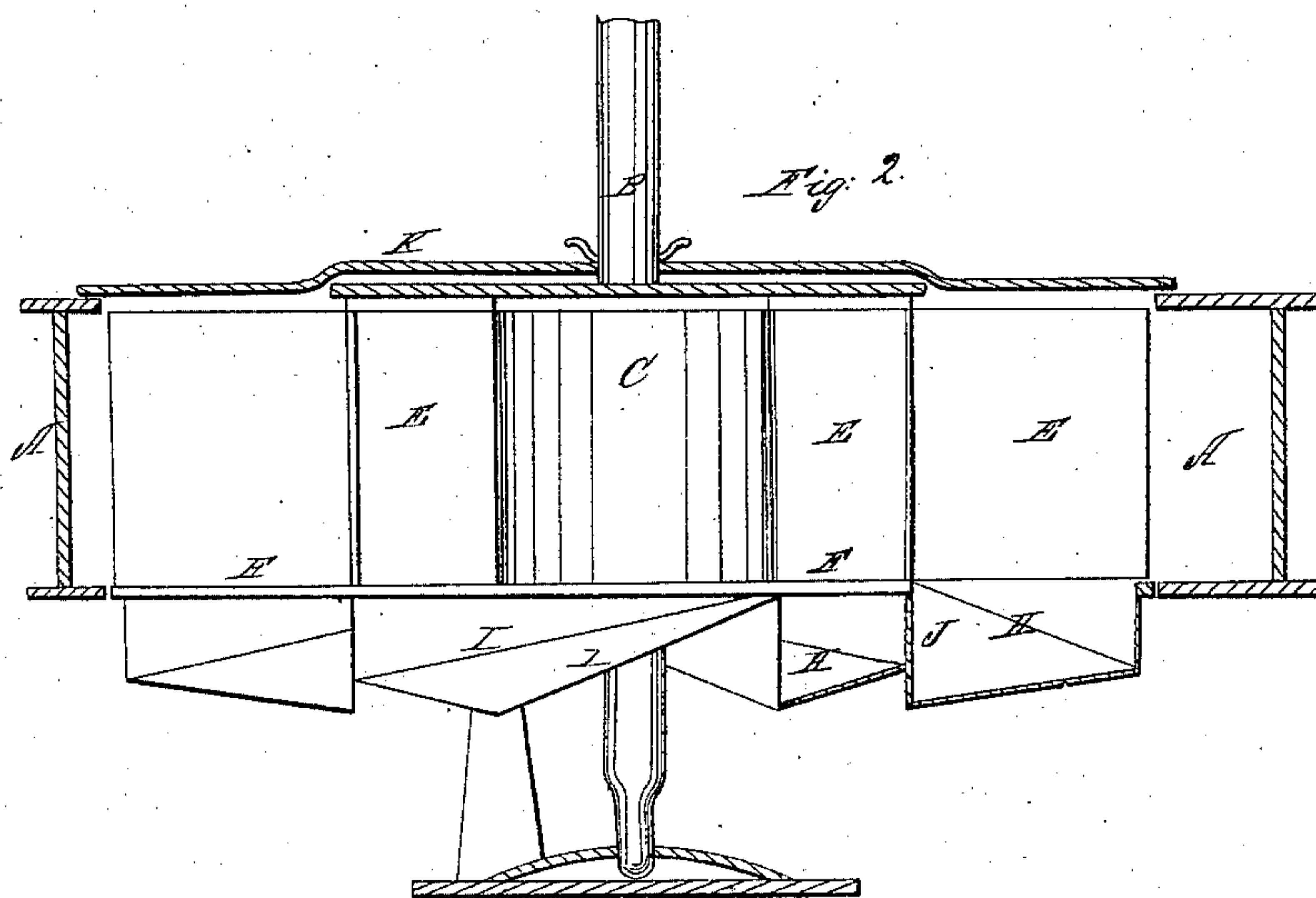
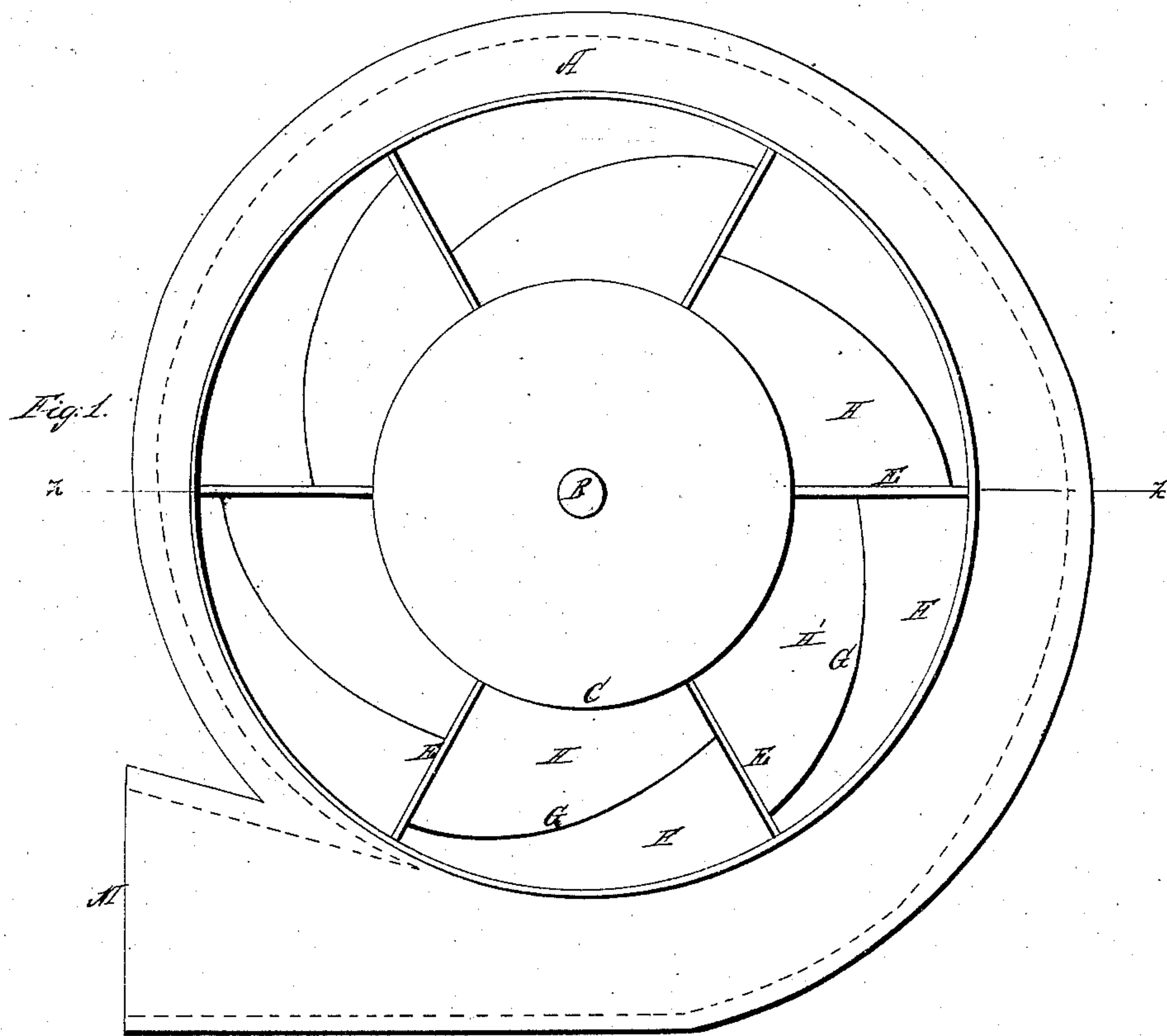


*S. Reynolds*

*Water Wheel,*

*N<sup>o</sup> 16,881.*

*Patented Mar. 24, 1857.*





# UNITED STATES PATENT OFFICE.

SAMUEL REYNOLDS, OF OSWEGO, NEW YORK.

## IMPROVED WATER-WHEEL.

Specification forming part of Letters Patent No. **16,881**, dated March 24, 1857.

*To all whom it may concern:*

Be it known that I, SAMUEL REYNOLDS, of the city and county of Oswego, and State of New York, have invented certain new and useful Improvements in Water-Wheels; and I do hereby declare that the same are described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my improvements, I will proceed to describe their construction and use, referring to the drawings, in which the same letters indicate like parts in each of the figures.

Figure 1 is a plan of the wheel and scroll surrounding it, the cover of the wheel being omitted. Fig. 2 is an elevation of the float or bucket H', Fig. 1 being omitted so as to show the whole of the outlet of the bucket or float H next beyond it. This figure also shows a section of the scroll on the line Z Z of Fig. 1.

The nature of my invention and improvements in water-wheels consists in arranging a series of radial floats above a horizontal plane, in combination with a series of floats or buckets arranged below said plane, made narrowest where they join the radial floats, and gradually increasing in width outward and in depth downward, with an inclination toward the center to their terminations, so as to make the outlet or discharge deeper toward the center than toward the periphery.

In the above-mentioned drawings the scroll which supplies the wheel with water is represented at A. Its interior height may be the same as the depth of the perpendicular radial floats, and its width gradually diminished to its termination, where it joins the beginning, as shown in the drawings by dotted lines in Fig. 1.

B is the shaft of the wheel, which may be fitted to turn in appropriate bearings or boxes. To this shaft the center or hub C is fitted and fastened firmly in some convenient manner, so as to support and sustain the perpendicular radial floats E E, which are fastened to the hub C and to the circular horizontal plane F, as shown in the drawings. This horizontal plane F does not extend in from the periphery any farther than the arcs G G, Fig. 1, leaving open spaces between the arcs and the hub C, over the floats or buckets H H, on which the water descends and passes out under the radial floats E E. The buckets H H are made narrowest where they join the

floats E E, as shown in the drawings, gradually increasing in width outwardly, as shown by the arcs G G, and descending, as shown by the lines I I, Fig. 2, with an inclination from the outer part downward toward the center to their termination under the next radial float, making the outlet or discharge deeper toward the center than toward the periphery at J, Fig. 2. The horizontal plane F is made to turn freely in the lower casing of the scroll, and the cover K extends entirely over the wheel and rests on the upper casing of the scroll, as shown in section, Fig. 1, to which it may be fastened.

The wheel having been constructed as above described, the water passes into the scroll A at M, as indicated by the arrows, and acts upon the radial floats E nearly at right angles to the plane of their surface. It then descends and acts by its weight on the buckets, which slip out from under it while it is reacting against the arcs G G, so that the whole force or momentum of the water is more fully communicated to the wheel and its power made more available than it would be if applied upon any other wheel.

I contemplate that wheels with my improvements may be made best and cheapest by casting them whole, of iron or other metals, and if the wheels are of large size the floats may be joined to a cylinder, which may be connected to the hub or shaft by arms or a plate of metal; also, that the radial floats may be covered by a plate cast with the wheel extending out over them, so as to dispense with the cover K, or a ring may be made and fastened to the scroll, extending in toward the shaft far enough to cover the radial floats.

Some of the advantages of this improved wheel are, first, it gives a larger per cent. of useful effect than any other. It runs as well under water as out, and gives a better per cent. of effect if the whole head and fall is measured in each case. The draft-box can be applied to this wheel with equal facility and effect as to other wheels, so as to secure the benefit of the whole head and fall where it is inconvenient to set the wheel under water. It runs steady and maintains its steadiness without loss of useful effect. It maintains its per cent. of effect when running above or below its proper velocity. It is adapted to high or low falls, and is not liable to be obstructed by grass, anchor ice, or other

substances, is very cheap, and needs very little repairing.

I believe I have described and represented my improvements in water-wheels so as to enable any person skilled in the arts to make and use them. I will now specify what I desire to secure by Letters Patent.

I claim—

The radial floats above the horizontal plane, in combination with the buckets or floats below said plane, constructed substantially as

described—that is, narrowest where they join the radial floats, gradually increasing in width outwardly and in depth downward, with an inclination toward the center to their termination, making the outlet to discharge the water deeper toward the center than toward the periphery.

SAMUEL REYNOLDS.

Witnesses:

J. DENNIS, Jr.,

JOHN S. HOLLINGSHEAD.