

A. H. Crozier.

Water Wheel.

N^o 71461

Patented Nov. 26, 1867.

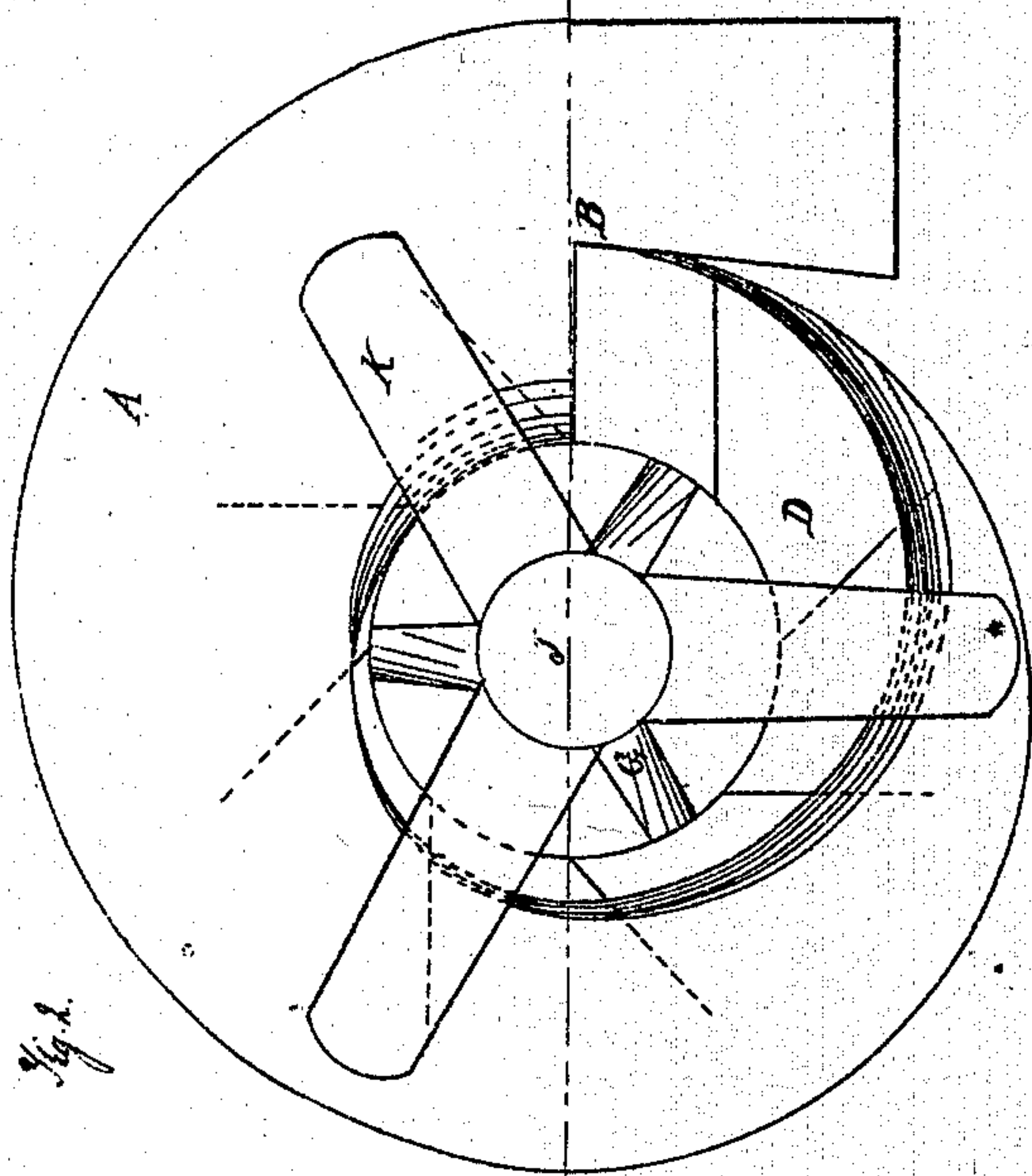


Fig. 2.

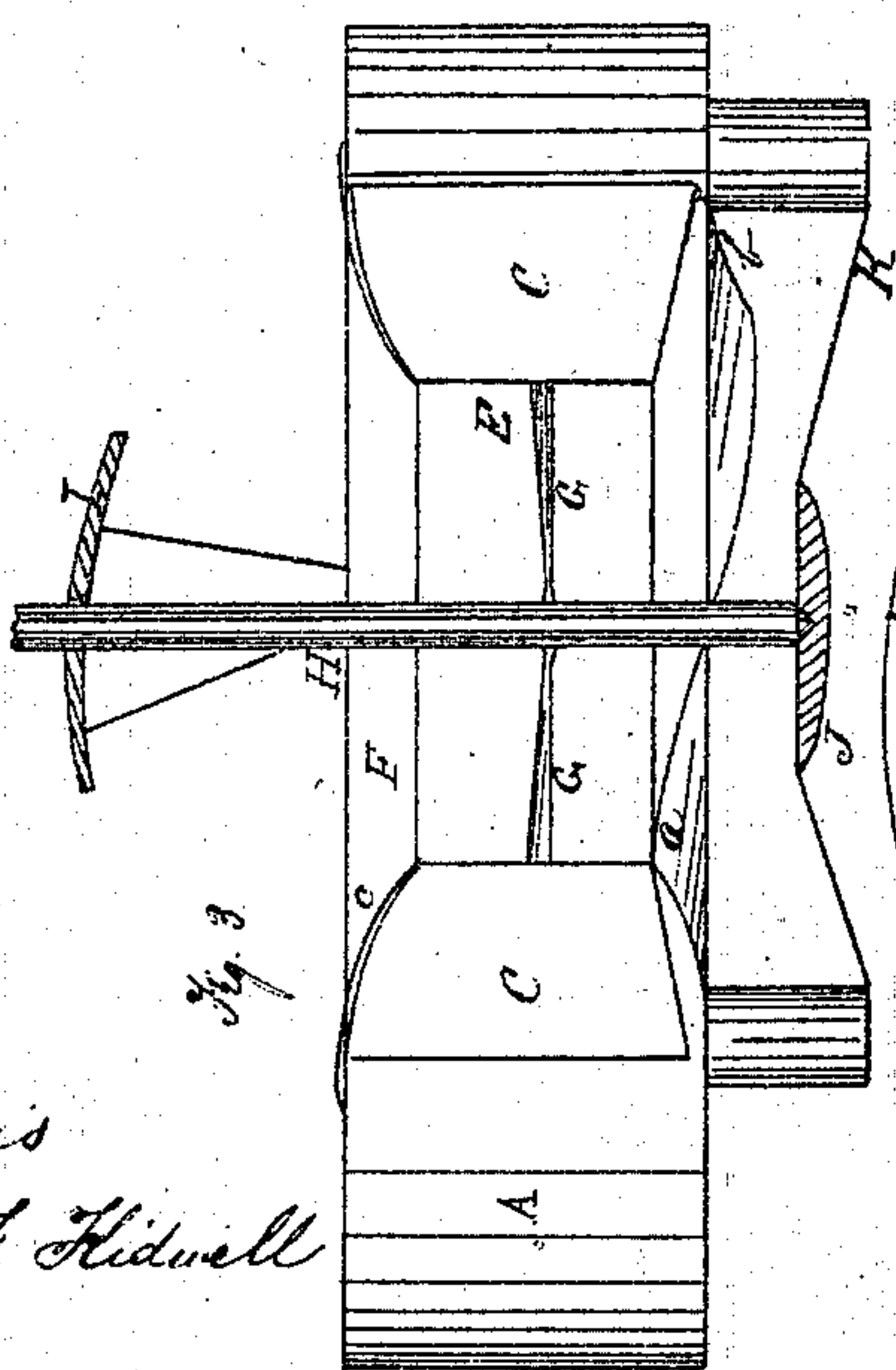


Fig. 3.

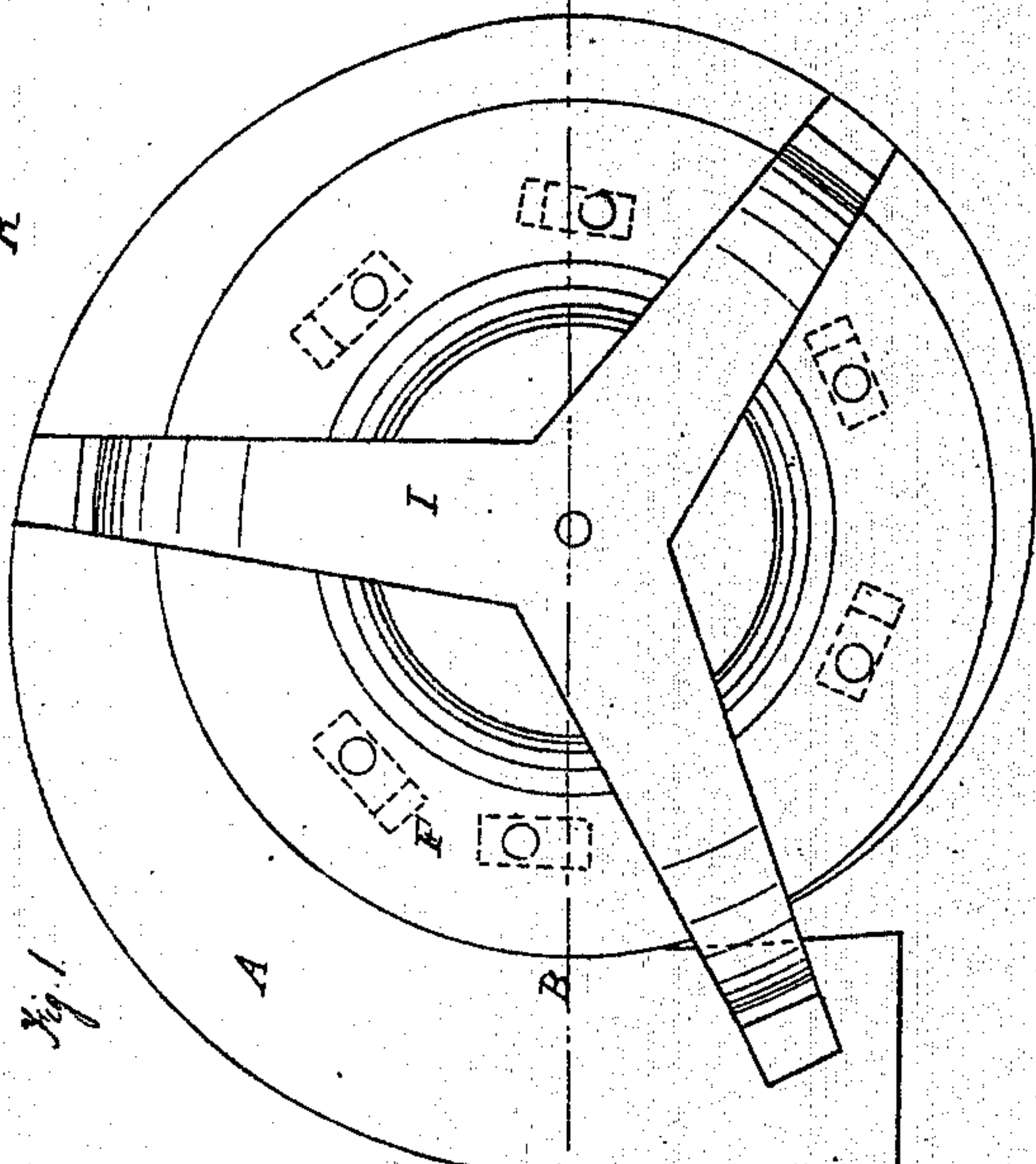


Fig. 1.

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ARCHIBALD H. CROZIER, OF OSWEGO, NEW YORK.

Letters Patent No. 71,461, dated November 26, 1867.

IMPROVEMENT IN 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, ARCHIBALD H. CROZIER, of the city of Oswego, Oswego county, State of New York, have invented certain new and useful Improvements in Water-Wheels; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

The nature of my invention and improvements consists in making the opening in the bottom of the curb enclosing the wheel, through which the water escapes, scroll-shaped in a reverse direction to that of the scroll around the wheel through which the water enters, and in curving the inner edge of said bottom around this opening upward for about one-fourth of the circumference, and curving it downward for the remaining three-fourths, the upward curvature being intended to prevent the water from escaping too soon, and the downward to facilitate its escape at the proper points; also in placing valves in the disk opening downwards to admit air to facilitate the escape of the water from the wheel, and at the same time preventing the water from flowing up through the disk.

In the following description, the accompanying drawings, making part of this specification, are referred to, of which—

Figure 1 is a plan of the top,

Figure 2 a plan of the bottom, and

Figure 3 a vertical section through the line *z z*.

A is the scroll-shaped curb of my improved water-wheel, into which the water is admitted at B, and, impinging against the buckets or floats C, revolves the wheel. D is an opening in the bottom of the curb for the water to escape through. It is also scroll-shaped, but its position or direction around the wheel is the reverse of that of the curb, through which the water is admitted, its widest part being opposite the point at which the water first enters at B. From this point the inner edge of the bottom of the curb is curved upward to meet the rim of the wheel, as seen at *a*, fig. 3, and is continued to form a close or water-tight joint, with the rim, for about one-eighth of the circumference of the scroll-shaped opening, more or less, in order to prevent the escape of the water before it has produced its proper effect upon the buckets, but, curving less and less as it proceeds, it becomes flat or horizontal at about one-fourth of the circumference from where it commenced, and then immediately begins to curve downward, as seen at *b*, fig. 3, and so continues; the curvature gradually increasing through the rest of the circumference, thus facilitating the escape of the water when it has ceased to act in propelling the wheel. The buckets are placed on the rim or cylinder E, inclining forward in the direction in which the wheel revolves, as seen in fig. 2, so as to form an angle of about forty-five degrees, with a radial line passing through the heel or inner edge of the bucket. This causes the water to tend towards the outer end of the bucket, where it will produce the greatest effect, and makes it less likely to recoil against the following bucket, which would retard the wheel. The disk F, forming the top of the wheel, is curved downward at the inner edge, as seen at *c*, fig. 3, in order to contract the water-spaces between the buckets near the cylinder, and throw a greater portion of the water against the outer end of the bucket to produce the greater effect, and also to facilitate its escape from the wheel. In this disk or cover are apertures L, one over each space between two adjacent buckets, covered with valves N, shown in dotted lines, opening downwards, thus freely admitting the air, so as to allow the water to escape from the wheel at the proper point, but preventing the water from rising through the cover at those points where it may press upward against it, as on its first admission to the wheel. G G are arms, connecting the cylinder E with the shaft H, which is held in position by the spider-frame I, and supported by the step J, held by the frame K. The arms G G are flattened in shape, but slightly twisted or spiral, being horizontal in position where they join the shaft, and, the forward edge gradually rising towards the cylinder of the wheel, the end connects with the cylinder at an angle of about thirty or forty degrees with the horizon. By this arrangement the arms tend to press the water in the central part of the wheel downward as they revolve, the weight of the wheel and shaft being at the same time partially supported by the water, and the friction of the pivot in the step J lessened.

I claim the bottom of the curb, having its inner edge, around the scroll-shaped opening therein, curved upward for a portion of the circumference, and curved downward for the remaining portion, substantially as described, and for the purposes set forth.

I claim the openings in the top of the wheel, with valves opening downward to prevent the water from flowing up, but admitting the air freely downward to facilitate the escape of the water from the buckets.

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Witnesses:

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