

No. 79,731.

PATENTED JULY 7, 1868.

J. M. COOK.
WATER WHEEL.

Fig. 1.

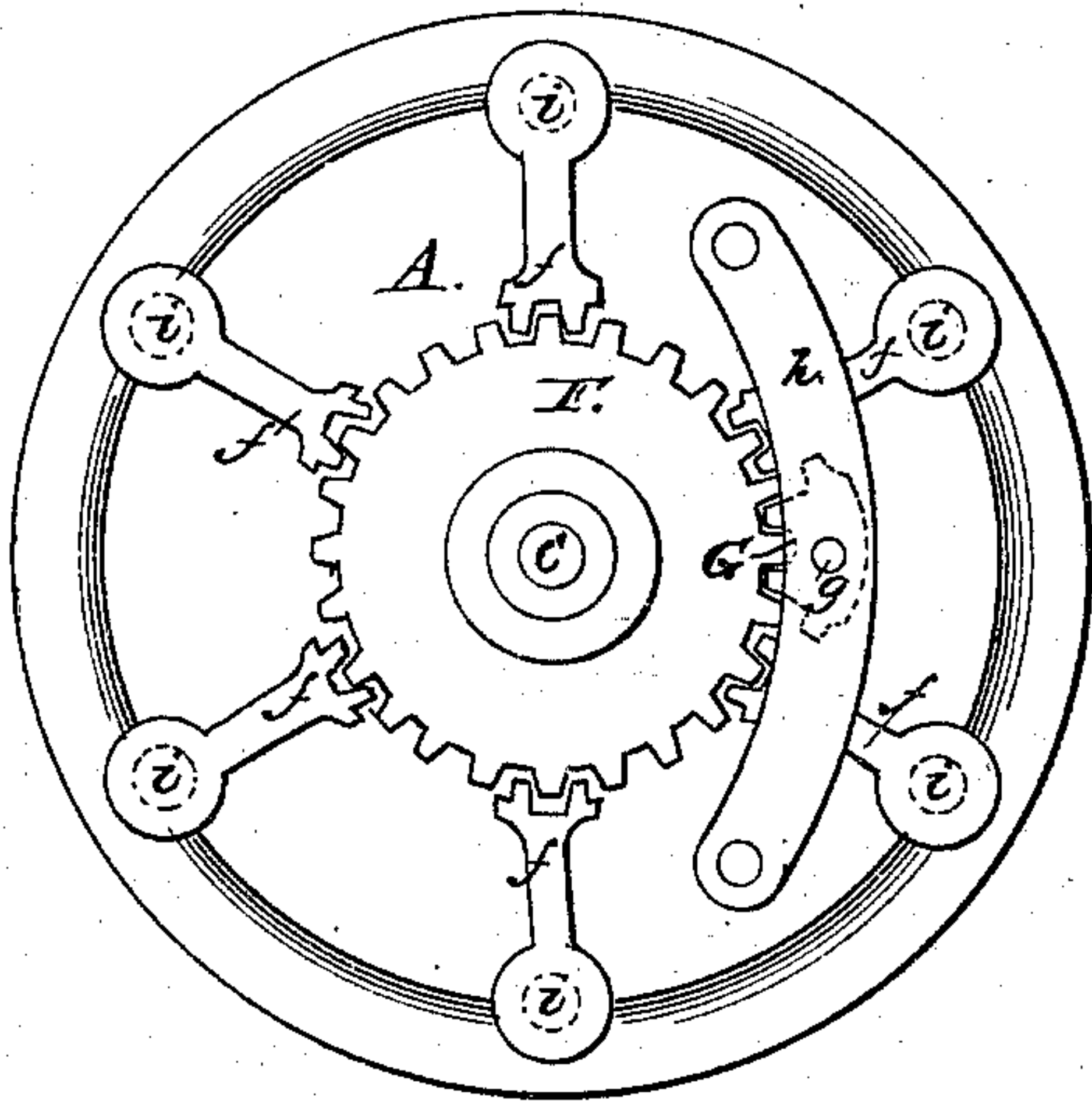


Fig. 2.

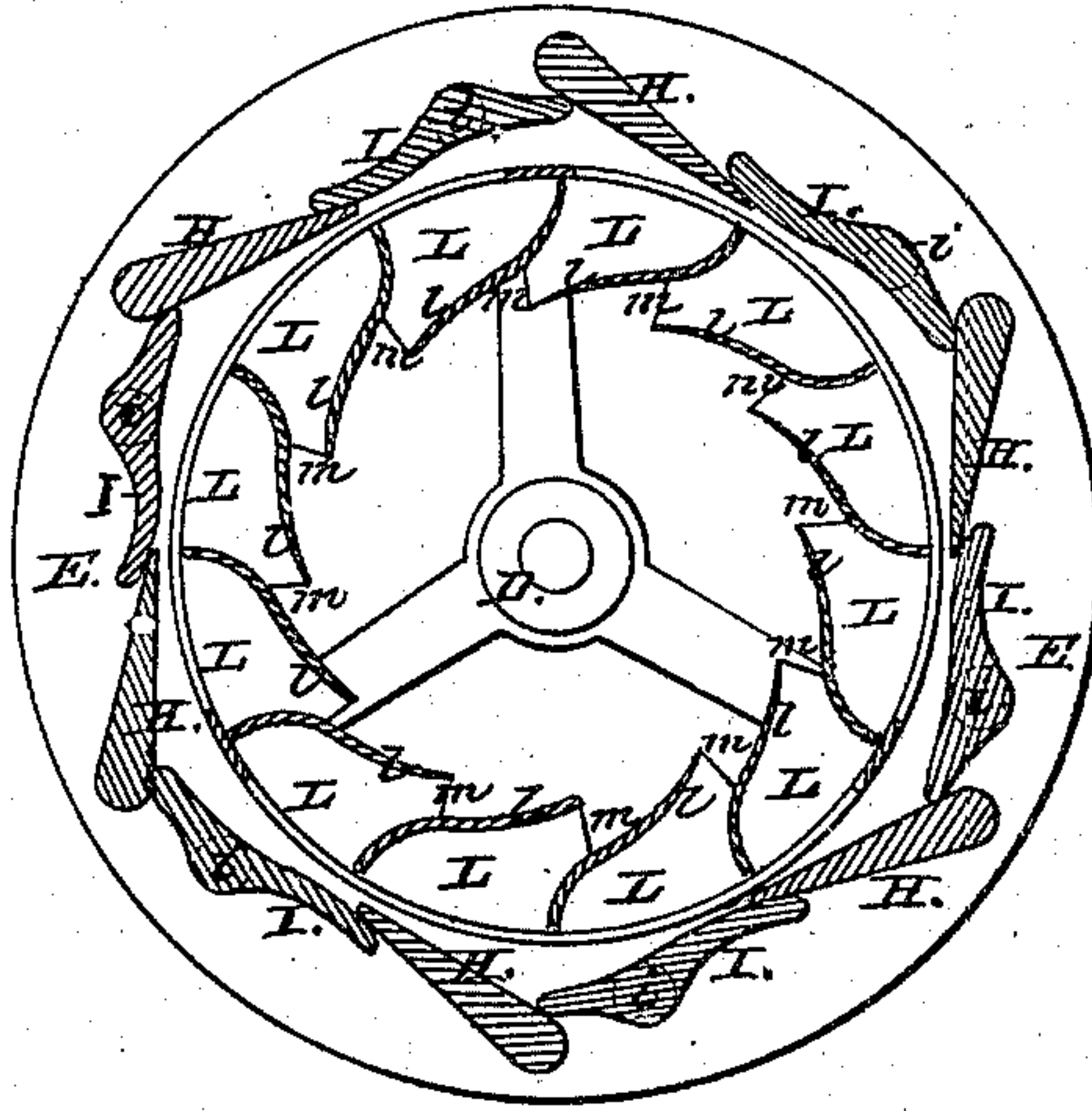


Fig. 4.

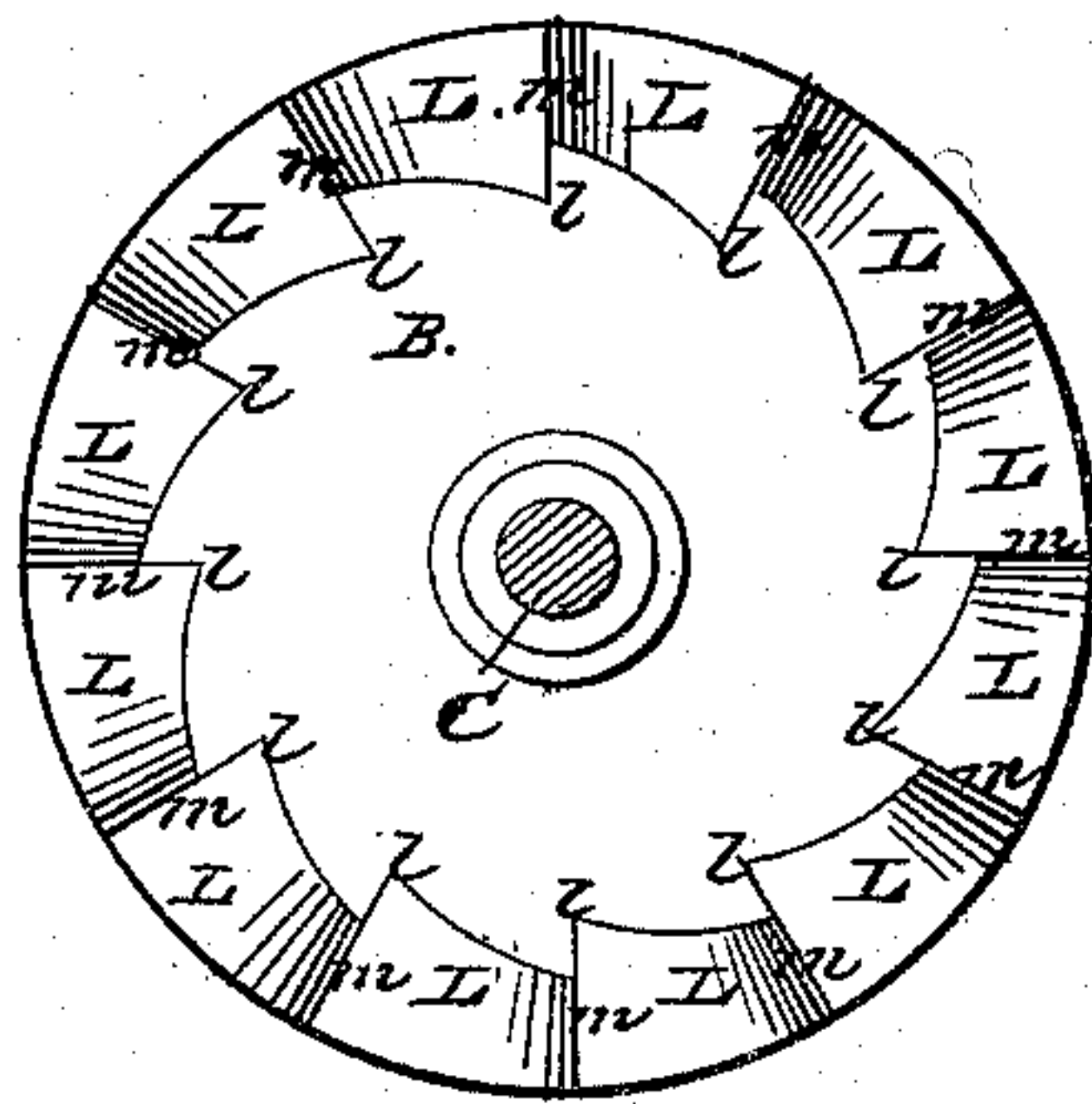


Fig. 3.

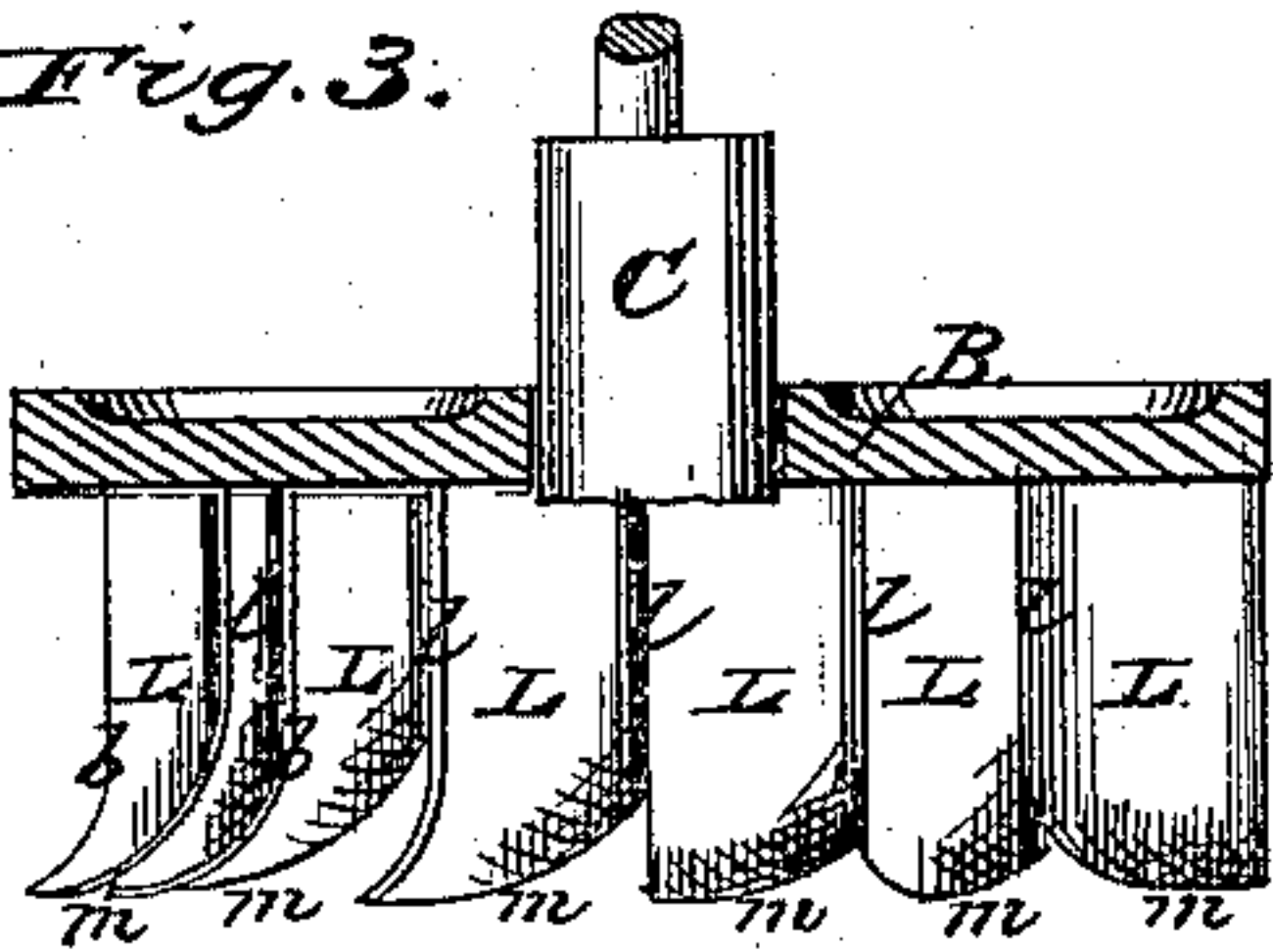


Fig. 5.



Witnesses:
A Van Branken,
Wm. Frank Browne.

Inventor.
J. M. Cook.
By his atty.,
J. S. Brown.

United States Patent Office.

J. M. COOK, OF LAKE VILLAGE, NEW HAMPSHIRE.

Letters Patent No. 79,781, dated July 7, 1868.

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, J. M. Cook, of Lake Village, in the county of Belknap, and State of New Hampshire, have invented an Improved Water-Wheel; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings making part of this specification—

Figure 1 being a top view of the upper case or rim of the wheel, showing also the operative portions in view thereon.

Figure 2, a horizontal section through the wheel, and the gates and guides around it.

Figure 3, a central vertical section of the wheel proper.

Figure 4, a bottom view of the wheel.

Figure 5, a view of one of the buckets.

Like letters designate corresponding parts in all of the figures.

My improvements are upon a turbine wheel, to which the water is admitted through gates all around its periphery.

The top plate or rim A of the case is connected with the bottom rim E (which supports the wheel-step D) by oblique water-guides H H, situated at uniform distances apart, and inclined inward, substantially as shown in fig. 2.

Between the water-guides H H are located the water-gates I I, by which the water is let into the wheel, or shut off, or regulated in the quantity of flow.

These gates are peculiarly arranged. They are pivoted at *i i*, near their centres, so as to be nearly or exactly balanced around them on the two edges by the pressure of the water upon them, thereby enabling them to be turned or adjusted with great ease, however great the pressure of water against them. But this pivoting of the gates in the middle, between the stationary water-guides H H, accomplishes another result of importance and value, namely, that of furnishing two openings for the water to each gate, whereby the number of gates and of water-guides is reduced one-half, and the whole construction is simplified and cheapened.

The shape of the gates is such as to give proper admission and direction to the water, at the edges thereof, substantially as represented.

The number of gates and of guides may vary from six (as shown) to twelve, or more, according to the size of the wheel.

The gate-pivots *i i* extend up through the upper rim or plate A, and have respectively attached to them cog-segment levers *f f*, which all gear into a central cog-wheel, F, substantially as shown in fig. 1. This cog-wheel is moved by means of a shaft, *g*, and pinion or cog-segment, G, whereby all the gates are operated equally and simultaneously.

The buckets L L of the wheel B are cast separately from the rim or plate, and have each a flanch, *p*, at the upper edge, by which they are secured to the rim or plate with bolts. Thus the buckets can be placed at any varying distance apart, and any convenient number on each wheel, say from twelve to thirty, according to the size of wheel. They are also thereby readily replaced if any one is broken or damaged.

This flanch *p* is made thin at the outer edge, and gradually thickened to the inner edge, or where they join with the side of the bucket. This thickening gives an inclination inward and downward on the under side, so that the water strikes in a way to lift somewhat upon the buckets, and is itself directed downward thereby. Each bucket has its inner discharge-edge, *l*, curved somewhat inward, and its lower discharge-edge *m* in like manner curved downward, while the two said edges, one nearly vertical and the other nearly horizontal, are connected by a quarter-round rope, similarly curved outward and downward. This form gives an inward, side, and downward bottom discharge, both discharges being connected in one sheet of water.

The discharge-end of each bucket receives a portion of the front part of each succeeding bucket, so that they are very compactly placed, and the size of the discharge-outlet is regulated by the relative situation of the buckets.

This combined construction produces an excellent discharge and a high percentage of power.

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

The water-wheel B, having independent buckets L L, secured to the upper plate by inclined flanches *p p*, and formed with inwardly-curved discharge-edges *l l*, downwardly-curved discharge-edges *m m*, and curved connecting-edges, substantially as and for the purpose herein specified.

The above specification of my improved water-wheel signed by me, this 19th day of November, 1867.

J. M. COOK.

Witnesses:

JOHN ALDRICH,

C. P. S. WARDWELL.