

948,755.

F. BANGERTER.  
WATER WHEEL.  
APPLICATION FILED JULY 27, 1908.

Patented Feb. 8, 1910.

FIG. 1.

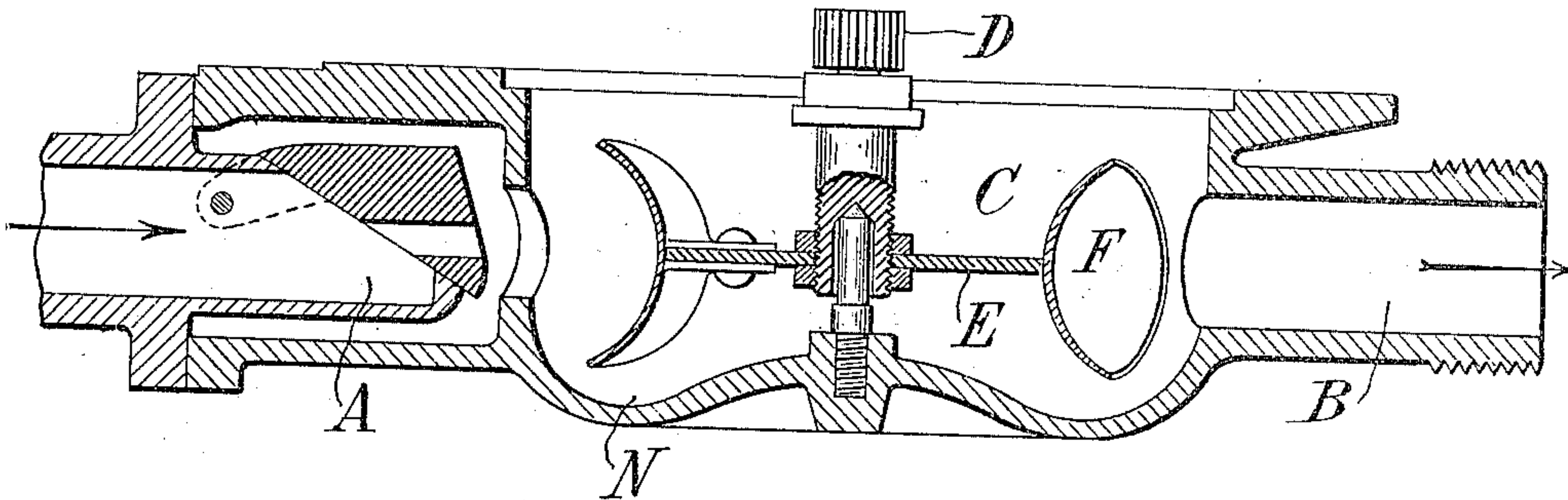


FIG. 2.

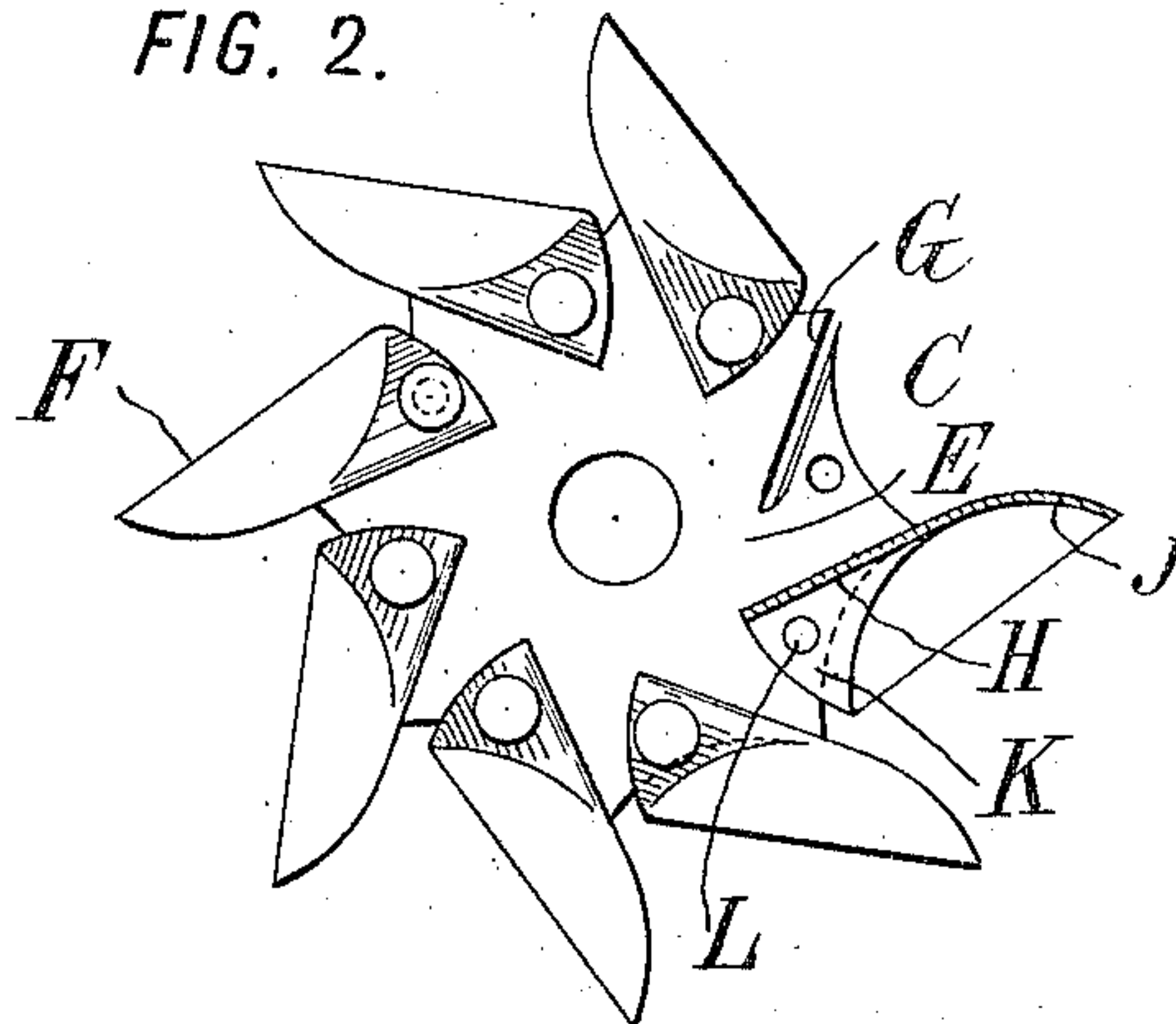


FIG. 3.

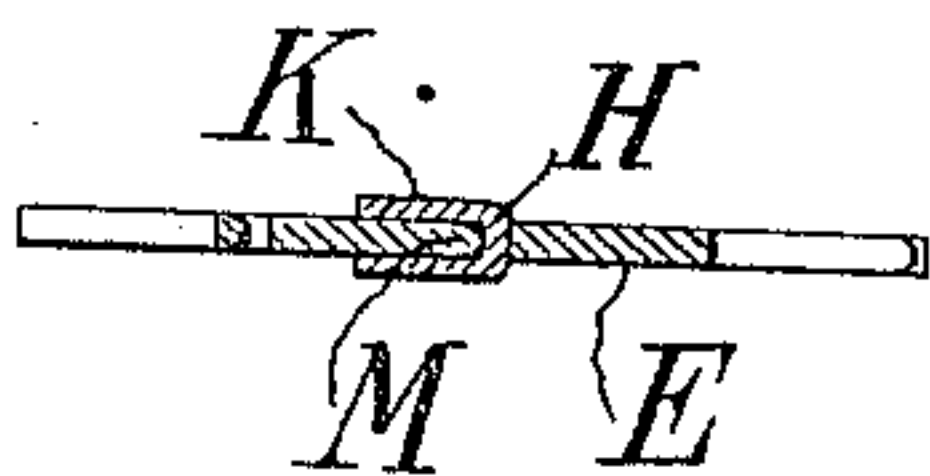


FIG. 4.

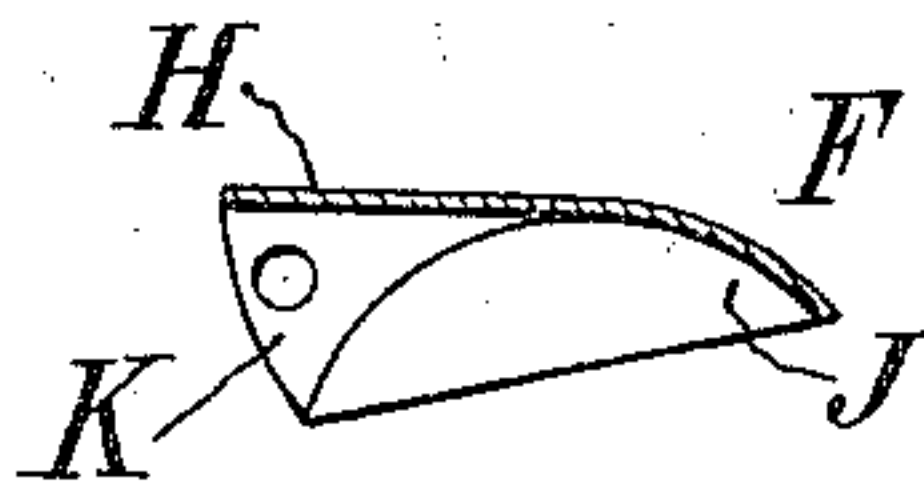
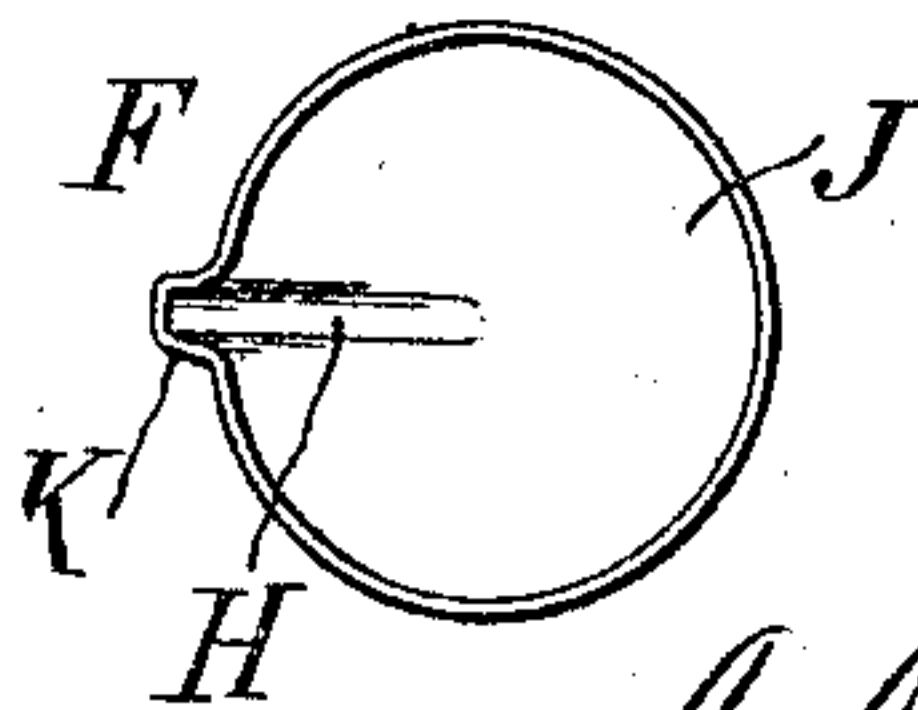


FIG. 5.



WITNESSES:  
*Fred White*  
*René Duine*

INVENTOR  
*Fred Bangarter,*

By Attorneys

*Arthur C. Raper & Nema*



# UNITED STATES PATENT OFFICE.

FRED BANGERTER, OF NEW YORK, N. Y., ASSIGNOR TO THE STANDARD WATER METER COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

## WATER-WHEEL.

948,755.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed July 27, 1908. Serial No. 445,649.

*To all whom it may concern:*

Be it known that I, FRED BANGERTER, a citizen of Switzerland, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Water-Wheels, of which the following is a specification.

This invention aims to provide certain improvements in the construction of water wheels such as are used in water meters, being rotated by the passage of the water through the meter and against the buckets of the wheel; and is applicable to wheels used in analogous situations.

The improvement is especially in the manner of forming and applying the buckets or pockets of the wheel, and in the general construction of the wheel.

The accompanying drawings illustrate an embodiment of the invention.

Figure 1 is a tangential vertical section of a standard water meter. Fig. 2 is a plan, partly in section, of the water wheel. Fig. 3 is a section through the disk of the water wheel. Figs. 4 and 5 are respectively a horizontal section and a front elevation of a bucket.

Referring to the apparatus illustrated, the water enters through the inlet valve A and discharges through the outlet B, striking the water wheel, which I designate as a whole by the letter C, tangentially and rotating it, the rotation being transmitted through a pinion D to any suitable mechanism.

The wheel C is formed of a central plate E to which are attached the buckets F. Various forms of wheels have been heretofore used, the prevailing one consisting of a central spider with buckets soldered thereon. Besides the minor disadvantages of the obstruction to rotation in the water which always surrounds the wheel and which obstruction is due to the spider and to the comparative clumsiness of the soldered joints, there was a serious expense involved, and difficulty in preserving the perfect balance of the wheel.

By the present invention the buckets may be made very cheaply, of the shape which is theoretically most efficient, and are fastened very neatly and cheaply to a solid disk which does not churn the water in which it

is embedded as would a spider, and whose rotation therefore is not resisted to the same extent as would be the rotation of a spider.

The disk E is provided with a number of slots G extending in the case illustrated in a tangential direction, and each bucket is fastened by having a portion passed through a slot G, bent down over the solid portion of the plate at top and bottom, and riveted through the bent-over portion. The buckets shown are spherically shaped, each constituting something less than a hemisphere, and are stamped out in such a form as to provide a tangential portion H from the bottom of the bucket portion J, and to provide flanges K overlapping the plate and through which the attaching rivet L fastens. It will be understood that the space between the upper and lower flanges K is substantially or largely filled by the portion of the plate E which lies between two adjacent slots the edge of the plate being formed with concave portions approximately fitting the concavities of the buckets. (see Fig. 2).

In Fig. 3 it is apparent that the flanges K and the intermediate portion H of the fastening members of the buckets are tapered on the inner side of the bend so as to fit the chamfered edges M of the slot in the plate E. This prevents the inverting of the buckets, insuring that the opening of each bucket shall be at the correct side. The construction described has also an advantage in permitting the casing to be formed with an annular depression N adjacent to the depending parts of the buckets so as to minimize the quantity of water carried in the meter and carried around with the rotating wheel, while at the same time preserving the necessary clearance around all parts of the rotating wheel.

What I claim is:—

1. A water wheel having a thin central member and wide buckets, said central member having slots in its edge and said buckets having narrow inward extensions entering said slots and flanges at the sides of said narrow extensions fastened upon the face of said central member to hold the bucket in position; each of said buckets with said extension and flanges being formed integrally of sheet metal.

2. A water wheel having a central member, and buckets F approximately spherical

and having tangential portions H extending from the bottoms of the buckets and flanges K overlapping said member, said member having slots into which said portions H of  
5 the buckets enter.

3. A water wheel having a central member, and concave buckets having flanges overlapping said member, the edge of the central member being formed with concave

portions approximately fitting the concavities of the buckets. 10

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

FRED BANGERTER.

Witnesses:

DOMINGO A. USINA,  
THEODORE T. SNELL.