W. E. Tate,

Rotary Meter.

No. 84,393. Patented Nov. 24, 1868.

Fig. 1.

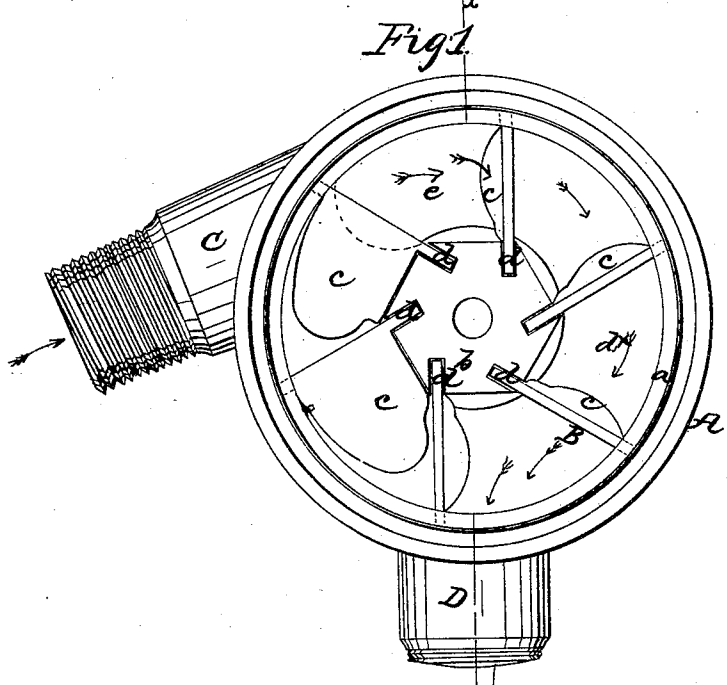
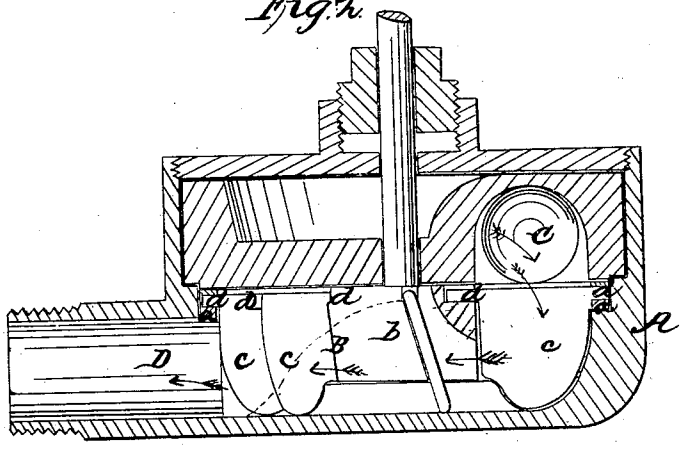


Fig. 2.



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WILLIAM E. TATE, OF CAMBRIDGEPORT, MASSACHUSETTS.

Letters Patent No. 84,393, *dated November* 24, 1868.

IMPROVED WATER-WHEEL.

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, WILLIAM E. TATE, of Cambridgeport, in the county of Middlesex, and State of Massachusetts, have invented a new and improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved water-wheel, which is also applicable for measuring water, or may be used as a water-meter; and

It consists in the combination of the top plate having a curved water-passage or channel in line with the supply-pipe, with the pivoted buckets, the annular groove in the bottom of the case, the abutment within the groove, and the induction and eduction-pipes, as will be hereinafter more fully described.

In the accompanying sheet of drawings—

Figure 1 is a plan or top view of my invention with the top plate removed.

Figure 2, a vertical section of the same, taken in the line *x x*, fig. 1.

Similar letters of reference indicate corresponding parts.

A represents a cylindrical box or case, in which the wheel B is fitted, and allowed to turn freely.

C is the water-induction, and

D, the water-eduction pipe, the pipe C, (induction,) entering or communicating with A in a higher plane than the eduction-pipe D. (See fig. 2.)

The wheel B is composed of a ring, *a*, and a hub, *b*, between which the buckets *c* are suspended on pivots *d*, the bearings of the inner pivots being in slots in the upper surface of the hub *b*, and the bearings of the outer pivots being in the ring *a*.

The buckets are all pendent, and swing freely on their pivots, and when down rest against bearings *b* on the hub, which bearings are slightly inclined from a vertical plane, as shown clearly in fig. 2.

The ring *a* rests upon a shoulder, *c'*, in the case A.

The lower parts or edges of the buckets are rounded, and they are fitted and work in an annular groove, $d^{\times}$, in the case A, the buckets fitting in the groove as snugly as may be without creating undue friction.

The groove $d^{\times}$ is not of the same dimensions entirely around the case, but has a ledge, *e*, inclined at one end within it, between the induction and eduction-pipes C D.

This ledge is for the purpose of raising the buckets to a horizontal plane between the aforesaid pipes, so as to admit of the revolution of the wheel, and to form an abutment or cut-off between the pipes, so as to cause the water to flow and act against the buckets, in the direction indicated by the arrows.

The water impinges against the buckets about at right angles, and the wheel is properly enclosed within the case by a cap-plate, E, which is let into the top of the case, and held therein by the screw-cap plate E'.

By this arrangement it will be seen that the water flows through the case in one direction only, and is made to act in the most efficient manner against the buckets of the wheel, a free discharge being allowed through the pipe D, the space between the top of the abutment *e* and the under surface of the top plate E, being just sufficient to allow the buckets *c* to pass through when edgewise or in a horizontal position.

The top plate E is provided upon one side with a tangential passage or water-guide in continuation of the supply-pipe C. This passage is curved downward from the periphery of the plate to its under side, in such a manner that the water entering from the pipe C, is directed and falls against the buckets at nearly a right angle.

The entering stream of water from C settles the buckets immediately as they leave the abutment *e*.

It will be seen from the above description that the device is applicable either as a motor or meter; the revolutions of the wheel, when the device is used as a meter, being registered in order to ascertain the amount of water discharged.

I claim as new, and desire to secure by Letters Patent—

The top plate E, with its channel or passage, in combination with the suspended or pivoted pendent buckets *c* of the wheel B, the groove $d^{\times}$ in the case A, the abutment *e*, within said groove, and the induction and eduction-pipes C D, all arranged to operate in the manner substantially as and for the purpose set forth.

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Witnesses:

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