(No Model.)

J. W. KALES.
WATER MOTOR.

No. 547,667. Patented Oct. 8, 1895.

Fig. 1.

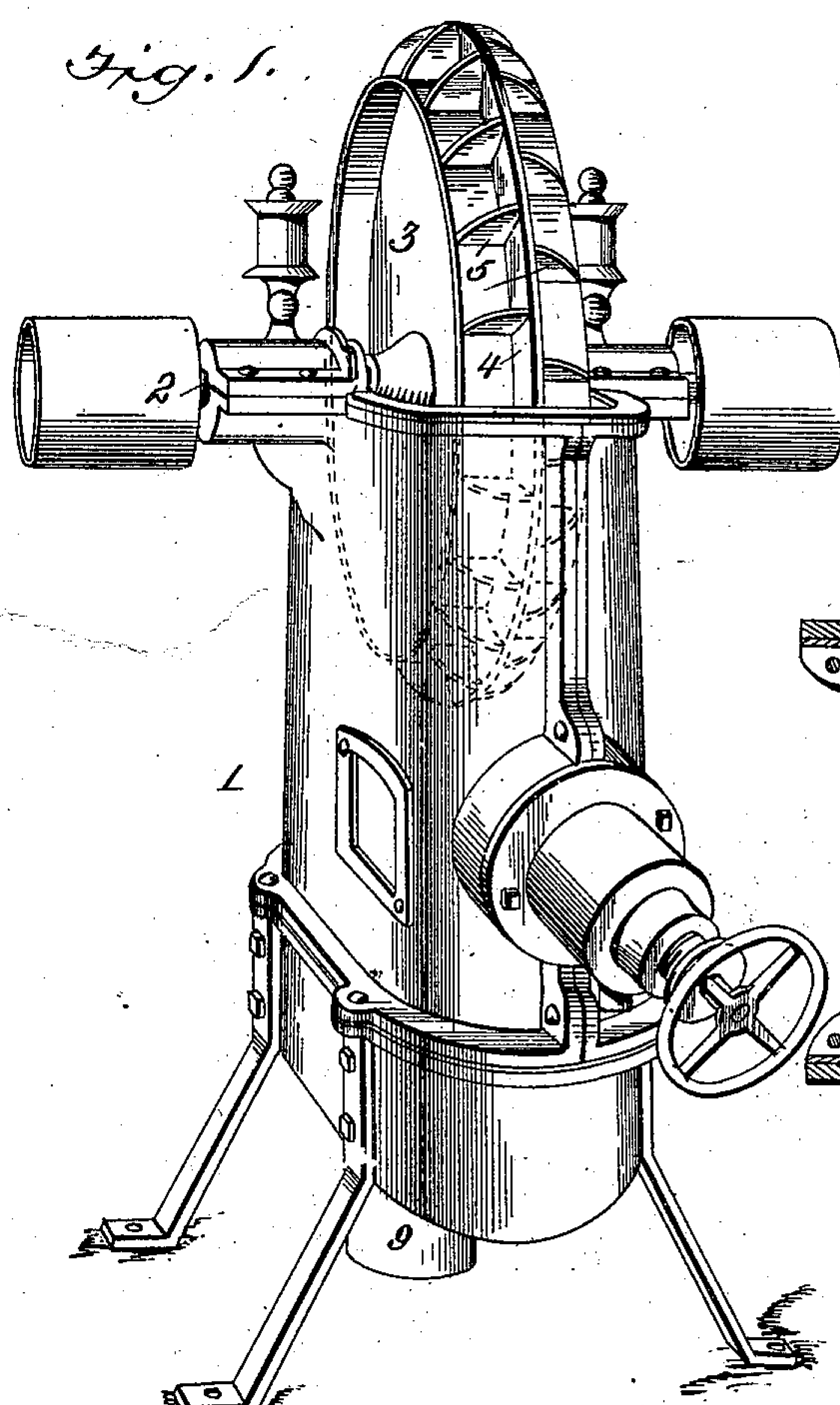


Fig. 2.

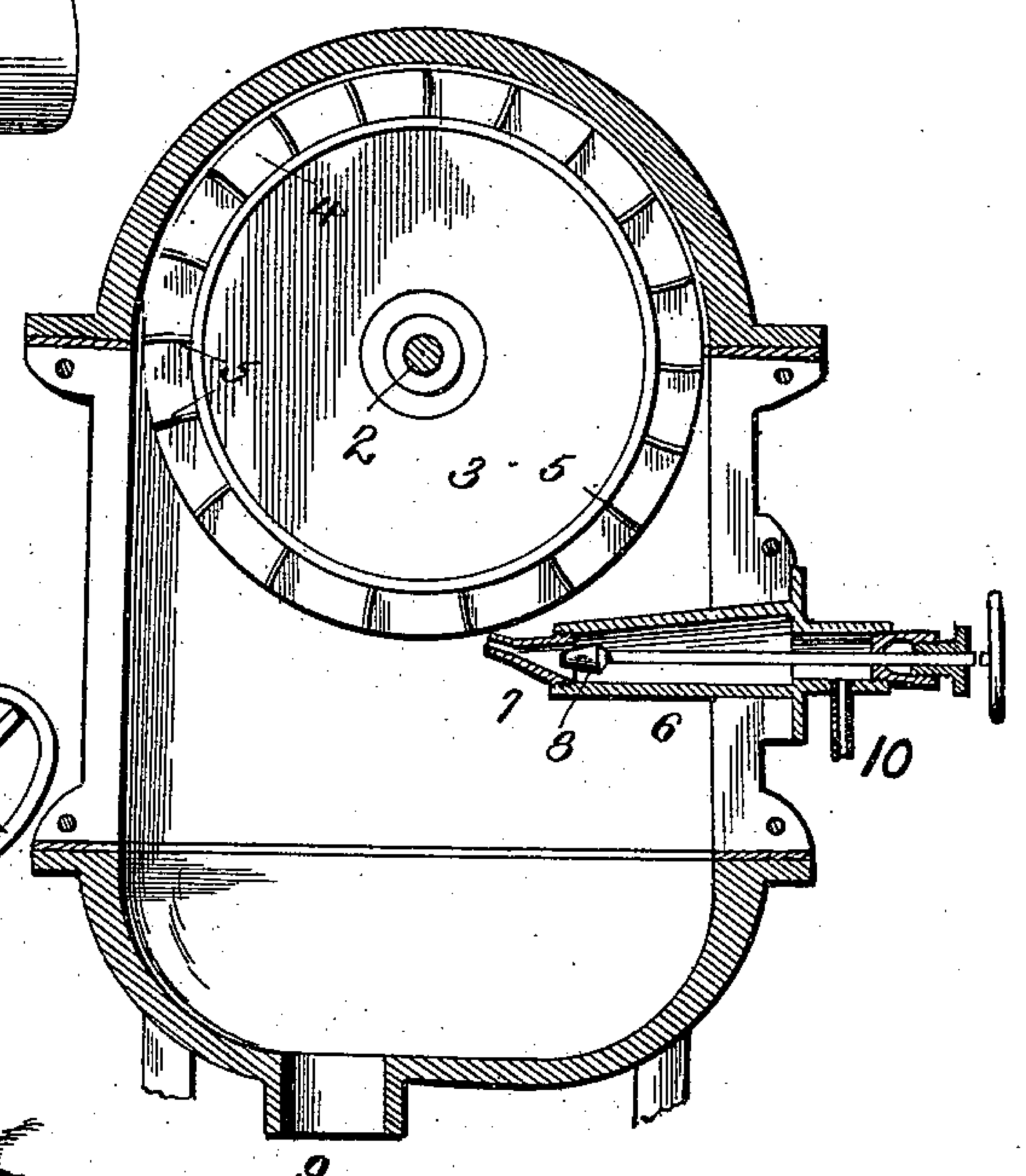
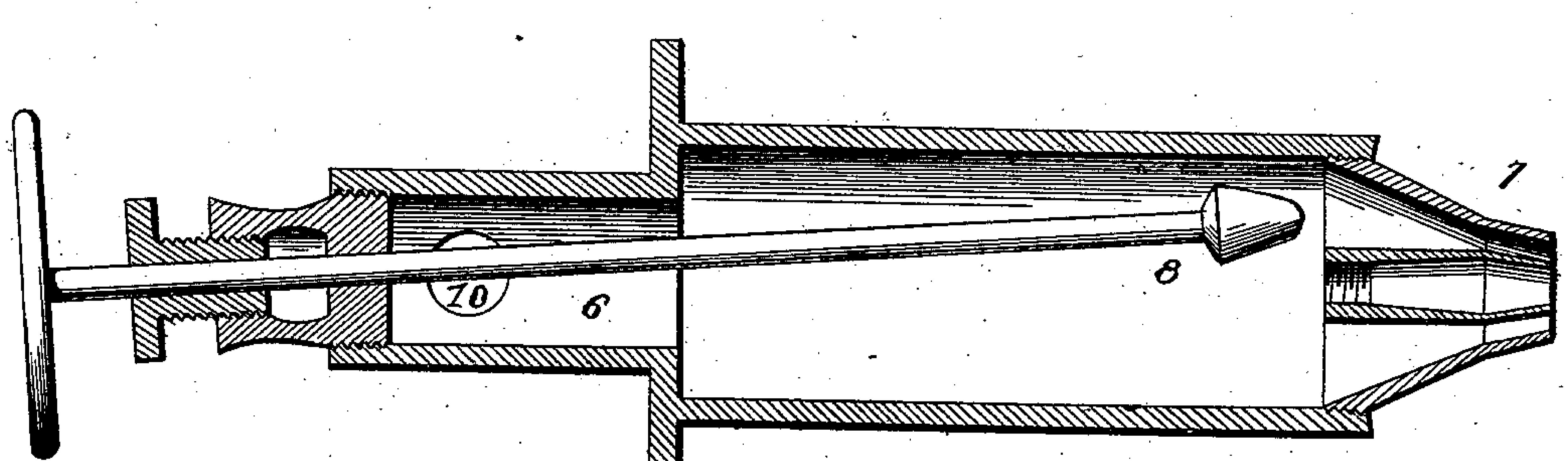


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JOIIN W. KALES, OF FRANKLINVILLE, NEW YORK.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 547,667, dated October 8, 1895.

Application filed December 23, 1893. Serial No. 494,540. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. KALES, a citizen of the United States, residing at Franklinville, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Water-Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates more particularly to that class of water wheels or motors known as "impact-wheels;" and its object is to provide an improved construction whereby the full pressure of the water is maintained in the water-line at the point of discharge against the wheel; also, to so construct and arrange the buckets upon the periphery of the wheel that they shall be perpendicular to the line of impact and shall discharge the water downward and outward, thereby relieving the wheel of the water usually carried by the buckets and periphery of the wheel; also, to provide for greater clearance of the water escaping from the wheel.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of this device, the cover removed. Fig. 2 is a vertical central section of this device. Fig. 3 is a plan view of the nozzle.

In the said drawings the reference-numeral 1 designates the casing of the apparatus sloping gradually outward on all sides from the top to the bottom. Journaled in this casing is the driving-shaft 2, to which is secured the water-wheel 3. Said wheel is preferably cast in a single piece of metal and formed with a central or mid-peripheral rib 4.

The numeral 5 designates the buckets, also preferably formed integral with the wheel, alternately arranged on the periphery of the wheel on opposite sides of said rib. These buckets are quadrant-shaped, curved in radial direction only, and concave on the side receiving the impact of water, and have curved peripheral edges and unite with the mid-peripheral rib at right angles.

The feed-pipe 6, suitably secured to the casing 1, is provided with a plurality of nozzles or vents 7 in its outer end, as more clearly seen in Fig. 3, and with a valve 8 for closing one of said nozzles, as indicated by its position in said figure, when it is desired to reduce the amount of water to be fed to the buckets of the wheel, according to the force or power to be expended. One or more of these nozzles may be provided, as described.

The numeral 9 designates the outlet.

The numeral 10 is the feed-pipe to the nozzle.

The operation will be readily understood. The water fed to the wheel will strike the buckets, thereby rotating the wheel and escaping at the outlet 9. By the peculiar shape of the buckets the water will continue to act thereupon at its full pressure until cut off by a succeeding bucket, and by alternately arranging the buckets on opposite sides of the rib the wheel will run steadier. By constructing the casing smaller at the top than at the bottom, as shown, the water which is thrown against it from the wheel flows away from the latter instead of falling back upon the same, as is the case when the walls of the casing are perpendicular. Only one vent or nozzle is stopped with the valve or plunger. The other is left open, so that when the water is turned on the wheel it is ready to start. In many places there are two printing-presses to run, a large cylinder-press and a small job-press. The job-press runs ten times as much as the cylinder-press. The cylinder requires all the available power developed when both vents are open. The job-press runs very nicely with one vent open. Now, to get the most power out of a given quantity of water, it is necessary to avoid friction, and hence small nozzles, as the vein of water in a very small nozzle is so thin that it requires much of the available power to overcome the friction in the nozzles, so I stop one nozzle and leave the other wide open.

There are in practice nozzles of different diameters, so that I can elect a combination thereof that will be most effective.

Having thus described my invention, what I claim is—

In a water-motor, the wheel having an edgewise-disposed, mid-peripheral rib and series of quadrant-shaped buckets alternating each

other on opposite sides of said rib, curved in radial direction only and concave on the side receiving the impact of water, and having curved peripheral edges and uniting with said rib at right-angles, all arranged beyond the periphery, proper, of the wheel, in combination with the casing closely compassing and conforming to the relatively upper buckets of the wheel and flaring downward therefrom toward the bottom thereof, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. KALES.

Witnesses:
E. D. SCOTT,
JAMES MCSTAY.