

No. 685,967.

Patented Nov. 5, 1901.

L. E. BOQVIST.
ROTARY WATER MOTOR.

(Application filed Jan. 22, 1900.)

(No Model.)

Fig. 1.

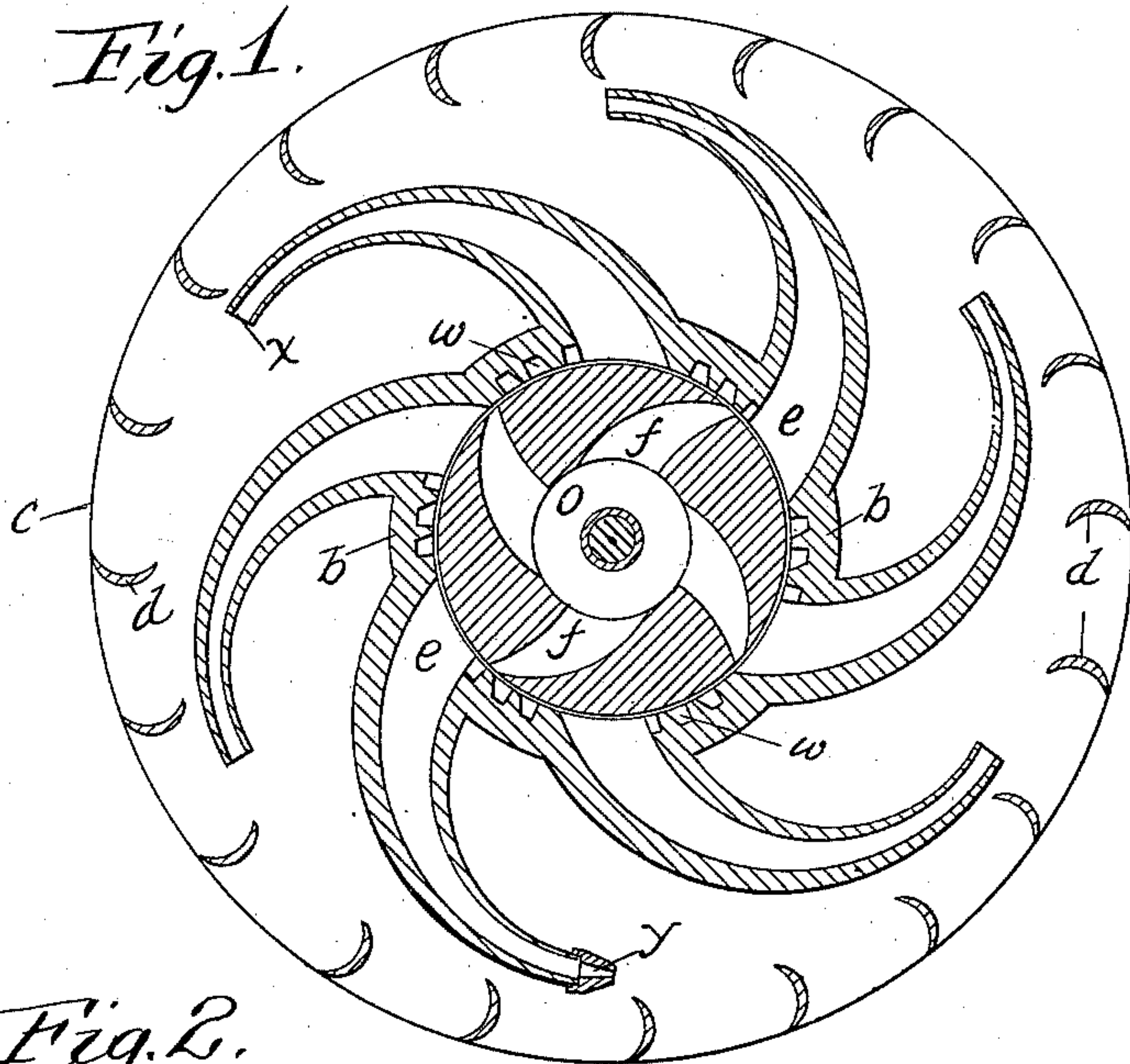
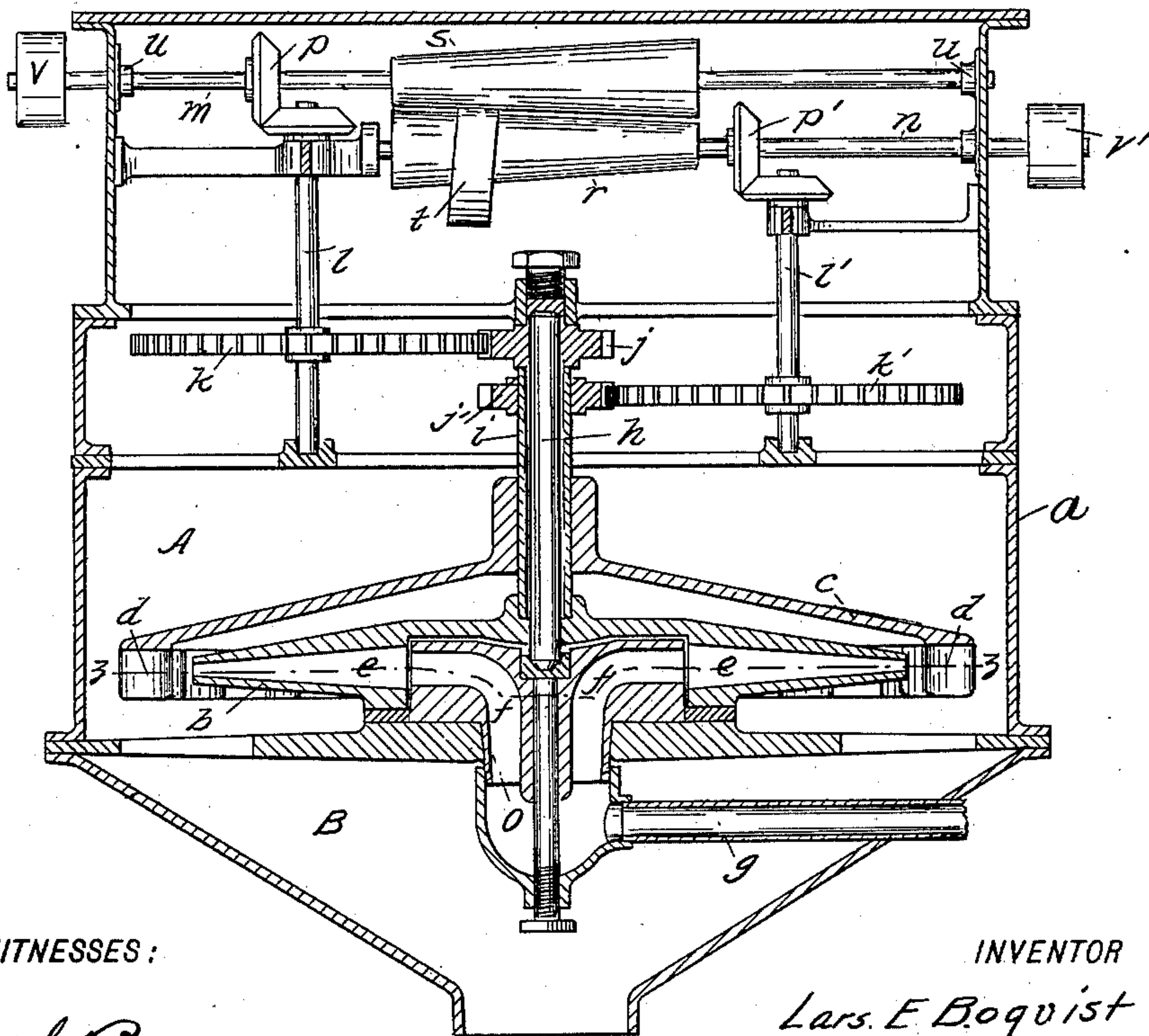


Fig. 2.



WITNESSES:

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LARS E. BOQVIST, OF SEATTLE, WASHINGTON.

ROTARY WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 685,967, dated November 5, 1901.

Application filed January 22, 1900. Serial No. 2,339. (No model.)

To all whom it may concern:

Be it known that I, LARS E. BOQVIST, a citizen of Sweden, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Rotary Water-Motors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in rotary water-motors in which the power-wheels are rotated by the action of water under pressure.

The object of my invention is to provide a motor that will utilize nearly the entire force of the water. I attain this object by mechanism illustrated in the accompanying drawings, in which similar letters refer to corresponding parts in both views.

Figure 1 is a horizontal section through line $z z$, Fig. 2; and Fig. 2 is a vertical section through the axis of the motor.

The reference-letter a designates the case or frame of the machine, forming therein a chamber A, in which the moving wheels b and c of the motor rotate.

g is an intake-pipe, where the water under pressure is led to and through passage-ways f of the directrix o , having a tangential discharge to the reverse-curved passage-ways e of the inner rotating wheel b , from whence it is discharged, also tangentially, to the outer wheel c , carrying a set of buckets d , (dished, preferably,) disposed at right angles to the direction of the discharge-jets from the orifices x of the inner wheel b .

h is a shaft having end adjustment, to which is fixed the rotary wheel b , and the bucket-wheel c is fixed to sleeve i , from which two— h and i , respectively—motion is transmitted through intermediate pinions $j j'$, gear-wheels $k k'$, shafts $l l'$, and miter-gears $p p'$ to shafts m and n , to which are mounted the cone-pulleys s and r , respectively, the object of which cones is to provide, through intermediate belt t , a means to transmit the power from one of said shafts m or n to the other where it is desirable to take all of the power from the motor by one driving-belt, using in that case

either pulley v or v' , and the belt is positioned longitudinally to the cones, so that the circumferential speeds of both cones at their points of contact with the said belt are the same, thus preventing all slip while transferring the power of shaft n to the main shaft m .

w represents depressions in the hub of the inner wheel to furnish steps therein for the water jetted through the directrix to accelerate the speed of said wheel. y shows a reducing-nozzle for regulating the size of stream from orifice, and B shows the dead-water-discharge chamber.

The advantage of my invention is in utilizing nearly all of the power from the water, which I accomplish by the use of the directrix, whereby the water is delivered in tangential lines to the inner rotary wheel, and by providing steps or depressions upon the hub of the said wheel between the several passage-ways instead of delivering all of the water directly to the said passage-ways.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a water-motor having two concentric wheels adapted to be rotated in opposite directions, the combination with the said wheels and the frame, of a directrix having tangential discharge-orifices and the depressions in the hub of the inner wheel, substantially as set forth.

2. In a water-motor having two concentric wheels adapted to be rotated in opposite directions, the inner wheel having water-passages therein formed in curves adapted to discharge the water tangential to the buckets on the outer wheel, in combination with the depressions formed between the said water-passages of the inner wheel on the hub thereof, substantially as set forth.

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

LARS E. BOQVIST.

Witnesses:

PAUL BARNES,
ERNEST E. GILMER.