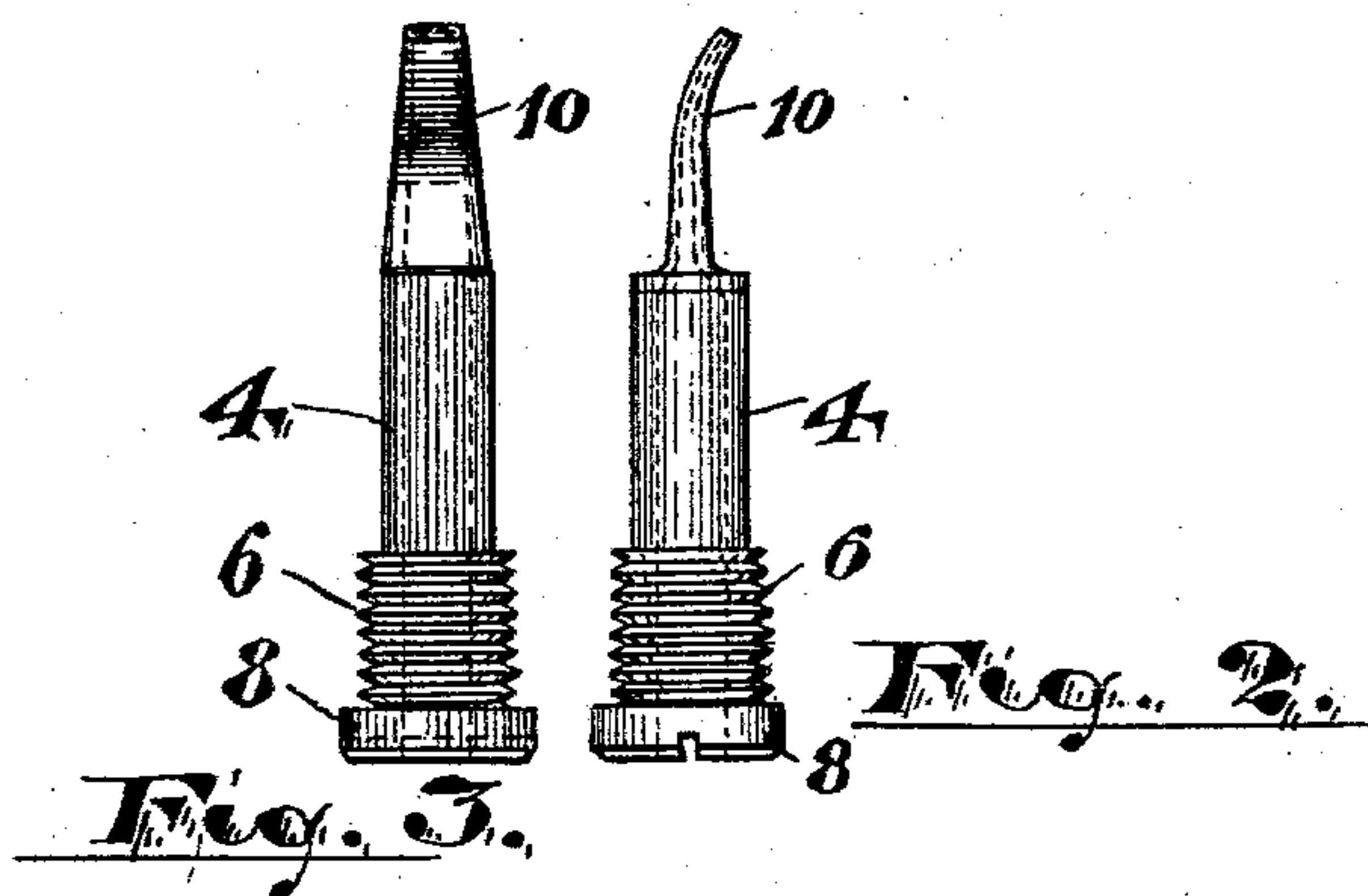
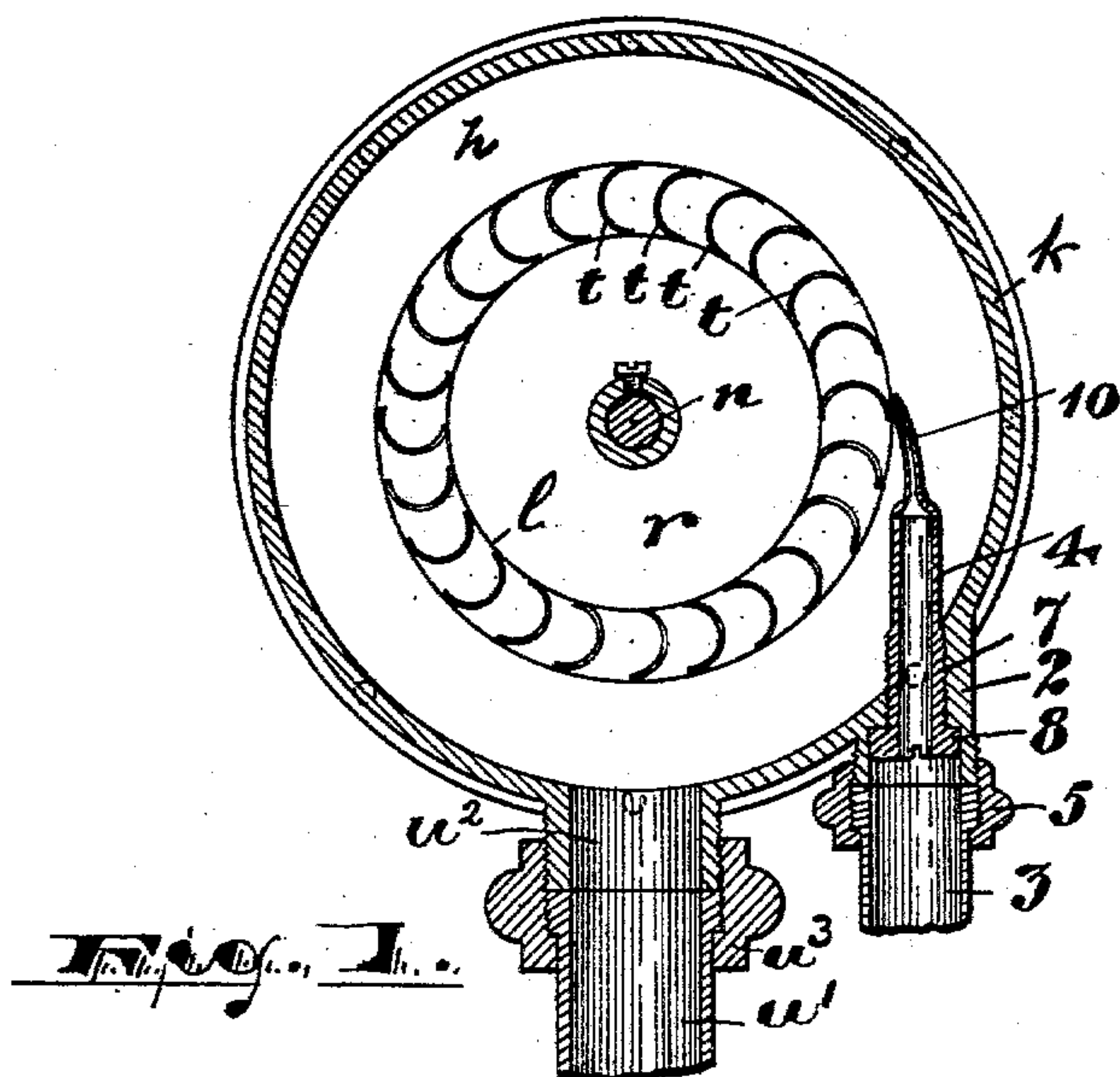


No. 740,919.

PATENTED OCT. 6, 1903.

S. RAWLINGS.
IMPACT WATER MOTOR.
APPLICATION FILED JAN. 24, 1902.

NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SAMUEL RAWLINGS, OF KEARNEY, NEW JERSEY.

IMPACT WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 740,919, dated October 6, 1903.

Application filed January 24, 1902. Serial No. 91,040. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL RAWLINGS, a citizen of the United States, residing at Kearney, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Impact 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, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The objects of this invention are to enable a fan to be rotated at a reduced expenditure of water, to reduce the cost of the motor and secure a more compact and simple construction of the same, and to secure other advantages and results, some of which may be referred to in connection with the description of the working parts.

The invention consists in the improved water-motor and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like characters of reference indicate corresponding parts in each of the several figures, Figure 1 is a central vertical section of a motor of my improved construction, showing the relation of the water-supply nozzle to the water-wheel therein and showing the separable relation of said nozzle to the case; and Figs. 2 and 3 are detail views of the said supply-nozzle.

In said drawings, *h* indicates one of the side plates, and *k* an annular rim of the casing or closure in which the motor-wheel *l* may freely rotate on or with its axial shaft *n*, the said shaft *n* receiving its motion and power from the wheel and transmitting it to the part to be actuated—for example, a rotary fan. (Not shown.)

The shaft *n* is arranged in bearings in the disk-like side plates in any suitable manner, and the plate *r*, fixed upon said shaft, carries an annular series of sheet-metal buckets *t*, which are segments of hollow cylinders and are preferably semicylindrical or approximately so. Said buckets are so arranged as

to receive the projected stream of fluid at their concave sides, and the force of such fluid will thus be imparted to the water-wheel, so that the latter will be rotated with considerable power and speed, thus operating the shaft and its connections.

The water from the water-wheel is conducted out from the casing by means of a pipe *u'* in communication with the bottom of the casing, said pipe being preferably coupled to a nipple *u*², integrally formed at the bottom of the rim *k* by means of a coupling-nut *u*³.

At or near the bottom of the casing a second nipple, 2, is formed, to which is coupled an inlet or supply pipe 3, the said pipe 3 being connected to the casing by the nut 5. Into said nipple 2 is thrust a separable nozzle 4, which is exteriorly threaded, as at 6, to be screwed into a correspondingly-threaded passage or opening in the casing at the inner end of the nipple 2. Inwardly from the threads 6 the nozzle is of reduced transverse diameter to enable the said nozzle to be readily removed outward through the small threaded opening in the casing within the nipple 2.

The nozzle 4 is provided with a head 8, adapted to limit its movement into the casing, and the threads 6 enable said nozzle to be adjusted to increase or diminish the distance of the inner extremity of the nozzle from the water-wheel to secure an increase of efficiency under various conditions.

The construction and arrangement of the nozzle with respect to the casing and water-supply pipe permit an adjustment of the nozzle with relation to the water-wheel prior to the application of the said water-pipe to the casing. This enables the parts to be nicely adjusted prior to placing the device on the market, and an inexperienced operator may properly apply the motor to the supply-pipe without interference with the adjustment.

The inner end of the nozzle opposite the head and threaded part is flexible, and thus adapted to be bent, as at 10, by hand to vary the inclination in the direction of the stream of water, thereby changing the point of impact of the water on the concave sides of the buckets, whereby the highest efficiency of the stream may be effected. Said flexible end is made flat or broad in side view, as in Fig. 3, and tapers or gradually contracts toward its

extremity, so as form and direct a broad but thin stream against the buckets, thus exerting a relatively strong moving force whereby the wheel is actuated to a high speed.

5 Having thus described the invention, what I claim as new is—

1. The improved water-motor herein described comprising a casing having an opening through which an outwardly-removable
10 nozzle may be inserted and directed toward the water-wheel, and having said water-wheel therein, and said nozzle extending through the opening in the casing, upward toward the periphery of the wheel at the intersection of
15 the plane of the wheel and the longitudinal plane of the axis of said wheel, the reduced end of the nozzle, adapted to be drawn out through the bottom of the casing, being flexible, whereby the same may be changed in di-
20 rection by hand manipulation, when drawn out from the casing.

2. The improved water-motor herein de-

scribed, comprising a casing having an opening in the bottom through which an outwardly-removable nozzle may be inserted and with-
25 drawn without dismembering the casing or disturbing the water-wheel therein, a water-wheel arranged in said casing and a separable nozzle adapted to be screwed into the bottom of said casing, the inward extension
30 of the nozzle from its point of engagement with the bottom of the casing to its inward extremity being reduced in transverse diameter, and the small tapering end of the reduced extension being flexible and flat and
35 bent at an angle to the longer axis of the nozzle, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of January, 1902.

SAMUEL RAWLINGS.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.