

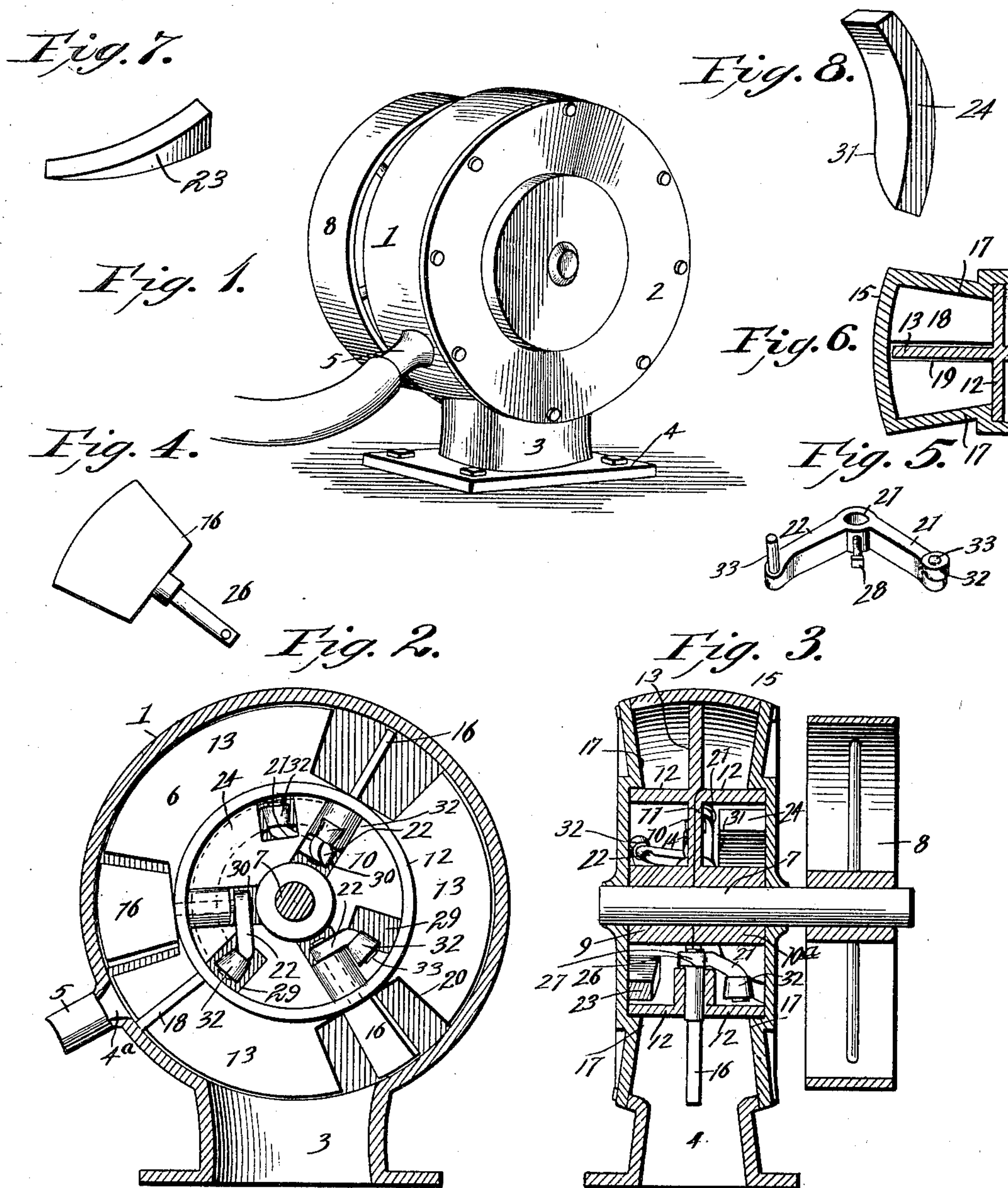
No. 669,115.

Patented Mar. 5, 1901.

J. T. HODGES.
WATER MOTOR.

(Application filed May 9, 1900.)

(No Model.)



Witnesses
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By his Attorneys.

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UNITED STATES PATENT OFFICE.

JOHN TIMOTHY HODGES, OF ROCKPORT, INDIANA.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 669,115, dated March 5, 1901.

Application filed May 9, 1900. Serial No. 16,068. (No model.)

To all whom it may concern:

Be it known that I, JOHN TIMOTHY HODGES, a citizen of the United States, residing at Rockport, in the county of Spencer and State of Indiana, have invented a new and useful Water-Motor, of which the following is a specification.

The invention relates to improvements in water-motors.

10 The object of the present invention is to improve the construction of water-motors and to provide a simple and comparatively inexpensive one adapted to obtain a maximum amount of power from a given quantity of
15 water; and a further object of the invention is to provide a construction of this character which will be adapted to be operated by other fluid-pressure and which may also be employed as a meter.

20 The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claim hereto appended.

25 In the drawings, Figure 1 is a perspective view of a motor constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a transverse sectional view. Fig. 4 is a detail perspective view of one of the pivoted blades.
30 Fig. 5 is a similar view of the arms of the blade. Fig. 6 is a detail sectional view illustrating the construction and arrangement of the partition which separates the inlet-opening from the outlet. Figs. 7 and 8 are detail
35 views of the cams.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

40 1 designates a cylindrical casing constructed in any suitable manner and provided with removable face-plates 2 to enable the parts to be assembled and having a hollow or tubular base 3, forming an outlet for the water.

45 The base, which consists of a tubular neck or extension, is provided with a horizontal flange 4, which is adapted to be bolted or otherwise secured to the supporting-surface. The casing is provided at one side with an
50 inlet-opening 4^a and preferably has a tubular extension or nipple 5 for the attachment

of a pipe or hose for conducting the water to the casing.

Within the casing is arranged a rotary water-wheel 6, mounted upon a horizontal shaft 55 7, which has one of its ends extended beyond the casing and carrying a pulley 8, adapted to receive a belt for transmitting motion from the motor to the device or machine to be operated. The wheel consists of a hub, a sleeve, 60 and inner and outer webs or flanges, and it may be cast of a single piece of metal, or, as illustrated in Fig. 3 of the accompanying drawings, the hub may consist of two sections 9 and 10^a, and the inner webs or flanges may 65 be divided into sections 10 and 11, and the sleeve 12 may be split centrally at the inner periphery of the outer webs or flanges 13. The two sections of the wheel are bolted together by suitable fastening devices 14, which 70 pass through the sections of the inner webs or flanges 10 and 11.

The sleeve 12, which is concentric with the hub, is spaced from the periphery or rim 15 to provide an annular water-space and to 75 form an inner compartment for the reception of the devices for automatically operating a series of pivoted blades 16, and the sides of the casing are inwardly offset at 17 to provide annular shoulders to fit against the ends of 80 the sleeve to exclude water from the interior of the latter.

The casing is provided below the inlet-opening 4 with a transverse partition 18, extending from the rim or periphery 15 to the sleeve 85 and disposed at a slight inclination and adapted to cause the water to pass around the cylindrical casing and to prevent the said water from passing directly to the outlet. The pivoted blades 16 are arranged at intervals 90 between the outer webs or flanges 13, which are spaced apart, as clearly shown in Fig. 2, for the reception of the pivoted blades, which are adapted to be turned in alinement with the curved webs or flanges 13 to pass through 95 an opening 19 of the partition 18. The pivoted blades fill the spaces 20 between the webs or flanges 13 when they are arranged in alinement with the same while passing through the slot or opening 19, and they are au- 100 tomatically operated by means of oppositely-disposed arms 21 and 22 and a pair of cams 23

and 24. The arms 21 and 22, which may be cast integral with stems or pivots 26 of the blades, are preferably formed separate from the same and are provided at their inner adjacent ends with sleeves or collars 27, which are secured to the stems or pivots by clamping-screws 28. The arms are mounted on the stems in spaces between the inner webs or flanges, as clearly illustrated in Fig. 2 of the accompanying drawings, and these inner webs or flanges, which are approximately sector-shaped, are provided with openings 29 and have intervening spaces 30 between them. The arms 21 and 22, which are arranged at an angle to each other, are located at opposite sides of the inner webs or flanges of the wheel and are adapted to engage alternately the cams 23 and 24. The cam 23 consists of a curved flange located adjacent to the slot or opening 19 of the partition 18, and it has a beveled edge arranged to engage one of the arms of each blade and oscillate the latter and turn it from a position at right angles to the outer webs or flanges to a position in alignment with the same, whereby the said blade is adapted to pass through the opening 18. As soon as the blade clears the partition 18 its other arm is engaged by the flange 24, which constitutes a cam, and it is gradually turned to a position at right angles to the outer webs or flanges, and the flange of the cam 24 is extended and provided with a straight edge 31 to hold the blades firmly in a position at right angles to the outer webs or flanges. The edge 31 forms a curved track for the arms of the blades, and the openings 29 of the inner webs or flanges permit the arms to extend into them and find the necessary clearance. In order to enable the arms to move smoothly and frictionlessly over the edges of the cams and to avoid wearing the same, they are provided with antifriction-rollers 32, which are mounted upon pins 33,

extending from the outer ends of the arms at an angle, as clearly illustrated in Fig. 2 of the accompanying drawings, and disposed toward the sleeve of the wheel. By this construction the arms 21 and 22 are offset from the planes of the cams and are adapted to clear the same. The antifriction-rollers, however, may be mounted in any other suitable manner.

It will be seen that the motor is exceedingly simple and inexpensive in construction, that it is positive and reliable in operation, that the blades are automatically turned and held in alignment with the outer webs or flanges while passing through the opening of the partition 18, and that such opening is filled by the webs or flanges, so that the water will not escape through it directly to the outlet. It will also be apparent that the construction may be applied to meters and that other fluid-pressure than water may be employed for driving it.

What is claimed is—

A device of the class described comprising a casing, a wheel mounted within the casing and composed of a hub, a concentric sleeve extending entirely across the casing, inner and outer webs or flanges, said hub, sleeve and inner webs or flanges being composed of sections, and the outer pivoted blades having stems extending into the space inclosed by the sleeve, arms mounted on the stems and located at opposite sides of the inner webs or flanges, and means for operating the arms, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN TIMOTHY HODGES.

Witnesses:

BENJ. F. HOFFMAN,
O. E. CADICK.