J. B. NORTON.

WATER MOTOR.

APPLICATION FILED MAY 10, 1910.

987,818. Patented Mar. 28, 1911.

FIG. 1.

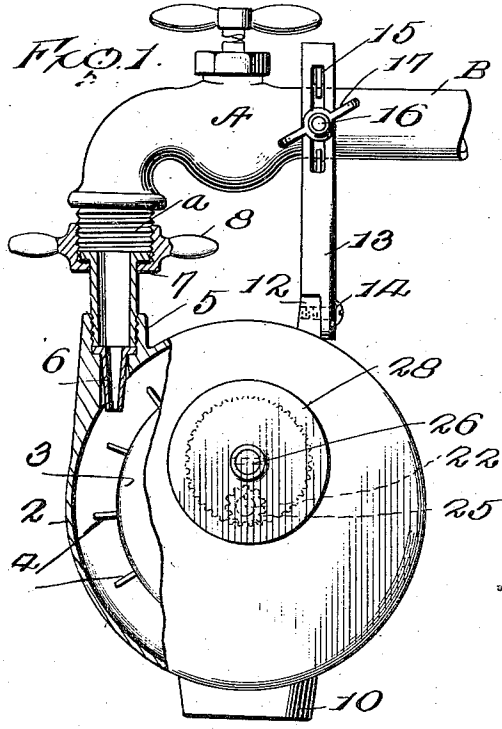


FIG. 2.

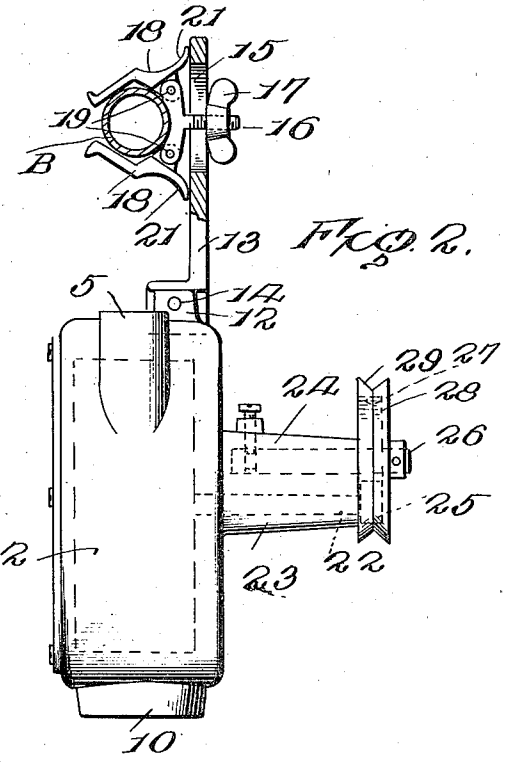


FIG. 3.

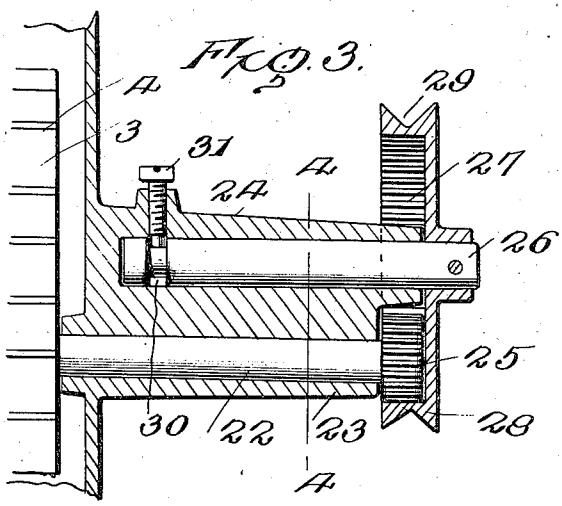
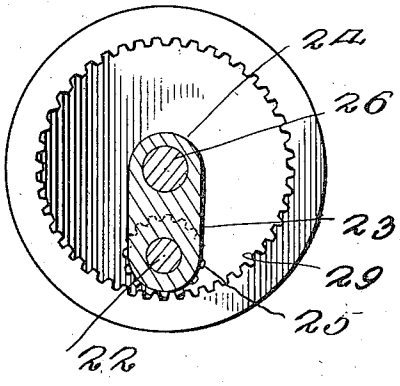


FIG. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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WATER-MOTOR.

987,818. Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed May 10, 1910. Serial No. 560,432.

To all whom it may concern:

Be it known that I, JEROME B. NORTON, a citizen of the United States, residing at Roslindale, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Water-Motors, of which the following is a specification.

My invention relates to water motors of that type in which a motor revolves within a circular casing to which water or other fluid is supplied, and particularly to a motor of this type which is adapted to be attached to a faucet, and is peculiarly adapted for running light machinery.

The primary object of my invention is to provide a motor of this class having a peculiar form of multiplying gears and mounting therefor, and a grooved pulley operated by the multiplying gears whereby power may be transmitted from the motor to the apparatus to be actuated.

Another object is to provide a very simple and effective means whereby the motor may be connected to the faucet and held in proper relative position thereon, so that the pulley on the belt will not tend to turn the motor upon the nozzle of the faucet.

While I have designed my improvements for application to a water motor of any usual or ordinary construction I have shown in the drawings a type of motor in which the rotor is mounted in an outer circular casing closed at its ends, the rotor being provided with projecting blades against which the water from the inlet nozzle impinges.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which:—

Figure 1 is a side elevation of my motor applied to a faucet. Fig. 2 is an end elevation of the motor, the faucet being in section. Fig. 3 is an enlarged fragmentary view through one side of the motor casing, and through the internal toothed drive pulley, and Fig. 4 is a section on the line 4—4 of Fig. 3.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to the drawings, 2 designates the motor casing which is circular in side elevation and is provided with the rotor 3 mounted on a central shaft, the rotor being provided with the blades 4. Extending tangentially from the motor casing is a nipple 5 in which the inlet nozzle 6 is supported. The nipple 5 carries a swiveled union coupling 7 having the projecting arms 8 which is interiorly screw-threaded for engagement with the screw threads *a* on the ends of the faucet A. The coupling 7 is swiveled to the motor casing so that the motor casing may be rotated around the axis of the nozzle 6 after the coupling has been secured upon the faucet. By rotating the coupling it is drawn up into a close water-tight engagement with the faucet so that no leakage of water shall occur at this point. The motor is also provided with the outlet opening 10 which may be located anywhere along the circumference of the casing 2, but is preferably located at the lowest portion of said casing, and is of course, of greater diameter than the nozzle 6. In order also to additionally support the motor upon the faucet I provide the upper face of the motor with the upwardly projecting transversely extending lug 12.

Attached in any suitable manner to the lug 12 is the standard 13. Preferably this standard is attached to the lug 12 by means of a screw 14 whereby a rigid engagement may be formed between the lug and the standard when the parts are in their finally adjusted position. The standard is vertically slotted as at 15, and passing through this slot 15 is the clamping bolt 16 carrying the wing-nut 17. This clamping bolt at its end opposite the wing-nut 17 carries upon it the two opposed pipe clamping members 18. Preferably, these members are angular in shape, having concaved inner faces so as to grasp the pipe and are pivoted at 19 to the enlarged portion 20 of the bolt 16. These clamping members are provided with wings 21 which project outward and toward the wing-nut 17. It will thus be seen that when the wing-nut is turned and the bolt is turned toward the wing-nut, that the projecting wings 21 on the clamping members will contact with the face of the standard 13, and hence that the clamping members will be forced together and into clamping engagement with the faucet B. When it is desired to release the engagement of the pipe it is only necessary to reverse the motion of the wing-nut, whereupon the clamping members may be easily

opened. While I have shown what I believe to be an exceedingly effective form of clamping device for this purpose, I do not wish to be limited to this construction except as in the claims, as it is obvious that other forms of clamps might be used without departing from the spirit of my invention. The form of clamp used, however, is one which holds the supporting member or standard 13 into very rigid engagement with the faucet barrel, so that there is no chance of the rotor turning upon its swiveled engagement with the nozzle, as it might otherwise do. Furthermore provision is made whereby the motor may be adjusted vertically so as to bring its union 7 into proper relation to the mouth of the faucet.

The rotor is mounted upon a shaft 22. The outer end of this shaft is supported in an elongated hub or bearing 23 which extends out from the face of the casing 2 and is preferably formed integral therewith. The bearing 23 is of such length that there is no necessity for a bearing upon the opposite side of the rotor. Also projecting out from the face of the motor casing immediately adjacent to the hub or bearing 23 is the hub or bearing 24 which is made integral with the casing, and preferably integral with the hub or bearing 23. This hub or bearing 24 projects out beyond the end of the hub 23 for the purpose to be later described. The rotor shaft 22 carries upon its extremity the pinion 25.

Mounted in the hub or bearing 24 is a stub-shaft 26 which carries at its extremity a wheel 27. This wheel is formed with the inwardly extending flange 28 and this flange is formed with integral teeth 29 which are adapted to mesh with the teeth on the pinion 26. The exterior face of the flange 28 is grooved as at 29 so that the wheel 27 forms a grooved pulley over which a belt may be placed and power communicated to the device to be actuated. The gear ratio, as shown in the drawing is three to one between the internal gear 29 and the pinion 25, but of course I do not wish to be limited to this ratio. The inner end of the shaft 26 is formed with a circumferential groove 30 in which engages a screw-pin 31 which extends through the wall of the hub or bearing 24. It will be seen that the outer face of the wheel 27 forms a casing which incloses the internal gear teeth 29 and the pinion 25 and thus the operating parts of this pulley are self-contained and an economy of space is secured. The motor casing opposite to the projecting bearing 23 and 24 is closed by means of a side-plate 32 which is attached to the casing in any suitable manner, as by the screws 33.

The operation of my invention will be obvious from the foregoing description. In placing the motor upon the faucet the motor is first connected to the faucet by the union nut and then the motor is turned about the axis of the nozzle, and its clamp engages with the barrel B of the faucet. When the clamp is tightened the motor is held rigid from movement in any direction, and hence will withstand the pull of the belt exerted upon the pulley 27. After the motor has been adjusted in place upon the faucet, the faucet is of course opened, and the water flowing down through the inlet nozzle will be turned down against the blades and the rotor will be rotated.

My invention is very simple, compact, thoroughly efficient and is very light in weight, thus particularly fitting it for the use described. It is obvious that a heavy rotor could not be supported upon the faucet and that it could not be attached or detached therefrom.

My invention is simple, portable, and in ordinary size will not weigh more than three pounds all told.

Having thus described the invention what is claimed as new is:—

1. In a motor of the character described, a rotor casing having a hub projecting out therefrom, said hub at its extremity being cut away on one side, a rotor shaft extending through said casing and through the hub, a pinion mounted on the rotor shaft and supported within the cut away portion of the hub, a stub shaft mounted in said hub parallel with the rotor shaft, a power transmission wheel carried upon the projecting extremity of said stub shaft and fitting against the end of the hub, said wheel having an annular flange projecting toward the rotor casing to an extent equal to the depth of the cut away portion of the end of the hub, teeth formed on the interior of said flange adapted to mesh with the teeth on the pinion, said flange surrounding the extremity of the hub and pinion and completely housing the latter.

2. In a motor of the character described, a rotor casing having a hub projecting out from one side thereof, said hub at its extremity being cut away at one side, a rotor shaft extending through the casing and hub and projecting into the recessed portion of the latter, said rotor shaft carrying a pinion on its extremity, said pinion being contained within said recessed portion of the hub, a stub shaft mounted in the hub parallel to the rotor shaft and a power transmission wheel carried upon the extremity of the stub shaft, the interior face of the wheel bearing against the end of the hub, said wheel having an annular flange projecting toward the rotor casing, the interior face of the flange being formed with teeth and being coincident with the periphery of the hub at the cut away portion thereof and having a depth equal to the depth of said cut away portion,

said flange surrounding the extremity of the hub and pinion and completely housing the latter.

3. A motor of the character described having a rotor casing, a rotor within the casing, a shaft projecting from the rotor, a grooved transmission pulley also carried by the casing and rotatable by said shaft, an inlet nozzle extending into the rotor casing, and a union having swivel engagement with the casing and nozzle adapted to engage the outlet end of the faucet, the upper portion of the casing being provided with separable clamping members for engaging the barrel of the faucet.

4. A motor of the character described having a rotor casing, a rotor within the casing, a shaft projecting from the rotor, a grooved transmission pulley also carried by the casing and rotatable by said shaft, an inlet nozzle extending into the rotor casing, and a union having swivel engagement with the casing and nozzle adapted to engage the outlet end of the faucet, the upper portion of the faucet being provided with an upwardly extending standard longitudinally slotted, a bolt passing through the front of the standard, and clamping members carried by said bolt and adapted to engage the barrel of the faucet.

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

JEROME B. NORTON. [L. S.]

Witnesses:

BERTHA M. SANDS,

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