J. RIPCZINSKE.

WATER ROTOR.

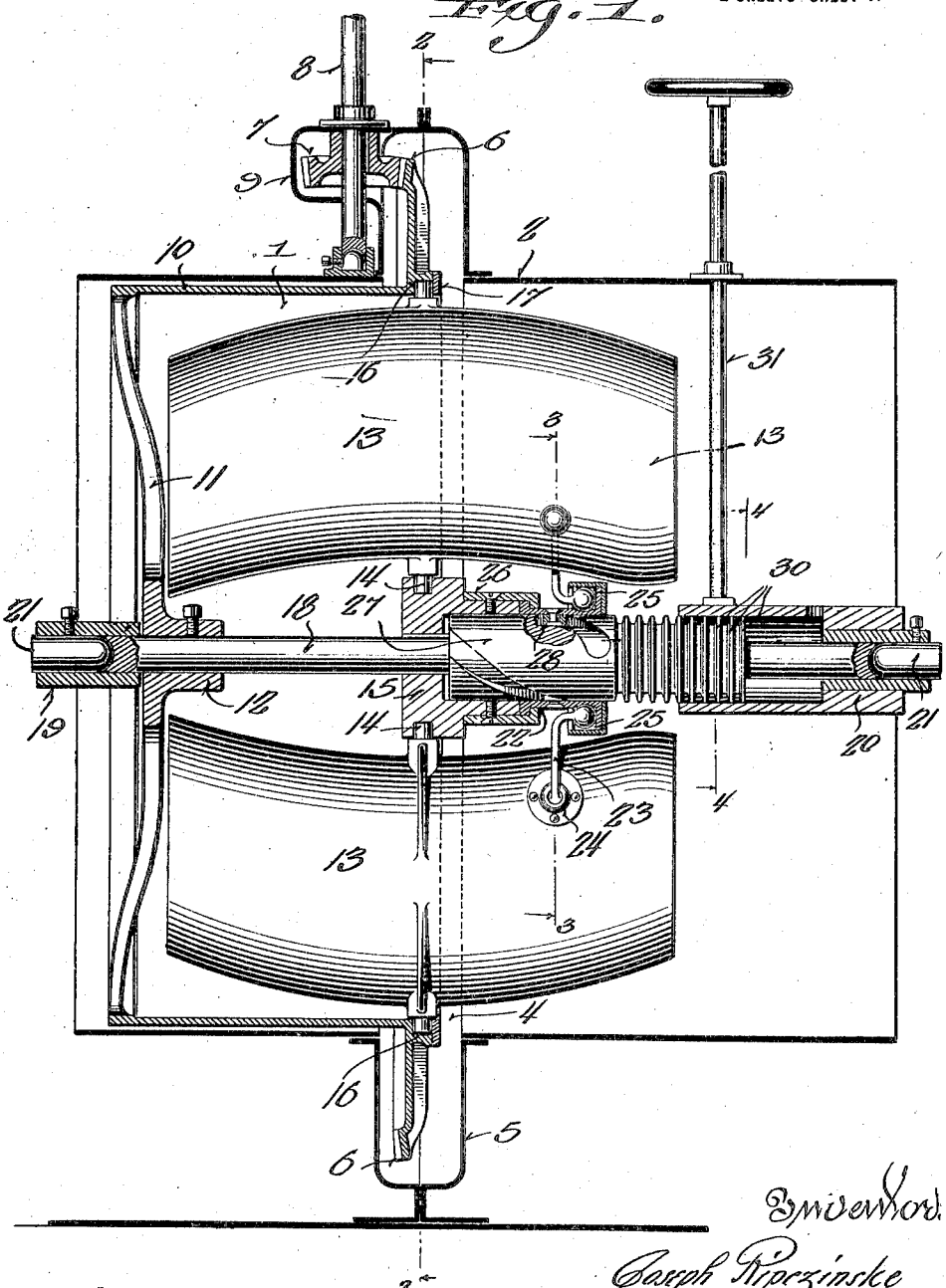
APPLICATION FILED JAN. 14, 1918.

1,283,908.

Patented Nov. 5, 1918.

2 SHEETS—SHEET 1.

Fig. 1.



Witness

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2 SHEETS—SHEET 2.

Fig. 2.

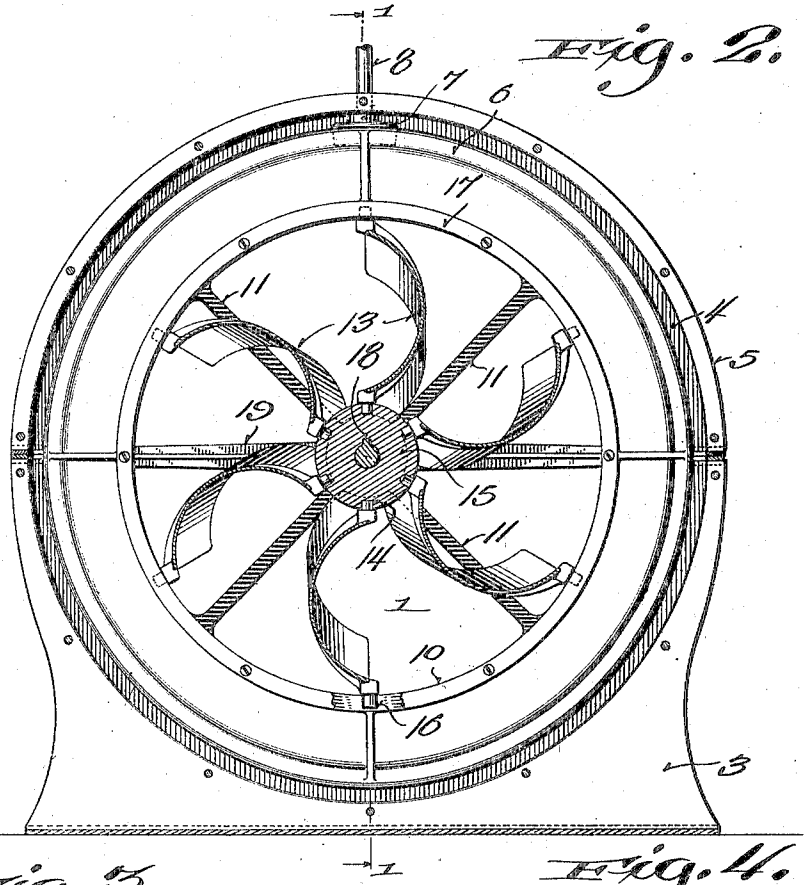


Fig. 3.

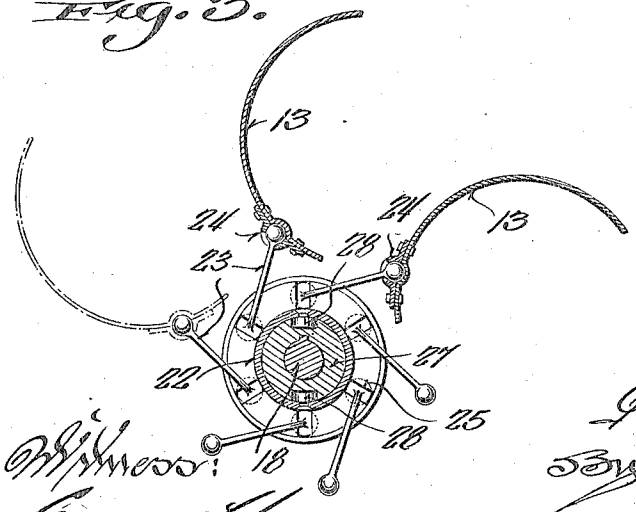
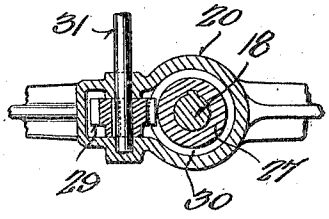


Fig. 4.



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UNITED STATES PATENT OFFICE.

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WATER-ROTOR.

1,283,908. Specification of Letters Patent. Patented Nov. 5, 1918.

Application filed January 14, 1918. Serial No. 211,803.

To all whom it may concern:

Be it known that I, JOSEPH RIPCZINSKE, a citizen of the United States, and resident of Wausau, in the county of Marathon and State of Wisconsin, have invented certain new and useful Improvements in Water-Rotors; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to means of the general type disclosed in my co-pending application for patent, filed April 3, 1917, Serial No. 161,758, for utilizing the power of moving bodies of water and applying the same to practical uses, the principal object being to provide an arrangement whereby the force of a current of water may be readily controlled to operate various mechanical devices.

It is another object of the invention to provide means whereby the power derived from the force of the water may be controlled for use in connection with devices which require varying amount of power.

A still further object is to provide an improved arrangement whereby the outer portion of the rotor element may be connected with the apparatus to be driven instead of the central shaft of such element as is customary.

With these and other objects in view the invention resides in the novel features of construction, combination and arrangement of parts which will be hereinafter more particularly described and claimed and shown in the drawings, wherein:

Figure 1 represents a vertical longitudinal sectional view through a water motor constructed in accordance with my invention, said section being taken on the plane of the line 1—1 of Fig. 2.

Fig. 2 is a transverse sectional view on the plane of the line 2—2 of Fig. 1, and

Figs. 3 and 4 are similar views taken respectively on the planes of the lines 3—3 and 4—4 of Fig. 1.

In the accompanying drawings of this application only the broad principles of my invention has been illustrated, and it will be obvious that the same is capable of use in various different arrangements and under different conditions. For instance the device may be placed directly in a stream of water without the addition of any parts other than those shown in the drawings; or it may be placed in the spillway of a dam; or a combination with one or more apparatuses of similar or the same construction.

Referring more specifically to the drawings it will be seen that the rotor element, which is designated broadly by the numeral 1, is disposed for rotation within a cylindrical open ended casing 2, the opening through which forms a race-way. The casing 2 is preferably stamped or otherwise formed from sheet metal and has a supporting base portion 3 to rest on the bed of a stream or the like. Substantially midway the ends of the casing is formed an annular opening 4 which provides an entrance into an outwardly extending annular channel 5 also constructed of sheet metal.

The channel 5 provides a housing for a bevel gear ring 6 forming a portion of the rotor 1 and having its teeth meshed with the teeth of a bevel pinion 7 carried by a vertical shaft 8 as shown in Fig. 1. The portion of the material of which the channel 5 is constructed adjacent the pinion 7 is enlarged as at 9 to house the same whereby the operating parts disposed outwardly of the race-way are completely covered and protected.

The rotor 1 also includes an annular ring 10 slightly smaller in diameter than the casing 2 and designed to rotate therein, said bevel gear ring being formed integrally with the inner edge of this part 10. The outer edge of the ring 10 is braced by spokes 11 which extend radially from a hub 12. The ring 10 provides a support or carrier for a plurality of intermediately pivoted blades 13, said blades being disposed longitudinally of the casing 2, and formed intermediately of each longitudinal edge of the several blades is cast a boss from which a trunnion 14 extends. The inner trunnions are pivoted in sockets formed in a hub 15,

while the outer trunnions are journaled in circular open side seats 16 formed in the inner edge of the ring 10 and the adjacent portion of the gear ring 6. One side of the seats 16 is obviously open to permit the trunnions to be readily inserted to or removed therefrom, said trunnions being held in position by a detachable retaining member 17.

From Figs. 2 and 3 it will be noted that each of the blades is curved transversely and from Fig. 1 it will be seen that the same are also curved longitudinally, the convex longitudinal edges being disposed outwardly. By such an arrangement the blades may be formed of sheet metal or light material because of the curvature which adds considerable strength and rigidity. The longitudinal curvature permits the blades to be rotated on their axes a very considerable extent before the ends thereof engage the annular ring 10 or the cylindrical race-way 2. The transverse curvature in addition to strengthening the blades in effect provides pockets whereby the water which passes through the race-way will operate to greater advantage than if said blades were flat. Said blades may be of undeterminate length but it has been found that if they are slightly less or approximately the same as the diameter of the annular ring 10 that a very effective operation will result.

The rotor formed of the above enumerated parts is supported concentrically of the casing 2 by means of a shaft 18 extended through the hubs 12 and 15 and journaled in bearings 19 and 20 respectively which are carried by brace bars preferably disposed horizontally across the opposite ends of the casing 2. Suitable end thrust members 21 of wood are used as is customary. The shaft 18 is used only as a supporting member in this form of my invention, the rotor element being connected with the apparatus to be driven at its outer portion, as by the gear ring 6.

When the blades 13 are arranged longitudinally of the casing 2 as shown in Figs. 1 and 2 the device will be inoperative. In other words to cause the rotor to revolve it is necessary to angle the blades. This is carried on simultaneously by the rotation of a sleeve 22, with which each of said blades is connected by a link 23. The opposite ends of the links are ball-shaped and are disposed in sockets 24 and 25, the first mentioned sockets being carried by the blades, whereas the sockets 25 are formed in the plate or the like carried by the sleeve 22. The sleeve 22 is connected with the hub 15 by means of a retaining collar 26.

Rotation of the sleeve 22 is procured in a very simple and effective manner by shifting a cylinder 27 longitudinally of the shaft 18 to which it is slidably keyed. The connection between the sleeve 22 and the cylinder is through a pair of anti-friction rollers 28 carried by the former and spiral grooves formed in the latter.

The cylinder is shifted by the rotation of a pinion 29, the teeth of which mesh between annular ribs 30 as particularly shown in Fig. 4. The pinion is carried by a shaft 31 which extends upwardly through the casing 2 above the level of the water and is rotated from any suitable point.

Thus when the operation of the rotor is to commence, the shaft 31 is rotated to shift the cylinder 27 longitudinally of the shaft 18 and thereby revolve the sleeve 22 and move the blades out of their longitudinal position. This movement of the blades may be carried out as rapidly as desired, and as the machinery or apparatus operated by the invention is increased in speed the blades may be angled to a greater degree as is obvious. Owing to the peculiar and improved connection between the shifting means including the cylinder 27 and the blades 13, the force of the water on the latter cannot possibly shift the same after they have been once adjusted.

I claim:—

1. An apparatus of the class described including a journal shaft, a ring surrounding the said shaft, spider arms connecting one end of the ring and the shaft, a hub block mounted on the shaft in spaced relation to said spider arms, a plurality of blades, inner and outer pintles projecting from the intermediate portions of the blades and journaled respectively in the hub and in the other end portion of the ring, and means for adjustably holding the blades against pivotal movement on the shaft.

2. An apparatus of the class described including a journal shaft, a ring surrounding the said shaft and rotatable therewith, a hub mounted on the shaft, a plurality of blade members, inner and outer pintles on the intermediate portions of said blade members journaled respectively in the hub and in the ring, a sleeve slidable on the shaft, a second sleeve mounted on the first sleeve and held against sliding movement longitudinally of the shaft, members connecting the second sleeve and the blade members at one side of their pivotal axis, a pin and spiral connection between the sleeves, and means for sliding the first named sleeve.

3. An apparatus of the class described including a journal shaft, a ring surrounding the said shaft and rotatable therewith, a hub mounted on the shaft, a plurality of blade members, inner and outer pintles on the intermediate portions of said blade members journaled respectively in the hub

and in the ring, a sleeve slidable on the shaft, a second sleeve mounted on the first sleeve and held against sliding movement longitudinally of the shaft, links having universal connections with the second sleeve and having universal connections with the blades at one side of their pivotal axis, a pin and spiral connection between the sleeves, and means for sliding the first named sleeve.

In testimony that I claim the foregoing I have hereunto set my hand at Wausau, in the county of Marathon, and State of Wisconsin.

JOSEPH RIPCZINSKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."