

S. W. REECE.
 TURBINE WATER WHEEL.
 APPLICATION FILED OCT. 14, 1909.

996,525.

Patented June 27, 1911.

Fig. 1.

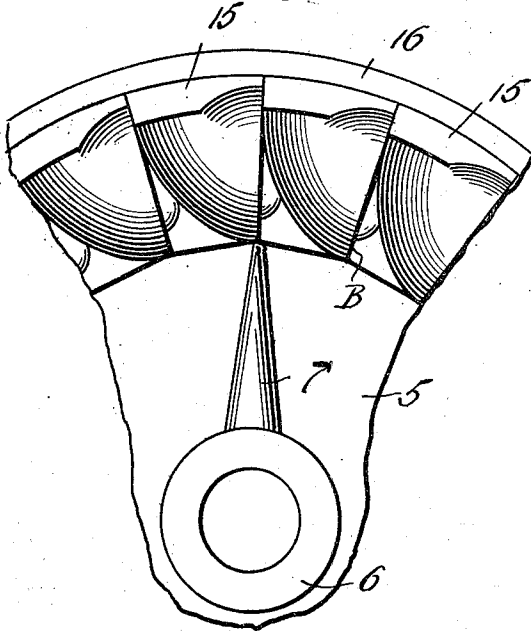


Fig. 2.

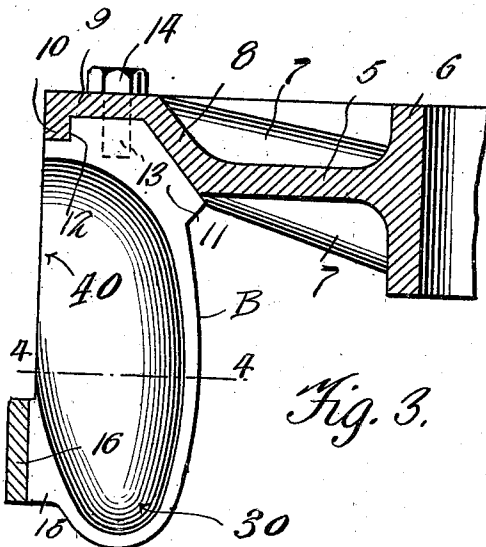
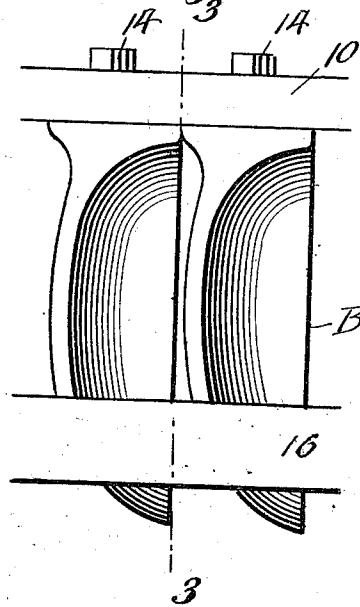


Fig. 3.

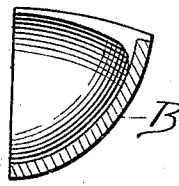


Fig. 4.

Witnesses

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TURBINE WATER-WHEEL.

996,525.

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To all whom it may concern:

Be it known that I, SHERROD W. REECE, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Turbine Water-Wheels, of which the following is a specification.

This invention relates to turbine water wheels such as are intended and adapted to be submerged in a pen stock within a suitable casing, and it has for its objects to simplify and improve the construction and operation and to increase the efficiency of this class of devices.

With these and other ends in view which will readily appear as the nature of the invention is better understood the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being however understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawing: Figure 1 is a bottom plan view of a portion of a turbine water wheel constructed in accordance with the invention. Fig. 2 is a side elevation of a portion of the wheel. Fig. 3 is a vertical transverse sectional view taken on the plane indicated by the line 3—3 in Fig. 2. Fig. 4 is a horizontal sectional view of one of the buckets taken on the plane indicated by the line 4—4 in Fig. 3.

Corresponding parts in the several figures are denoted by like characters of reference.

In the construction of the improved turbine wheel the said wheel is formed of a plurality of buckets which are detachably connected with a supporting plate or spider. The latter which is shown at 5 is provided with an eye 6 whereby it is adapted to be mounted in the usual manner upon a vertical supporting shaft; the said plate or spider which is reinforced by means of the radially disposed ribs 7 is provided with an inclined flange portion 8 from the upper edge of which a horizontal flange 9 extends in an outward direction, said flange being

provided adjacent to its outer edge with a downwardly extending rim 10. The said rim coöperates with the flange 9 and with the inclined wall of the flange portion 8 to form a recess for the reception of the upper extremities of the bucket members B which are provided with angular reinforcements forming head pieces 11 adapted to fit in said recess and provided adjacent to their outer edge with notches 12 for the reception of the rim 9. The head pieces 11 are provided with screw threaded sockets 13 for the reception of cap screws 14 whereby they may be secured seated upon and connected with the spider.

The buckets consist of shells of arcuate cross section substantially as shown in Fig. 4, the said buckets being longitudinally of an elliptical or ovoidal conformation as illustrated in the figures of the drawing. Said buckets are provided adjacent to their lower ends with offsets 15 upon which a band or tire 16 may be shrunk or otherwise secured. It will be observed that the offsets 15 affording a seat for the tire or band 16 are disposed adjacent to the inlets 30 of the buckets which while thus partially obstructed are of sufficient width to render the obstruction negligible; the discharge openings 40 of the buckets on the other hand are entirely unobstructed, the advantage of which will be readily understood, undue friction being avoided and apertures sufficiently large being formed for the escape of any obstructions that may be carried along with the water. The curve in the upper part or discharge end of each bucket serves by the upward impact of the water to relieve the weight and friction on the step supporting the wheel-carrying shaft when the wheel is run in a vertical position.

By securing the buckets upon the foundation plate or spider in the manner herein described they will be held very securely and efficiently. The lip or rim 10 will serve to hold the buckets firmly in place against centrifugal force when the wheel is in motion. The wheel, the parts of which may be cast or otherwise formed of any suitable metal or alloy is easily taken apart for transportation to places that are not convenient of access such as mines and the like, and the wheel may be as readily assembled when it reaches its destination. In case of breakage of any part of the wheel, such

part may be easily replaced at small expense. The parts are susceptible of receiving a smooth finish whereby friction will be materially reduced thus resulting in an increase of the power derived from the amount of water used. Other advantages of this improved wheel will readily suggest themselves to those skilled in the art to which it appertains.

10 Having thus described the invention, what is claimed is—

1. In a turbine water wheel, a supporting plate or spider having an inclined flange portion from the upper edge of which a horizontal flange extends in an outward direction, said flange being provided adjacent to its outer edge with a downwardly extending rim cooperating with the horizontal flange and with the inclined flange portion to form an annular recess, in combination with bucket members having angular reinforcements forming head pieces fitting in said recess and provided adjacent to their outer edges with notches for the reception of the

rim and with threaded sockets, and cap screws engaging said sockets through the flange of the spider to draw the reinforced portions of the buckets into the annular recess where said reinforced portions will be securely seated.

2. In a turbine water wheel, a spider having an inclined flange, a horizontal flange and a vertical flange cooperating to form an annular recess, bucket members having reinforcements forming head pieces fitted in said recess, fastening means operating through the spider to draw the reinforced portions of the bucket members into the annular recess, said buckets being provided adjacent to their lower or inlet ends with offsets, and a band or tire seated upon said offsets.

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

SHERROD W. REECE.

Witnesses:

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