W. E. SEELYE.

WATER WHEEL.

APPLICATION FILED MAY 15, 1909.

955,478. Patented Apr. 19, 1910.

Fig. 2.

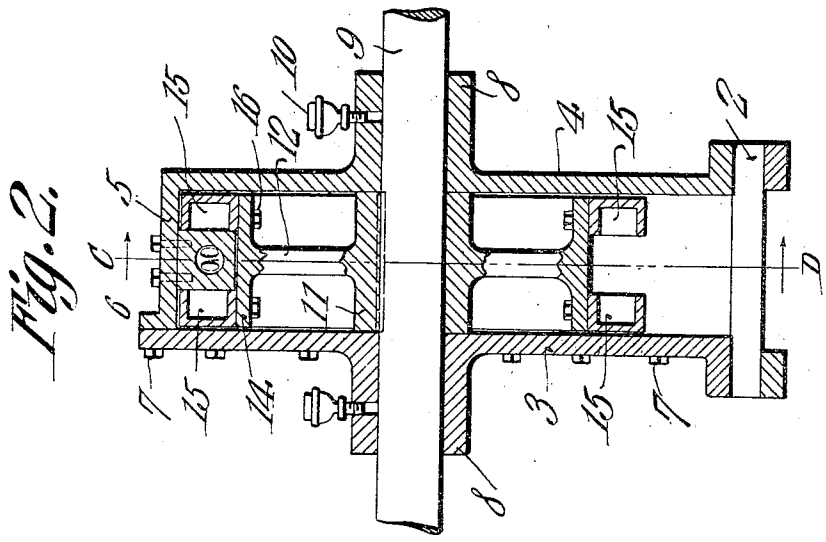


Fig. 1.

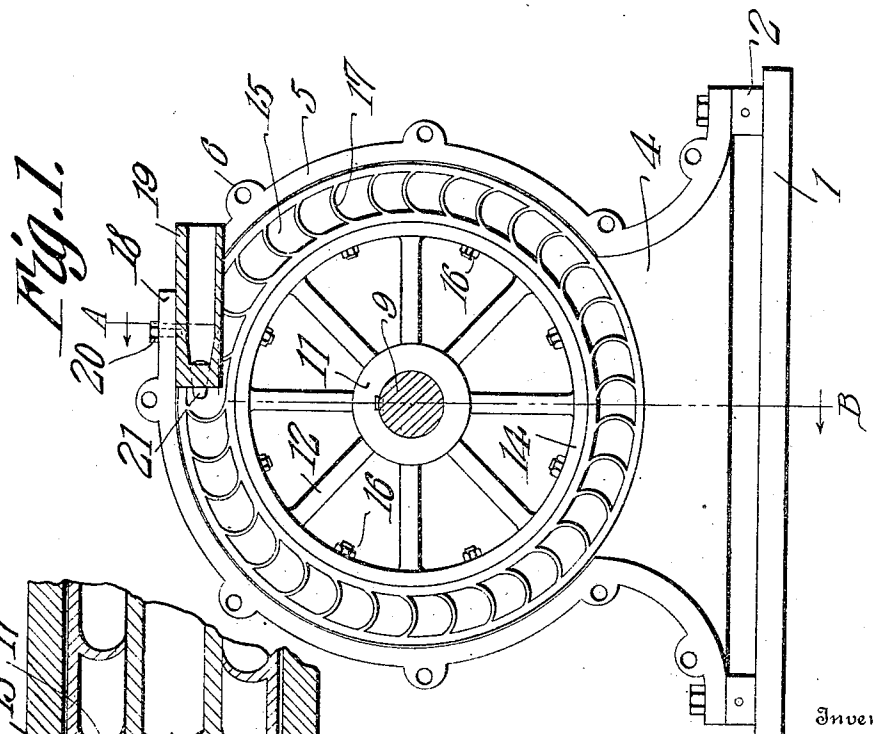
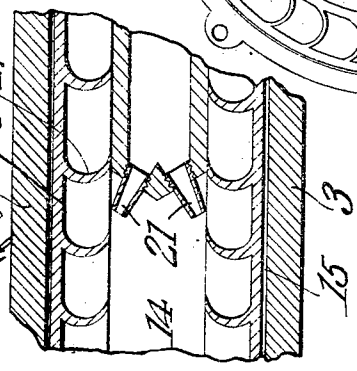


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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WATER-WHEEL.

955,478. Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed May 15, 1909. Serial No. 496,188.

To all whom it may concern:

Be it known that I, WILLIAM E. SEELYE, a citizen of the United States, residing at Coeur d'Alene, in the county of Kootenai and State of Idaho, have invented a new and useful Water-Wheel, of which the following is a specification.

The objects of the invention are, generally, the provision in a merchantable form of a device of the class above described which shall be inexpensive to manufacture, facile in operation, and devoid of complicated parts; specifically, the provision of a wheel of novel and improved construction; the provision of buckets of novel and improved form, adapted to be assembled with the wheel; the provision of novel means for housing the wheel and suspending the same for rotation; the provision of novel means for delivering a hydraulic jet to the buckets; other and further objects being made manifest hereinafter as the description of the invention progresses.

The invention consists in the novel construction and arrangement of parts hereinafter more fully described, delineated in the accompanying drawings, and particularly pointed out in that portion of this instrument wherein patentable novelty is claimed for certain distinctive and peculiar features of the device, it being understood that, within the scope of what hereinafter is thus claimed, divers changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Similar numerals of reference are employed to denote corresponding parts throughout the several figures of the drawings.

In the accompanying drawings, Figure 1 shows my invention in vertical transverse section on the line C—D of Fig. 2, parts being shown in elevation. Fig. 2 is a vertical transverse section of the device on the line A—B of Fig. 1. Fig. 3 is a top plan view of the wheel proper, parts being sectioned and removed, better to illustrate the structure, the view being fragmental.

The device forming the subject matter of this application for Letters Patent may be mounted in any suitable way. In the present instance, I have provided sills 1, terminally connected by transverse braces 2, and upon these braces 2 the turbine wheel is superposed. The housing for the structure comprises side plates 3 and 4, the side plate 4 at its edge, being overbent to form a flange 5, extending entirely around the periphery of the device, the edge of this flange 4 being adapted to be brought into contact with the side plate 3, the said flange 5 being provided with upstanding ears 6 adapted to receive bolts 7, which, passing through the peripheral edge of the side plate 3, unite the side plate 3 and the side plate 4, to form a box-like housing, circular in general contour and open at the bottom. The side plates 3 and 4 are provided, centrally, with outstanding boxes 8 in which is journaled for rotation a shaft 9, the said boxes being provided with oil cups 10 of any approved form.

The wheel proper comprises a hub 11 which is rigidly assembled with the shaft 9 in any suitable manner. From this hub 11, radiate spokes 12, supporting a rim 14.

I further provide, in carrying out my invention, a pair of annular troughs 15. These troughs 15 are adapted to be mounted upon the rim 14, and are located on the edges of said rim. The width of the troughs 15 is such, that when they are mounted upon the rim 14 as hereinbefore described, a space will intervene between the said troughs, it being understood that the open sides of the annular troughs 15 are disposed toward each other. Located within the troughs 15 are wings 17 disposed transversely of the rim of the wheel, and defining spaced buckets located upon the rim of the wheel, and, as clearly discernible, open upon their adjacent sides only.

The housing in which the wheel is mounted, is, at its upper extremity, extended tangentially, as denoted by the numeral 18, to provide a tubular socket adapted to receive, removably, a nozzle block 19, which, if desired, may be retained in place by means of a set screw 20, so that one such block may be removed from the device and replaced by another. The nozzle block 19 is provided with diverging nozzles 21, pointing toward the sides of the wheel, each of said nozzles 21 being adapted to deliver a stream of water into one of the annular troughs 15, impinging against the wings 17 mounted therein. In practical operation, a stream of water constituting the prime mover, enters the nozzle block 19 at its outer end, and, dividing, passes outward through the nozzles 21, entering the buckets which are defined

by the wings 17, in each of the annular troughs 15. These buckets are open at their adjacent sides only, and, after the water has exhausted itself in pressure against the buckets, it will flow from said buckets, and pass downward over the portion of the rim 14 which is disposed between the annular troughs 15. By constructing the buckets, so that they are open upon their adjacent faces only, I am enabled to utilize the largest possible amount of the kinetic energy of the moving water, and, since the water after leaving the buckets, flows downward over the rim 14 of the wheel, between the annular troughs 15, the water after having done its work within the buckets still has an appreciable effect in the rotation of the wheel. As hereinbefore stated, the housing wherein the wheel proper is journaled for rotation, is open at the bottom, and the water, having completed its work, falls clear of the device without striking, or impeding the action of the wheel.

In the manufacture of the turbine wheel of my invention, obvious departures may be made from the particular form shown in the drawings, for instance, parts described as separate elements, may be united in a separate casting. Thus, the annular troughs 15, which are shown assembled with the rib 14 by means of bolts 16, may, if desired, be cast integral with the rim. These minor differences from the form illustrated in the drawings, may readily be appreciated and understood from the foregoing description and a specific illustration of them is considered unnecessary.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:—

In a device of the class described a housing having an open bottom and comprising laterally separable sections; a wheel located within the housing; annular troughs open upon their adjacent sides only and arranged to be slid upon the wheel rim from one side of the wheel; means for securing the troughs to the wheel rim; the troughs being extended into close peripheral relation with the housing and being spaced apart to provide between the wheel rim and the housing, an uninterrupted tail-water passage communicating with the open bottom of the housing; there being blades within the troughs defining buckets therein; and a nozzle block insertible into the housing adjacent the top thereof and having a divided outlet arranged to discharge into the buckets.

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

WILLIAM E. SEELYE.

Witnesses:
F. W. TINKEL,
O. O. YOUNG, Jr.