M. GHOUGASSOF.

TURBINE.

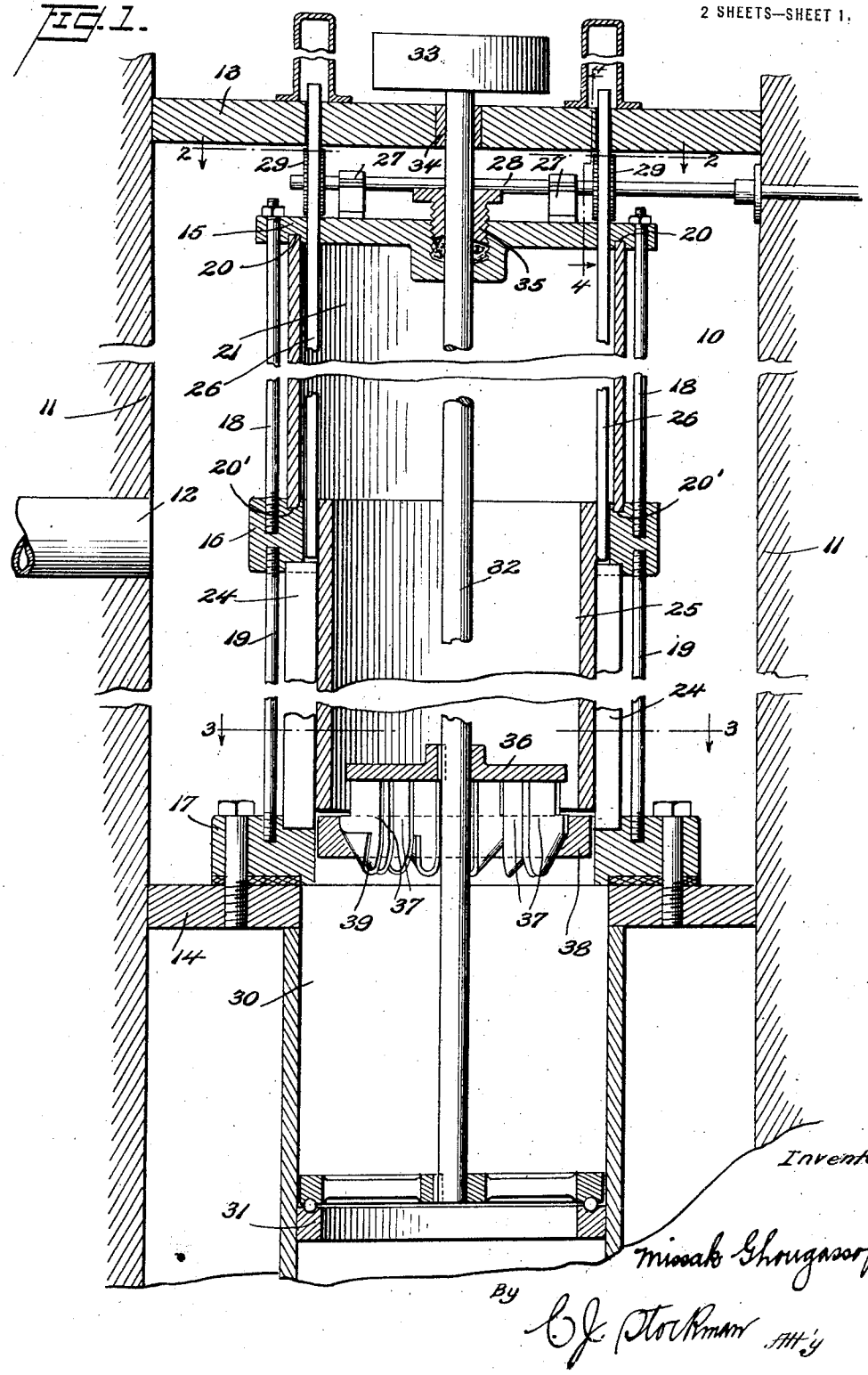
APPLICATION FILED DEC. 6, 1920.

1,412,281.

Patented Apr. 11, 1922.

2 SHEETS—SHEET 1.

FIG. 1.



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2 SHEETS—SHEET 2.

FIG. 2.

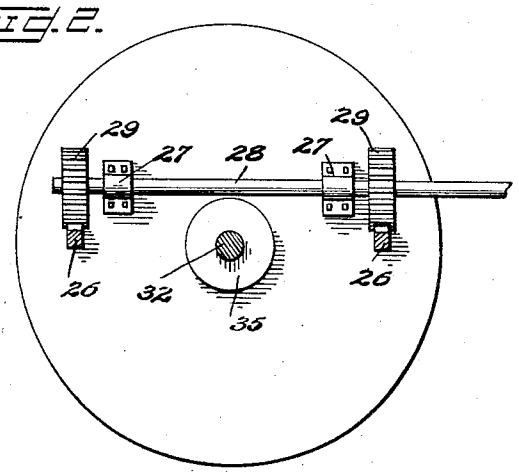


FIG. 3.

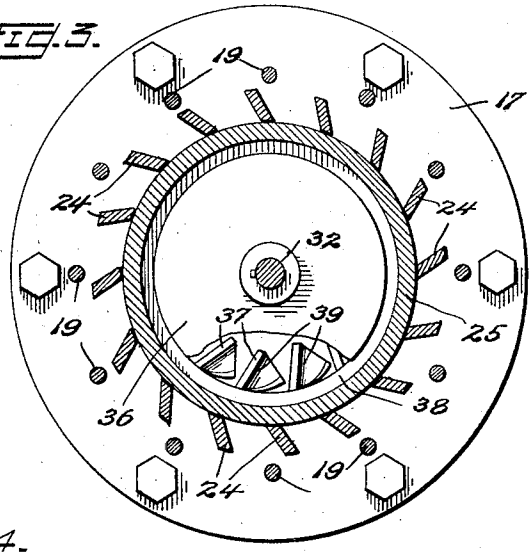
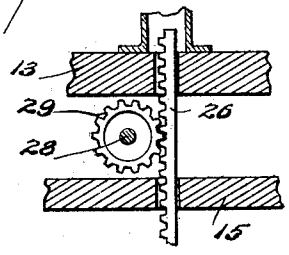


FIG. 4.



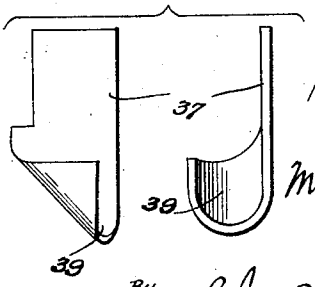


FIG. 5.

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UNITED STATES PATENT OFFICE.

MISSAK GHOUGASSOF, OF NEWARK, NEW JERSEY.

TURBINE.

1,412,281. Specification of Letters Patent. Patented Apr. 11, 1922.

Application filed December 6, 1920. Serial No. 428,727.

To all whom it may concern:

Be it known that I, MISSAK GHOUGASSOF, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Turbines, of which the following is a specification.

My invention relates to turbines, and particularly to that class thereof known as water wheels in which the fluid supply is received upon the buckets in a horizontal plane and is discharged centrally and downwardly.

The invention has for its object the perfection of the details of construction of such a wheel to the end that a strong, durable and efficient turbine of the water wheel type is produced. A further object of the invention is the provision of a novel construction of casing for the rotating bucket carrying element. A further object of the invention is the production of a very simple construction of bucket element in such a turbine. A still further object of the invention is the production of a simple mounting or arrangement of the chutes or baffles within the casing. A still further object is the production of a well or shaft for the turbine, and an efficient mounting of the casing therein.

In the drawings,

Figure 1 is a vertical sectional view of the turbine mounted within the well or shaft,

Figure 2 is a sectional view taken upon the line 2—2 of Figure 1,

Figure 3 is a like view taken upon the line 3—3 of Figure 1,

Figure 4 is a detail of a part of the gate elevating mechanism and

Figure 5 are views at right angles of the bucket member.

Like letters of reference indicate like parts throughout the several figures of the drawings.

The numeral 10 indicates the well or shaft comprising the side walls 11, 11, in one of which is the conduit opening 12, from which liquid is supplied from the mains at any desired head. 13 is the well cover while 14 is the bottom of the well or shaft and consists of a broad ring tightly fitting the walls of the well or shaft and acting as a support for the turbine casing.

The casing of the turbine comprises the top 15, the intermediate ring 16 and the base 17. These three parts ar held rigidly together by a series of bolts or rods 18, 19. In the lower face of the top 15 and the upper face of the intermediate ring member are provided grooves 20 and 20′, in which rest the ends of the cylindrical member 21. This cylindrical member forms tight joints with the top and intermediate ring and is held clamped in place by the bolts 18, which are screw threaded into the intermediate ring and passed through the top and provided with nuts for producing the necessary tension between the several parts. The base of the casing is suitably bolted to the bottom member of the well.

In the lower face of the intermediate ring and the upper face of the base member are provided slanting grooves, in which are mounted the ends of slats 24, 24, which form guides or chutes for the liquid in its passage from the well to the buckets. These slats are clamped in position by the rods or bolts 19, which are screw threaded into the intermediate ring and base member, it being understood that the rods are either provided with right and left screw threads or with suitable turnbuckles to produce this result.

Within the contour of the inner edges of the slats is mounted a gate or valve member 25, which is designed for vertical adjustment to permit of the production of a varying opening at the lower ends of the slats for the liquid to enter the casing from the well and actuate the rotor by impinging upon the buckets thereof as will be obvious hereinafter. This gate or valve is in the form of a cylinder and is guided in its vertical movement by the inner edges of the slats. Attached to its upper portion is the pair of racks 26, 26, which pass through openings in the top 15. On the top 15 are mounted bearings 27, 27, for the shaft 28, upon which are mounted pinions 29, 29, cooperating with the racks to control the adjustment of the gate or valve from a source exterior of the turbine well.

The bottom ring of the well is provided with a depending outlet 30 for the discharge of the liquid from the turbine, and in this outlet is mounted the annular support for the lower end of the rotor.

The turbine rotor comprises a central shaft 32 which passes through the well cover and through the turbine casing top and is provided at its lower end with a spider support keyed thereto and mounted for rotation upon the ring support 31. At the upper end of this shaft above the well cover the shaft is provided with a pulley 33 from

which power is taken. Below the pulley the shaft is mounted in the bearing or bushing 34 in the well cover. The shaft passes through the top 15 where a broad bearing is provided by means of the depressed portion 15′ and the screw plug 35; this construction constitutes a bracing or support for the upper end of the turbine casing.

At a point intermediate the length of the shaft is mounted the supporting collar 36 for the buckets 37, 37, which depend from said collar and are connected together by means of the annular connector 38. These buckets are formed of sheet material by bending one corner of the metal back upon the body portion thereof to form a trough for the discharge of liquid after it has impinged upon the bucket, as best shown in the two views of Figure 5.

In the operation of the turbine, liquid flows from the conduit 12 into the well 10 and finds its way into the casing through the openings between the slats 24 and under the gate 25. By the slats it is directed against the buckets 37 and the reaction against which causes the shaft carrying these buckets to rotate. If it is desired to stop the operation of the turbine, it is only necessary to drop the gate or valve to its lowermost limit of movement, while if it is desired to increase the power, the gate is lifted.

It will be seen that by this construction a novel arrangement of parts in a device of this character is produced resulting in an efficient construction of turbine, in ease of assemblage of parts of the turbine and of the turbine in the well.

While I have shown but a single embodiment of my invention, it will be understood that changes in the details of construction may be made without departing from the spirit of the invention as defined by the appended claims. For instance, the gate may be made shorter than shown in the drawings or the buckets longer than those shown, or the particular means for actuating the gate may be altered by placing the parts within the turbine casing rather than outside thereof.

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

1. A turbine casing comprising a top, a base and an intermediate ring member, said members being provided with grooves, a cylindrical body member and a series of slats resting in said grooves, and means for clamping the several parts together.

2. A turbine casing comprising a top, a base and an intermediate ring, a cylindrical member between the top and ring, a series of slats between the ring and the bottom, and clamping rods for securing the several parts together.

3. A turbine casing comprising a top, a base and an intermediate ring, a cylindrical member fitting circular grooves in said top and ring; a series of slats fitting in grooves in said ring and bottom, tightening rods connecting said ring to said bottom and to said top, whereby the parts are clamped and securely held.

4. A bucket member for a fluid turbine made from a single piece of sheet material and having one corner thereof bent back to form a trough.

In testimony whereof I affix my signature.

MISSAK GHOUGASSOF.