R. M. STEWART.
Turbine Water-Wheel.

No. 199,873. Patented Jan. 29, 1878.

Fig. 1.

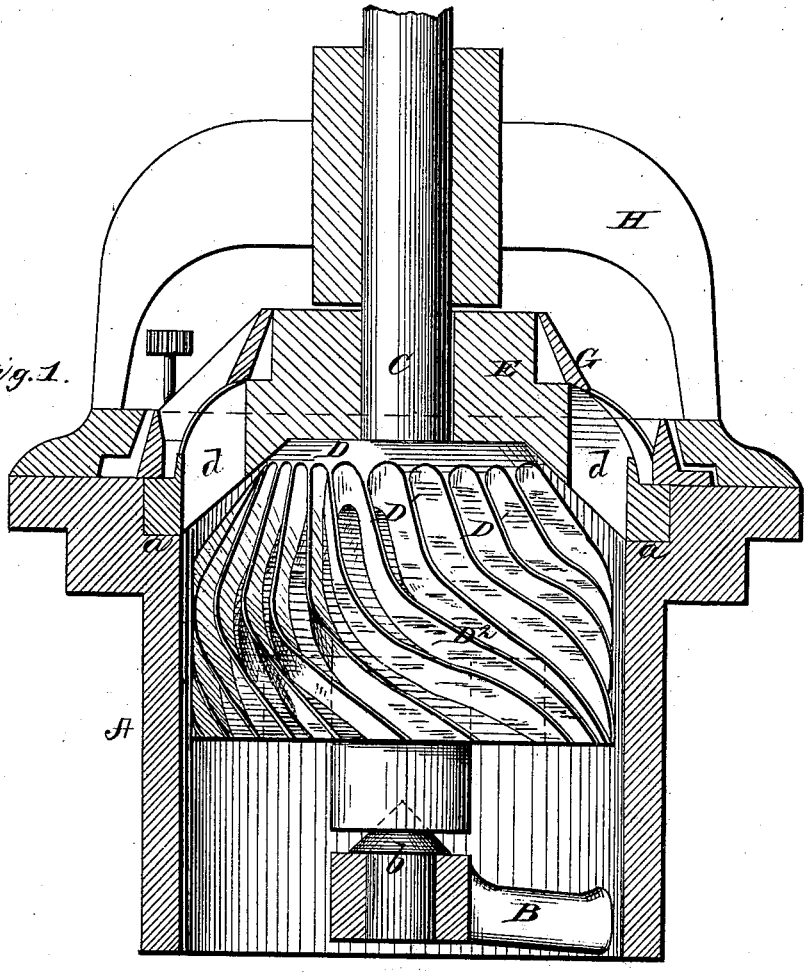


Fig. 2.

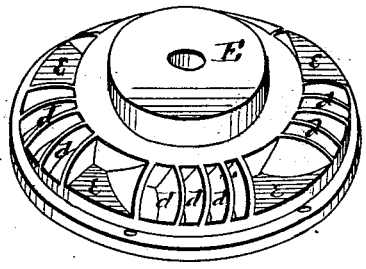
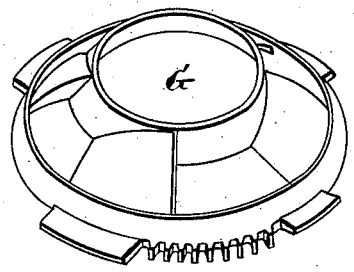


Fig. 3.



WITNESSES
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UNITED STATES PATENT OFFICE.

RICHARD M. STEWART, OF AMERICUS, GEORGIA.

IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. **199,873,** dated January 29, 1878; application filed December 18, 1877.

To all whom it may concern:

Be it known that I, RICHARD M. STEWART, of Americus, in the county of Sumter, and in the State of Georgia, have invented certain new and useful Improvements in Turbine Water-Wheels; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a water-wheel, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a vertical section of the casing, chutes, and gate, showing a side view of the wheel. Fig. 2 is a perspective view of the top of the casing with the chutes. Fig. 3 is a perspective view of the gate.

A represents the casing, made in cylindrical form and extending some distance below the wheel. In the lower end of the casing is a cross-bar, B, with central step *b*, upon which the vertical shaft C rests, said shaft passing upward through the top E, gate G, and cage H. The wheel is fast on the shaft C, and consists of a hub, D, the lower portion of which is cylindrical, and the upper part in the form of a truncated cone. On the outer surface of this hub are formed the buckets, and these buckets are so arranged as to form, as it were, two distinct series. The upper end D^1 of each bucket is only slightly inclined, and extends from the top of the hub to about the base of the conical part thereof, while from this point the bucket inclines still more in a somewhat spiral direction, as shown at D^2, around the cylindrical part of the hub.

The top E is formed, around its circumference, with chutes *d* arranged in groups, as shown in Fig. 2, with a solid part, *e*, between the groups. This top rests on and is secured to a shoulder or offset, *a*, in the top of the casing.

The gate G is constructed as shown in Fig. 3, and turned by an ordinary rack and pinion to open and close the chutes *d*.

In my construction of the water-wheel the arrangement of the two sets of buckets is of great importance. By the arrangement of the first or upper set of buckets, D^1, the water is received at a right angle with the axle, thereby giving to the wheel the full force of the water at its reception. The second or lower set of buckets D^2 act as a discharge, thereby preserving the solidity of the water, and their spiral form adds a per cent. to the first action of the water after it begins its descent.

Because the water is discharged in a solid body after it has passed through the wheel, it produces more or stronger suction than would otherwise be the case.

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

1. The water-wheel constructed of a hub, D, having its lower part cylindrical and upper part conical, and provided with buckets D^1 D^2, extending at different angles from top to bottom of the hub, as herein set forth.

2. The combination, with the wheel D D^1 D^2, of the casing A, extending below the wheel, the top E, with chutes *d*, and the gate G, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of November, 1877.

RICHARD M. STEWART.

Witnesses:

APPLETON F. KELLY,
W. H. C. DUDLEY.