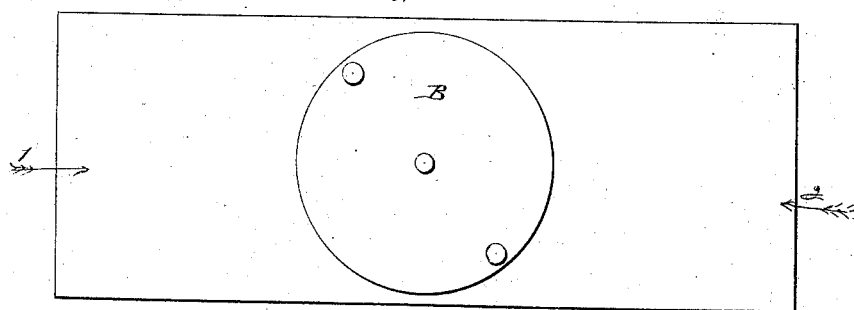


D. Putney,
Water Wheel

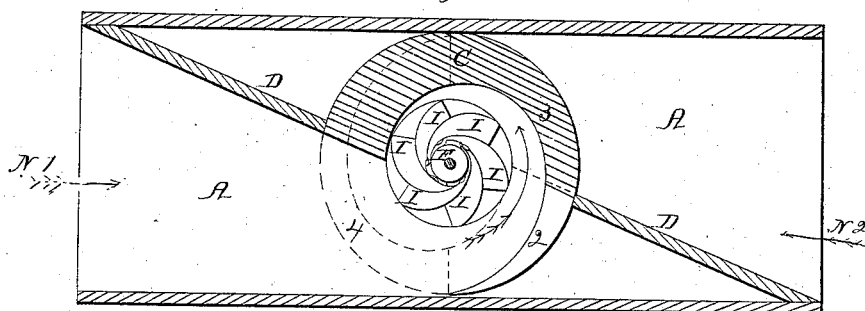
N^o 3,703.

Patented Aug. 12, 1844

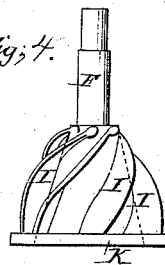
Fig; 1



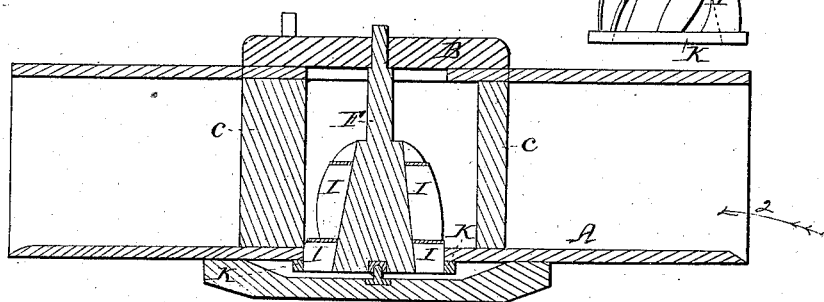
Fig; 2.



Fig; 4.



Fig; 3.



UNITED STATES PATENT OFFICE.

DAVID PUTNEY, OF RED BANK, PENNSYLVANIA.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 3,703, dated August 12, 1844.

To all whom it may concern:

Be it known that I, DAVID PUTNEY, of Red Bank township, in the county of Armstrong and State of Pennsylvania, have invented a new and useful Improvement in the Construction of Water-Wheels to be Turned by Currents of Water or by the Ebb and Flow of Tides, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a top view of the flume within which the wheel revolves horizontally, its axle being vertical. Fig. 2 is a horizontal sectional view, the top of the flume being removed in order to show the interior thereof and the wheel revolving therein and the revolving scroll for directing the water to any part of the wheel. Fig. 3 is a vertical section through the center of the flume and wheel; Fig. 4, an elevation of the water-wheel detached from the flume.

The flume A is of a rectangular form of suitable size, but may be of any convenient size and shape, open at both ends and perforated in the top, with a large round aperture closed by a revolving top B, to which on its under side is fastened a solid scroll C, in the form of a curved wedge, for changing the direction of the water to any part of the circumference of the circle in which the wheel revolves, made to turn with said top as it is revolved horizontally in the aforesaid aperture, said flume being divided internally into two equal parts by a diagonal partition D, making each part in the form of a right-angled triangle whose bases and perpendiculars are of unequal length, said oblique partition being open in the middle of its length to admit the wheel and the large end of the revolving scroll, which exactly fills the space between the periphery of the wheel and the partition, so that as said scroll is turned horizontally around the wheel the outer curved surface of the scroll, which is the segment of a circle, will touch the inner ends of the divided oblique partition and the side of the large end of the scroll next the wheel will always be in contact with the outer circumference of the wheel, while the point or small end of the scroll will always revolve at a distance from the wheel and against the oblique partition and the inner sides of the flume, producing a changeable scroll-formed space

around the wheel to admit the water to the buckets of the wheel. When the water flows in the direction of the arrow No. 1, the scroll will be in the position represented in Fig. 2, and when the water ebbs in the direction of the arrow No. 2 the scroll will be in the position represented by the dotted lines, the change of position being effected by simply turning the top B, to which the scroll is fastened, as above described. The said scroll also serves the purpose of a revolving gate for shutting off or letting on the water to the wheel by simply bringing it across the space between the inner ends of the oblique partition and the sides of the flume or removing it therefrom. The bottom of the flume is perforated with a large round aperture of corresponding diameter with that of the wheel, in which the wheel is placed and made to revolve by the direct action of the current or tide against the buckets thereof when it escapes through said aperture below the wheel.

The hub F of the wheel is made in the form of a frustum of a cone. The shaft which passes through the center of the same is cylindrical or polygonal and turns in boxes in cross-bars of the flume, or on a point or pivot on a bridge-tree or bed-piece.

The buckets I form spherical triangles and are coiled around a segment of the outer surface of the conical hub at equal distances apart, the small ends of the buckets being next the small or upper end of the hub and the large ends on the same horizontal plane with the large end of the hub.

The larger diameter of the wheel or circle of the buckets is surrounded by a hoop or ring K of the requisite width.

The length of the wheel should be such as to extend nearly to the top of the flume, and also below the bottom thereof, so that the water may have an opportunity to act upon or against a large proportion of the surface of the buckets. It is not essential that the buckets have the same inclination; but they should in order to form a perfect wheel, and they should approach a perpendicular line at top, and at the bottom they should approach a horizontal line. The commencement of the spiral line of the buckets should be about eight or ten degrees at the bottom and rise to about seventy or eighty at top. The number of the buckets may be varied to suit the loca-

tion. When there is a head gained by a dam, the outside band or rim may be from six to twelve inches wide.

The buckets of the wheel are acted on by the percussion of the water in striking them, and also by gravity in leaving as the water passes over their inclined surfaces in escaping from the wheel through the bottom of the flume.

In place of the single revolving scroll C, the scroll C may be divided into four parts 1 2 3 4, as represented in Fig. 2 by dotted lines, two of said parts to be stationary—say Nos. 1 and 2—and two to be movable—say Nos. 3 and 4—to be raised and lowered alternately as the tide ebbs and flows. When the water enters the flume in the direction of the arrow No. 1,

the segment No. 4 must be raised, No. 3 remaining closed down to make the scroll perfect. When the water enters the flume in the direction of the arrow No. 2, then the segment No. 3 must be raised and No. 4 must be shut down.

What I claim as my invention, and which I desire to secure by Letters Patent, is—

The combination of the revolving scroll C and trunk A D, and also in combination therewith the wheel I K, arranged and constructed as described.

DAVID PUTNEY.

Witnesses:

WM. P. ELLIOT,
A. E. JOHNSON.