

WILLIS READ.

Improvement in Water Wheels.

No. 121,195.

Patented Nov. 21, 1871.

Fig. 1.

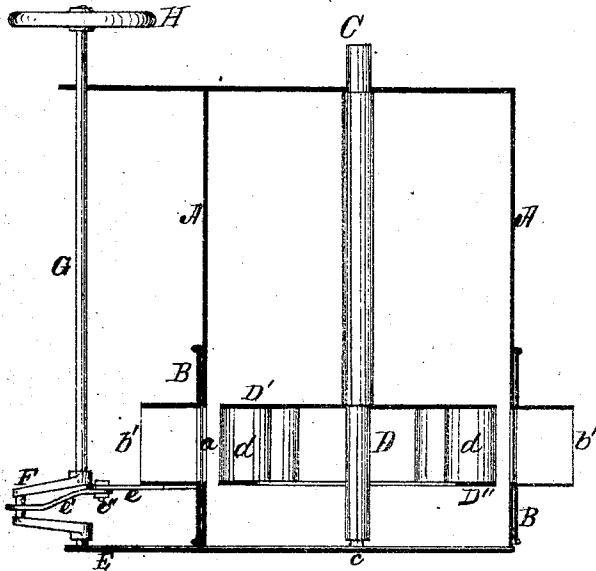


Fig. 2.

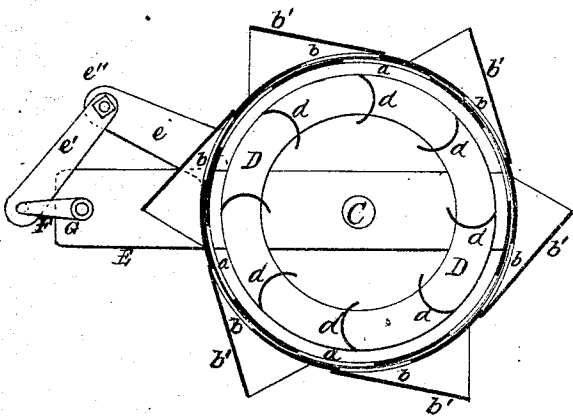
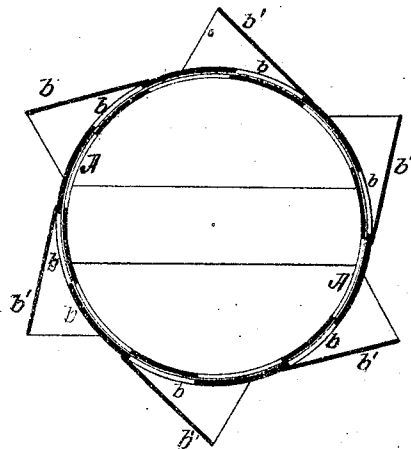


Fig. 3.



Witnesses:
George Dutton
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Inventor:
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UNITED STATES PATENT OFFICE.

WILLIS READ, OF PATTERSON, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 121,195, dated November 21, 1871.

To all whom it may concern:

Be it known that I, WILLIS READ, of Patterson, in the county of Putnam, in the State of New York, have made certain Improvements in Water-Wheels, of which the following is a specification:

The object of this invention is to improve the water-wheel, its case and gates, so that all the water impinging against the buckets of the wheel shall have its full force whether the gates are fully open or only partially so; and it consists in the construction, arrangement, and combination of the parts that effect the result.

In the drawing, Figure 1 is a vertical section of the case, wheel, and chutes, and means of operating the gates. Fig. 2 is a plan or top view of the same, and Fig. 3 is a sectional plan view through the case, chutes, and gates.

A is an upright cylindrical case, placed in the fore-bay and surrounded by water, the top of the same being above high water. *a a a* are a series of openings through the case A, and of any number desired, and, taken collectively together, large enough to supply the maximum quantity of water to the wheel when working at its greatest effect. B is an annular gate or cylinder surrounding the case A, and fitting thereto sufficiently tight to stop water at its top or lower edge, and has as many openings *b* through it as there are openings *a* in the case, and to be of the same size and coincident therewith. This cylindrical or annular gate B is made to slide or revolve on the case A sufficiently far to move the openings *b* away from being coincident with the openings *a* in case A; or, in other words, to completely cut off the flow of water through openings *a* into or through case A. Over and about openings *b*, and projecting from the annular or ring gate B, are chutes *b'*, having the proper shape to direct the inflowing water through openings *b* in the cylindrical gate B, and through openings *a* in case A. C is the upright shaft, resting on center *c'* at its lower end, and having wheel D fixed thereto in the proper position. D is a horizontal wheel, of any diameter or height to give the power required. *d d* are vertical buckets placed at the periphery of the wheel, and secured between the heads of the wheel in proper position for the best effect. The buckets *d* are concave on their inner vertical face, and may be made in form of a segment of a circle or in scroll form, as desired; but the

curvature of the buckets at the periphery of the wheel must be as near to a right angle with the said periphery as a curved line can be, in order not to force the water too soon away from or before it has spent its full force at the outer diameter of the bucket. The upper head D' of wheel D is whole and entire, only admitting the shaft C, while the lower head or rim D'' is open within or inside of the inner diameter of the bucket *d*, through which opening or space the water is discharged from the wheel. E is a bridge-tree underneath the case A, and in which is the conical bearing *c* upon which shaft C revolves, and is extended to one side to give support to crank F on shaft G and allow it to revolve freely therein. *e* is an arm firmly attached to the under side of the annular gate B, at the outer end of which it is pivoted to arm *e'* by pivot-pin or screw *e''*, while the other end of arm *e'* is attached to crank F. G is an upright shaft, with crank F at its lower end and hand-wheel H at its upper end.

The wheel, its case, chutes, and gates, being constructed and placed within the fore-bay, as described, the water is let upon the wheel by taking hold of the hand-wheel H and turning it either to the right or left; it will, through the shaft G and crank F, arms *e'* and *e''*, revolve the annular gate B far enough to cause the openings *b* in gate B to be coincident with openings *a* in case A, or to be only partially open, as may be desired, and to give the necessary power or motion to the wheel. By this construction of the wheel with vertical buckets, and its arrangement with relation to the annular gates B and chutes *b'*, the best results are obtained; for as soon as the annular gate B is rotated far enough to admit water through openings *a* it impinges directly upon the concave faces of buckets *d* at the point where the greatest effect can be given; and this will be the case whether a greater or less quantity is admitted through openings *a*; and when the gate B is moved to close the openings the wheel is instantly cleared of water, and it has only to overcome its own inertia to be at rest, or when at rest, and the gates opened, will as instantly be in motion.

The wheel is simple in design, easy of construction, as is also the gates, chutes, and means of operating them, and none of them liable to get out of order; or when worn out are so arranged as to be easily repaired or replaced by others; and

is believed, under ordinary conditions, to be the most economical wheel in use, and giving as great a percentage of power for the water used as any wheel now in use; is constructed to run in either direction by reversing the buckets in the wheel and turning the annular gate B the other side up.

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

The combination of the wheel D, having vertical curved buckets *d*, with case A having openings *a*, annular gate B with opening *b*, and projecting chutes *b'*, and arranged to be operated in the manner and for the purpose described.

WILLIS READ.

Witnesses:

EDM. F. BROWN,
GEO. C. POULTON.

(168)