A. R. GUILDER.

TURBINE WATER-WHEEL.

No. 192,691. Patented July 3, 1877.

Fig. 1.

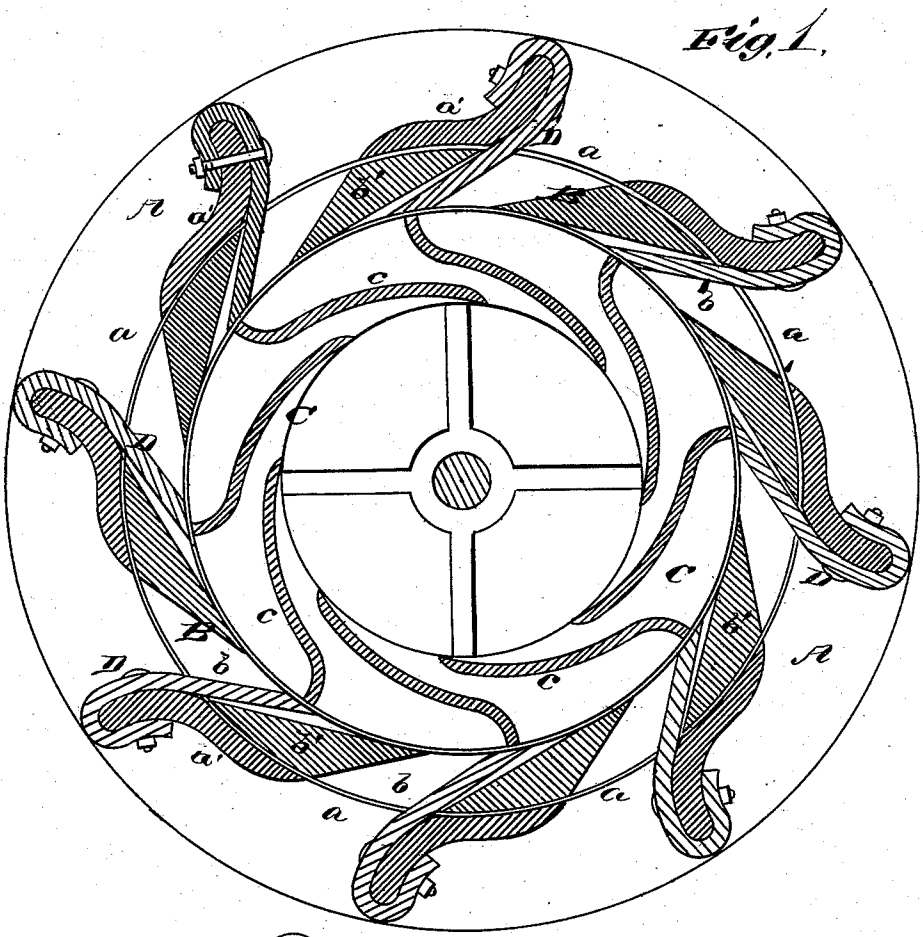
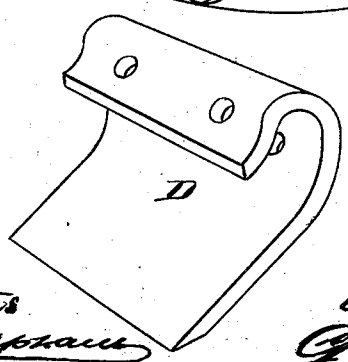


Fig. 2.



WITNESSES

E. F. Bates

Geo. C. Upham

INVENTOR.

Absalom R. Guilder.

Gilmore & Smith

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ABSALOM R. GUILDER, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. **192,691**, dated July 3, 1877; application filed March 31, 1877.

To all whom it may concern:

Be it known that I, ABSALOM R. GUILDER, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and valuable Improvement in Turbine Water-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a horizontal vertical sectional view of my wheel, and Fig. 2 is a perspective detail view of the same.

The object of this invention is to utilize the entire force of the water entering through the outer casing of a turbine wheel.

This object is accomplished by the attachment of guide plates or shields to the partitions separating the shutters or ingress-openings of said outer casing, said guide-plates or shields being so arranged as to direct the water immediately under the buckets.

In the accompanying drawings, A designates the outer casing of a turbine water-wheel, having chutes *a* and alternating partitions *a'*; B, the register-gate, having chutes *b* and partitions *b'*, and C the rotating inner wheel, having buckets *c*.

The foregoing parts do not differ in any respect from similar ones now in use.

When said chutes *a* and *b* are quite open the wheel works well without any additional device; but when said register-gate is turned so as to partly close said chutes *a* of casing A, pockets or spaces are formed on the inner side of said outer casing, into which pockets or spaces the water flows or eddies, thus partly depriving wheel C of its direct action, and lessening the efficiency of the wheel.

To obviate this difficulty I employ guide-plates D, which are bolted to the partitions *a'* between the chutes *a* of outer casing A, and extend inward through the chutes *b* of said register-gate B, so as to deliver the whole volume of water directly into the buckets of the wheel C. When said register-gate is turned so as to partly close the openings or chutes, as stated, the previously-mentioned pockets or spaces will still be formed; but said plates will cut off the water from access to them, and this source of loss will thus be obviated.

Without said plates the water, eddying in said pockets or spaces, operates, in part, to retard rather than to turn said wheel.

By the employment of said plates the full force of the water admitted is utilized, whatever may be the position of the gate, so that when half closed the wheel will do just one-half the work that it will do when open; but without said plates it will do (owing to the defect above explained) less than half the work, when half closed, that it will do when entirely open. There is a similar discrepancy when the wheel is more or less than half opened.

What I claim as new, and desire to secure by Letters Patent, is—

1. A turbine water-wheel having fixed guide-plates for directing the entire current of water from the chutes immediately to the buckets of the wheel, irrespective of the position of the gate, substantially as and for the purpose set forth.

2. The combination of water-casing A, register-gate B, wheel C, and plates D, bolted to the partitions *a*, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ABSALOM R. GUILDER.

Witnesses:
FRED. ACKER, Jr.,
C. H. MCEWEN.