S. R. JENNER.

Turbine Water-Wheel.

No. 165,334. Patented July 6, 1875.

Fig. 1.

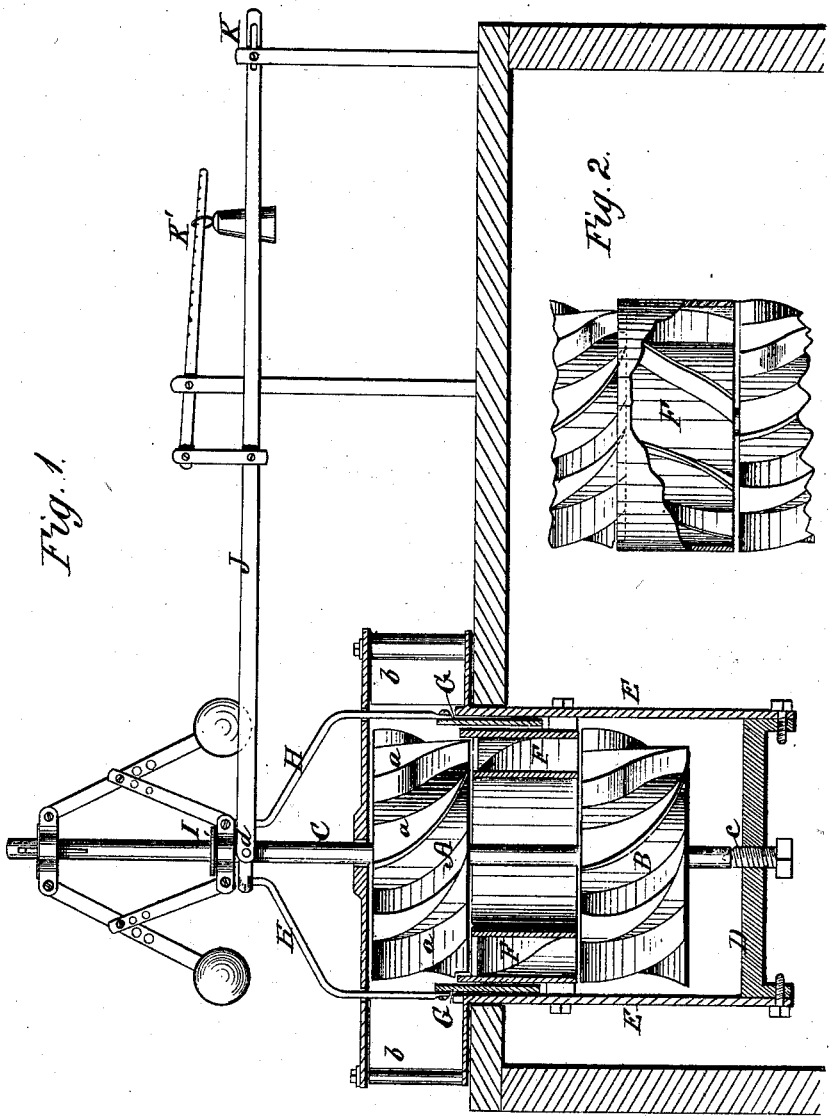

Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

STEPHEN R. JENNER, OF MILLTOWN, INDIANA.

IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. **165,334**, dated July 6, 1875; application filed March 23, 1875.

To all whom it may concern:

Be it known that I, STEPHEN R. JENNER, of Milltown, in the county of Crawford and State of Indiana, have invented a new and Improved Turbine Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a vertical section with turbine-wheels in side elevation; Fig. 2, a detail, showing the relation of the stationary water-ways to the buckets of the alternating turbine-wheels.

The object of this invention is to utilize a larger per cent. of motive power than is usually obtained in common turbine-wheels, and to render the same more constant and uniform in their action. It consists in placing stationary water-ways in between two or more turbine-wheels attached to the shaft, the said water-ways being detached from the shaft, and alternating with the turbine-wheels, and the ways running in direction transversely to the spiral flanges of the turbine-buckets. It also consists in the combination, with the stationary water-ways and the turbine-wheels, of a cylindrical cut-off and a counter-balance, as hereinafter more fully described.

In the drawing, A represents an ordinary turbine-wheel, having revolving buckets *a* and inlet water-ways *b*. B is a second turbine-wheel at the opposite end of shaft, having its buckets arranged to turn in the same direction as the first. Both these wheels are rigidly attached to a shaft, C, which revolves upon a bearing, *c*, supported by the pieces D, which are attached to the incasing-cylinder E. F is one of the stationary water-ways placed between the two turbine-wheels A and B, the said ways being arranged transversely to the spiral flanges of the buckets of the turbine-wheels, so that they deliver the volume of water received from the first wheel full upon the buckets of the second, thereby utilizing a large amount of power that would otherwise be wasted.

I do not confine myself to one stationary set of water-ways arranged between two revolving wheels, but I may place a number of them upon the same shaft, and have them alternate with revolving wheels, as described.

G is a cylindrical cut-off to regulate the flow of water from the inlet water-ways *b* to the turbine-wheels. Said cut-off is arranged to slide vertically between the outer casing E and the outer surface of the stationary water-ways, and is maintained upon supports H, attached to the movable collar I of the centrifugal governor. J is a lever, having bifurcated ends, in which are pivoted the studs *d*, attached to the sliding collar I. Said lever is pivoted at K upon a support, and is attached by means of a link to a graduated lever and weight, K. The object of this mechanism is to counterbalance the weight of the cylindrical cut-off, and render the cut-off sensitive to the action of the governor.

Having thus described my invention, what I claim as new is—

1. The combination, with two or more turbine water-wheels attached to one and the same shaft, of alternating stationary water-ways, which deliver their water transversely to the inclination of the turbine-buckets, substantially as and for the purpose described.

2. The combination, with the turbine-wheels and the alternating stationary water-ways, of the cylindrical cut-off G, the lever J, and the weight K, substantially as and for the purpose described.

STEPHEN R. JENNER.

Witnesses:

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