

(No Model.)

J. SUTER.
WATER OR WIND WHEEL.

No. 487,381.

Patented Dec. 6, 1892.

Fig. 1.

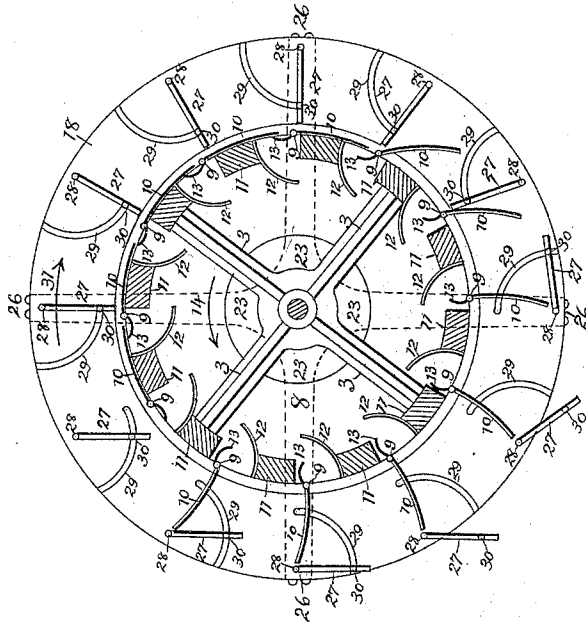
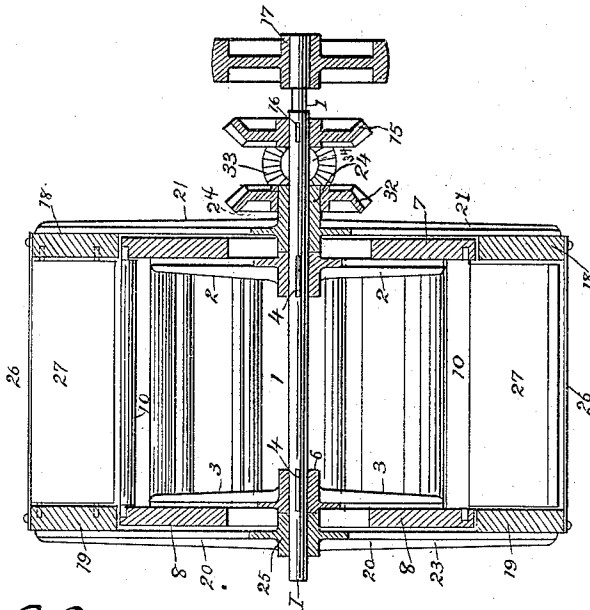


Fig. 2.



ATTEST:

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WATER OR WIND WHEEL.

SPECIFICATION forming part of Letters Patent No. 487,381, dated December 6, 1892.

Application filed April 29, 1891. Serial No. 390,961. (No model.) Patented in Switzerland February 20, 1891, No. 2,910.

To all whom it may concern:

Be it known that I, JACOB SUTER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Water or Wind Wheels, (for which a patent has been granted to me by the Swiss Government the 20th of February, 1891, and which is numbered 2,910;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of devices which are driven by a head of water or by the force of the wind, those devices using water as a motive power being found among the class of water-wheels, hydraulic motors, &c.

My wheel comprises a plurality of paddle-carrying wheels or rings concentrically disposed about a common center, each wheel or ring thereof being provided with pivoted blades. The rings are intended to be rotated in opposite directions, and the blades thereof are adapted to fall out of action, preferably by the force of gravity, when they approach and are passing those in action on the other wheel.

My invention further consists in the construction, arrangement, and combination of parts set forth in the specification and claims.

In the drawings, Figure 1 shows a horizontal cross-section of my improved form of wheel; Fig. 2, a longitudinal section of the same.

The same figures of reference refer to like parts throughout the several views.

Upon a shaft 1 are firmly secured the spanners or cross-arms 2 and 3 by the pins 4, passing through their hubs 5 6, each supporting a paddle-ring 7 8, respectively, and between them are pivotally hung upon pins 9 movable blades 10, which are secured to both the rings 7 8 near the outer periphery thereof, and which are adapted to project radially and tangentially therefrom.

In Fig. 1 the blades 10 at the bottom of the figure (sheet held vertically) are shown in the position they would occupy were the shaft 1 horizontally disposed, in which position they are ready to receive the head of water or the current of wind, as the case may be. If the

shaft is vertically disposed, they should be made to assume the same relative position.

At 11 are a series of ribs uniting the sections 7 and 8 of the inner ring and arranged about the periphery thereof. To these are fixed the segmental blades 12, which extend within the periphery of the inner ring, which blades are so constructed and arranged in relation to each other and to the blade on the outer ring that the wind or water, as the case may be, tends to increase the power of the wheel. The blades 10 are provided with inwardly-projecting lugs or projections 13, which strike against the ribs 11 so as to hold said blades against the action of the wind or water. The inner wheel rotates in the direction of the arrow 14. It will be noticed that the blades 10 at a certain period of the rotation of the wheel rest on the ribs 11, thereby forming a wall or sleeve. The shaft 1, upon which the said inner ring is affixed, naturally revolves in the same direction. The shaft carries a miter-wheel 15, secured thereto by the pin 16. Should it be desired to transfer the power of the wheel by belt, a pulley 17 can be secured on the shaft 1, as shown, or in any other desired manner. The outer wheel comprises the rings 18 and 19, disposed concentrically about the rings 7 and 8 of the inner wheel. Spanners 20 21, having the arms 22 23, are rotatably set upon the shaft by their hubs 24 25, the arms of which are secured to the rings 18 19, respectively. The rings 18 and 19 are secured transversely together by the braces 26. The outer paddles 27 are pivotally secured between the two rings 18 19 by the pins 28 upon their ends. Both rings 18 and 19 are provided with segmental grooves 29, extending nearly to the inner edge, and extending clear through the outer periphery. The blades 27 are provided with pins 30, which are adapted to move in the grooves 29, the inner end of the grooves arresting the inward movement of the blades by the pins 30 coming in contact therewith. In this case the blades 27 are preferably made straight. When the outside wheel is rotated in the direction indicated by the arrow 31, the blades 27 will then, owing to the pressure of the wind or water or to their gravitation, or other cause, assume the various positions shown in the drawings.

The hub 24 of the spanner 21 has affixed thereto a miter-wheel 32, which takes the movement of the outer wheel. A miter-pin 33 on a shaft 34 meshes with the miter-wheels 15 32, uniting the two wheels for the purpose of conveying the power of both.

The extended ends can be omitted from the blades, and many changes and modifications may be made in that structure shown and described herein, which I have stated to be the preferred form, without departing from the spirit of my invention.

What I claim is—

1. In a wind or water wheel, the combination of an inner wheel secured to a central shaft, an outer wheel concentrically disposed about the inner wheel, a series of straight blades pivotally secured to the outer wheel, segmental guides for the same, a plurality of series of segmental blades carried by the inner wheel, one of said series being pivoted, the other fixed, the pivoted blades being alternated between the fixed blades, substantially as described.

2. In a wind or water wheel, the combination of an inner wheel secured to a central shaft, an outer wheel concentrically disposed about the inner wheel and rotatably supported upon the said shaft, a series of straight blades secured to the outer wheel, a series of segmental guides for co-operation with the said blades, means for limiting the movement of said blades, a plurality of series of said blades carried by the inner wheel, one series being pivoted, the other fixed, the fixed series being alternated with the pivoted series, and means carried by the pivoted blades for limiting their movement, substantially as described.

3. In a wind or water wheel, the combination of wheels concentrically supported upon the same shaft, a series of pivoted blades carried by each wheel, pins on the blades of one series, and a series of grooves in the corresponding wheel for co-operation with the said pins, substantially as described.

4. In a wind or water wheel, the combination of a wheel, a series of blades pivoted thereon, and stops for said blades, one surface of each stop limiting the movement of its corresponding blade when the latter arrives at its radial position and another surface limiting its movement when it arrives at its tangential position, substantially as described.

5. In a wind or water wheel, the combination of an inner wheel, an outer wheel concentrically disposed about the inner wheel, a mutual shaft for both wheels, and a series of pivoted blades carried by each wheel, the width of the blades of one series being slightly less than the minimum distance between the pivotal axes of the two series, so that the free edges of said blades pass close to the pivotal axes of the other series, substantially as described.

6. In a wind or water wheel, the combination of an inner wheel and an outer wheel concentrically disposed about the inner wheel, stops on the wheels, a series of blades pivoted at or near the edge of the outer wheel and disposed inwardly when limited by their stops, and a series of blades pivoted at or near the edge of the inner wheel and disposed outwardly when limited by their stops, substantially as described.

7. In a wind or water wheel, the combination of an inner wheel, an outer wheel concentrically disposed about the inner wheel, a mutual shaft for both wheels, a series of pivoted blades carried by each wheel, and stops arranged to limit the inward movements of both series when the blades so limited are at right angles to each other, substantially as described.

8. In a wind or water wheel, the combination of an inner wheel and an outer wheel concentrically disposed about the inner wheel, a series of pivoted blades carried by the outer wheel, a series of inwardly-radiating blades carried by the inner wheel, and a series of outwardly-radiating blades carried by said wheel, both of said series presenting a concave surface in the same direction, substantially as described.

9. In a wind or water wheel, the combination of an inner wheel, an outer wheel concentrically disposed about the inner wheel, and a series of pivoted blades carried by each wheel, the blades upon the outer wheel being inwardly disposed in their limited position and the blades upon the inner wheel being provided with rear extensions adapted to overlap the adjoining blade when in a tangential position, forming a continuous wall, substantially as described.

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Witnesses:

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