

(No Model.)

D. C. HERMAN.
WIND AND CURRENT WHEEL.

No. 485,933.

Patented Nov. 8, 1892.

Fig. I.

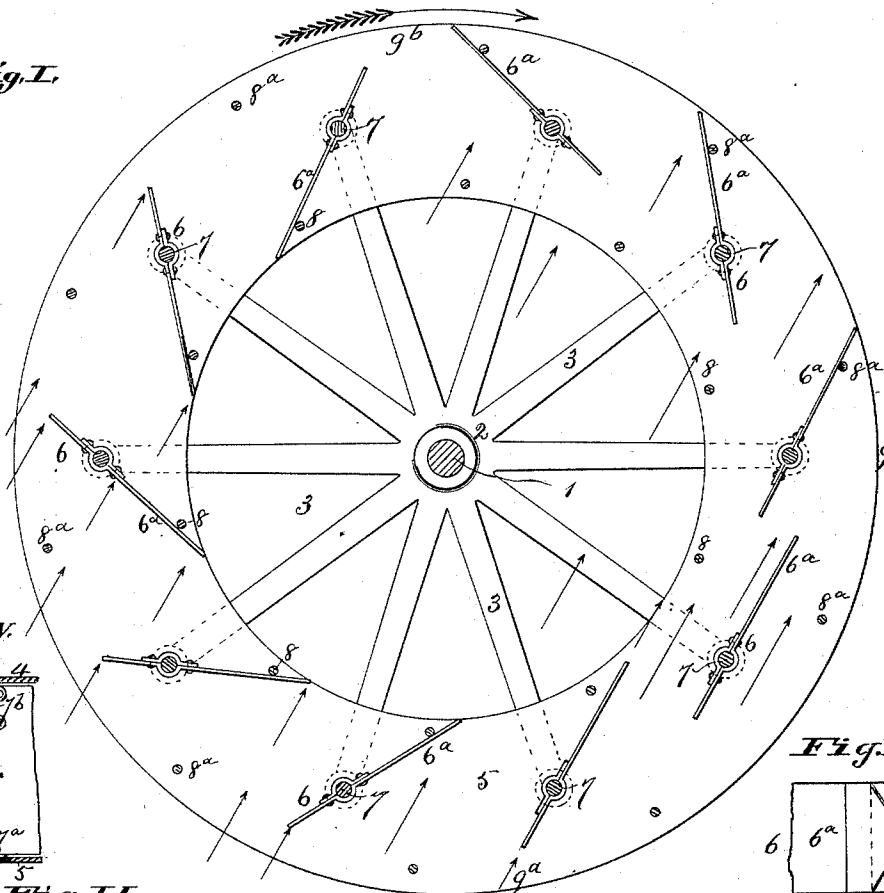


Fig. V.

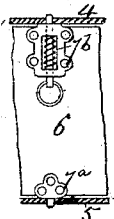


Fig. IV.

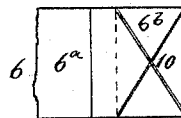


Fig. II.

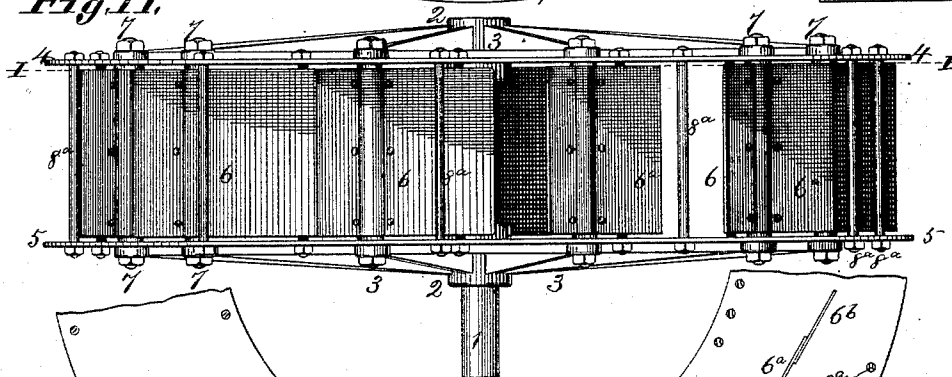
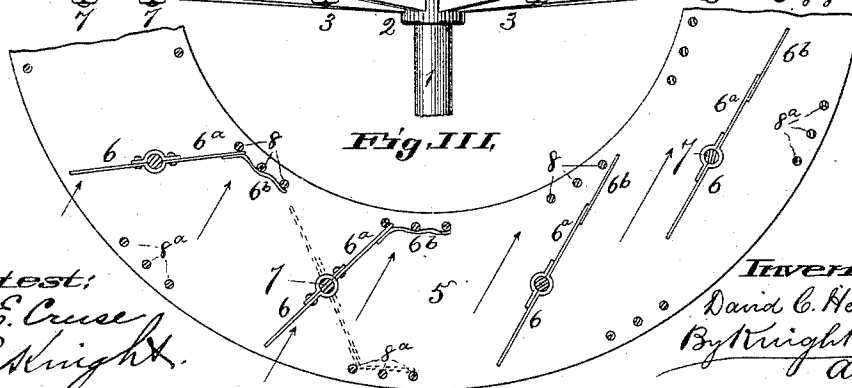


Fig. III.



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WIND AND CURRENT WHEEL.

SPECIFICATION forming part of Letters Patent No. 485,933, dated November 8, 1892.

Application filed January 8, 1892. Serial No. 417,407. (No model.)

To all whom it may concern:

Be it known that I, DAVID C. HERMAN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Wind and Current Wheels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This is a wheel with wings pivoted between two flat rings, the pivotal points being nearer to one end of the wing than the other end, so that they tend to take a position in line with the wind or water current.

15 The movement of the wings on their pivots is limited by stop-bars, which hold them in position to cause the turning of the wheel by the impact of the current. The only inactive wings are those which are moving in a direction opposite or nearly opposite to the current, and these form scarcely any impediment to the turning of the wheel, because they are in line with the current.

25 Figure I is a horizontal section of the wheel, taken at I I, Fig. II. Fig. II is a side elevation of the wheel. Fig. III is a detail horizontal section showing a modification embracing an additional feature. Fig. IV is a detail side view showing a modification of the wings. 30 Fig. V is a detail section showing a preferred means of pivoting the wings, so as to render them easily removable.

1 is a shaft, to which the wheel is fixed by means of a hub 2 and spider or spokes 3.

35 4 and 5 are two parallel flat rings or plates, between which the wings 6 are set, and in which the ends of the wing-pivots 7 have bearing.

8 8^a are stop-rods, between which are the 40 longer or rear ends 6^a of the wings. These rods serve to bind together the plates or rings 4 5. The inner rods 8 arrest the inner movement of the longer ends 6^a of the wings and the stop-rods 8^a arrest the outer movement of 45 the longer ends 6^a.

At the point 9 the wings are in line with the current, and continue in line with the current until they pass the point 9^a. At the point 9^a the wing is in contact with the 50 stop-rod 8, and as the wing moves past this point the current acts upon the outer side of the wing to turn the wheel. The wings re-

tain this position till they reach a point 9^b, when the current acts upon their inner side and carries the end 6^a against the outer stop-rod 8^a, which position it retains to the point 55 9, and in which it is available for the turning of the wheel. It will be seen that over two-thirds of the wings are constantly in active position and that they are moved into and re- 60 tained in this position by the direct action of the current without any appendage for this purpose and almost without friction. The top and bottom edges of the wings are so near to the rings 4 and 5 as to effectually check 65 the escape of the air or water at those points. The rings prevent any vertical escape of the current from the wings either upward or downward. The wheel is open at the center 70 to allow the free vertical escape of the current after it has done its work on the wings at the wind side of the wheel and to allow its free entrance into the wheel to the leeward wings as induced by the partial vacuum at the periphery of the wheel upon that side. 75 The wheel may be set horizontal or perpendicular or at any angle between and will be turned by a current in any direction except in the direction of its axis. Any number of wheels may be attached to the same shaft, so 80 that the capacity can be readily increased at will by increasing the number of the wheels.

In the modification shown in Fig. III the wings have a flexible extension 6^b at their rear end and the stop-pins 8 8^a are increased 85 in number, so as to make an efficient bearing for this extension. The purpose of this construction is to give the wings a concave form upon the wind side when in active position, as seen at the left hand in Fig. III, thus in- 90 creasing their efficiency, owing to the concentration of the current to the central part of the wing, causing increased pressure thereon and checking the lateral escape of the current. The material of the wing extensions 6^b may 95 be such as to give them vertical stiffness, preventing their sagging, or they may be braced in any way to this end—for instance, by cross-braces 10, as indicated by diagram Fig. IV.

I have described the top and bottom plates 100 4 and 5 as flat rings and shown a considerable central opening, and this is the best form; but I do not confine myself to this shape, as there may be merely a small central opening

or none at all. The stop-rods have been described as arresting the movement of the wing by impingement against them of the longer or rear end of the wing. These stop-rods 5 may, however, be so placed as to arrest the movement on the wings.

In Fig. V is shown a preferred means for pivoting the wings in their bearings. In this 7^a is a gudgeon fixed to one edge—say the 10 bottom of the wing—and having free bearing in the plate 5, while 7^b is a spring gudgeon or bolt having bearing in the top plate 4. After drawing down the bolt 7^b the wing may be withdrawn by pulling out the upper edge until

the gudgeon 7^a may be lifted from its bearing. 15

I claim as my invention—

A wind or water wheel having parallel plates 4 5, with pivoted wings 6 between them, having flexible extensions or flaps 6^b, and binding-rods, as 8 8^a, connecting the plates and 20 limiting the movement of the wings on their pivots and giving bearing to the flexible extensions in their working position, substantially as set forth.

DAVID C. HERMAN.

In presence of—

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E. S. KNIGHT.