

N. H. DOLSEN.
WIND WHEEL.

No. 555,806.

Patented Mar. 3, 1896.

Fig. 1.

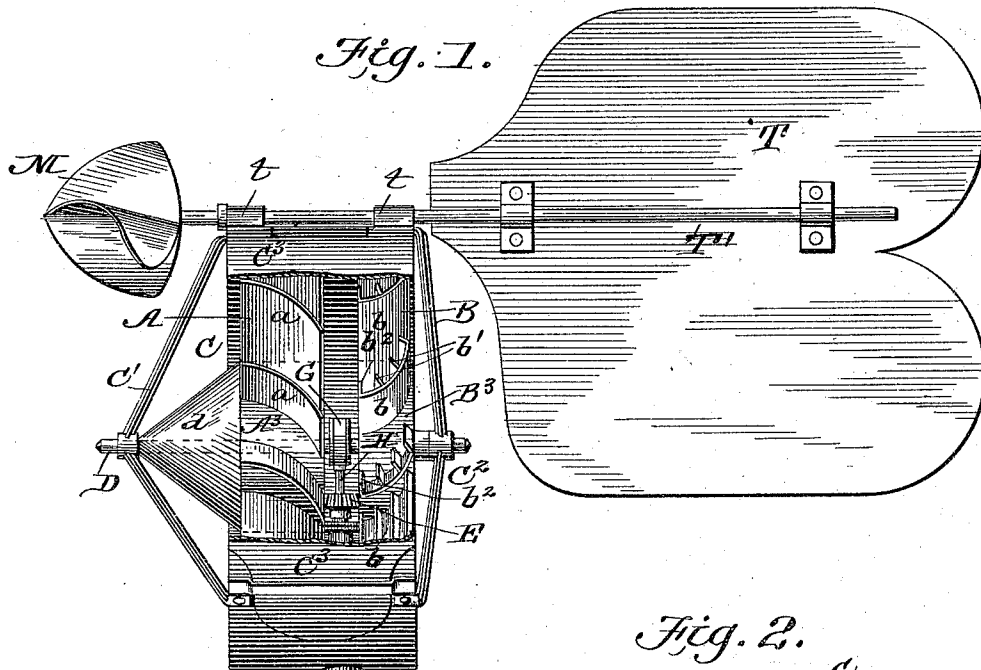
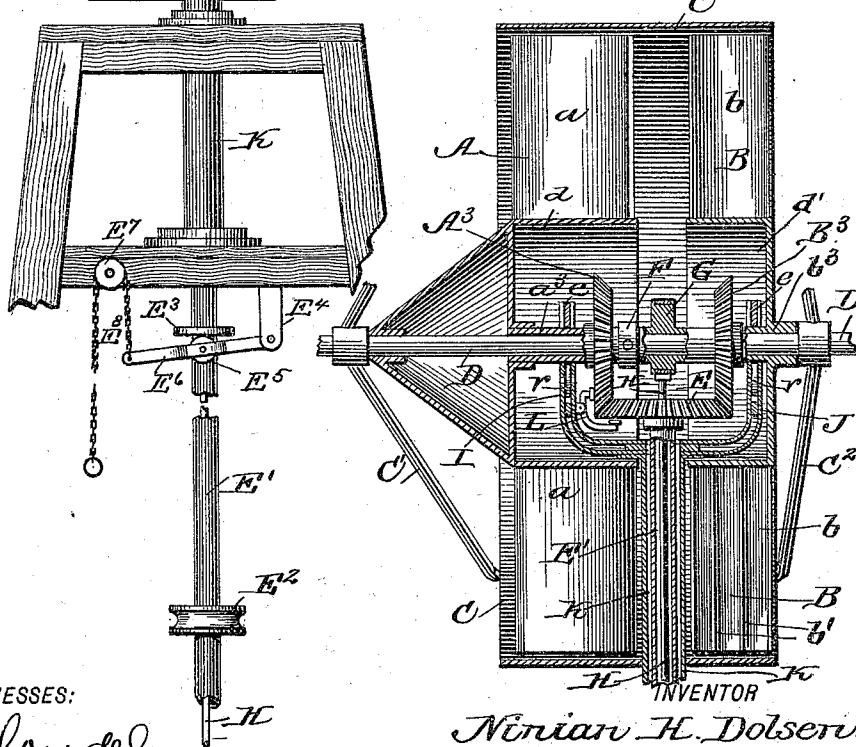


Fig. 2.



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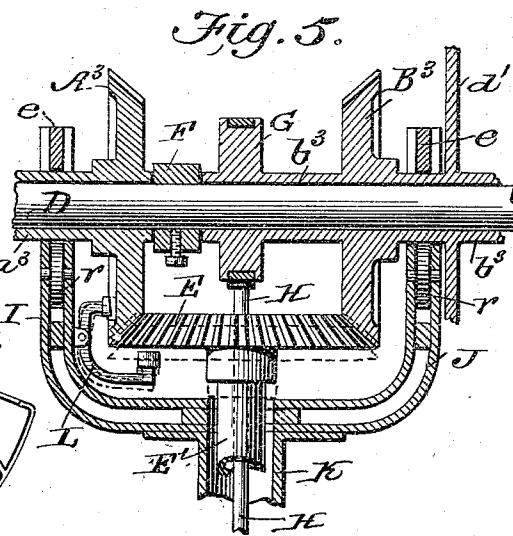
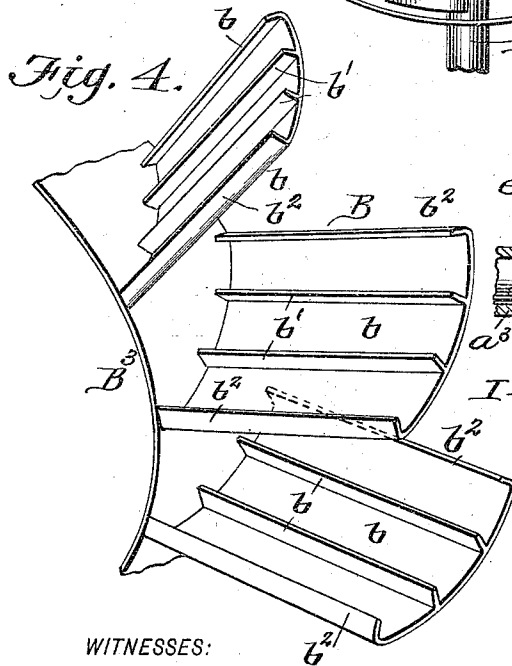
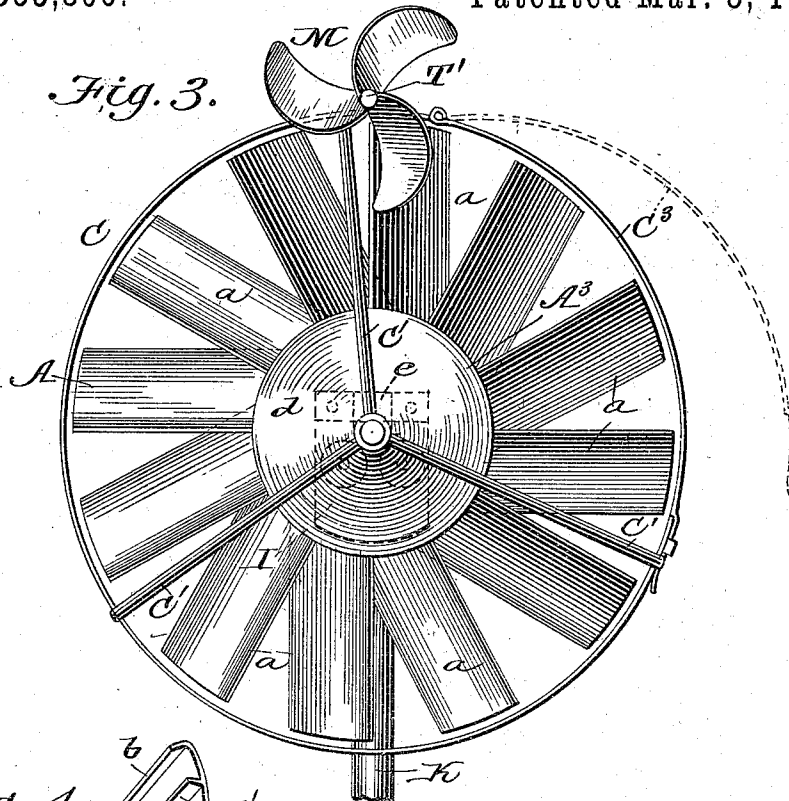
(No Model.)

2 Sheets—Sheet 2.

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NINIAN H. DOLSEN, OF HESSEL, MICHIGAN.

WIND-WHEEL.

SPECIFICATION forming part of Letters Patent No. 555,806, dated March 3, 1896.

Application filed August 24, 1895. Serial No. 560,388. (No model.)

To all whom it may concern:

Be it known that I, NINIAN H. DOLSEN, of Hessel, in the county of Mackinac and State of Michigan, have invented a new and useful
5 Improvement in Wind-Wheels, of which the following is a specification.

The object of my invention is to provide a wind-wheel for pumping water and performing other work requiring motive power, which
10 wheel shall be of simple construction, easily kept in order, and one which will develop the greatest amount of power for its size, and to these ends it consists in a compound wheel of peculiar construction and arrangement,
15 which I will now proceed to fully describe with reference to the drawings, in which—

Figure 1 is a side elevation partly broken away. Fig. 2 is a vertical central section. Fig. 3 is a front view. Fig. 4 is a detail of a
20 portion of the blades of the main power or impact wheel, and Fig. 5 is a sectional detail of the gears.

A and B are the two members of the compound wheel, each of which consists of a complete wheel, the front one, A, having vanes or
25 blades inclined to the axis and revolving in one direction, and the other, B, having buckets facing in the opposite direction, so as to cause it to revolve in the opposite direction. The
30 front wheel, A, has its vanes a inclined to the axial center with a slight concave on their inner faces, and this acts as an ordinary reaction-wheel in which the wind striking the face of the blades glides off with an uninterrupted discharge to the rear, but with the
35 rear wheel, which is the main power-wheel, a different construction and principle of action exists. The blades b of this wheel are not intended to let the wind glide freely across
40 their faces, but on the contrary their faces have a series of right-angularly-projecting longitudinal wings or flanges b' , which preclude such free transverse movement of the wind across the same. These flanges are
45 radial to the wheel and parallel to each other. The front and back edges b'' of these blades are curled over inwardly, so that these blades, instead of acting as ordinary plane vanes, have the function of buckets to catch and re-
50 tain the wind, and they are so set in relation to the vanes of the front wheel that the air

will be discharged perpendicularly or at right angles into these buckets with a full and direct impact, so as to give the greatest possible power to this wheel. The two wheels are
55 also inclosed in a broad stationary cylindrical case C, which extends around the plane of both wheels and holds the air into the wheels against centrifugal action, and co-
60 operates with both wheel-sections by insuring the delivery of the air from the front wheel to the rear wheel with its full effective motive power instead of flying off tangentially from centrifugal action.

The cylindrical case C has radial arms C' C'' that extend to a central stationary shaft D, and on this shaft the two wheels revolve with
their sleeves a^3 b^3 , which latter are rigidly attached to the wheels and form bearings for
70 the same on the stationary shaft.

The hubs of the two wheels are constructed in the form of large sheet-metal drums d d' , the front one of which has a conical end to
75 throw the wind outwardly from the center into the most effective portion of the wheel. These drums also form housings for the gears that are contained within, and said drums approach each other as closely as possible so
80 as to prevent the air between the wheels from finding its way under pressure toward the center of the wheels.

The sleeves a^3 b^3 of the two wheels are provided with rigidly-attached bevel-gears A^3 B^3 , which mesh on opposite sides of an intermediate horizontal bevel-gear E, which is fast
85 upon the end of a vertical tube E' bearing at its lower end a band-wheel E^2 or other form of gear for taking off its rotary motion.

Between the two sleeves of the two wheels is
90 a spacing-collar F rigidly connected by a set-screw to the stationary shaft. On the sleeve b^3 of the impact-wheel there is an eccentric G (or crank) whose strap connects with a pitman-rod H that extends down the tube E' and
95 connects with the plunger of a pump.

When the bevel-gear E of the tube E' is in mesh with the bevel-gears of the two wheels, the reverse motion of the two wheels is converted through the bevel-gears into a har-
100 monious rotary motion, each turning the tube E' in the same direction, and said rotary mo-

tion of said tube may be utilized to transmit the cumulative power of both wheels to any desired application or utilization of the power.

To run the pump alone the bevel gear-wheel E with tube E' is adjusted downwardly, as indicated by dotted lines in Fig. 5, so that bevel-gear E is out of contact with the actuating bevel-gears of the wheels, and by the same movement a locking lever or catch L is made to engage with the bevel-gear A³ of the wheel A, and the latter wheel is then held against rotation, and its vanes then simply act as stationary deflector-blades to direct the air-currents upon the impact-wheel B, which latter through its sleeve and eccentric actuates the pump-rod.

For adjusting the tube E' up or down and holding its bevel-gear E engaged with bevel-gears A³ B³, I may, as in Fig. 1, form a rigid disk E³ on said tube, and lift it by the contact of two wheels or rollers E⁵, one on each side of the tube, carried in a frame E⁶, one end of which is jointed to a hanger E⁴, and the other end of which is connected to a rope or chain E⁸ passing around a pulley E⁷. Any other suitable device may, however, be used for the purpose.

The sleeves a³ b³ of the two wheels revolve upon friction-rollers r in the stationary yoke-frame I J, which consists of two separated flat plates of wrought-iron or steel fastened together with the rollers r between them, which yoke-frame is rigidly attached to a tubular post K inclosing the tube E' and pump-rod and turning in a suitable bearing or upon a turn-table to bring the face of the wind-wheel into or out of the wind. This yoke-frame has openings to receive the sleeves of the wheels, which openings are closed by latches e in full lines in Fig. 5 and dotted lines in Fig. 3.

The wind-wheel has its face directed to the wind by a guiding-tail T, whose horizontal shaft T' is journaled in bearings tt on the top of the outer case C. The guiding-tail T has a greater extension upon one side of the shaft than it has upon the other, so that the gravity of its larger side will tend to hold it in a vertical plane. On the front end of this shaft, however, there is a turning head M, of a screw-propeller shape, which when the wind blows too hard rotates partially the shaft T' and by turning the tail into a horizontal plane allows the face of the wind-wheel to be turned partially away from the wind. This is effected automatically because the friction of the wind is greater on one side of the tail than it is upon the other.

To gain access to the wheels a portion C' of the rim or casing is made hinged, like a door, Fig. 3, and is provided with suitable fastenings to hold it closed.

The rim or casing C is rigidly connected to the tubular standard K, which passes through it at the bottom and thus locks the rim C from turning on the shaft D.

I do not claim broadly the combination of two reversely-rotating wheels connected by bevel-gears, nor the use of inclined stationary deflectors for a wind-wheel, nor the extension of the pump-rod down through a tube rotated by bevel-gears, as these features are not broadly new.

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

1. A wind-wheel, consisting of an impact-wheel having a horizontal axis with radial blades each having both its edges b² b² turned inwardly to form buckets, and having in the same radially-arranged wings or flanges b, in combination with a stationary cylindrical inclosing case, and a wheel arranged in the casing in front of the impact-wheel and having a series of blades adapted to act as deflectors substantially as described.

2. A compound wind-wheel consisting of two reversely-rotating wheels arranged immediately adjacent to each other and geared together by bevel-gears, the front wheel having inclined and radial blades, and the rear wheel having receiving-surfaces inclined reversely to those of the front wheel and curled up and inwardly at their edges to form buckets and provided with radially-arranged wings or flanges within the said buckets, and a single stationary cylindrical casing extending across the plane of both wheels and inclosing them circumferentially to retain the air from the front wheel against centrifugal escape and direct it full into the buckets of the rear wheel substantially as and for the purpose described.

3. The combination of the two reversely-rotating wheels arranged side by side, and geared together by bevel-gears, and a single inclosing cylindrical case surrounding both wheels and having a hinged section to give access to the intermediate gears of the wheels substantially as and for the purpose described.

4. The combination of the two reversely-rotating wheels having central drum-housings, the drum of the front wheel being closed in front and the drum of the rear wheel being closed in the rear, a stationary inclosing cylindrical case surrounding both wheels, and bevel-gears connecting the two wheels and located within the drum-housings substantially as and for the purpose described.

5. The combination of the two reversely-rotating wheels having sleeves with bevel-gears, a stationary axis, a vertically-adjustable tube with horizontal bevel-gear adapted to be brought into or out of mesh with the bevel-gears of the wheels, and an eccentric upon one of the sleeves of said wheels with connecting-rod running down the adjustable tube substantially as and for the purpose described.

6. The combination of the two reversely-rotating wheels having sleeves with bevel-

gears, a stationary axis, a vertically-adjustable tube with horizontal bevel-gear adapted to be brought into or out of mesh with the bevel-gears of the wheels, an eccentric upon one of the sleeves with connecting-rod running down the adjustable tube, and a locking device for locking the front wheel when the bevel-gears are disconnected substantially as and for the purpose described.

10 7. The combination with a wind-wheel having a circumferential or inclosing case, of a horizontal rock-shaft mounted in bearings on said case parallel to the axis of the wheel, and having at the front end a screw-propeller
15 and at the rear end a guiding-tail with a larger projection of tail below its rock-shaft

than it has above it substantially as and for the purpose described.

8. The combination of the two reversely-rotating wheels having sleeves with bevel-gears, and a yoke-shaped supporting-frame composed of two separated wrought-metal sheets fastened together and having antifriction-rollers between them for the sleeves, and means for retaining the sleeves in the yoke-shaped frames substantially as and for the purpose described.

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Witnesses:

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