(No Model.)

3 Sheets—Sheet 1.

E. PARKER.

WINDMILL.

No. 435,652. Patented Sept. 2, 1890.

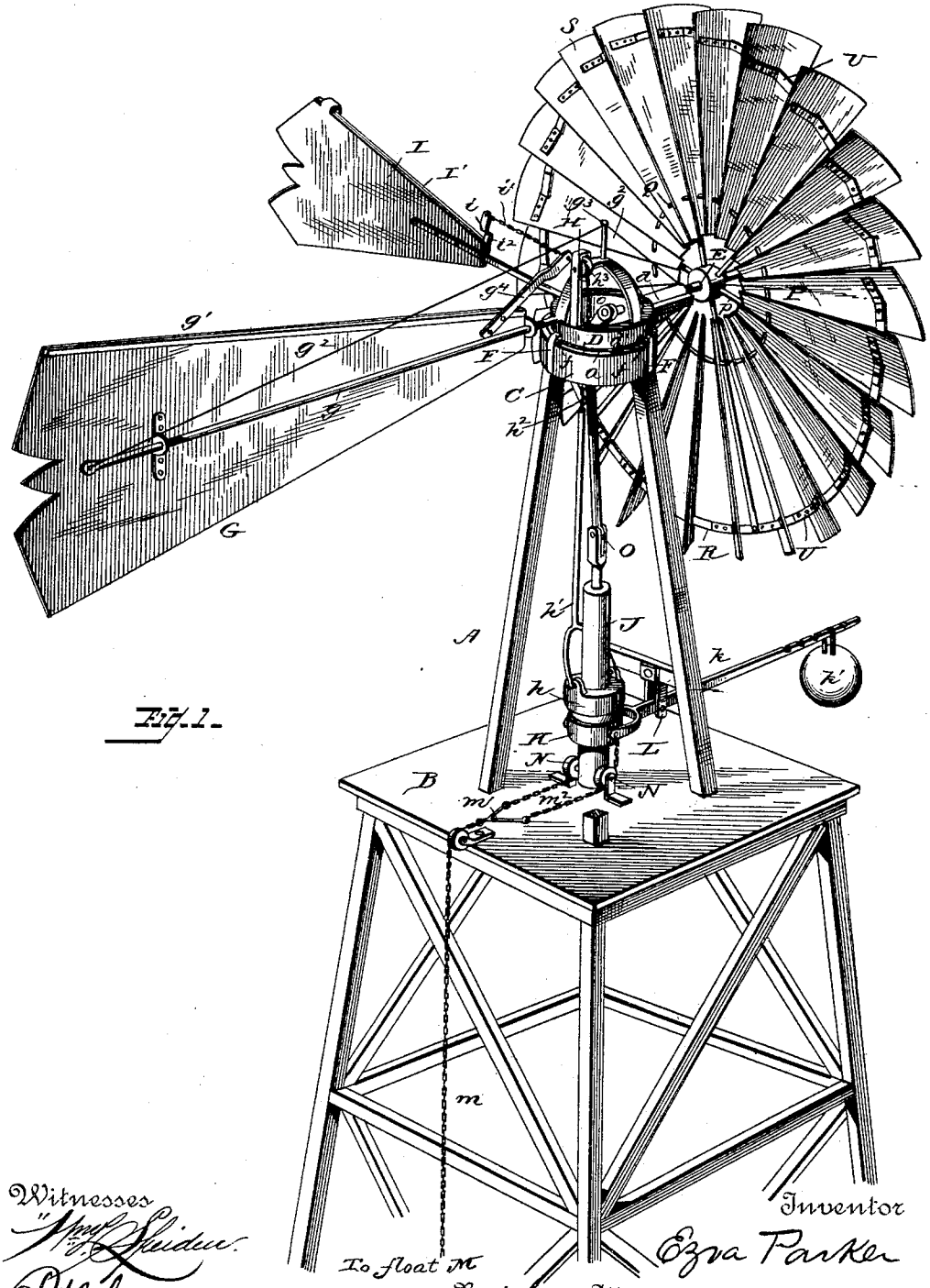


Fig. 1.

Witnesses
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D. H. Loucks

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

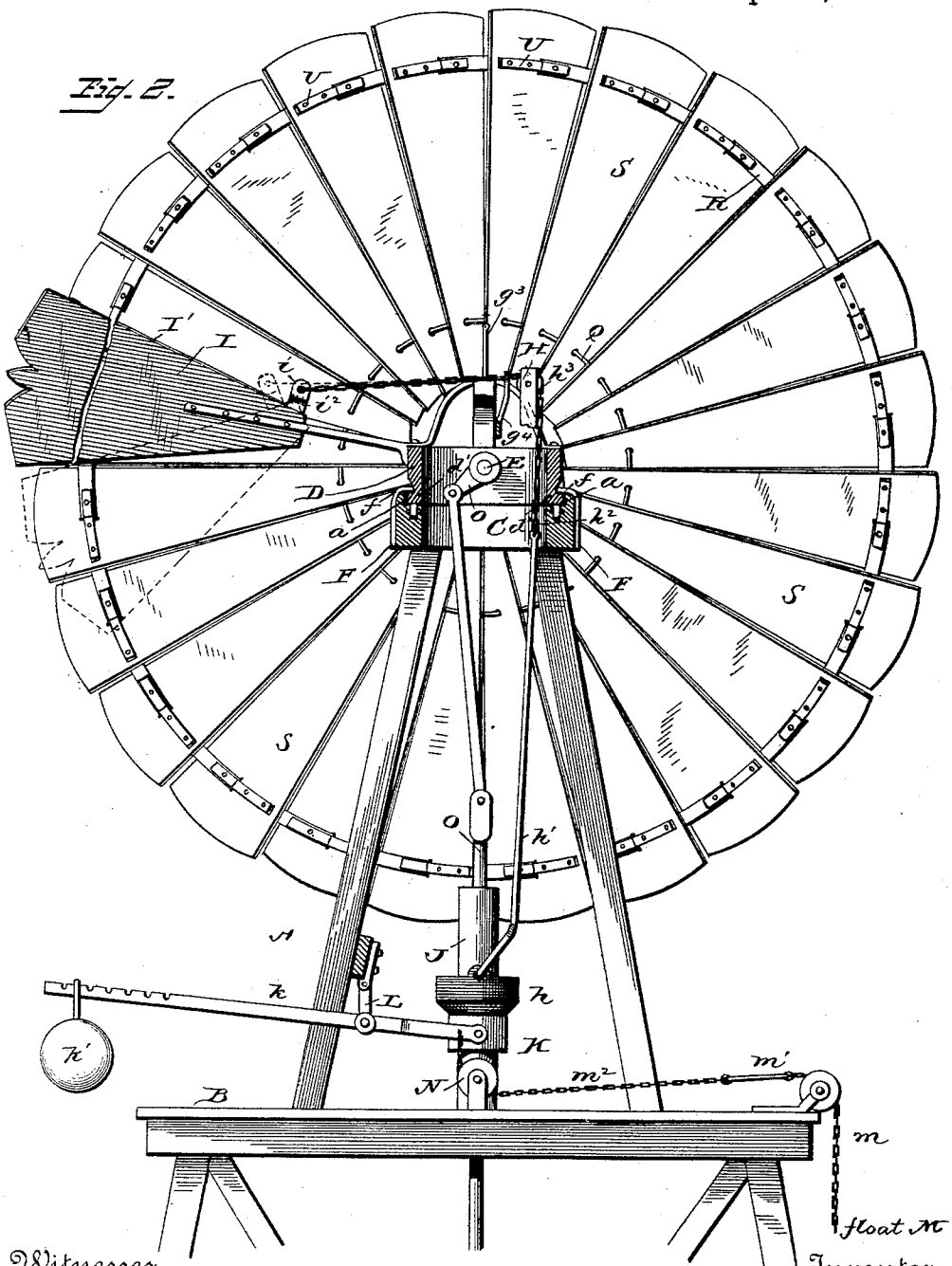
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WINDMILL.

No. 435,652. Patented Sept. 2, 1890.

Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

E. PARKER.

WINDMILL.

No. 435,652. Patented Sept. 2, 1890.

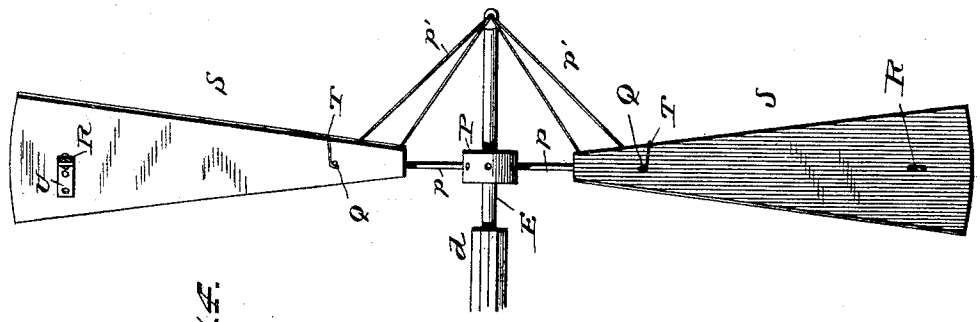


Fig. 4.

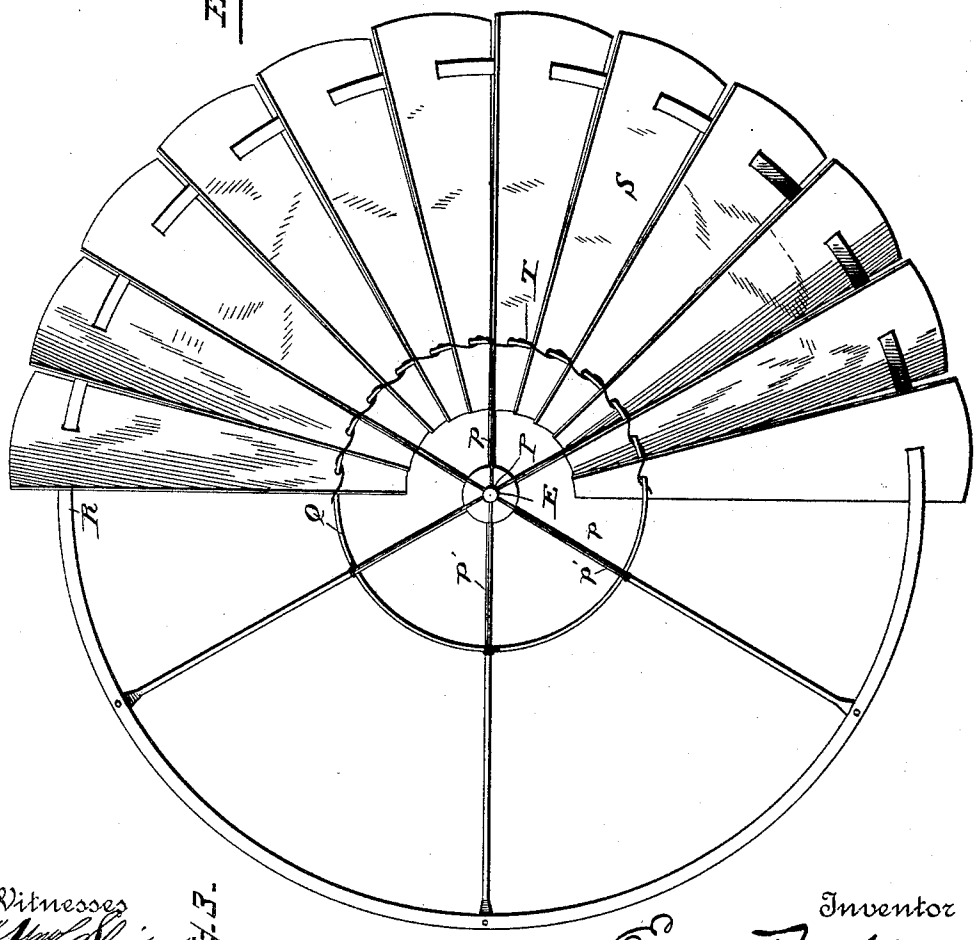


Fig. 3.

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UNITED STATES PATENT OFFICE.

EZRA PARKER, OF FORT ROBINSON, NEBRASKA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 435,652, dated September 2, 1890.

Application filed March 19, 1890. Serial No. 344,542. (No model.)

To all whom it may concern:

Be it known that I, EZRA PARKER, a citizen of the United States, residing at Fort Robinson, in the county of Dawes and State of Nebraska, have invented certain new and useful Improvements in Windmills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in windmills, and more particularly to that class which are provided with a side vane parallel with the wheel to throw the said wheel out of the wind.

The prime object of the invention is to increase the area of the side vane when the engine is out of gear, and to devise mechanism for connecting the tail and side vanes together and with the governor, so that the several parts will operate synchronously. By increasing the area of the side vane when the engine is out of gear the wheel will shift to a slight current of air, thereby preventing any straining of the parts and avoiding the use of brake devices.

A further object of the invention is to utilize the mass of the movable section of the side vane as a counterbalance-weight to throw the engine out of gear by turning the tail-vane on its axis, so as to present its edge to the wind.

A still further object of the invention is to diminish the friction of the turn-table and hold the same firmly on the tower against vertical and lateral displacement.

Another object of the invention is to brace the wheel, and particularly the wings, and simplify the construction of the same.

A still further object of the invention is to improve the general construction of this class of engines and render certain and positive the operation of the parts and increase the usefulness and the efficiency of the same.

The improvement consists in the novel features and the peculiar combination, arrangement, and adaptation of parts, which will be hereinafter described and claimed, and which are clearly illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a windmill embodying my invention. Fig. 2 is a vertical cross-section. Fig. 3 is a detail view of the wheel. Fig. 4 is an edge view of Fig. 3.

Reference now being had to the details of the drawings by letter, A represents a tower of ordinary construction having a platform B near the top, the corner-posts being united at their upper ends by a casting C, which is an annulus having the vertical flange *a*.

D is the turn-table, an annular casting having arm *d*, which forms a bearing for the wheel-shaft E. The turn-table fits snugly within the flange *a*, and is supported on rollers between it and the casting C, being held in place by the brackets F, which are secured to and let in recesses in the sides of the casting C, the bent ends *f* of the said brackets overlapping the shoulder *d* on the said turn-table. The tail-vane G is mounted on the rod *g* that projects from the turn-table, and is strengthened by the batten *g'* secured to its upper edge. This batten also forms a weight, which assists in turning the vane out of the wind. The rod *g* is braced by the truss-wire g^2, which extends from the outer end of the arm *d* to the outer end of the rod *g*, being deflected between its ends by the upright g^3. The arm g^4, extending from the tail-vane, is adapted to engage with the standard and limit the movement of the vane when it is full in the wind, and the weight *h*, for holding the vane G in the wind, is connected with said arm by the rod *h'* and cord h^2, the latter passing over the pulley h^3 on the standard H.

The side vane I is composed of a series of sections, two being shown, which are connected together in such a manner that one can move past the other, so as to increase the area or surface exposed to the wind. The sections taper in width and are pivotally connected at their smaller ends. The movable section I' is provided with an arm *i*, which is connected by chain *i'* with the arm g^4 on the tail-vane G in such a manner that when the tail-vane is in the wind the side vane will be of the smallest size consistent with its efficiency for the purpose designed, and when

the vane G is out of the wind and the engine out of gear said side vane will be exposed to its utmost limit to present a large area or surface to the wind. The weight *h* is mounted on a tubular guide J on the platform B, and rests on the sleeve K, which is also mounted on the said guide J. This sleeve is controlled by a force which is superior to the weight *h*, and which, when not held in check, will elevate the weight *h* and throw the engine out of gear. This force is the resultant of lever *k* and weight *k'*, the latter being adjustable on the lever *k*. The hanger or support L for the lever *k* is movable to permit of the free movements of the lever *k*. The float M, superior to the force which raises the sleeve K, is adapted to act in opposition to such force and hold it in check, and is connected by chain *m*, clevis or bail *m'*, and chains m^2 with the sleeve K. The side chains m^2 pass over pulleys N on the platform B and are connected at their lower ends with the clevis or bail and at their upper ends with the sleeve or bifurcated end of lever *k*. The pump-rod O, of ordinary construction, is connected with and operated from the crank *o* on the inner end of the wheel-shaft E. The wheel, comprising the hub P, arms *p*, inner and outer rings Q and R, respectively, and wings S, is braced by rods or wires *p'*, which extend from the wheel-shaft to the inner ring. The wings S have openings near each end, which receive the rings Q and R, being strung on said rings and held at relative distances apart and at the proper angle by a tie-wire T and angle-braces U. The tie-wire T is wrapped around the inner ring Q between each two wings and passes over the edge of each wing. The angle-braces U are secured to the outer ring and to the wings and give the proper pitch to the wings.

The operation of the device is as follows: The water being low in the tank, the float M falls, and, through the connections hereinbefore described, draws down the sleeve K and the inner end of the lever *k*, thereby permitting the weight *h* to fall, which weight holds the engine in gear and the side vane in its contracted dimensions. When the water in the tank rises to the predetermined height, the float is elevated, and the weight *k'* being no longer held in check falls and lifts the sleeve K and weight *h*. The movable section of the side vane being free falls and throws the engine out of gear by turning the tail-vane on its support or rod *g* to present its edge to the wind. The increased wind-surface of the side vane admits of a light wind turning the wheel, so as to present the edge thereof to the wind. When the water falls below a given level, the operation heretofore described is repeated, the engine being thrown into gear. The sections of the side vane are limited in their movements by suitable stops, as the stop i^2 on the movable section I', which stop is formed by bending the arm *i* so as to form an offset, as shown.

What I claim as new is—

1. In a wind-wheel, the combination, with the governor-vane, of a pivoted section for increasing the area or wind-surface of the said vane, and provided with an arm and a flexible connection between said arm and the tail-vane, substantially as and for the purpose specified.

2. In a wind-engine, the combination, with the tail-vane and the side vane, of a section applied to the side vane for increasing its area, and connected with the tail-vane for turning its edge to the wind when released, substantially as described.

3. In a wind-engine, the combination of the side vane adapted to expand, the tail-vane, and a connection between the two vanes, and a governor-weight connected with the said vanes to hold the tail-vane in the wind and the side vane in a contracted position, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EZRA PARKER.

Witnesses:
C. E. WINSLOW,
M. G. EASTMAN.