

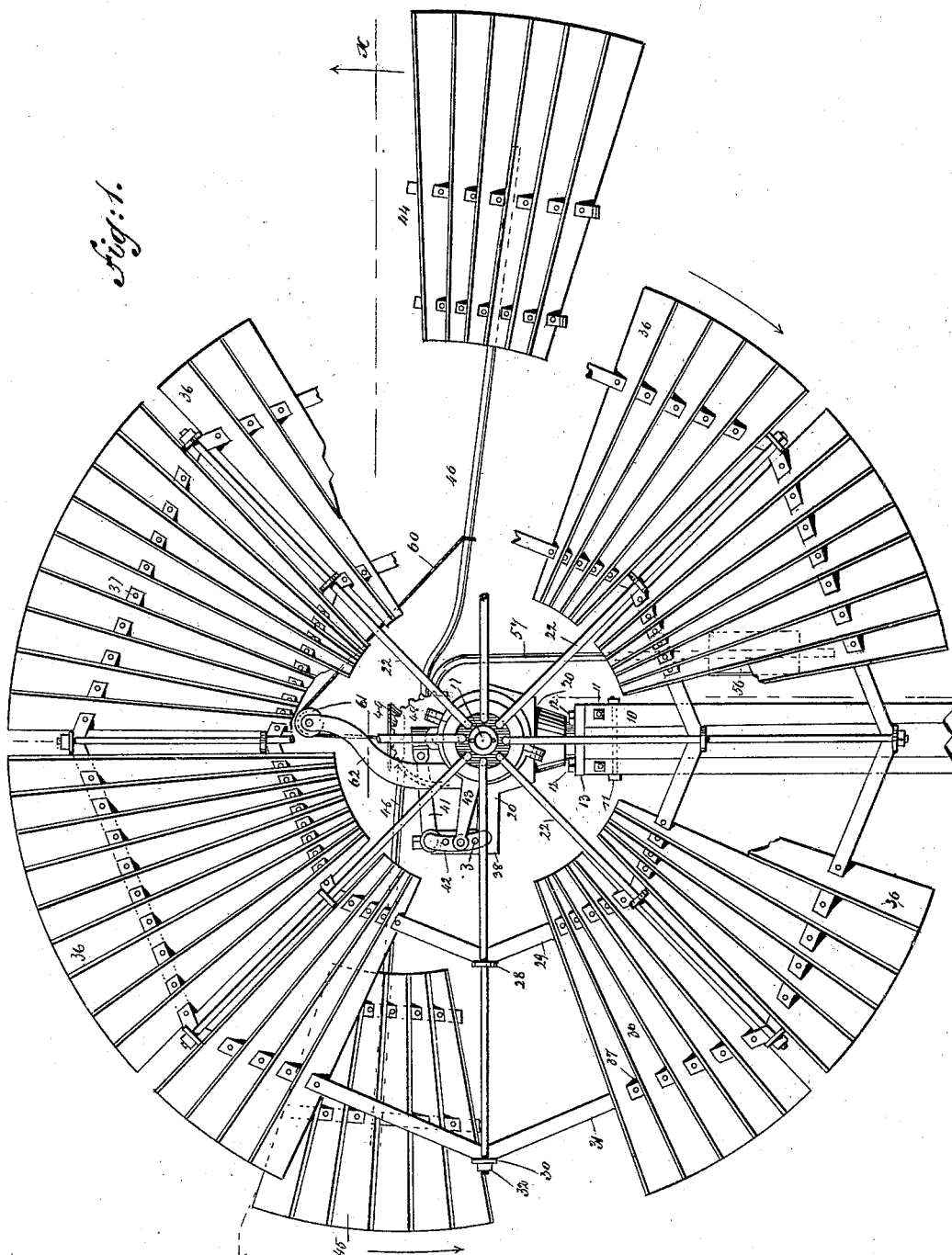
(No Model.)

3 Sheets—Sheet 1.

J. S. MARSHALL.
WINDMILL.

No. 385,676.

Patented July 3, 1888.



WITNESSES:

Chas. C. Mearns
G. Sedgwick

INVENTOR:

J. S. Marshall
BY *Munn & Co*
ATTORNEYS.

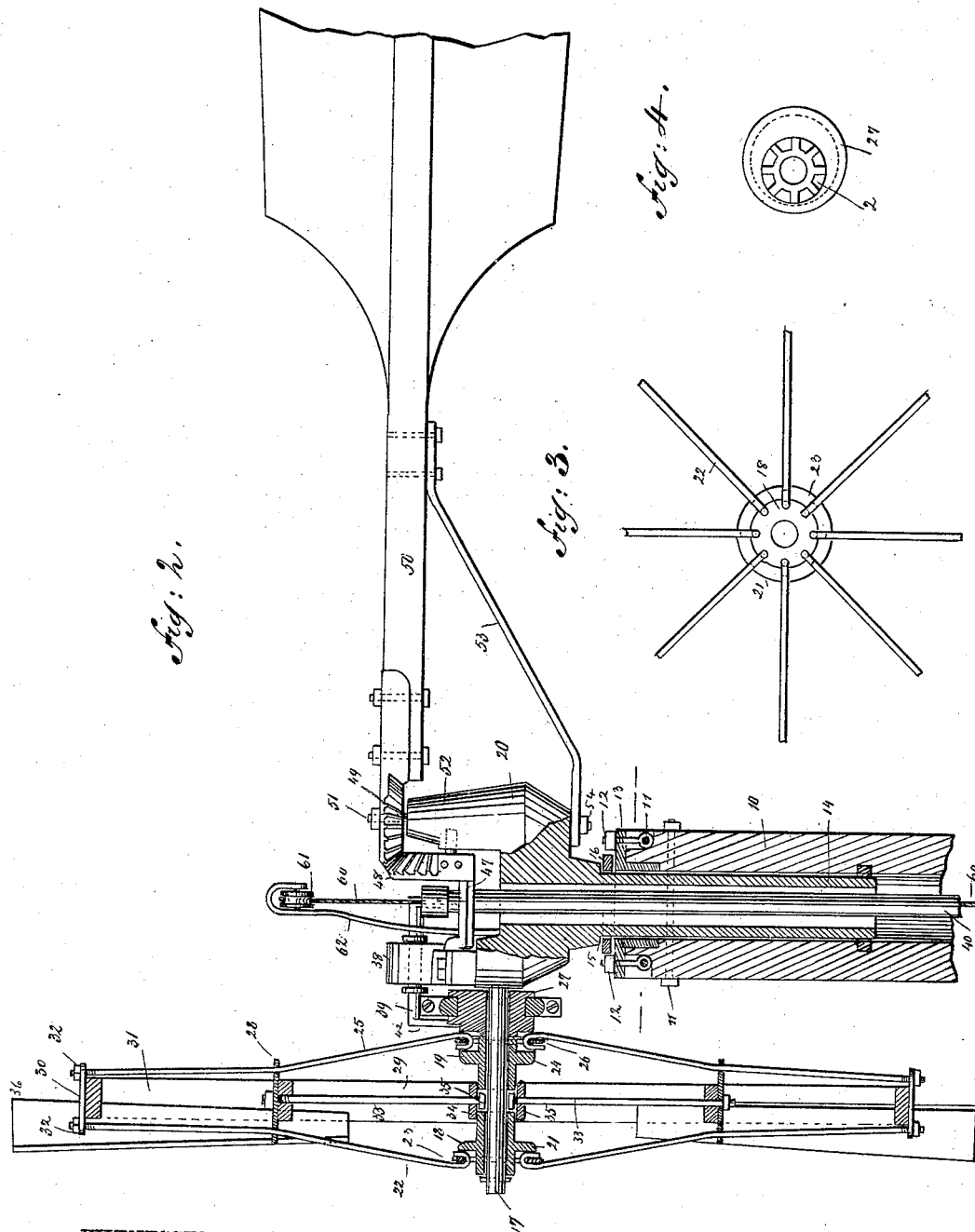
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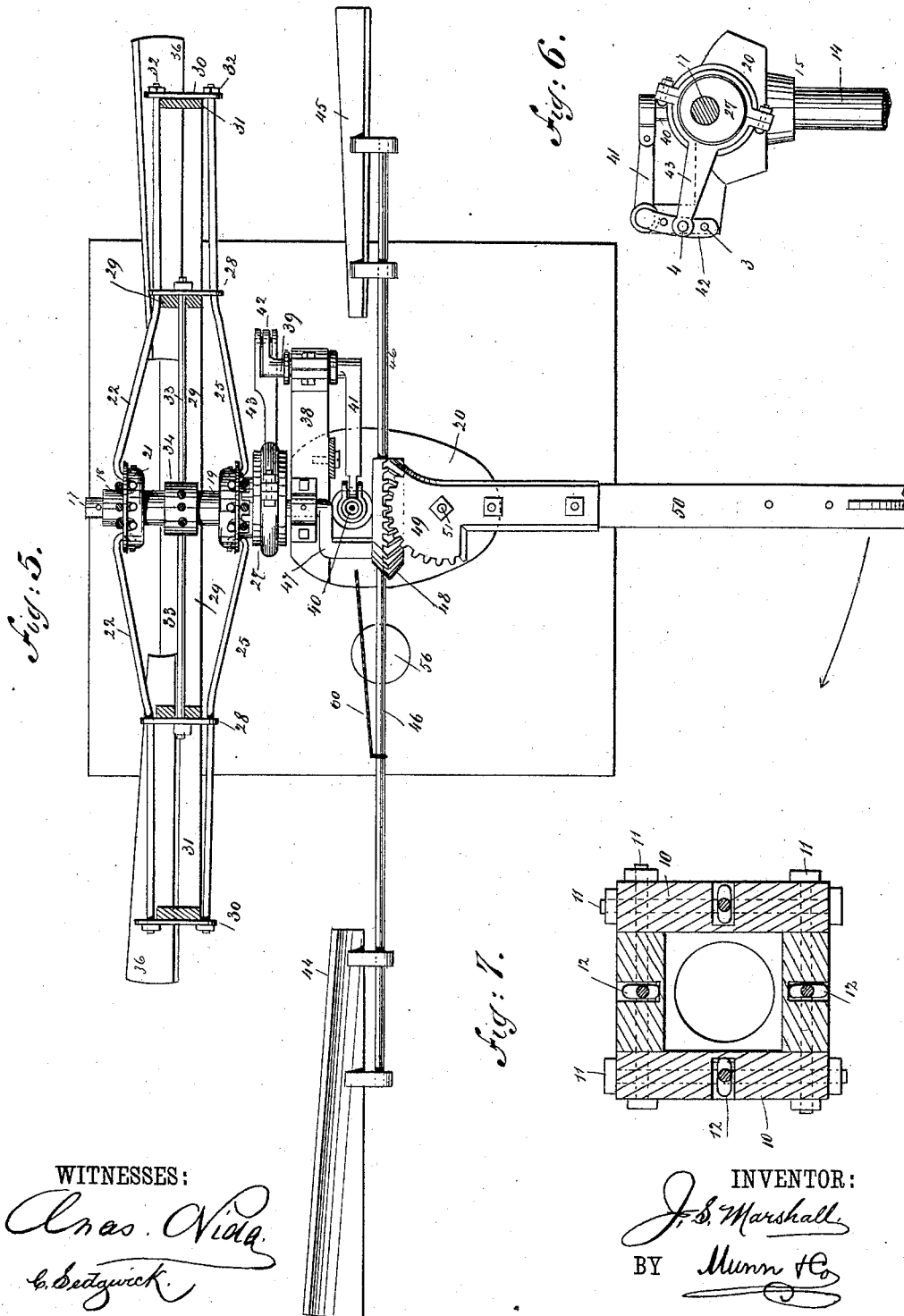
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WINDMILL.

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WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JOSEPH S. MARSHALL, OF CLEAR WATER, KANSAS, ASSIGNOR OF ONE-HALF TO CONNOR W. LEEDOM, OF SAME PLACE.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 385,676, dated July 3, 1888.

Application filed October 29, 1887. Serial No. 253,683. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH STANLEY MARSHALL, of Clear Water, in the county of Sedgwick and State of Kansas, have invented a new and Improved Windmill, of which the following is a full, clear, and exact description.

This invention relates to windmills, the object of the invention being to provide a mill which is of simple construction, and which consequently may be manufactured at a low cost, and one wherein the parts shall be so connected that the bolts will not be apt to become loose when the wood-work of the mill is exposed to the action of the elements.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a face view of my improved form of mill, parts being broken away and a part of the fans being removed in order to disclose the construction of the mill. Fig. 2 is a central sectional elevation of the mill. Fig. 3 is a detail view illustrating the construction whereby the outer spokes are connected to the wheel-hub. Fig. 4 is a detail view of the hub-eccentric, the view being taken just inside of the inner set of wheel-spokes. Fig. 5 is a sectional plan view taken on the broken line *xx* of Fig. 1. Fig. 6 is a detail view illustrating the arrangement of the eccentric and its connections, and Fig. 7 is an enlarged sectional view of the upper end of the mast.

In the mill forming the subject-matter of this application the upper portion of the mast consists of a box-like structure, 10, that is made up of four boards that are fastened together at their upper ends by bolts 11, said bolts passing through eyebolts 12, which extend upward through apertures formed in the cap 13, the cap being held to the upper end of the mast by nuts, which engage the extending ends of the eyebolts 12. The turn-table or mill head 20 is provided with a downwardly-extending tubular flange, 14, which passes through the central aperture in the cap 13, a shoulder, 15, that is formed upon the mill-head resting upon a washer, 16, which washer in turn rests upon the cap 13.

To one side of the mill-head there is rigidly connected an outwardly-extending shaft, 17, upon which there is loosely mounted the hub

of the wheel, said hub consisting of an outer section, 18, and an inner section, 19, the section 18 being formed with a single flange, 21, that is recessed to receive the hooked ends of spokes 22, which spokes engage with a collar, 23, that surrounds the end of the hub section 18, as is probably best shown in Figs. 2 and 5.

The hub-section 19 is formed with a flange, 24, that is also recessed to receive the hooked ends of the inner spokes, 25, which spokes engage a collar, 26, as illustrated, and beyond this collar 26 there is an eccentric, 27, formed upon the hub-section 19, the outer face of the eccentric being recessed, as shown at 2 in Fig. 4, these recesses being formed to accommodate the hooked ends of the spokes 25.

The spokes 22 and 25 pass through apertures that are formed in corner-brackets or retaining-plates 28, by which the sections of the inner octagonal frame, 29, are held together, the spokes passing on beyond said frame to other brackets or plates, 30, by which the sections of the outer octagonal frame, 31, are held to place, the ends of the spokes being engaged by nuts 32, as illustrated. The plates 28 serve only as guides for the spokes 22 and 25, the plates being held in position by short central spokes, 33, which pass through the plates and through a collar, 34, which overlaps the approaching ends of the hub-sections, heads 35, formed on the inner ends of the spokes 33, resting beneath the collar 34 and between the approaching ends of the two hub-sections.

The fans or blades 36 are mounted in diagonal slots that are cut in the sections of the frames 29 and 31, the fans being held to place by pins or bolts 37, as illustrated in the drawings.

At one side of the head or turn table 20 there is an outwardly-extending arm, 38, which serves as the support for the bearing of the main crank-shaft 39, the inner crank-arm, 41, of said shaft being connected to the pitman or pump-rod 40, and this arm extends in about a horizontal line inward from the main portion of the shaft, while the other arm, 42, is curved and extends downward from the main body of the shaft to be connected to the eccentric-rod 43, the end of this rod being bifurcated to receive the arm 42, which arm is formed with a number of apertures, 3, through any one of which the connecting-bolt 4 may

be passed, the stroke of the pitman or pump-rod being varied as the connection between the eccentric-rod and the arm 42 is changed.

The novel governor which I employ in connection with my improved windmill consists of fans 44 and 45, the blades of which are mounted at an opposite angle to those of the main portion of the wheel, and these fans are secured to the ends of a rod or bar, 46, which rod or bar is mounted upon a shaft, 47, that is mounted in proper bearings upon the mill-head 20, the shaft being cranked in order to provide for the necessary play of the pitman or pump-rod.

The shaft 47 carries a segmental gear, 48, which gear engages with a similar segmental gear, 49, that is bolted to the vane-shaft 50, the vane-shaft being connected to the head 20 by a bolt, 51, the axis of which is concentric with that of the gear 49, the bolt extending upward from a standard, 52, that is formed upon the mill-head 20, the shaft 50 being further supported by a brace, 53, which is bolted to the shaft and held to the under side of the mill-head by a bolt, 54, the axis of which is in the same vertical line as that of the bolt 51.

The governor and vane are normally held in the position in which they are shown in the drawings by the action of a weight, 56, that is adjustably connected to a downwardly-extending lever-arm, 57, which arm is connected in turn to the shaft 47.

Such being the general construction of the mill, it will be seen that when the mill is in the wind the wheel will turn in the direction of the arrow shown in connection therewith in Fig. 1, but that the effect of the wind upon the governor-fans 44 and 45 will be to move said fans in the direction of the arrows shown

in connection therewith in said Fig. 1; but as the fans 44 and 45 are so moved the vane will be moved in the direction of the arrow shown in Fig. 5, and the wheel will be turned out of the wind—that is, with its edge toward the wind, the speed of the mill being regulated by adjusting the position of the weight 56, which tends to hold the fans 44 and 45 in their normal position against the action of the wind thereon.

In order that the mill may be thrown out of the wind by an attendant, I connect a chain or rope, 60, to the bar 46 at a point between the mill-head and the fan 44, and this cord or chain I pass over a sheave, 61, that is carried by an arm, 62, which extends upward from the mill-head, the end of the cord or chain 60 being carried downward to within reach from the ground.

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

In a windmill, the combination, with a central sectional hub, of inner and outer polygonal frames, brackets 28, mounted at the angles of the inner polygonal frame, a collar which overlaps the hub-sections, spokes passing through said collar and through the bracket 28, spokes 22 and 25, connected to the hub-sections and arranged to pass through apertures formed in the brackets 28, and outer brackets, 30, arranged at the angles of the outer polygonal frame, to which brackets the spokes 22 and 25 are connected, as and for the purpose stated.

JOSEPH S. MARSHALL.

Witnesses:

B. B. HAMMERS,
G. W. MARTIN.