(No Model.) 2 Sheets—Sheet 1.

R. LEONHART, Jr.

WINDMILL.

No. 601,972. Patented Apr. 5, 1898.

FIG. 1.

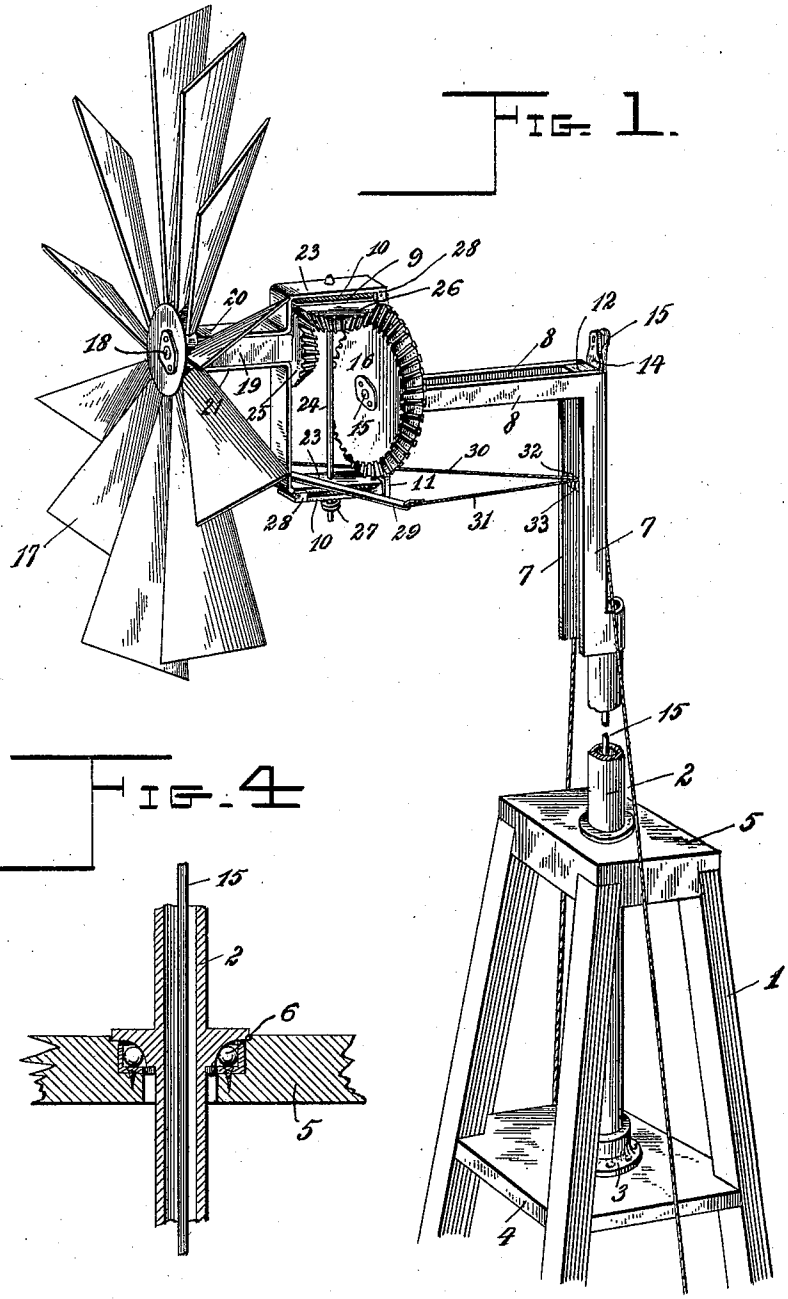


FIG. 4.

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(No Model.) 2 Sheets—Sheet 2.

R. LEONHART, Jr.

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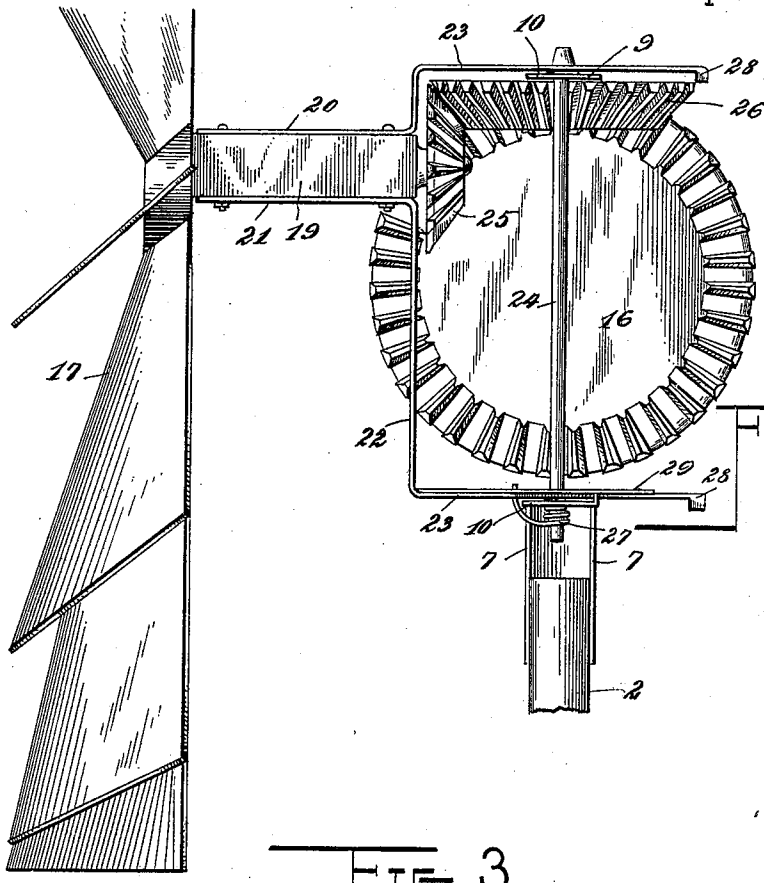
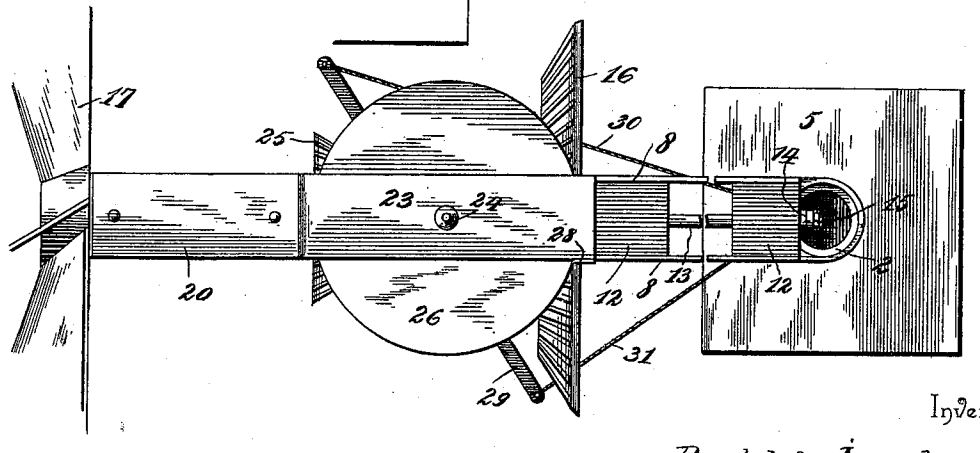


FIG. 2.

FIG. 3.



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UNITED STATES PATENT OFFICE.

RUDOLPH LEONHART, JR., OF FRESNO, CALIFORNIA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 601,972, dated April 5, 1898.

Application filed August 6, 1897. Serial No. 647,363. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH LEONHART, Jr., a citizen of the United States, residing at Fresno, in the county of Fresno and State of California, have invented a new and useful Windmill, of which the following is a specification.

This invention relates to windmills, its object being to simplify and improve the construction thereof, whereby the wind-wheel may be easily and quickly turned into and out of operative position and fewer parts will be required to make an operative device.

With this and other objects in view the invention consists of the several details of construction and combination of parts, as will be hereinafter referred to, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a windmill built in accordance with my invention, the tower being partly broken away and the wind-wheel being in operative position. Fig. 2 is a front elevation thereof, the wind-wheel being turned to its inoperative position. Fig. 3 is a top plan view. Fig. 4 is a detail sectional view of a ball-bearing for the tubular mast.

Similar reference-numerals indicate similar parts in the several figures.

1 indicates the tower, and 2 the tubular mast, which is seated at its lower end in a step-bearing 3, secured on a suitable support 4, which latter is perforated for the passage of the pump-rod.

5 indicates a platform secured on the upper end of the tower, through which the tubular mast 2 extends downwardly to the step-bearing 3, and this platform is provided with a suitable ball-bearing 6 for the mast.

To the upper end of the tubular mast are secured two spaced parallel vertical arms, which lie in a vertical plane to one side of the mast, and from the upper ends of these vertical arms the horizontal arms 8 extend. The arms 8 are preferably integral with the arms 7, and to their outer ends a U-shaped frame 9 is rigidly connected. This frame preferably consists of a metal bar bent to form the upper and lower horizontal members 10 and the vertical member 11, the latter being secured midway its length to the ends of the arms 8.

12 indicates bearings secured between the arms 8, and in these bearings a shaft 13 is journaled and provided at one end with a crank 14, adapted to be connected to the pump-rod 15, and at its other end, within the U-shaped frame 9, with a beveled gear 16.

17 indicates the wind-wheel, the shaft 18 of which is journaled in a bearing 19, clamped between two metal bars 20 and 21, which bars are so bent as to form another U-shaped frame 22, the upper and lower horizontal members 23 of which are supported, respectively, by the upper and lower horizontal members 10 of the U-shaped frame 9. A vertical shaft 24 extends through the horizontal arms of the U-shaped frames and is supported therein in any suitable manner to permit the frame 22 to turn thereon relatively to the frame 9.

The shaft 18 projects within the frame 22 and carries a beveled pinion 25, and a beveled gear 26, which is mounted on the shaft 24 in the upper end of the U-shaped frame, meshes with the pinion 25 and the beveled gear 16 and transmits motion from the wind-wheel to the pump-rod.

27 indicates a spring which is coiled around the lower end of the shaft 24, below the U-shaped frames, and the ends of this spring are respectively connected to the lower horizontal arm of the frame 9 and the lower horizontal arm of the frame 22. The arms 10 and 23 of the U-shaped frames are provided with lugs 28, which serve as stops to prevent the horizontal arms from moving out of vertical alinement in one direction, and the normal tendency of the spring 27 is to hold the lugs on one arm in engagement with the other arm and thereby maintain the said arms in vertical alinement, and when in this position the wind-wheel will be in operative position. To the lower horizontal arm 23 a lever 29 is secured midway its length, and this lever extends diagonally across the arm, and ropes 30 and 31 are secured to its ends, which ropes respectively pass over pulleys 32 and 33, supported between the vertical arms 7, down to the lower end of the tower, where they are adapted to be secured in any suitable manner and will be within convenient reach of the operator when it is necessary to shift the wind-wheel.

When it is desired to turn the wind-wheel from its operative to its inoperative position,

the operator will release the rope 31 and pull on the rope 30, which will have the effect of turning the U-shaped frames at a right angle to each other against the force of the spring 27, and the wind-wheel will be brought around to lie parallel with the U-shaped frame 9, when by securing the rope 30 it will be maintained in this position and will be free to follow the course of the wind without being turned, as it will always present the ends of the blades toward the wind when in this position. In order to turn the wheel from its inoperative to its operative position, the rope 30 will be released and the spring 27 will automatically throw the wheel into operative position, and by securing the rope 31 it will be held firmly in such position.

From the foregoing description it will be seen that the parts constituting my improved windmill are few and simple and are not liable to get out of repair, that a vane is entirely dispensed with, and that by simply releasing the rope which holds the wind-wheel in its inoperative position the latter will be automatically turned to its operative position.

It will be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what I claim is—

1. In a windmill, the combination with the tower and the mast supported to turn axially therein, of a frame rigidly connected to the upper end of the mast, a frame pivotally supported by the first frame and arranged to swing horizontally, a wind-wheel carried by the pivoted frame and adapted to swing horizontally into and out of the wind, and means to turn the wind-wheel frame on its pivot and secure it in position, substantially as described.

2. In a windmill, the combination with the tower and the mast supported to turn axially therein, of a U-shaped frame rigidly connected to the upper end of the mast, a similar U-shaped wind-wheel-supporting frame, the upper and lower horizontal arms of which are respectively supported on the upper and lower horizontal arms of the first-named frame, a vertical shaft supported by the horizontal arms of the said frames and serving as a pivot for the supporting-frame, a wind-wheel carried by the said frame, and means to turn the wind-wheel frame on its pivot and secure it in position, substantially as described.

3. In a windmill, the combination with a tower and the mast supported to turn axially therein, of a U-shaped frame rigidly connected to the upper end of the mast, a similar U-shaped frame, the upper and lower horizontal arms of which are respectively supported on the upper and lower arms of the first-named frame, a vertical shaft supported by the horizontal arms of the said frames and serving as a pivot for the supported frame, a wind-wheel carried by the pivoted frame, a spring coiled around the lower end of said shaft and having its ends secured to the lower horizontal arms of the respective frames to turn the pivoted frame in one direction, a lever and rope secured to the pivoted frame to turn it in the opposite direction, and stops on the frames to limit the movement of the pivoted frame by the spring, substantially as described.

4. In a windmill, the combination with a tubular mast and the wind-wheel, of two oppositely-disposed U-shaped frames, one being pivotally supported by the other, the supporting-frame being rigidly connected to the mast and the pivoted frame carrying the wind-wheel, a spring to turn the wind-wheel frame on its pivot, in one direction, stops to limit the movement of the said frame by the spring, and means to turn said frame in the opposite direction, substantially as described.

5. In a windmill, the combination with a tubular mast and the wind-wheel, of two oppositely-disposed U-shaped frames, one being pivotally supported by the other, the supporting-frame being rigidly connected to the mast and the pivoted frame carrying the wind-wheel, a spring to turn the wind-wheel frame on its pivot in one direction, stops to limit the movement of said frame by the spring, a lever secured to the lower horizontal arm of the pivoted frame and extending diagonally across it, and ropes secured to the ends of said lever to turn the wind-wheel frame on its pivot and secure it in position, substantially as described.

6. In a windmill, the combination with the tower, the tubular mast supported to turn axially therein, and the pump-rod, of spaced vertical arms secured to the upper end of the mast, spaced horizontal arms extending from the upper ends of said vertical arms, a U-shaped frame rigidly secured to the ends of said horizontal arms, bearings secured between said horizontal arms, a shaft journaled in said bearings and having a crank connection at one end of the pump-rod, a beveled gear on the other end of said shaft within the U-shaped frame, a second U-shaped frame pivotally supported by the first-named frame, a wind-wheel shaft journaled in bearings carried by the said second frame, a beveled pinion on the wind-wheel shaft, a beveled gear meshing with the said pinion and the beveled gear on the crank-shaft, and means to turn the windmill-frame on its pivot, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

RUDOLPH LEONHART, JR.

Witnesses:
S. F. COWAN,
WM. SHAW.