

(No Model.)

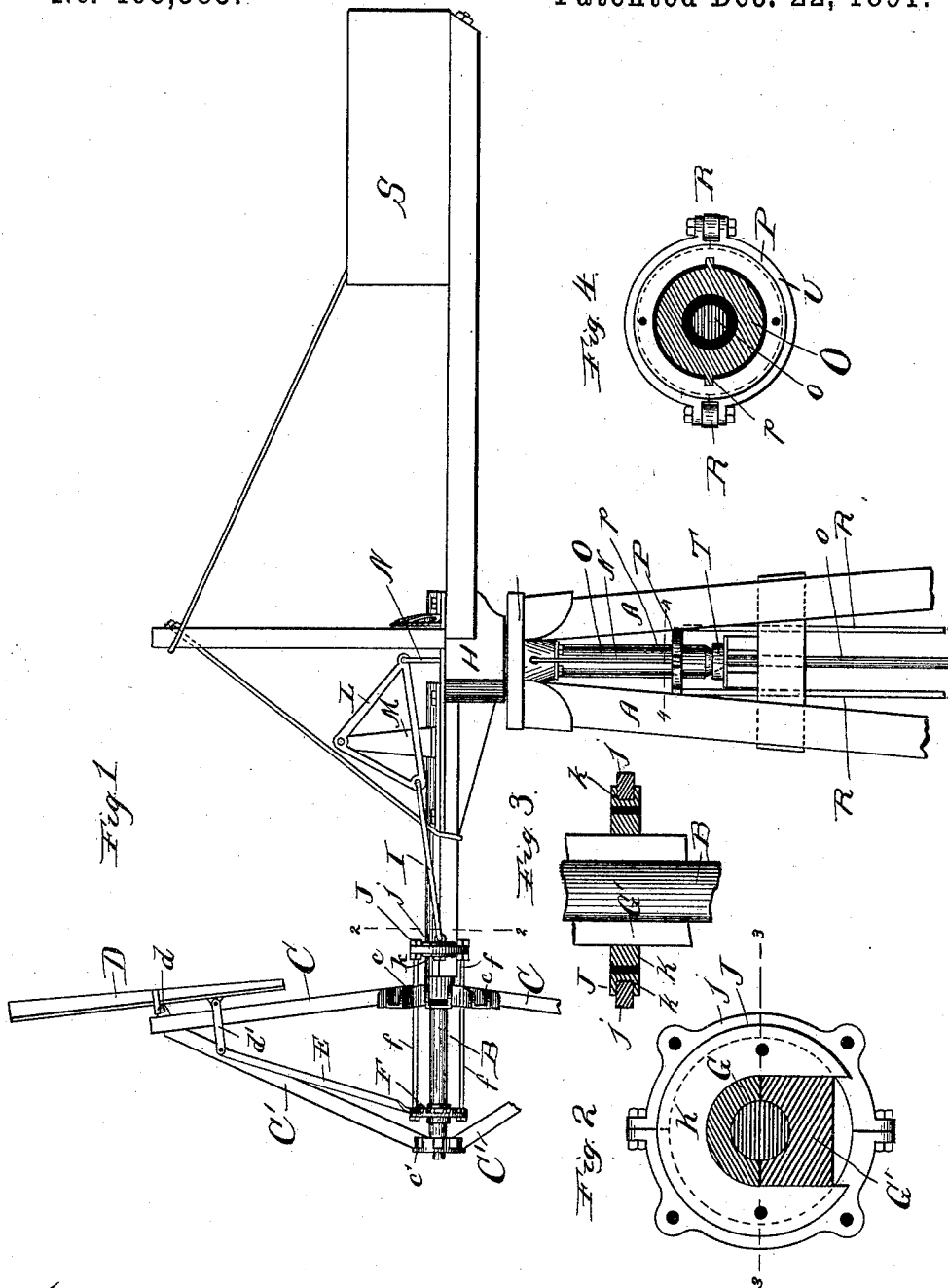
W. D. NICHOLS, Dec'd.

M. A. NICHOLS, Administratrix & B. D. NICHOLS, Administrator.

WINDMILL.

No. 465,583.

Patented Dec. 22, 1891.



Witnesses:

Geo. C. Curtis.

A. W. Munday.

Inventor:

W. D. Nichols.

By Munday, Evans & Hidecock.

His Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM D. NICHOLS, OF ELGIN, ILLINOIS; MARGARET A. NICHOLS, ADMINISTRATRIX, AND B. D. NICHOLS, ADMINISTRATOR, OF SAID WILLIAM D. NICHOLS, DECEASED.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 465,583, dated December 22, 1891.

Application filed November 25, 1889. Serial No. 331,416. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. NICHOLS, a citizen of the United States, residing in Elgin, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Windmills, of which the following is a specification.

This invention relates to the means used for controlling the mill from the ground, the object being to so change the construction of the devices used for this purpose as to simplify them and render them less liable to get out of order as well as cheaper to make.

The nature of the invention will fully appear from the accompanying drawings, when considered in connection with a description which I give below.

In said drawings, Figure 1 is a side elevation of a mill embodying my present improvement. Fig. 2 is an enlarged vertical cross-section on line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a horizontal section on the line 4 4 of Fig. 1.

In said drawings, A represents the tower of the mill.

B is the main shaft, upon which the wheel is mounted, *c* representing the hub or spider of the wheel, and C the radial arms thereof.

D represent the fans, which are grouped in sections in the usual manner and hinged to the arm C at *d*.

C' represent braces extending from the outer head *c'* to the outer ends of the arms C.

The vanes are swung upon the hinge *d* by means of the unyielding levers E and the links *d'*, the latter attached to the cross-bar of the fans inside the pivotal point, upon which they swing, and the former solidly attached to and rigid with a head F, mounted upon the shaft B, with freedom to slide thereon. Extending from the head F backward to another head J are rods *f*, the same passing through spaces or openings in the spider *c*, so that said head J will move in unison longitudinally with the head F. Said head J is composed of an outer ring *j*, to which the rods *f* are secured, and which is made in halves bolted together, as illustrated at Fig. 2, and a saddle K, which is adapted to be slipped over and rest upon

the frame of the mill, which at this point is composed of the upper semicircular piece G and the under angular part G', forming a bearing for the shaft B. The saddle K is free to slide upon the parts G G', but of course has no rotary movement thereon, as the part G' is adapted to prevent all rotation. The ring *j* is, however, permitted to rotate upon the saddle and is confined on the saddle by being let into the exterior groove *k* thereof.

From the shoe K two rods I I extend back and are freely jointed to swinging triangles L L, mounted upon standards M and having connecting-rods N depending from one corner and passing through the turn-table H at either side of the tube Q down to the ring P, hereinafter mentioned. The pipe O encircles the shaft *o*, which is driven by the mill and moves with the turn-table, said ring P being keyed thereto, as shown, by ribs *p* upon opposite sides of the tube. Said ring P is inclosed by an exterior ring U, which serves as a support for the rods R, which are supposed to extend within reach of the ground, and as it is not desirable that these latter rods should move about the axis with the mill as it turns upon the turn-table said ring U is loosely mounted upon the ring P. It may be preferable to let the outer ring into the interior ring, as indicated by the broken lines in Fig. 4. By this construction I obviate all tendency which has existed in previous constructions to twist the shifting-rods N around the axis about which they move.

The counter-balance of the mill is shown at S. The step of the mill is shown at T.

The operation of my invention is as follows: If it is desired to throw the mill out of operation, the rods R are lifted upon, thereby raising the ring P and the rods N and also tilting the triangles L. This results in drawing the heads J and F toward the turn-table and in a consequent raising of the inner ends of the fans, the change of position of the fans being regulated by the extent of the lift given to the rods R. To put the mill into wind again it is only necessary to draw the rods R downward, when the operation described will be reversed and the fans lifted to the vertical.

By my construction I reduce the number of joints from the number heretofore employed, extend the bearing for the main shaft clear to the hub of the wheel, obviate twisting of the shifting-rods N, a tendency which
 5 has existed in previous constructions, and also obviate a similar tendency to twist on the part of the rods I.

It will be noted that the open-bottomed saddle prevents any accumulation of water between it and the frame or support upon which it slides and also between it and the ring which rotates upon it, as is the case where the saddle entirely incloses the support; also
 10 that the interior surface of the rotating ring *j* is so formed as to prevent any detention of water by it, inasmuch as such water as finds its way into the ring runs off readily. These features both tend to obviate any "freezing"
 15 of the head in cold weather, which is likely to interfere with its perfect working. The removable ring and open-bottom feature of the saddle also facilitate their removal from the support and obviate taking the mill to
 20 pieces or removing it from its shaft when the sliding head is to be repaired.

I claim—

1. The combination, in a windmill, of a sliding head mechanically connected to and serving to feather the sails, and a slideway or support therefor, the head having an open-bottomed saddle resting on said support, whereby
 30 the saddle is rendered readily removable and

prevented from freezing to its support, substantially as set forth.

2. In the sliding head of a windmill, said head being mechanically connected to and serving to feather the sails, the combination, with a surrounding rotating ring, of an open-bottomed saddle upon which the ring is
 40 mounted and from which it may be detached, substantially as set forth.

3. In the sliding head of a windmill, a surrounding rotating ring, such as *j*, the interior surface of which is self-draining, in combination with an open-bottomed saddle having an exterior groove in which said ring rotates,
 45 substantially as set forth.

4. The combination, in a windmill, with the sliding head F and the unyielding levers E,
 50 rigid upon said head, of the fans D, hinged to the wheel at *d*, and the links *d'*, connecting the fans to said levers inside said pivots *d*, substantially as set forth.

5. The combination, with the turn-table, of a depending tube O, rigid with said turn-table, a keyed and sliding ring P, mounted on the tube, the shifting-rods N, connected to the head for operating the wheel-fans, and suitable means for sliding said ring, operable from
 60 the ground, substantially as set forth.

WILLIAM D. NICHOLS.

Witnesses:

H. M. MUNDAY,
 EDW. S. EVARTS.