

No. 679,346.

Patented July 30, 1901.

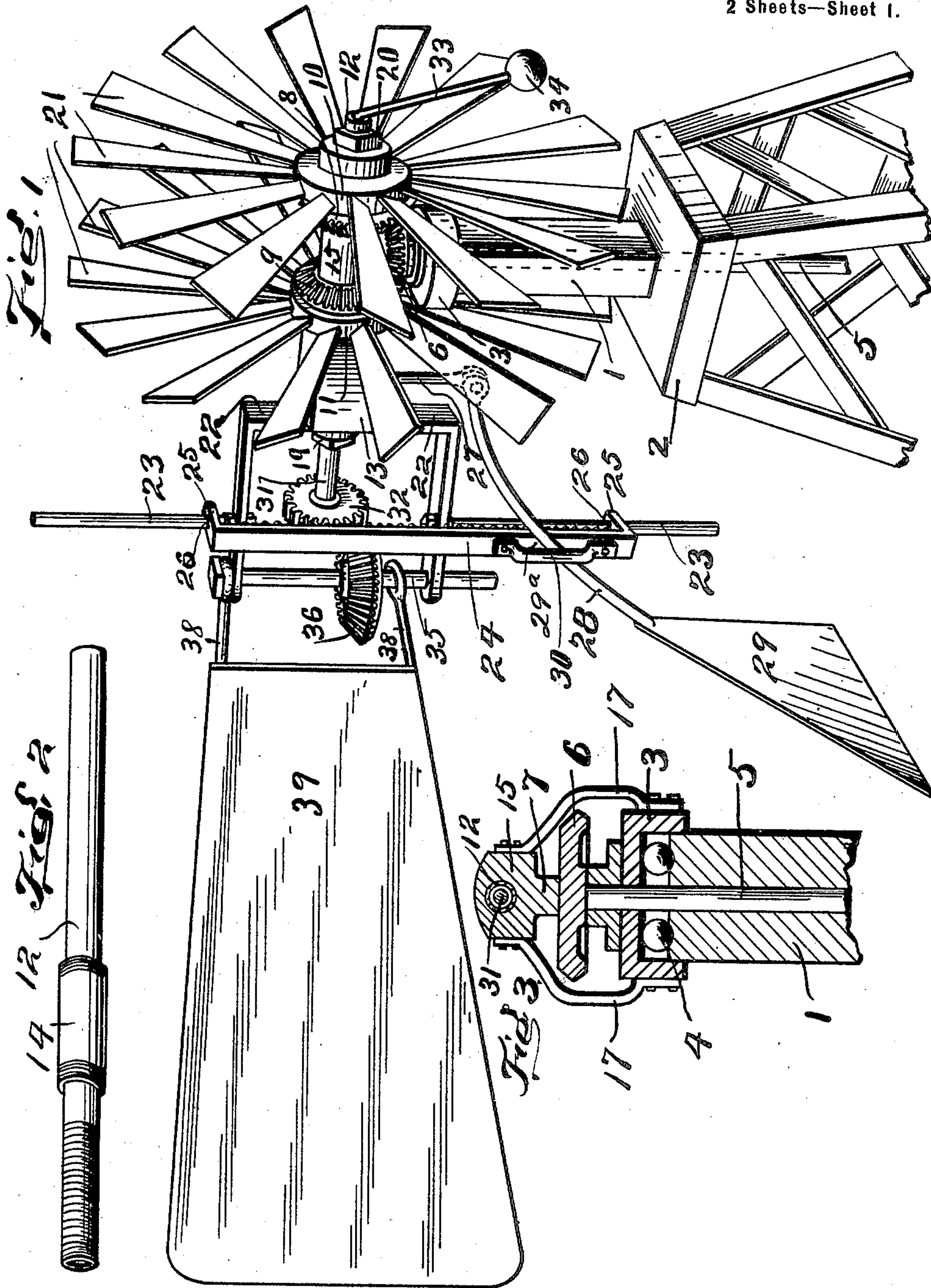
J. C. SUMMERS & H. E. YODER.

WINDMILL.

(No Model.)

(Application filed May 31, 1901.)

2 Sheets—Sheet 1.



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7-14

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Fig. 4.

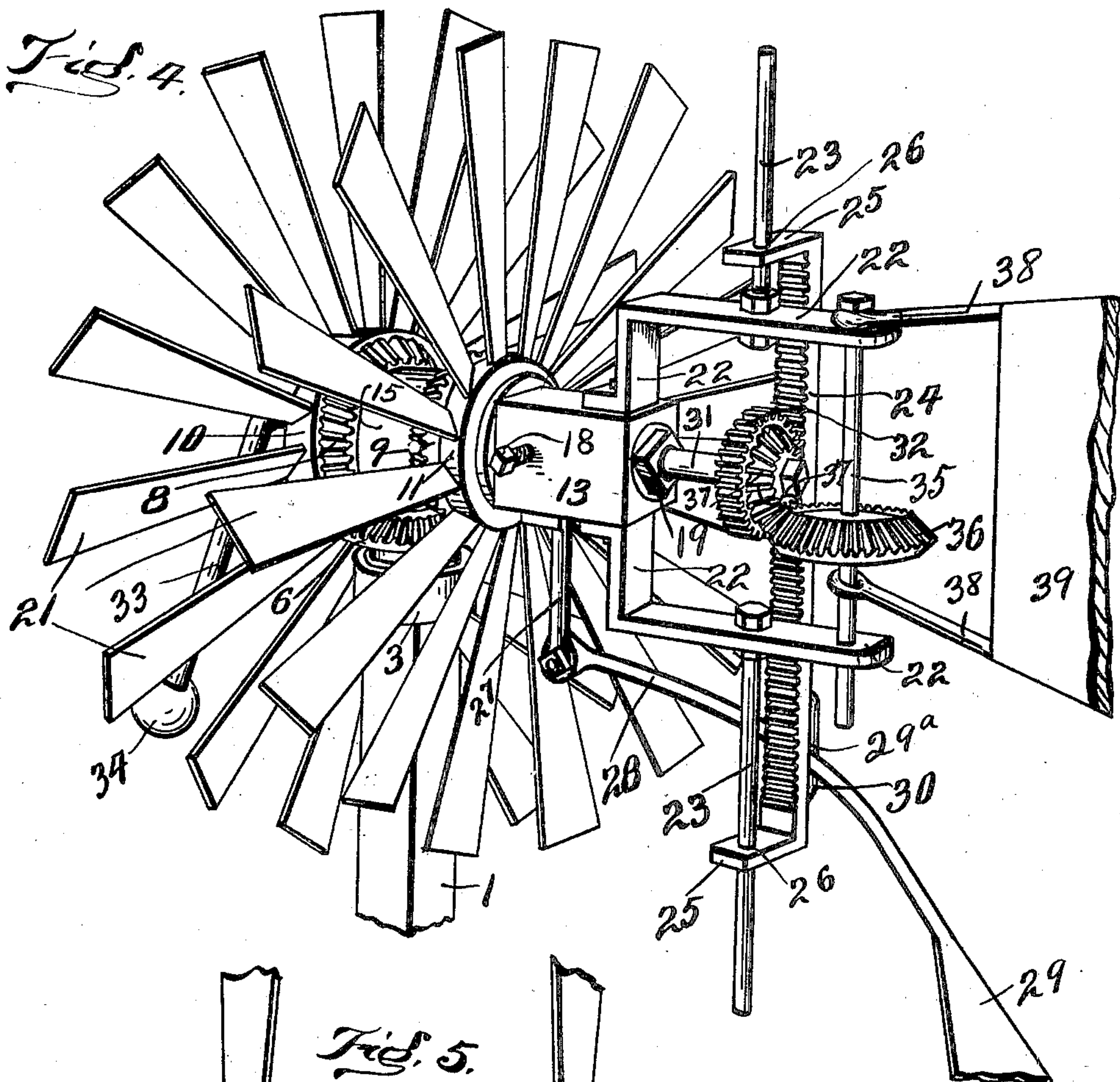
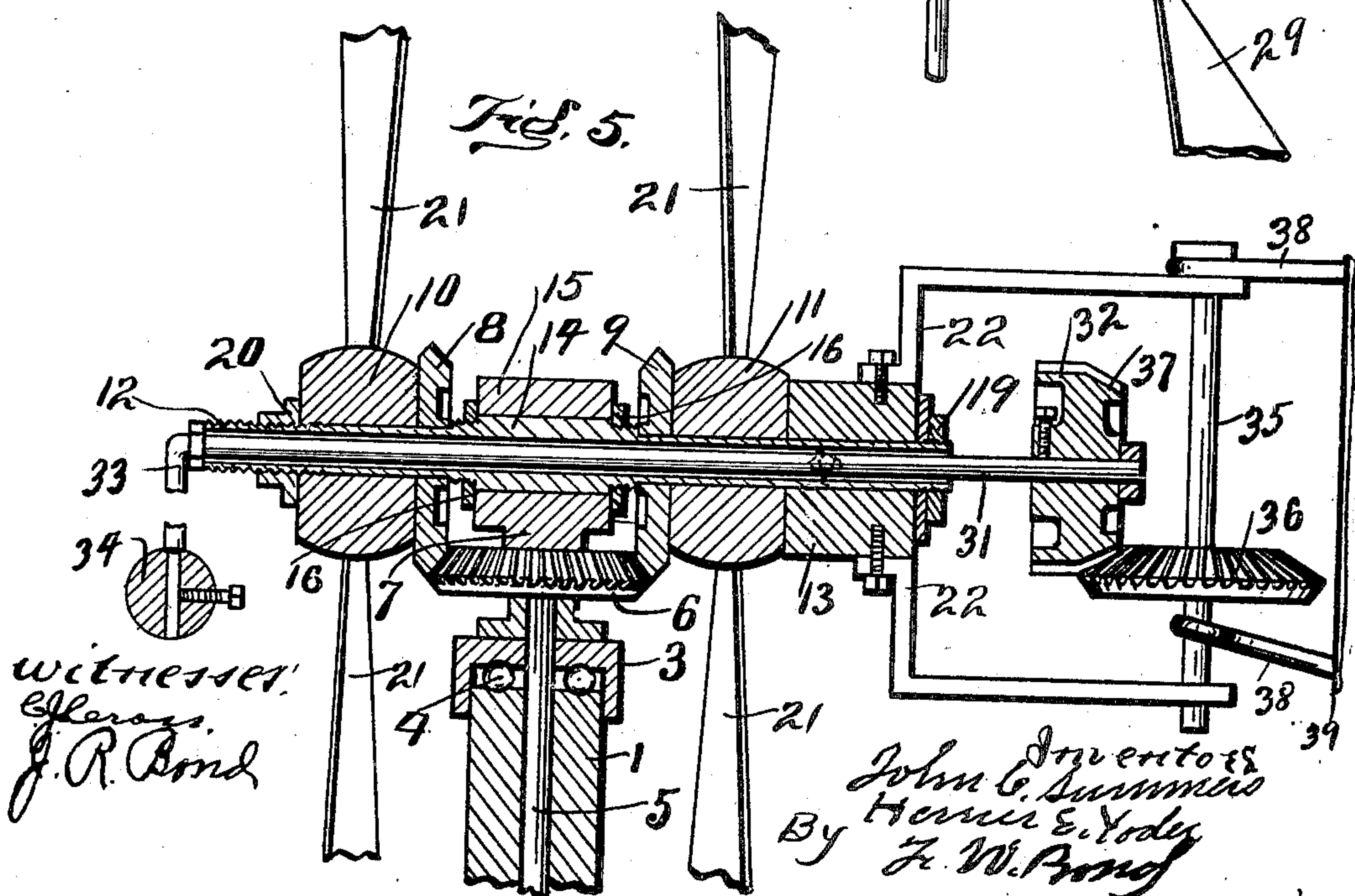


Fig. 5.



UNITED STATES PATENT OFFICE.

JOHN C. SUMMERS AND HOMER E. YODER, OF MOUNT HOPE, OHIO.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 679,346, dated July 30, 1901.

Application filed May 31, 1901. Serial No. 62,654. (No model.)

To all whom it may concern:

Be it known that we, JOHN C. SUMMERS and HOMER E. YODER, citizens of the United States, residing at Mount Hope, in the county of Holmes and State of Ohio, have invented certain new and useful Improvements in Windmills; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a perspective view of wind-wheels, showing the same properly mounted and connected. Fig. 2 is a detached view of the hollow shaft. Fig. 3 is a transverse section of the hollow shaft and its head, showing the connecting-strips properly located. Fig. 4 is a perspective view of the wind-wheels, showing the same in a different position from that shown in Fig. 1. Fig. 5 is a longitudinal section of the hollow shaft, showing the different parts connected thereto properly arranged and connected.

The present invention has relation to windmills; and it consists in the novel construction hereinafter described, and particularly pointed out in the claims.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the post or support, which is securely connected in any convenient and well-known manner to the top of the derrick 2 and extends upward a sufficient distance to properly clear the blades or fans of the windmill from the top or upper end of the derrick.

To the top or upper end of the post 1 is journaled the cap or head 3, and between the top or upper end of the post 2 and the bottom or under side of the cap 3 is located the antifriction-balls 4, said balls being interposed for the purpose of reducing the friction and allow the windmill proper to revolve in a horizontal plane, together with the different parts connected thereto.

The power-shaft 5 is properly journaled in the post 2 and extends upward through the cap or head 3, and to the top or upper end of

which is connected the beveled wheel 6, said beveled wheel being held in proper position by means of a suitable head or nut 7, formed upon the top or upper end of the power-shaft 5.

Upon opposite sides of the beveled wheel 6 are located the beveled wheels 8 and 9, which beveled wheels are securely attached in any convenient and well-known manner to the hubs 10 and 11, which hubs are loosely mounted upon the hollow shaft 12, which hollow shaft is formed of such a length that it will properly support and carry the hubs 10 and 11 and the head 13.

The hollow shaft 12 is provided with the enlarged portion 14, which is for the purpose of properly spacing the gear-wheels 9 and 10 and at the same time providing a means for holding the head 15 in proper and fixed position by means of the nuts 16, said nuts being located upon screw-threaded portions of the enlarged portion 14 of the hollow shaft 12.

It will be understood that the head 15 rotates in a horizontal plane with the head or connecting block 3, and for the purpose of holding the head 15 in proper position with reference to the head or block 3 suitable connecting straps or bars 17 are provided and connected at their ends to the head 15 and to the head or block 3, said straps being bent, as illustrated, so as to provide room for the gear-wheel 6.

Upon the hollow shaft 12 and adjacent to the wind-wheel hub 11 is located the head 13, which head is held in fixed position by a suitable set-screw 18, and for the purpose of preventing any end movement of the hollow shaft 12 the nuts 19 and 20 are provided, which nuts are located upon screw-threaded portions of the hollow shaft 12, it being understood that the nuts 19 and 20 should be so adjusted that the hubs 10 and 11, together with the beveled wheels 8 and 9, will be free to rotate upon the hollow shaft.

For the purpose of causing the wind-wheels proper to rotate in opposite directions the blades 21 are set at opposite angles, as illustrated in the drawings.

In the drawings we have illustrated the blades 21 formed tapering, their wider ends

being located at the outer ends of said blades; but it will be understood that we do not desire to be confined to any particular form of blades 21, and that whatever form of blades is
5 used they must be set in opposite directions so as to give opposite rotation to the wind-wheels proper.

To the head 13 are securely attached the angled bars 22, to which angle-bars are se-
10 curely connected the guide rods or bars 23, said guide rods or bars being located one above the other and are for the purpose of guiding and holding in proper relative position the rack-bar 24 by means of the heads or
15 flanges 25, which heads or flanges are provided with apertures 26, through which apertures the guide rods or bars 23 pass, as illustrated in the drawings.

To the head 13 is securely attached in any
20 convenient and well-known manner the downward-extending arm 27, to which downward-extending arm is pivotally attached the curved arm 28, which curved arm is provided with the blade 29. Said blade when in its
25 normal position hangs downward, as illustrated in Fig. 1.

The curved arm 28 is extended through a slot 29^a, preferably formed by means of the bar 30, which bar is securely attached to the
30 rack-bar 24; but it will be understood that this construction may be varied, as the only object is to provide a slot through which the curved arm 28 is to be passed. The object and purpose of providing a slot 29^a is to al-
35 low the blade 29 to move up and down by the action of the wind a limited distance without affecting the rack-bar, as hereinafter described.

Within the hollow shaft 12 is located the
40 shaft 31, to which shaft is securely attached the pinion 32, said pinion meshing with the rack-bar 24. The shaft 31 is provided at the opposite end from that to which the pinion 32 is connected with the lateral extension 33
45 and upon which lateral extension is connected the adjustable weight or counterbalance 34. When the counterbalance is down, the rack-bar 24 is in its normal position with reference to the pinion 32.

To the angled arm 22 is journaled the shaft
50 35, and upon which shaft is fixed the beveled gear-wheel 36, which beveled gear-wheel meshes with the beveled gear-wheel 37.

To the shaft 35 is securely connected in
55 any convenient and well-known manner the arms 38, to which arms are connected the vane 39, which vane is of the ordinary construction and formed of a size sufficient to control the horizontal movements of the wind-
60 mill proper.

It will be understood that when the wind is moving at a high rate it will lift the blade 29, carrying with it the curved arm 28, which in turn moves the rack-bar 24 upward, rotating
65 the pinion 32, which in turn rotates the bev-

eled gear-wheel 37, at the same time rotating the gear-wheel 36 and the shaft 35, thereby turning the vane 39 into position to throw the wind-wheel proper out of operative position. When the blade 29 falls, the rack-bar is
70 brought downward, which movement brings the weather-vane 39 into its normal position and in turn the wind-wheels into position to be rotated by wind.

For the purpose of providing a counter-
75 balance, or, in other words, to prevent the blade 29 from being elevated with little wind, the counterbalance 34 is provided, which counterbalance is adjusted on the arm 33 or from the shaft 31, thereby providing an ad-
80 justment for different velocities of wind.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a windmill the combination of a hol-
85 low shaft having mounted thereon two wind-wheels rotatable in opposite direction, a power-shaft provided with a beveled gear at its upper end, gear-wheels loosely mounted upon the hollow shaft and rotatable with the
90 hubs of the two gear-wheels, a rotatable cap mounted upon a fixed post having a head carrying the hollow shaft, a shaft located within the hollow shaft and provided with a weighted arm and a beveled gear-wheel, a
95 gear-wheel meshing with the beveled gear-wheel upon the shaft located in the hollow or fixed shaft and a vane connected to the shaft driven by the beveled gear-wheel on the shaft provided with a weighted arm, a pinion lo-
100 cated on the shaft having the weighted arm, and a rack-bar meshing with the pinion and a blade connected to a pivoted arm, said arm loosely connected to the rack-bar, substantially as and for the purpose specified. 105

2. The combination of a horizontal hollow shaft having mounted thereon wind-wheels provided with blades located at opposite an-
110 gles, gear-wheels rotatable in opposite directions with the opposite rotations of the wind-wheels, a power-shaft provided with a gear-wheel meshing with the oppositely-rotating gear-wheels upon the hollow shaft, a shaft located in the hollow shaft and provided with a weighted arm, a pinion and a beveled gear-
115 wheel fixed to the shaft carrying the weighted arm and a rack-bar meshing with said pinion, means for imparting reciprocating movement to the rack-bar, a shaft provided with a gear-wheel meshing with the gear-
120 wheel upon the shaft having the weighted arm and a vane securely connected to the shaft upon which the beveled gear-wheel is mounted, substantially as and for the purpose specified. 125

3. The combination of a hollow shaft, a wind-wheel loosely mounted thereon, a shaft located within the hollow shaft and provided with a weighted arm and a pinion and a beveled wheel, guide-bars having connected there- 130

to a reciprocating rack-bar meshing with said
pinion, a beveled gear-wheel meshing with
said first-named beveled gear-wheel, a vane
fixed to the shaft of the other beveled gear-
5 wheel, and a pivoted arm connected to the
rack-bar and provided with a blade, substan-
tially as and for the purpose specified.

In testimony that we claim the above we

have hereunto subscribed our names in the
presence of two witnesses.

JOHN C. SUMMERS.
HOMER E. YODER.

Witnesses:

CELSUS POMERENE,
GEO. W. SHARP.