

No. 837,795.

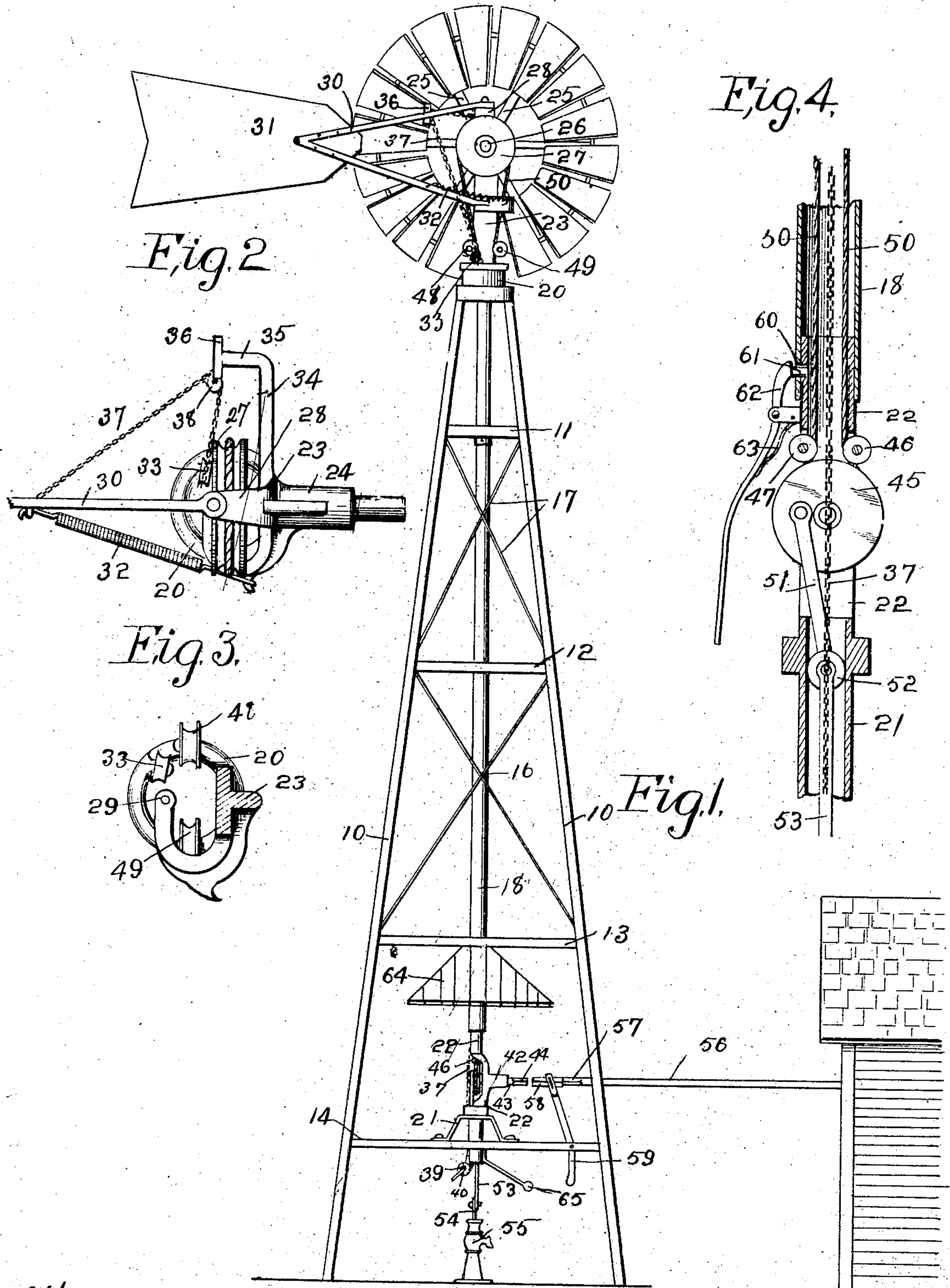
PATENTED DEC. 4, 1906.

B. E. CASSELL.

WINDMILL.

APPLICATION FILED DEC. 29, 1906.

2 SHEETS—SHEET 1.



Witnesses,
A. S. Hague
S. F. Christy.

Inventor B. E. Cassell
by Chamberlin & Lane attys

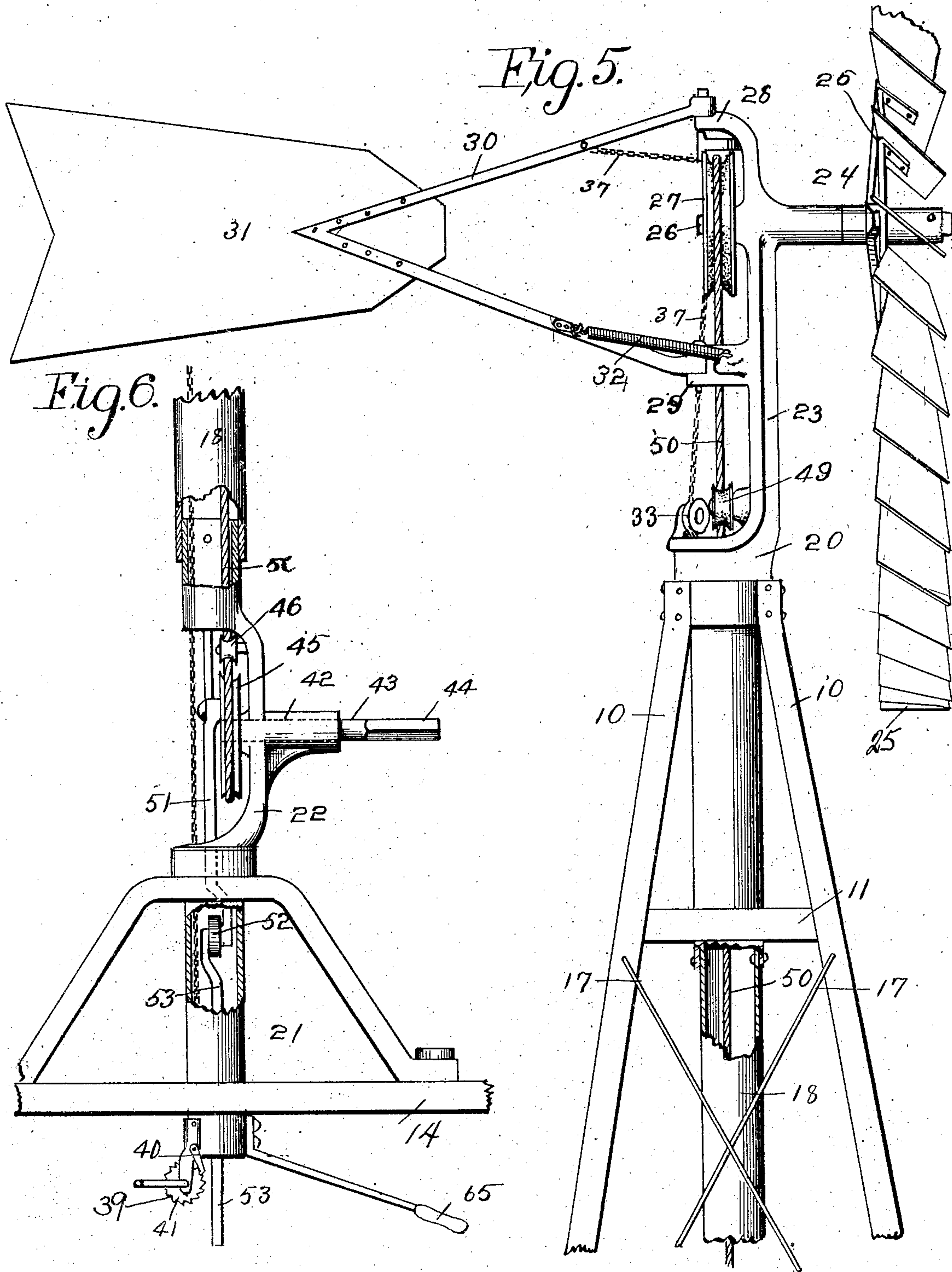
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UNITED STATES PATENT OFFICE.

BERT E. CASSELL, OF SPARLAND, ILLINOIS.

WINDMILL.

No. 837,795.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed December 29, 1905. Serial No. 293,743.

To all whom it may concern:

Be it known that I, BERT E. CASSELL, a citizen of the United States, residing at Sparland, in the county of Marshall and State of Illinois, have invented a certain new and useful Windmill, of which the following is a specification.

The objects of my invention are to provide a windmill of simple, durable, and inexpensive construction, in which there is a tube through which a portion of the operative parts of the device extend, and in which there is a mechanism for operating directly from the windmill a rotary shaft and at the same time a vertically-reciprocating rod.

A further object is to provide a mechanism for detachably connecting the rotary shaft with the driving mechanism and to provide means for securing the mechanism which is directly connected with the rotary shaft rigidly in position relative to the rest of the vertical shaft when the rotary shaft is disconnected from the other operative parts of the device.

A further object is to provide a wind-wheel which can be thrown into or out of the wind by means of the vane, which vane can be thrown from one position to another by means of a windlass and pawl-and-ratchet device mounted adjacent to the base of the windmill.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device where- by the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the complete windmill, showing the vane substantially parallel with the wind-wheel. Fig. 2 is a plan view of the device at the upper portion of the windmill upon which the wind-wheel is mounted and by which the vane is moved from one position to another. Fig. 3 is a detail plan view of the upper portion of the hollow shaft in the windmill, showing the rollers at the upper portion of this shaft. Fig. 4 is a detail sectional view of the windmill, showing the mechanism which is secured to the pump-rod and by which it is designed to be operated. Fig. 5 is a detail enlarged view showing the upper portion of the windmill and in section a portion of the hollow shaft to show the rope in it, and Fig. 6 is a detail view

showing in elevation largely the parts of the mechanism shown in Fig. 4.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate the posts of the windmill, which are of the ordinary construction. These posts are braced relative to each other by means of the braces 11, 12, 13, and 14 and the crossed braces 16 and 17, of which there may be any desirable number. Extending vertically and midway between the posts 10 is a hollow shaft 18, which is rotatably mounted on the brace 20, and arranged on and fixed to the brace 14 is a collar 21, Figs. 1 and 6. Alternately mounted between the hollow shaft 18 and the fixed collar 21 is a wheel-supporting frame 22, which is rotatable in the fixed collar 21 and is also rotatable relative to the hollow shaft 18. Secured to the upper end of the hollow shaft 18 is an upper frame 23. Extending outwardly from one side of this frame 23 is a shaft 24, on which is rigidly mounted the wind-wheel 25. Extending from the opposite side of the frame from the shaft 24 is a bearing 26, having the grooved wheel 27 rotatably mounted on it. Above and below the bearing 26 I have provided the lug-bearings 28 and 29, to which are pivotally secured, by means of the V-shaped arm 30, the vane 31. Detachably secured to one side of the V-shaped arm 30 and to the upper frame 23 is a spring 32, designed to normally maintain the vane substantially in line with the shaft 24, on which the wind-wheel is rigidly mounted.

Secured to the frame slightly above the top of the hollow shaft 18 is an idler 33. Extending outwardly from the side of the upper frame and substantially at right angles to the shaft 24 is an arm 34, Fig. 2, having an angular extension 35 at its outer end, which angular extension has a plate 36 on its outer end designed to be engaged by the upper portion of the V-shaped arm 30 when the vane is drawn to a position substantially at right angles to the shaft 24—that is, parallel with the wind-wheel—by means of a chain 37, which passes over the pulley 38, which is secured to the plate 36, and which chain passes down over the idler 33 and through the hollow shaft 18 down to a windlass 39 near the lower portion of the windmill. This windlass is held in various positions by means of the pawl 40 and the ratchet 41.

From the above description it will be seen

that the vane is normally held by means of the spring in position where the windmill will be operative. When, however, it is desired to throw the wind-wheel out of gear—that is, out of the wind—the vane is drawn around to the position shown in Fig. 1—that is, a position substantially parallel with the wind-wheel—by means of the windlass 39 and the chain which is attached to it and to the vane, and the vane is maintained in position by means of the pawl 40 and ratchet 41. By simply releasing the pawl the spring draws the windlass back to a normal position.

Extending outwardly from one side of the frame 22 is a bearing 42, having the shaft 43 rotatably mounted in it, which shaft has a square head 44 at one end of it and a grooved wheel 45 at its other end, and on the opposite side of the frame 22 from the bearing 42 I have provided two idlers 46 and 47 immediately above the grooved wheel 45. I have also provided two idlers 48 and 49 above the upper portion of the hollow shaft and secured these to the upper frame 23. Passing around the grooved wheels 27 and 45 is a continuous rope 50, which rope engages the idlers 48 and 49 and the idlers 46 and 47, which serve the purpose of retaining the rope 50 on the wheels 27 and 45 and also serves the purpose to guide this rope as it passes through the hollow shaft 18 between the wheels 27 and 45.

Pivotally attached to one side of the wheel 45 and outside of the center of it is an arm 51, having a roller 52 mounted at its lower end, which roller is designed to travel up and down in and engage the inner side of the collar 21 as the wheel 45 is rotated and the arm 51 moved vertically on account of the rotation of the wheel 45.

Secured to the lower end of the shaft 51 and on the opposite side of the roller 52 from it is a rod 53, which is designed to be detachably secured to the piston-rod 54 of the pump 55. Extending substantially in line with the shaft 43 is a rotary shaft 56, having the squared end 57 adjacent to the squared end 44 of the shaft 43. Slidingly mounted on the squared end 57 of this shaft is a square sleeve 58, which is designed to be slid over the squared end 44 of the shaft 43 to connect the shafts 43 and 56 with each other when it is desired to operate the rotary shaft 56 by means of the wind-wheel. The sliding of the shaft 58 is accomplished by the handle 59, which is pivotally attached to one of the braces 14 and which is pivotally and slidingly attached to the sleeve 58, so that the operator can easily throw the rotary shaft into or out of operative relation with the shaft 43 by means of this lever 59 from the ground.

I have cut holes through the upper portion of the frame 22 and the lower portion of the

hollow shaft 18 at the point designated in Fig. 4 by the numeral 60, into which a pin 61 is designed to be inserted by means of the lever 62, which is secured to said pin and pivotally secured to the frame 22, so as to normally hold these two parts in operative relation to each other. This pin is maintained in its locked position by means of a spring 63, which acts on the lever 62 to obtain this result.

I have provided a small roof 64 immediately above the frame 22 to protect the parts of the device beneath it from the weather to a certain extent, and I have also provided a handle 65 with which to turn the frame 22 into such position that the sleeve 58 can be easily slipped over the squared end 44 of the shaft 43 and throw the rotary shaft 56 into operative position.

From the foregoing it will be apparent that the windmill can be thrown into or out of gear from the ground, and the windmill can be used to operate either the pump 55 or the rotary shaft 56 each independent of the other and can also be used to operate both the pump 55 and the shaft 56 at the same time. Of course when the shafts 44 and 56 are coupled together the wind-wheel is confined to a fixed direction, and hence it can only operate to rotate said shaft 56 when the wind is in said direction or approximately so.

The frame 22, hollow shaft 18, and frame 23 are adapted to turn together, and when the shaft 43 is adjacent to and in line with the shaft 56 the square sleeve or shaft 58 is adjusted to connect said shafts 43 and 56. In virtue of the pin 61 normally resting in registered apertures of the frame 22 and hollow shaft 18 it will be observed that said frame and hollow shaft are normally fixed together, and yet when it is desired the hollow shaft 18 may be disconnected from the frame 22, so as to turn independent thereof.

In the construction of the device rope or cable or chain may be used for the rope herein shown, and the parts of the device will be made out of any desirable material.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States therefor, is—

1. The combination in a windmill, of a supporting-frame, a rotatably-mounted hollow shaft in the supporting-frame, a horizontally-swinging frame arranged to turn on the supporting-frame and with the hollow shaft, a wind-wheel mounted on the horizontally-swinging frame, a vane pivotally connected to the horizontally-swinging frame, a spring for normally maintaining the vane at a right angle to the wind-wheel, means arranged to be operated from the ground for drawing the vane against the resistance of the spring to a position substantially parallel with the wind-wheel, a pulley mounted in the horizontally-swinging frame and arranged to be driven by

the wind-wheel, a second pulley mounted below the hollow shaft, a rope passing around the said pulleys and through the hollow shaft, an angular-headed shaft secured to the lower pulley, a rotary shaft, and means for throwing out of and into operative relation the rotary shaft and the shaft secured to the lower pulley.

2. The combination in a windmill, of a supporting-frame, a rotatably-mounted hollow shaft in the supporting-frame, a horizontally-swinging frame arranged to turn on the supporting-frame and with the hollow shaft, a wind-wheel mounted on the horizontally-swinging frame, a vane pivotally connected to the horizontally-swinging frame, a spring for normally maintaining the vane at a right angle to the wind-wheel, means arranged to be operated from the ground for drawing the vane against the resistance of the spring to a position substantially parallel with the wind-wheel, a pulley mounted in the horizontally-swinging frame and arranged to be driven by the wind-wheel, a second pulley mounted below the hollow shaft, a rope passing around the said pulleys and through the hollow shaft an angular-headed shaft secured to the lower pulley, a rotary shaft, means for throwing out of and into operative relation the rotary shaft and the shaft secured to the lower pulley, and means secured to the lower pulley away from the center thereof and arranged to reciprocate a pump-rod.

3. In a windmill, the combination of a supporting-frame, a rotatably-mounted hollow shaft therein, a horizontally-swinging frame

arranged to turn on the supporting-frame and with the hollow shaft, a wind-wheel mounted on the horizontally-swinging frame, a pulley mounted in the horizontally-swinging frame and arranged to be driven by the wind-wheel, a second pulley mounted below the hollow shaft, a rope passing around the said pulleys and through the hollow shaft, an angular-headed shaft secured to the lower pulley, a rotary shaft, and means for throwing out of and into operative relation the rotary shaft and the shaft secured to the lower pulley.

4. In a windmill, the combination of the supporting-frame, a rotatably-mounted hollow shaft therein, a horizontally-swinging frame arranged to turn on the supporting-frame and with the hollow shaft, a wind-wheel mounted on the horizontally-swinging frame, a pulley mounted in the horizontally-swinging frame and arranged to be driven by the wind-wheel, a frame detachably connected to the lower portion of the hollow shaft and arranged to turn therewith, a shaft journaled in said lower frame and having an angular head, a pulley fixed on said shaft, a rope passing around the upper and lower pulleys and through the hollow shaft, a handle connected to the lower frame, a rotary shaft, and means for throwing out of and into operative relation the rotary shaft and the shaft bearing the lower pulley.

BERT E. CASSELL.

Witnesses:

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JAS. P. HICKEY.