

(Model.)

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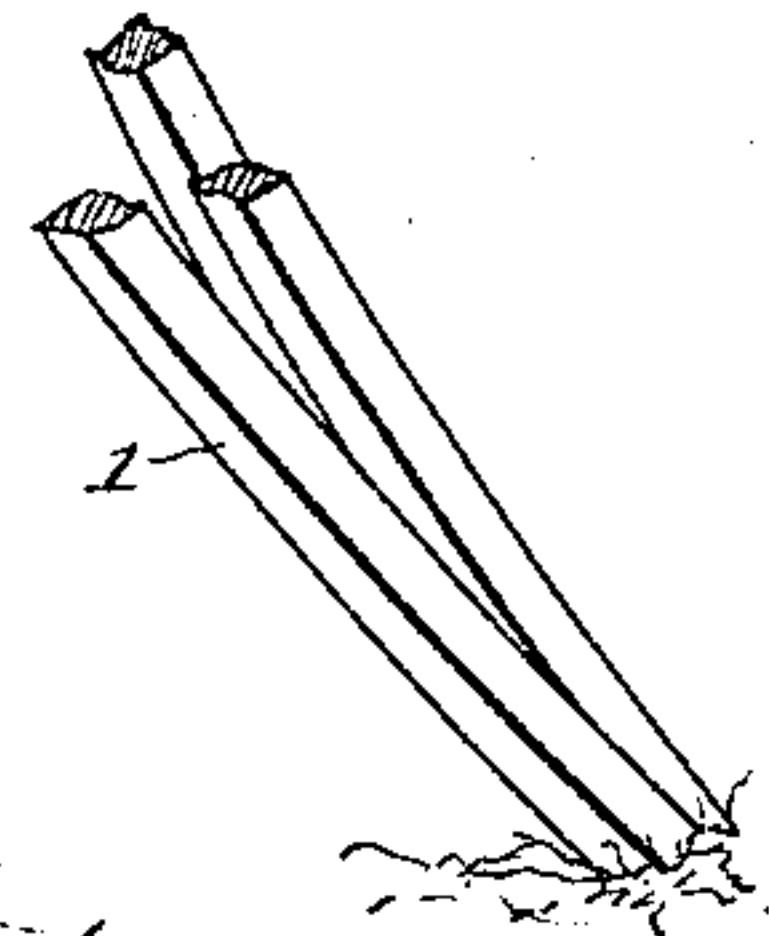
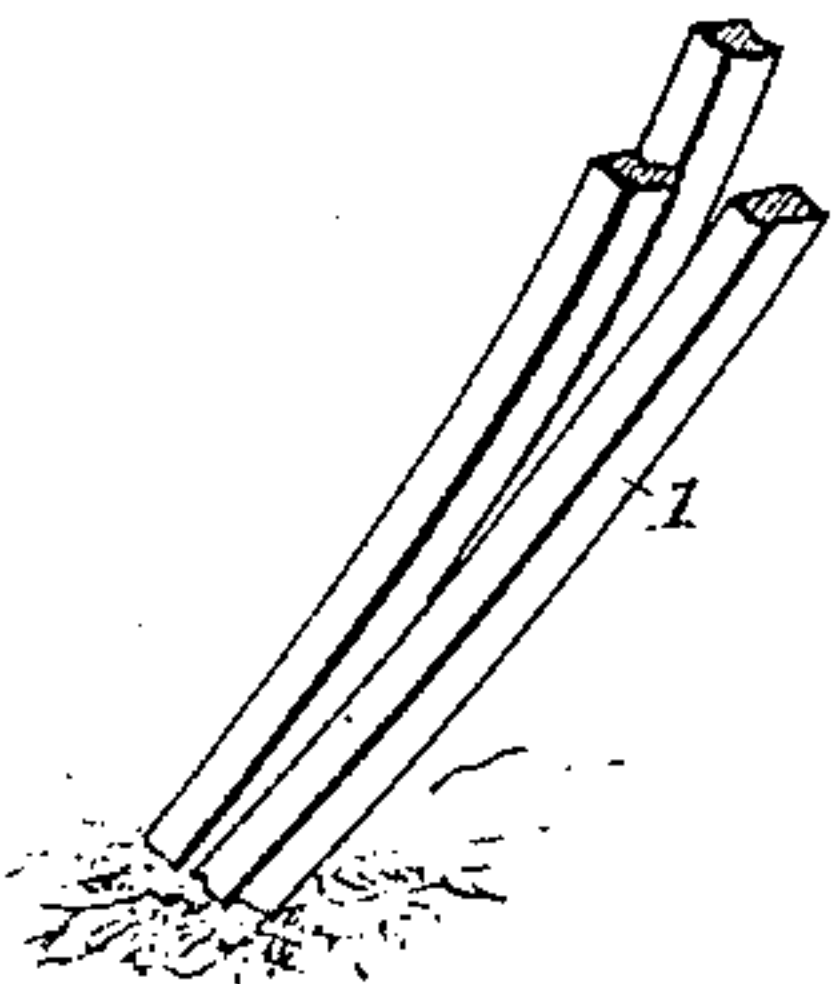
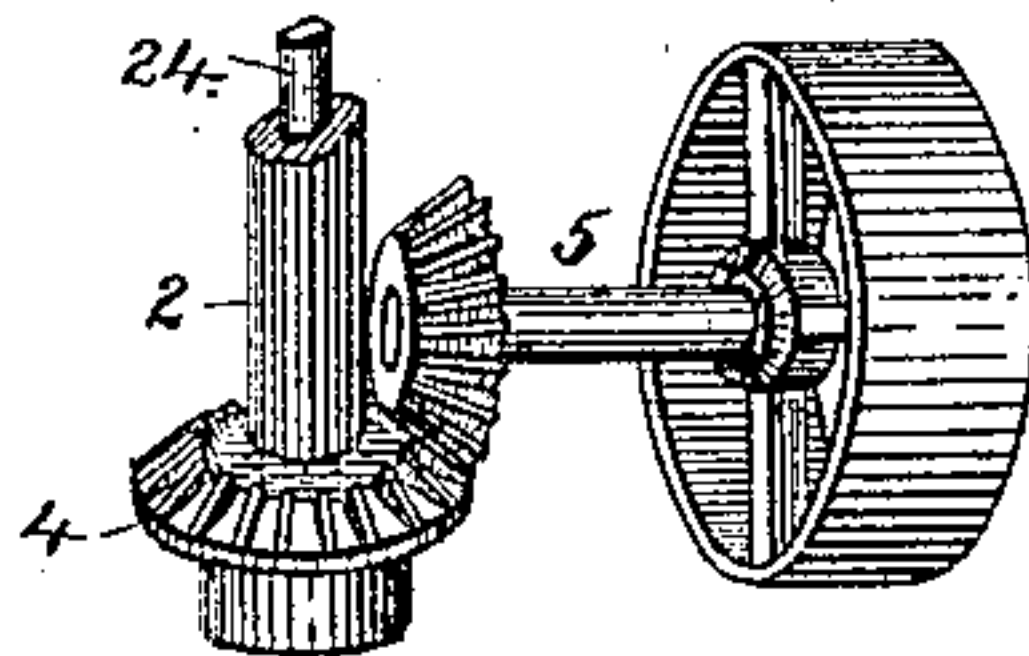
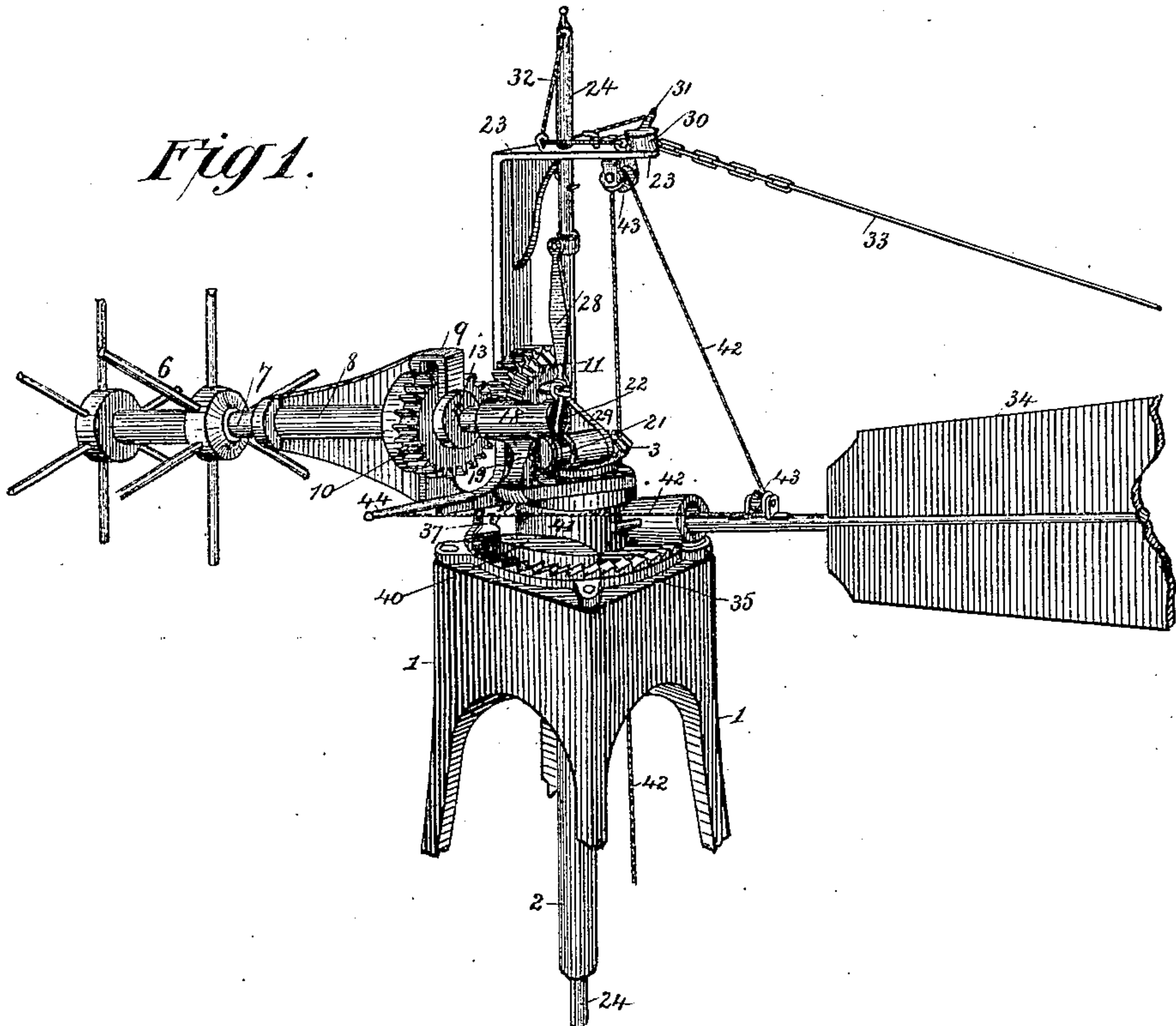
B. CHAMBERLAIN.

WINDMILL.

No. 249,002.

Patented Nov. 1, 1881.

Fig 1.



Attest:
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Harry C. Knight

Inventor:
Blanchard Chamberlain.
BY *Knight Bros.*
attys

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2 Sheets—Sheet 2.

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Fig 2.

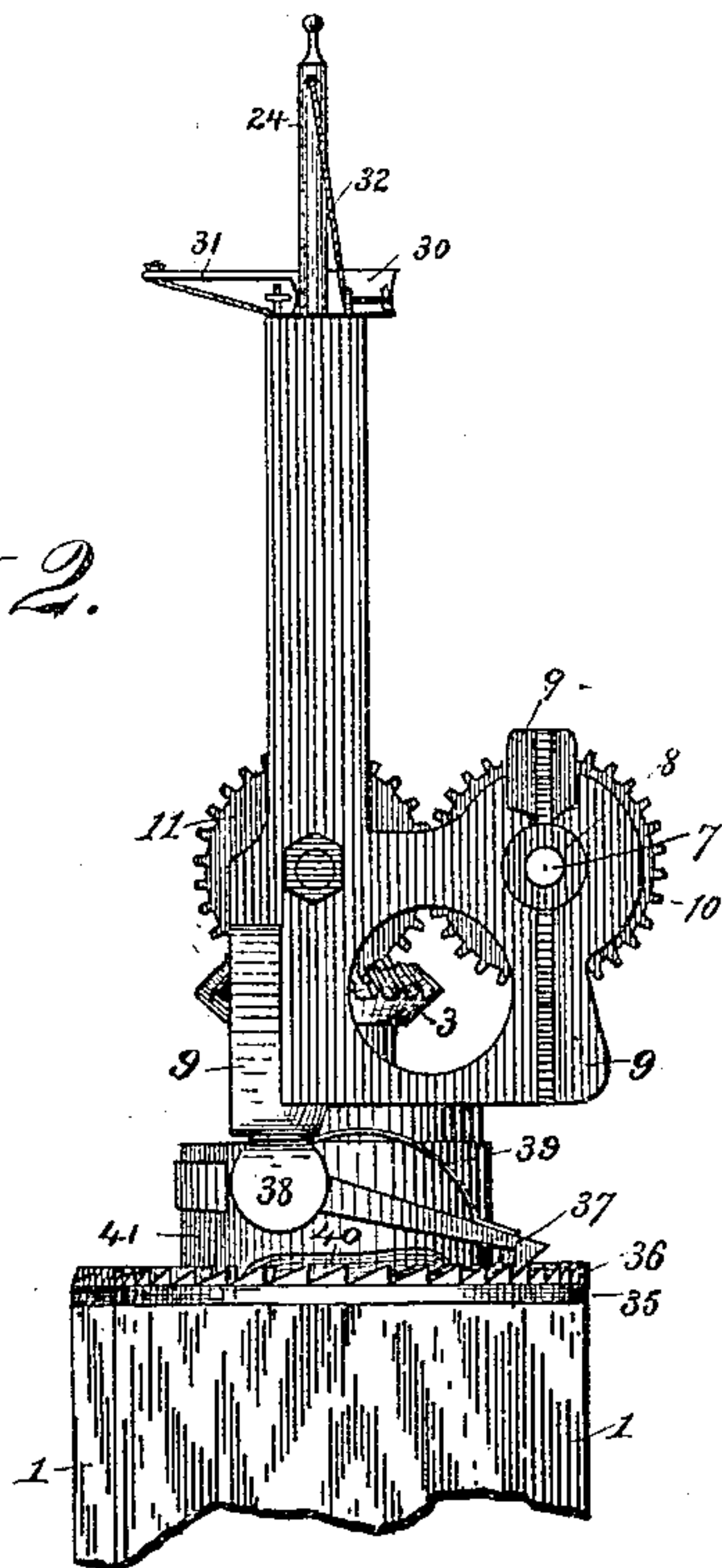
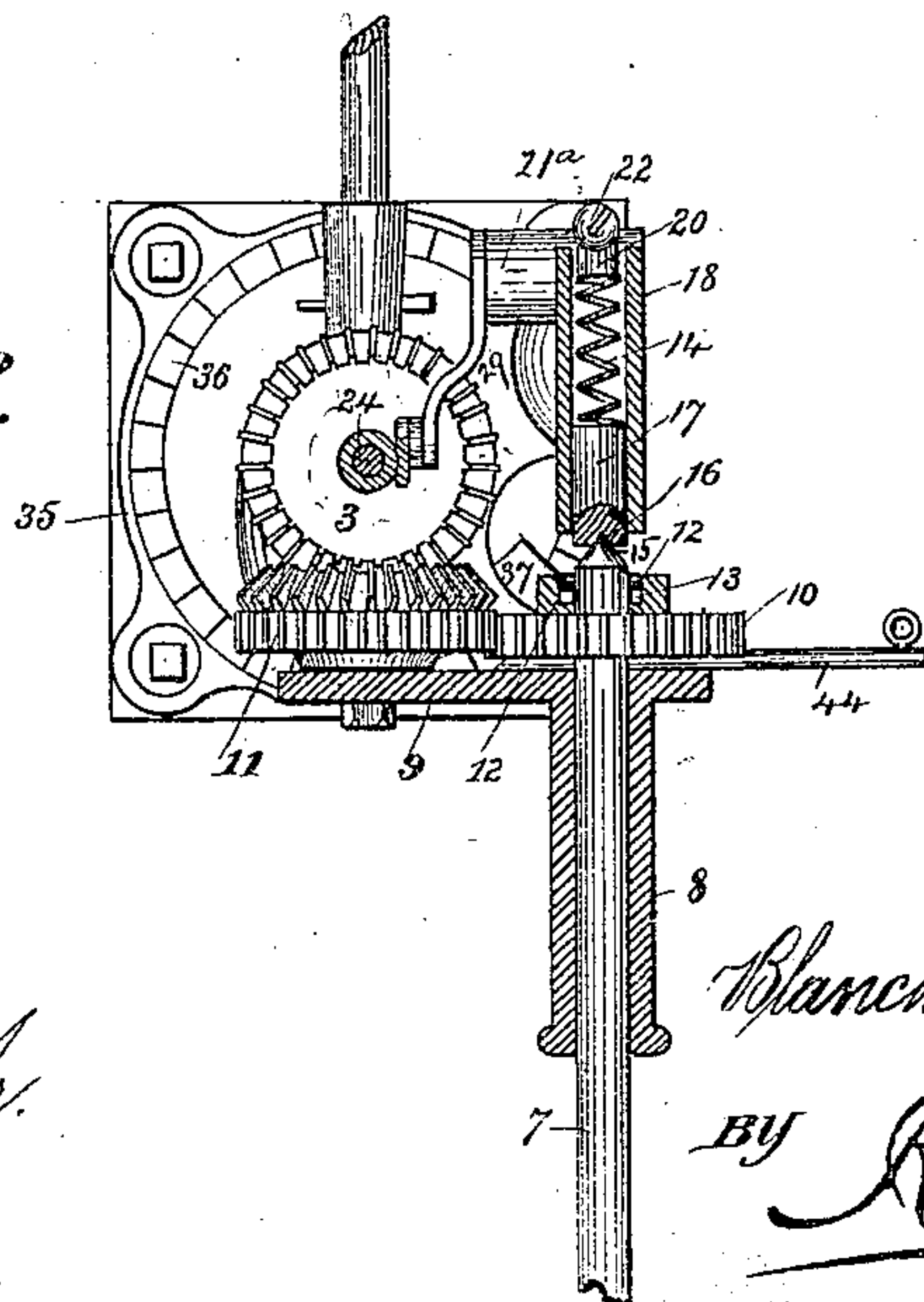


Fig 3.



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UNITED STATES PATENT OFFICE.

BLANCHARD CHAMBERLAIN, OF BELLEFONTAINE, OHIO, ASSIGNOR TO
JOSEPH H. WILSON, OF SAME PLACE.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 249,002, dated November 1, 1881.

Application filed July 1, 1881. (Model.)

To all whom it may concern:

Be it known that I, BLANCHARD CHAMBERLAIN, a citizen of the United States, residing at Bellefontaine, in the county of Logan and State of Ohio, have invented Improvements in Windmills, of which the following is a specification.

My invention consists, first, of a spring-clutch for the wind-wheel shaft, allowing the throwing of the said shaft out of gear with the driving-gear on the mast-head when the wind becomes too strong; second, in devices for regulating the speed of the wind-wheel shaft from ground, and by the same operation lifting the vane by any suitable mechanism to transfer its weight; third, in a device for holding the wheel in or throwing it out of the face of the wind by means of a circular set of ratchet-teeth cast on the face of the main socket-plate and a hanging latch on the gearing-frame actuated by a lip on the vane-collar.

In the accompanying drawings, Figure 1 is a perspective view of a windmill embodying my invention, part of the shaft and mast being broken away. Fig. 2 is a side view of the mast-head and running-gear with the wind-wheel removed. Fig. 3 is a top view of the same, partly in horizontal section.

1 represents the mast, and 2 the vertical shaft, of a windmill. On the upper and lower ends, respectively, of the shaft 2 are customary bevel-gear wheels 3 and 4, the one for receiving power from the wind-wheel mechanism and the other for transmitting it to a band-wheel or crank-shaft, 5.

6 is a wind-wheel of any common or preferred construction, fixed removably or otherwise to its shaft 7, which is supported by and rotates within a sleeve, 8, rigidly projecting from the gearing-frame 9. The end of the wheel-shaft within the frame 9 bears a gear-wheel, 10, which acts through gear and bevel wheel 11 to transmit the motion of the wheel-shaft to bevel-wheel 3. The gear-wheel 10 has within its bore two sockets, 12 12, with which, when the wheel is in its operative position, register lugs 13 projecting from the wheel-shaft. By this means the shaft, so long as the wind is not too high, clutches and actuates the gear-

wheel; but when the wind rises above the desired point it will press the wheel in, disconnect the shaft and gear-wheel, and the wheel will swing out of the wind and remain stationary till the wind moderates, when it will resume its position, being thrown back by the spring 14. The inner conical end, 15, of the wheel-shaft runs in a hollow cone-shaped bearing, 16, in a loose block, 17, sliding in a cylinder or sleeve, 18, supported rigidly by an arm, 19, of the frame. A spiral or other spring, 14, within the sleeve 18 bears at one end against the block 17 and at the other against a block, 20, held at back by a lug, 22, projecting from a rock-shaft, 21.

Passing through the hollow vertical shaft 2, and having bearing at top in the arm 23 of the frame, is a rod, 24, connected by swivel-joint 25 and rod 26 to the lever 27, by which it is actuated. Jointed to the rod 24, above the bevel-wheel 3, is a pitman, 28, in the lower extremity of which bears the wrist of the crank 29 on the rock-shaft 21. The shaft 21 is supported by and has bearing in a cylindrical sleeve, 21^a, which has rigid connection with the frame. By elevating or depressing the lever 27, the rod 24 will be raised or lowered and the spring 14 relaxed or compressed, thus providing means for regulating the pressure on the wheel-shaft according to the speed desired and the velocity of the wind.

The arm or bracket 23 carries near its outer end a cam-pulley, 30, having arm 31, the said pulley being operated through the medium of chains or ropes 32, by the vertical rod 24, to raise the top-lift 33 of the vane 34, thus regulating the weight of the vane.

In windmills as ordinarily constructed an effect of a too heavy load being put on the engine is to stop, or partially stop, the engine and the vertical shaft 2, and as the wind-wheel still revolves, the tendency is for it to "climb" around the bevel-gear on the end of the shaft 2, thus throwing the wheel more and more out of the wind and lessening instead of increasing its power when it is most needed. To obviate this difficulty I use the following mechanism:

On the top of the mast is bolted an annular

plate, 35, having circular rack 36 to engage a hanging latch, 37, depending from and pivoted in lugs 38 from the underside of the frame. A spring, 39, holds the hanging latch to its place on the rack. The head of the latch 37 extends within the circular rack 36 and slides on a lip, 40, of the vane-collar 41. With this device the wind-wheel, so long as the vane is held by the wind directly in rear of it, will be kept from walking around the gearing by the latch and ratchet, but as soon the wind shifts the vane will swing around, the lip 40 lifting the latch 37, and the wheel being thrown into the wind by the weight of the vane acting through top-lift 33 and cam-pulley 30.

The force with which the wheel will respond to the shifting of the vane may be regulated by increasing or lessening the weight of the vane upon the top-lift 33 and cam-pulley 30.

It will be seen that while the wind, acting on the wheel, can throw it only in one direction, from which it will be driven by the weight of the vane, the wind acting on the vane itself will readily move the wheel in either direction required by the shifting wind, and when the wind is too high and the wheel is pressed out of gear, the wheel and vane will swing parallel to each other, in which position the wheel ceases to move until the relaxing of the wind permits the wheel and vane to resume their normal position, when the wheel is instantly engaged.

A rope 42, running over pulleys 43 43 and fastened to the frame at 44, enables the closing up of the vane and wheel from the ground when desired.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a wind-engine, the combination, with a wind-wheel and its shaft for operating the same, of clutch mechanism for automatically connecting and disconnecting the wheel-shaft and the driving-wheel of the engine, substantially as set forth.

2. In combination with the wheel-shaft of a windmill, the braking mechanism, consisting of block 17, spring 14, and means for compressing or releasing said spring, and thus increasing or lessening the pressure on the shaft, for the purposes set forth.

3. The combination of plate 35, having ratchet 36, latch 37 on the gearing-frame, and lip 40 on the vane-collar, substantially as and for the purposes set forth.

4. The combination of cam-pulley 30, top-lift 33, vane 34, and mechanism for operating the same from the ground, for the purposes set forth.

BLANCHARD CHAMBERLAIN.

Witnesses:

J. D. McLAUGHLIN,
DUNCAN DOW.