

No. 721,565.

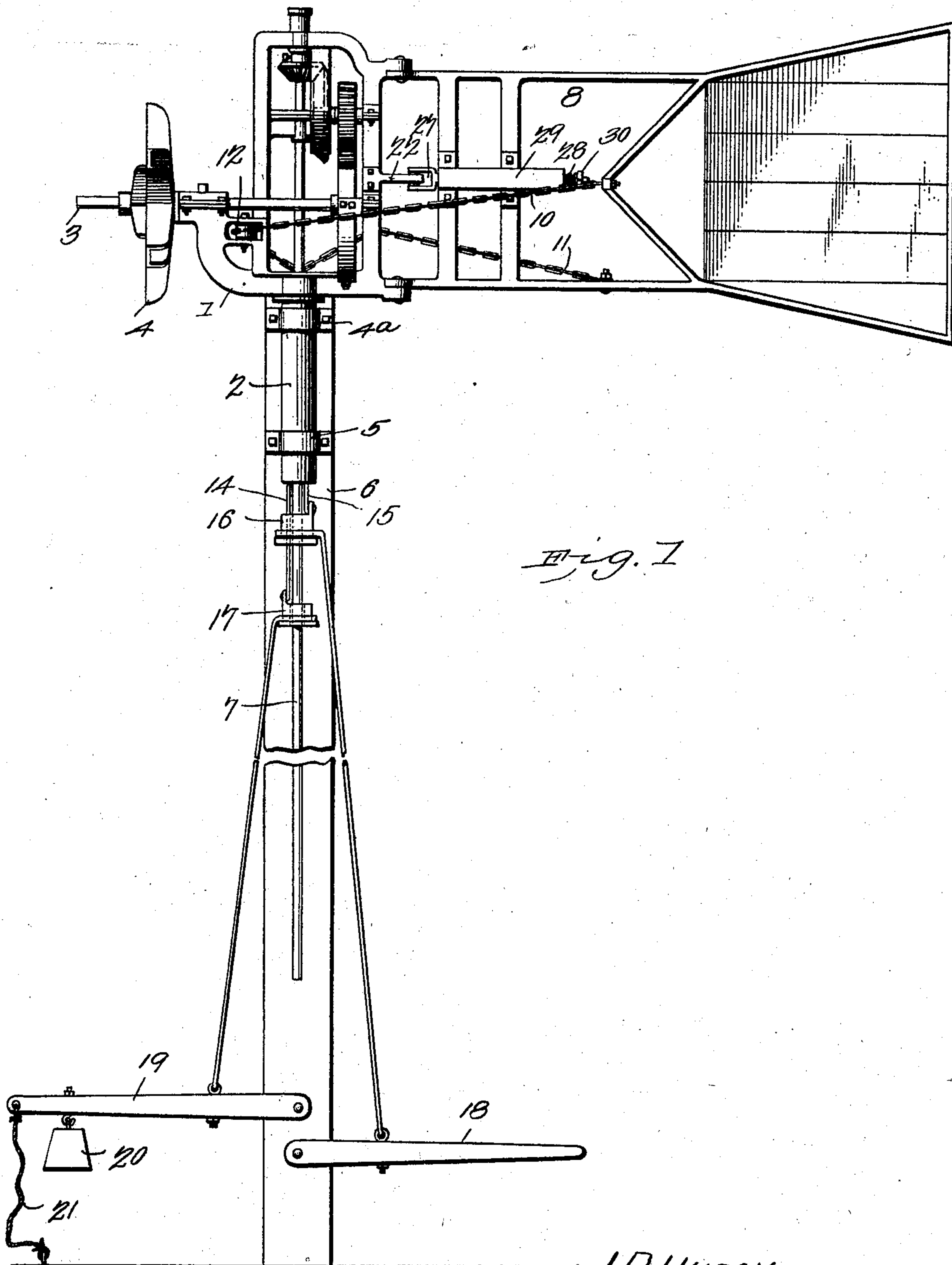
PATENTED FEB. 24, 1903.

J. D. HUSON.
WINDMILL.

APPLICATION FILED JUNE 20, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

E. H. Steward
J. F. Riley

by

J. D. HUSON, Inventor.
C. A. Snow
Attorney

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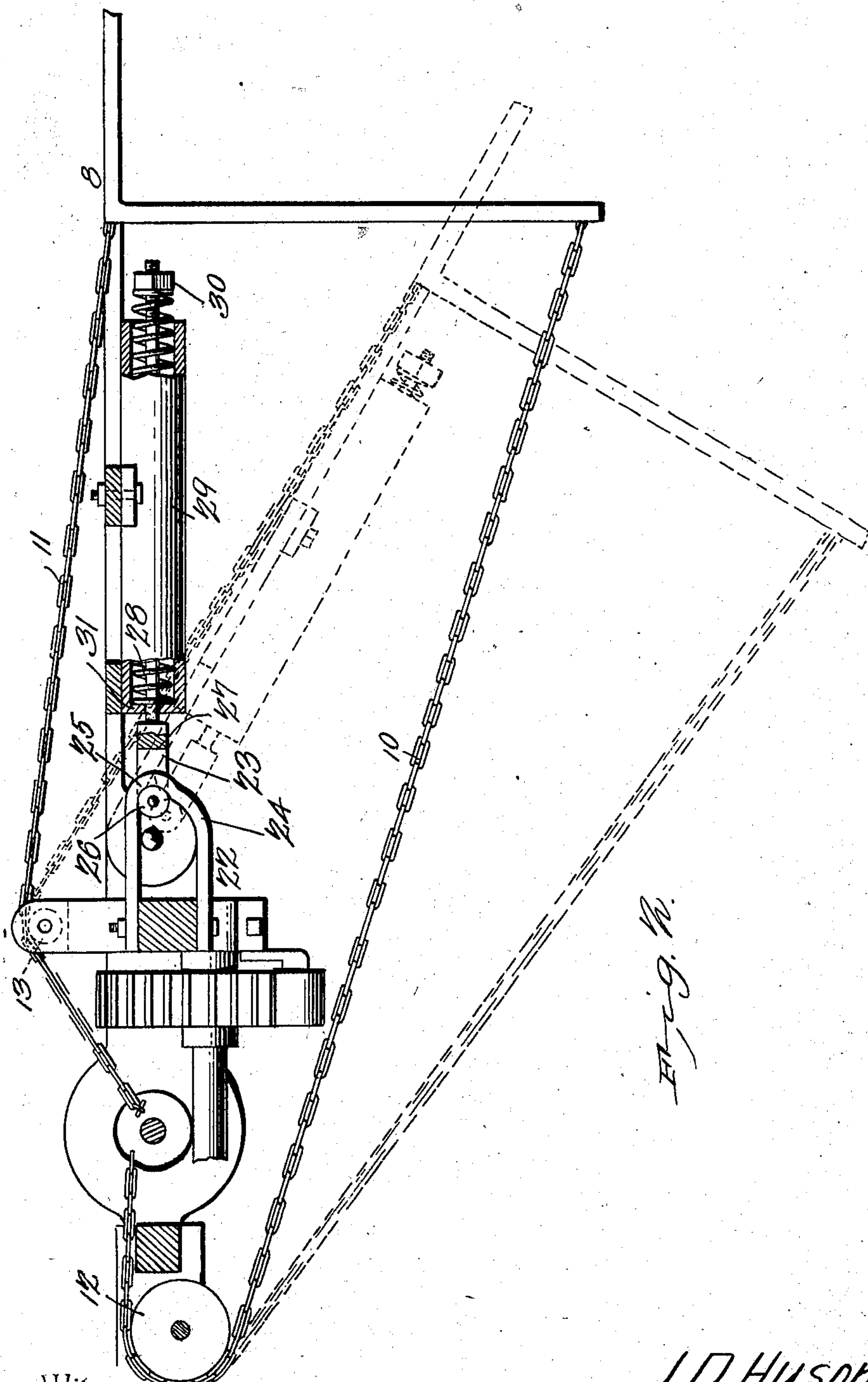
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E. H. Leonard
J. H. Riley

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J. D. HUSON, Inventor.
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UNITED STATES PATENT OFFICE.

JOHN D. HUSON, OF PLYMOUTH, WISCONSIN.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 721,565, dated February 24, 1903.

Application filed June 20, 1902. Serial No. 112,540. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. HUSON, a citizen of the United States, residing at Plymouth, in the county of Sheboygan and State of Wisconsin, have invented a new and useful Windmill, of which the following is a specification.

The invention relates to improvements in windmills.

10 The object of the present invention is to improve the construction of windmills and to provide a simple and comparatively inexpensive construction adapted to increase the steadiness of windmill-power and capable of
15 increasing the power obtained from a windmill by maintaining the vane in a plane at right angles to the plane of the wind-wheel when the force of the wind is insufficient to throw the windmill out of the wind and ca-
20 pable also of preventing the windmill from being thrown entirely out of the wind and ceasing its operation when the force of the wind increases sufficiently to overcome the weight which holds the wind-wheel in the
25 wind.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed
30 out in the claims hereto appended.

In the drawings, Figure 1 is an elevation of a windmill constructed in accordance with this invention. Fig. 2 is a plan view, partly in section.

35 Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a rotary frame having a depending tube 2 and provided with suitable
40 bearings for a horizontal wind-wheel shaft 3, to which is secured a hub 4 of a wind-wheel. The depending vertical tube is designed to be arranged in suitable bearings 4^a and 5, which are supported by an upright or
45 standard 6, extending from the floor of a barn to the top thereof, the windmill being designed to be mounted upon the barn for furnishing power for operating various kinds of machines or devices located within the
50 barn. The horizontal wind-wheel shaft is connected by suitable gears with a vertical shaft 7, which extends to the interior of the

barn and which is designed to be connected with any suitable gearing for communicating motion to the device to be operated. 55
The rotary frame has hinged to it a vane 8, which is connected with chains 10 and 11 or other suitable flexible connections extending from the vane in opposite directions to guide-pulleys 12 and 13, and the flexible connection 10 is adapted to be operated for pulling
60 the vane to a position parallel to the wind-wheel for throwing the windmill out of operation, and the other flexible connection is adapted to be operated to swing the vane
65 away from the wind-wheel to start the windmill. The flexible connections 10 and 11 are connected with wires or rods 14 and 15, having swivel-joints 16 and 17 to permit the rotary
70 frame to revolve without twisting the flexible connections. The wires or rods 14 and 15 extend downward and are connected with levers 18 and 19, the lever 18 being adapted to be
75 operated for throwing the windmill out of operation and the lever 19 being provided with a suitable weight 20, adapted to hold the windmill in operation. Any suitable means may
be provided for securing the lever 18 for holding the windmill out of operation, and in order
80 to limit the movement of the lever 19 and prevent the vane from swinging entirely around to its position parallel to the wind-wheel a rope 21 is employed; but any other suitable
means may be provided for this purpose. 85
When the wind increases in force sufficiently to swing the windmill-vane away from its position at right angles to the plane of the wind-wheel, the flexible connection will prevent
90 the vane from assuming a position at right angles to its former position, and a certain portion of the wind-wheel will be exposed to the wind, so that the rotation of the wind-wheel will not entirely cease, as is the case
95 with those wind-wheels where the windmill is thrown entirely out of operation. A large amount of power is thus saved and the steadiness of the power of windmills is greatly increased.

In order to hold the wind-wheel at right angles to the vane of the windmill at all times
100 when the force of the wind does not exceed the power of the weight 20, a locking device is employed, and this locking device, which is adapted to yieldingly hold the wind-wheel and

the vane at right angles to each other, consists of a horizontal frame 22 and a spring-actuated bolt or plunger 23. The frame 22, which is approximately U-shaped, is disposed horizontally and is composed of two sides and a connecting transverse portion forming a curved guide 24 and provided with a bend 25, forming a shoulder or seat, which is adapted to receive a roller 26 of the spring-actuated bolt or plunger. The spring-actuated bolt or plunger is provided with a bifurcated head 27, in which is mounted the roller 26 and which receives the transverse portion of the frame. The transverse portion of the frame is arranged between the roller and the inner wall of the bifurcation, and the roller, which is located within the frame, is held in engagement with the curved guide and the seat thereof by means of a spring 28. The spring 28, which is arranged within a tubular casing 29, is disposed on the stem of the bolt or plunger and is interposed between a nut 30 and the inner wall or end 31 of the tubular casing. The outer end of the tubular casing is open, as clearly shown in Fig. 2, and the inner end is provided with a perforation through which passes the stem of the rod or plunger, and the outer end of the latter is threaded to receive the nut 30, which is adapted to be adjusted to vary the tension of the spring. When the force of the wind increases sufficiently to cause the roller to leave the seat, the vane will be swung around toward the wind-wheel, but will be prevented from assuming a position parallel with the wind-wheel by the rope 21, whereby a portion of the fan-surface of the wind-wheel will be exposed to the wind to prevent the wind-wheel from entirely ceasing its rotation. By this construction and operation the windmill is held with the wind-wheel square to the wind and the maximum power is obtained until the force of the wind is sufficient to overcome the locking device. The curved guide portion 24 is arranged concentric with the pivot of the vane, so that when the force of the wind becomes sufficient to disengage the roller from its seat the device will not materially interfere with the swinging of the vane.

It will be seen that the windmill is simple and comparatively inexpensive in construction, that the improvements are applicable to various kinds of windmills having vertical wind-wheels and hinged vanes, that a maximum power is obtained while the windmill is operating, and that when the wind-wheel is swung out of the wind it does not stop, whereby the power obtained from windmills is rendered more steady than heretofore. The weight 20 is adapted to be lifted off its lever when the windmill is swung out of operation by the other lever, so that in throwing the windmill out of gear it is unnecessary to swing the same against the power of a weight or spring.

What I claim is—

1. The combination with a windmill having

a hinged vane, of flexible connections extending from the vane at opposite directions to enable the same to be swung in either direction, means connected with one of the flexible connections for holding the wind-wheel in the wind under a given power, and adjustable means for limiting the movement of the vane to prevent the wind-wheel from being turned entirely out of the wind to produce a continuous rotation of the wind-wheel, said means being also adapted to permit the windmill to be turned entirely out of the wind to stop the wind-wheel, substantially as described.

2. The combination with a windmill having a hinged vane, of an automatically-operating yieldable locking device connected with the vane and engaging the same when the vane is at right angles to the wind-wheel and capable of permitting the vane to swing freely when the vane moves inward from such point, substantially as described.

3. The combination with a windmill having a hinged vane, of an automatically-operating locking device comprising a smooth guide provided at its outer end with a shoulder or seat and mounted on the frame of the windmill, and a spring-actuated device carried by the vane and engaging the seat or shoulder and adapted when disengaged from the same to move freely on the guide, substantially as described.

4. The combination with a windmill having a hinged vane, of a locking device comprising a smooth curved guide having a seat, a plunger engaging the seat and adapted to ride on the guide and mounted on the vane, and a spring engaging the plunger, substantially as described.

5. The combination with a windmill having a hinged vane, of a locking device comprising a spring-actuated plunger carried by the vane, and a frame mounted on the windmill and provided with a seat arranged in the path of the plunger and in position to be engaged by the same when the vane is at right angles to the plane of the wind-wheel and yieldably holding the vane in such position and permitting the vane to swing freely when it moves from such position, substantially as described.

6. The combination with a windmill having a hinged vane, of a horizontal frame mounted on the windmill and carried by the rotary frame thereof, a casing secured to the vane, a plunger arranged within the casing and extending therefrom and having a roller arranged to run on the horizontal frame, and a spring located within the casing and engaging the plunger, 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.

JOHN D. HUSON.

Witnesses:

PETER M. WOLF,
T. F. ACKERMANN.