

No. 773,020.

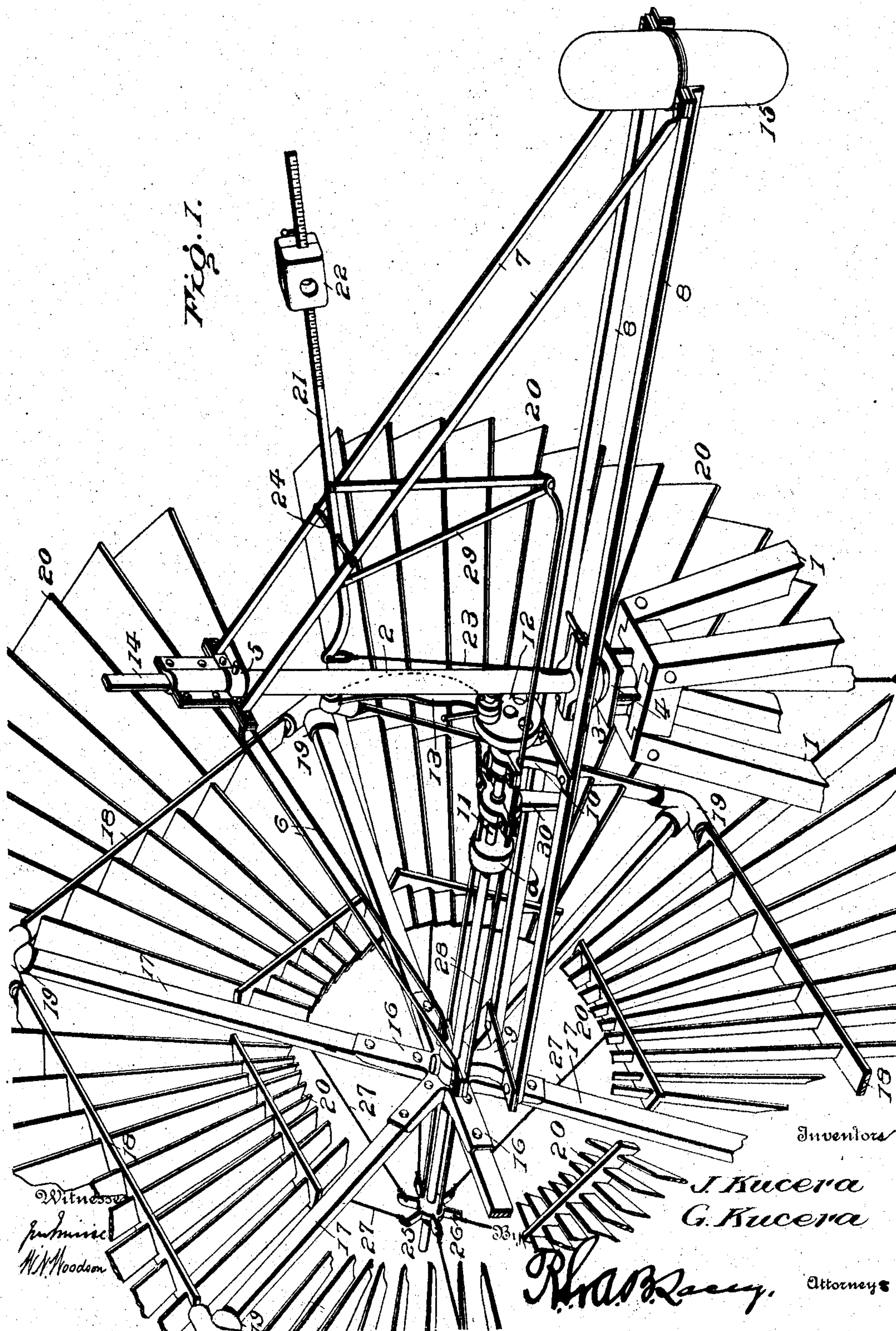
PATENTED OCT. 25, 1904.

J. & G. KUCERA.
WINDMILL.

APPLICATION FILED APR. 5, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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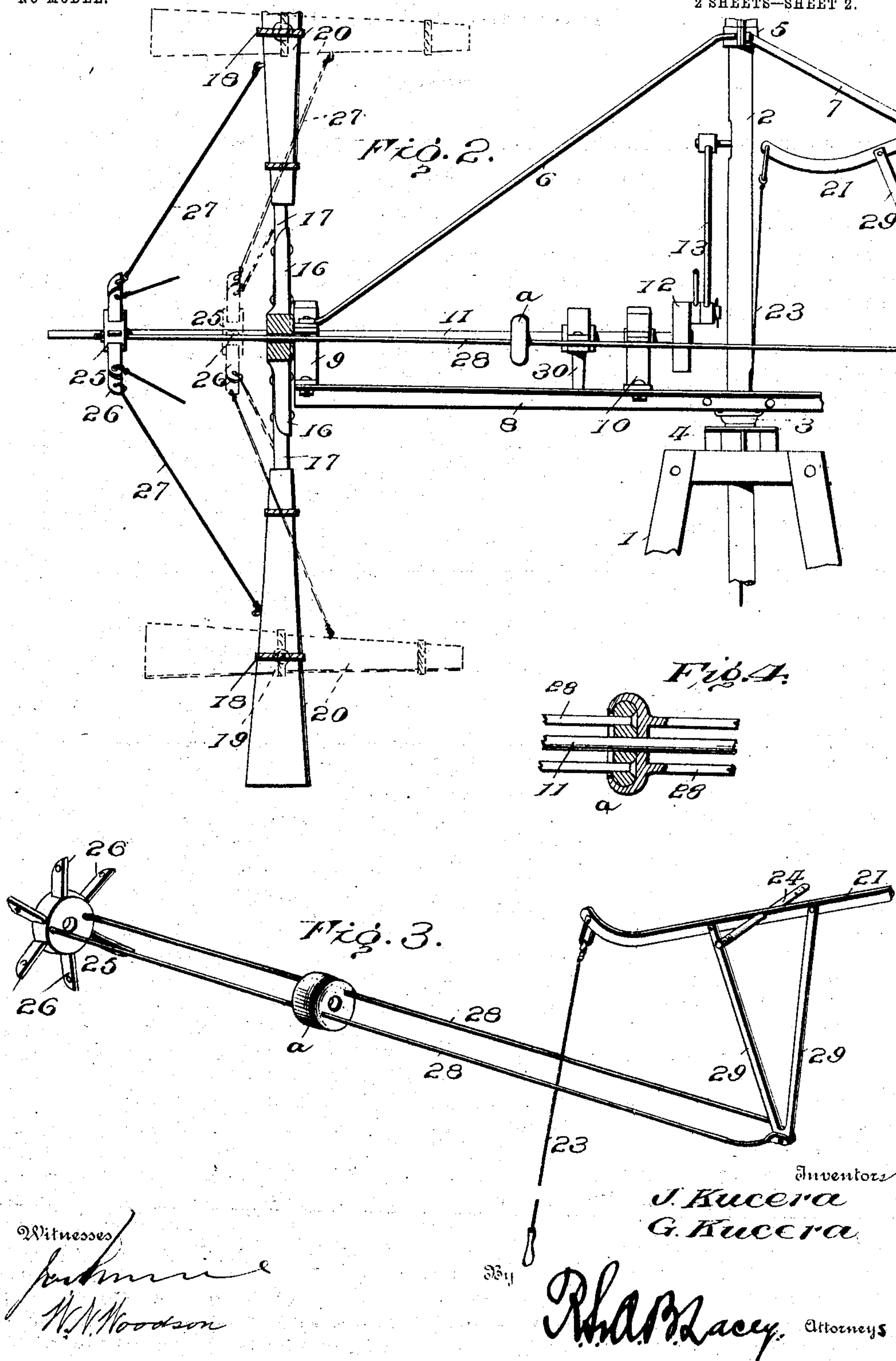
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

JOHN KUCERA AND GEORGE KUCERA, OF WESTERN, NEBRASKA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 773,020, dated October 25, 1904.

Application filed April 5, 1904. Serial No. 201,728. (No model.)

To all whom it may concern:

Be it known that we, JOHN KUCERA and GEORGE KUCERA, citizens of the United States, residing at Western, in the county of Saline and State of Nebraska, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

This invention appertains to windmills, and is designed to improve the general structure of this type of engines, whereby their efficiency is enhanced and the cost of maintenance minimized.

The primary purpose of the invention is to simplify and render more certain and positive the governing means whereby the engine may be regulated according to the load and the strength of the wind, so as to equalize as nearly as practicable the power and running of the engine.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the upper portion of a windmill embodying the invention. Fig. 2 is a vertical central section of the wind-wheel and adjunctive parts. Fig. 3 is a detail perspective view of the means for throwing the engine into and out of the wind. Fig. 4 is a detail view of the swivel in the length of the rods connecting the collar with the operating-lever.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The tower or derrick is indicated at 1 and may be of usual or any approved construction. The vertical shaft is designated at 2 and is provided with a hub or casting 3, mounted upon the cap 4 of the tower or derrick in such a manner as to admit of the shaft turning to adapt the wind-wheel to the currents of air,

so as to receive the full benefit thereof. A casting 5 is clipped to the upper portion of the shaft 2 and has oppositely-extended lugs, to which braces 6 and 7 are connected. Longitudinal bars 8 are bolted or otherwise connected to the casting 3 and are arranged horizontally and together with the braces 6 and 7 and the adjunctive connections form the frame of the engine. A pillow-block 9 is arranged at one end of the bars 8 and a corresponding pillow-block 10 is located at a point between the extremities of the bars 8. The shaft 11 of the wind-wheel is journaled in the pillow-blocks 9 and 10 and is provided at its inner end with a crank-wheel 12, which is connected by pitman 13 to the vertically-disposed pump-rod 14. The braces 16 are connected at their lower forward ends to lateral extensions of the pillow-block 9 and at their upper rear ends to the lateral extensions of the casting 5. The wind-wheel is arranged at one end of the frame and a counterweight 15 is located at the opposite end, so as to balance the engine upon the vertical shaft 2 and obviate any lateral stress which would tend to produce binding and detract from the efficiency of the engine. The counterweight 15 is composed of similar parts, which are secured thereto and to the end portions of the bars 8 opposite to that provided with the wind-wheel. The wind-wheel is composed of a frame and pivoted wings. The frame comprises a hub 16, radial arms 17, firmly connected at their inner ends to extensions of the hub, and rods or bars 18, connecting the arms 17 at their outer ends. The arms 17 and bars 18 may be connected in any substantial manner, and, as shown, fittings 19 are provided, said fittings being approximately of T form and each having three sockets or ends into which the terminal portions of the parts 17 and 18 are entered and secured. The wings 20 are of fan form, and each is composed of a series of blades, which are outwardly tapered and arranged, so that the wings as a whole present a uniform series of elements or blades for the wind to impact against. The wings are mounted so as to turn about the rods or bars 18 to present a greater or less surface to the action of the

wind, according to the load and the force of the wind. Any means may be employed for pivotally connecting the wings to the rods or bars 18, which form a support therefor. The means now to be described have been devised for controlling the wings to admit of throwing the same into and out of the wind either automatically or at the will of the operator.

A lever 21 is pivotally mounted at a point between its ends and is provided with a weight 22 adjustable thereon, so as to hold the wings into the wind according to any determinate pressure. An operating-cord or like part 23 is connected to the inner end of the lever 21 and extends through the lower portion of the vertical shaft 2 within convenient reach of the ground, so as to be drawn upon when it is required to throw the engine out of action. As shown, a pin or rod 24 connects the braces 7 at a point between their ends and forms a support for the lever 21. A collar 25 is slidably mounted upon an end portion of the shaft 11 and is formed with radial lugs 26, which are connected by rods 27 or analogous means to the respective wings 20. Upon moving the collar 25 toward the plane of the wind-wheel the wings of the latter are caused to assume an approximately horizontal position, and upon moving said collar outward to a normal position the wings 20 are made to stand about at a right angle to the current of the wind and to the shaft 11, as indicated most clearly by the full lines in Fig. 2. Rods or bars 28 are connected at one end to the collar 25 and at the opposite end to an arm 29, projected from the lever 21, and serve to transmit motion from one part to the other. The rods 28 are composed of sections, which are connected by means of a swivel of ordinary construction to admit of free rotation of the wheel and operation of the wings 20. The arm 29 is composed of companion members secured at one end to the lever 21 upon opposite sides of its fulcrum and converged toward their outer ends, at which point said arm is pivotally connected to the rods 28. A standard 30, connected to the bars 8, receives the wind-wheel shaft 11 and is provided with opposite extensions, in which the rods 28 are slidably mounted. When the parts of the engine are assembled substantially as shown in Fig. 1, the wings 20 are held in the wind by the weight 22 upon the outer end of the lever 21. By adjusting the weight 22 upon the lever 21 the mill may be regulated to any determinate strength of air-current. When drawing upon the connection

23, the lever 21 is operated, and through the connections herein specified the wings 20 are turned from the vertical to the horizontal, so as to present a greater or less effective surface for the action of the wind, thereby admitting of controlling the speed of the engine or throwing the latter out of gear entirely when it is desired to have the engine at rest.

Having thus described the invention, what is claimed as new is—

1. In a windmill, a frame comprising an approximately horizontal portion, oppositely-disposed braces connected at their outer ends to the end portions of said horizontal portion, a vertically-disposed shaft having connection with said braces at their point of convergence and with the said horizontal portion, a wind-wheel arranged at one end of the frame and a counterweight at the opposite end of the frame for balancing the engine about said vertical shaft, substantially as set forth.

2. In a windmill, the combination of horizontal bars, a pillow-block at one end and at a point between the extremities of said bars, oppositely-disposed braces, a vertically-arranged shaft, means for connecting said shaft to the horizontal bars and to the braces at their point of convergence, a shaft journaled in said pillow-blocks, a wind-wheel connected to said shaft, and a counterweight at the end of the frame opposite to that provided with the wind-wheel, substantially as set forth.

3. In a windmill, the combination of a frame comprising horizontal and oppositely-inclined portions, a wind-wheel at one end of the frame and comprising pivoted wings, a counterweight at the opposite end of the frame, a weighted lever, a pin connecting the rear complementary braces and forming a support for said weighted lever, converged rods extended downward from said weighted lever and journaled at their upper ends thereto upon opposite sides of the said pin, an operating connection attached to said weighted lever, a collar slidably mounted in coaxial alinement with the wind-wheel and connected to the wings thereof, and rods connecting said collar with the converged rods extended from the weighted lever, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN KUCERA. [L. S.]
GEORGE KUCERA. [L. S.]

Witnesses:

GEORGE F. SAWYER,
CARRIE PATTERSON.