

R. D. MOON & H. J. HORNE.
WINDMILL.

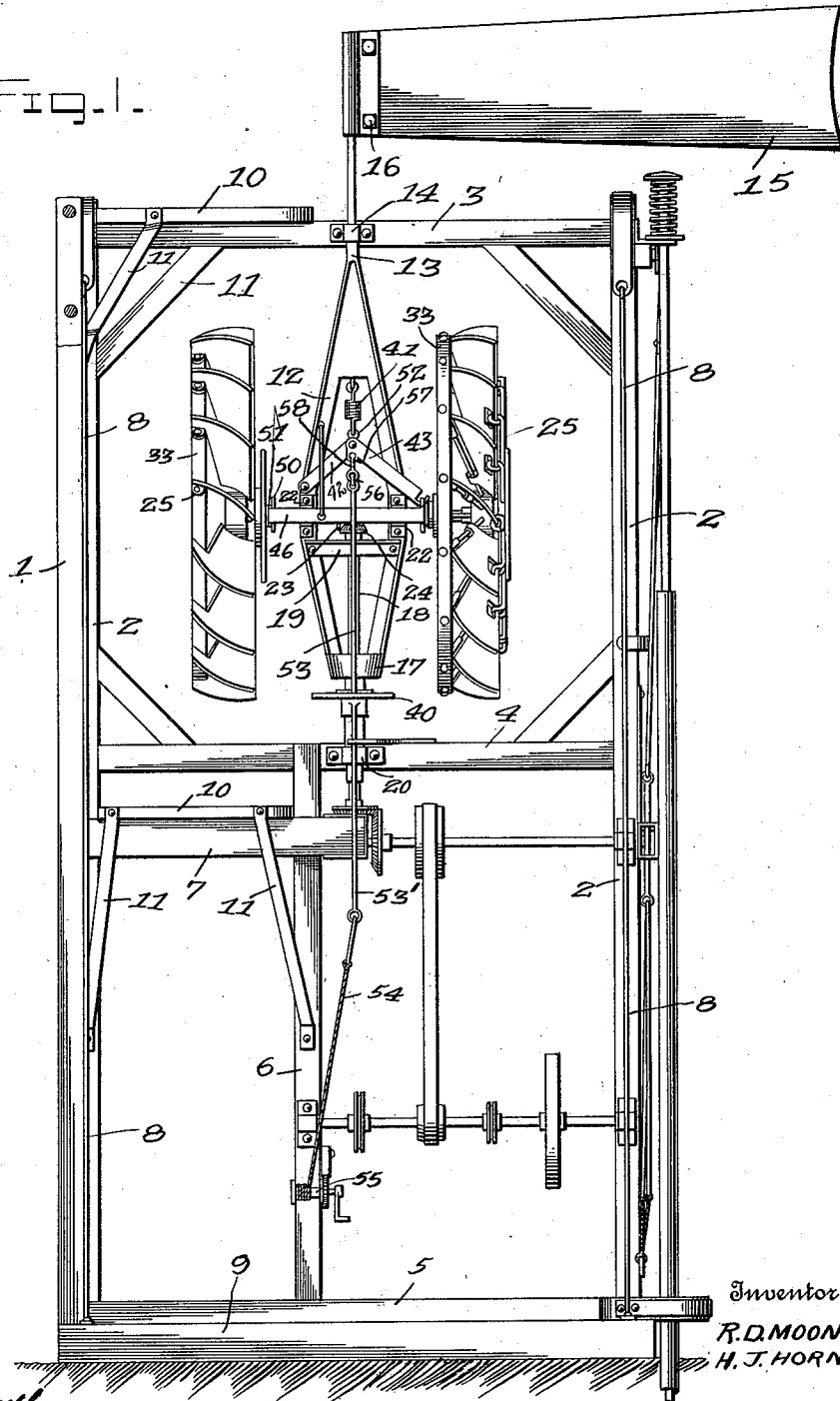
APPLICATION FILED SEPT. 24, 1909.

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2 SHEETS—SHEET 1.

1,015,505.

Fig. 1.



Witnesses
W. H. Russell
R. D. Duffie

By

John T. Cuppie
his Attorney

Inventors
R. D. MOON
H. J. HORNE

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Fig. 2.

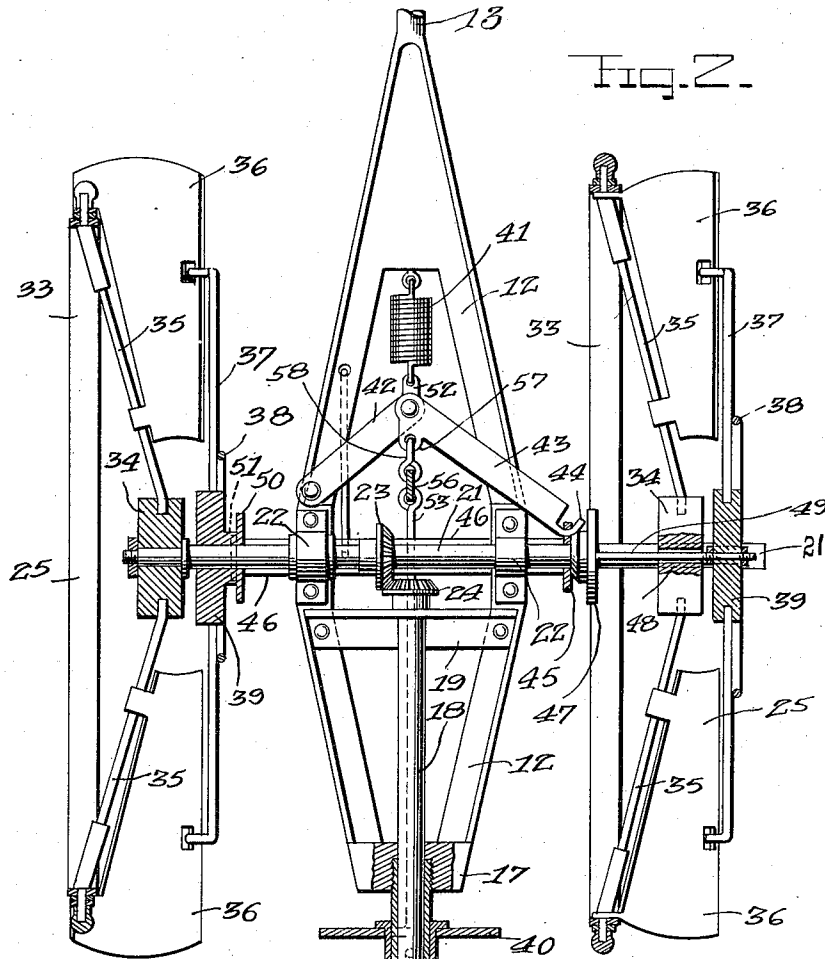
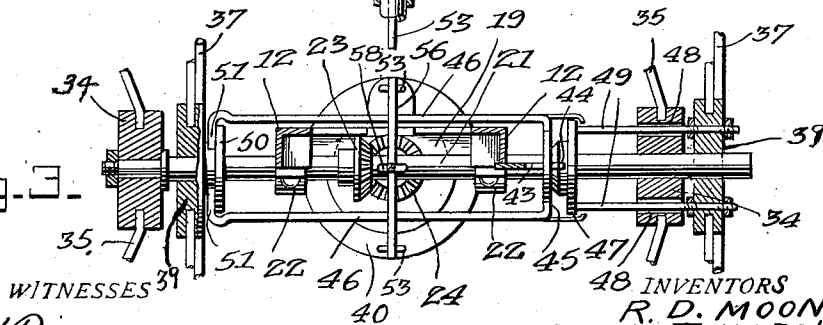


Fig. 3.



WITNESSES
W. H. Rockwell
R. R. Duffie

INVENTORS
R. D. MOON
H. J. HORNE
By *John A. Clappie*
Attorney

UNITED STATES PATENT OFFICE.

RICHARD D. MOON AND HENRY J. HORNE, OF SAN ANGELO, TEXAS.

WINDMILL.

1,015,505.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, RICHARD D. MOON and HENRY J. HORNE, citizens of the United States, residing at San Angelo, in the county of Tom Green and State of Texas, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

Our invention has relation to wind mills and the main object thereof is to produce such a device that will be strong and durable and at the same time inexpensive to construct.

With these and other objects in view our invention consists of the novel construction and arrangement of parts as are fully described in this specification, illustrated in the accompanying drawings forming a part thereof and particularly pointed out in the claim hereunto appended.

Reference being had to the drawings, which are for illustrative purposes only and therefore not drawn to any particular scale, Figure 1 is a front elevation of our invention. Fig. 2 is an enlarged fragmental vertical sectional view taken through the wind wheels. Fig. 3 is a horizontal detail fragmental sectional view taken through the wind wheels on an enlarged scale.

Our invention is described as follows: The tower 1 comprises the vertical uprights 2 which are braced by means of the transverse beams 3, 4 and 5. An additional vertical upright 6 is interposed between said transverse beams 4 and 5. An additional transverse beam 7 is interposed between one of said vertical uprights 2 and upright 6. The purpose of said upright 6 and beam 7 will be brought forth herein later. Said tower is held against sidewise movement by means of the brace rods or cables 8 which are suspended from the uppermost ends of each of said uprights 1 and 2, and to the right and left thereof. Said braces are secured to a suitable base 9 or are buried into the ground to such a distance that they will be held firmly against movement. A platform 10 is supported by each of the beams 3 and 7 said platform being braced by means of the braces 11. The metallic framework 12 is rotatably mounted at its upper reduced portion 13 in a suitable bearing 14, said reduced portion extending upward the required distance beyond said beam 3 for the purpose of mounting the blade 15 thereupon, rigidly, by means of nut

and bolt connections 16 or the equivalent thereof. Said framework 12 is widest at its center, but from such point it tapers as it extends downwardly forming a collar 17 which encircles the vertical shaft 18, which is mounted in the crosspiece 19 of said framework 12 as its upper bearing. The lower bearing 20 of said vertical shaft 18 is secured to one of the side faces of said beam 4. Thus it will be seen that said metallic framework will turn whenever the position of said blade 15 is varied by the wind. Whenever said framework rotates it carries with it the longitudinal shaft 21 which is mounted for rotation in the bearings 22 thereof. Keyed to the shaft 21 is a beveled gear 23, which intermeshes with beveled gear 24 secured to the uppermost end of said shaft 18. Secured to each of the outer ends of said shaft 21 is a wind wheel 25, the construction of which will be more fully described hereinafter.

It will be observed that each of the blades of said wind wheels is dished in such a manner as to offer a greater resistance to the wind, thereby transmitting a greater amount of power to said shaft 21. Each of said wheels is provided with a hoop 33 and a hub 34. Extending radiately from each hub and passing through each hoop, is a plurality of spokes 35 which correspond to the number of blades 36 which each fan comprises. The blades 36 are pivotally connected at their windward edges with the spokes 35. Pivotal-ly connected to the leeward edge of each of the blades, is one of a second set of spokes 37 all of which are held against movement in relation to each other by means of a wire ring 38, which is welded thereto. Said spokes 37 are secured to a second hub 39, which is slidably held upon said shaft 21. Thus it will be seen that when said hubs 39 slide upon the spindle 21 away from their respective hubs 34, said blades 36 will straighten out so that the wind will not come in contact with any portion thereof other than their windward edge portions. Therefore this is the position that will be assumed by the blades when it is desired that the wheels do not rotate. The blades are held in this position by means of a feathering mechanism, which, normally, is held out of operation by means of the coil or helical spring 41. We will now proceed to describe the construction of said feathering mechanism. A short arm 42 has one of its ends pivotally held to the

metallic framework 12 at a suitable point thereof. Said arm extends slantingly upward and has pivoted to its free end a longer arm 43 provided at its free end with
 5 a hook 44 which engages the transverse strip 45 which connects together the longitudinal bars 46, the function of which will be brought forth later. Said strip 45 is provided with a perforation through which
 10 passes said spindle 21. One of said wind wheels is provided with a collar 47 which has extending therefrom through perforations 48 in the hub 34 a pair of projecting pins 49, which normally touch the corresponding hub 39 of said wheel. The other
 15 of said wind wheels is provided with a collar 50 which is integral with its secondary hub 39. Each of said longitudinal bars is provided with a right-angular portion 51, which
 20 portions engage said collar 50. When said arms 42 and 43 are pulled downwardly against the action of said spring 41 to which they are connected at their highest points by means of an eyelet 52, said arm 43 presses
 25 against the strip 45 forcing the longitudinal bars 46 to the right, which action causes said collar 50 to slide upon the spindle 21 also to the right thus straightening out the blades of the left of said wind wheels 25. The
 30 same action forces said collar 47 to the right which action presses said pins 49 against the secondary hub 39 with which they come into contact, thus straightening out the blades of that particular wind wheel. Said arms 42
 35 and 43 are drawn downward by means of two vertical rods 53 which have a plate 40 provided at their lower ends, said plate encircling the shaft 18 and adapted to slide vertically thereupon. Extending from the
 40 plate is a rod 53', to the lower end of which is provided a rope or cable 54, which winds upon a windlass 55 when said arms 42 and 43 are being drawn downward. The upper ends of said rods 53 are secured to the ends

of a swingle-tree 56, which is connected in 45 an eyelet 57 formed to said arm 43 by means of a clevis or hook 58 or any other connecting means adapted for the purpose.

The advantage of this structure is that when it is desired to swing the blades so that 50 they will not be operated upon by the wind this may be readily done for the reason that the wind is blowing in the direction in which both sets of blades will swing and therefore when the wind is moving at a great velocity 55 an operator may readily position the blades so that they will not take the wind.

Having described our invention what we claim as new, is:

In a wind mill a frame, a shaft horizontally journaled upon the frame, a set of 60 spokes fixed to the shaft at each end thereof, blades pivotally attached at their windward edges to the spokes, hubs slidably mounted upon the shaft one adjacent each set of 65 spokes, spokes carried by said hubs and pivotally connected with the leeward edges of the blades, bars slidably mounted upon the shaft and operatively connected with both hubs, to move the same simultaneously in 70 the same direction, toggle arms pivoted together at their inner ends and one pivoted at its outer end to the frame and the other pivotally connected at its outer end with the leeward end portions of said bars, a return 75 spring connected at its upper end with the frame and at its lower end with the link arms, and means for drawing the inner ends of the link arms down against the pull of the spring. 80

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

RICHARD D. MOON.
 HENRY J. HORNE.

Witnesses:

C. C. KIRKPATRICK,
 W. B. HUNTER.