

J. O. LINDSEY.

WINDMILL.

APPLICATION FILED JULY 8, 1911.

1,019,974.

Patented Mar. 12, 1912.

2 SHEETS—SHEET 1.

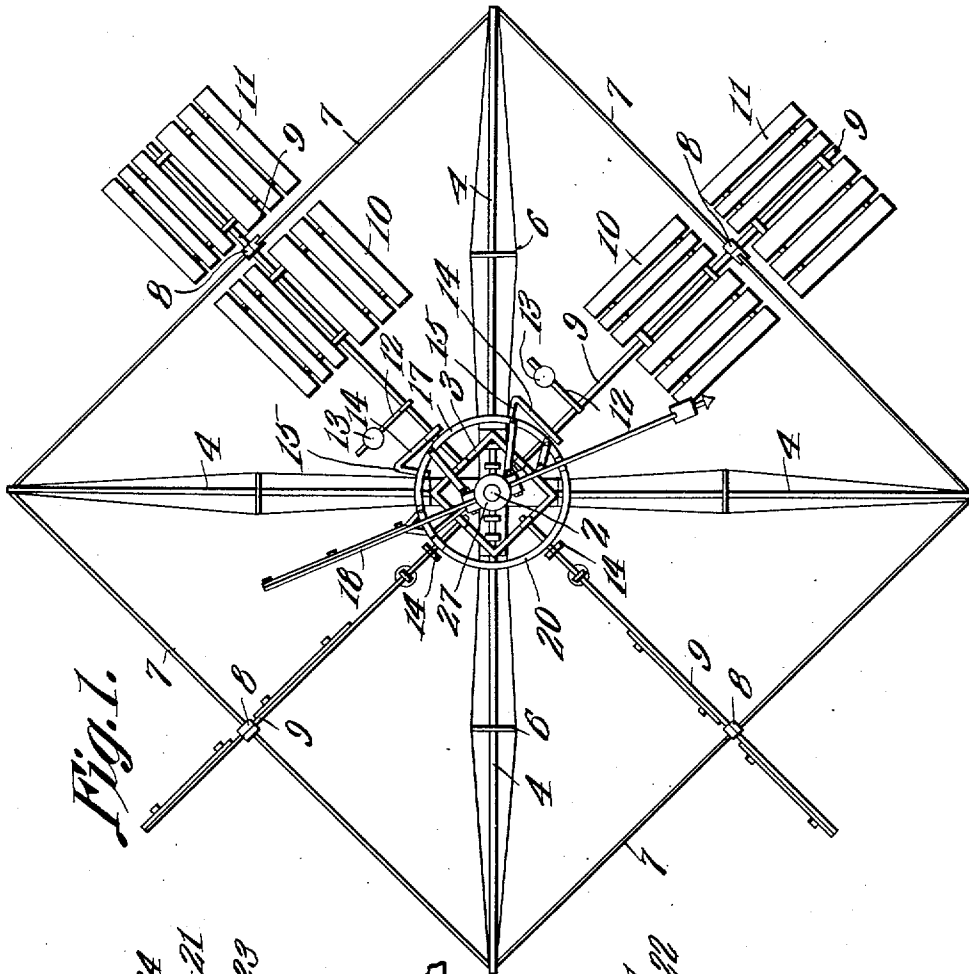


Fig. 1.

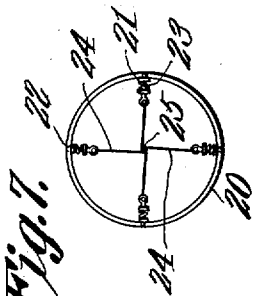


Fig. 7.

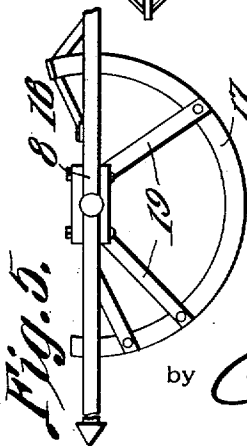


Fig. 5.

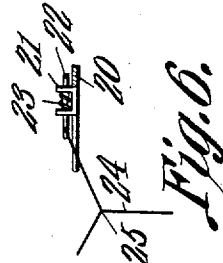


Fig. 6.

Witnesses

J. O. Lindsey
L. H. Wilson

James O. Lindsey,
Inventor

by

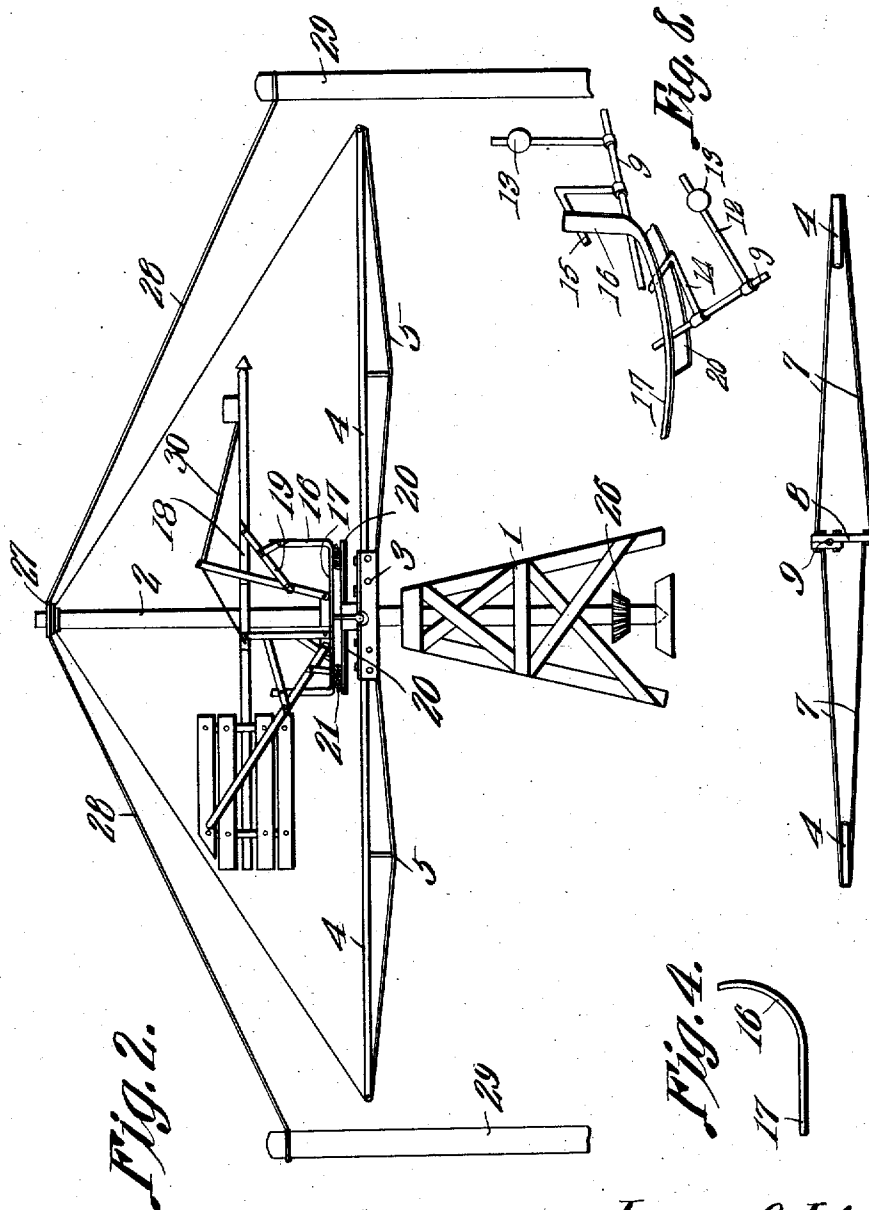
C. A. Snow & Co.
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by *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

JAMES OWEN LINDSEY, OF HEREFORD, TEXAS.

WINDMILL.

1,019,974.

Specification of Letters Patent.

Patented Mar. 12, 1912.

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To all whom it may concern:

Be it known that I, JAMES O. LINDSEY, a citizen of the United States, residing at Hereford, in the county of Deaf Smith and State of Texas, have invented a new and useful Windmill, of which the following is a specification.

This invention relates to windmills and its object is to provide a device of this character utilizing a horizontally movable wheel provided with wings having means whereby they can be automatically shifted out of the wind when they reach predetermined positions, thus permitting the steady rotation of the wheel in one direction and without hindrance by those of the wings which are advancing against the wind.

A further object is to provide a wing tripping element connected to a vane and whereby the said element is always held in proper position relative to the course of the wind for shifting the wings at the proper time during the rotation of the wheel.

A still further object is to provide means whereby the wings can be locked in horizontal positions and thus hold the wheel against rotation.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a plan view of the wind wheel and adjacent parts. Fig. 2 is a side elevation of the windmill, portions of the wheel being removed. Fig. 3 is a side elevation of one of the truss connections between the outer ends of the spokes of the wheel. Fig. 4 is a side elevation of the tripping rail. Fig. 5 is a plan view of the wing locking mechanism. Fig. 6 is a section through a portion of the wing lock. Fig. 7 is a plan view of a portion of the wing locking mechanism. Fig. 8 is a perspective view of a portion of the tripping rail and of certain of the parts adjacent thereto.

Referring to the figures by characters of reference 1 designates the upper portion of

the tower of the windmill and a standard or shaft 2 is mounted for rotation therein, said shaft having a central frame 3 secured thereto and revoluble therewith. Arms, preferably four in number, extend radially from the frame, as indicated at 4, each of these arms being provided with a truss 5 extending longitudinally thereunder and additional trusses 6 extending laterally therefrom. A pair of tie rods 7 extends laterally in each direction from the outer end of each of the spokes 4, these tie rods diverging away from the spokes to which they are secured, and being attached, at their spaced ends, to a bearing block 8 located midway between the spoke ends. This construction has been clearly illustrated in Fig. 3. These bearing blocks have shafts 9 journaled within them and the inner ends of the shafts are journaled in the frame 3. Each shaft extends longitudinally through two wings such as indicated at 10 and 11, the wings 10 being interposed between the bearing blocks 8 and the frame 3 while the wings 11 are mounted on those portions of the shafts 9 projecting beyond the bearing blocks 8. The shafts 9 are not extended through the centers of the wings but are off center so that one portion of each wing overbalances the other portion and said wings are thus normally held vertically. An arm 12 extends radially from each shaft 9 between the frame 3 and the wing 10 and said arm is disposed in the same plane with the wing and carries an adjustable weight 13. By shifting this weight away from the shaft 9, the wings can be almost balanced on their shafts so that they can easily swing out of the wind, thus materially reducing the power of the wheel. By shifting the weight toward the shaft 9, however, the wings will offer more resistance to the wind and the power of the wheel will thus be materially increased.

Each of the shafts 9 is provided, adjacent its inner end, with an arm 14 having an inwardly extending angularly disposed finger 15 adapted to ride against and to be deflected by the curved end 16 of an arcuate tripping rail 17. Said rail extends partly around the shaft 2 and is fixedly connected to a vane 18 which is mounted for rotation on the shaft 2, the connecting frame used for holding the rail 17 to the vane being indicated at 19. Rail 17 is arranged almost entirely at one side of the vane 18, the end

portions of the rail being extended short distances beyond the other side of the vane.

Extending under and connected to the rail 17 is a ring 20 having upstanding ears 21 arranged in pairs, each pair of ears carrying a bolt 22 normally projected radially by a spring 23. Cords 24 extend from the inner ends of the bolts and are connected together so that, by pulling on a single cord 25, all of the bolts may be drawn inwardly so as to retract the outwardly projecting ends of the bolts whereas, when the cord 25 is released, the bolts will be automatically projected. One of these bolts is provided for each shaft 9 and they are spaced apart equal distances.

It is to be understood that the arms 14 normally extend upwardly and that the fingers 15 travel in a path intersected by the upturned curved end 16 of the arcuate tripping rail 17. When the fingers 15 are under the rail 17, they hold the shaft 9 with wings 10 and 11 in a horizontal plane, and as the rail 17 is arranged practically only at one side of the vane, it will be apparent that the wings at said side of the vane will always be held horizontally while the wings at the other side of the vane are free to hang vertically or substantially vertical. When the bolts 22 are projected, or in their normal positions, they extend between the ring 20 and the rail 17, certain of the bolts projecting into the paths of the fingers 15 which are held down by rail 17 and thus preventing the wings 10 and 11 and their shafts 9 from rotating independently of the vane. When, therefore, a current of air flows against the wheel, the hanging or free wings will be shifted by the wind so as to move the vane slightly out of the wind until the pressures upon the vane and the hanging wings are equalized whereupon the wheel will remain practically stationary. When, however, the bolts are retracted by means of the cords hereinbefore described, the pressure of the wind against the free or hanging wings will cause the wheel to rotate and the pressure of the wind against the vane will promptly bring said vane into the wind. As the wheel rotates the fingers 15 will be brought successively against the deflecting upturned end 16 of the tripping rail 17 and will be swung downwardly thereby, thus rotating the shaft to which the arm 14 is connected and bringing the wings on the shaft to a horizontal position. The wings are maintained in this position as long as the finger is traveling under the rail 17 and, therefore, the wings remain horizontal until after they have passed under the front end of the vane whereupon the finger moves from under rail 17 and the wings, because overbalanced will swing to operative position and receive the force of the wind. Should the velocity of the wind in-

crease to an undesirable extent it will cause the hanging portions of the wings to swing back with the wind while the upstanding smaller portions of the wings will move forward against the wind, it being understood that the force necessary to thus swing the wings is dependent upon the distance between the shaft 9 and the weight 13. As soon as it is desired to stop the rotation of the wheel, the cords 24 and 25 are released and the bolts 22 thus spring radially, those bolts under the rail 17 moving into the path of the fingers 15 arranged under the rail and as soon as said fingers come into contact with the bolts, the vane 18 is swung slightly out of the wind by the momentum of the wheel and this movement of the vane and wheel continues until the pressure of the wind upon the vane and upon the free or hanging wings is equalized.

A gear, such as indicated at 26 may be secured to the shaft 2 and used for driving any suitable mechanism.

It will be apparent that whenever the direction of the wind changes, the vane 18 will shift the rail 17 so that said rail will always assume the same relation to the direction of the wind.

As shown in Fig. 2 the upper end of the shaft 2 may be mounted in a bearing ring or collar 27 from which guides 28 extend to anchoring posts 29 or the like, whereby the upper end of the shaft can be held steady during the operation of the mill.

As shown in Fig. 2, the vane 18 is preferably provided with a truss 30 for reinforcing it.

What is claimed is:—

1. A windmill including a vane, a wheel, said vane and wheel being separately revoluble about a common axis, radially disposed shafts carried by the wheel, wings secured to the shafts and normally suspended vertically, an adjustable counter-balance upon each shaft, cooperating means upon each shaft and on the vane for rotating the shaft and shifting the wing thereon to a horizontal position when said shaft and wing are extended beyond one side of the vane, and means for locking the wheel against rotation independently of the vane.

2. A windmill including a vane, a wheel, said vane and wheel being revoluble about a common axis and independently of each other, an arcuate tripping rail extended beyond one side of and movable with the vane, said rail having an upstanding deflecting terminal portion, shafts arranged radially within the wheel, wings carried by the shafts and normally extended vertically, means carried by each shaft and cooperating with the tripping rail for rotating the shaft and holding the wing thereon in a horizontal position while the shaft is extended beyond one side of the vane, and means for locking the

wheel against rotation independently of the vane.

3. A windmill including a vane, a wheel, said vane and wheel being separately revoluble about a common axis, wings carried by the wheel and normally vertical, cooperating means upon the wheel and vane for shifting the wings to horizontal positions when brought into place at one side of the vane,

and means for locking the wheel and vane 10 against independent rotation.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES OWEN LINDSEY.

Witnesses:

R. T. MOSES,

J. A. BUCKNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."