Oct. 29, 1935. E. G. FRANCIS 2,018,888

WINDMILL

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Fig. 1.

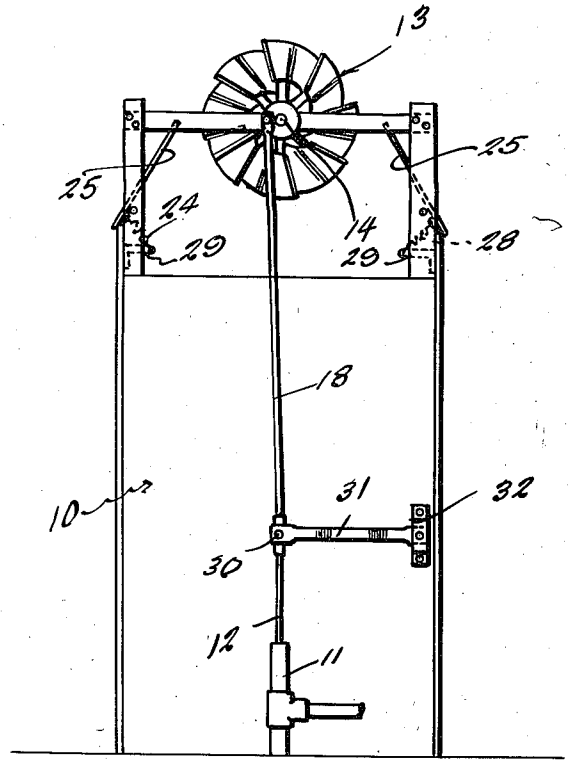
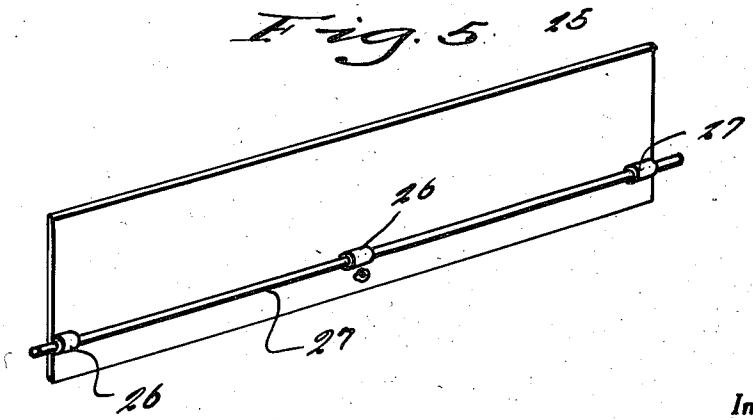


Fig. 5.



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Fig. 2.

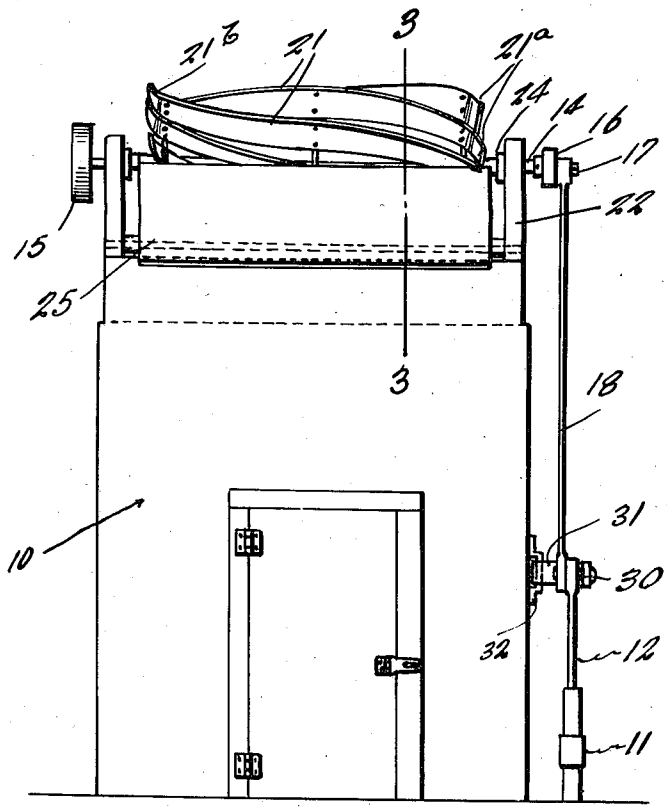
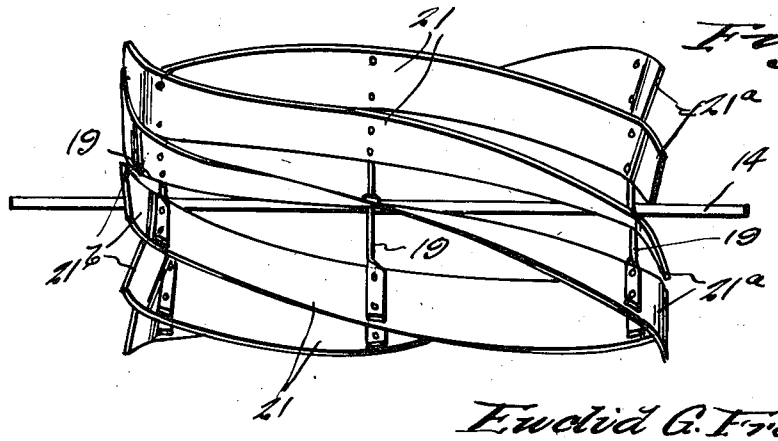


Fig. 4.



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Fig. 3.

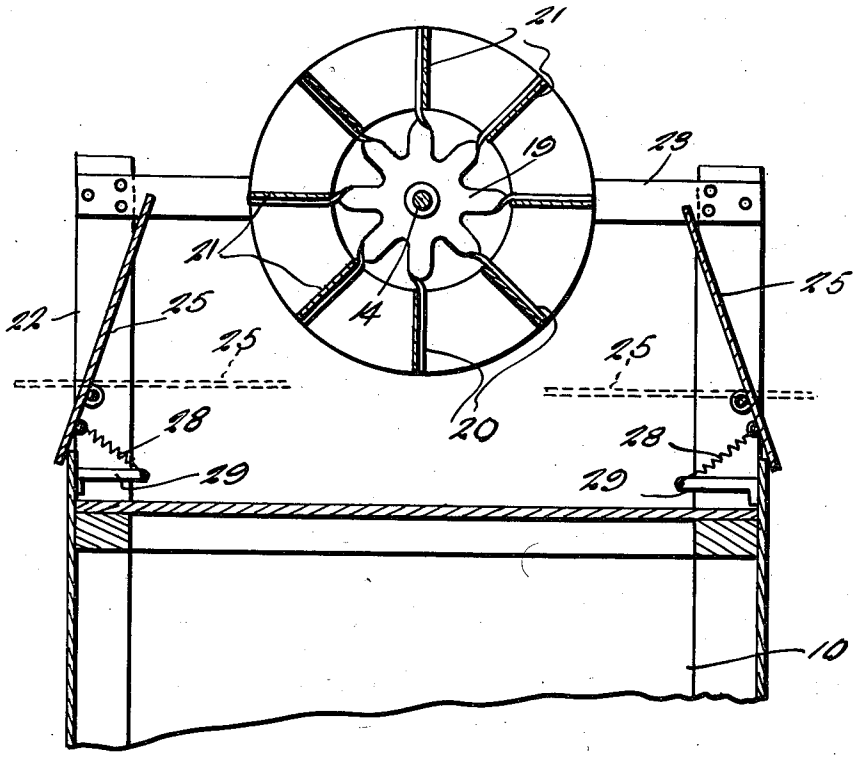
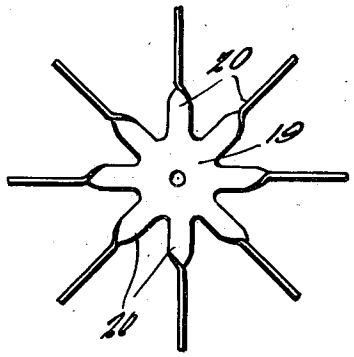
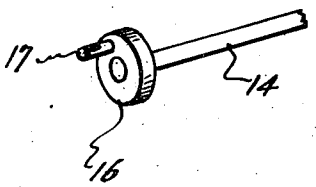


Fig. 7.

Fig. 6.





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UNITED STATES PATENT OFFICE

2,018,888

WINDMILL

Euclid G. Francis, Pride, Tex.

Application May 22, 1934, Serial No. 726,979

1 Claim. (Cl. 170—12)

This invention relates to windmills and has as an object thereof the provision of an improved wind wheel arranged to derive power from the wind and connected to drive pump, machinery or the like.

A still further object of the invention is to provide a device of this character characterized by extreme simplicity and economy in construction and operation.

A further object of the invention is to provide a wind wheel that may be readily mounted on the roof of a tower house and operatively connected with the sucker rod of a pump for reciprocating the latter.

The invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is an elevational view illustrating the application of the invention.

Figure 2 is a similar view taken at right angles to Figure 1.

Figure 3 is an enlarged sectional view taken substantially on the line 3—3 of Figure 2.

Figure 4 is a plan view of the wind wheel.

Figure 5 is a perspective view of a windshield.

Figure 6 is an elevational view of one of the spoke structures of the wind wheel, and

Figure 7 is a perspective view of one end of the wheel shaft.

Referring to the drawings by reference numerals it will be seen that 10 indicates generally a tower house of conventional construction, 11 a well casing disposed adjacent to one side of the house 10, and 12 the sucker rod of the pump.

In accordance with the present invention there is suitably supported above the roof of the house 10 a wind wheel 13 mounted on a shaft 14 to turn with the shaft, and the shaft 14 at one end is provided with a power take off wheel 15, and at a relatively opposite end with a disk 16 provided with an eccentric pin 17. A pitman rod 18 is connected at one end with the eccentric pin 17, and in a manner hereinafter more fully described is connected at its free end with the sucker rod 12 for transmitting power from the shaft 14 to the sucker rod for reciprocating the latter in operating the pump.

The improved wind wheel 13 comprises a series, in the present instance three spoke assemblies including a pair of end assemblies and an intermediate assembly secured to the shaft 14 in any suitable manner as to rotate therewith. Each of these spoke assemblies is preferably cut from a single blank of metal or other suitable material to provide a hub portion 19 having radiating therefrom a circular series of spokes 20 which are longitudinally twisted as clearly suggested in Figures 3 and 6. Secured to the outer end of the spokes 20 are blades 21 and these blades, as clearly shown in Figure 4 are spirals, and have the free ends thereof reversely bent as indicated at 21*a* and 21*b* respectively. The relative angular arrangement of the spoke assemblies are such as to secure the blades 21 at the proper pitch and twist. The spiral twist thus given to the blades, in addition to increasing the efficiency of the wind wheel adds strength to the individual blades.

The wind wheel 13 is supported within a suitable frame which includes corner posts 22 rising from the roof of the power house 10, and these posts are connected in pairs at their upper ends by cross bars 23. The bars 23 at their free ends are provided with suitable bearings 24 in which are journalled the end portions of the aforementioned shaft 14.

At opposite sides of the axis of the wind wheel 13 are mounted windshields 25.

As shown in Figure 5 each windshield 25 consists of an oblong plate of any suitable material provided on one side with longitudinally spaced sleeves 26 to accommodate a hinge or pivot rod 27. The ends of the pivot rod 27 are suitably supported between a pair of opposing corner posts 22.

The windshields 25 are thus mounted to swing inwardly from an inclined position to a horizontal or dotted line position suggested in Figure 3 in response to the pressure of the wind thereagainst. The shields 25 are normally urged to the inclined or full line position shown in Figure 3 through the medium of springs 28 which are secured at one end to the inner side of the shields 25 below the pivot rods 27, and at a relatively opposite end suitably anchored to inwardly extending brackets 29. These brackets 29 are mounted on the upper portion of the front and rear walls of the tower house, which portions as clearly shown in Figure 3 project above the roof of the tower house and serve as stops against which the shields 25 adjacent their pivoted edges abut and are yieldably retained in abutment through the medium of the springs 28.

Referring again to the connection between the sucker rod 12 of the pump and the piston rod 18 it will be seen that these rods are pivotally connected together as at 30, and where so connected are also pivotally connected to one end of a guide arm 31 that is pivoted for vertical swinging movement through the medium of a bracket 32 mount-

ed on one side wall of the power house 10, and as shown in Figure 1.

From the above it will be apparent that in operation as the wind wheel 13 is caused to revolve by the action of the wind against the blade thereof power from shaft 14 will be transmitted through the pitman rod 18 to the sucker rod 12 of the pump for operating the latter.

In the event of a very high wind, the action thereof against the shields 25 would cause the latter, against the action of springs 28 to swing from the full line position shown in Figure 3 to the dotted line position shown in said figure thus permitting the wind to strike the vanes 21 of the wheel at the bottom of the wheel thus retarding the rotative speed of the wind wheel and consequently prevent a too fast operation of the pump.

In a light wind the shields 25 will maintain substantially the position suggested in full line in Figure 3 thus protecting the lower vanes from the wind and permitting the upper vanes to obtain maximum benefit from the wind so as to cause the wind wheel to rotate at a speed proper for the operation of the pump.

Having thus described my invention, what I claim as new is:

A shield for windmills adapted to be pivotally mounted above the roof of the windmill tower house comprising a rectangular shaped member having spaced bearings on one side thereof disposed below the longitudinal center thereof in longitudinal alignment, a rod in said bearings projecting beyond the ends of said member, the projected ends of said rod being secured to said tower permitting pivotal movement of the member about said rod, and a spring anchored at one end to the tower and connected at an opposite end with the member adjacent one side of the rod and yieldably urging an edge of the member into engagement with adjacent walls of the tower house for normally retaining the member in a substantially vertical position.

EUCLID G. FRANCIS.