No. 769,190. PATENTED SEPT. 6, 1904.

H. S. SIMPSON.

WINDMILL.

APPLICATION FILED FEB. 18, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.

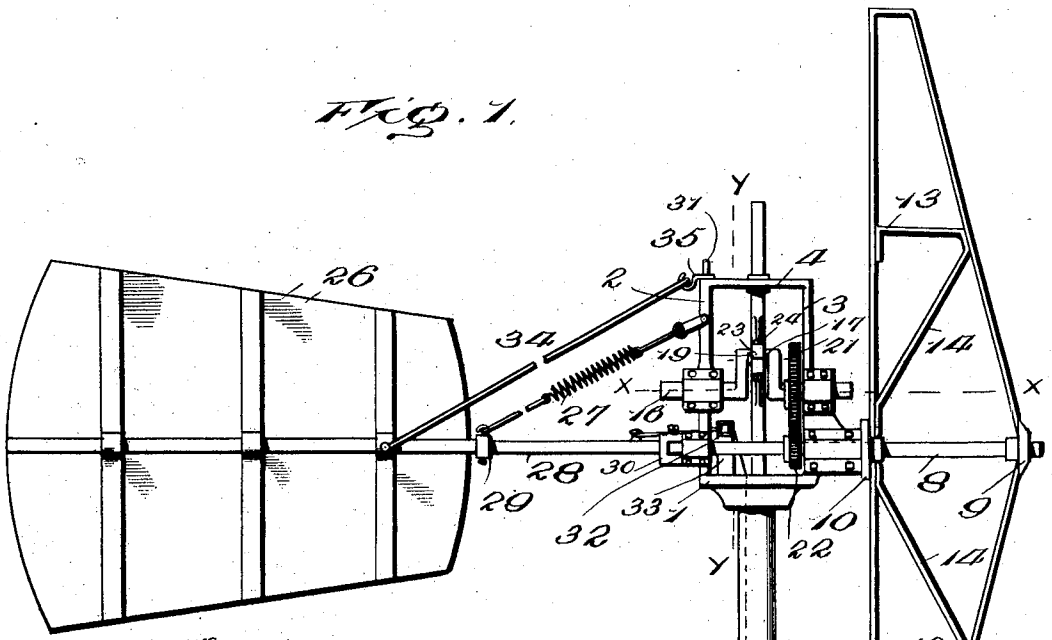
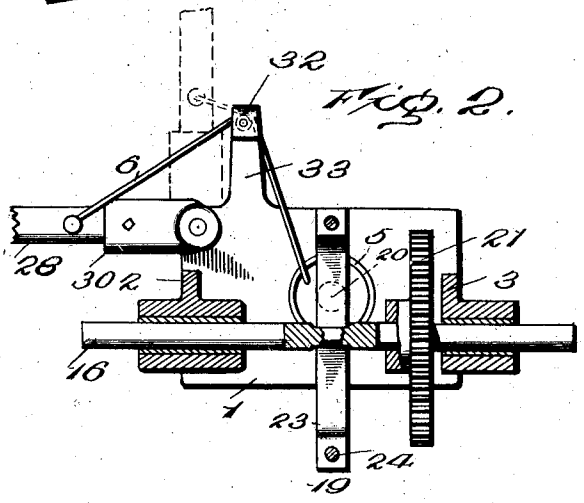


FIG. 2.



Witnesses

W. N. Woodson

Inventor

H. S. Simpson.

By R. H. B. Lacey & Co. Attorneys.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

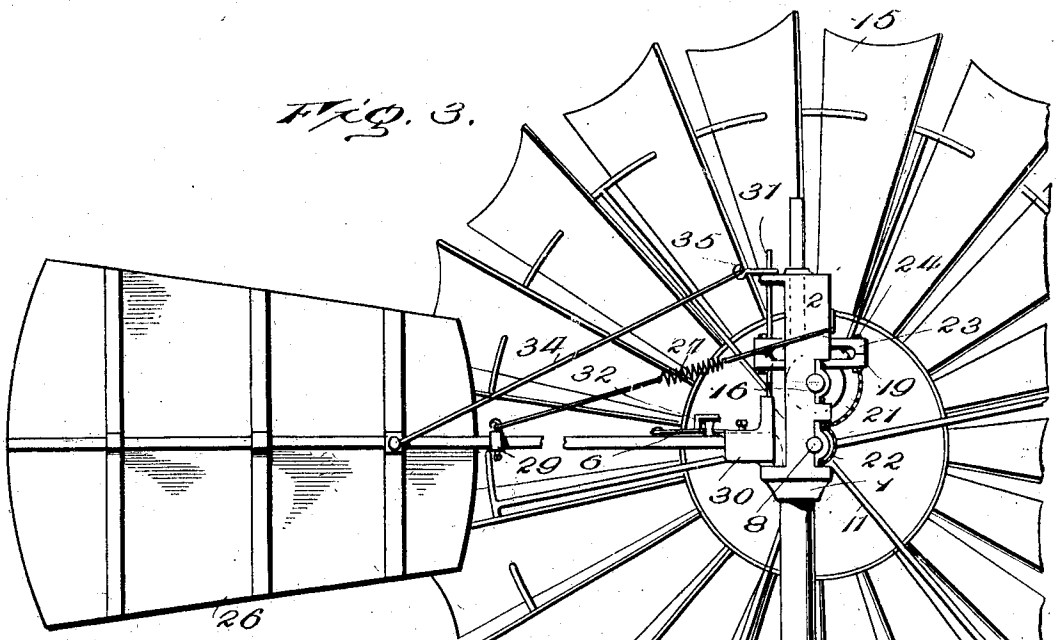


Fig. 4.

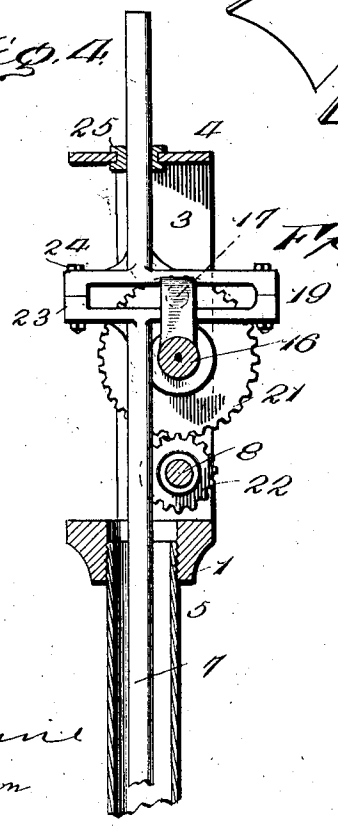
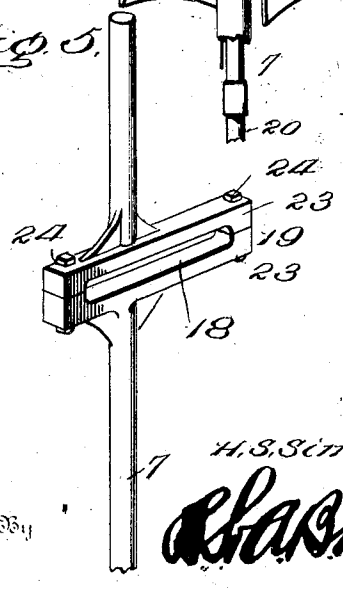


Fig. 5.



Witnesses

J. Bennie

W. N. Woodson

Inventor

H. S. Simpson.

By

Bakewell & Bakewell

His Attorneys.

No. 769,190. Patented September 6, 1904.

UNITED STATES PATENT OFFICE.

HORATIO S. SIMPSON, OF MANKATO, KANSAS, ASSIGNOR OF ONE-HALF TO WILLIE SIMPSON AND O. P. SIMPSON, OF MANKATO, KANSAS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 769,190, dated September 6, 1904.

Application filed February 18, 1904. Serial No. 194,268. (No model.)

To all whom it may concern:

Be it known that I, HORATIO S. SIMPSON, a citizen of the United States, residing at Mankato, in the county of Jewell and State of Kansas, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

This invention relates to the type of wind-engines commonly designated as "vertical" solid wheels.

The purpose of the invention is to simplify and improve the general construction of the type of engines aforesaid whereby their efficiency is increased, the working parts rendered more accessible, and the engine as a whole made more subservient to the will of the operator both as regards work to be performed and safety in high winds.

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 side elevation of a windmill embodying the invention. Fig. 2 is a plan section of the operating parts on the line X X of Fig. 1. Fig. 3 is a rear view of the engine, showing the tail-vane in a plane parallel with the wheel. Fig. 4 is a vertical section on the line Y Y of Fig. 1 looking to the right, showing the parts on a larger scale. Fig. 5 is a detail perspective view of the reciprocating rod to which the pump or machine to be operated is connected.

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 framework comprising the head of the engine and to which the working parts are attached comprises the base 1, uprights 2 and 3, and transverse connecting-piece 4. A tube 5 is secured to the base 1 and constitutes the vertical axis about which the engine turns in adapting itself to the various currents of air. The operating-cord 6 and power-transmitting rod 7 pass through the tube 5 and extend within convenient reach of the ground in the usual manner. The shaft 8 of the wind-wheel is journaled in bearings applied to the lower portion of the uprights 2 and 3 and is provided with collars 9 and 10, to which the inner ends of rods or bars 11 and 12 are connected in any substantial manner. Braces 13 and 14 are interposed between the rods or bars 11 and 12 to stiffen the same and increase the stability of the wheel. The sails or wings 15 are attached to the framing of the wheel in any substantial manner and are inclined, so as to spill the wind in the operation of the engine. The crank-shaft 16 is journaled in bearings applied to the uprights 2 and 3, and its crank portion 17 is arranged to operate in a slot 18 of the cross-head 19, forming a part of the reciprocating rod or bar 20. The crank-shaft 16 derives its power from the wind-wheel shaft 8 by means of the gearing 21 and 22. The gear element 22 is a spur-pinion secured to the shaft 8 and in mesh with the gear-wheel 21, secured to the crank-shaft.

The reciprocating rod or bar 20 is composed of upper and lower sections, each having a cross-piece 23 at its meeting ends, which unitedly form the cross-head 19, the cross-pieces when brought together being secured by the bolts or fastenings 24 and having their inner sides cut away between their ends to form the slot 18, in which the crank portion 17 of the crank-shaft 16 operates. The upper portion of the reciprocating rod is mounted in a bushing 25, applied to the transverse piece 4, and the lower portion enters the tube 5 and is adapted to have the pump-rod 7 or like part connected thereto.

The tail-vane 26 is set to one side of a vertical plane passing through the axis of the wheel to admit of the wind-wheel presenting a greater surface upon one side of the plane of the tail-vane than upon the other, whereby there is a tendency for the wind to throw the engine out of action by turning the wheel so as to occupy a plane parallel with the plane

of the tail-vane, as indicated in Fig. 3. To hold the engine in the wind, the spring 27 is provided and connects the arm 28 of the tail-vane with the framework of the engine, said spring acting in opposition to the force of the wind exerted upon the superior wind-surface of the wheel. The tension of the spring 27 may be varied as desired, whereby the engine may be adjusted to air-currents of different force. The tension of the spring 27 may be regulated by shifting the collar 29 along the arm 28, one end of the spring being connected to said collar, as indicated. The arm 28 of the tail-vane is secured in the socket 30, pivotally connected to the framework of the engine by means of the hinge-rod 31, passed through an opening of the socket 30 and through corresponding openings in lateral extensions of the upright 2. As shown most clearly in Fig. 3, the hinge-rod 31 is located to one side of a vertical plane passed through the shaft 8 parallel therewith. The pull-cord 6 is connected at one end to the arm 28 and passes around a pulley 32, mounted upon the outer end of an arm 33, projected laterally from the base 1, and thence extends downward through the tube 5. This construction is shown most clearly in Fig. 2. A pull upon the cord 6 draws the vane around parallel with the wheel, as indicated by the dotted lines in Fig. 2. Hence the wheel occupying a position parallel with the direction of the wind is out of action. The tail-vane is braced by the stay 34, connected thereto at one end and having its opposite end in engagement with a hook 35, fitted upon the upper end of the hinge-rod 31.

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

In a windmill, the combination of a vertically-arranged wind-wheel, a crank-shaft parallel with the axis of the wind-wheel, gearing connecting the wind-wheel and crank-shaft, a reciprocating rod having a cross-head slotted to receive the crank portion of the crank-shaft, a tail-vane arranged to one side of the axis of the wind-wheel, a spring for holding the wind-wheel in the wind, a stay for supporting the tail-vane, and a pull-cord to admit of throwing the mill out of action, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HORATIO S. SIMPSON. [L. S.]

Witnesses:

W. A. MITCHELL,

C. H. OLSON.