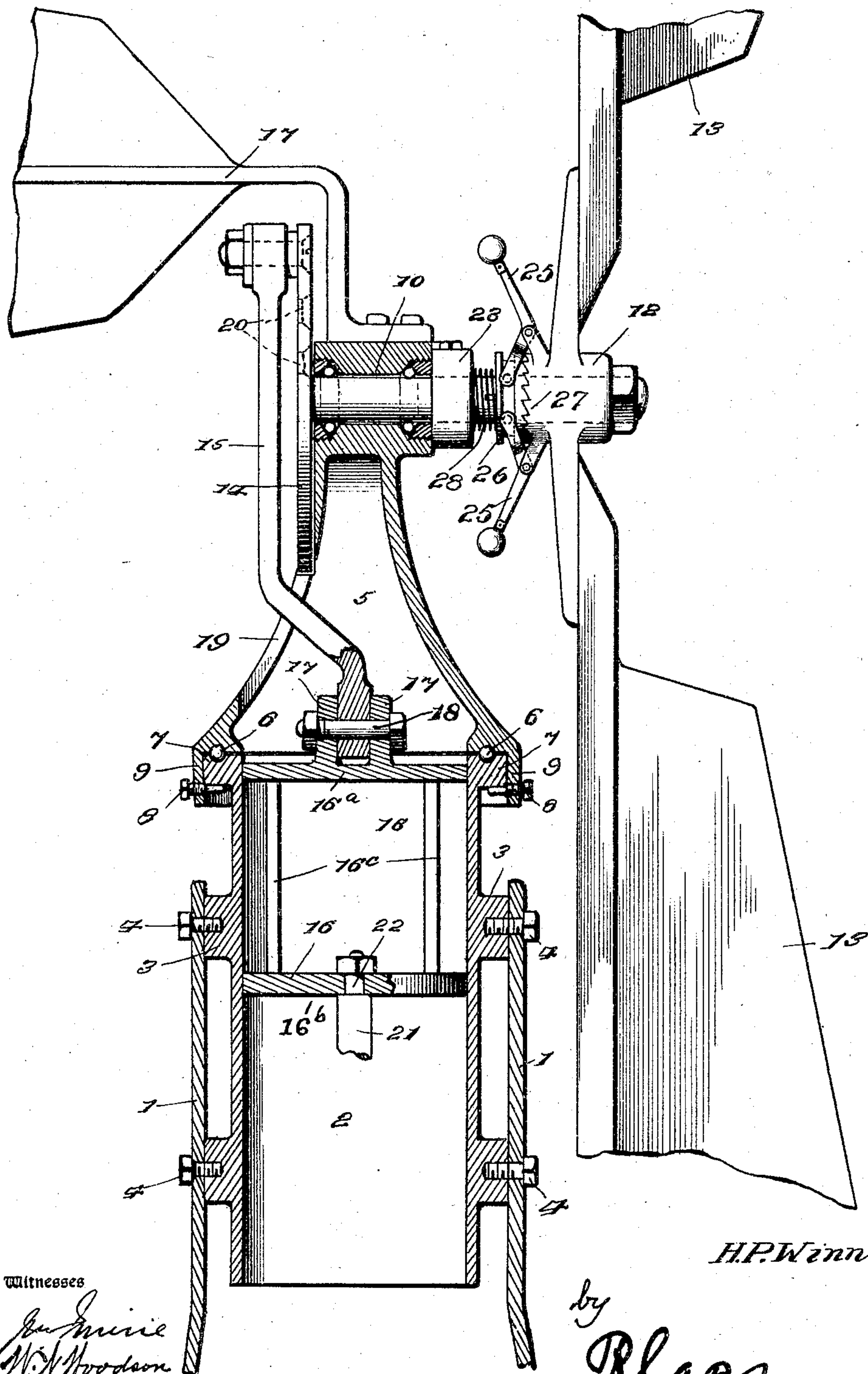


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H. P. WINN.
WINDMILL.

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UNITED STATES PATENT OFFICE.

HARRY P. WINN, OF BROADDUS, VIRGINIA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 783,163, dated February 21, 1905.

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To all whom it may concern:

Be it known that I, HARRY P. WINN, a citizen of the United States, residing at Broaddus, in the county of Nelson and State of Virginia, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

This invention embodies improvements in windmill construction, and relates particularly to the mounting of the wind-wheel upon the tower and the operative connections between said wheel and the pump-rod which is operated thereby.

The invention further aims to secure a construction and arrangement of parts whereby the general efficiency of the wind-engine is promoted, a desideratum being to attain a simplicity as regards the above which reduces the cost of manufacture and gives rise to other obvious advantages.

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 accompanying drawing.

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 drawing, in which the figure is a vertical sectional view showing clearly that portion of the windmill construction comprised in my invention.

Corresponding and like parts are referred to in the following description and indicated in the drawing by the same reference characters.

Since the tower construction of the mill forms no part of the invention, same is not illustrated, the operating mechanism which constitutes the invention consisting, essentially, of the supporting means of the wind-wheel and the connections through the medium of which the wheel is caused to actuate the pump-rod.

It is designed that a plurality of braces or similar supporting members 1 be projected upwardly from the upper portion of the tower of the mill, and secured to the upper ends of

the bases or standards 1 is a cylinder or casing 2. It is preferred that the casing be provided with a number of threaded bosses 3, and fastenings 4 are passed through the upper ends of the standards 1 and attached to the bosses 3 in an obvious manner. Mounted upon the cylinder or casing 2 is a rotating head 5, and this head is preferably of hollow formation, being mounted upon ball-bearings 6, carried by the upper end of the aforesaid cylinder 2. The bearings 6 are located in an annular groove of an annular flange 7, formed with the upper end of the cylinder 2, and the lower extremity of the head 5 extends below the flange 7, set-screws 8 or the like being employed to secure the head from displacement from the said cylinder. Set-screws 8 pass transversely through openings in an integral circular flange 9 at the lower extremity of the said head 5, and the inner ends of said screws engage beneath the flange 7, serving in the capacity of stops for the purpose above mentioned. At the upper end of the head 5 is provided a transverse bearing 10, in which is mounted a wheel-shaft 11, and the wheel, which is of any conventional and approved construction, consists of the usual hub 12 and blades or wings 13. The wind-wheel is carried by one end of the shaft 11, and at the opposite end of said shaft is mounted a crank-wheel 14, which crank-wheel is connected, by means of a pitman 15, with an actuator 16, located within the cylinder 2. The usual vane 17 is suitably secured to the head 5 above the bearing 10 therein.

The actuator 16 mentioned above is of a formation somewhat similar to a piston and comprises spaced upper and lower plates 16^a and 16^b, which plates are connected by means of stay-rods 16^c, the latter being of any suitable number to lend rigidity to the construction. The actuator 16 moves vertically in the cylinder 2, and the uppermost plate 16^a thereof has projected from the upper side spaced pivot-lugs 17, which receive the lower end of the pitman 15 therebetween, the latter being attached to the lugs 17 by the usual pivot member 18. The head 5 is provided with an opening 19 in one side thereof, through which the pitman passes to its point of connection with

the actuator 16, and this opening is of sufficient size to allow for the range of movement of the pitman in its stroke. Should it be desirable to vary the stroke of the pitman 15, and thereby the movement of the actuator 16, the point of connection of the pitman with the crank-wheel may be adjusted, a plurality of openings 20 at different distances from the line of axis of the crank 7 being provided therein. The crank-pin of the wheel 14 may be secured in any of the openings 20 for the purpose above mentioned. The pump-rod is indicated at 21 and has a swivel connection, as shown at 22, with the lower plate 16^b of the actuator 16. As the inner engine is driven the pitman 15, because of its operative connection, as shown, transmits movement to the actuator 16, and the latter thereby reciprocates the pump-rod 21 vertically. The pitman-rod 21 is connected with the pump mechanism of the mill in the usual manner. As the direction of the wind-current varies the wheel will of course adjust itself properly, and the mounting of the head 5 upon the cylinder 2 admits of the foregoing in a manner which will be readily seen. As the head 5 revolves according to the movement of the wind-wheel in adjusting itself to the wind the actuator 16 also has imparted thereto a rotating movement. A set-collar 23 is attached to the wheel-shaft 11, so as to properly position the said shaft in its bearing 10.

It will be understood that within the contemplation of the invention it is designed to provide any suitable type of governor mechanism for automatically throwing the pump mechanism into or out of gear in very heavy winds. That illustrated consists of a pair of governor-arms 25, pivoted to the hub of the wind-wheel, and these arms are connected with a movable clutch-collar 26, keyed to the shaft 11 and held normally in clutch with a clutch element 27 on the wheel-hub aforesaid by a spring 28. As the wheel revolves under normal conditions of service the engagement of the members 26 and 27 causes the shaft 11 to rotate, imparting actuation to the pump mechanism through connections before described. Should the wheel begin to revolve too fast because of a heavy wind, the arms 25 will move toward the same in the customary manner, and since these arms are of bell-crank formation their inner ends will cause the clutch member 26 to move from the element 27, and the motion of the shaft 11 will cease, as will be readily comprehended. Also I may provide a mechanism of approved form for permanently throwing the pump out of operation.

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

1. In windmill construction, the combination of the casing 2, a revolving head carried by said casing and provided with a bearing, a wheel-shaft mounted in the bearing of the head, the wind-wheel, the actuator mounted in the casing, operative connections between the wind-wheel and the actuator, a pump-rod, and connecting means between the actuator aforesaid and said pump-rod.

2. In windmill construction, the combination of the casing, a revolving head carried by said casing and provided with a bearing, a wheel-shaft mounted in the bearing of the head, the wind-wheel, the actuator mounted in the casing, operative connections between the wind-wheel and the actuator, a pump-rod, and connecting means between the actuator aforesaid and said pump-rod, the actuator mounted in the casing and comprising spaced members movable longitudinally in said casing.

3. In windmill construction, the combination of the casing or cylinder, a revolving head carried by said casing or cylinder and provided with a bearing, a wheel-shaft mounted in the bearing of the head, the wind-wheel, the actuator mounted in the casing or cylinder, operative connections between the wind-wheel and the actuator, a pump-rod, and a swivel connection between the actuator and the pump-rod.

4. In windmill construction, the combination of supporting-standards, a casing or cylinder attached to said standards and provided at its upper end with a flange, a head rotatably supported upon the upper end of the casing, engaging means between the head and the flange of said casing, said head being of hollow formation and provided with an opening in a side thereof, an actuator movable in the cylinder or casing and comprising upper and lower plates and stay-rods connecting said plates, a pump-rod having swivel connection with the lower plate of the actuator, the head being provided with a bearing, a wheel-shaft mounted in said bearing, a wind-wheel mounted upon the shaft, a crank-wheel mounted upon the shaft, and a pitman connecting the crank-wheel with the upper plate of the actuator and passing through the opening in the side of the head.

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

HARRY P. WINN. [L. S.]

Witnesses:

E. SCRAGGS,
J. WINN.