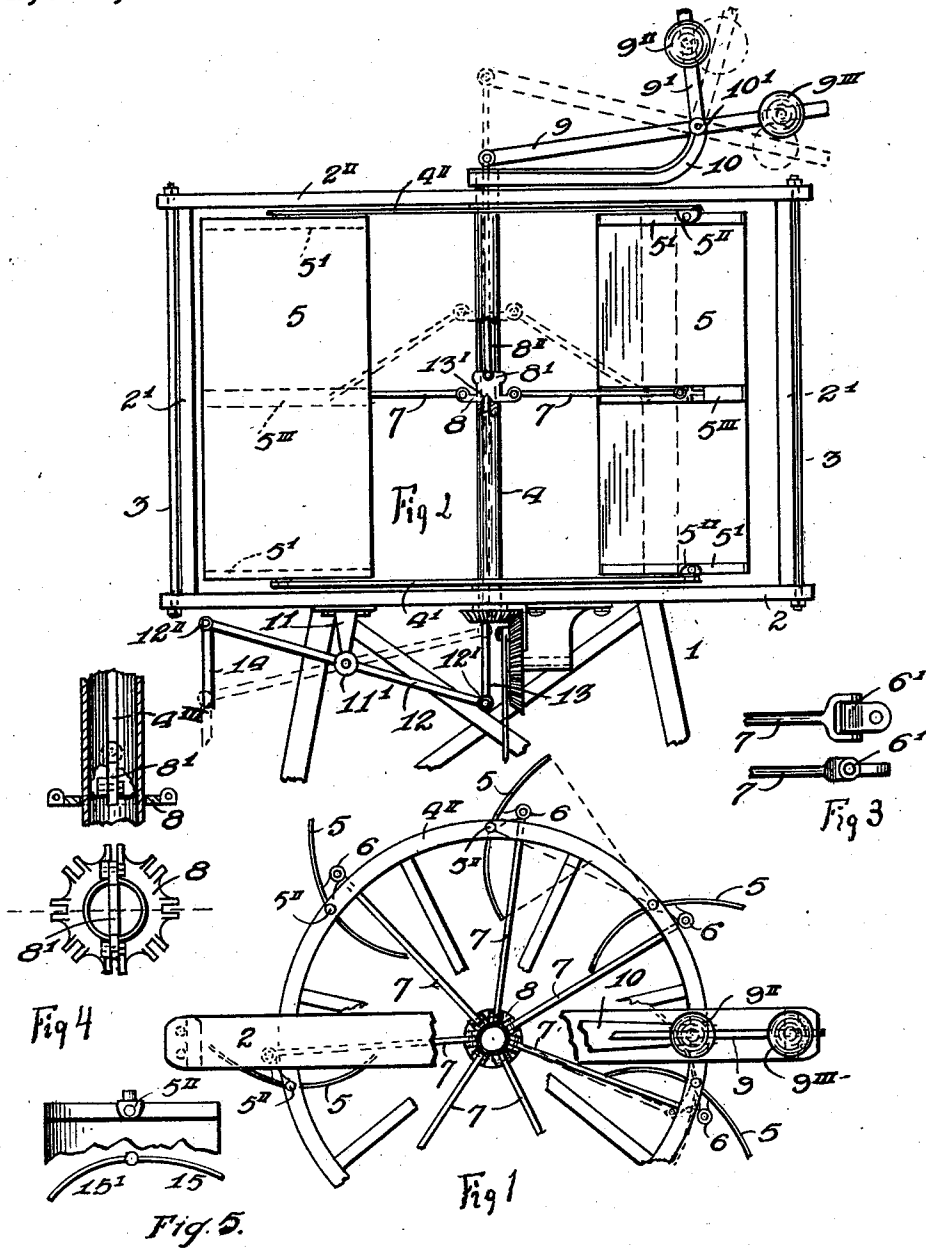


WINDMILL.

Patented Aug. 22, 1911.

1,001,172.



Witnesses

Witnesses
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UNITED STATES PATENT OFFICE.

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WINDMILL.

1,001,172.

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To all whom it may concern:

Be it known that I, HENRY SCHMIDT, a citizen of the United States, residing at Galva, in the county of McPherson and State of Kansas, have invented a new and useful Improvement in Windmills, of which the following is a specification.

This invention relates to wind mills for power purposes, and is of the type of those having a horizontal rotary wheel, that is, one which revolves on a vertical axis.

The object of the invention is to insure an active control of the vanes by means of a directly attached governor to the end that, a steady and even number of revolutions be obtained, almost regardless of the velocity of the wind.

A further improvement lies in the conformation of the vanes, whereby they gain increased value from the force of the wind, due to a varied curvature of the face of the vanes.

A third improvement consists in a device that may entirely shut off the vanes from the force of the wind, or act as a delicate adjuster of the governor power.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a broken plan view of the mill. Fig. 2 is an elevation, and Figs. 3, 4, and 5, are detail views of parts not readily shown in the other views.

The drawings more particularly illustrate the improvements claimed as the invention. Referring to the drawings, Fig. 1 represents the top of a tower to which the frame work of the mill is securely attached. The said frame work consists of the base, 2, the uprights, 2', 2', and the cross beam, 2'', firmly held in their respective places by the tie rods, 3, 3, 3. In the horizontal centers of the upper and lower beams of the said frame work are suitable bearings, made to receive and support the vertical tubular shaft, 4; while solidly attached to and rotating with the said shaft, are the spiders, 4', 4'' which support the vanes of the mill. In the periphery of the spiders 4', 4'', are a series of holes or bearings, vertically opposite each other and equi-distant, made to receive the pivotal bearings, 5'', 5'', of the vanes, 5, and thereby allow said vanes to swing responsive to the action of the governor.

The vanes, 5, may be composed of galvanized iron or other suitable material. On

the upper and lower ends of the said vanes, 5, are the former bars, 5', and to the longitudinal center of said bars, 5', are attached the pivotal bearings 5'', on which they swing, and by means of which the said vanes, 5, are held in their vertical positions, see detail Fig. 5. Mounted midway between the ends of the vanes is a third former bar 5'', with its projecting lug, 6; to this lug, by the intermediate means of a loosely hinged joint, 6', see detail Fig. 3, is attached the outer end of the connecting rod, 7,—the inner end of said rod being hinged as shown, to the central spider, 8, allowing a vertical movement thereof, the function of said movement being to force the vanes, 5, into the closed position. The central spider, 8, encircles the vertical tubular shaft, 4, and is held in place thereon by the guide, 8', of which it is made a part, said guide, 8', working in the slot of the tubular shaft, 4, shown at 4³, Fig. 4. Connecting the guide 8', to the governor lever bar, 9, is the rod 8'', the lower end being suitably attached to the said guide, and the upper end having a like suitable connection with the inner end of the lever 9, as shown.

Solidly attached to the upper end of the vertical shaft 4, is the supporting arm, 10, at the outer and upper end of which is the bearing, 10', in which is fulcrumed the governor lever bar 9. At the outer end of the bar 9, is placed the counter weight 9''. The bar 9, as shown, is formed with a right angled upwardly projecting arm, 9', on which is set the governor weight 9''. The revolution of the mill as a whole carries with it the governing devices, so that its rotation, through centrifugal force, tends to throw outward the governing weight 9'', and any excessive speed is at once checked by the closing of the vanes by the governing power through the connecting devices described as illustrated by the dotted lines in Figs. 1 and 2. Again, the counterbalancing weight 9'', may be transferred to the positive closing mechanism and operated from below, the construction and operation of said mechanism being as follows: Extending downward from the base timber 2, of the mill frame work, and properly attached thereto, is the lug 11, at the lower end of which is the bearing 11', in which works the lever 12; at the inner end of the said lever is the bearing 12', in which works the lower end of the rod 13, said rod extending upward through the

tubular shaft 4, and terminating in the cone-like depression 13' of the guide block 8. At the outer end of the bar 12, and suitably connected thereto through the bearing 12'', is the rod or wire 14, which leads down to the base of the tower, and it is through this rod, by being properly weighted, that the governor can be locked.

It is the special function of the above described device to entirely shut off the vanes in time of need, and keep them closed as long as need be by fastening the lower end of the rod or wire in its extreme downward position by suitable devices below, when the governing devices assume the positions shown by the dotted lines.

A governor control and a hand control may be both mounted in the same structure and either of them used as desired.

In detail Fig. 5, is illustrated the turbined conformation of the vanes; the wind blowing in the direction of the arrow and striking, as it naturally would, the outer section of the vane, is caught by the increased curvature, 15', necessarily increasing the effect of the wind on the vane. It will be noted the curving of the inner leg of the vane becomes of special value when one takes into consideration the variable positions of the said vanes as regards the wind, in their rotation.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

In a wind wheel of the character described, a vertical rotary shaft, a circular frame mounted on the upper and lower ends of said shaft, a number of vanes having their ends pivotally mounted to the periphery of said frame, a vertically movable guide member on said shaft, rods hinged to said guide member at one end, each of said rods having its other end loosely hinged to a vane, a rod vertically movable in said shaft, and connected to said guide member, a horizontal arm fixed at one end to the upper end of said shaft and having its other end formed with a vertically projecting arm, a governor lever bar hinged to the upper end of said rod in the shaft, and having a governor weight at its outer end, and said lever bar being pivoted to the angular arm of the governor bar, and having a vertical arm projecting from said pivotal point with a governor weight in its end.

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

HENRY SCHMIDT.

Witnesses:

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