(No Model.)

J. M. POLLARD.

WINDMILL.

No. 454,664. Patented June 23, 1891.

Fig. 1.

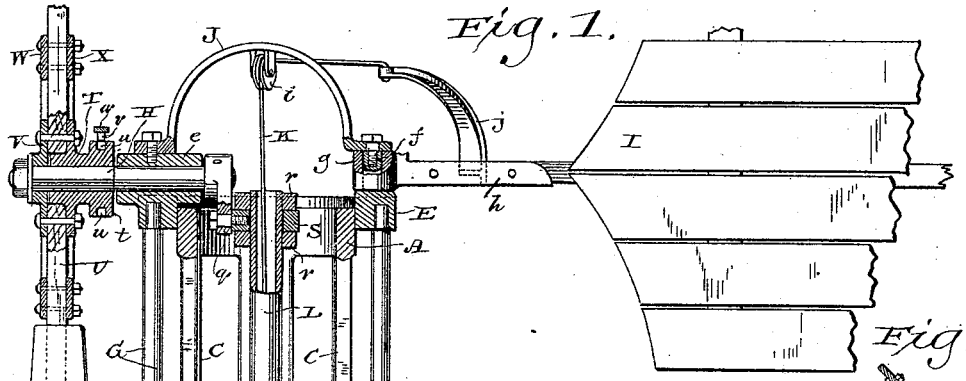


Fig. 6.

Fig. 7.

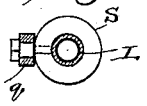
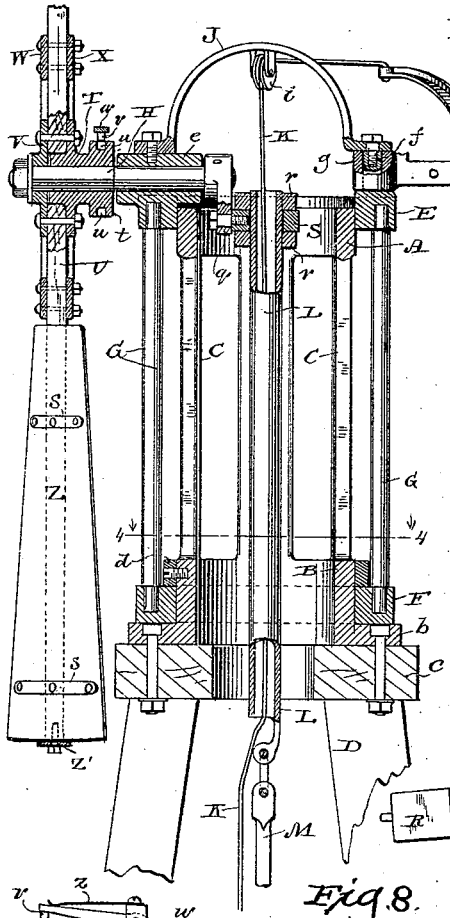
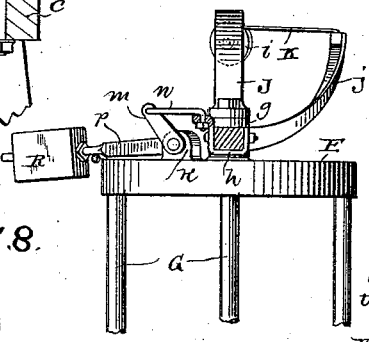


Fig. 2.





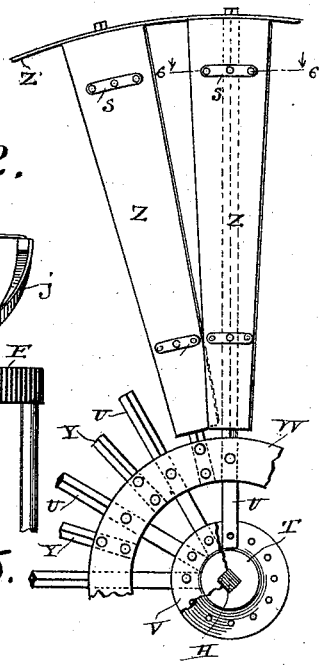


Fig. 8.

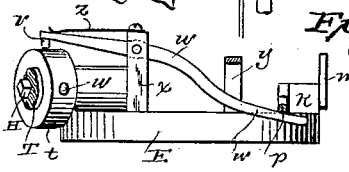


Fig. 5.

Fig. 3.

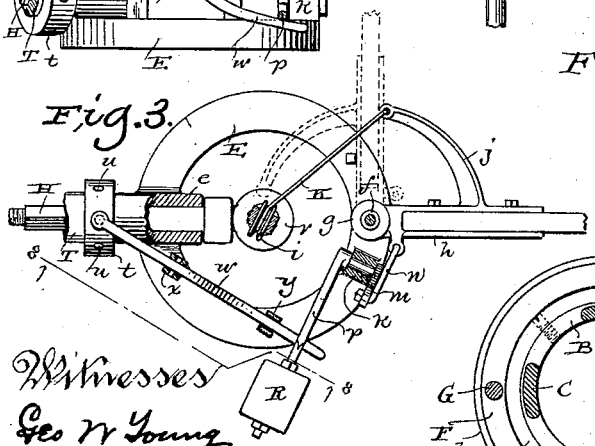
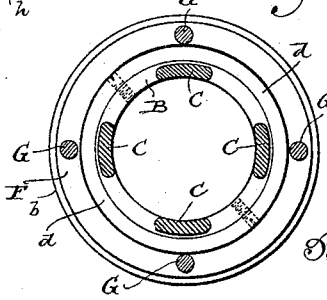


Fig. 4.



Witnesses
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N. E. Oliphant

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Attorney

UNITED STATES PATENT OFFICE.

JAMES M. POLLARD, OF EAST TROY, WISCONSIN.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 454,664, dated June 23, 1891.

Application filed November 12, 1890. Serial No. 371,191. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. POLLARD, a citizen of the United States, and a resident of East Troy, in the county of Walworth, and in the State of Wisconsin, have invented certain new and useful Improvements in Windmills; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in certain peculiarities of construction and combination of parts, to be hereinafter described with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a sectional elevation of a windmill constructed according to my invention; Fig. 2, a detail elevation illustrating the pull-out mechanism; Fig. 3, a detail plan view, partly in horizontal section; Fig. 4, a horizontal section on line 4 4 of Fig. 1; Fig. 5, a detail elevation of a portion of the wind-wheel; Fig. 6, a horizontal section on line 6 6 of Fig. 5; Fig. 7, a like view illustrating the connection between the wheel-shaft and pump-rod; and Fig. 8, a detail elevation, partly in section, as viewed on line 8 8 of Fig. 3.

Referring by letter to the drawings, A B represent two rings connected by vertical braces C, the lower ring B being provided with a horizontal flange *b*, bolted to the top platform *c* of a tower D, said rings and braces forming a skeleton frame, surrounded by another such frame that comprises upper and lower rings E F, united by vertical rods G, a set-collar *d* being secured to the lower ring of the innermost skeleton frame to hold the outer one down upon its track, the latter being the flange *b*, above described.

The upper ring E of the outer skeleton frame is provided with a bearing *e* for a shaft H, that carries the wind-wheel, and a stud *f* on said ring serves as a bearing for a sleeve *g* at the inner extremity of the stem *h* of a vane I, as is clearly illustrated in Fig. 1. The bearing *e* and stud *f* on the ring E are connected by means of a yoke J, and suspended from this yoke is a pulley *i*, over which is run a flexible device or pull-out K, the latter being connected to an arm *j* on the vane-stem *h*, and run down through a tubular rod L, that is linked to a pump-rod M, as is also clearly illustrated in Fig. 1. The upper ring E of the outer skeleton frame is further provided with a bearing *k* for a bell-crank, one arm *m* thereof being connected to the vane-shaft *h* by means of a link *n*, while the other arm *p* is provided with the usual counter-weight R for the vane.

The wheel-shaft H has a crank *q* on its inner end, this crank being connected to a ring S, loose on the tubular rod L, between two set-collars *r*, as shown in Fig. 1. The wheel itself comprises a flanged hub T, fast on the shaft H, spokes U, bolted to the hub-flange, and a ring V, opposed to the latter, rings W X, concentric with said hub-flange and its opposing ring, other spokes Y, bolted to the rings W X, alternate with the former spokes, (the latter being also bolted to the said rings W X,) a blade Z, fast on each spoke, and a tire Z′, uniting all the spokes adjacent to the outer ends of the blades.

In practice the spokes U Y will be beveled beyond the outer clamping-rings W X, to give the blades Z the proper angle to the wind, and these blades are braced by means of transverse strips *s*, bolted thereto and to said spokes.

The wheel-hub T is provided at its inner end with a collar *t*, having recesses *u* therein at regular intervals, these recesses being for engagement with a lug *v* on a lever *w*, fulcrumed to a post *x* on the upper ring E of the outer skeleton frame and arranged to move in a guide *y*, the latter being mounted on said ring. The lever extends down under the bell-crank arm *p*, that carries the counter-weight R, and a spring *z* is secured to the fulcrum-post *x* to exert its power against said lever. When the pull-out K is operated to swing the vane I, the counter-weight R on the arm *p* of the bell-crank is lifted, and being thus brought away from the lever *w* the spring *z* acts to swing said lever on its fulcrum in such a manner that the lug *v* on the aforesaid lever is caused to engage one of the recesses *u* in the collar *t* on the hub T of the wheel, whereby the latter is locked against rotation when out of the wind.

By the construction and arrangement of parts above described I provide a windmill that is very simple in its construction and durable in its operation, it being impossible for the spokes of the wind-wheel to pull out because of the tire by which they are connected, while at the same time the entire

weight of said parts comes directly on the tower of the mill.

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

1. In a windmill, the combination, with the tower, of an inner frame comprising the rings A B, united by the vertical braces C, and a horizontal flange on the ring B, bolted to said tower, an outer frame comprising the rings E F, united by the vertical rods G, and the latter ring supported on said flange, the collar *d*, fast on the ring B above the one F, a wind-wheel and vane having their bearings on the ring E, an arch J, connecting said bearings, the pulley *i*, depending from the arch, the arm *j* on the vane-stem, and the pull-out device *k*, run over the pulley and connected to said arm, substantially as set forth.

2. In a windmill, the combination of the wind-wheel having its hub provided with radial recesses, a spring-controlled lever provided with a lug for engagement with said recesses, the pivotal vane, a bell-crank having one arm linked to the vane-stem, a counter-weight on the other arm of the bell-crank, and this counterweighted arm of said bell-crank opposed to said spring-controlled lever when said wheel is in the wind, substantially as set forth.

3. In a windmill, the wheel thereof, comprising a flanged hub fast on a shaft, a ring also fast on the shaft and opposed to the hub-flange, spokes bolted between said hub-flange and ring, inner and outer rings bolted to the spokes concentric with the aforesaid hub-flange and its opposing ring, other spokes bolted between said inner and outer rings alternate with the former spokes, a blade secured to each spoke beyond said inner and outer rings, and a tire uniting the outer ends of all the spokes, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at East Troy, in the county of Walworth and State of Wisconsin, in the presence of two witnesses.

JAMES M. POLLARD.

Witnesses:
CARL LOEFER,
F. E. F. POTTER.