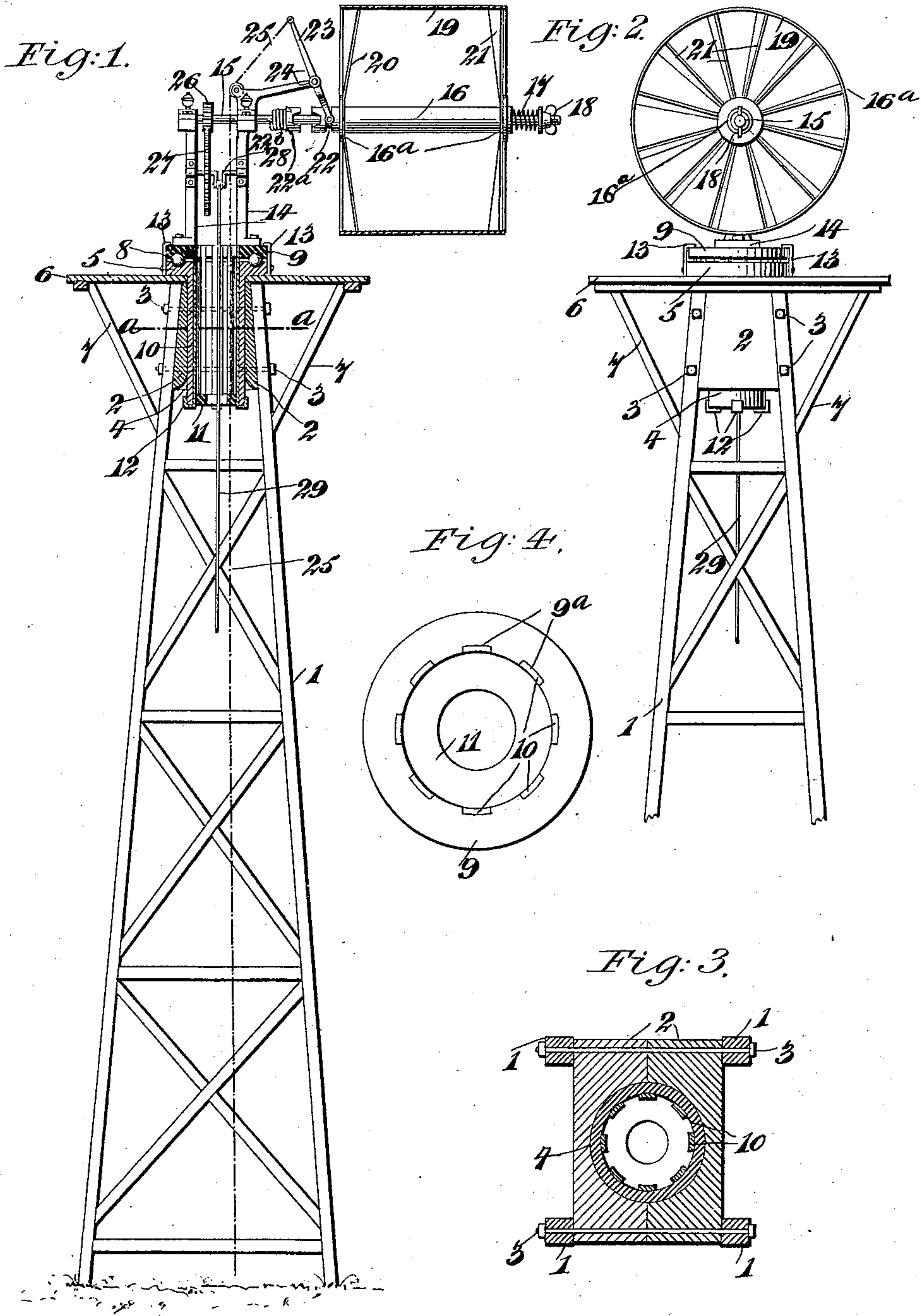


(No Model.)

J. L. & F. M. RUST.
WINDMILL.

No. 562,246.

Patented June 16, 1896.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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WINDMILL.

SPECIFICATION forming part of Letters Patent No. 562,246, dated June 16, 1896.

Application filed February 5, 1896. Serial No. 578,153. (No model.)

To all whom it may concern:

Be it known that we, JACOB L. RUST and FRANKLIN M. RUST, of Gladstone, in the county of Henderson and State of Illinois, have invented new and useful Improvements in Windmills, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in windmills, and has for its object to provide a mill of a simple and inexpensive construction, which shall be strong and durable and not liable to become broken or deranged, having its wind-wheel provided with means for holding it normally in the wind, and adapted, when the wind becomes too high to permit the operation of the wind-wheel with safety, to be thrown out of the wind.

The invention consists in certain novel features of the construction, combination and arrangement of the various parts of the improved windmill, whereby certain important advantages are attained, and the device is made simpler, cheaper and better adapted and more convenient for use than various other similar devices heretofore employed, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a windmill constructed in accordance with our invention, the upper portion of the mill being shown in axial section. Fig. 2 is a rear view of the upper portion of the tower, showing the windmill in position thereon. Fig. 3 is a transverse sectional view drawn to an enlarged scale and taken in the plane indicated by the line *a a* in Fig. 1; and Fig. 4 is a detached view, also drawn to an enlarged scale, and showing the upper bearing-ring whereon the wind-wheel is carried.

In the views, 1 indicates a tower, which may be of the ordinary or any preferred construction, being by preference made of corner-posts of angle-iron or the like connected together by diagonal braces. The corner-posts of the tower 1 are secured at their upper ends to the opposite sides of a head-block

comprising two sections 2, said head-block being held in place by means of bolts 3, extending through the same and also through said corner-posts, as clearly shown in the detail view, Fig. 3, and being recessed on their inner surfaces, as clearly shown in Fig. 3, to receive a bearing-piece 4, held vertically therein and consisting of a tubular portion of circular cross-section, on the upper end of which is formed a projecting bearing-ring 5, annular in form and placed slightly above the upper ends of the corner-posts of the tower 1, and also above the upper face of the head-block 2.

Between the upper face of the head-block 2 and the upper ends of the corner-posts of the tower 1 and the lower face of the annular bearing-ring 5, is held a platform 6, having at its central portion a circular opening of sufficient diameter to permit the passage of the tubular bearing-piece 4, and said platform 6 extends outward from the bearing-ring 5, as clearly indicated in Figs. 1 and 2, and is supported at its outer edges by means of diagonal braces 7, extending down and connected at their lower ends to the corner-posts of the tower 1. The platform thus forms a convenient stand for the operator in oiling the working parts of the mill, and may be of any desired dimensions, and, if desired, the tower may be provided with a ladder of any kind, as, for example, a string, whereby access may be had to said platform.

The upper face of the annular bearing-ring 5 is provided with an annular groove to receive balls 8, forming a ball-bearing whereon is mounted an annular base piece or ring 9, carrying the operating parts of the windmill, said base-ring 9 being provided, as clearly seen in Fig. 4, with a series of recesses 9^a, formed in its inner face and adapted to receive vertically-extending guide-bars 10, which pass down inside the tubular bearing-piece 4 and are secured at their lower ends to the outer face of a ring or bracket 11, located adjacent to the lower end of said bearing-piece 4. As clearly shown in Fig. 1, the bars 10 are bent outward at their lower ends, as indicated at 12, and have their extremities bent up on the outer side of the lower end of the bearing-piece 4, in order to securely hold the base-ring and the operating parts carried thereon

to the tower. To secure the base-ring 9 against lateral movement on the bearing-ring 5, we prefer to provide the bearing-ring 5 with a series of fingers 13, having their upper ends bent over the upper surface of the base-ring 9, as clearly shown in Figs. 1 and 2.

On the base-ring 9, by preference at points diametrically opposite each other, are secured standards 14, in the upper ends of which is journaled a horizontal shaft 15, having one end projecting laterally beyond the side of the tower, as clearly shown in Fig. 1, and provided with a wind-wheel mounted to turn thereon. By this arrangement it will be seen that the wind-wheel is always held in the wind without the necessity of employing a vane for this purpose.

As shown in Fig. 1, the wind-wheel is carried on a sleeve 16, adapted to turn loosely on the shaft 15, and said wind-wheel is arranged to be pressed toward the standards 14 by means of a spring 17, coiled on the extremity of the shaft 15 beyond the wind-wheel and adapted to be adjusted as to its tension by means of a nut 18, held on a screw-threaded portion of the said shaft, as clearly shown.

The wind-wheel comprises hubs 16^a at the opposite ends of the sleeve 16, and a rim 19 of cylindrical form, connected to the hubs 16^a by means of inclined plates 20 and 21, extending inward radially from the opposite end portions of said rim. The end of the sleeve 16 opposite to the spring 17 is extended beyond the hub 16 at that end of the sleeve, and is provided with an annular groove 22 in its periphery, which groove is engaged by the forked lower end of a lever 23, pivoted on a bracket 24, secured to one of the standards 14. The lever 22 is connected to the upper end of a cord or chain 25, which extends down through the central hollow of the bearing-ring, and has its lower end arranged in a position convenient for operation by persons standing on the ground.

The extremity of the projecting portion of the sleeve 16 is formed into a clutch member, as seen in Fig. 1, and said clutch member is adapted to be held normally in engagement with a similar clutch member 22^a, mounted on the shaft 15, and secured thereto by means of a spring 22^b, having one end secured to the shaft and its opposite end secured to said clutch member 22^a, the spring 17 serving to hold these clutch members normally in engagement, and the spring 22^b serving to relieve the operative parts from excessive strain arising from sudden starting of the wind-wheel while the shaft 15 is stationary.

The shaft 15 carries a gear-pinion 26, meshing with a gear-wheel 27, mounted on a crank-shaft 28, extending between the standards 14, and having its crank connected to a pitman 29, which extends down through the central hollow of the base-ring and bearing-piece, and is connected to the device to be operated by the windmill, in the ordinary way.

In the operation of the windmill, construct-

ed as above described, it will be seen that the wind-wheel together with its operating parts is capable of swinging freely on the upper end of the tower owing to the ball-bearing interposed between the base-ring and the bearing-ring, and it will be seen that the spring 17 will serve to hold the clutch members normally in engagement, so that the wind-wheel will normally be adapted to drive the mechanisms to which it is connected. When it is desired to place the wind-wheel out of operation, it is only necessary to pull the cord or chain 25 in such a way as to slide the wind-wheel longitudinally on the shaft 15 against the tension of the spring 17, whereby the clutch members will be placed out of engagement.

From the above description it will be seen that the device is of an extremely simple and inexpensive construction and especially well adapted for the purposes for which it is intended, since it is strong and durable and not liable to become deranged or broken while in use, and it will also be obvious that the invention is susceptible of considerable modification without material departure from its principles and spirit, and for this reason we do not wish to be understood as limiting ourselves to the precise form of the parts herein set forth.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a windmill, the combination of a base-piece, a shaft mounted to turn thereon and adapted to swing in a horizontal plane, a wind-wheel mounted on said shaft and provided with a clutch member at one end, a clutch member connected to the shaft, a spring arranged to hold the clutch member on the wind-wheel normally engaged with the clutch member on the shaft, means for moving said clutch members out of engagement, and gearing connected to said shaft, substantially as set forth.

2. In a windmill, the combination of a base-piece, a shaft mounted to turn thereon, a wind-wheel mounted on and capable of longitudinal movement on the shaft and provided at one end with a clutch member, a clutch member connected to the shaft and adapted to be engaged by the clutch member on the wind-wheel, a spring coiled on the shaft and arranged to bear against the end of the wind-wheel opposite to that end at which is arranged the clutch member, a nut screwing on said shaft and arranged to engage said spring to adjust the tension thereof, means for moving the clutch members out of engagement, and gearing connected to said shaft, substantially as set forth.

3. In a windmill, the combination of a base-ring adapted to turn in a horizontal plane, standards extending up from opposite sides thereof, a shaft journaled in the upper ends of said standards and having one end extending beyond one side of the base-ring, a wind-wheel mounted on the projecting end of the

shaft and capable of longitudinal movement
thereon, a spring coiled on the extremity of
the shaft and arranged to engage the outer
end of the wheel, a nut screwing on the end
5 of the shaft and adapted to control said spring,
a clutch member formed on the opposite end
of the wind-wheel, a clutch member secured
to the shaft to be engaged by the clutch mem-
ber on the wind-wheel and adapted when op-
10 erated, to move the same endwise on the shaft

to disengage the clutch members, and gear-
ing connected to said shaft, substantially as
set forth.

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