J. W. COLEMAN.

WINDMILL.

APPLICATION FILED AUG. 16, 1909.

978,433. Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.

Fig. 2.

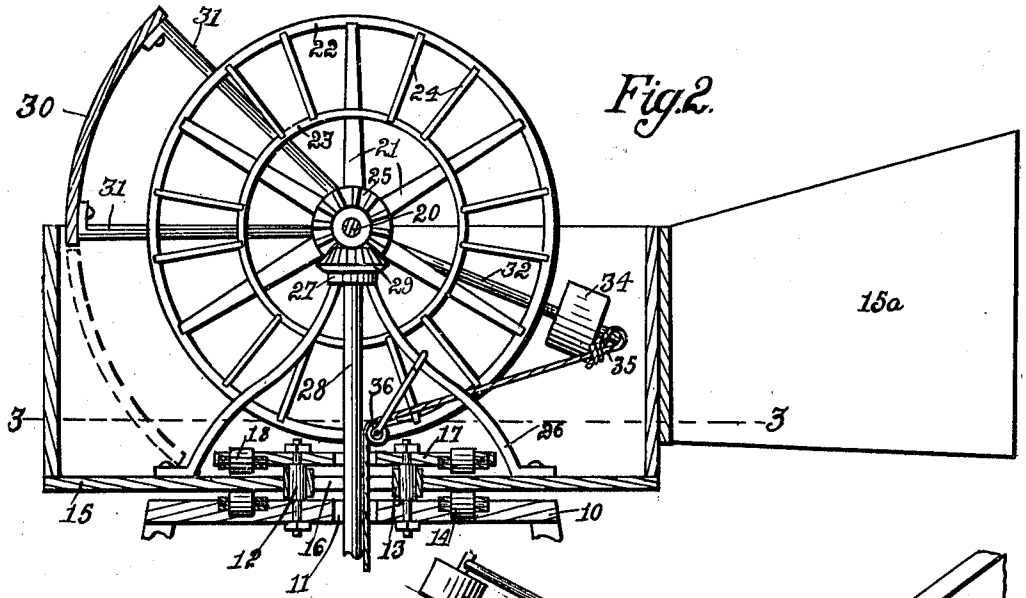
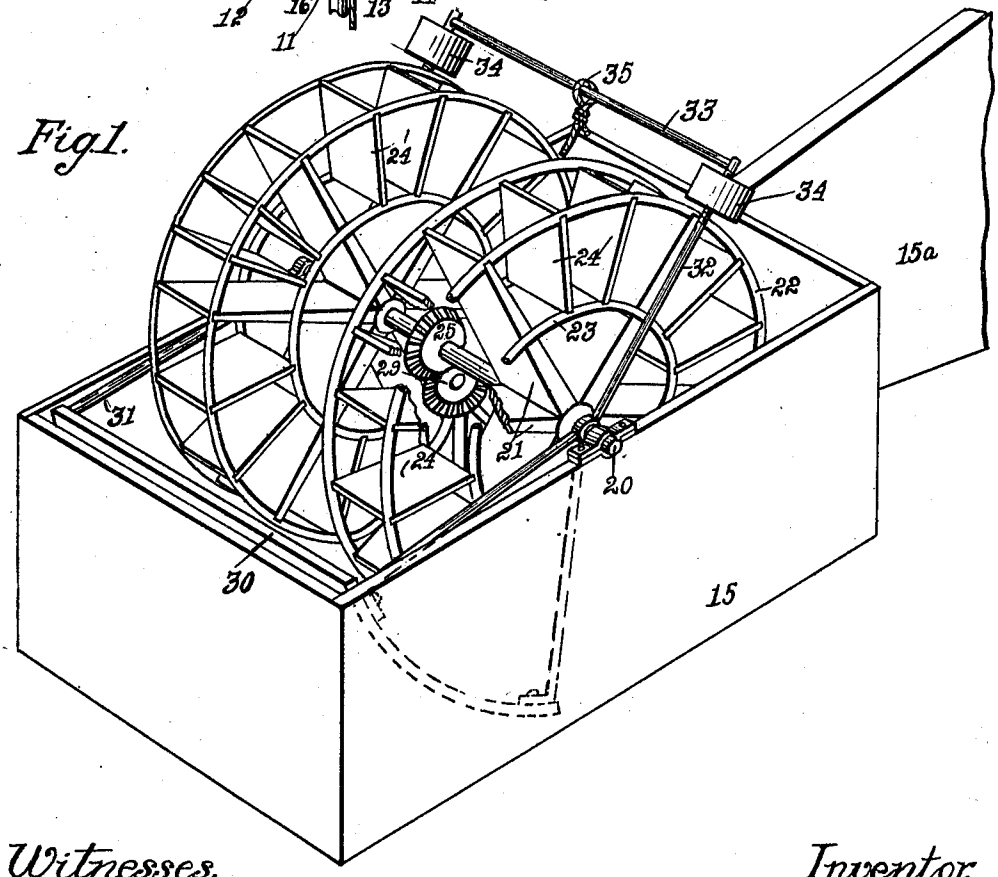


Fig. 1.



Witnesses.
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2 SHEETS—SHEET 2.

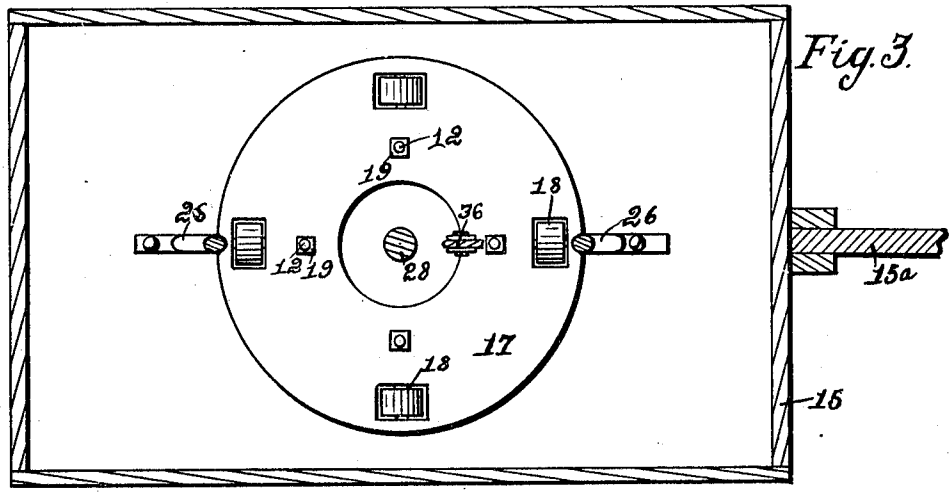

Fig. 3.

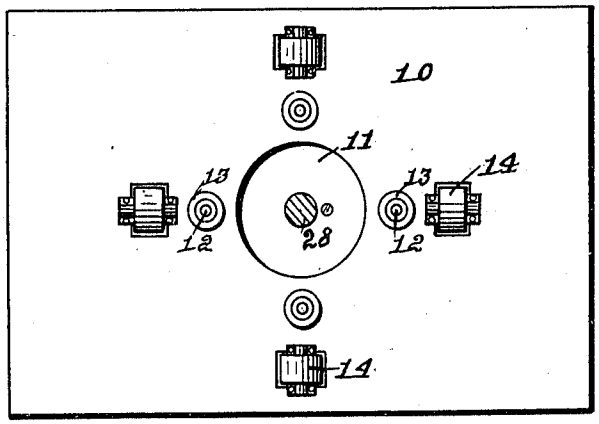

Fig. 4.

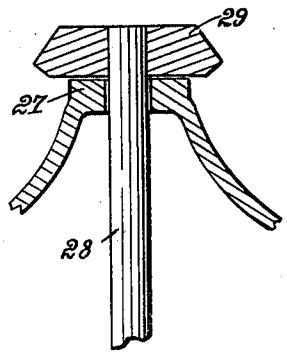

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN W. COLEMAN, OF MADRID, IOWA.

WINDMILL.

978,433. Specification of Letters Patent. Patented Dec. 13, 1910.

Application filed August 16, 1909. Serial No. 513,145.

To all whom it may concern:

Be it known that I, JOHN W. COLEMAN, a citizen of the United States, residing at Madrid, in the county of Boone and State of Iowa, have invented a certain new and useful Windmill, of which the following is a specification.

The object of my invention is to provide an improved windmill of simple, durable, and inexpensive construction.

More specifically, it is my object to provide improved means for shielding or protecting the wind wheels from the wind in order to prevent their operation, and also to provide improved means of simple and durable construction for mounting the rotatable frame of the windmill on the stationary support at the top of the windmill tower, and, further, to provide an improved and simplified construction of the wind wheel proper.

My invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a perspective view of a device embodying my invention. Fig. 2 shows a vertical, longitudinal, central, sectional view of same. Fig. 3 shows a horizontal, sectional view taken on the line 3—3 of Fig. 2. Fig. 4 shows a top or plan view of the top of the windmill tower, and Fig. 5 shows an enlarged, detail, sectional view of the upper end of the power transmitting shaft.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate the top of the windmill tower. This top is provided with a central opening 11, and extended vertically through the top 10 at points equidistant from the center of the opening 11, are the bolts 12, on the central portion of each of which is a roller 13. Arranged in the top 10, adjacent to each of the bolts 12 are the horizontally arranged antifriction rollers 14 for purposes hereinafter made clear.

The frame for containing the wind wheel comprises a substantially rectangular body portion 15 inclosed at its ends, sides and bottom and having at the central portion of the bottom, an opening at 16, as shown in Fig. 2, and also provided at the central portion of one end thereof with a vane 15ª. The bottom of said frame 15 rests upon the rollers 14 and the said rollers 13 engage the bottom at the edges of its central opening 16, as shown in Fig. 2. In this way, the said frame 15 is made capable of free and easy rotation relative to the tower and, at the same time, friction is reduced to a minimum and the frame 15 is kept accurately centered relative to the tower. On top of the bottom of the frame 15, I have provided a disk 17 on the under surface of which I have mounted a series of rollers 18 to engage the bottom of the part 15, and the said bolts 12 are extended through the disk 17 and secured thereto by nuts 19. The said disk 17 is thereby held stationary in its position relative to the tower and the rollers 14 and 18 co-act with each other in preventing tilting movements of the body portion 15 while the rollers 13 hold said body portion 15 accurately centered relative to the windmill tower while permitting its free rotation relative to the tower.

Mounted in suitable bearings at the top of the frame 15 is a shaft 20 having a series of radial blades 21 forming part of the wind wheels to be hereinafter described fixed to it near each end. In this connection, it is to be understood that in the illustrated embodiment of my invention there are two wind wheels of identical construction secured to the shaft 20, hence but one will be herein fully described. The said radial blades 21 are arranged with their flat faces substantially parallel with the shaft 20 and at all times approximately one-half of the wind wheel formed by said blades is below the top of the frame 15.

The wind wheel proper is constructed of two large brace rings 22 and two smaller ones 23, concentrically arranged and supported by the blades 21 on opposite sides thereof. Between each pair of the blades 21, I have provided a number of smaller blades 24 which are supported wholly by the rings 22 and 23 and face in the same direction as the blades 21. In this way, a strong, durable and inexpensive wind wheel is provided in which some of the blades form the supports for the rings and said rings support the remainder of the blades.

Mounted on the central portion of the shaft 20 is a beveled gear wheel 25. Mounted upon the bottom of the frame 15 is a bracket 26 having a flat plate 27 at its top

provided with a central opening through which the windmill shaft 28 is extended. Fixed to the top of the shaft 28 is a beveled gear wheel 29 in mesh with the beveled gear wheel 25 on the shaft 20. By this arrangement, it is obvious that when the shaft 20 is rotated, a rotary motion will be applied to the shaft 28.

To provide means for shielding the wind wheels from the wind in order to prevent their operation, I have provided the following device: The numeral 30 indicates a segmental shield of a length slightly greater than the width of the two wind wheels, and of a height sufficient to extend from the top of the frame 15 to a point above the wind wheels. This shield is supported by means of arms 31 pivotally mounted upon the shaft 20. For counter-balancing the weight of such shield, I have extended the arms 32 beyond the shaft 20 in a direction opposite from the arms 31. These arms 32 are connected by means of a rod 33, and each of the arms 32 is provided with an adjustable weight 34, which weights, however, are not so heavy as the weight of the shield 30, so that the shield is normally in its lowered position, as shown by dotted lines in Fig. 2. I have attached a rope or cable 35 to the rod 33 and this rope or cable passes over the pulley 36 which is fixed to the frame 26 and is so positioned that the said rope or cable may pass downwardly through the openings adjacent to the windmill shaft 28, as clearly shown in Fig. 2, so that the frame 15 may freely rotate on the tower top without interfering with the operation of said rope. Obviously, when said rope is pulled downwardly by an operator, the shield 30 will be elevated to the position shown by solid lines in Fig. 2, to thus protect the wind wheels from the wind so that they will not be operated thereby.

In practical use, it is obvious that when the rope or cable 35 is released, the weight of the segmental shield 30 is sufficient to hold it to its lower limit of movement where it will be contained wholly within the frame 15, and said frame will be held by means of the vane 15^a in position where the wind will strike directly upon the flat surfaces of the wind wheel blades and cause the wind wheels to rotate in the direction indicated by the arrow. In the event that it is desired to stop the movement of the wind wheels or to retard them, the operator pulls downwardly upon the rope or cable 35 and either wholly or partially protects the wind wheels by means of said shield as desired. When the shield is in its uppermost position as shown in Fig. 2, the wind will not strike upon any part of the wind wheel blades, and, therefore, the mill will not be rotated.

By means of the peculiar arrangement and construction of the bearing devices that support the frame 15, tilting movements of said frame are reduced to a minimum and the said frame is made capable of free and easy rotation relative to the tower top, and by having the shaft 28 extended through openings in the frame 15 and the tower top, which openings are much larger than the shaft, an arrangement is provided by which the rope or cable 35 may pass down alongside of the main shaft 28. Thus it will be apparent that all of the parts are compact and not liable to get out of order.

While in the illustrated embodiment of my invention, the wind mill is provided with two similarly constructed and mounted wind wheels, it is to be understood that I may dispense with one of said wheels, or provide a plurality of wheels of the same or different construction, and that various other changes, modifications and variations may be made in the several parts of my invention within the scope of the subjoined claims.

I claim as my invention:

1. The combination with the tower top of a windmill, of a frame having a central aperture, means for rotatably mounting the frame upon the tower top comprising a plurality of horizontally mounted rollers journaled in the tower top, a plurality of vertically disposed rollers adapted to contact with the wall of said aperture, bolts secured in the tower top upon which said vertical rollers are mounted, a stationary plate secured by said bolts and located above the bottom of said frame, and a plurality of horizontally disposed rollers mounted in openings in said plate and resting upon the bottom of the frame.

2. The combination with the tower top of a windmill, of a box or frame rotatably supported thereon and provided at one end with a projecting vane, a shaft mounted in bearings at the sides of the frame, a wind wheel mounted on said shaft, a segmental shield, arms mounted on said shaft for supporting the shield and counter balancing means for said shield consisting of parallel arms secured to the shaft, a rod connecting said arms, and weights carried by said parallel arms.

Des Moines, Iowa, July 19, 1909.

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Witnesses:

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