

No. 727,762.

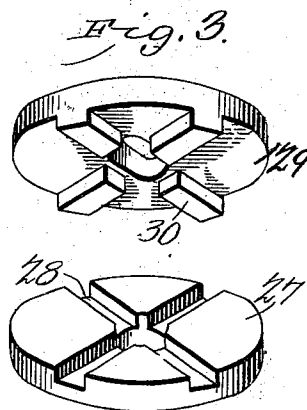
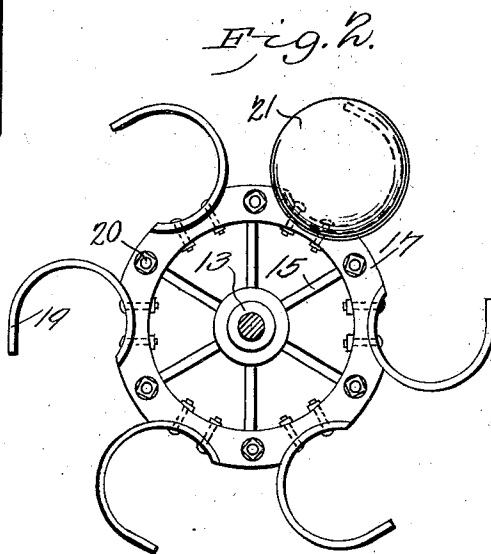
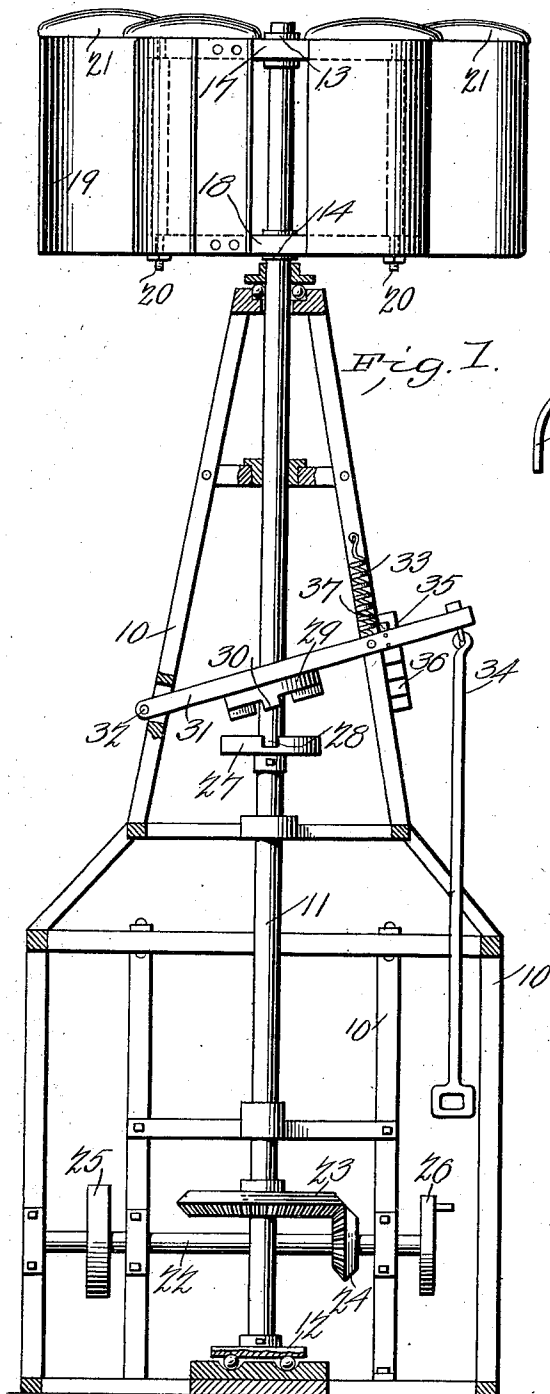
PATENTED MAY 12, 1903.

G. B. EDGAR.

WINDMILL.

APPLICATION FILED JAN. 23, 1903.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE BENJAMIN EDGAR, OF LAWRENCE, KANSAS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 727,762, dated May 12, 1903.

Application filed January 23, 1903. Serial No. 140,274. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BENJAMIN EDGAR, a citizen of the United States, residing at Lawrence, in the county of Douglas and State of Kansas, have invented a new and useful Windmill, of which the following is a specification.

This invention relates to windmills, and has for its object to simplify the construction and increase the operativeness and efficiency of such devices; and the invention consists in certain novel features of the construction, as herein shown and described, and specified in the claims.

In the drawings illustrative of the invention, in which corresponding parts are denoted by like designating characters, Figure 1 is a sectional side elevation. Fig. 2 is a plan view illustrating the construction and arrangement of the "sail" or "wing" portion of the device. Fig. 3 represents enlarged perspective views of the two parts of the locking-clutch detached.

The supporting-framework may be of any approved form, such as shown at 10, and provided with a vertical shaft 11, preferably supported at its lower end by "ball-bearing steps" 12 and extending above the frame by its upper end, as shown.

Attached to the upper portion of the shaft 11 are hubs 13 14, spaced apart and having radiating arms 15 16, connecting rims 17 18 to the hubs, as shown. Any number of the arms may be employed; but for the purpose of illustration six are shown, as in Fig. 2.

The wings or sails will be connected to the rims 17 18 and are formed of semicylindrical plates 19, the outer surfaces of the rims having curved recesses conforming to the inner sides of the wings, as shown in Fig. 2, and bolted, riveted, or otherwise fastened thereto, as shown. By this means the rims partially embrace the wings and support and strengthen them and prevent any tendency to straighten out under the pressure of the wind.

The wings 19 will preferably be of sheet metal and the rims 17 18 of wood; but the whole may be of metal, if preferred. The diameters and lengths of the wings may be varied to any desired extent and will be placed any required distance apart upon the rims;

but generally the wings will be about three feet in diameter and about six feet long and placed about two feet apart, so that the larger the wheel the greater the number of the wings. For a wheel having six wings, as in the drawings, therefore, the outside diameter over all would be about fourteen feet; but while these dimensions are the approved ones and have been employed in building the mills it will be understood that I do not wish to be limited thereby in any manner and reserve the right to construct the mills with wings of any size and of employing any number upon the rims.

The rims 17 18 will be connected at suitable intervals with stay-rods 20, provided with suitable nuts, and may be otherwise stayed and as required. The wings thus form partial vertical semicylinders and each wing will be provided with a cap 21, preferably oval in cross-section, to confine the air and increase the power or force with which the wind acts upon the wings. This is an important feature of the invention and adds materially to the efficiency and power of the mill. The caps 21 will be of sheet metal pressed into the proper shape.

The ball-bearing step 12 may be of any approved form and will materially reduce the friction and decrease the power necessary to operate the device.

Any desired form of mechanism may be driven from the shaft 11; but for the purpose of illustration a driven shaft 22 is shown mounted for rotation upon the frame 10 and adapted to be operated from the shaft 11, as by gears 23 24, and provided with the necessary band and crank wheels 25 26 to provide for the attachment of the machinery to be operated. While this arrangement of mechanism, as shown, is an approved one, I do not wish to be limited thereto and reserve the right to the use of the device for operating any form or structure of mechanism to which it is applicable.

Connected to the shaft 11 at some point between the gearing 23 24 and the wings 19 is a clutch member 27, having spaced radiating recesses 28, and slidably disposed upon the shaft is an opposing clutch member 29, having spaced radiating ribs 30, corresponding to and adapted to engage the recesses 28 when the two parts of the clutch are brought

together. Attached to the clutch member 29 is a lever 31, the lever pivoted at one end 32 to the frame 10 and provided with a pull-spring 33 exerting its force to maintain the lever yieldably in its upper position and holding the clutch member 29 out of action. Attached to the lever 31 is a pull-rod 34, extending to a point convenient to the hand of the operator, by which the lever may be moved downward to cause the clutch member 29 to be operatively engaged with the clutch member 27. Attached to the frame 10 is a plate 35, having spaced teeth 36, with which a catch 37 on the lever 31 engages to lock the lever in any required position. The clutch member 39 being fast to the lever 31 will not rotate upon the shaft, but will be slidable thereon with the vertical motion of the lever. Hence when the lever and its attached clutch member are moved into their upper position by the spring 33 the shaft 11 will be free to be rotated by the influence of the wind upon the wings 19; but when it is desired to stop the movement of the mill a downward pull upon the rod 34 will bring the clutch member 29 into engagement with the clutch member 27 and lock the shaft from turning, the catch 37 engaging the teeth 36 and holding the parts in their locked position. When the mill is again to be released, the catch 37 is disconnected by a slight lateral pull upon the rod 34, which will release the catch 37 from the teeth 36 and permit the spring 33 to draw the lever 31 and clutch member 29 upward and release the shaft and its wings.

The parts are extremely simple, and the device can be compactly constructed and is of great strength, combined with durability and effectiveness.

The mill requires no "vaness" to keep it "in the wind," as the wind acts upon the wings 19 from all sides equally no matter from what direction the wind may be blowing, and

changes in the direction of the wind will not, therefore, effect the operation.

The parts may be of any desired proportionate size to adapt the device to all sizes of windmills and may be employed to operate any required form of mechanism, as before noted.

Having thus described the invention, what I claim is—

1. A windmill comprising a supporting-frame, a shaft mounted for rotation upon said frame, spaced rims connected to said shaft and having spaced peripheral concave recesses and wings consisting of semicylindrical plates connected to said rims within said recesses and supported thereby substantially as described.

2. A windmill comprising a supporting-frame, a shaft mounted for rotation upon said frame, spaced rims connected to said shaft and having spaced peripheral concave recesses, spaced tie-rods connecting said rims and supporting them from longitudinal movement relative to said shaft, and wings connected to said rims within said recesses.

3. A windmill comprising a supporting-frame, a shaft mounted for rotation upon said frame, spaced rims connected to said shaft and having spaced peripheral concave recesses and wings consisting of semicylindrical plates connected to said rims within said recesses and supported thereby, and covers to said curved wings, whereby the air-currents are prevented from moving upwardly, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE BENJAMIN EDGAR.

Witnesses:

FRANK E. MELVIN,
M. A. EDGAR.