No. 658,129. Patented Sept. 18, 1900.

E. STEUDE.

WINDMILL.

(Application filed Aug. 31, 1899.)

(No Model.)

Fig 1.

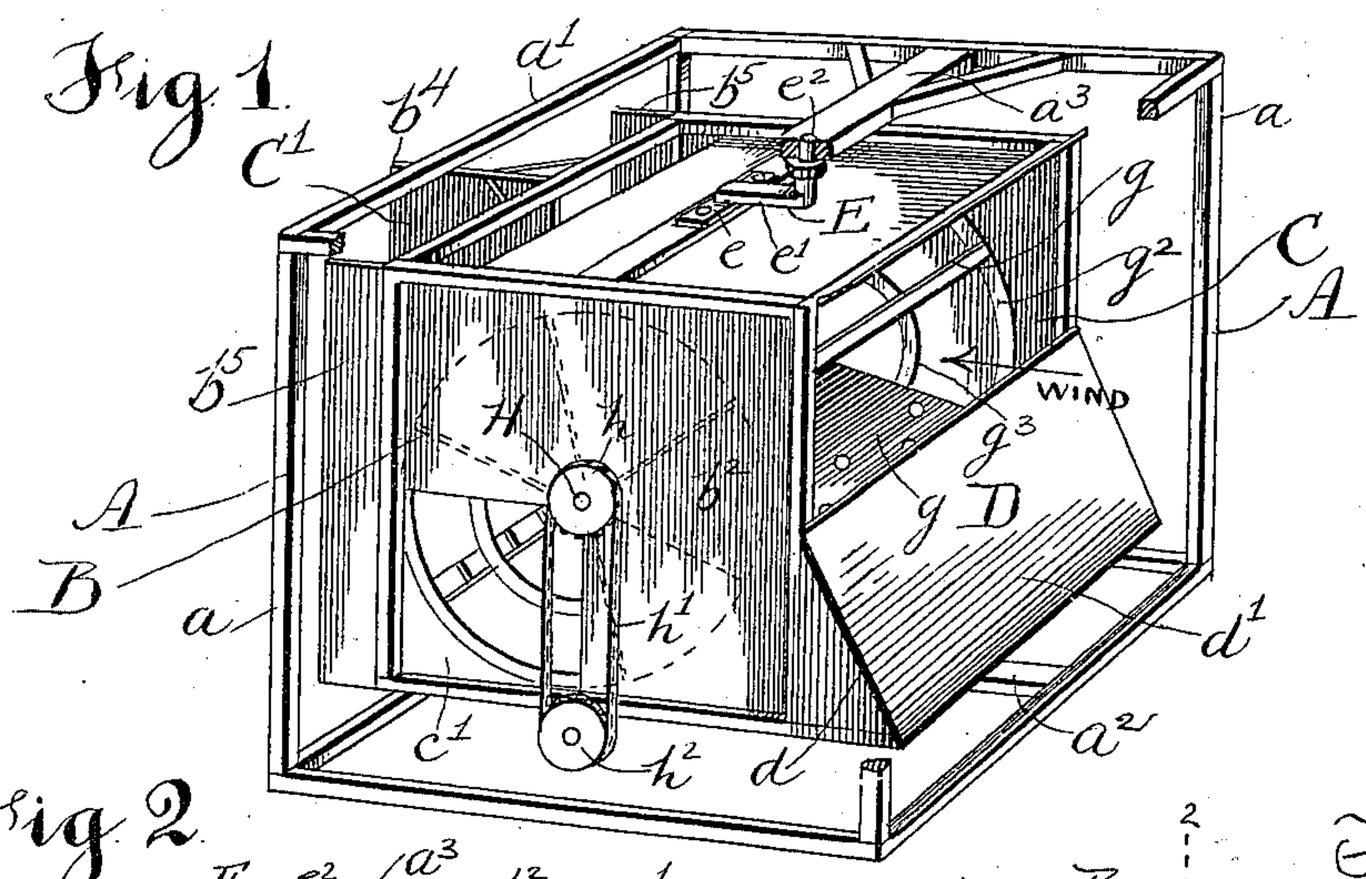


Fig 2.

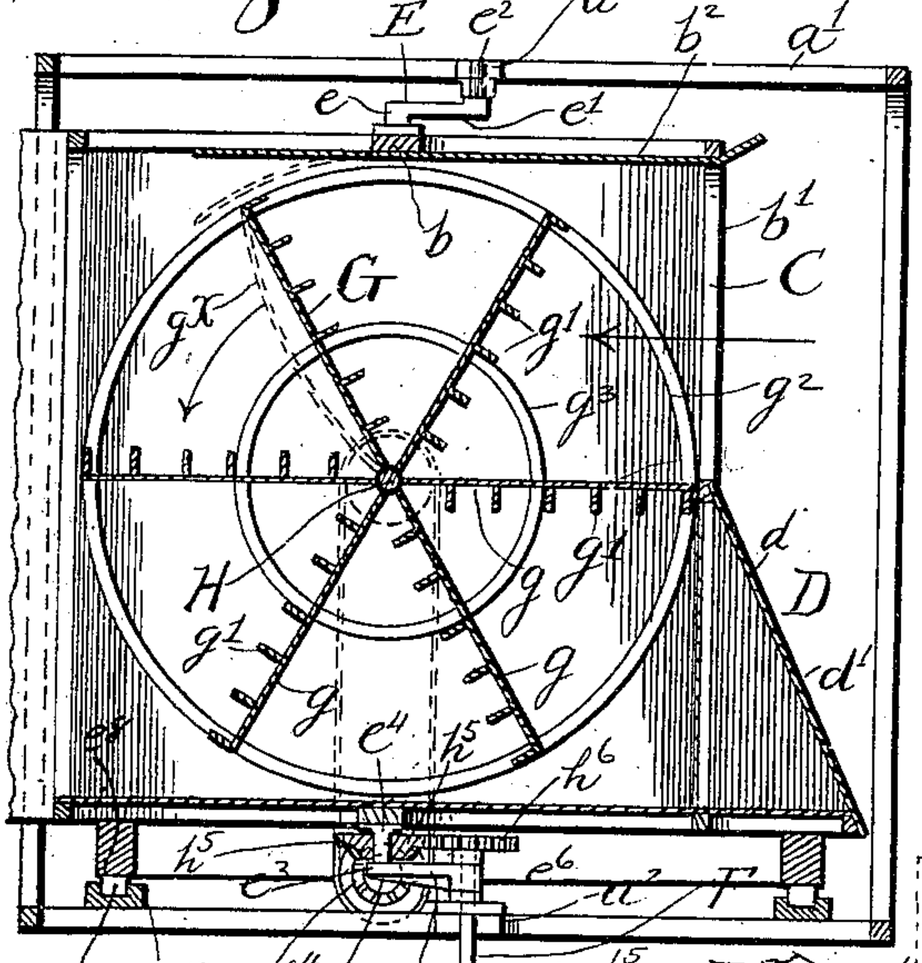


Fig 3.

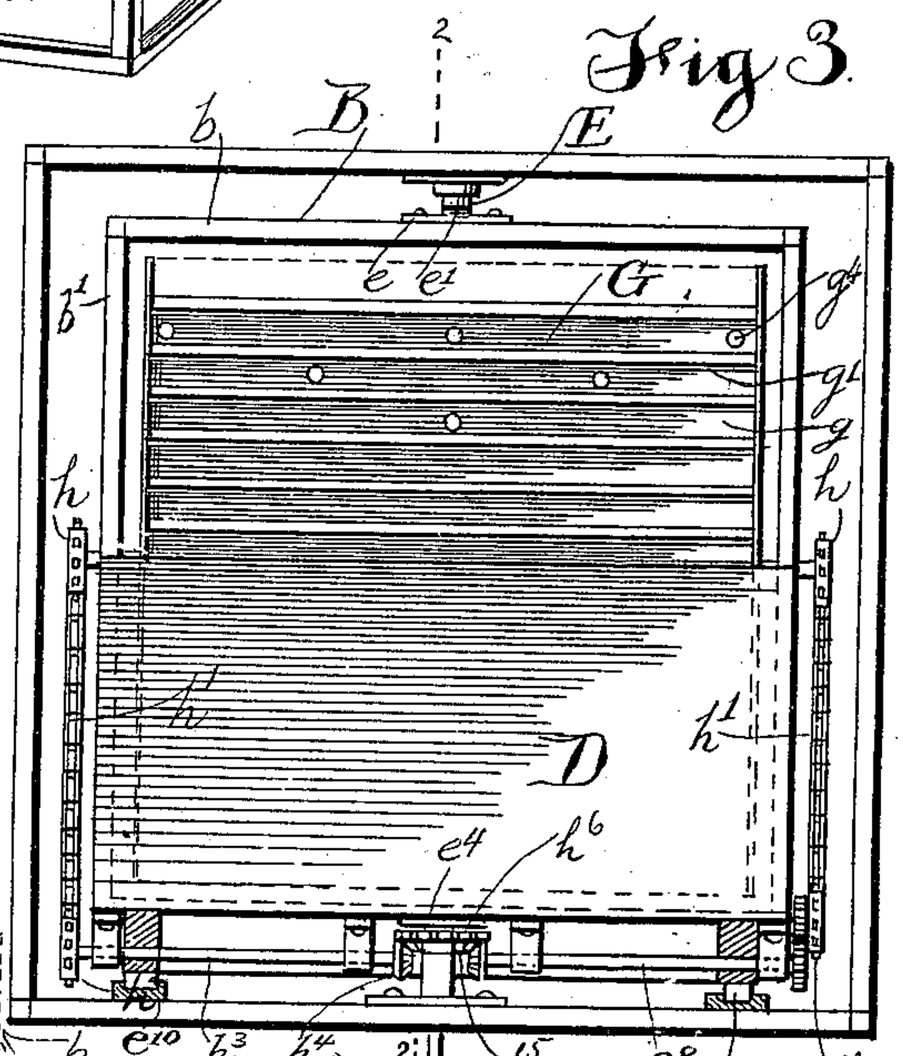


Fig 4.

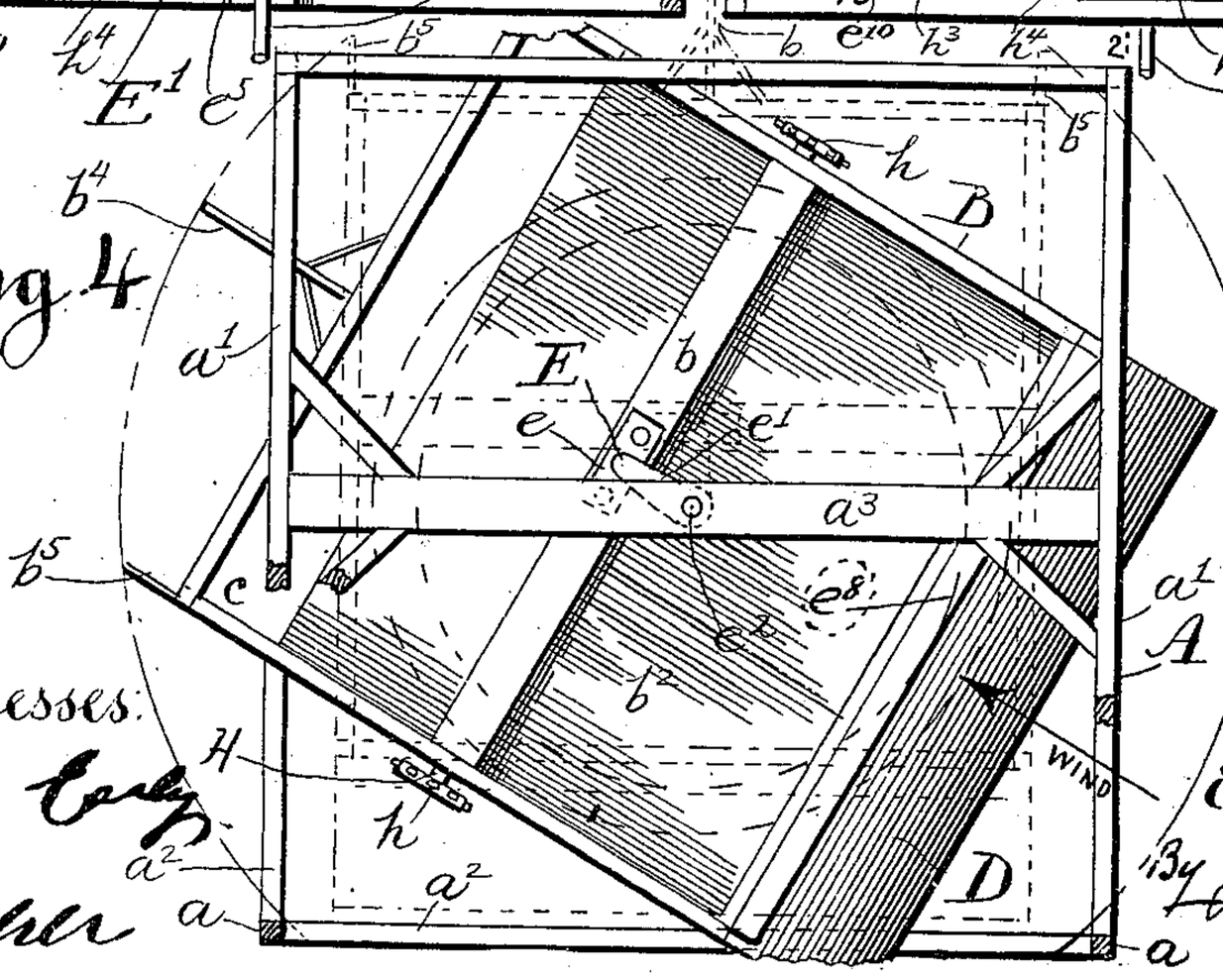
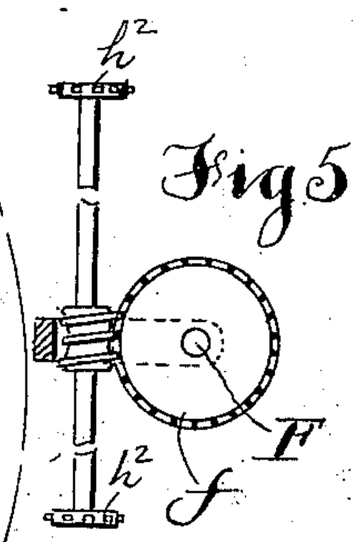


Fig 5



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UNITED STATES PATENT OFFICE.

EDWARD STEUDE, OF CHICAGO, ILLINOIS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 658,129, dated September 18, 1900.

Application filed August 31, 1899. Serial No. 729,055. (No model.)

To all whom it may concern:

Be it known that I, EDWARD STEUDE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

The present invention relates to a windmill having some novel features, among which are a wind-wheel having a horizontal axis with blades parallel to the axis, a movable wheel-casing mounted eccentrically, a wind-deflector at front of casing, and means for transmitting power from the wheel through its eccentric support. These and other features of construction are illustrated in the accompanying drawings and will hereinafter be fully described.

In the drawings, Figure 1 is a perspective view of a windmill embodying features of my invention, a portion of the stationary framework being broken away to more clearly show the movable frame or wheel-casing. Fig. 2 is a cross-section of the wind-wheel, its casing, and framework, the said section being taken on the line 2 2 of Fig. 3. Fig. 3 is a front elevation of same, with the outer supporting-track shown in section. Fig. 4 is a plan view of the windmill, showing the movable casing in different positions; and Fig. 5 is a modification of the means for transmitting power through the eccentric support of the wind-wheel.

A refers as a whole to a stationary framework, which is placed on top of a building or in any suitable elevated position, or it may form the upper part of a tower. This framework consists of posts a and of beams or connecting-pieces a'. Centrally located is a cross-piece or beam a^2, upon which is mounted the lower bearing of the movable receptacle or casing, hereinafter mentioned, and in the upper part of the framework A is a similar beam a^3, to which is attached the upper bearing of the movable casing.

B refers to the movable receptacle or casing, in which is mounted the wind-wheel. This casing is box-like in form and consists of a framework made of horizontal and vertical members b and b', respectively, to which at certain portions is attached a light metal sheathing or covering b^2.

C is the wind-inlet, which consists of an aperture extending across the front of the receptacle and occupying the upper half of same. At the rear of the receptacle is the main outlet C'. Additional openings or outlets may be provided, for instance, as shown, on the top at c and on ends of receptacle at c'. At the front of the receptacle is a wind-deflector D, which consists of a plate or guard d, projecting at the front of the receptacle and having a beveled face d'. The inclined surface of the deflector tends to catch such wind as strikes the lower part of the receptacle and divert or cause it to pass into the inlet C, thus obtaining the use of more wind than might otherwise pass through the opening C. As shown in the drawings, the deflector has an inclination from the vertical of about thirty degrees; but it may be placed at any other inclination, if desired.

E and E' are eccentric bearings on which the receptacle B is mounted, so as to permit the said receptacle to move or swing in a horizontal plane. The upper bearing E consists of a bracket e, rigidly attached in a central position to the cross-piece b of the receptacle B. An arm e' of the bracket is pivoted at e^2 to the beam a^3 of the stationary frame A. The lower bearing E' consists of a bracket e^3, attached fixedly to base of receptacle D at e^4. The arm e^5 of this bracket has a pivotal bearing e^6 axially in line with that of the upper bracket e and is mounted loosely on the shaft F and a supporting base or stand E^2, which is secured to the beam a^2. Side or circumferential supports may also be employed by using rollers e^7 and a track e^8, as shown in Fig. 2. The track e^8 consists of an annular bearing or plate attached fixedly to bottom of the receptacle B. This track rests on a series of rollers e^7, which are mounted in grooved supports or journals e^{10}. The rollers and the revolving track support the receptacle B outwardly and permit the receptacle to turn readily. By mounting the receptacle B eccentrically in the manner just described it tends to make the receptacle swing, so that its front and wind-inlet always face the wind. When the receptacle has hardly sufficient of its bulk back of its bearing-points to readily accomplish the purpose,

I place a short tail or vane b^4 at rear. Side pieces or boards b^5 may also be added for the same purpose.

G is the wind-wheel, which is mounted in the receptacle B. The wheel G has a horizontal shaft or axle H. Attached to axle H and having faces parallel thereto are wind blades or wings g. I have shown six of these blades, but less or more may be employed. These blades are preferably made to extend radially from the axle H, but may be curved, if desired. On the face of each blade I place a number of ribs or projections g', which run horizontally on the blade. These ribs help to catch force of wind and prevent the wind from sliding off or inwardly when the blades are not in position at right angles to the general direction of wind. Rims g^2 and cross-pieces g^3 are provided at ends of wheel to strengthen same. A number of apertures or perforations g^4 are placed on blades g. While of some advantage, these are not essential.

To transmit power from the wind-wheel G, I provide sprocket-wheels h on outer end of shaft. Chains h' run from these wheels to wheels h^2. One of these wheels has a shaft h^3 and a beveled gear h^4 connected with gears h^5 and h^6. The other side of receptacle B has suitable intermediate gearing. The gear h^5 is mounted on the bracket e^3 and the wheel h^6 on the shaft F, which transmits power from the mill to such point as may be desired. I have shown in Fig. 5 a modification in which the gears h^2 are mounted on one shaft and a worm $h^\times$ is connected with a gear f on the shaft F.

The windmill I have now described provides a very strong and compact appliance to furnish power at a minimum expense. The mill may be used for agricultural purposes, for pumping, for storing power by driving-dynamos or compressing air, and for many other uses. It does not require a special tower, as the stationary frame may be placed on top of any suitable building. The construction of the wheel-receptacle provides means for always keeping the wheel so that the blades will face the wind and obtain a constant pressure therefrom, and in the construction and operation of the wheel it will be observed that the direct and maximum force of the wind is fairly utilized and converted into power, thus providing a very powerful windmill or motor.

What I claim is—

1. In a windmill, a stationary frame, a receptacle mounted eccentrically with bearings at top and bottom of said frame so as to be movable horizontally within said frame, the said receptacle being provided with suitable wind-apertures and a wind-wheel having a horizontal axis and blades, and means for transmitting power from the shaft of the wind-wheel, as set forth.

2. A windmill having a stationary frame with open sides, and cross-pieces or beams at top and bottom of frame having bearings on which is mounted eccentrically a receptacle capable of rotating in a horizontal plane, the said receptacle being provided with apertures, a wind-wheel having a horizontal axis, means for keeping the front of receptacle toward the wind and means for transmitting power from the shaft of wind-wheel, as set forth.

3. In a windmill, the combination of a stationary and open frame, A, a receptacle B trunnioned or mounted eccentrically in said frame and having a wind-aperture C and suitable outlets, a wind-deflector D, and a wind-wheel G, the said wind-wheel being provided with a horizontal shaft and means for transmitting power to a vertical shaft located centrally in the stationary frame and beneath the receptacle B, as set forth.

4. In a windmill, a stationary frame, a box-like receptacle pivoted eccentrically on same and capable of rotating in a horizontal plane, the said receptacle being provided with a wind-wheel, a wind-inlet, and wind-outlets in the rear and wind-outlets in the ends of said receptacle, as set forth.

In testimony whereof I have hereunto set my signature this 29th day of August, 1899.

EDWARD STEUDE.

In presence of—
J. B. HALPENNY,
C. I. EARLY.