

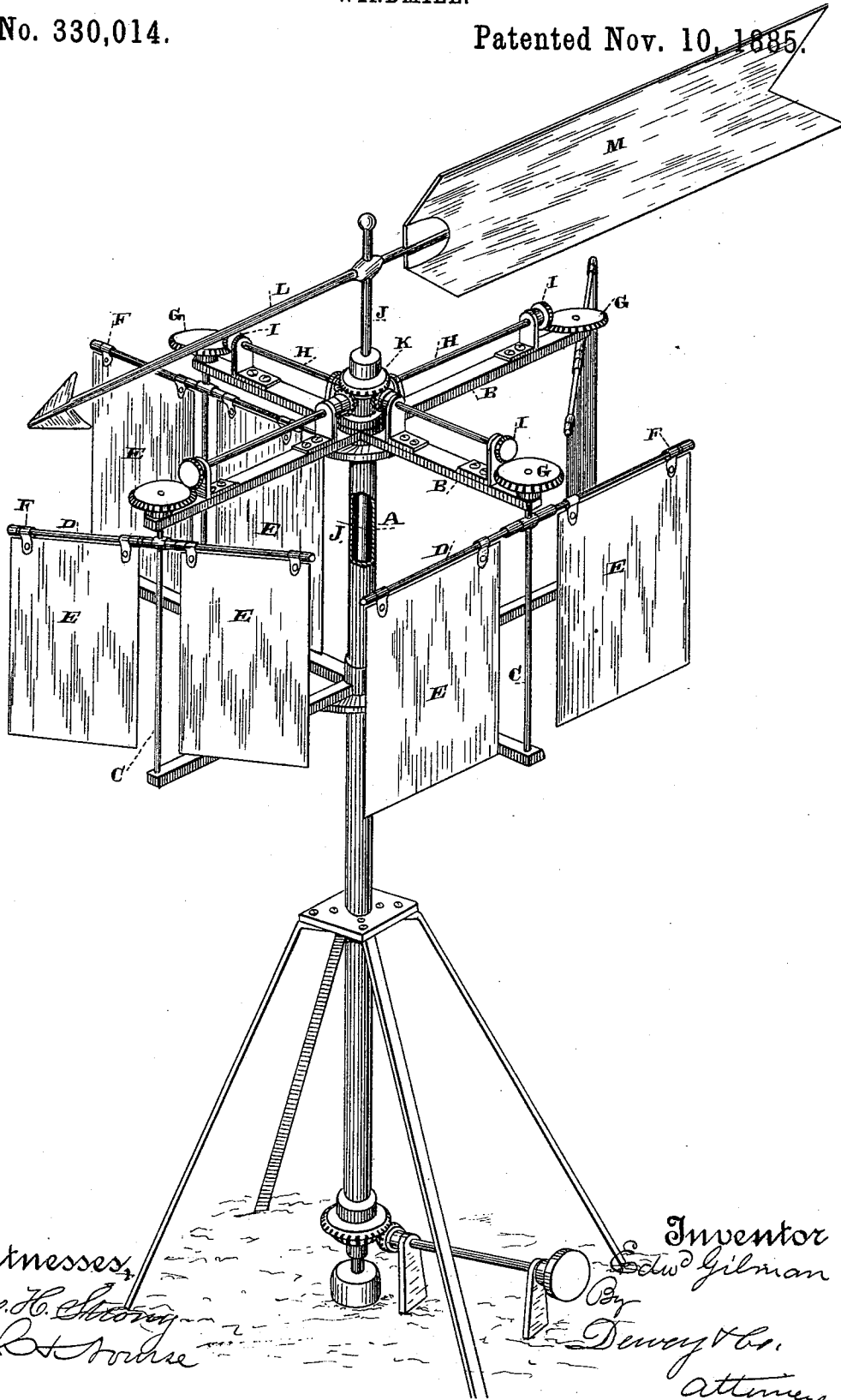
(No Model.)

E. GILMAN.

WINDMILL.

No. 330,014.

Patented Nov. 10, 1885.



Witnesses,
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UNITED STATES PATENT OFFICE.

EDWARD GILMAN, OF OAKLAND, CALIFORNIA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 330,014, dated November 10, 1885.

Application filed April 13, 1885. Serial No. 162,118. (No model.)

To all whom it may concern:

Be it known that I, EDWARD GILMAN, of Oakland, Alameda county, State of California, have invented an Improvement in Windmills; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved windmill; and it consists of a vertical shaft having arms projecting horizontally from its upper end, with wings supported upon vertical shafts journaled in the ends of the upper and lower arms, and connected with a central tail-supporting shaft by gearing, so that the position of the wings or sails will be regulated by the direction from which the wind blows. These sails are arranged so as to automatically adjust themselves to the intensity of the wind.

Referring to the accompanying drawing for a more complete explanation of my invention, the figure is a perspective view of my mill.

A is a vertical shaft turning in a suitable step at the bottom and supported by a journal-box at a point high enough above the step to insure its rotating steadily. Horizontal arms B B extend outward from the disks or plates fixed upon this shaft, and the outer ends of these arms are perforated, or may be provided with journal-boxes, in which small shafts C are fitted to turn. Horizontal arms D are fixed upon these shafts C just below the upper horizontal arms, B, and across the vertical shaft, like the top of the letter T. Upon these arms D are swung the sails E, against which the wind is to act, these sails having suitable journals or hinges F at the top, by which they are suspended from the transverse bars so that when the wind blows with great force they may swing backward from the wind, and thus present less surface and resistance to it. The upper ends of the vertical shafts C have beveled gear-wheels G secured to them, and horizontal shafts H are journaled upon the top of the arms B, so that beveled pinions upon their outer ends will mesh with and engage the gear-wheels G. At the inner ends of the shafts H are similarly-beveled pinions I, by means of which the shafts, gearing, and the sails are held in a certain relative position to each other. The several wheels comprising this gear, with the wings or sails, will make half a revolution around their shafts

to one revolution of the main shaft A around its axis, and each pair of sails is so placed that while upon one side of the shaft A the full face of the sail is presented to the wind, on the other side the sail presents its edge toward the wind and affords little resistance as it moves against the wind. The upper end of the shaft A is made hollow or fitted to receive the lower end of a shaft or stem, J, to which the centrally-beveled gear-wheel K is secured, so that it will engage with the pinions on the inner ends of the horizontal shafts before mentioned. To the upper end of the stem J the horizontal arm L is secured, carrying the tail-vane M. The effect of the wind is to hold this tail in line with its direction, the opposite end of the arm L pointing toward the wind.

By this construction whenever the tail is turned by change of wind it carries with it the stem J, turning the beveled pinions K and I, and with them moving the horizontal shafts H upon the arms B, and through them turning the wings or sails, so that they will always stand in position to be acted upon by the wind in whatever direction it may blow.

I am aware that the arrangement of sails or wings upon vertical shafts with a gearing connecting them with a fixed central gear is not new, and I do not claim, broadly, such a device.

I am aware that a mill has been constructed with means for throwing the wings out of the wind by gear-wheels similar to mine, said wings to be operated on by a system of weights and levers. I am also aware that a blade has been provided with means whereby it was thrown out of the wind while coming toward the wind by mounting the wings on a horizontal shaft; but this shaft was provided with lugs which held the wings rigid while they were acted upon by wind to drive the machinery. Such therefore I hereby disclaim; but

What I believe to be new, and desire to secure by Letters Patent, is—

1. In a windmill, the hollow vertical shaft A, the wings or sails E, supported on horizontal arms D, said wings connected with vertical revolving shafts supported at the outer ends of arms B, and horizontal shafts journaled upon the upper sides of these arms, with pinions upon their outer ends meshing with

gears upon the upper ends of the vertical sail-shafts, and similar pinions upon their inner ends, in combination with a vertical stem fitting telescopically in the vertical shaft, and
5 having the tail-vane fixed to its upper end and a pinion secured to it, so as to engage the pinions I upon the inner ends of the horizontal shafts, substantially as herein described.
2. In a windmill, a vertical central shaft
10 having horizontal arms with vertical shafts at their outer ends, in combination with trans-

verse arms secured to the upper ends of these vertical shafts, and wings or sails journaled or suspended from these arms, so that they may swing upon them in a violent wind while
15 in the wind, substantially as herein described.

In witness whereof I have hereunto set my hand.

EDWD. GILMAN.

Witnesses:

S. H. NOURSE,
H. C. LEE.