

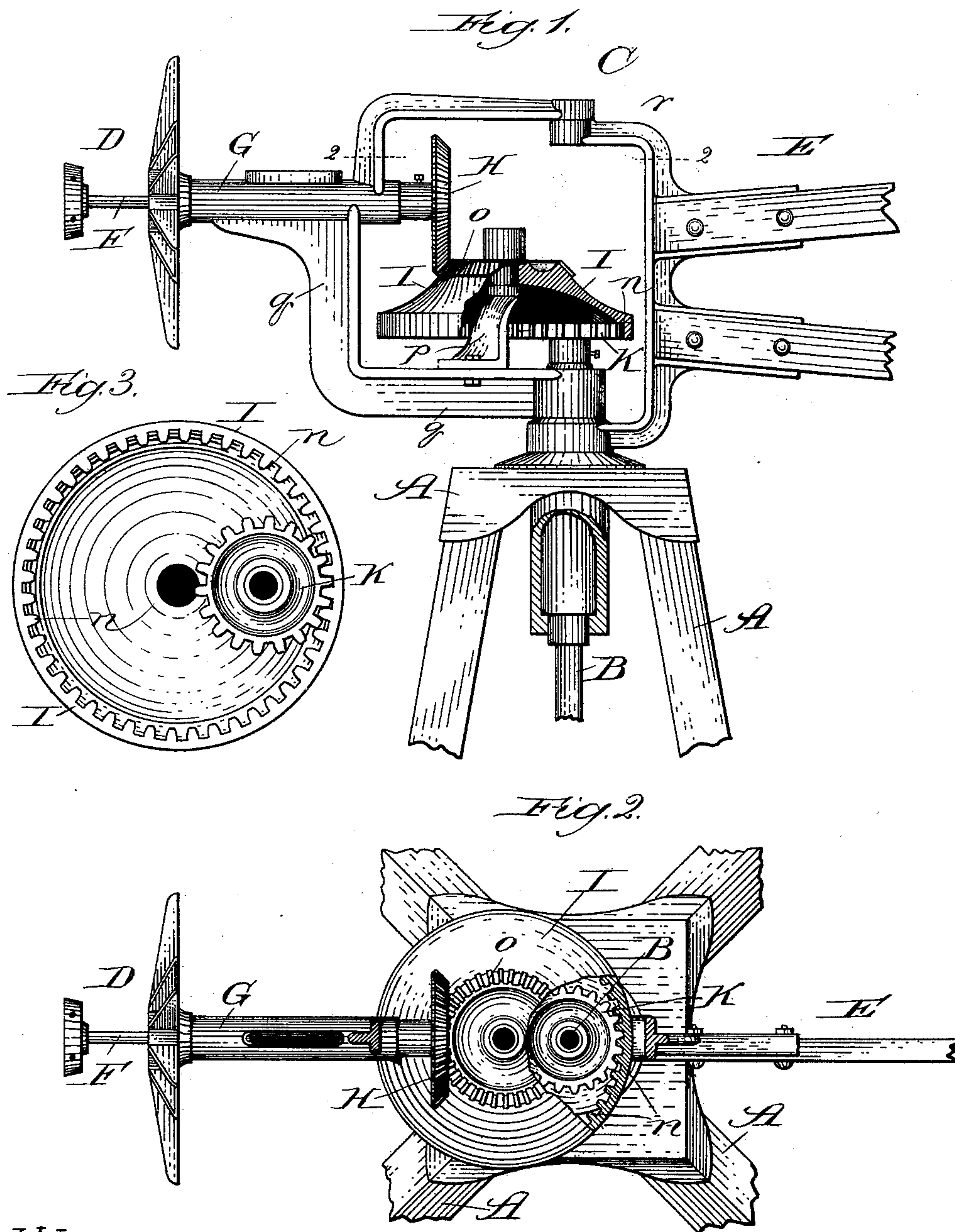
(No Model.)

J. T. HOSTLER.

WINDMILL.

No. 414,113.

Patented Oct. 29, 1889.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN THOMAS HOSTLER, OF KALAMAZOO, MICHIGAN.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 414,113, dated October 29, 1889.

Application filed February 25, 1889. Serial No. 301,005. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMAS HOSTLER, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and useful Improvement in Windmills, of which the following is a specification.

My invention relates to an improvement which, while useful in windmills generally, I design for especial use in the class of windmills in the operation of which the wind-wheel, the rotary motion of which is transmitted to a vertical shaft rotatory on its own axis, may have presented to it by the load which the vertical shaft has to drive (as, for example, feed-cutters or other machinery) greater resistance than the power of the wind against the wind-wheel can overcome. When this condition occurs—that is to say, when the force of the wind is insufficient to overcome the inertia or load to be moved by the rotary vertical shaft—the effect has been to cause the gear-wheel on the shaft of the wind-wheel to “pivot” or “climb” upon the horizontal gear-wheel, meshing with it and secured upon the vertical rotary or “power” shaft, thereby permitting the force of the driving-power (wind) to turn the pivotal wind-wheel on its vertical axis away from the wind, and necessitating its readjustment into the position of facing the wind before it will be actuated by the latter when its force shall increase sufficiently to cause turning of the vertical shaft. The reason for this climbing or pivoting is often due to the construction, whereby the gear-wheel of the wind-wheel shaft or spindle meshes directly with that on the upper end of the vertical rotary or power shaft.

The object of my improvement is to provide means which shall effectually prevent, especially under the circumstances stated, this tendency in the gear of the wind-wheel to climb or pivot.

In the accompanying drawings, Figure 1 is a broken sectional view of the upper portion of a windmill provided with my improvement. Fig. 2 is a plan section taken on the line 2 2 of Fig. 1, and Fig. 3 is a bottom plan view of the form of gearing I prefer to employ for my purpose in the transmission of

the rotary motion of the wind-wheel to the vertical rotary shaft.

A denotes the upper part of the framework of the structure of one common form of windmill, through which frame-work extends the vertical rotary or power shaft B, which sustains the revoluble support, commonly in the form of a frame C, carrying the wind-wheel D (of which only the foundation parts are shown) and the vane E, and which frame is formed in the kind of windmill illustrated in two pivotally-jointed parts *r* and *q*, on the first-named of which the vane is secured. The horizontal rotary shaft F, carrying the wind-wheel, extends through a sleeve G on the part *q* of the frame C, inside the latter, and carries at its inner end a beveled gear-wheel H.

I is a hollow crown-shaped wheel revolubly supported with its open side downward by a bracket *p*, secured on the frame C, and is thus on the same support as the wind-wheel. Around the upper and narrower part of the wheel I, on the exterior thereof, are provided beveled teeth *o*, in mesh with the wheel H; and around the inner side of the lower circumferentially-larger part of the wheel I, which extends over the upper end of the shaft B, are gear-teeth *n*, with which a gear-wheel K on the adjacent end of the vertical shaft is in mesh.

The operation is as follows: While the wind is blowing with sufficient force to cause the power it imparts to the wind-wheel in revolving it to overcome the load or resistance constituting the work to be performed by the revoluble shaft B, it will, through the intervening gear mechanism, revolve the said shaft. If, however, the resistance to the rotation of the vertical shaft be increased, or, as is more likely to happen, the force of the wind abate below that necessary to overcome the said resistance, however powerful, notwithstanding, the wind may be, it will not cause the wheel H, by continued rotation of the wind-wheel, to climb on the gear with which it meshes, and thereby permit the wind-wheel to move out of the wind, this being impossible owing to both said gears being on the same pivoted support; nor will the wheel I be rotated and thus climb on the wheel K, particularly as their vertical centers are lateral to each other and they both

move in the same direction. As a consequence, therefore, the wind-wheel will come to a standstill without changing its position with relation to the wind, whereby it will remain in position to take the wind from the same direction, so that when the latter increases in force sufficiently to overcome the resistance on the shaft B no readjustment, either by hand or by the wind, which latter may be possible, will be required of the wind-wheel, and consequently no portion of the wind-power wasted.

The particular form of windmill and gearing illustrated and described, while preferred, owing to the effectiveness for my purpose, may be changed without thereby departing from the spirit of my invention; hence I do not wish to be understood as intending to limit my invention thereto. Obviously, also, it amounts to the same thing whether the gear *o* be integral with the crown-wheel, as shown, or secured to or connected with it so as to cause both gears *o* and *n* to have a common center.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a windmill, the combination, with the power-shaft B, having a gear-wheel near its upper end, and the revoluble support carrying the vane and the wind-wheel with its gear-wheel, of suitable horizontally-disposed gearing on the said revoluble support and interposed between and in mesh with the said gear-

wheels, the vertical centers of the said interposed gearing and gear-wheel on the power-shaft being on perpendicular lines parallel to each other and both being revoluble in the same direction, substantially as described. 35

2. In a windmill, the combination, with the power-shaft B and a revoluble frame C, supporting the vane and wind-wheel, of a gear-wheel on the shaft B, a gear-wheel on the wind-wheel shaft, and a hollow gear-wheel I, supported on the frame C and extending over the gear on the power-shaft and provided externally and internally with gear-teeth respectively in mesh with the wind-wheel and power-shaft gear-wheels, substantially as described. 40

3. In a windmill, the combination, with the power-shaft B and the revoluble frame C, supporting the vane and wind-wheel, of a gear-wheel K on the shaft B, a beveled gear-wheel H on the wind-wheel shaft, a hollow gear-wheel I, supported on the frame C and extending over the wheel K, beveled teeth *o* around the narrower exterior surface of the wheel I, in mesh with the wheel H, and teeth *n* around its wider interior surface, in mesh with the wheel K, the whole being constructed and arranged to operate substantially as described. 50 55

JOHN THOMAS HOSTLER.

In presence of—

J. W. DYRENFORTH,
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