W. L. Gregory,

Wind Wheel,

No. 24,298. Patented June 7, 1859.

Fig: 1

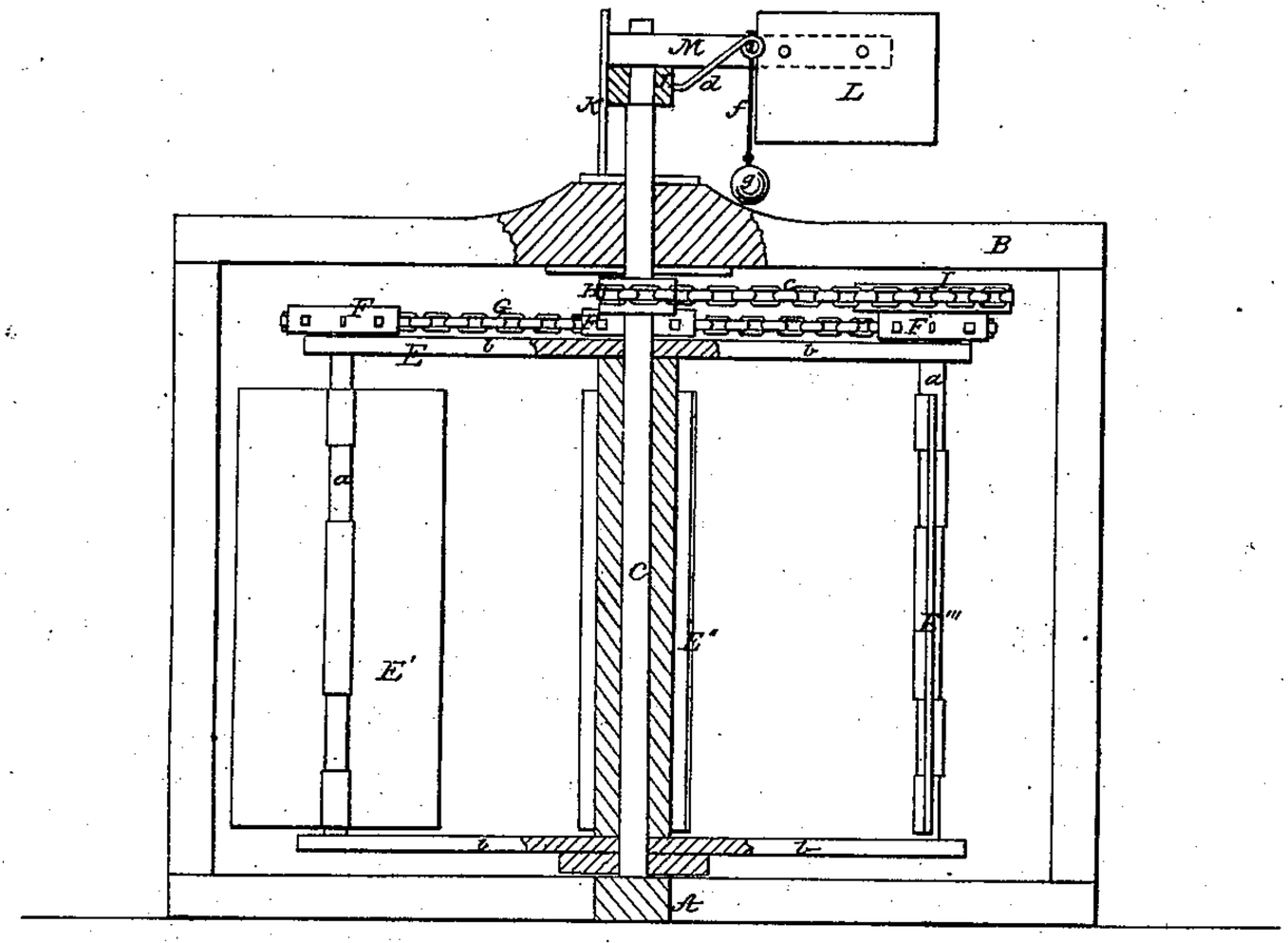
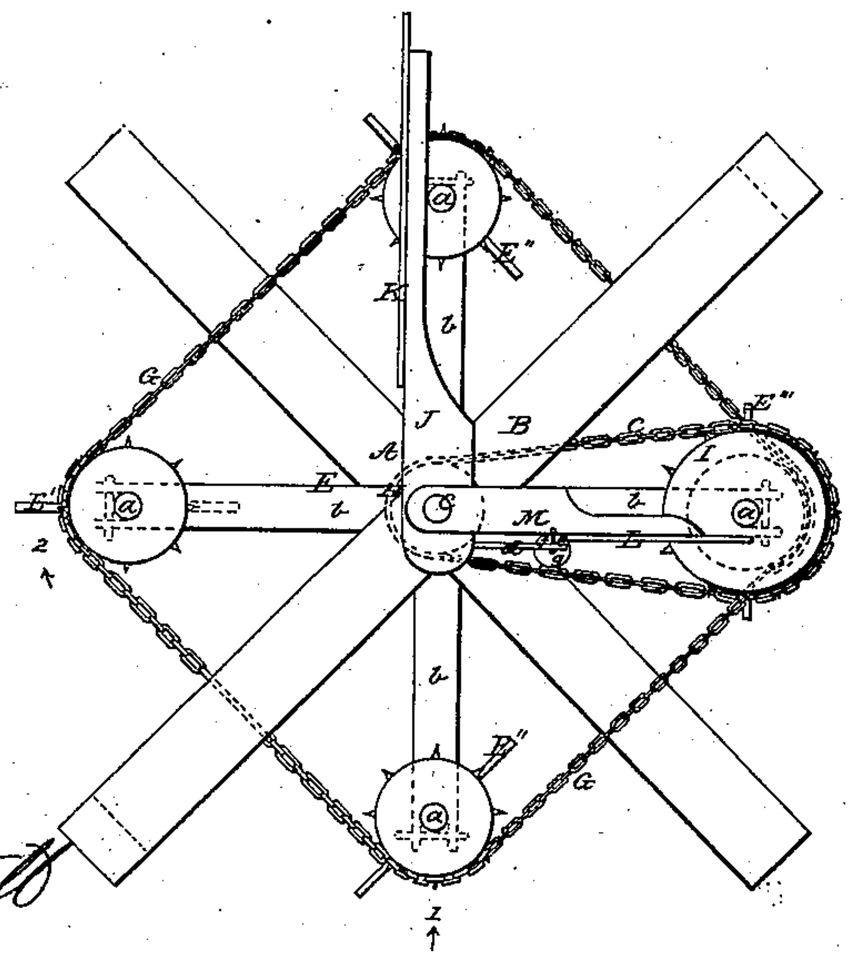


Fig: 2



Witnesses

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UNITED STATES PATENT OFFICE.

W. L. GREGORY, OF THERESA, NEW YORK.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **24,298**, dated June 7, 1859.

To all whom it may concern:

Be it known that I, W. L. GREGORY, of Theresa, in the county of Jefferson and State of New York, have invented a new and Improved Wind-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical central section of a wind-wheel constructed according to my invention. Fig. 2 is a plan or top view of the same.

Similar letters of reference in both the views represent corresponding parts.

This invention consists in arranging two vanes in such relation to the wings that the position of the latter is regulated according to the force of the wind by the action of the vanes, one of which (the main vane) is placed loosely on the shaft, so that it places itself in the direction of the wind, while the other (the regulating-vane) is firmly secured to the shaft, and it is kept at right angles to the main vane by a weight, and the shaft is connected with the wings by means of pulleys and chains, so that when the increasing force of the wind forces the regulating-vane toward the main vane the wings are turned out of the wind, whereby the speed of the wheel is regulated, and that the regulating-vane returns to its original position by the action of the weight as the wind slackens, whereby the wings are turned again so as to be in the most effective position.

To enable those skilled in the art to fully understand, make, and use my invention, I will proceed to describe its construction and operation.

A represents the bed or foundation of the structure B, which forms the bearings for a vertical shaft C. Arranged on this shaft and secured to the sleeve D is the wind-wheel E with its four wings E′ E″ E‴ E^{IV}, which are secured to separate arbors *a*, which revolve freely in the arms *b* of the wheel. These wings are connected by means of chain wheels F, which are secured to the upper ends of the arbors *a*, and a chain G is stretched over the several pulleys F, as clearly represented in Fig. 2, so that by turning one of the wings the rest are compelled to follow. The wings themselves, as represented in the drawings, are constructed of flat metal plates, which are rigidly attached to the arbors *a*; but they may be constructed in any other desirable manner and of other material, if it should be preferred.

Rigidly attached to the shaft C is a chain-wheel H, which connects by means of a chain *c* with another chain-wheel I, which is firmly secured to the upper end of one of the arbors *a*, and placed loosely over the upper end of the shaft C is an arm J, to which the main vane K is attached, so that the same is left entirely free to place itself in the direction of the wind.

L represents the regulating-vane, which is secured to an arm M, which is firmly secured to the shaft C close over the arm J, and a short arm *d* extends at right angles from the arm J, which forms a loop *e*, through which a rope *f* passes, which is secured to the arm M of the regulating-vane, and to which a ball *g* is attached, which keeps the arm M, together with the regulating-vane, up against the arm *d* and at right angles with the main vane K. The weight of the ball and the size of the regulating-vane are so adjusted that the latter preserves its position under an ordinary wind; but a high wind or a sudden gust drives the regulating-vane up toward the main vane.

The operation is as follows: When the wind blows in the direction of arrow 1, Fig. 2, the main vane K places itself in the direction of the wind and the wings of the wind-wheel assume a position clearly shown in Fig. 2, the wing E′ being full in the wind, while the wings E″ and E^{IV} are turned under an angle of forty-five degrees, and the wing E‴ stands edgewise, so as to offer as little resistance as possible while returning through the wind. If the force of the wind increases, or in case of a sudden gust, the regulating-vane L is blown up closer and closer to the main vane K, and the wings are turned more and more out of the wind by the action of the wheels H and I and by the chain *c*, and the returning wing E‴ is brought in such a position that it opposes the progress of the wind-wheel until the wind slackens, when the regulating-vane is drawn back again toward the arm *d* by the action of the ball *g*, so as to be at right angles with the main vane K, whereby

the wings are turned back again to their original position, as represented in the drawings. By these means the speed of the wind-wheel is perfectly regulated and the wings are preserved from injury by a sudden gust of wind, and at the same time, when the wind is moderate, the position of the wings is such as to give the best possible effect.

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

The arrangement of the main vane K and the regulating-vane L to operate in combination with the wings E, substantially as and for the purpose described.

W. L. GREGORY.

Witnesses:
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