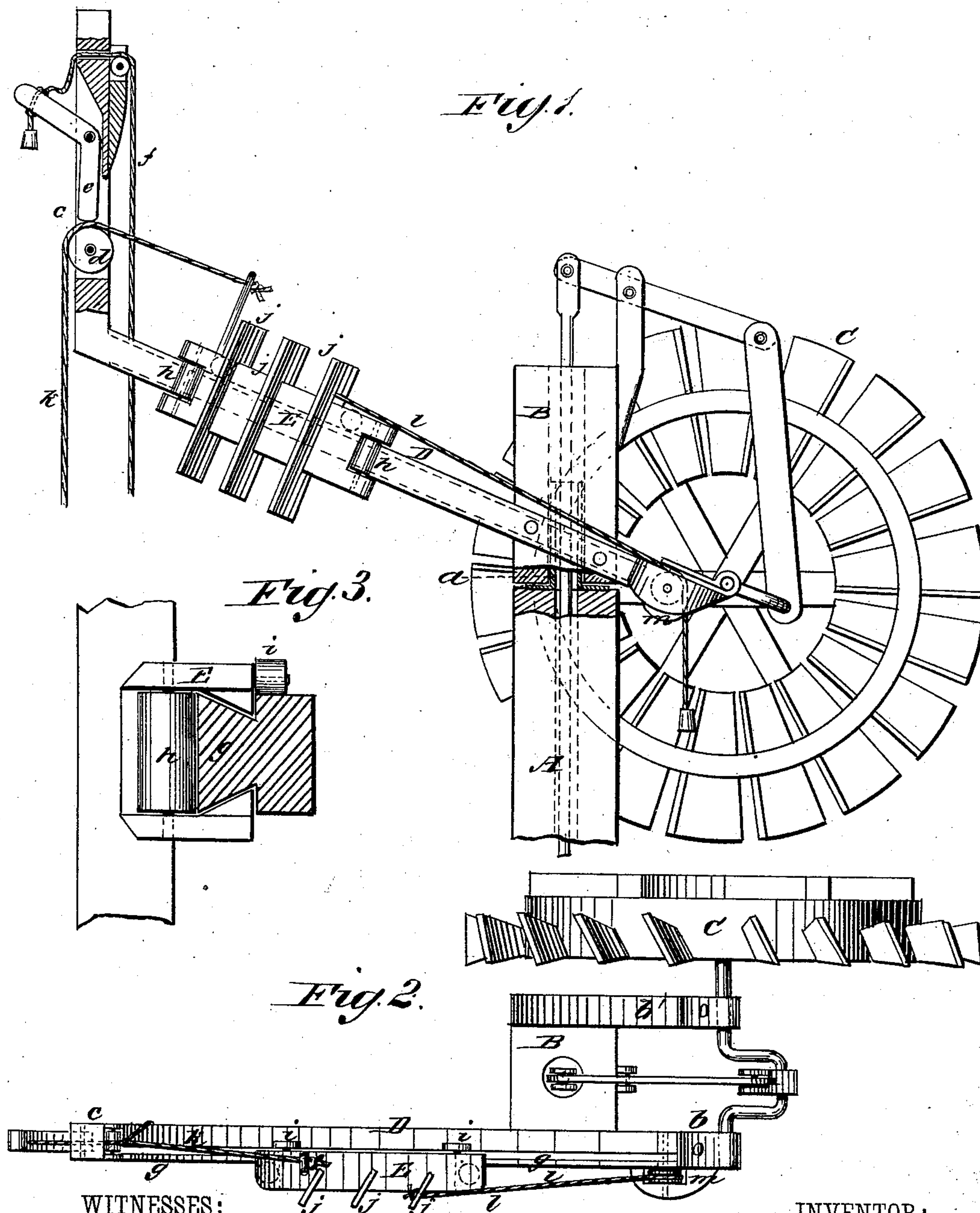


R. LORENZO.  
Windmill.

No. 221,081.

Patented Oct. 28, 1879.



WITNESSES:

Francis M. Ardle  
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# UNITED STATES PATENT OFFICE.

RATTI LORENZO, OF LOYALTON, CALIFORNIA.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **221,081**, dated October 28, 1879; application filed August 2, 1879.

*To all whom it may concern:*

Be it known that I, RATTI LORENZO, of Loyalton, in the county of Sierra and State of California, have invented a new and Improved Windmill, of which the following is a specification.

My invention relates specifically to providing the wind-wheel with an adjustable vane; and the object thereof is to vary the leverage of the vane on the wheel to allow the wind to act upon it with greater or less power, and thus move the wheel to accommodate its position to the force of the wind.

The invention consists of vanes affixed to a carriage adapted to move freely on an incline attached to the pivoted head of the mill, and extending backward parallel to the face of the wheel, whereby, when a strong wind is blowing, the carriage is forced out on the incline, and by the greater leverage thus obtained it carries the wheel nearer to the wind, and thus lessens the speed; but when a lighter wind is blowing the carriage descends the incline, lessening the leverage and permitting the wheel to come around in opposition to the wind.

The invention consists of other details of construction, which will be fully described further on.

In the accompanying drawings, Figure 1 is a side elevation of my improvement applied to a windmill. Fig. 2 is a top plan or view of the same; and Fig. 3 is a detail of the vane-carriage.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A is the standard supporting the wind-wheel, in the upper end whereof is a tubular pivot, *a*, over which is placed the head B, so as to rotate freely on the pivot. From the head extend two arms, *b b'*, in which is journaled the crank-shaft carrying the wind-wheel C.

Arm *b* is extended backward parallel to the face of the wheel, but carried upward, forming a steep incline, D, at the end whereof is an upright, *c*, with a mortise through it, in which is a pulley, *d*, and above this a pivoted dog, *e*, having a rope, *f*, attached to its upper arm, and running over a pulley down to within easy reach of the operator.

E is a carriage, having a dovetailed slot on

one side, which engages the longitudinal dovetailed projection *g* on the side of incline D. To the carriage, at the ends of the dovetailed slot, are pivoted rollers *h h*, which bear against the face of projection *g*, and on the upper side of the carriage are other rollers, *i i*, which bear upon the upper side of the incline. These rollers are to lessen the friction of the carriage and facilitate its movement up and down the incline.

In the carriage are fixed wings *j j j*, at right angles to its length, and their faces turned obliquely to the incline, the upper edges being in advance, so that the direction of the wind will have the effect of forcing the carriage up the incline.

The upper end of the carriage is connected with a rope, *k*, running over pulley *d*, and its lower end is connected with a rope, *l*, running down over a pulley, *m*, in the lower end of the incline. By means of these ropes the carriage is moved up and down the incline, and it can be secured in any desired position on the incline by allowing the dog *e* to engage rope *k*, as in Fig. 1.

The operation of the invention is as follows: When the wind is blowing very strong it acts on the wings *j j j*, and by its reactionary force it forces the carriage up the incline away from the center of rotation. This of course increases the leverage of the vane, (for which the wings *j* serve,) and it is forced around, bringing the edge of the wheel nearer to the wind and slowing its movement, and if brought around far enough stops its movement entirely.

When the wind slackens the carriage settles down the incline and shortens the leverage of the vane and enables the wheel to maintain itself more in opposition to the wind, and thus avail itself of its full force.

In moderate winds the vane remains about half-way up the incline, and in this position the wheel is held in proper working condition.

The wheel is stopped in the following manner: By means of the cord *k* the carriage is drawn to the upper end of the incline, and the dog *e*, engaging the rope *k*, holds it in that position, and the wind acting on it forces it around and brings the edge of the wheel to the wind, stopping its movement. When the dog

is lifted the carriage is permitted to descend the incline by its own gravity, unless held up by the contrary force of the wind, as above set forth.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. As an improvement in windmills, the vane composed of wings *j*, set in carriage *E*, held by a dovetailed connection on the incline *D*, in combination with the incline *D*, pivoted head *B*, and wind-wheel *C*, whereby the vane is permitted to adjust itself under the force of the wind to and from the axis of rotation of the vane and wheel, and thus carry the wheel

to or in opposition to the wind, for the purpose of regulating its movement, substantially as described.

2. In combination with the vane composed of wings *j*, fixed in carriage *E*, adapted to move up and down the incline *D*, and provided with rope *k*, running over pulley *d*, the dog *e*, for engaging the rope and holding the vane in position to enable the wind to carry it around and bring the edge of the wheel to the wind to stop the wheel, substantially as described.

RATTI LORENZO.

Witnesses:

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