J. D. GRAVES.
Windmill.

No. 219,715. Patented Sept. 16, 1879.

Fig: 1.

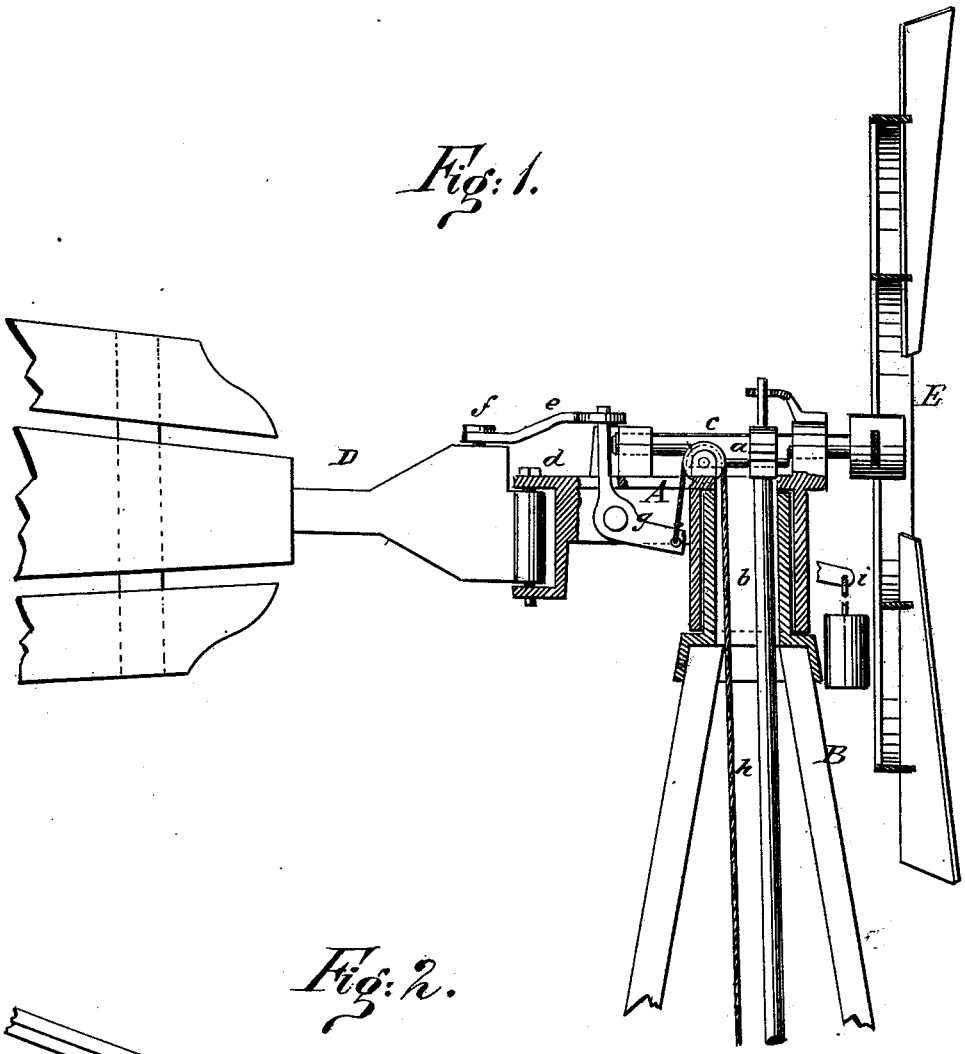
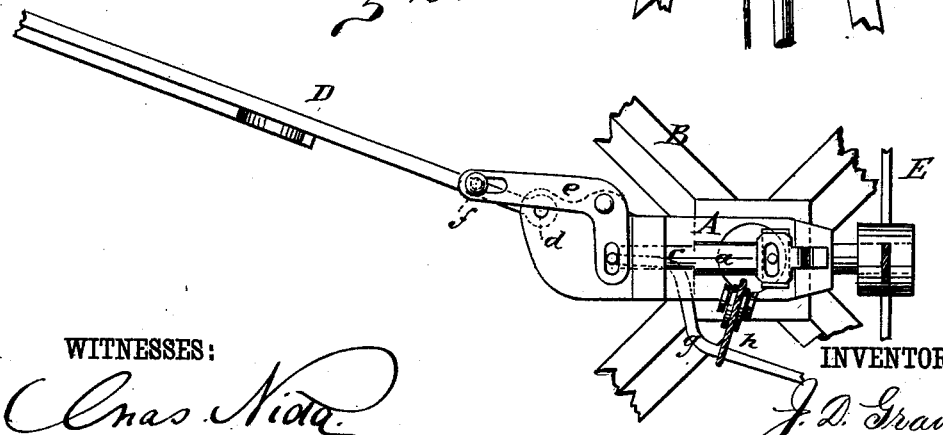


Fig: 2.



WITNESSES:

Chas. Nida.

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN D. GRAVES, OF WICHITA, KANSAS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **219,715**, dated September 16, 1879; application filed June 2, 1879.

To all whom it may concern:

Be it known that I, JOHN D. GRAVES, of Wichita, in the county of Sedgwick and State of Kansas, have invented a new and useful Improvement in Windmills, of which the following is a specification.

My invention consists in a windmill wherein the wheel is held to the wind by a vane, and turned more or less at an angle to the direction of the wind by horizontal adjustment of the vane, which adjustment is automatically performed for regulating the speed and power of the wheel by the endwise movement of the wheel-shaft acting upon an elbow-lever connected to another elbow-lever, which in turn is connected to the vane; or it may be done by hand by a rope attached to the first-named elbow-lever and passed over a pulley, as hereinafter fully described.

My improvements are shown in the accompanying drawings, wherein Figure 1 is a sectional side elevation. Fig. 2 is a top view.

Similar letters of reference indicate corresponding parts.

A is the derrick, fitted to revolve upon the top of the frame B in any desired manner for obtaining the usual horizontal movement of the vane and wheel.

The wheel-shaft *c* is sustained in bearings on derrick A, and operates the pump-rod *b* by an eccentric, *a*. This shaft *c* is fitted in its bearings so as to be capable of lengthwise movement.

The vane D is hung upon the derrick by a vertical pin, *d*, by which connection it may swing horizontally and to a position more or less inclined to the direction of shaft *c*.

Upon the derrick is hung a bent lever, *e*, the longer arm of which is connected to the vane by a pin, *f*, passing through a slot in *e*, and the shorter arm of the lever is fitted for being operated to swing the vane. This may be accomplished by the movement of shaft *c* endwise, caused by pressure of wind on wheel E, or by means of a second bent lever, *g*, that is moved by hand or by a connection from a float in the water-tank.

The shorter arm of lever *g* enters a slot in the short arm of lever *e* and extends contiguous to the end of shaft *c*, so that movement of shaft *c* thereby moves lever *e*.

h is a cord connected to *g* for moving the vane by hand.

i is a rod connected to lever *g*, and extending to a float that will be fitted in the tank for receiving water pumped up by the windmill, so that when the water reaches a certain level the vane will be turned by operation of the float and rod on lever *g*.

This construction combines the mechanism in a simple form, but the action is separate, in one case the vane being turned when the wind-pressure increases beyond a safe point, and in the other case when less pumping is required.

The movement of the vane to an inclined position, as described, results in turning the derrick by the action of the wind on the vane, and the wheel E is caused to present its edges more or less to the wind, according to the inclination of the vane. The speed and power are thus checked until, by decrease of wind or fall of the float, the parts are restored to a normal position.

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

1. In a windmill, the combination of the hinged vane D, the slotted elbow-lever *e*, the elbow-lever *g*, and the horizontal wheel-shaft *c* with the derrick A and wheel E, substantially as and for the purpose set forth.

2. In a windmill, the combination of the hinged vane D, the slotted elbow-lever *e*, the lever *g*, and rope *h*, substantially as and for the purpose set forth.

JOHN D. GRAVES.

Witnesses:
N. F. NIEDERLANDER,
T. J. CLARK.