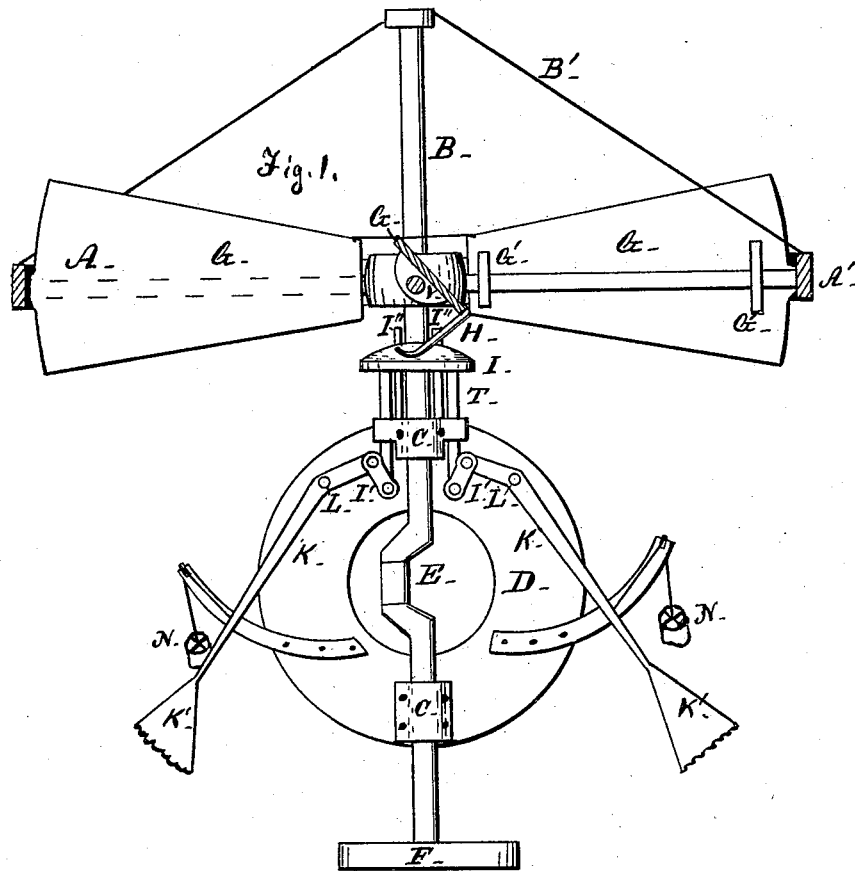


W. D. GRIFFITH.  
WIND-MILL.

No. 190,429.

Patented May 8, 1877.



Witness =  
Wm J Cochran  
Jno. C. Fry

Inventor =  
William D. Griffith,  
By Saml. J. Wallace -  
Attorney =

# UNITED STATES PATENT OFFICE.

WILLIAM D. GRIFFITH, OF VINCENNES, IOWA.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. 190,429, dated May 8, 1877; application filed March 17, 1877.

*To all whom it may concern:*

Be it known that I, WILLIAM D. GRIFFITH, of Vincennes, Lee county, Iowa, have made a new and useful invention in Windmills, of which the following is a specification:

This is made substantially as set forth hereinafter, referring to the accompanying drawing, in which the figure shows a plan view of apparatus.

This invention relates to the class of windmills having vanes pivoted and regulated by the force of the wind automatically; and consists in improved parts and arrangements therein.

The wheel A is mounted on shaft B, which turns with the wheel, in bearings C C' in a table, D. This table is mounted on a platform, supported on a suitable frame, so that the table will be held securely in position, but turn freely on the platform. There is an open passage up through the center of the table and platform, by which a driving-pitman is connected from below to a crank, E, in the shaft B, to receive the power of the wheel. The shaft has a wheel or weight, F, to counterbalance the weight of the wheel A over the table D.

The wheel A has a hub and rim and spokes to connect them. The shaft B projects in front, and the rim of the wheel is strengthened by tie-braces radiating from the end of the shaft to it on all sides. Each spoke has pivoted to it a vane, G, by bearings at its ends between the hub and rim. These vanes are hung so as to be nearly balanced on the spokes, with a small excess on one side, so the wind bearing on that side tends to turn that edge forward. A stop is placed to act between the edge of the vane and the rim, so the vane can bear against it, and only turn so far as to catch the force of the wind most fully, and be held so by the inequality of its two sides. The vanes are connected at their like edges by pivoted ties, so as all to open or close together. Some of the vanes have arms H at their inner ends, projecting at right angles to their planes from one edge or corner. These abut against a block, I, through which shaft B passes backward. This block does not turn, but has a suitable face for these arms to rest against in turning. This block is held in position by guide-arms T, passing back with suitable supports on the table D,

arranged so it can be moved back or forward on shaft B against these arms H, so as to regulate the inclination of the vanes on their pivots by movement of the arms. This block is moved forward or back by pivoted rods I' I' from the two vane-levers K K, pivoted on table D at L L'. These levers have vanes K' K' on their ends. They have cords or chains connected with them, and passing over pulleys to weights N N, which pull them apart, so the vanes project to opposite sides to nearly parallel with the plane of the wheel.

The wind strikes the vanes K' K', so as to turn them with the table D and wheel A, and balance each other with the wheel facing toward the wind, and, striking the inclined vanes of the wheel, turns it. The wind then presses the two vanes K' K' backward and together, so as to lift the weights N N more or less, according to the force of the wind and the heaviness of the weights. This movement of levers K K forces the block I against the arms H, and turns the vanes of the wheel nearer in line with the wind, until the force of the weights balances the force of the wind on the unbalanced portion of the wheel-vanes. If the wind is very heavy, vanes will all be turned by this action nearly into line with it, so as to give little resistance; and the resistance of all the vanes to the wind, and consequently the part of its force which is used for work, is regulated by increasing or decreasing the weights N N. If no work is desired they are removed, and there is no force in the wheel, no resistance to the wind. The two fixed guide-bars I'' project from the part C, and pass through the block I, to hold it solid as it slides back and forth on them. In some cases the ends of levers K connect with the push-bars T by means of an elongated pivot-hole in the levers, dispensing with parts I'.

I claim—

1. The wind-wheel, with pivoted vanes, combined with the arms H and a regulating-block, I, substantially as set forth.
2. The wind-wheel, having two lever-vanes to guide the wheel to the wind, combined with a regulating-block, I, substantially as set forth.

WILLIAM D. GRIFFITH.

Witnesses:

JAMES G. ACHUFF,  
U. C. BALES.