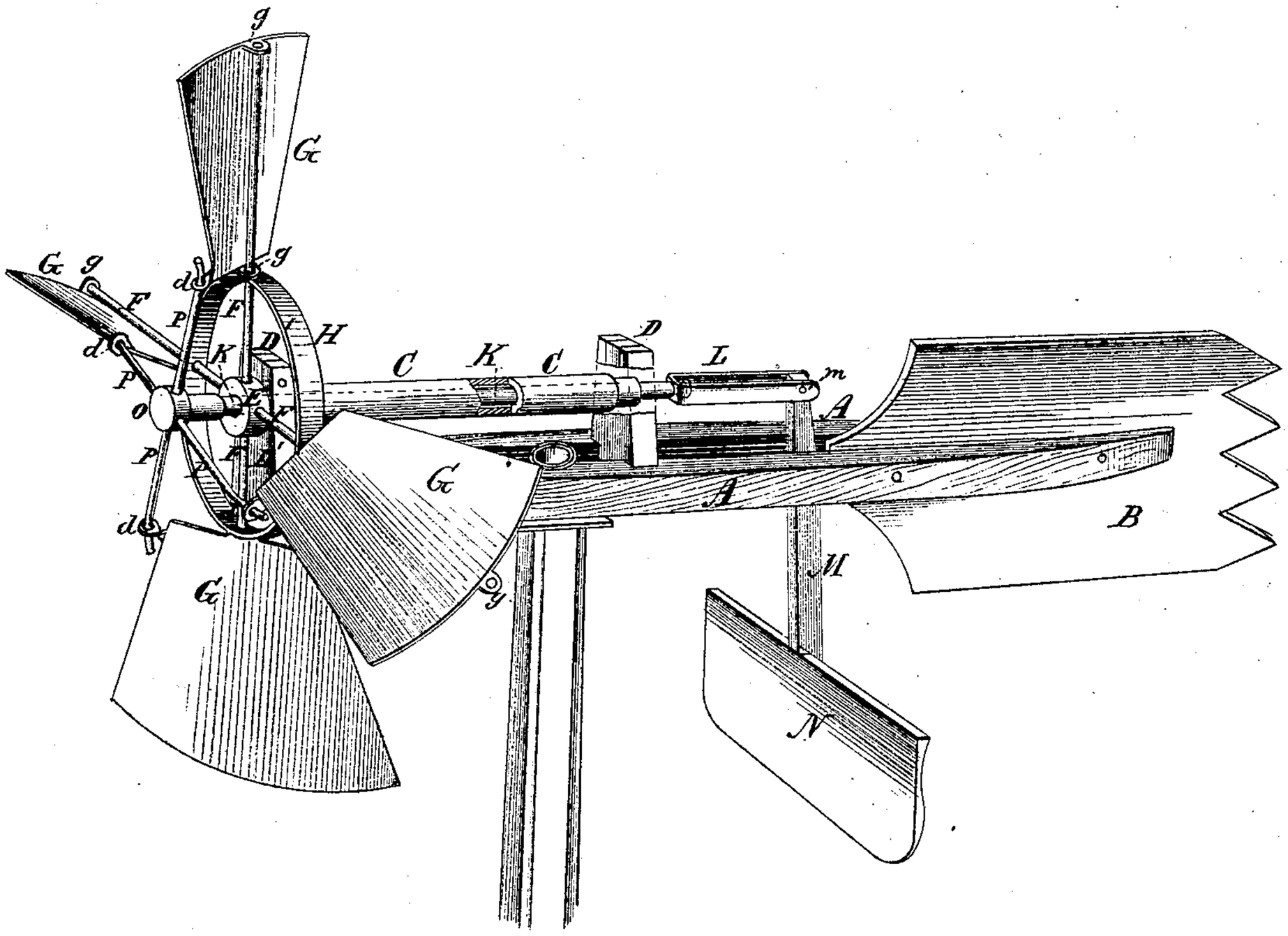
J. B. CUSHMAN.

Wind-Mill.

No. 132,060. Patented Oct. 8, 1872.




Witnesses.
A. Ruppert.
Edw. A. Newman.

Inventor:
Josiah B. Cushman
by his attys.
Cox and Cox

# UNITED STATES PATENT OFFICE.

JOSIAH B. CUSHMAN, OF THOMSON, ILLINOIS.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **132,060**, dated October 8, 1872.

*To all whom it may concern:*

Be it known that I, JOSIAH B. CUSHMAN, of Thomson, Illinois, have made and invented a new and useful Improvement in Windmills, of which the following is a specification:

### *Nature and Objects of the Invention.*

My invention has reference to wind-mills; and consists of a horizontal frame with standards, which support a tubular shaft, to the forward end of which the principal wings or sails are attached. A rod that passes through the tubular shaft is connected at its rear end with a fan, which stands at right angles to the rod and below the frame, its forward end being provided with a spider, the arms of which passing through horizontal ears therein control the position of the principal wings or sails. Thus the position of the principal wings or sails is governed by the action of the wind upon the sail connected with the rod that passes through the tubular shaft, as aforesaid. The object of my invention is to provide a windmill of a desirable construction, and one that is not liable to dangers arising from sudden or varying high winds.

### *General Description.*

A is the frame, which is constructed of two parallel beams bolted together, or in any other suitable manner, and arranged to turn upon a pivot or table upon the upright frame-work. The rear end of the frame A is provided with a rudder-fan, B, of proper dimensions, which is designed to turn the frame so as to present the principal wings or sails G to the wind. C is a tubular shaft, the ends of which turn in sockets or bearings in the standards D D′ that are secured to the frame A in any appropriate manner. The rear end of the shaft C rests in a socket or bearing in the standard D, its forward end being extended beyond the standard D′, to which the hub E is attached. The hub E is constructed of metal or other suitable material, and is made sufficiently strong for the purposes for which it is designed. In it are inserted the metallic arms F, upon which the principal wings or sails G turn. To the arms F, at a suitable distance below the wings G, a circular brace, H, is attached, the arms F passing through it, their lower ends terminating, as aforesaid, in the hub E, their upper ends extending beyond the upper edges of the fans G. The fans or wings G are constructed of any desired form and material, and are arranged with the ears *g*, or otherwise, to turn upon the arms F. At the lower, forward, or outer corners of the fans or wings G horizontal ears *d* are provided, through which pass the arms P of the spider, as will hereinafter more fully appear. Constructed to slide and turn within the tubular shaft C is the round metallic rod or shaft K. The rear end of the rod K passes through a hole in the bowed end of the open metallic link L, a head being provided to prevent its sliding out of place and to assist in its operation. At the open end of the link is pivoted the vertical arm M, that, passing down through the frame A, to which it is attached by the pin *m* so as to swing freely, has fastened to its lower extremity the fan N, which depends below and nearly at right angles with the rudder-fan B. To the forward end of the rod K, which extends beyond the hub E, is fastened a spider, which consists of the hub O and arms P. The hub O is of metal and rigidly attached to the rod K, as may be desired. It is of such length that when it rests against the hub E the fans G will stand at an angle greater than forty-five degrees to the shaft C. It may be constructed with a collar, or a detached collar may be used to prevent the arms P from turning too far, and thus dislocating the fans G and other parts. The arms P are metallic rods, rigidly secured in the hub O. Their number corresponds with the number of the sails or fans G, and they pass up through the horizontal ears *d*, with which the fans G are provided, being arranged for that purpose. Their upper ends may be bent, as shown, to facilitate their operation.

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

1. The spider herein described, consisting of the hub O and arms P, in combination with the sails G, provided with the ears *d*, for for the purposes shown and described.

2. The spider herein described, consisting of the hub O and arms P, in combination with the rod K, link L, arm M, and fan N for

the uses and purposes herein shown and described.

3. The ears *d* upon the corners of the fans G, for the uses and purposes shown and described.

In testimony that I claim the foregoing improvement in windmills, as above described, I have hereunto set my hand and seal this 10th day of August, 1872.

JOSIAH B. CUSHMAN. [L. S.]

Witnesses:
JAMES FERGUSON,
EMILY CLARK.