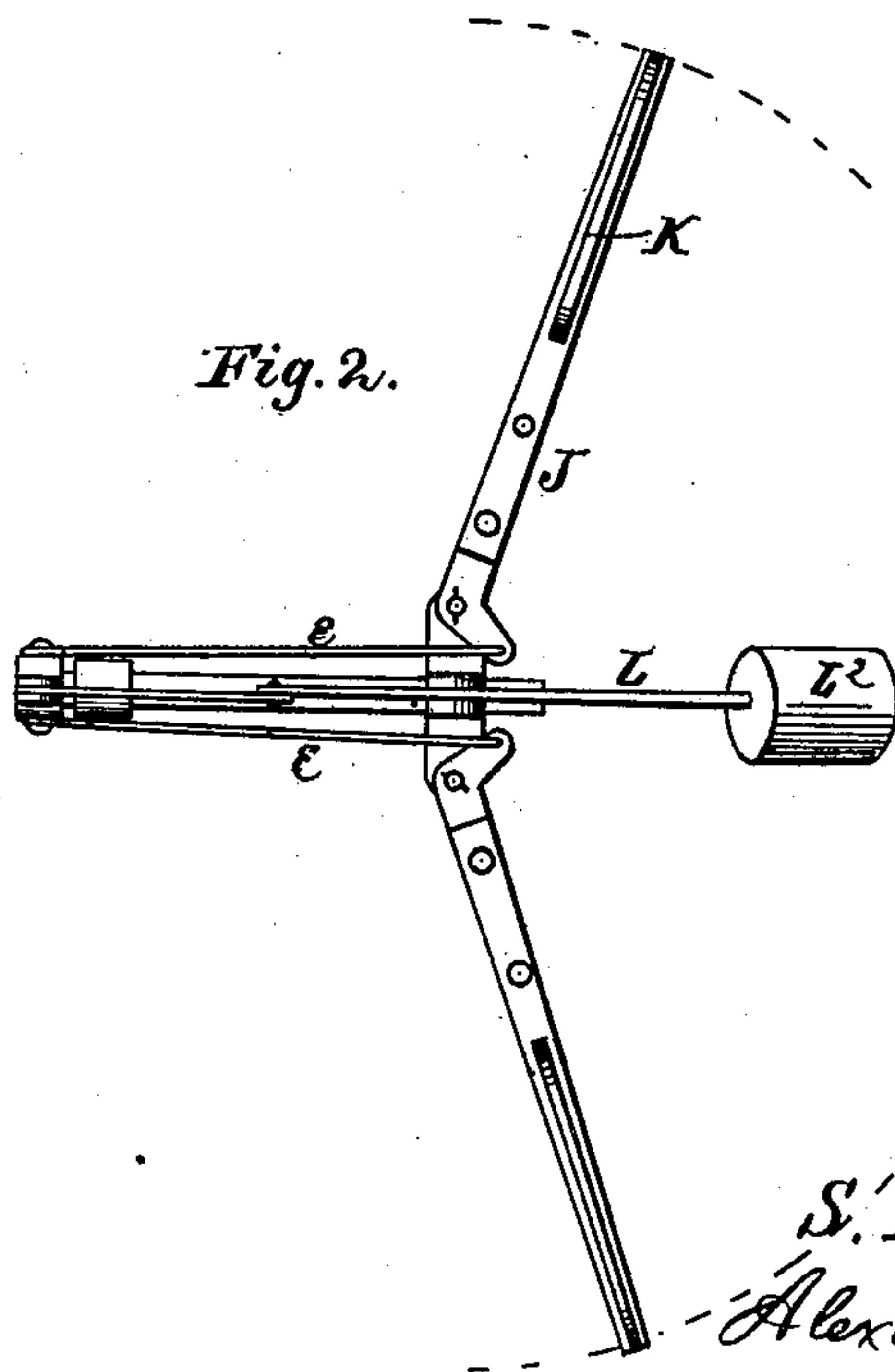
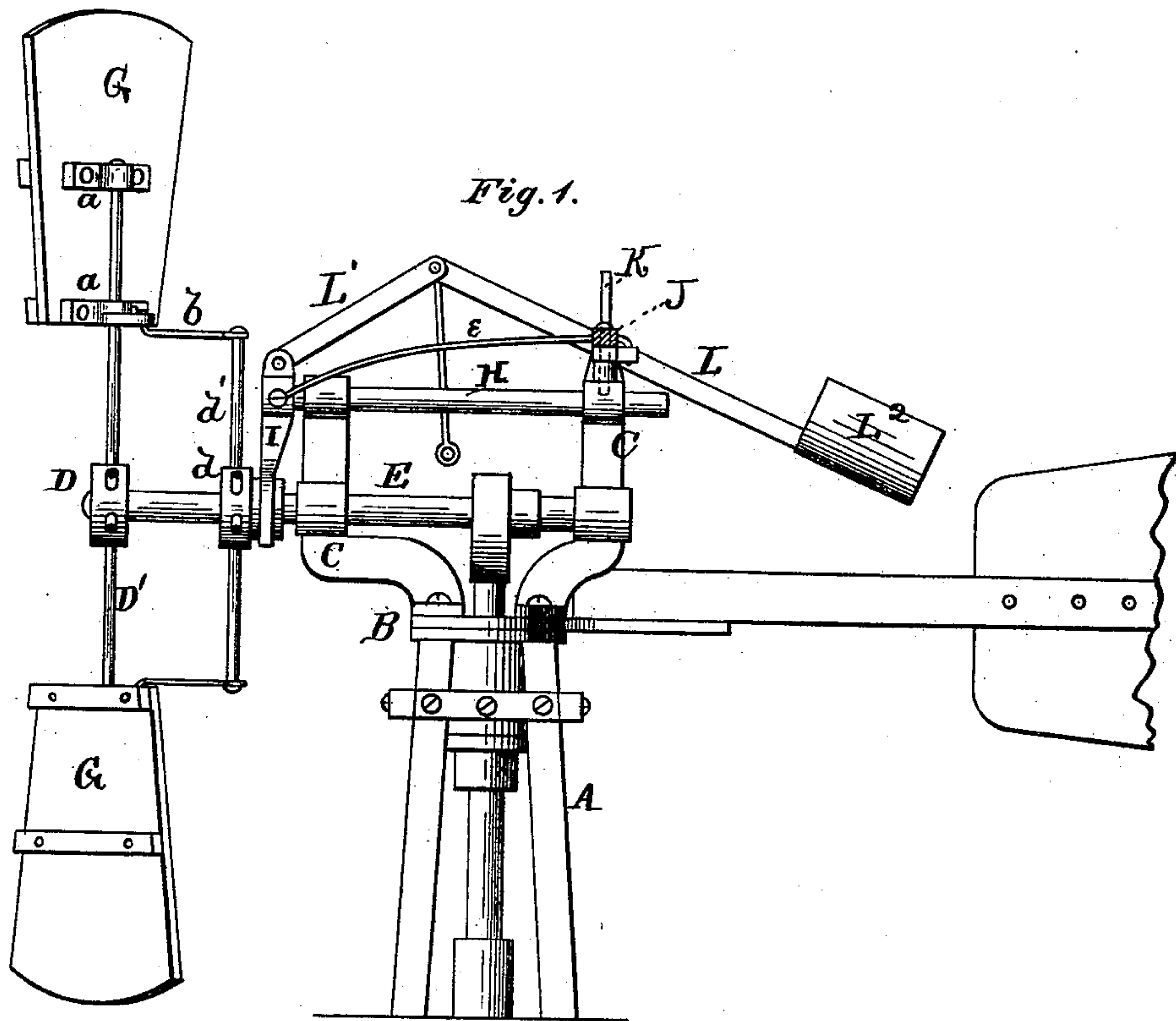


S. H. SMITH.
Windmills.

No. 199,114.

Patented Jan. 8, 1878.



WITNESSES
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Frank Gaer

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UNITED STATES PATENT OFFICE.

SETH H. SMITH, OF BROOKLYN, MICHIGAN, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO G. H. FELT AND GEO. W. GREEN, OF SAME PLACE.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **199,114**, dated January 8, 1878; application filed August 10, 1877.

To all whom it may concern:

Be it known that I, SETH H. SMITH, of Brooklyn, in the county of Jackson, and in the State of Michigan, have invented certain new and useful Improvements in Windmills; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a windmill, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of my improved windmill, the sail on that side being cut off, but the sail on the other side shown at K. Fig. 2 is a detailed view of a part thereof.

A represents the tower, with turn-table B, provided with arms C C, in which the horizontal wind-wheel shaft E has its bearings. D is the hub of the wind-wheel, secured to the end of the shaft E. The hub D is provided with a series of radial arms, D' D', at equal distances apart, upon each of which is placed a fan, G. This fan is provided with boxes *a a*, through which the arm D' passes.

The fans are all free to turn on the arms, so that they can be turned to any angle to produce the best result in a light wind, and are free to be turned out of the wind, as required in high wind.

Each fan G is, by a pivoted rod, *b*, connected with an arm, *d'*, projecting radially from a head, *d*, which slides on the wheel-shaft E.

The head *d* has a projecting hub, which is surrounded by a forked arm, I, rigidly attached to and extending downward from a rod, H, that has its bearings in the upper ends of the arms C C, and is capable of moving endwise therein.

The arm I is, at the point of connection

with the shaft H, provided with two wires or rods, *e e*, which connect with the short arms of two horizontal elbow-levers, J J, pivoted at their angles, one on each side of the shaft H, to the top of the arm C. The outer ends of these levers are provided with the regulating-vanes K K.

In the upper end of the arm C, between the two levers J J, is pivoted a lever, L, the outer end of which is provided with a movable weight, L², and the inner or front end by a pivoted lever, L¹, connected with the upper end of the arm I.

By the connection of the fans G with the sliding head *d*, as described, the fans are easily pulled out of the wind and brought to rest by pulling on a wire, *h*, connected to the point of connection of the two levers L L¹; and by their connection with the side sails or regulators, as the wind increases in power, the fans are turned out of the wind a proper amount to give the wheel proper motion by said side sails or regulators being pushed back; and as the weight that brings the wheel or fans in the wind is the same at all points, it will readily be seen that as the side sails or regulators are pushed back they present less surface to the wind, therefore require more wind to turn the sails farther out of the wind, hence giving the wheel the same motion in high wind as in gentle breezes. By having one side sail or regulator on each side of the mill the wheel is not thrown out of the wind, as is the case with wheels having but one side sail, but it faces the wind, so as to stand steady in the wind at all times. The wheel does not have to get up any extra velocity to turn the fans out of the wind, as is the case with all wheels that govern by the velocity of the wheel.

By changing the position of the weight L² on the lever L the fans will turn out with more or less wind, as required, so that the wheel may be set to run at any speed desired.

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

1. The combination of the sliding head d , connected to the fans G , the arm I , shaft H , and two side sails or regulators, arranged on opposite sides of the mill and connected to the arm I , substantially as and for the purposes herein set forth.

2. The combination of the arm I , toggle-levers L^1 L , and adjustable weight L^2 , substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of July, 1877.

S. H. SMITH.

Witnesses:

C. B. FELT,
GEO. W. BERTRAM.