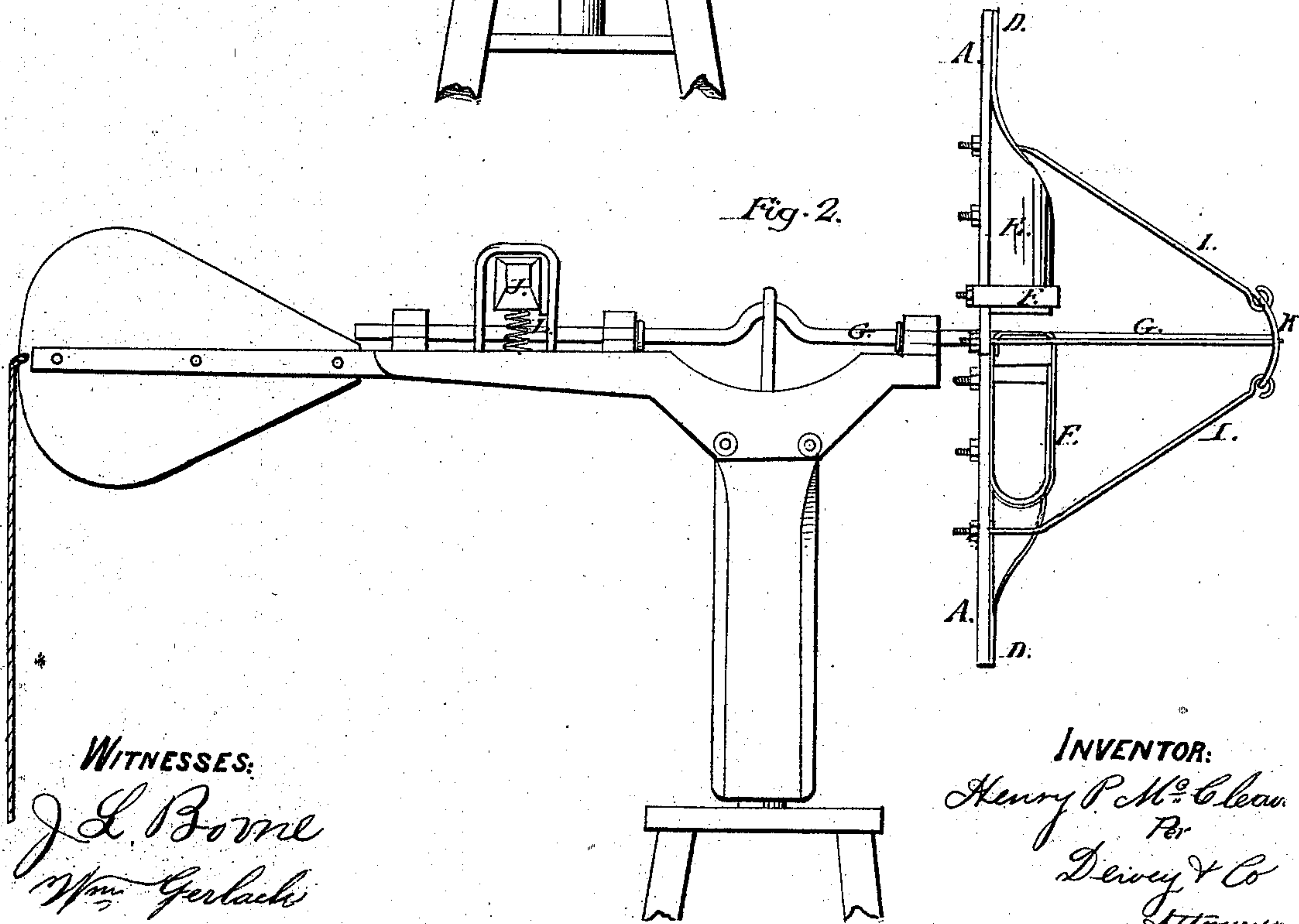
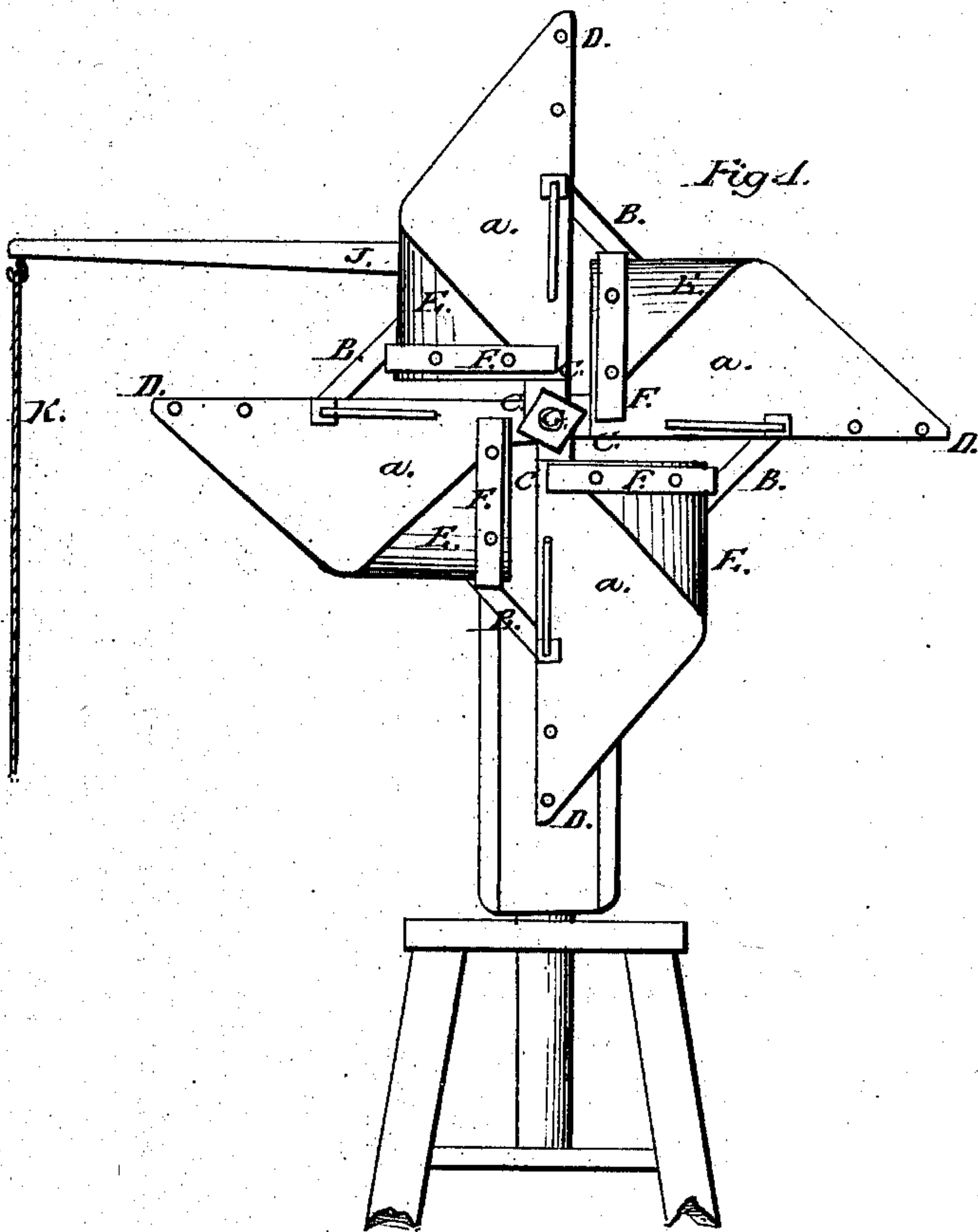


*H. P. McCleave.*

*Water Wheel.*

*N<sup>o</sup> 97,665.*

*Patented Dec. 7, 1869.*



*WITNESSES:*

*J. L. Borne*  
*Wm. Gerlach*

*INVENTOR:*

*Henry P. McCleave*  
*Per*  
*Devery & Co*  
*Attorneys*



# United States Patent Office.

HENRY P. McCLEAVE, OF TOMALES, CALIFORNIA.

*Letters Patent No. 97,665, dated December 7, 1869.*

## IMPROVEMENT IN WIND-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern :*

Be it known that I, HENRY P. McCLEAVE, of Tomales, county of Marin, State of California, have invented an Improved Windmill; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains, to make and use my said invention or improvement, without further invention or experiment.

My invention relates to windmills, and consists principally in an improved manner of constructing the vanes composing the wheel, so that the efficiency of the mill is much increased. This is effected by forming the vanes, triangularly, of metal, and bending one of the outer corners of each vane down toward the centre, where the third corner is secured, and holding the corner so bent by straps of iron. Braces extend forward from the outer ends of the vanes to a central rod, by which they are firmly supported.

Referring to the accompanying drawings for a more complete explanation of my invention—

Figure 1 is a front view of the wheel.

Figure 2 is a side view.

A A are suitable arms, of wood, to which the vanes are fastened, and which are braced laterally, as at B.

Any suitable number of vanes may be used, but in the present drawings four only are shown.

The vanes consist of triangular metallic plates, *a*, so cut, that when laid flat, they will make a figure with as many sides as there are arms.

One side of the triangle is laid on the arm A, so that the interior point C is near the centre, and is

then firmly fastened, along the arm, to the outer point D, which, when all are fastened to their respective arms, will leave the alternate exterior corners free. These corners are then bent inward toward the central point C, so as to form a curve, as at E.

Straps of iron, F, are curved, to fit the bent edge E of each vane, and so strengthen and hold it in place.

The shaft G is extended out in front of the wheel, and carries at its extremity, a cross, H, to which one end of the braces I I is fastened. The other end passes through the vanes and the arms A, near the outer ends, so as to brace them firmly.

The brake J is operated by a rope, K, so as to check the speed of the mill when desirable, and is kept from contact with the shaft, when not in use, by the spring L.

This wheel is strong, cheap, and durable, and will run well fronting the wind, or with the side toward it, but can be entirely stopped by turning the back toward the wind.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

A wind-wheel, composed of the vanes *a*, forming the curve E, and constructed substantially as herein described.

In witness whereof, I have hereunto set my hand and seal.

HENRY P. McCLEAVE. [L. s.]

Witnesses:

WILLIAM CAMM,  
JOHN LITTLE.