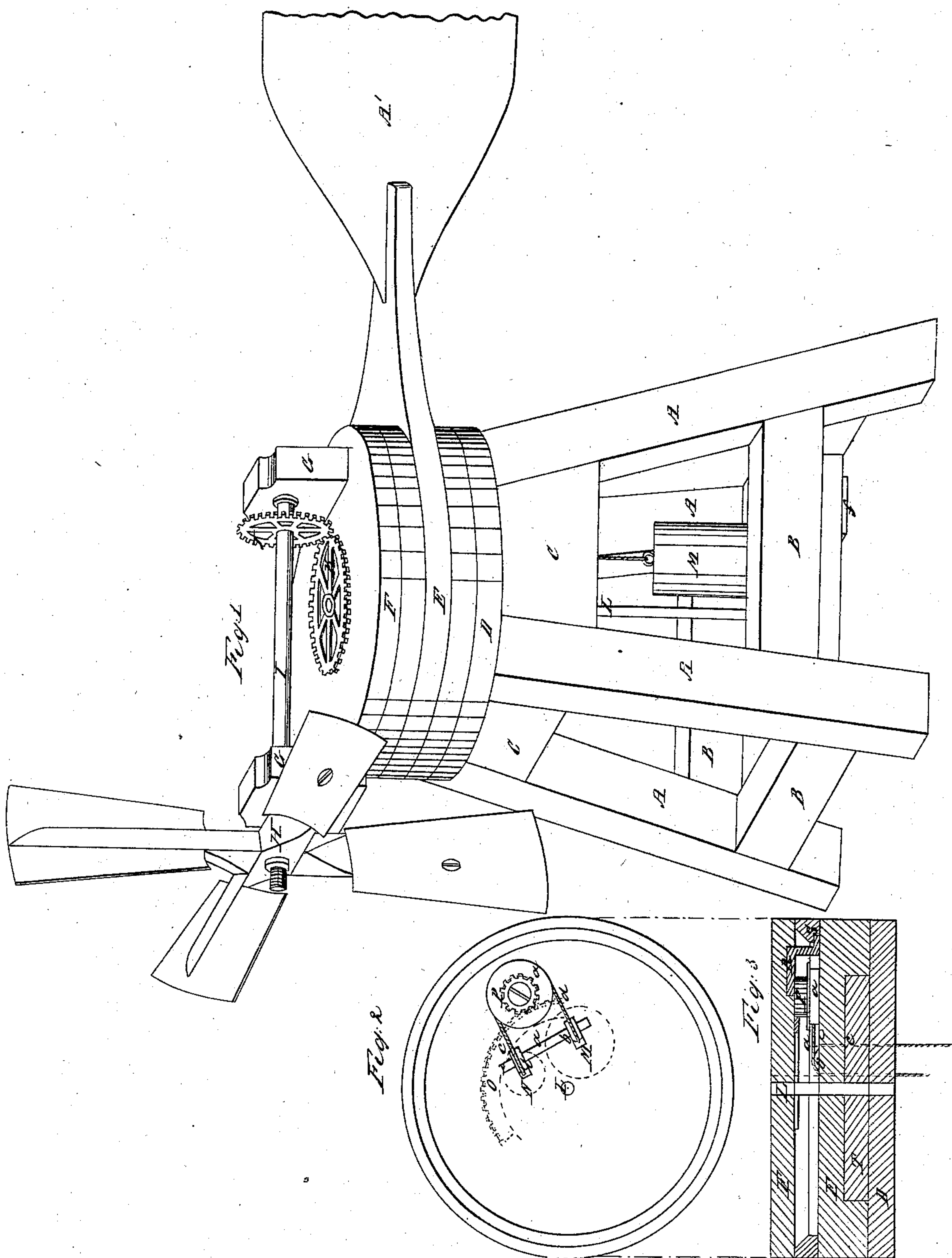


Chambers & Hargraves,

Wind Wheel,

N^o 15,599,

Patented Aug. 26, 1856.



UNITED STATES PATENT OFFICE.

WILLIAM C. CHAMBERS AND THOMAS S. HARGRAVE, OF BROOKLYN,
NEW YORK.

IMPROVED WIND-WHEEL.

Specification forming part of Letters Patent No. 15,599, dated August 26, 1856.

To all whom it may concern:

Be it known that we, WILLIAM C. CHAMBERS and THOMAS S. HARGRAVE, of Brooklyn, Kings county, State of New York, have invented a new and Improved Self-Regulating Windmill; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, figures, and letters of reference thereon, in which—

Figure 1 is a perspective view of our improved windmill. Fig. 2 is a top view having the plate removed to show the mechanism which regulates the mill. Fig. 3 is a vertical section showing the manner in which it is put together.

Similar letters of reference indicate like parts in all the drawings.

The nature of our invention consists in so attaching the plate supporting the mill to the vane or rudder-head that it will have an independent vibrating rotary movement for the purpose of rendering it self-regulating, and also in the mechanism for retaining the plate in a proper position.

To enable others skilled in the art to make and use our invention, we will proceed to describe the manner in which we construct it and its operation.

A A B B C C are parts of the frame-work securely put together, as shown in Fig. 1.

D is a circular plate placed on top of the frame, having thereon a smaller ring or plate T, Fig. 3. E is another plate to which is attached the rudder, and is turned out to fit the plate D and make a good joint and allow it a free rotary motion.

F is the plate having thereon the two standards G G, which form the bearings of the wheel-shaft H and I.

J is the driving-gear on the shaft I. K is another gear upon the vertical shaft L, which shaft propels the machinery. This shaft is secured in bearings at the top in the center of the plate, as plainly shown, and has the gear K secured to it by means of a small nut e, while the lower bearing is formed in a cross-bar f, attached to the frame-work B B.

M is a weight, which is attached by a cord to the small pulley Q. N is another smaller weight, secured in the same manner to the

pulley. These weight-cords are wound around the pulley, so that one or the other will always draw, as shown in Figs. 2 and 3.

O is the segment of a gear made fast upon the plate F on its under side.

P is a small pinion, which gears into the segment O and is secured to the pulley Q, as shown in Figs. 2 and 3.

R is an elbow-shaped piece having a short projection at one end. This piece is secured to the top plate E on the under side, while the projection fits a groove S in the plate E, which groove is made about one-fourth the way around the plate, so as to allow the wind-wheel to turn at right angles with the rudder. I would remark that the surface of the plate E is beveled down, as shown in Fig. 3, so that the top plate F will have but little friction, and thus rotate easy. A' is the rudder. There is a small shaft a, Fig. 2, fitted into the plate E, having thereon two small grooved rollers b b, which rotate on the shaft a and over which the weight-cords c and d pass.

The wind-wheel is constructed in the ordinary manner, having its float-board or sails fastened permanently to the frame of the wheel H, as seen in Fig. 1. The weight-cords pass through holes in the plate E, while the lower plate D is cut out in the center to allow the cords to work around the vertical shaft L.

Operation: Motion being given the mill, it imparts a movement through the gears to the vertical shaft L, which propels the machinery. As the force of wind increases or slackens, the mill will always be self-regulating, for the vane or rudder will always be in range with the wind, or nearly so, while the wind-wheel H will, in proportion to the resistance offered from the machinery it propels and the force of the wind, be carried away from or brought to the line of the rudder A'. As the plate F is vibrated away from the line of the rudder, it will by means of the segment O cause the small pinion, which is secured to the pulley Q, to rotate, and as the weight-cords are secured to this pulley in such a manner by being wound around them as to always draw one weight will be elevated and the other depressed. The purpose of the heavy weight is to always bring the wind-wheel into

a line with the rudder, while the small weight serves to steady it in its action. The rudder-head E and plate F are free to rotate upon the ring of the plate D, as the direction of the wind may indicate.

Having thus described our improved wind-mill, what we claim as new therein, and desire to secure by Letters Patent, is—

1. Attaching the plate E which supports the wheel to the rudder-plate in such a manner as to allow it a vibrating rotary motion, whereby the mill is rendered self-regulating, substantially as described.

2. The combination and arrangement of the segment-gear O, pinion P, drum Q, and weights M and N, or any equivalent mechanism, for holding and retaining the wind-wheel always in the proper position, substantially as set forth, and for the purpose specified.

WM. C. CHAMBERS. [L. S.]
T. S. HARGRAVE. [L. S.]

Witnesses:

C. A. DURGIN,
IRVING SNELL.