

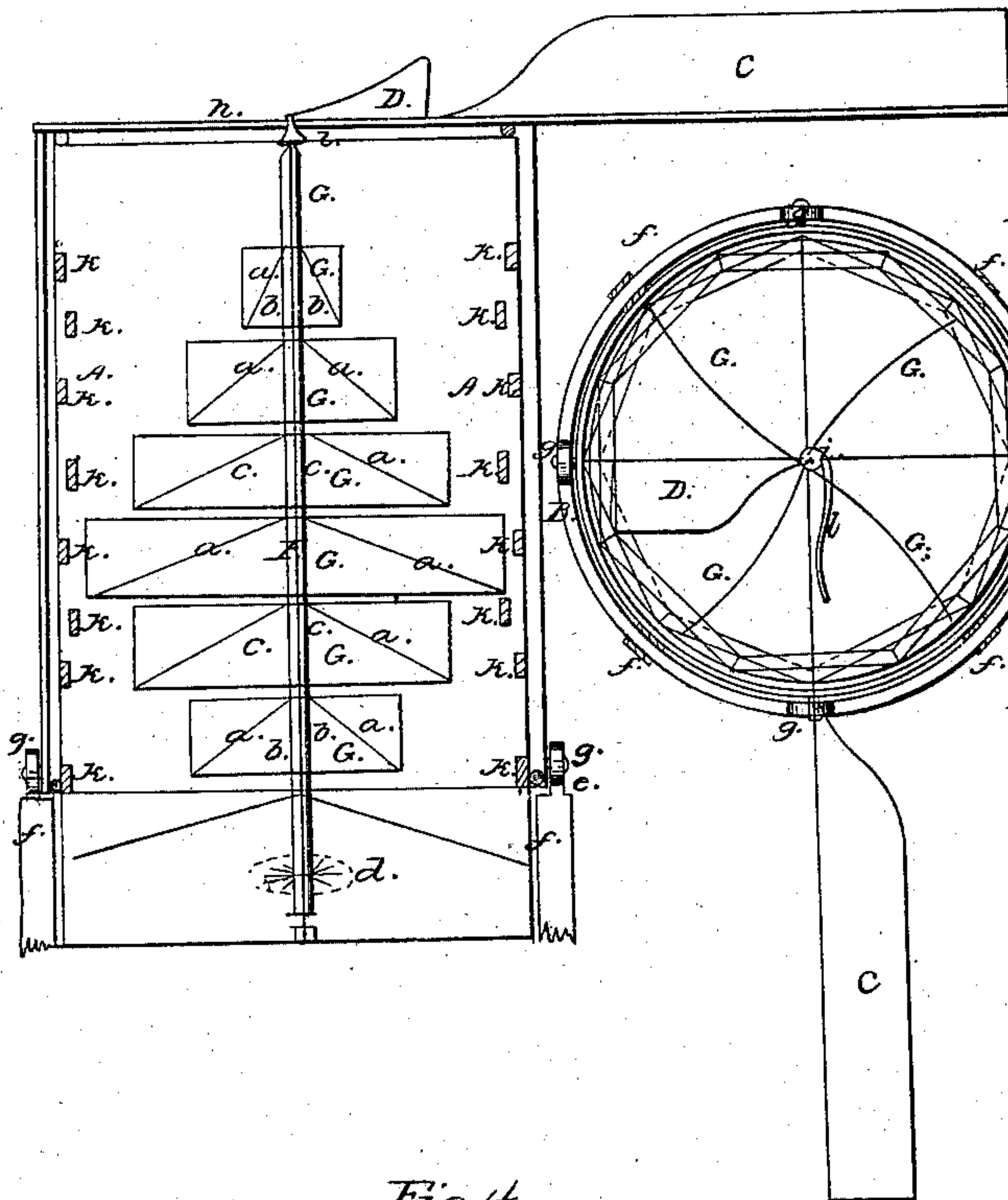
*A. M<sup>o</sup> Grew,*

*Wind Wheel,*

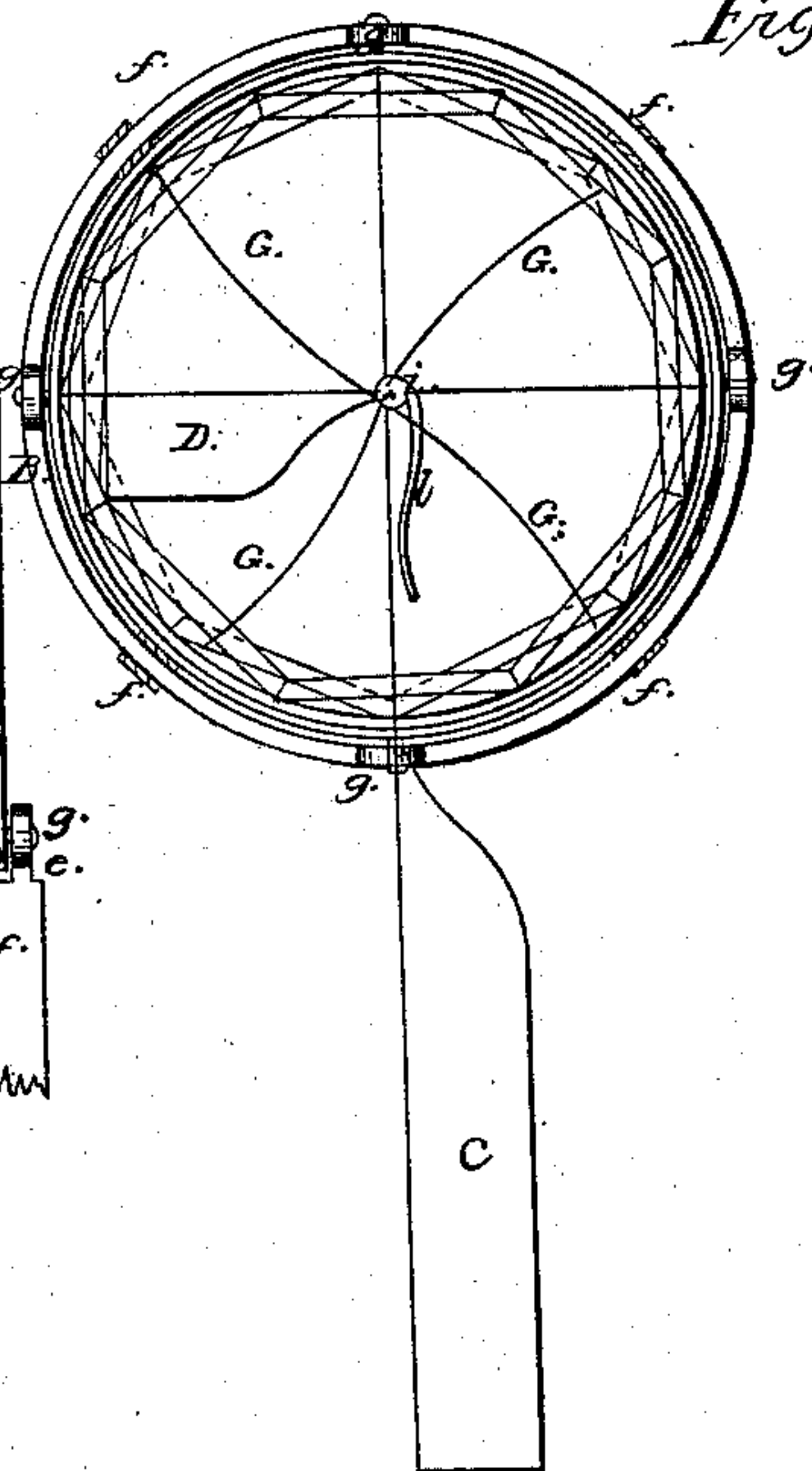
*N<sup>o</sup> 2,746.*

*Patented Aug. 2, 1842*

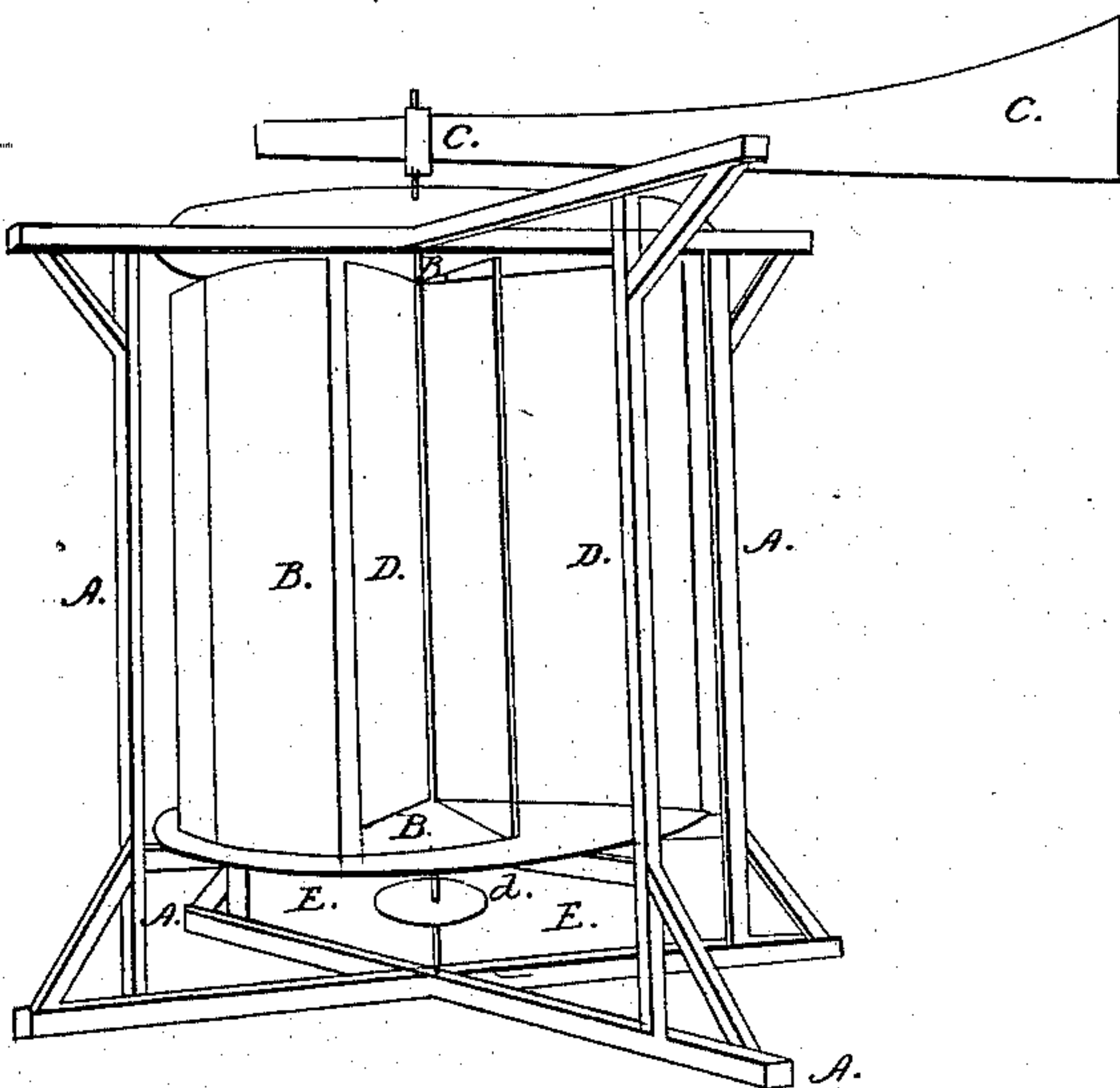
*Fig. 1.*



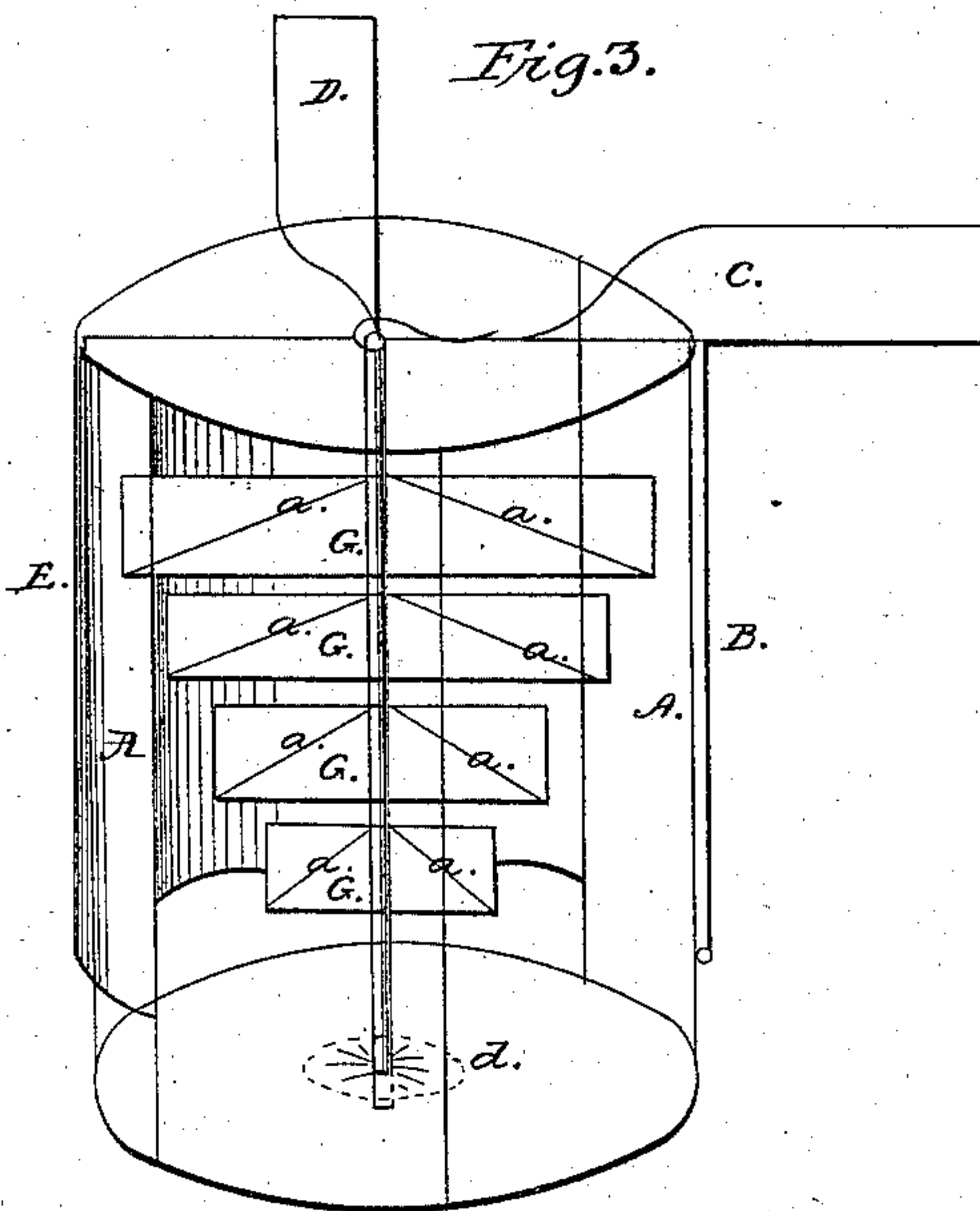
*Fig. 2.*



*Fig. 4.*



*Fig. 3.*





# UNITED STATES PATENT OFFICE.

ALEXANDER MCGREW, OF CINCINNATI, OHIO.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. 2,746, dated August 2, 1842.

*To all whom it may concern:*

Be it known that I, ALEXANDER MCGREW, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Mode of Constructing a Windmill, which I shall describe under the name and designation of the "self-regulating and locomotive windmill," and of which I do declare the following a true and adequate description.

I do not claim to have invented the windmill; but the nature of my invention consists in an improved mode of constructing the wind-wheel screening or protecting one part of the floats or fans from the action of the wind, while at the same time the others receive its full force, nearly at right angles to their plain or surface, so as to produce more power, and in having the different parts so contrived as that it shall in a great measure regulate itself and admit of its being used stationary or in locomotion either in wind or water; and in order to enable any one skilled in architecture to erect a mill on this plan I will describe it as follows, to wit:

In the first place I would erect two concentric open frames A and B, Figure 1, the inner one to be composed of a number of posts standing vertically in a circular form of any given height and inclosing an area according to the power wanted—say the diameter thirty feet and the altitude fifty, and let the number of posts be eight. These posts I connect at top by cross-ties, and every ten feet from the base to the top they should be braced by horizontal pieces of timber *k*, passing from post to post all round, and in this frame (for a windmill) I erect a vertical shaft of the same height of the frame or posts, having eight or more sides. Then to this shaft I affix floats extending near to the circumference and about ten feet in width, being made concave on one side and convex on the other and having braces *a* extending from the inner and upper corners, where they are fastened to the shaft at the lower and outer corners to keep them in a horizontal position, placing four of them *b b b b* opposite to and at right angles to each other, and four more *c c c c* in the same way fastened, but on different sides of the shaft, and so on from the top of the shaft to within some fifteen feet of the lower end of the shaft, still changing sides, so as to have

some of them all the time receiving the force of the wind at right angles. The lower gudgeon of the shaft rests in a step made for the purpose of the usual construction and standing in the center of this frame and on its base. The upper end or journal of this shaft runs in a box fastened to the cross-ties, which connects the frame at top, thus turning on its lower gudgeon, with floats extending horizontally from the shaft, in a wheel of this size presenting to the direct action of the wind a concave surface equal to about four hundred square feet, with but very little reaction, as we shall hereinafter see. On the lower part of this shaft I affix a wheel or drum *d* to communicate the power from the wind-wheel to the machinery, which occupies the first ten feet in height of this frame, allowing the shaft of the wind-wheel to pass down through the center of it. I next make my outer frame B of very light materials, so as to have strength enough, letting it extend from the top of the inner frame A to a line corresponding to the lower edge of the lower floats, where it may rest on a rail *e*, supported by a circle of posts *f*, having wheels *g* on the lower part of the frame to run on the rail, the upper part of the frame being held to its place by cross-pieces *h* at top, having a box *i* in their center to receive a journal or post fastened in the center of the cross-ties, which connects the inner frame, or a rail or narrow platform may be placed on the top of the posts of the inner frame, on which this outer frame may be supported, and by having wheels or rollers under its cross-pieces to revolve on, and I cover a vertical section, amounting to nearly one-half of this outer frame, with canvas or some other light material, and on the other side and directly opposite to the center of the covered part I fasten a wing or vane D, called my "regulator," which is to have a sufficient area of surface to cause the outer frame to change its position with regard to the large vane or weather-cock, as hereinafter to be described. On the top of this outer frame I affix a large vane or weather-cock of sufficient size to cause this outer frame to revolve as the direction of the wind changes. This vane or weather-cock is to be held by a spring *t* or weight at nearly right angles to the regulator and the covered part of the frame, so that



when the weather-cock stands in the direction of the wind the covered part of the outer frame will screen or shield the wind from the floats on one side of the shaft, while the other floats will be exposed to its direct action. This weather-cock is allowed to change its position on the outer frame nearly ninety degrees. When the velocity of the wind is so great as by its action against the regulator to overcome the strength of the spring by which it is held to its place (or the gravitation of the weight, as the case may be) as the wind increases in velocity, the regulator will move toward the weather-cock, turning the frame with its covered part more and more round between the wind and the wind-wheel, until a very strong gale or storm will turn it so far as to shut out the wind entirely, when the wheel will cease altogether to revolve, so that with whatever measure of power I fasten the weather-cock to its place on the revolving screen and outer frame when the wind exceeds that strength then the revolving screen shields more and more of the floats from the wind, as I said before, and this in some measure preserves a uniform motion of the mill. This fastening of the weather-cock to the frame can be varied at pleasure. Should I wish to stop the mill at any time, I have only by a cord and pulley to draw the weather-cock and regulator together, and thus draw the screen directly between the wind and the wind-wheel, where it ceases to move, having no power acting on it. If I wish to use a wheel on this plan immersed in a running stream of water, I build a wall from the shore into the running stream of sufficient length to shelter the semi-diameter of the wheel, it being a section of that described for the wind, standing with its shaft in a vertical position and the wheel horizontally immersed under water, one-half the floats or buckets in the current, the other half in the eddy-water be-

low the screen-wall; and in tide-water it can be used; but then the wheel would have to run both ways, so that the floats should be plain instead of concave, and if I wish to apply the above-described windmill to locomotive purposes I so connect it with the wheels of a carriage as to cause them to revolve in any of the usual methods, and thus on a railroad drawing a train of cars after it, or on a level prairie with plows or other farming-instrument attached to it cultivate the soil. A mill can be erected on this plan at a comparatively small expense, so that almost every farmer might erect one on the top of his barn, allowing the shaft of the wind-wheel to pass down through the roof, and by the power obtained from the wind thrash, clean, and grind his grain.

In the accompanying drawings, Fig. 1 is a section through the screen and frame; Fig. 2, a top plan; Fig. 3, a perspective, and Fig. 4 another method of constructing the wings extending the whole length of the shaft.

A A represent the inner frame; B, the outer; C, the vane or weather-cock; D, the regulator or governor; E, the revolving screen attached to the outer frame; F, the shaft of the wind-wheel; G G, &c., the floats or fans attached thereto, and *d*, the wheel which communicates motion to the machinery.

The size of this mill or power-giving machine may be varied so that the advantage of the power of the wind may be obtained at a very small expense.

What I claim as my invention, and wish to secure by Letters Patent, is—

The revolving frame and screen, in combination with the regulator or governor, in the manner and for the purpose herein set forth.

ALEXANDER MCGREW.

Witnesses:

J. J. GREENOUGH,  
GEORGE WEST.