

W. D. Nichols. Sheet 1, 2 Sheets.
Wind Wheel.

No 102,032.

Patented Apr. 19, 1870.

Fig. 1. E.

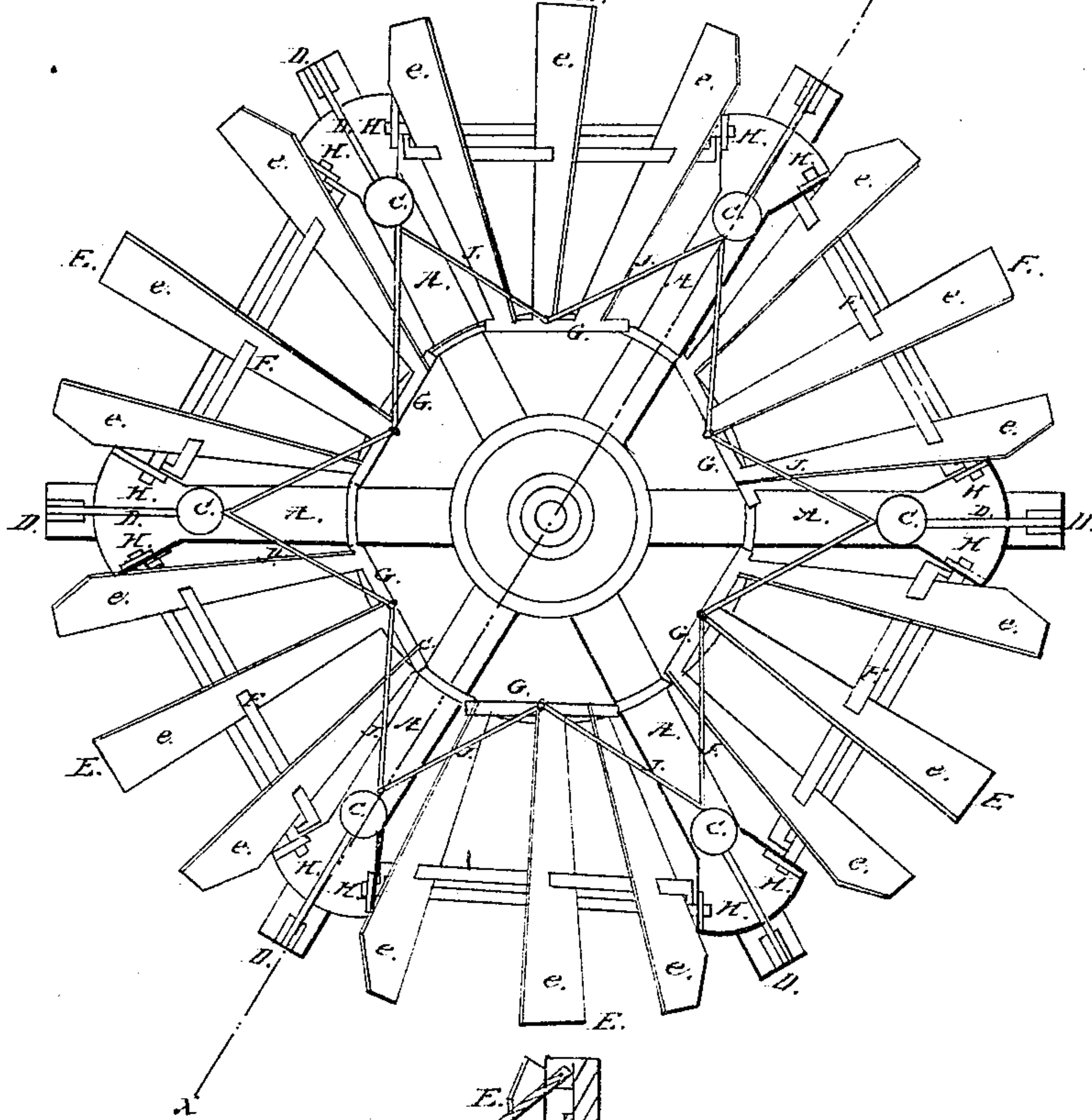
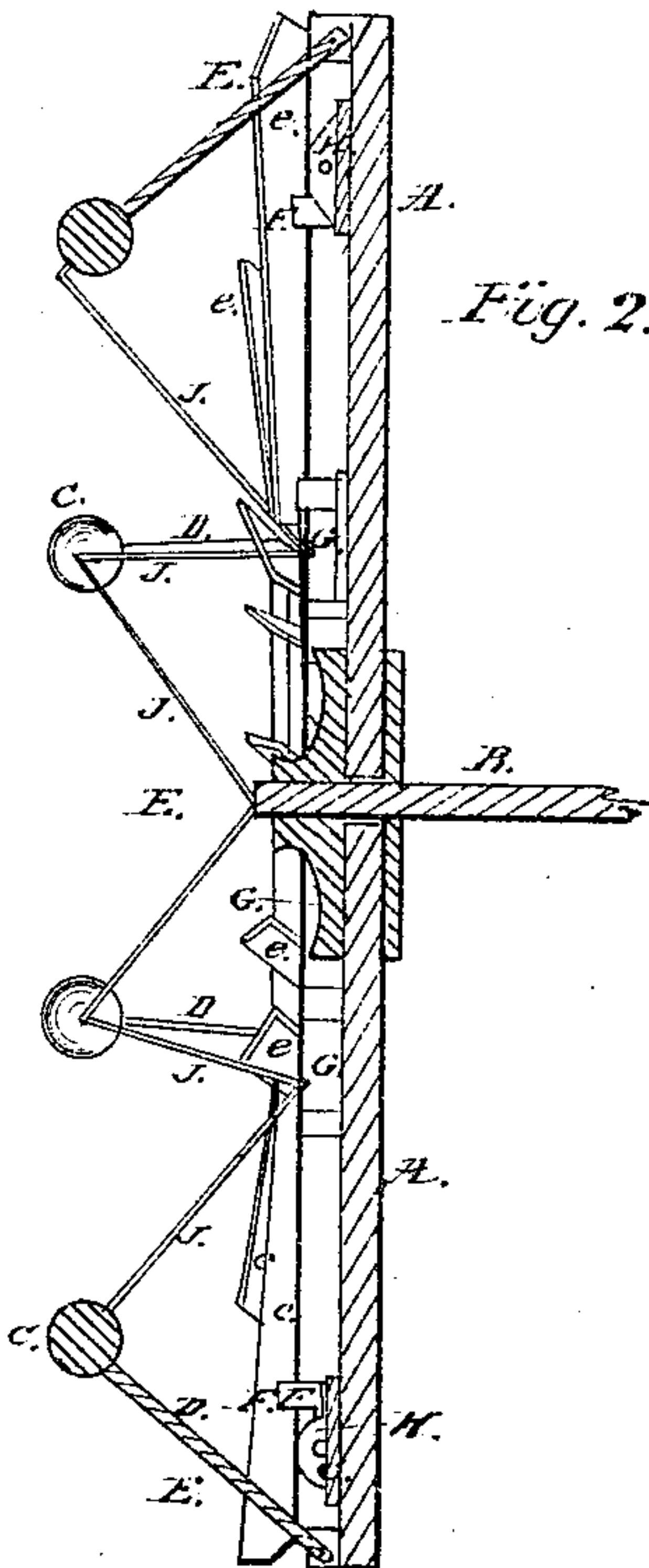


Fig. 2.



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Fig. 3.

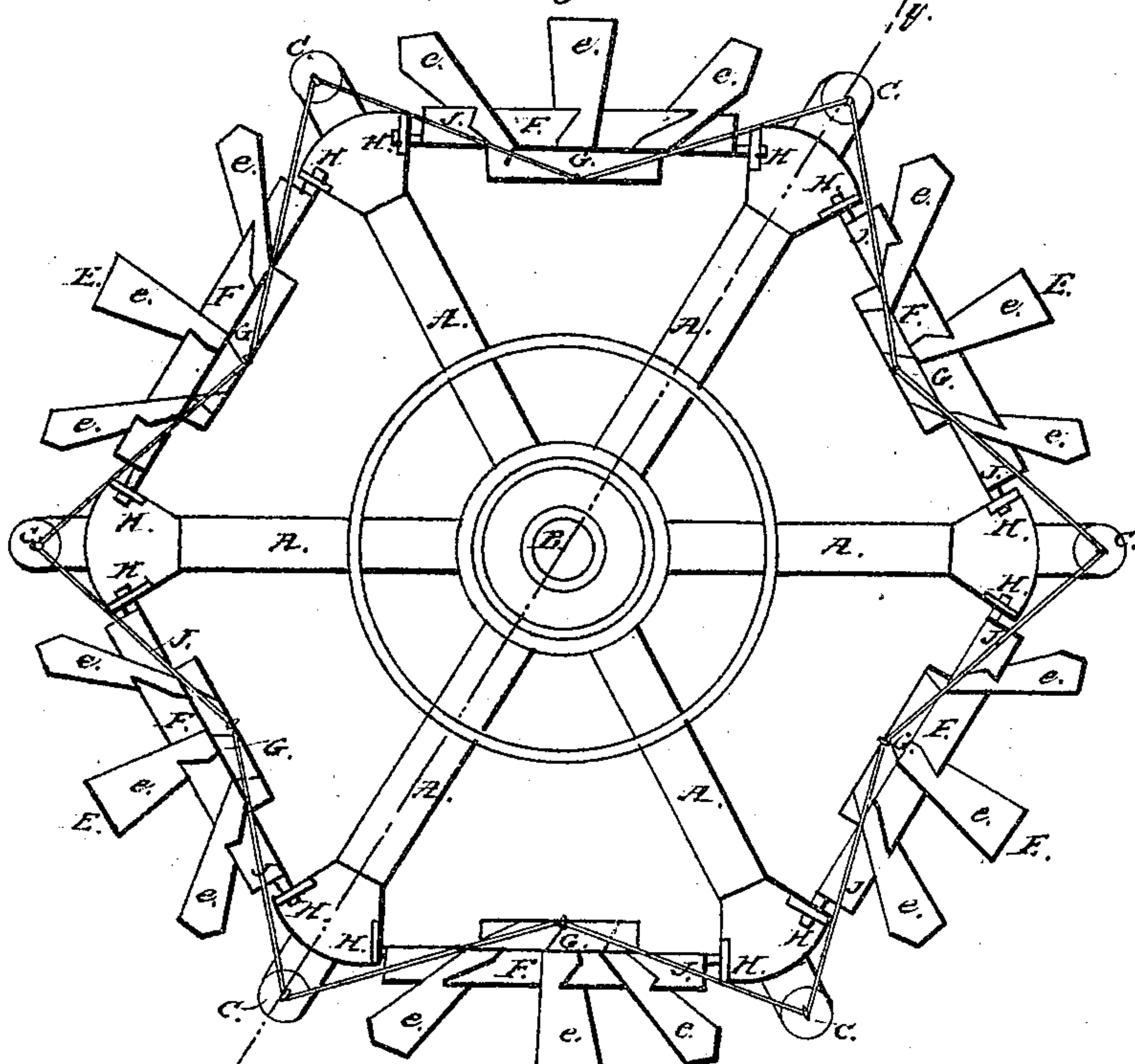
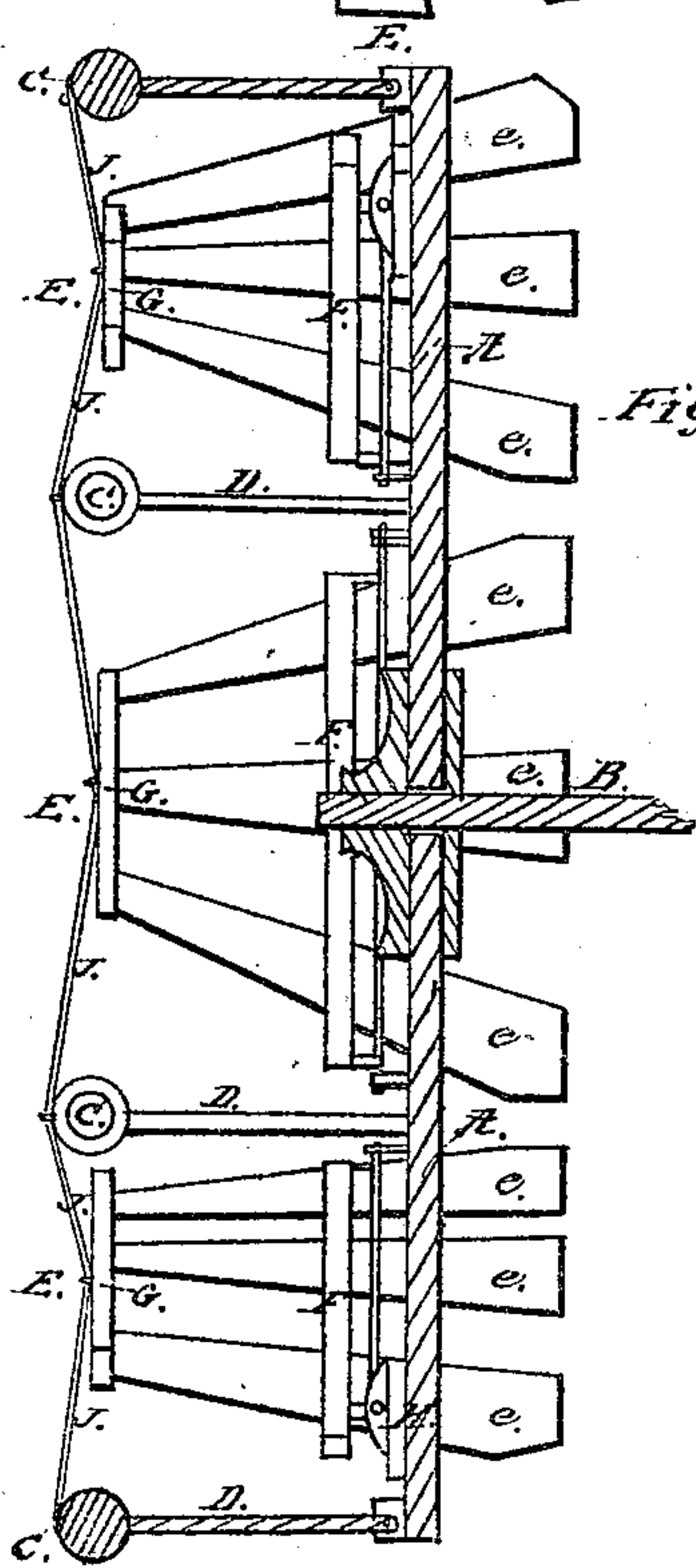


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM D. NICHOLS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **102,032**, dated April 19, 1870.

To all whom it may concern:

Be it known that I, WILLIAM D. NICHOLS, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Windmills, of which the following is a specification.

The nature of my invention consists in so attaching the governing balls or weights to the arms of a self-regulating rosette-windmill as that each ball shall be connected with two sets or sections of sails of the mill, each set or section of sails connecting with two balls, the object being to prevent the vibration which occurs in ordinary windmills, caused by the inertia and weight of the governing-balls bearing upon the sails in different directions as the mill moves around, as more fully hereinafter described.

In the accompanying drawings, Figure 1 is a front view of my invention with the sails thrown in the wind. Fig. 2 is a section along the line *x x* of Fig. 1. Fig. 3 is a front view of my invention with the sails thrown out of the wind. Fig. 4 is a section along the line *y y* of Fig. 3.

A are the arms of the wind-wheel, carried by the shaft B.

C are the governing balls or weights, attached to the rods D, which are pivoted to the ends of the said arms A.

E are the several sets or sections of sails, composed of the slats *e*, fixed to the cross-bar F and head-bar G. The sets or sections of sails E are pivoted severally to the arms A at H.

J are connecting-rods extending from the balls C to the center of the head-bar G, each ball being connected to the head-bars upon either side thereof, so that the motion of one ball is felt around the entire series of sails.

The sets or sections of sails E are connected by the usual contrivance of levers to the ordinary sliding head, neither of which is shown in the drawings.

The operation of the governing-balls C is as follows: When the wind is high, the rapidity of revolution of the wheel throws the balls outward. The sails are thereby lifted through the connecting-rods J and present less surface to the wind. They are brought back to the normal position by the ordinary contrivance of a weighted lever attached to the sliding head, or any of the ordinary methods.

Governing-balls have hitherto ordinarily been attached to and carried upon the sails or upon the pivoting-bar thereof, and the weight of the ball, when in certain positions, has a tendency, when so attached, to tilt the sail either back or forward upon its bearings, bringing it awry with the other sails, causing thus at each revolution a lateral vibration, which tends to hinder the motion and wear out the mill. It will be readily perceived that in my invention this vibration is almost entirely done away with, by reason of the governing-balls being attached to the arms instead of the sails, and any tendency of the sails to tilt of their own weight is corrected and prevented by the bracing of the connecting-rods J, so that if one sail tilts the whole series must tilt in like manner.

I claim as my invention—

The series of weights C, when hinged to the arms A of a rosette-windmill, and connected to the sets of sails, so as to operate them, substantially as specified and shown.

WILLIAM D. NICHOLS.

Witnesses:

J. W. MUNDAY,
J. K. AUSTIN.