

G. J. Thorn,

Wind Wheel,

N^o 78,773.

Patented June 9, 1868.

Fig. 1.

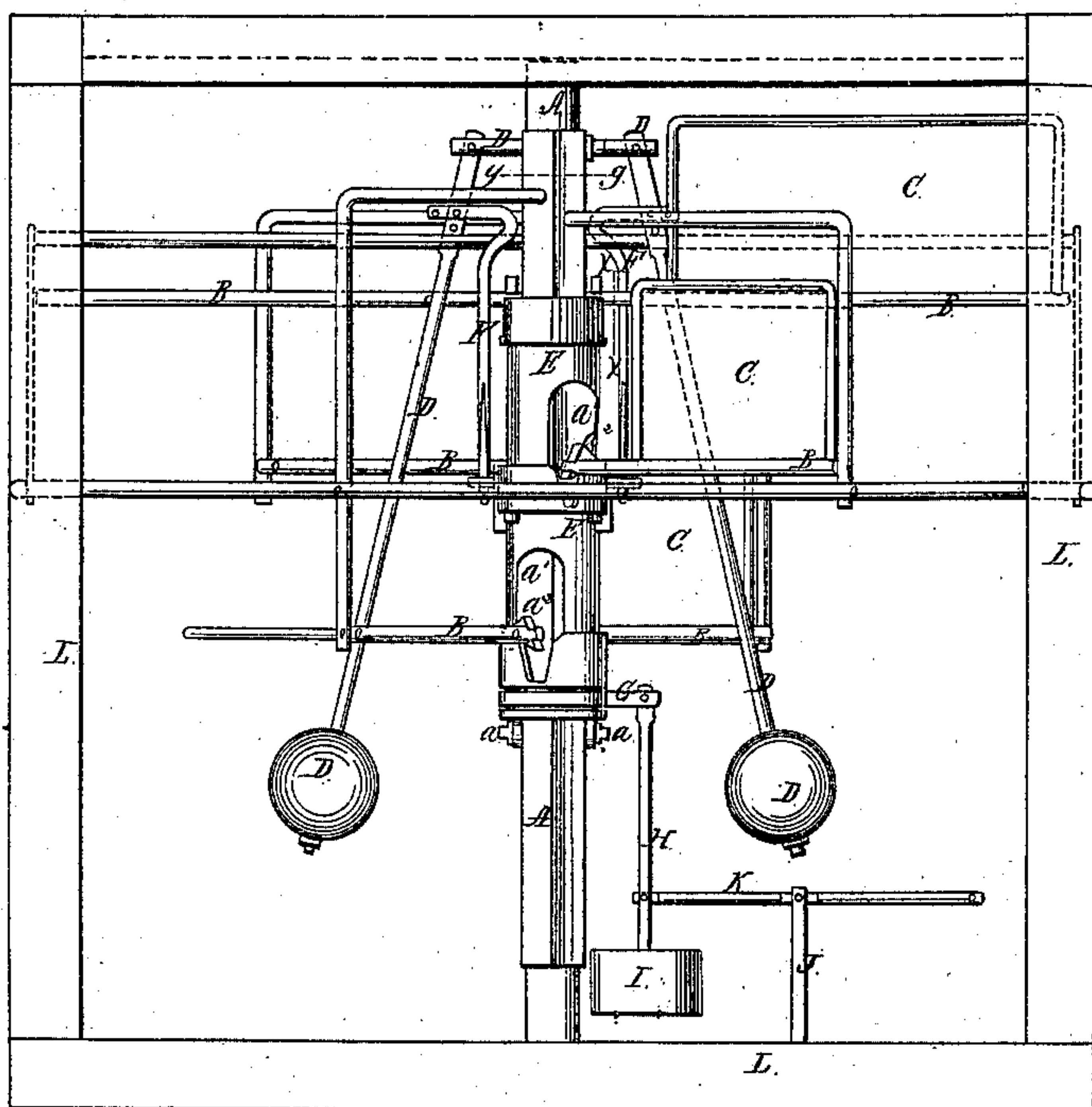
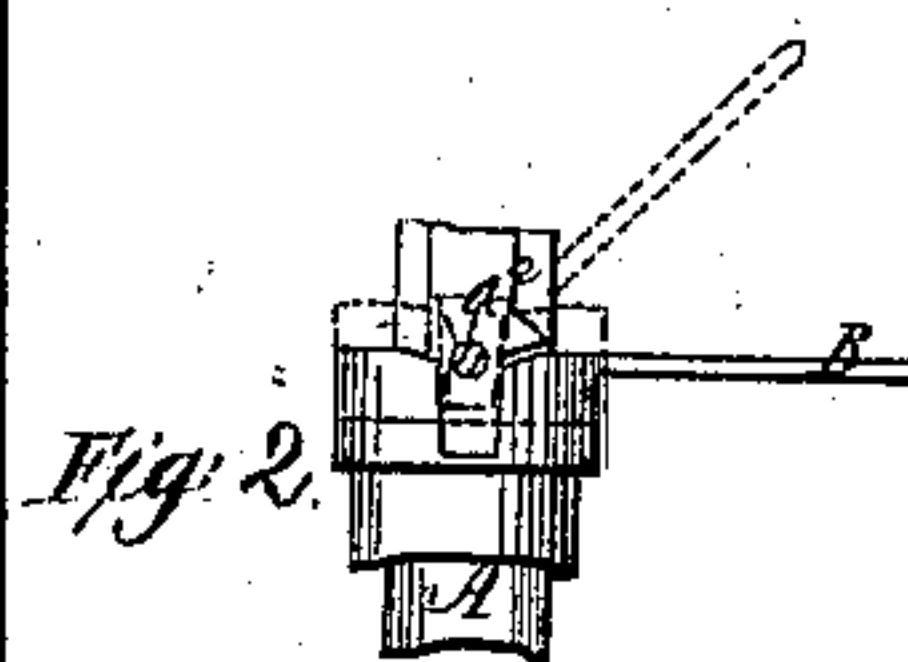
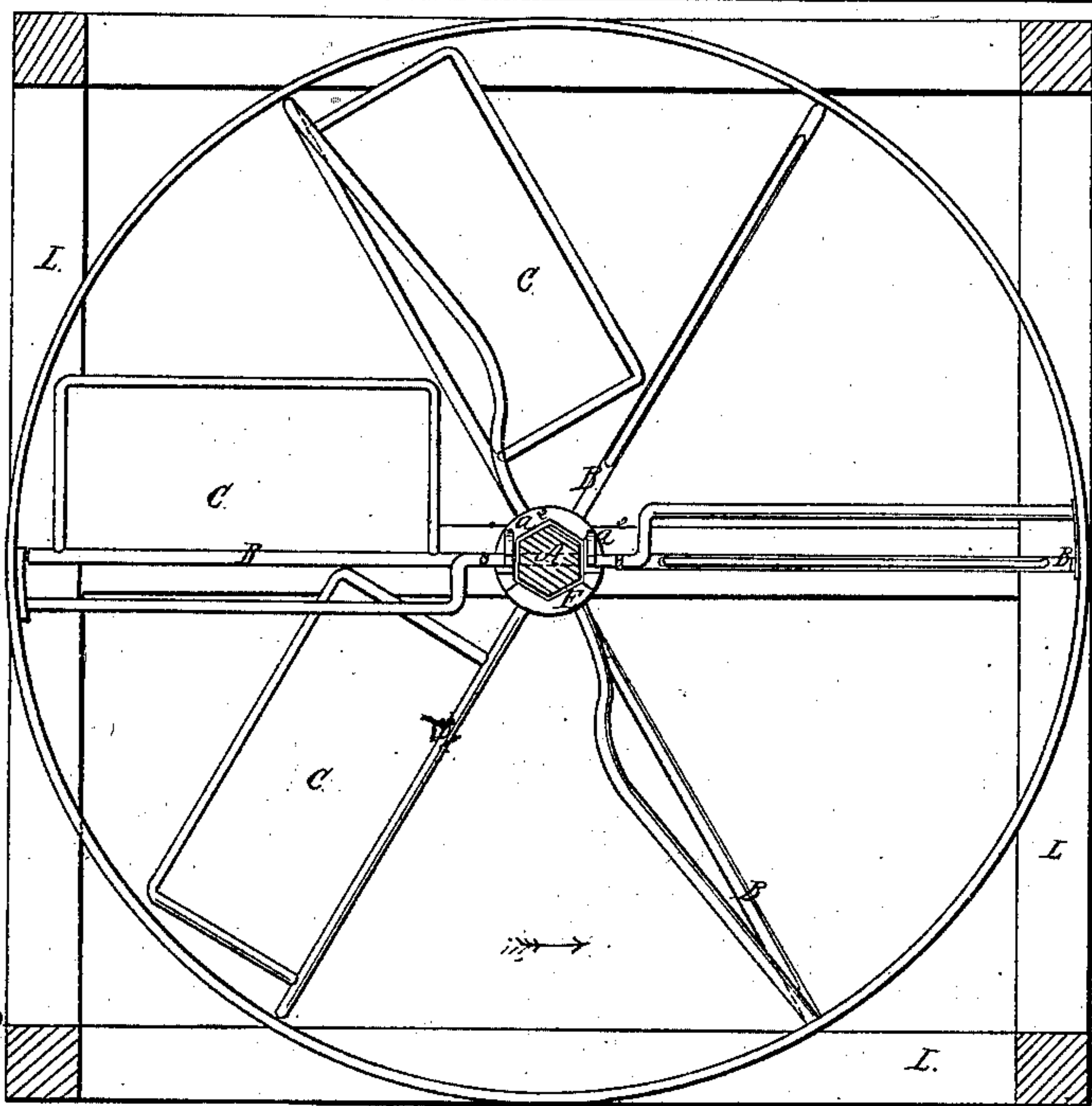


Fig. 3.



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G. J. THORN, OF PECATONICA, ILLINOIS.

Letters Patent No. 78,773, dated June 9, 1868.

IMPROVEMENT IN WINDMILLS.

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, G. J. THORN, of Pecatonica, in the county of Winnebago, and State of Illinois, have invented a new and improved Windmill; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved method of constructing windmills, whereby the fans of the same are always in proper position with respect to the direction of the wind, and the speed of the same is more uniform and regular. It consists in the construction, arrangement, and combination of the parts as hereinafter described. In the accompanying plate of drawings—

Figure 1 is a side view of my invention.

Figure 2 is a partial vertical sectional view of the same, taken in the line $x x$, fig. 1.

Figure 3 represents a horizontal section of the same, taken in the line $y y$, fig. 1.

Through a vertical main shaft, A, rotating in suitable bearings in a frame, L, as shown, are three or more radial horizontal arms, B, extending beyond the shaft A an equal distance on each side of the same. Said radial arms B are permitted a rocking motion in said vertical shaft A, and are placed one below the other in different vertical lines, equidistant from each other. To each end of each of said arms B is secured a rectangular-shaped wing, C.

The wing C, upon one end of each arm B, is secured to said arm B at right angles to the wing C upon the other end of the same arm B, so that when wings C on one side of the shaft A are in a vertical position, or before the wind, the wings C on the other side of said shaft A will be in a horizontal line, or in the wind, as shown in the drawing.

To the shaft A, above the arms B, is secured a governor, D, composed of two balls, supported by two arms of the usual form, as shown.

Upon the shaft A is a movable sleeve, E, supported by the connecting-rods F, pivoted by one end to the sleeve E, and by the other end to the arms of the governor D, as shown, and so that by the rising and falling of the balls of the governor D, the sleeve E will rise and fall. The sleeve E rests upon a pin or bolt, a , as shown, and is furnished with suitable openings, a^1 , to receive the arms B, said openings a^1 being of sufficient size to permit the upward and downward movement of the sleeve E. The openings a^1 are made in the form of a V at the bottom, so as to receive the knuckles or cranks a^2 , as shown.

To each of the arms B, and near to the shaft A, is rigidly secured a knuckle or crank, a^2 , as shown.

The cranks a^2 are placed upon the arms B, so that a line drawn through the centre of each of the cranks a^2 to the centre of the arm B, to which the same is secured, will be at an angle of forty-five degrees to the fans upon said arm B.

The cranks a^2 are made in the form of a V, and so as to fit into the V-shaped openings a^1 in the sleeve E when the sleeve E is raised by the rising of the balls A of the governor D, said cranks a^2 resting upon shoulders upon the sleeve E on either side of the V-shaped part of the openings a^1 when the sleeve E is at the lowest point in the movement of the same, as shown in the drawing. When the sleeve E is raised, the arms B will be partially rotated, so as to change the position of the fans C from a vertical position on one side of the shaft A, and a horizontal position on the other side of said shaft, until all the fans C will stand nearer and nearer to an angle of forty-five degrees to the direction of the wind, at which angle the upward movement of the sleeve E will be stopped by the arms B and the crank a^2 , at which angle of forty-five degrees the wind will exert a like force upon all the fans C, and the mill will be stopped, the speed of the same being slower and slower as said fans C approach said angle of forty-five degrees to the direction of the wind. The effect of the governor D, by the opening of the arms, or the raising of the balls of the same, and the raising of the sleeve by centrifugal force, will be constantly to render equal the surface of the wings C exposed to the action of the wind, and of course diminish the speed of the mill.

The operation is such, that in any direction of the wind the wings C on one side of the shaft B will be at right angles to the direction of the wind when the sleeve E is down, as shown in the drawing, and when, by the revolution of the said wings C, any wing passes to the other side of the shaft A, the said wing C will be thrown down into the wind, while the opposite wing will be thrown up or before the wind.

In the lower end of the sleeve E is a groove, in which is a bent metallic band, G, the two ends of the said band G being united, so as to receive between the same the rod H, the sleeve E rotating in said band G. The rod H is pivoted between the parts of the band G, as shown.

To the lower end of the rod H is attached a float, I, so situated with reference to any tank to be filled with water by pumps operated by the windmill above described, as that when said tank is filled to a given height, the float I will rise and raise the sleeve E, and stop the mill, as above described.

To any upright or support, J, is pivoted a lever, K, one arm of said lever being pivoted to the rod H, as shown, by means of which the sleeve E may be raised, and the mill stopped.

The whole may be supported in any suitable frame, L, and the several parts made of wood or iron, or of wood and iron combined, or of other suitable material, according to the several offices of the said parts.

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

1. The windmill, having each of its arms B provided at opposite ends with wings C, placed at right angles to each other, said arms passing in different vertical planes through the vertical shaft A, and through openings α^1 in the sleeve E, all arranged as described, for the purpose specified.
2. The sleeve E, suspended upon the shaft A by the rods F, attached to the arms of the governor, and provided with a series of openings, α^1 , in different vertical lines, for the passage of the arms B, and for the operation of the cams α^2 , as herein described, for the purpose specified.
3. The device for changing the position of the wings C, consisting of the V-shaped cranks α^2 upon arms B, and the V-shaped openings α^1 in sleeve E, substantially as shown and described.

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Witnesses:

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