

E. J. Hall. Wind-Wheel.

N^o 75752

Patented Mar. 24, 1868.

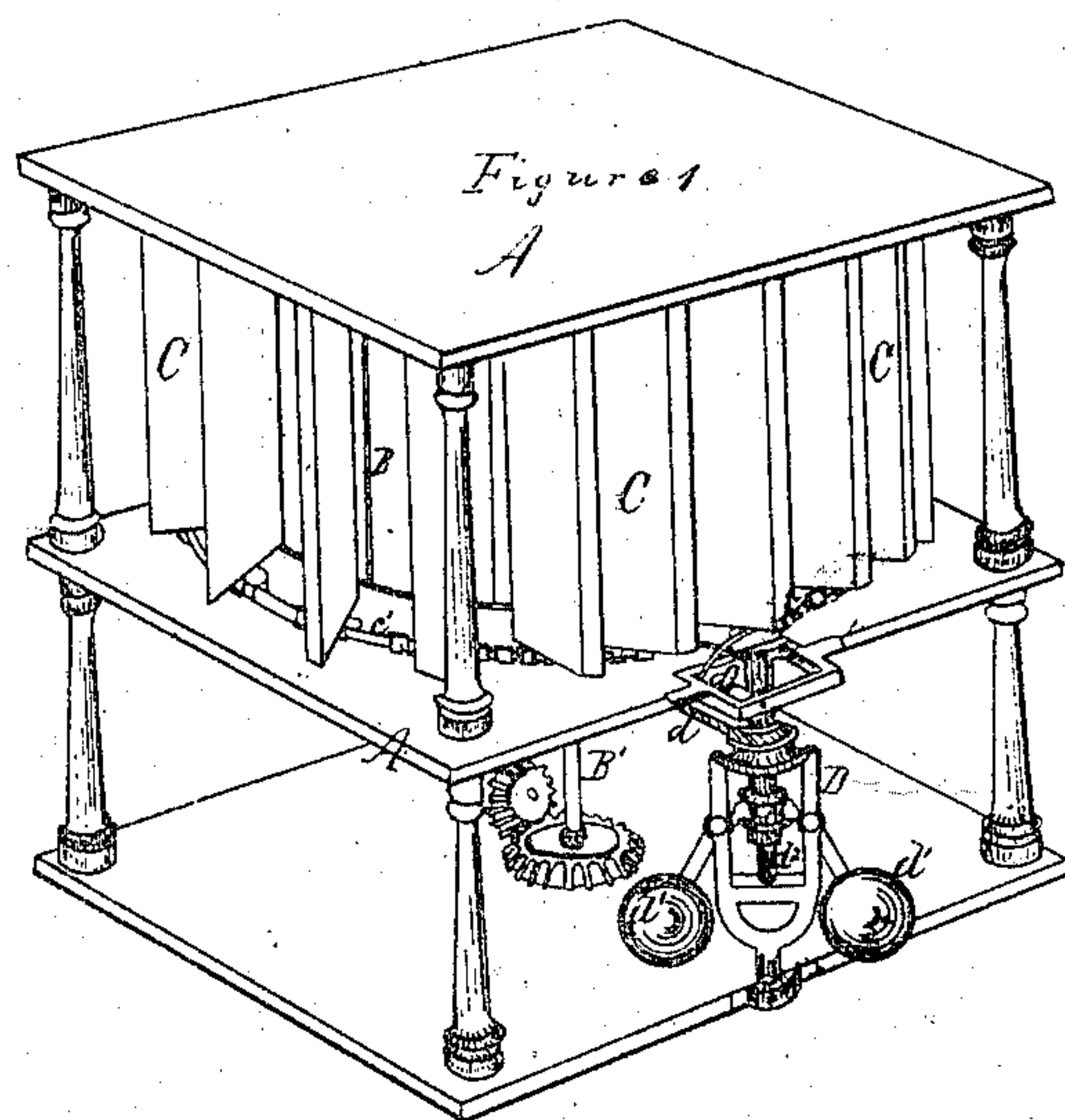


Figure 2

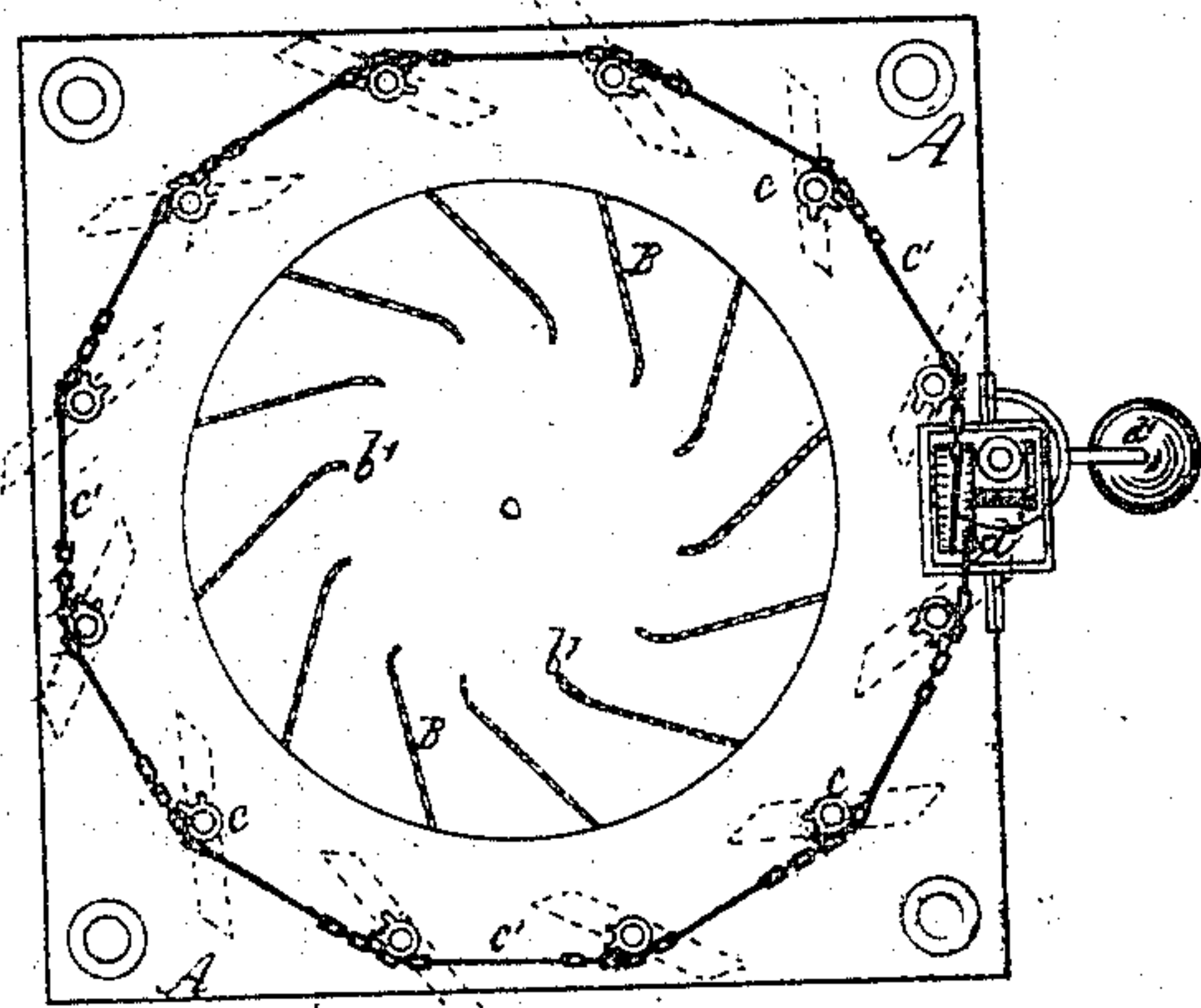
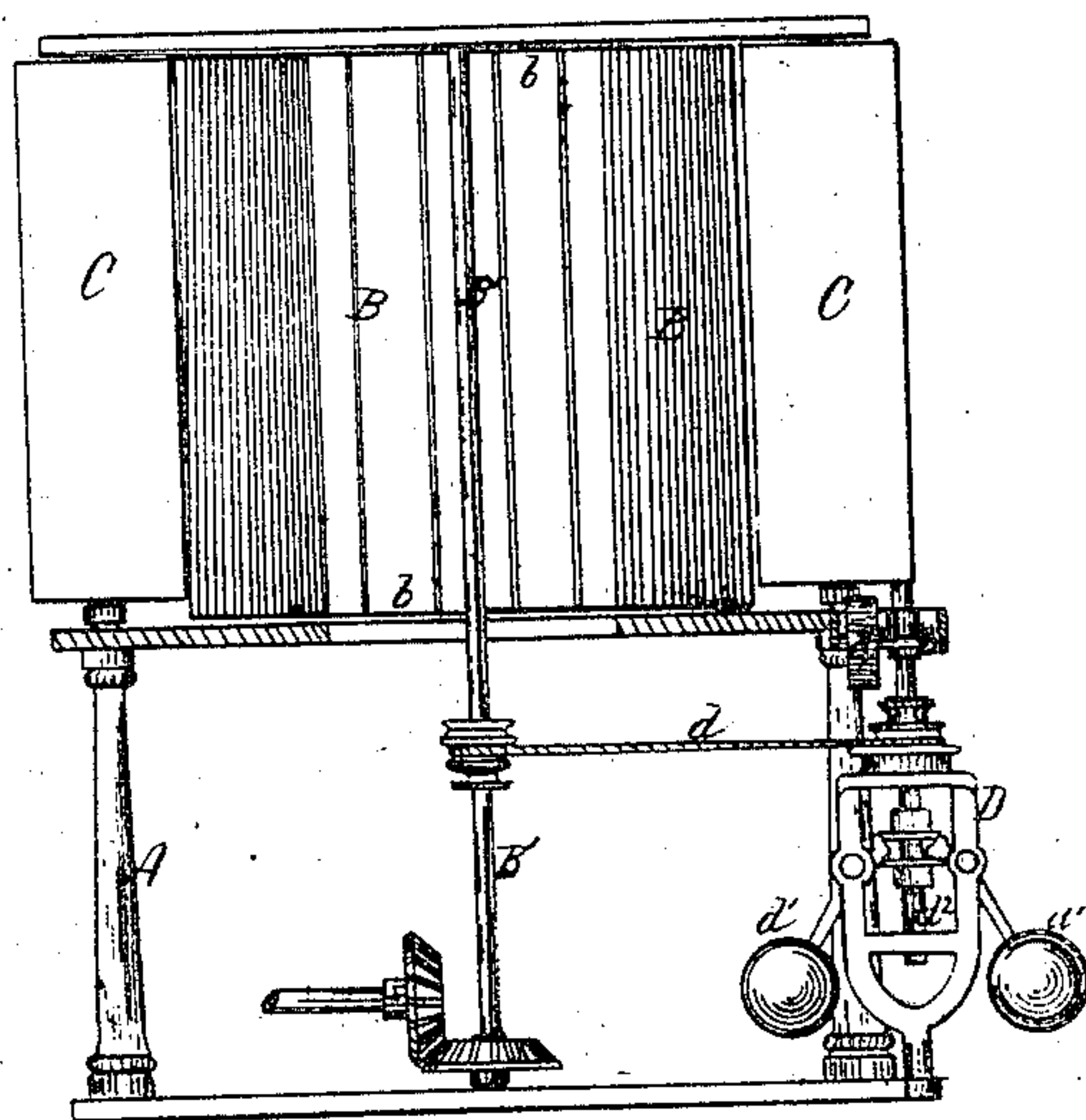


Figure 3



Witnesses
H. F. Paul
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EARL J. HALL, OF INDIANAPOLIS, INDIANA.

Letters Patent No. 75,752, dated March 24, 1868.

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, EARL J. HALL, of Indianapolis, in the county of Marion, and State of Indiana, have made certain new and useful Improvements in Windmills; and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to an improvement in that class of windmills in which vertical fans or wings are combined with horizontal disks, so as to form the required wind-wheel; and this wheel so constructed is surrounded by an adjustable casing of vertical slats, each slat being provided with journals at its ends, around which it rotates, the object being to open or close the said adjustable casing of slats more or less, as may be required, so as to admit a greater or less quantity of wind to the revolving wheel within, and thus regulate its movements in accordance with the attendant circumstances and requirements. All of the said rotating slats which form the surrounding casing are actuated simultaneously by means of a governor.

The particular features of this invention are more especially confined to the construction of the fans or wings, upon which the wind acts to turn the machine; also to the arrangement of the governor, and to its connection with the rotating slats of the enclosing casing, by means of an endless chain and cogged sectors.

To enable those skilled in the art to make and use my improved windmill, I will proceed to describe its construction and operation.

Figure 1 of the drawings is an elevation in perspective of one of the improved windmills.

Figure 2 is a sectional plan of the same, taken on the line *xy* of fig. 3.

Figure 3 is a central sectional elevation of the mill.

The frame or building A furnishes all necessary supports for the operative parts of the mill. These consist of the rotating fan-wheel B *b*, the enclosing adjustable casing C, and the governor D. The fan-wheel is built upon a central vertical shaft, B', which revolves with it, and transmits power from it to whatever machinery is to be driven by the mill. The said fan-wheel consists of two or more horizontal disks *b*, connected together by a series of vertical fans B, which are affixed to the aforesaid disks near their peripheries, and in such positions as to form angles of about thirty degrees, (more or less,) with radial lines bisecting them. This arrangement of the disks and fans is not a new one, but a new feature in the arrangement consists of making the retired edge of the fan-pieces B curved inward, as at *b'*, so as to cause the wind to impinge more violently thereon, and thus increase in a measure the power generated by the machine. Surrounding the wheel B *b*, is an adjustable casing of vertical slats C, in the ends of which are journals, that find their bearings in the frame or building A. Affixed to the lower end of each of these slats is a cogged sector, *c*, and surrounding these sectors, is an endless chain, *c'*, as is clearly shown in fig. 2. This chain is acted on by the governor, as will be hereinafter described more fully, and the chain will act upon the sectors so as to turn them in such a manner as to open or close the interstices between the said slats, and thus diminish or increase the amount of wind admitted to the fan-wheel, thereby regulating the speed of the mill in a perfect manner. By closing the slats C tightly one upon another, by means of a lever or other mechanical device, (not shown,) the action of the mill will be entirely suspended. The governor, D, may be placed in any convenient location on the frame or building A, and is to be driven by means of a belt, *d*, from the shaft D'. The governor itself may be constructed in any of the most approved forms for constructing governors of steam-engines, but I prefer to use one with short arms and quick action. The rotating balls *d'* act upon the vertical spindle *d''*, by centrifugal action, in the usual manner. The top end of the spindle *d''* is connected with the chain-wheel *d'''*, by means of a crank-connection, so as to rotate the wheel with a rocking motion, as the spindle is worked up or down by the centrifugal action of the balls *d'*. The chain *c'* passes around the wheel *d'''*, and turns with it, and in this manner is transmitted from the governor to the slats C the required motion for regulating the blast of wind upon the wheel B *b*.

Having described my invention, what I claim, is—

1. The fans or wings B, having their surfaces in straight lines, excepting at their inner ends, which are provided with the short curves *b'*, for the purpose described.
2. The governor, D, wheel *d'''*, and chain *c'*, when combined and arranged substantially as described.

EARL J. HALL.

Witnesses:

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