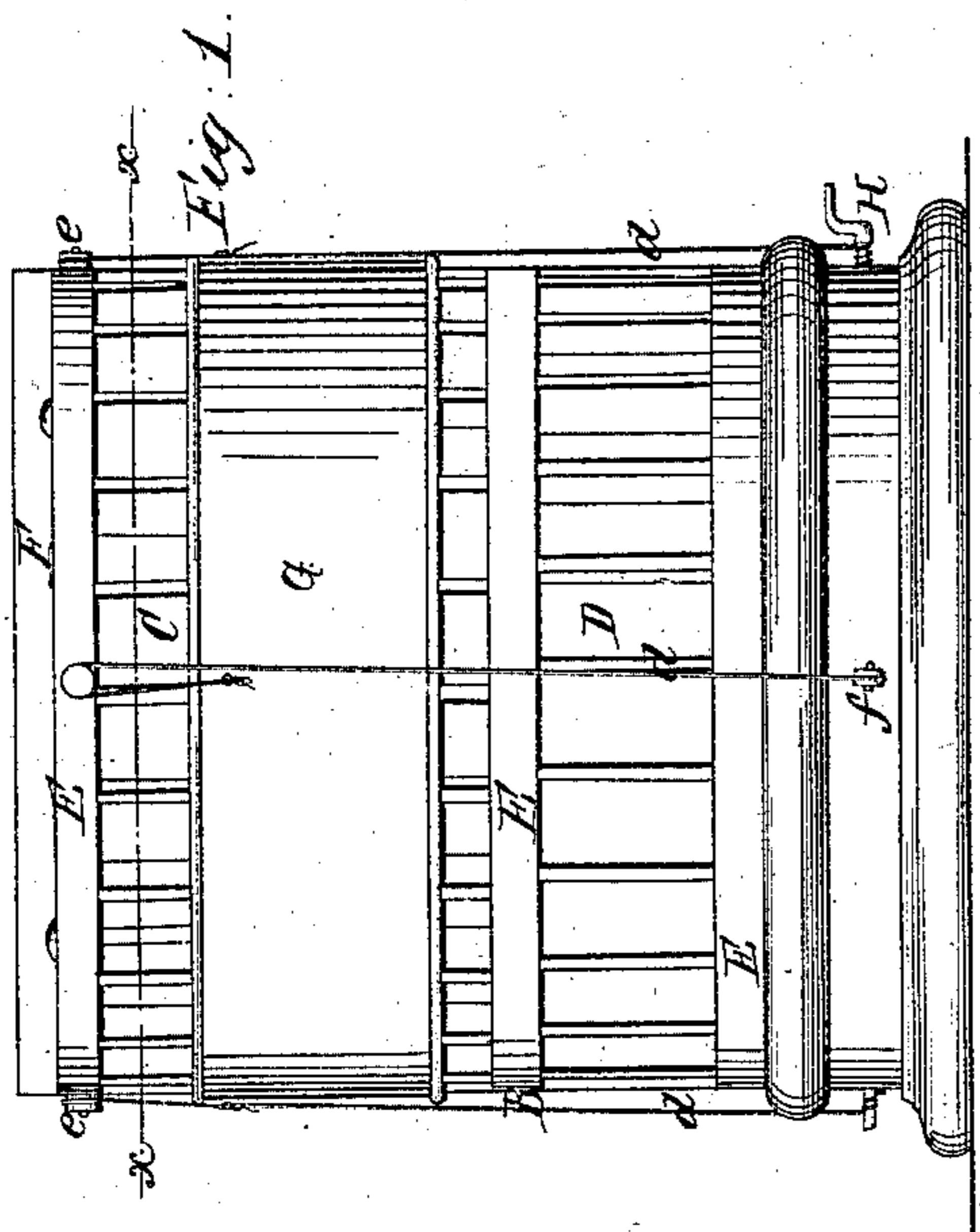
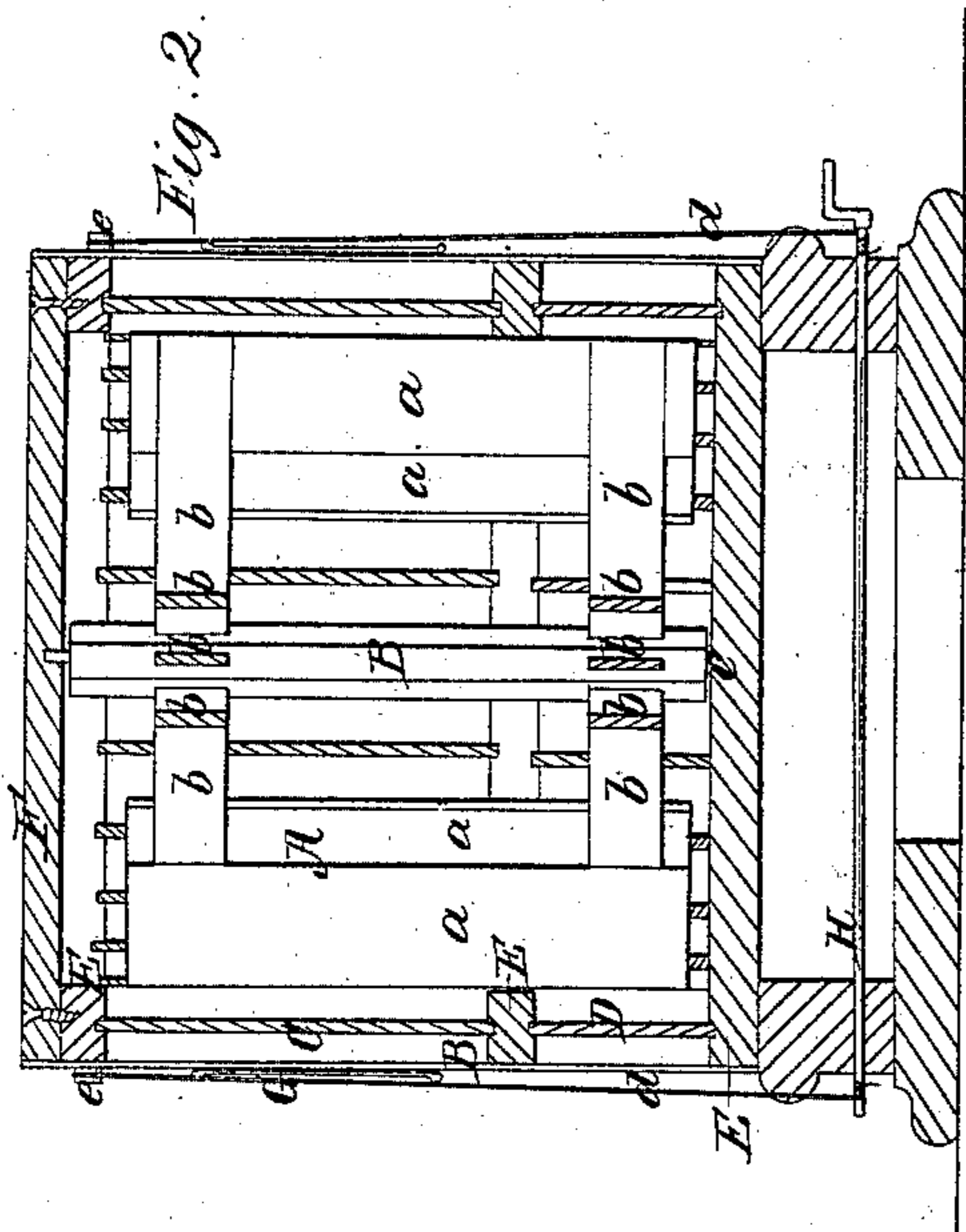


*A. W. Wood,*

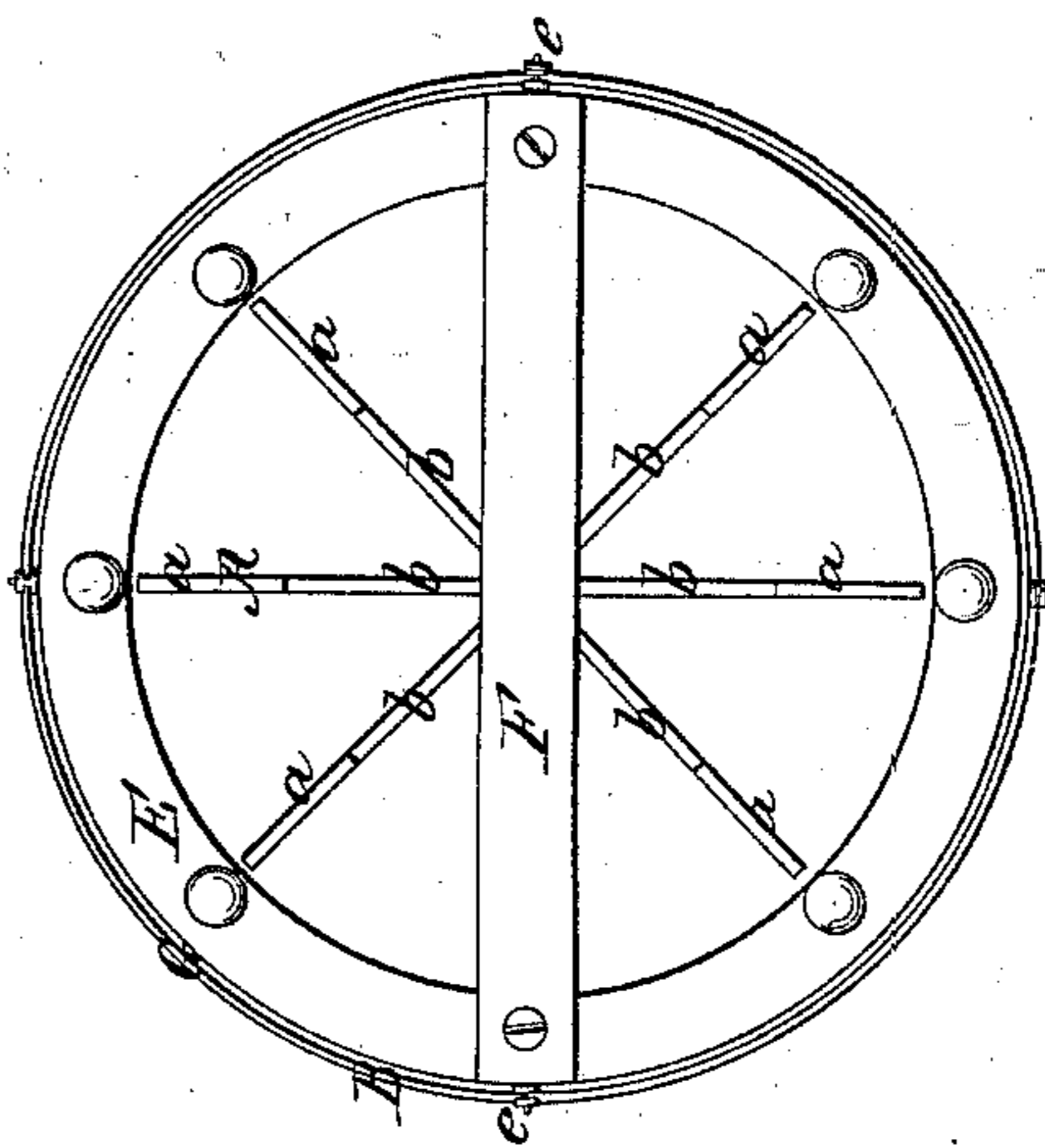
*Wind Wheel.*

*N<sup>o</sup> 16,895*

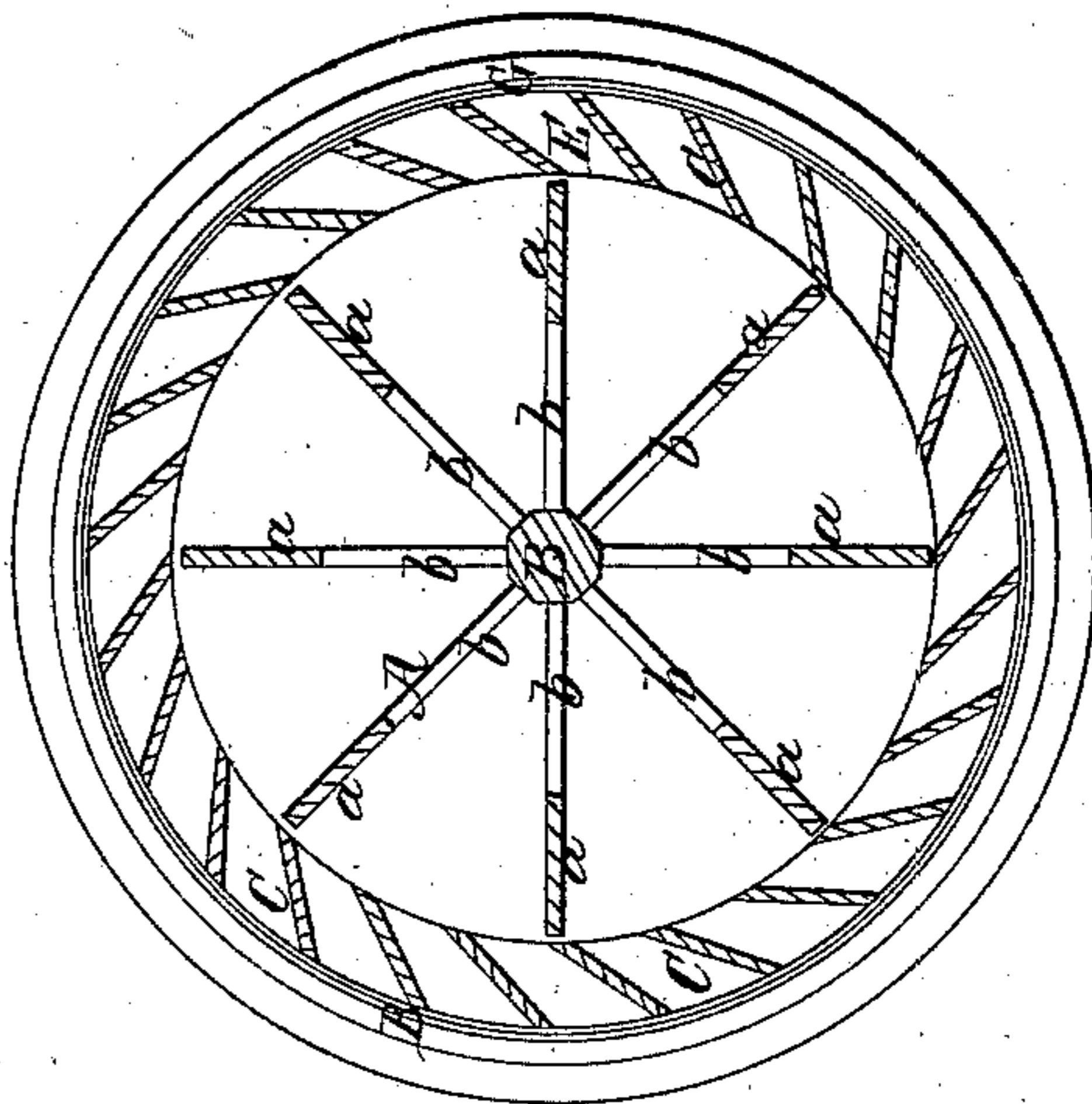
*Patented Mar 24, 1857.*



*Fig. 4.*



*Fig. 3.*



# UNITED STATES PATENT OFFICE.

A. W. WOOD, OF MILWAUKEE, WISCONSIN.

## IMPROVED METHOD OF REGULATING THE VELOCITY OF WIND-WHEELS.

Specification forming part of Letters Patent No. 16,895, dated March 21, 1857.

*To all whom it may concern:*

Be it known that I, A. W. WOOD, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and Improved Windmill; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is an elevation of my improvement. Fig. 2 is a vertical section of the same, the plane of section being through the center. Fig. 3 is a horizontal section of the same,  $\alpha\alpha$ , Fig. 1, showing the plane of section. Fig. 4 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists in inclosing a wind-wheel within a cylindrical slatted casing, which has two series or rows of oblique vertical slats, one row or series being placed in a reverse position to the other. The cylindrical slatted casing is encompassed by a gate, which may be raised and lowered by any proper means, and by which, in conjunction with the casing, as will presently be shown, the speed of the wind-wheel may be regulated as desired, or made to run with uniform speed during a variable velocity of the wind.

To enable others skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, Figs. 2, 3, and 4, represents the wind-wheel, which is attached to a vertical shaft B. The wheel A is constructed by attaching vertical sails or wings  $a$  to horizontal arms  $b$ , which arms are secured to the shaft B. The wheel A is encompassed by a cylindrical casing B, which is formed by placing two rows or series of vertical slats C D between suitable rims E E E. The slats C D are placed between the rims E, obliquely or nearly tangential with the wind-wheel A, as clearly shown in Fig. 3. The upper slats C are placed in a reverse position to the lower slats D, as shown in Fig. 1. The upper rim E has a cross-bar F attached to it, in which the upper bearing of the shaft B is placed, and the lower end of the shaft B is stepped at the center of the bottom of the casing, as shown at  $c$ , Fig. 2.

G represents an annular gate, which encompasses the cylindrical casing B, the gate

being allowed to work freely up and down upon the casing. The gate has cords  $d$  attached to it, which cords pass over pulleys  $e$  on the outer edge of the upper rim E. Two of said cords are directly attached to a horizontal shaft H underneath the bottom of the casing, and the other two pass underneath pulleys  $f$  at the lower part of the casing and are then attached to the shaft H. (See Figs. 1 and 2.)

The height of the gate G is about equal to that of the lower slats D.

The operation will be readily understood. When it is desired to obtain the full or maximum power of the wheel A, the gate G is lowered by turning the shaft H so as to cover the lower slats D, and the wind will pass between the upper slats C, and owing to the position of said slats will turn the wheel from left to right. To diminish the speed, the gate G is raised by turning the shaft H, and the slats C will be partially covered by the gate and a corresponding portion of the lower slats D exposed, and as the lower slats are placed in a reverse position to the upper slats the wind that passes between the lower slats D will act upon the side of the wheel opposite to the side upon which the wind acts that passes between the upper slats C. Consequently the speed of the wheel will be retarded in proportion as the gate G is raised; also, the wheel may be made to run with uniform speed as the variable velocity of the wind may be compensated for by operating the gate as above described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

Inclosing the wind-wheel A within a cylindrical case B, formed of two rows or series of vertical slats C D, one row or series of which is placed in a reverse position to the other, and encompassing said case with a gate G, which may be raised and lowered on said case in any proper manner, the above parts being constructed and arranged substantially as herein shown, and for the purpose of regulating the speed of the wind-wheel, as set forth.

A. W. WOOD.

Witnesses:

CYNTHIA A. NEWLAND,  
ADALINE POWERS.