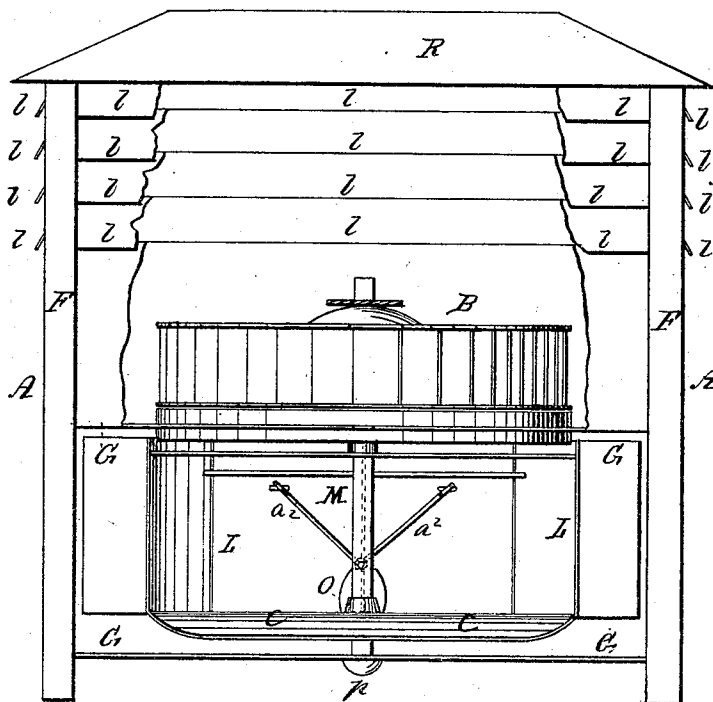
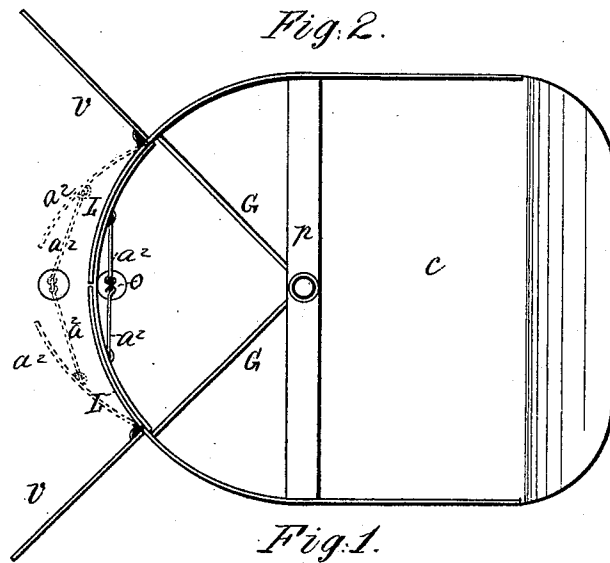


C. W. KLINE.
Wind-Wheels.

No. 145,214.

Patented Dec. 2, 1873.



Witnesses
J. Berham
Henry Hayford

Inventor
Columbus W. Kline

UNITED STATES PATENT OFFICE.

COLUMBUS W. KLINE, OF BELOIT, WISCONSIN.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. 145,214, dated December 2, 1873; application filed October 2, 1873.

To all whom it may concern:

Be it known that I, COLUMBUS W. KLINE, of the city of Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Wind-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

In the drawings, Figure 1 is a plan view of my improved wind-wheel or windmill, with the upper section of tower; and Fig. 2 is a detached view of the revolving air-chamber with vanes and governor-gates, hereinafter particularly described.

Similar letters of reference indicate corresponding parts.

My invention consists in the adaptation and arrangement of a turbine wheel inclosed in a tower of suitable construction, the wheel being arranged and provided with a suitable revolving automatic air-chamber or gates for delivering the wind to the wheel.

In the drawings, letter A represents the tower, which may be of any available form; the one here represented is in square form, having four posts, F. Two girders, G, running from corner to corner transversely, cross at the center of the tower, and are there provided with a step, p, for supporting the vertical spindle m, upon and with which the wheel B revolves. The tower has a roof, R, and is closely boxed from the line at G upward to the line of l l l l. The upper part of the tower is inclosed with open-work, overlapping slats of suitable width, and open enough to allow free egress to the wind after passing out of the wheel, as hereinafter described, and yet close enough to prevent ingress of rain, sleet, or snow. A part of the front slats l and box in the drawings is broken away, so as to show the interior and rear of the chamber of the tower in which the wheel is placed. The box around the sides of the wheel is large enough to permit free egress of the wind from the wheel. The wheel is decked over the entire upper surface, and is provided with buckets discharging horizontally at the

periphery; the under side central part is left open to receive the wind. C is a rotating air-chamber or chute for receiving and conducting the wind to the lower side of the wheel and into the buckets. This air-chamber is loosely pivoted upon the spindle m, but rotates independently of the wheel. This chamber is also to be of suitable size for admitting sufficient wind to drive a wheel of corresponding size at ordinary velocity of wind-current. The mouth of the chamber is always held to the eye of the wind by means of the vanes V, which are not so long as to prevent the chamber C, with vanes attached, from revolving freely within the posts F of the tower. L L represent the vertical sides of the chamber C (which move closely under the lower side of the wheel-box) and automatic governor-gates. These automatic governor-gates are hinged to the sides of the frame of the air-chamber C near the intersection of the vanes V with gates, and meet at the center, as shown in the drawing at Fig. 2. Chains or rods a^2 are loosely hinged to each of these governor-gates at the upper edges, and about midway of their length, as shown. These are coupled in the center to the weight O, which, when the gates are closed, is depressed at least as low as the bottom or floor of the air-chamber C. The weight must be sufficient to hold the gates closed until the wind shall blow with force greater than required for ordinary work of the wheel, when the gates will open as the gale increases, until they shall reach the first or second dotted lines a^2 of the drawing, Fig. 2, or still wider, if required for the escape of surplus wind, so that the mill may, and it is believed will, work at almost uniformity of speed in any stress of weather, and will never be required to go out of the wind, so to speak, or stop work, even in a violent gale.

Only an upper section of the tower is shown, though it may be of any desired available height and size, and inclosed as any other building, and hence may be employed as a mill, machine-shop, or for storage in a small way, or, if erected adjoining a mill or shop, may be used as an auxiliary thereto; or it may be erected upon the top of any large building, answering all the purposes of an independent tower, and have only the external appearance

of a cupola. The air-chamber C is, of course, to have a suitable floor, and, in case of erecting the tower upon the top of a building, the roof may, perhaps, serve as a floor for such an air-chamber.

The buckets of the wheel may be placed at any angle, or may be made so as to discharge the wind vertically.

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

The combination, with the turbine wheel B

and the shaft M, of the independently-rotating chamber C, with vanes V V and hinged gates L L, connected by rods $a^2 a^2$ to the weight O, all constructed and arranged substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 29th day of September, 1873.

COLUMBUS W. KLINE.

Witnesses:

JOHN PERHAM,

HENRY HAYFORD.