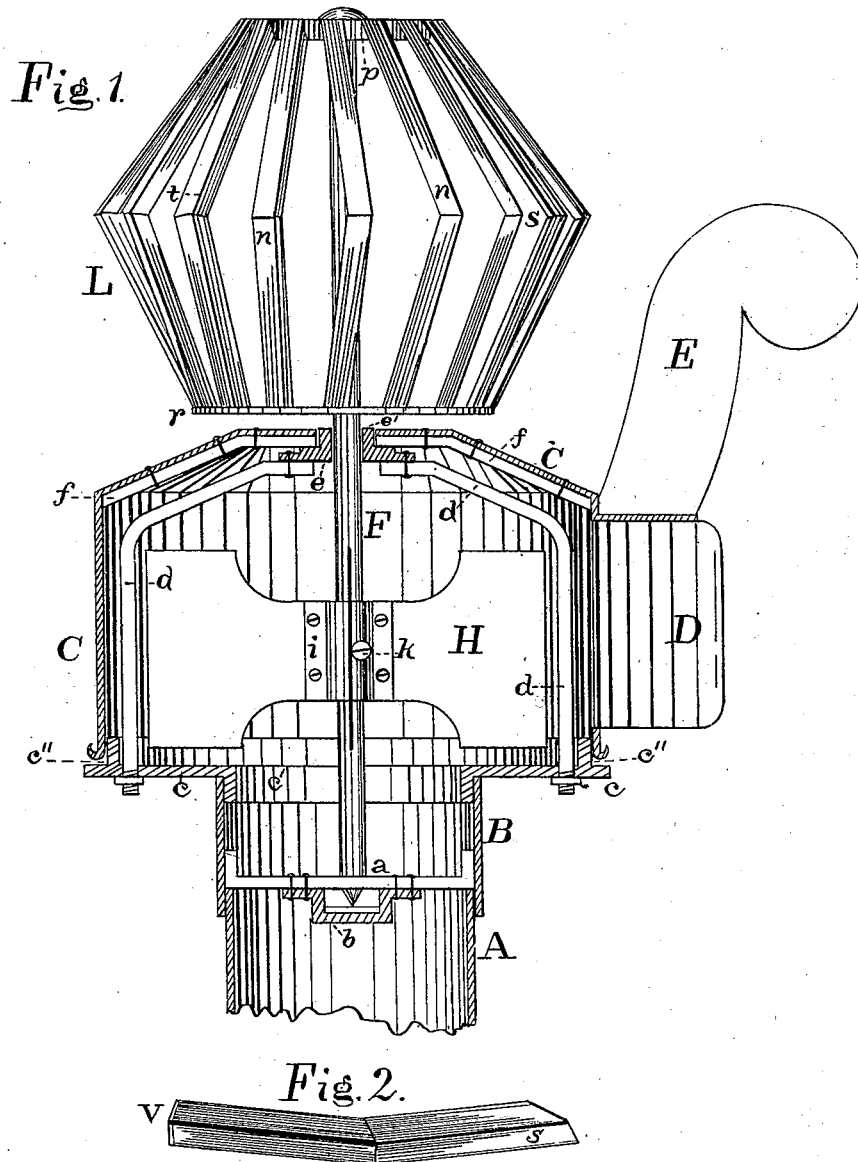


L. J. WING.
Ventilator.

No. 215,783.

Patented May 27, 1879.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN VENTILATORS.

Specification forming part of Letters Patent No. **215,783**, dated May 27, 1879; application filed November 8, 1878.

To all whom it may concern:

Be it known that I, LEVI J. WING, of the city of Baltimore, and State of Maryland, have invented a new and useful Improvement in Ventilators, of which the following is a specification.

The invention relates to an improvement in flue or shaft ventilators that are operated by a wind-wheel.

The object of the invention is to produce an article of manufacture adapted for public or private buildings of any size, which shall be at once cheap and effective in its operation.

My invention will first be described in connection with the accompanying drawings, and then pointed out in the claims.

Figure 1 is a vertical section of my fan-ventilator. Fig. 2 is a detail view of parts of the wind-wheel.

The letter A represents the flue of the structure to be ventilated. This may be a special flue or shaft, or the ordinary smoke-flue of the chimney. B is the neck or portion of the apparatus which connects with the flue. C is an enlarged hood, the upper part of which is closed, and is provided with a lateral opening, D, directly above which is the vane E. The top or upper part of the hood is provided on the inner side with a re-enforcing bar of iron, *f*, extending across diametrically, and a hole is formed in the center of the top and through the bar, whereby the hood is adapted to revolve, as hereinafter described, its rotation being governed by the action of the wind on the vane, insuring the opening to be always kept from the wind.

F is a vertical shaft, the lower end of which terminates in a steel spindle, its point resting on plate-glass or other suitable material in the step *b*, which is supported by the cross-bar *a*.

c is an annular plate, in practice made of cast-iron. Its inner edge is provided with a down-turned flange, *c'*, to which the neck B of the apparatus is secured by rivets, or in any suitable manner. On the upper surface of this plate, near its outer edge, is an upward-extending rim or flange, *c''*, around the outer side of which the lower edge of the hood depends. Vertical rods of iron *d* are secured in the plate *c*, close to the inner side of the flange

c''. In the present example there are four rods placed equidistant, which, after rising vertically to a sufficient height to permit the passage of the blades of the fan, are bent toward the vertical shaft, their ends being secured in a cast-iron piece, *e*, having a hole in the vertical direction, which constitutes the upper bearing for the shaft F. The central part of the piece *e* is of extra thickness, and outwardly is circular in shape, constituting a fixed spindle, *e'*, around which is an annular seat or bearing, whereon the hood C is suspended. Thus its rotation is attended with but little friction.

The letter H indicates the exhaust-fan, having four blades, which are riveted to the flanges of the casting *i*, having a core, through which the vertical shaft passes, the parts being secured by the set-screw K.

It will be seen the blades extend radially from the shaft and are vertical, the fan being inclosed by the hood.

Attached to the shaft, above the hood, is the wind-wheel L, having buckets *n* of peculiar form, constructed of sheet-metal strips bent or partly folded longitudinally, forming, in cross-section, nearly a right angle, as seen at V in Fig. 2.

The ends of two of the angular strips are secured together by solder or rivets, forming the bucket into an elbow, the angle whereof is about sixty-five degrees, the guttered part *s* being on the inner side. The buckets are then secured to the upper and lower annular plates or rings, *p* *r*, which are connected to the shaft, thus forming the wheel, which, on one side, presents the guttered parts *s* to the wind, and on the opposite side the backs or angular parts *t*, thereby making the wheel very sensitive to the wind.

The operation of this apparatus is as follows: The wind acting on the wheel L causes the exhaust-fan to revolve, which forces the air from the hood through the opening D, the effect of which is to create an upward draft in the flue. The air thus rising no sooner enters the hood than it, in turn, is expelled.

The advantage resulting from the construction here shown is that the exhaustion or aspiration of air is effected with greater rapidity,

as shown by actual tests of the anemometer, than by similar devices of different construction.

Having described my invention, I claim and desire to secure by Letters Patent—

1. In combination, the revolving hood C, having the lateral opening D and vane, annular plate *c*, provided with flange *c'*, rods *d*, iron piece *e*, having a hole in the vertical direction, and the fixed spindle *e'*, shaft F, and a wind-wheel, and an exhaust-fan, substantially as and for the purpose specified.

2. In combination, the hood C, provided on one side with a lateral opening and vane, and adapted to revolve, shaft F, exhaust-fan H, and the wind-wheel L, as set forth.

3. In a ventilator, the annular plate *c*, provided on its inner edge with the downward flange *c'*, and on its upper surface with the flange *c''*, and rods *d*, iron piece *e*, having a hole in the vertical direction, and the fixed spindle *e'*, as and for the purpose specified.

4. The exhaust-fan H, having radial blades, the extremities of which are vertical, in combination with the hood C, having its upper part closed, from the center of which it is suspended, and provided on one side with a lateral opening and a vane, as shown and described.

5. The wind-wheel L, having guttered buckets *n*, which in cross-section are nearly a right angle, and lengthwise are in the form of an elbow, the angle whereof is about sixty-five degrees, and which are secured to the upper and lower rings in such manner that while the elbows project outwardly the guttered parts *s* are presented to the wind, as set forth.

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Witnesses:

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