

(Model.)

W. A. PITT.  
VENTILATING MACHINE.

No. 246,815.

Patented Sept. 6, 1881.

Fig. 1.

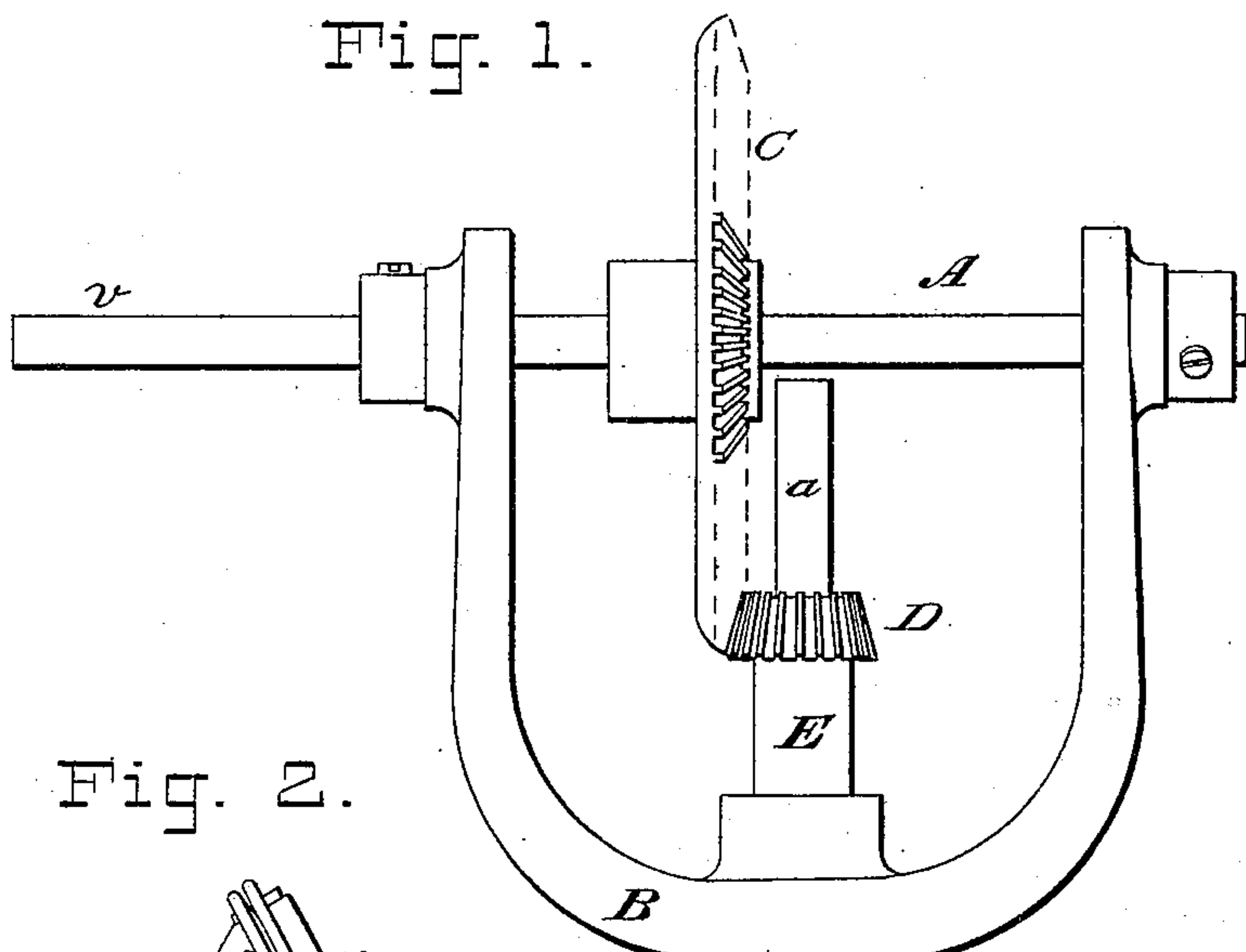


Fig. 2.

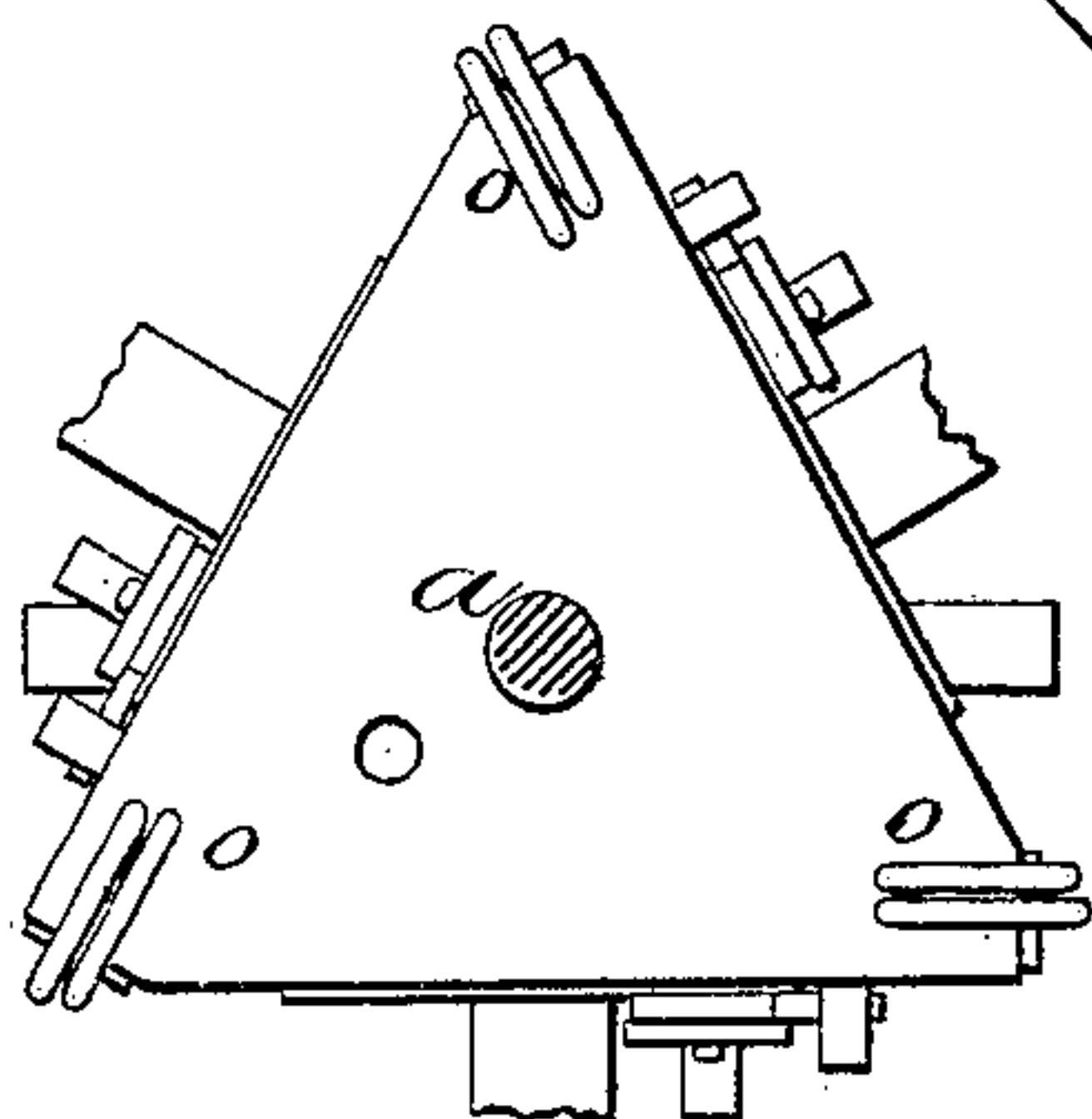
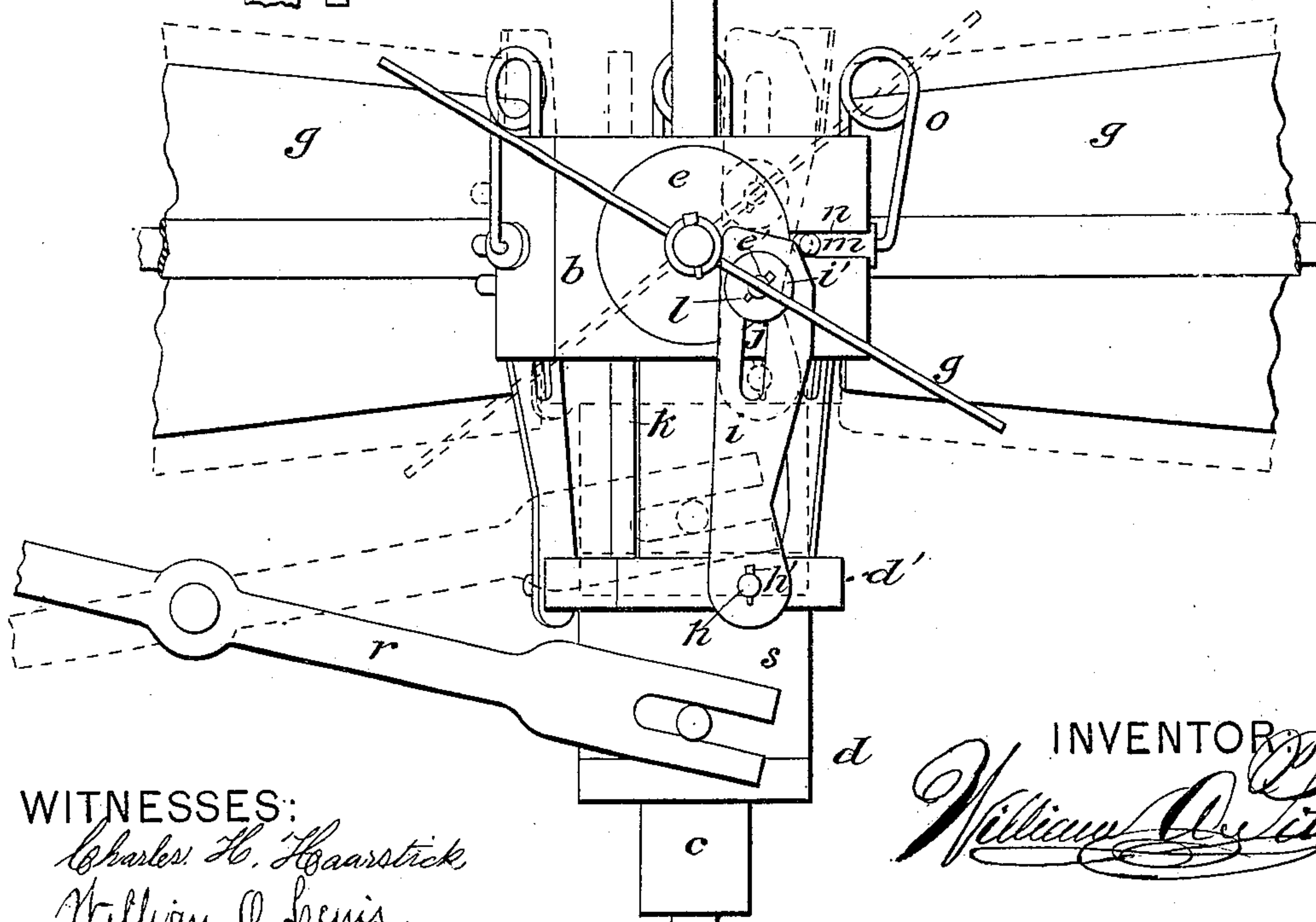
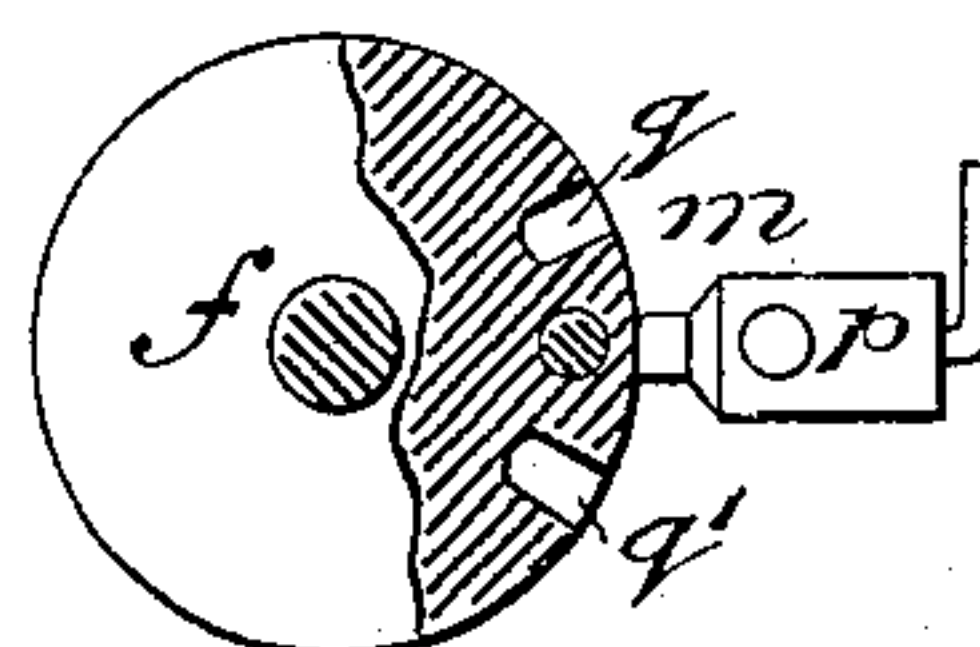


Fig. 3.



WITNESSES:

*Charles H. Haarstick*  
*William O. Lewis*

INVENTOR

*William A. Pitt*

# UNITED STATES PATENT OFFICE.

WILLIAM A. PITT, OF NEW YORK, N. Y.

## VENTILATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 246,815, dated September 6, 1881.

Application filed December 29, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. PITT, of the city, county, and State of New York, have invented an Improvement in Ventilating Apparatus; and I do hereby declare that the following is a correct description of the same, reference being had to the accompanying drawings.

My invention relates to improvements in ventilating-machines where propeller-blades are used, and it is designed to be used for expelling the foul air from buildings, cellars, and analogous places, where effective ventilation is necessary.

The object of my improvement is to provide means whereby the inclination of the propelling-blade can be readily changed to reverse the air-current, and whereby it can be locked in either position to which it is shifted.

In the accompanying drawings, which illustrate my improved mechanism, Figure 1 represents a view in side elevation, the dotted lines showing the position of the blades and operating parts after being reversed; Fig. 2, a plan view of the head-piece; and Fig. 3, a detail view of the disk-plate broken away to show its interior recesses.

The first part of my description is confined to the mechanism for reversing the inclination and locking the blades in position.

*a* represents a vertical rod, which serves as the main axis for the several operating parts.

*b* is a head-piece, through which the rod passes centrally, and to which it is secured so as to revolve conjointly with it. The head *b* is preferably triangular in general form, and carries three blades. It is provided with a tubular neck, *c*, which fits over the rod *a*, and upon which the sliding piece *d* moves. The head-piece *b* is provided on each of its sides with a recess, into which is fitted a loose disk-plate, *e*, through which the short rod *f*, projecting from the side of the head-piece *b*, passes and on which it rotates. To these disk-plates are attached the blades *g*, and motion imparted to the disk-plates will cause them to turn in either direction, carrying the blades with them.

*d* is a sliding piece, which moves freely up and down on the sleeve portion *c* of the head-piece *b*. It is provided with a polygonal col-

lar, *d'*, to which is secured, by means of projecting studs *h* and cross-pins *h'*, one end of a cam-plate, *i*. The other end of the cam-plate *i* is secured to the face of the disk-plate *e* by means of a stud, *e'*, formed on the disk-plate, which passes through a slot, *j*, in the cam-plate, and on which the cam-plate works as it is forced upward and downward by the movement of the sliding piece *d*. A guide-rod, *k*, extends up from the collar *d'* through an aperture formed in the head-piece *b*. The cam-plate *i* is held on the disk-plate *e* by means of the washer *i'* and cross-pin *l*. When motion is imparted to the disk-plate *e* the stud *e'* will work in the slot *j* in the cam-plate.

*m m m* are sliding pins, which work in slots *n n n*, formed in the head-piece *b*, the angles thereof being made less abrupt for that purpose. The in-and-out movement of these pins is controlled by a coil-spring, *o*, one end of which is attached to the head of the pins and the other to the top of the head-piece *b*. The pins *m m*, &c., are provided with stud *p*, which projects beyond the plane of the face of the head *b*. Holes *q q'* are provided in the disk-plate *e*, into which the pins *m* are sprung after they have been released from contact with the cam-plate *i*.

Referring to Fig. 1, it will be understood that the solid lines are intended to represent the blades as locked in one position and the dotted lines the relative position of the operating parts after the inclination of the blades has been reversed.

The operation of changing the inclination of the blades is as follows: The sliding piece *d* is moved up to the head *b*, and as the convex portion of the cam-plate *i* strikes against the stud *p* on the pin *m* the pin *m* is forced backward and out of its hole *q* in the disk-plate *e*, and the latter is left free to rotate by the further movement of the cam-plate until the hole *q'* is brought round opposite the pin *m*, when the pin is sprung in by the action of the spring *o* and the blade is locked in position. The first half of the upward movement brings the cam-plates in contact with the studs and forces out the pins, setting the disk-plate free. The second half throws the disk-plate around in the opposite direction, and by so doing sets the blade at a reverse inclination, and by the same movement locks it



in that position by causing the pins *m* to enter the other hole, *q'*, in the disk-plate.

The sliding piece *d* is most conveniently operated by a hand-lever, *r*, which is attached in any suitable manner to a loose ring, *s*, arranged to revolve independently on the sliding piece *d*.

My improved apparatus is especially applicable to buildings for supplying a cooler current of air from the roof to the cellars, and for expelling the foul air at the street-level, thereby keeping the air in the lower portion of the building equally as pure as, and the temperature much lower than, if the ventilation were conducted in a reverse manner. Its construction is such that fresh air is supplied and foul air exhausted at will without reversing its rotation or arresting its motion, the upward and downward currents being produced by simply shifting the inclination of the blades in the manner hereinbefore described.

The accompanying drawings represent my device as used on top of a shaft, where it is propelled by wind. It is so constructed in its upper part, which carries the wind-vanes, as to enable it to set itself to the wind.

A is a horizontal shaft, which has bearings in a U-shaped piece, B, and which carries the gear-wheel C, that engages with a pinion, D, secured to the vertical rod *a*. To the end *v* of the shaft A is connected a windmill, and motion is communicated to the gearing and lower operating parts by the rotation of shaft A.

E is a friction-roller, loosely mounted on rod *a*. Beneath the U-shaped piece B is provided a friction-roller, F, which rests on a fixed collar, G, secured by screw H to a sleeve, I, extending from the U-shaped piece B, and made integral therewith. The piece B and connected parts rotate on the rod *a*, (the pinion D only being fixed thereon,) and sets itself to the wind.

When my apparatus is located in the lower part of the shaft the gearing may be dispensed with, and it may be driven by a pulley and belt deriving power from any suitable machinery.

While my device is designed principally for the purposes of ventilation, as hereinbefore set forth, it can be readily adapted to other purposes. When used in buildings it is located either at the bottom of a shaft, near the cellar,

or at the top thereof, the main shaft extending from the bottom to the top of the building, and the required communication therewith being made from each floor.

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

1. The combination, with a propeller-screw, of a cam and spring mechanism for changing the inclination of the blades without arresting or changing the rotation of the screw, and for locking the blades in position at one and the same operation, substantially as set forth.

2. In a ventilating apparatus, the combination of a vertical rod with a fixed head and a sliding piece, which operates, in connection with cam-plates and rotary disk, to change the inclination of the blades, substantially as set forth.

3. In a ventilating apparatus, the combination, with a vertical rod, of a fixed head provided with radial arms and loose disks, to which the blades are connected, with means for rotating said disks in either direction, substantially as set forth.

4. The combination, with a vertical rod and fixed head having loose disk-plates mounted therein, of a sliding piece having cam-plates pivoted thereto, and adapted to be engaged with the face of said disks, so as to permit of their semi-rotation in either direction, substantially as set forth.

5. In combination with the fixed head *b*, the loose disk-plates *e*, provided with recesses *q q'*, pin *m*, and spring *o*, all arranged to operate in the manner and for the purpose set forth.

6. The combination of the head-piece *b*, having recesses *n n*, with the loose disks *e*, provided with recesses *q q'*, pins *m*, having stud *p*, cam-plates *i i*, and a spring, *o*, or other equivalent means for operating said pins, substantially as set forth.

7. The horizontal rod A, mounted in the U-shaped piece B, friction-roller F, and collar G, combined with the gear-wheel C, pinion D, and friction-roller E, as and for the purpose set forth.

WILLIAM A. PITT.

Witnesses:

A. H. MINTURN,  
GEO. H. FLECKENSHEIR.