

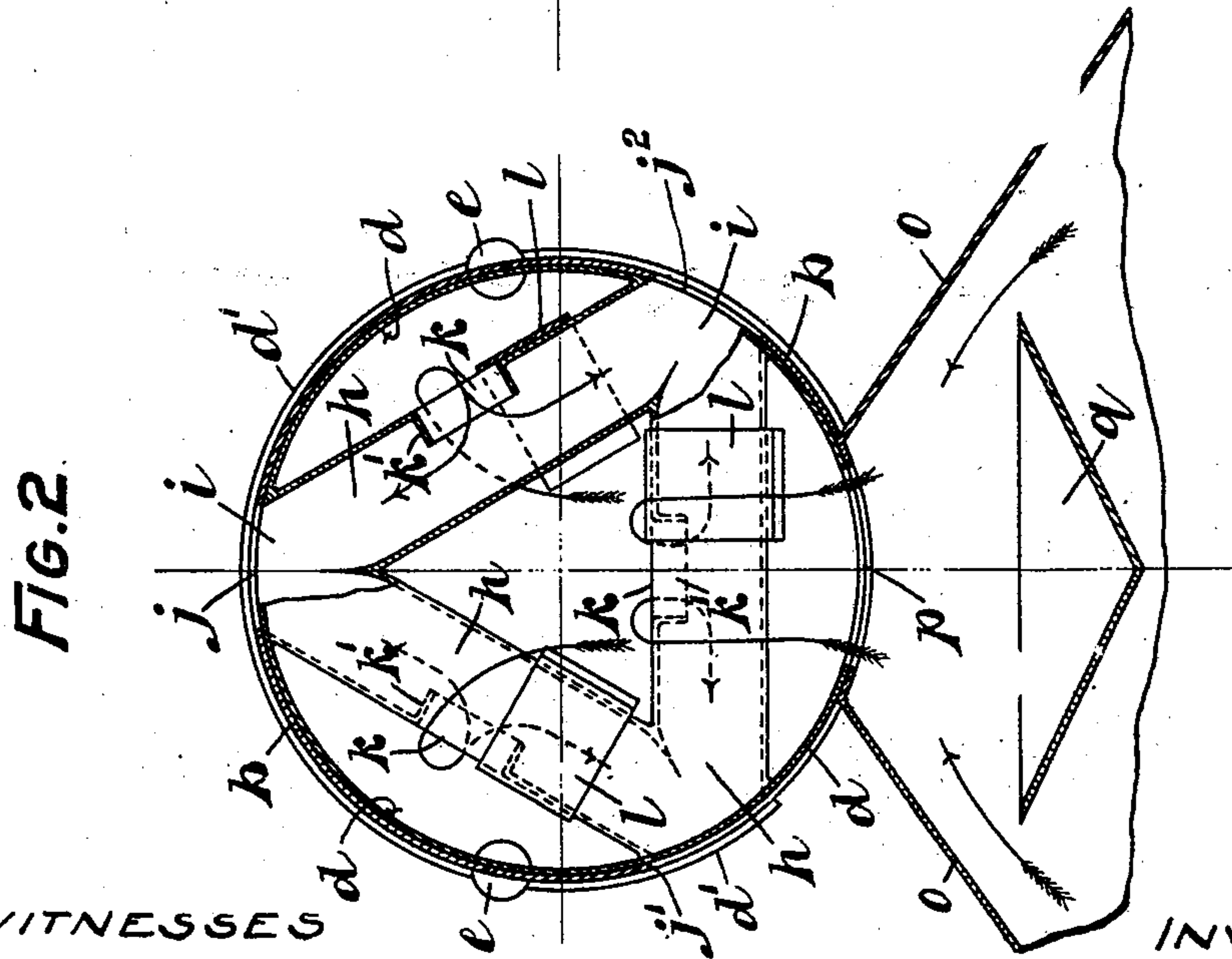
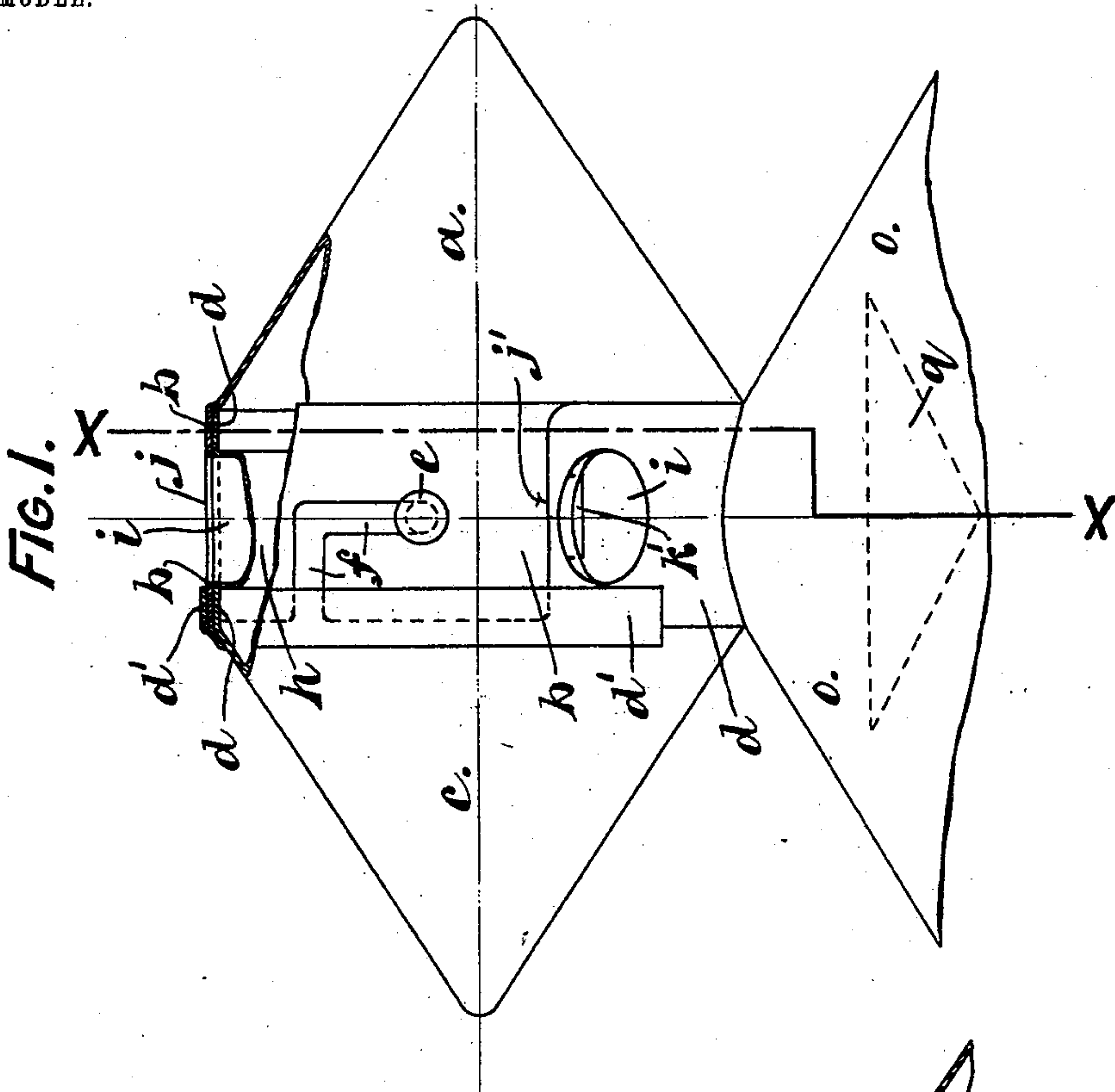
No. 747,427.

PATENTED DEC. 22, 1903.

T. HOUGH.
VENTILATOR.

APPLICATION FILED JULY 9, 1903.

NO MODEL.



WITNESSES

Wm. Kuehn
Reynolds White

INVENTOR

Thomas Hough
BY *Richardson*
ATTORNEYS

UNITED STATES PATENT OFFICE.

THOMAS HOUGH, OF ANDERTON, NEAR CHORLEY, ENGLAND.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 747,427, dated December 22, 1903.

Application filed July 9, 1903. Serial No. 164,856. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HOUGH, a subject of the King of England, and a resident of Anderton, near Chorley, in the county of Lancaster, England, have invented certain new and useful Improvements in Ventilators, of which the following is a specification.

This invention has reference to ventilators for use on lamps, railway-carriages, buildings, ships' holds and rooms, chimneys, and in other similar cases where it is desired to extract gases from an inclosed or partly-inclosed space or chamber, and is particularly advantageous as a ventilator for paraffin or other oil or oil-gas burning lamps—such as are used on locomotives and railway-trains, cycles, motor-cars, railway-carriages, and the like, which move at a high rate of speed—as in such lamps a constant and uniform rate of ventilation or updraft and one which is not much influenced by the rate of motion through the air is required. The invention, however, is also well and advantageously adapted to other lamps, as hereinafter described.

The invention will be further described with the aid of the accompanying drawings, which show a ventilator involving my improvements.

In the drawings, Figure 1 is a side elevation, shown partly in section, of the ventilator; and Fig. 2 is a cross-section of it, taken at the line xx , Fig. 1, with the internal parts shown partly broken away.

The ventilator comprises a conical end or head a at one side, having a cylindrical body part b , and a similar conical end c , with a cylindrical body part d , over which the body portion b fits, and the part b is held in position by headed pins or studs e , fixed in the body part d and passing through right-angle slots f in said part b , and this part b is adjustable circularly or circumferentially on the part d by turning it thereon, the turning being rendered possible by the circumferential parts of the slots f . The inner edge of the body part b fits under a ring d' , fixed on the body d . Within the body portion d transverse or diagonal tubes h are provided, three being shown in the ventilator illustrated. The mouth or ends of these tubes converge and ramify into openings i in the

body d , and these openings i are less in area than the combined areas of any two of the tubes d . This body part b is provided with an upper opening j , which normally coincides with the upper opening i , and a side opening j' , opposite one of the side openings i , and is cut away below the edge or part j' at the other side, and by turning it more or less on the stationary body part d , so as to cover the openings i the operative areas of these openings i may be regulated.

The tubes h have each an aperture k in them at their upper side, and round each of these holes is an inwardly-extended flange k' , the object and effect of which is to guard against the air or wind as it flows through these tubes from one end to other from passing through these apertures in the wrong way. These holes k are in some cases adapted to be regulated by providing over the tubes h spring-sleeves l , by which they may be partially covered when desired, as when the draft produced by the ventilator is too great.

The body d is fixed onto the top o of the lamp in the case of its application to a lamp or the fitting, whatever it may be, connected with the chamber or space to be ventilated, and the gases moved by the ventilator pass from the part o into the body d through the aperture p in its lower part, below which is preferably disposed a deflecting cone or plate q to prevent a central column only of gas directly below the aperture p being drawn up into the ventilator and to prevent downdraft caused by opening the door acting directly on the flame and putting it out.

By turning the cone a and body portion b round and then pulling it away from the body d it will come off and will so give access to the tubes h and to the interior of the ventilator for cleaning or sweeping same.

In cases where the circumstances do not permit of the use of the deflector d and the shape of the part o shown being employed these may be dispensed with, and any suitable form of conduit connecting the body d with the space to be ventilated may be used. This will be the case, of course, when the ventilator is used in connection with a chimney of a fireplace or a ventilating-shaft.

When the ventilator is used on a locomotive

tive, train, vehicle, or like lamp, the axis of the cones and bodies will preferably lie at right angles to the direction of motion.

It is found in using the lamp on locomotives or trains that practically no difference in its brilliancy exists, either when the train is standing or moving at a high velocity, and in action when it is stationary the gases from the flame below ascend through the aperture *p* into the body of the ventilator, round the tubes *h*, and flow mainly through the apertures *k* in the two upper inclined tubes *h* and out by the upper hole *i*. This course of the gases is practically a direct one—that is, it is without any abrupt change of direction or downward bends to make and is equivalent to a direct chimney outflow—and consequently when the lamp is not being moved or when the atmosphere is still it burns as a lamp with ordinary ventilation. If, however, the lamp is moved quickly, the action is that the body portions *b d* and of the cone cause the air to be deflected and to flow over the holes *i* at the tube ends and produce an indraft through the holes *k* in these tubes and thereby the necessary updraft in the lamp.

If a strong wind be blowing and, say, blowing downward, it will pass in at the upper hole *i* and out at the two lower holes *i*, which will also cause an indraft into all the tubes *h* through the openings *k*, and it is found that no matter how the lamp may be moved or in what direction or how the wind may blow the ventilator produces a practically-constant updraft, and consequently a steady and uniform flame.

This ventilator has a large cooling-surface, which prevents it getting hot, and this characteristic in connection with hand-lamps is very valuable.

It will be seen in a ventilator according to this invention downdraft is turned to useful account by allowing it to pass by the upper aperture *i* down through the two inclined tubes *h h*, and thereby causing an indraft through the apertures *k* into the tubes, which is discharged at the lower openings *i*, and no

attempt is made to baffle or impede downdraft.

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

1. A ventilator comprising a closed hollow body, having a plurality of tubes, *h*, extending through it at different inclinations, the ends of two of such tubes opening out at each end in a common opening on the outside of the body, and each tube having within the body an opening, and said body having an opening communicating with the space or thing to be ventilated; substantially as set forth.

2. A ventilator comprising a hollow body, having oppositely-coned portions *a, c*, a plurality of tubes *h*, extending through the body at the largest diameter, and opening on the outside of same, the ends of two of said tubes having a common opening at said ends *i*, and having openings *k*, within said body; substantially as set forth.

3. A ventilator comprising a hollow body, having a plurality of tubes *h* extending through it and opening on the outside of same, the ends of two of said tubes having a common opening *i* at said ends, openings *k* in said tubes, and projecting rings *k'* round the openings *k* inside said tubes; substantially as set forth.

4. A ventilator comprising a hollow body, having oppositely-coned portions *a, c*, one of which is stationary, and the other movable upon same, a plurality of tubes *h* extending through the stationary part of the body, and opening onto the outside of same, the ends of two of said tubes having a common opening at said ends and openings *k* in said tubes, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

THOMAS HOUGH.

Witnesses:

S. GOODALL,
FRANK. E. FLEETWOOD.