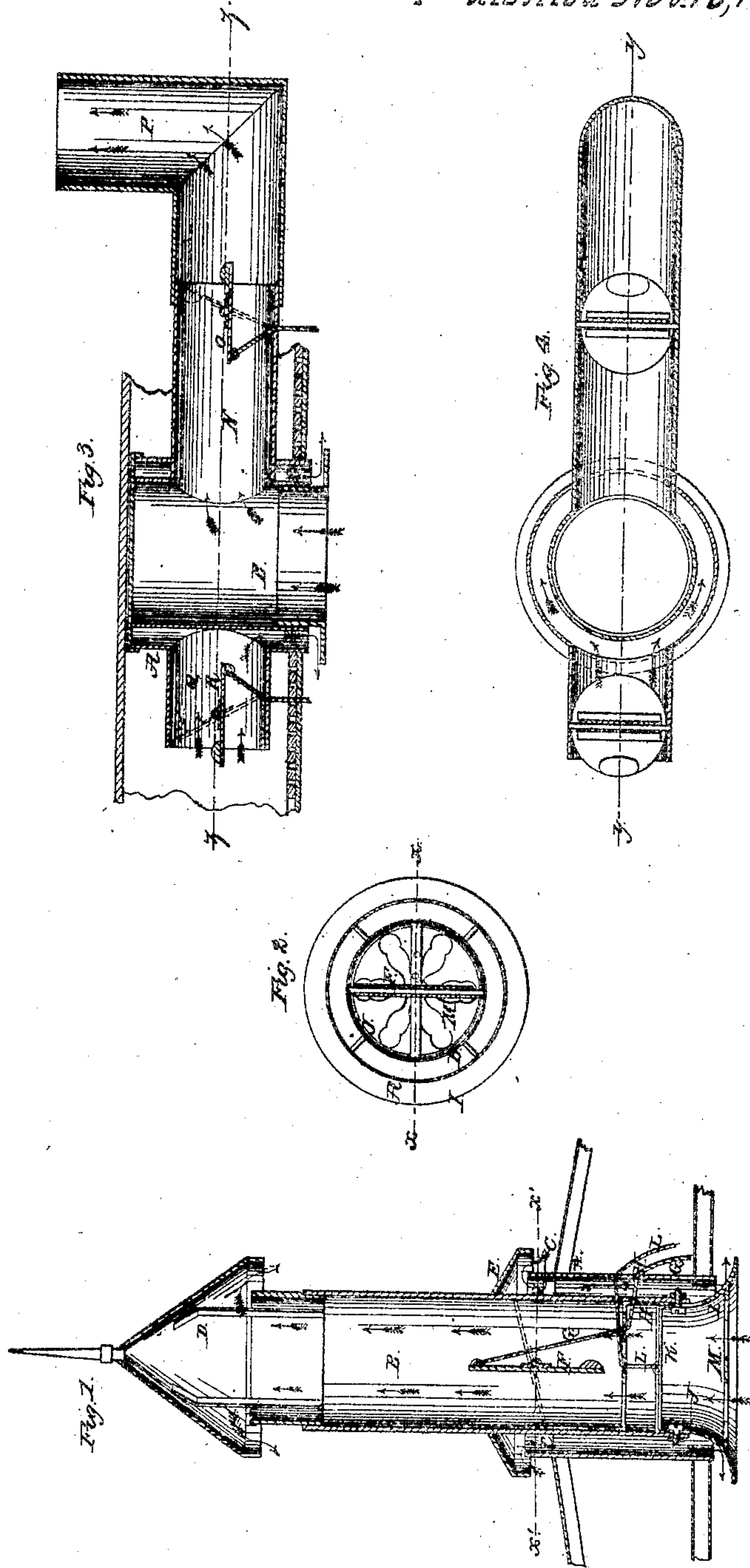


J. M. Kinnell,
House Ventilator.

N^o 36,981.

Patented Nov. 18, 1862.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN VENTILATING APPARATUS.

Specification forming part of Letters Patent No. 36,981, dated November 18, 1862.

To all whom it may concern:

Be it known that I, JOHN MCKINNELL, of the city of London, in the county of Middlesex and Kingdom of Great Britain, have invented a new and Improved Ventilating Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical section of one modification of my improved ventilating apparatus adapted for places where the tubes can be carried vertically through the roof of the structure, *xx*, Fig. 2, indicating the plane of section; Fig. 2, a horizontal section of the same, taken in the line *x' x'*, Fig. 1; Fig. 3, a vertical section taken in the line *yy*, Fig. 4, of the ventilating apparatus as modified to suit localities where it is necessary to convey the currents along horizontal passages, as between the floors of a building, for example; Fig. 4, a horizontal section of the same, taken in the line *zz*, Fig. 3.

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

This invention relates to the arrangement and construction of a simple automatic apparatus to be fixed in the roofs or ceilings of public halls, churches, dwelling-house apartments, ships' cabins, railroad-cars, and other places, for the purpose of securing efficient ventilation therein—that is to say, to provide for a steady influx of pure atmospheric air and for the discharge of the air which is vitiated by respiration, combustion, or other causes.

The apparatus consists essentially of two tubes, arranged concentrically, and opening at their lower ends into the space or apartment to be ventilated. These tubes communicate with the external atmosphere at different levels, the vitiated air rising up the central tube and passing off at the higher level, while the fresh air enters the annular passage between the inner and outer tubes at a lower level, and descends into the space or apartment below. Both passages are provided with suitable valvular mechanism for regulating the currents, that of the outer passage at the same time serving to deflect the downward current of fresh air and spread it out horizontally so as to prevent partial drafts.

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

A, Fig. 1, represents a tube, of thin metal or other suitable material, fixed in any convenient manner in the ceiling or roof (shown in red) of the apartment or space to be ventilated. Inside this tube, and concentric with it, is placed a smaller tube, B, which is supported by radial ribs C, or in any other convenient manner. The tube B projects above the outer tube, A, and is surmounted by a cover or hood, D, from beneath the edges of which the vitiated air rising through this central tube escapes, as indicated by the black arrows. The upper open end of the outer tube, A, is also covered by an annular hood, E, underneath which fresh air passes down into said outer tube. The tubes A and B are so proportioned that the sectional area of the central tube, B, is about equal to the sectional area of the annular passage comprehended between the two tubes.

When the apparatus is in action, the doors and windows of the apartment to which it is applied being closed, the vitiated air, which is heated, and consequently lighter than the external fresh air, rises up the central tube, B, on account of the greater length of this tube, while the heavier fresh air descends through the shorter external passage, A, and thus a constant current is kept up, the air as it becomes vitiated and heated rising and passing off, while its place is supplied by pure, fresh atmospheric air from the outside of the structure.

The valvular apparatus for regulating the currents consists, in the case of the central tube, B, of a simple throttle-valve, F, set upon a transverse spindle inside the tube, and weighted on one side so as to have a tendency to maintain a vertical position, leaving the passage fully open. The valve is closed wholly or partially by means of a cord, G, conveyed through apertures H in the tube and over pulleys, if desired, to any point where it can be conveniently adjusted by an attendant. The valve appertaining to the outer air-passage, A, is an annular flange or plate, I, which slightly overlaps the mouth of the passage, and is fixed to the bottom of a short length of tube, J, fitted to slide easily inside the tube B.

This valve is suspended by means of the bridle-piece K, to which a suspensory cord, L, is attached, and this cord passes through apertures in the tubes A B, and over pulleys, if desired, to any point where it can be conveniently adjusted by an attendant. When the valve I is drawn up as high as is possible, it completely closes the downdraft passage, while, by letting it down more or less, the passage is correspondingly opened, and the current of air impinging upon the plate I is deflected and spread out in a horizontal direction, (see blue arrows,) so as to be more uniformly dispersed over the apartment or space to which the ventilator is applied. The under side of the valve I may be ornamented in any convenient way, and the central opening communicating with the tube B may be covered with a perforated rosette, M. (See Fig. 2.)

In the modification represented in Figs. 3 and 4, the same principle is preserved throughout, there being but a slight change in construction in order to adapt the device or apparatus to the conveying of currents along horizontal passages—as between the floors of a building, for example. The central tube, B, instead of being open at the top for the escape of the foul or vitiated air, is made to communicate with the horizontal tube N, in which a throttle-valve, O, is fitted, the tube N being extended to the desired point and communicating with a vertical tube, P, passing through the roof of the building or structure, a horizontal tube, Q, communicating with the external tube A, through which the fresh atmospheric air passes into A. The tube Q is also provided with a throttle-valve, R.

I would remark that, although the tubes A

B, are represented as of circular section, it is obvious that the same effect may be obtained by means of tubes of any convenient section, such as square or polygonal tubes, the various details being shaped to correspond.

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

1. A ventilator for apartments or other inclosed spaces, composed of two concentric tubes or passages opening below in the ceiling or top of the apartment or inclosed space, and communicating with the external atmosphere at different levels, when used in connection with a deflecting-flange, I, adjustable or otherwise, to distribute the pure air within the apartment, substantially as set forth.

2. The employment or use, in the ventilator described, of an adjustable flange or annular plate, which serves to close the passage, either wholly or partially, when required, and which when open acts as a deflector to deflect and spread out the current in a horizontal direction, as hereinbefore described.

3. A ventilator for apartments, composed of two concentric tubes or passages opening below in the ceiling or top of the apartment or inclosed space, and communicating with the external air at different levels, when used in combination with a horizontal tube or tubes, Q, for the ingress of pure air, substantially as and for the purposes set forth.

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