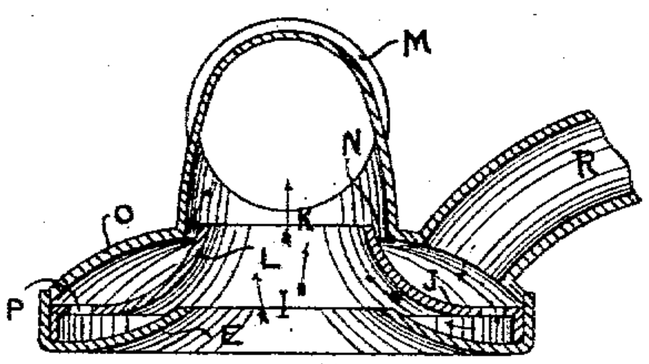
(No Model.)

F. H. SMITH.

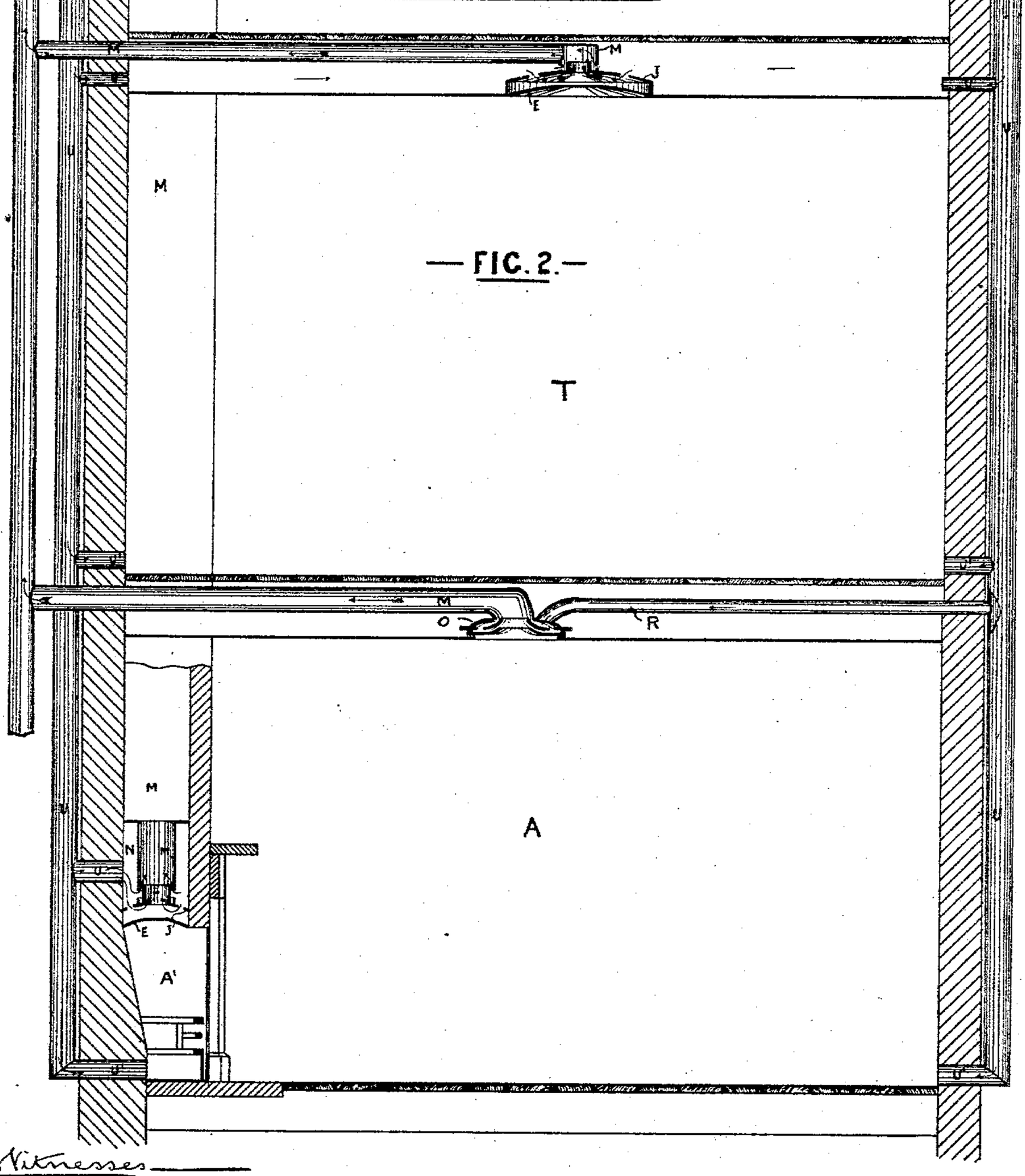
VENTILATOR.

No. 327,608. Patented Oct. 6, 1885.

—FIG. 1.—



—FIG. 2.—



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UNITED STATES PATENT OFFICE.

FREDERICK HENRY SMITH, OF WINCHMORE HILL, COUNTY OF MIDDLESEX, ENGLAND.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 327,608, dated October 6, 1885.

Application filed October 14, 1884. Serial No. 145,537. (No model.) Patented in England October 22, 1881, No. 4,638.

To all whom it may concern:

Be it known that I, FREDERICK HENRY SMITH, a subject of the Queen of Great Britain, and residing at Winchmore Hill, in the county of Middlesex, and Kingdom of Great Britain, have invented certain new and useful Improvements in Ventilators, (for which I have obtained Letters Patent in Great Britain, dated October 22, A. D. 1881, No. 4,638;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to ventilators for ventilating rooms and other closed spaces generally, where it is required to remove warm or vitiated air from such rooms or spaces, and to introduce cold or fresh air thereinto, in place of the said warm or vitiated air, without producing objectionable drafts of air in such rooms or spaces; and in order that my said invention may be most clearly understood I will now proceed to describe the same by the aid of the accompanying sheet of drawings.

Figure 1 is a section of my improved ventilator, and Fig. 2 shows the same applied to the ventilation of the rooms of a house.

In Fig. 1, E is a disk with a central opening, I.

J is a false cover, of a shape somewhat similar to the disk E below it, but projecting upward, so as to form a kind of neck, L, with a central opening, K, therein concentric with but rather smaller than that in the disk E. The outer edge of the false cover J is bent down, so as to form a rim, which fits and rests on the upper side of the disk E, or the false cover J may be supported above the disk E by other suitable means. The false cover J is perforated near its outer edge with several holes, P P, for the admission of cold air into the space between the said false cover J and the disk E.

O is a cover with a hole in its center, which drops over and surrounds the neck L of the false cover J, preferably so as to leave a narrow annular opening, N, between itself and the said false cover J.

M is an outlet pipe or chimney, which, commencing at the hole in the center of the cover O, is continued to any suitable point where the heated or vitiated air is to be discharged.

R is an inlet-pipe for fresh air, which opens into the space between the cover O and the false cover J, and is continued to any suitable point where fresh air can be received into it.

In Fig. 2 the above-described ventilator is shown applied to the ceiling of the room A, for the purpose of ventilating that room. I introduce the cold air intended to replace the heated or vitiated air removed from the ventilator into the lower part of the room or chamber A by pipes, tubes, or other conduits or channels U, the upper ends of which are carried up to a height equal (or nearly so) to that of the outlet-openings M, or in some cases the conduits or channels U may simply pass through the walls and terminate in gratings or otherwise, the vertical extensions of such conduits or channels being omitted. The result of these arrangements is that cold air enters the lower part of the room or chamber A through the aforesaid pipes or conduits U below the warm or vitiated air, which rises upward toward the above-described ventilator in the ceiling, causing a current of warm or vitiated air through the outlet M thereof, which current induces another current of cold air to flow through the fresh-air inlet-pipe R into the space between the cover O and the false cover J, thence through the holes P P (see Fig. 1) into the space between the false cover J and the disk E, from whence it passes up the chimney or outlet M in a thin sheet or stream of cool air surrounding the inclosed column of warm or vitiated air. Part of the current of cold air admitted into the space between the cover O and the false cover J escapes in an annular stream through the opening N, when such opening is provided. By these means all possibility of downdraft is obviated. The arrows in the figures show the course of the air-currents, the currents of cold air being indicated by arrows without wings and the current of warm air by arrows with wings.

A modification of the above-described arrangements is shown in the upper part of Fig. 2 applied to the ceiling of the room T, the only material difference being that the cover O and air-pipe R are dispensed with, and the

cold air admitted through the conduit or channel U travels freely along the rectangular channel formed by two adjacent floor-joists, the floor above, and the ceiling below, and entering the space between the disk E and the false cover J through the holes P P, as before. Fig. 2 also shows the ventilator applied to a fire-place, the various parts of the ventilator corresponding to the parts described in reference to Fig. 1 being indicated by similar letters of reference. These parts are fixed in the upper part of the fire-place A′, as shown, and the heated products of combustion pass up the neck L and chimney M in the same manner as described in reference to the ventilators applied to the ceilings of the rooms A and T, cold air being supplied to the space between the disk E and the false cover J, and into the space N between the neck L and chimney M through the inlet-pipe U. The air to ventilate the room and support combustion in the fire-place may by preference be admitted by means of branch pipes U′, connected to the inlet-pipe U, or by the ordinary means, such as windows or doors. Instead of, or as well as, being applied to the fire-place, the ventilator may be applied to the chimney pot or cowl, for the purpose of preventing downdrafts in the chimney, the means for admitting air between the parts E and J or between L and M being arranged according to the construction of the chimney top, pot, or cowl. Similar arrangements are also applicable to the ventilation of kilns, closed vehicles, or other places where it is required to remove warm or vitiated air, and to introduce cold or fresh air in place thereof.

I claim—

1. For ventilating purposes generally, the combination of the disk E, having an opening, I, in the center thereof, the perforated false cover J, having a central opening, K, therein concentric with but smaller than the opening I in the disk E, the neck L, attached to or forming part of the false cover J, and the outlet pipe or chimney M, external to the neck L, the whole constructed, arranged and operating so that the warm or vitiated air escaping by the outlet pipe or chimney M shall induce currents of cold or fresh air to be drawn in through the holes P in the false cover J, and be caused to traverse the spaces between the disk E and the false cover J, and between the neck L and the outlet pipe or chimney M, substantially as hereinbefore described, and illustrated in the drawings hereto annexed.

2. For ventilating purposes generally, the combination of the disk E, having an opening, I, in the center thereof, the perforated false cover J, having a central opening, K, therein concentric with but smaller than the opening I in the disk E, the neck L, attached to or forming part of the false cover J, the cover O, the fresh-air inlet R, and the outlet pipe or chimney M, external to the neck L, the whole constructed, arranged, and operating so that the warm or vitiated air escaping by the outlet pipe or chimney M shall induce currents of cold or fresh air to be drawn in through the holes P in the false cover J, and be caused to traverse the spaces between the disk E and the false cover J, and between the neck L and the outlet pipe or chimney M and the cover O, substantially as hereinbefore described, and illustrated in the drawings hereto annexed.

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