

(No Model.)

R. BULLYMORE.
Ventilating Buildings, &c.

No. 242,264.

Patented May 31, 1881.

Fig. 1.

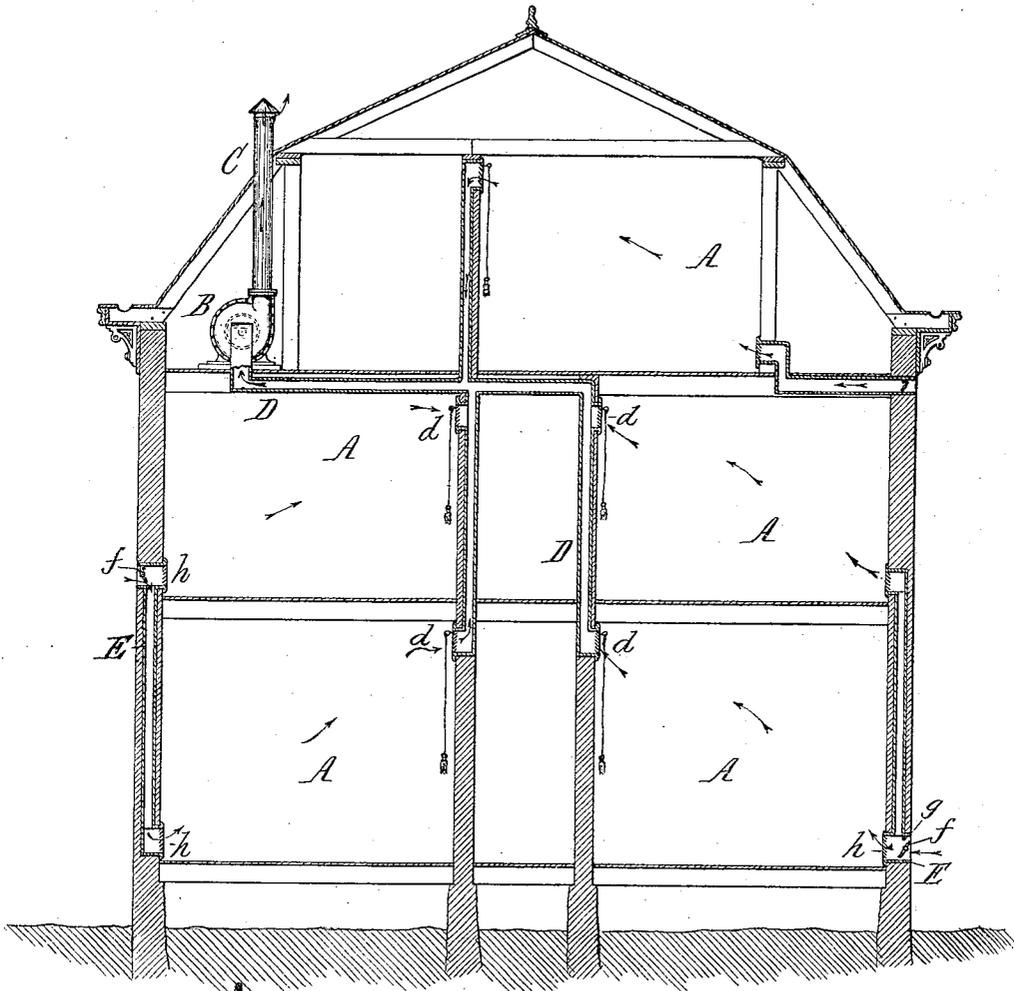


Fig. 2.

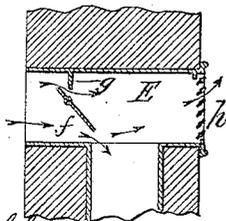
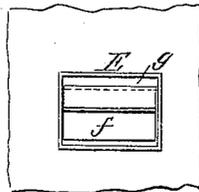


Fig. 3.



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UNITED STATES PATENT OFFICE.

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VENTILATING BUILDINGS, &c.

SPECIFICATION forming part of Letters Patent No. 242,264, dated May 31, 1881.

Application filed March 22, 1881. (No model.)

To all whom it may concern:

Be it known that I, RICHARD BULLYMORE, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Ventilating Buildings, &c., of which the following is a specification, reference being had to the accompanying drawings.

This invention relates more especially to that class of ventilating apparatus in which the air in a building, room, vessel, or other inclosed space is renewed by withdrawing the air contained therein and forming a partial vacuum, thereby causing the surrounding air to flow into the partially-exhausted space and supply the void.

The object of this invention is to remove the vitiated air from buildings, vessels, and other similar inclosed spaces, and to control at the same time the influx of the exterior air into the space or spaces from which the air is removed.

The invention consists, to that end, in combining, with the room, building, or other inclosed space which is to be ventilated, a suction-fan which is connected with the space to be ventilated by one or more air-conduits, so as to withdraw the air from such space, and air-inlet valves which open automatically and permit the ingress of the external air when the natural ventilation is not sufficient to replace the quantity of air which is withdrawn from the space by the suction-fan and which close automatically, so as to exclude the external air from the space when no air is withdrawn by the fan or when the natural ventilation is sufficient to supply the air which is so withdrawn.

My invention also consists of the peculiar construction of the air-inlet valve, as will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a sectional elevation of a building provided with my improved ventilating apparatus. Fig. 2 is a sectional elevation of the automatic air-inlet valve, and Fig. 3 is an end view of the same.

Like letters of reference refer to like parts in each of the figures.

A represents one or more rooms or other inclosed spaces in a building, vessel, or other structure which is to be ventilated.

B represents a suction-fan, arranged in a con-

venient location and rotated by any available power.

C is the blast-pipe of the fan, which opens into the open air; and D is the suction-pipe of the fan, which is connected with the inclosed space or spaces A by one or more openings, *d*, which are preferably provided with registers or regulating-valves, whereby the flow of air from the inclosed space or spaces A to the fan can be controlled.

E represents one or more air-inlet pipes penetrating the wall of the building and connecting the inclosed space or spaces A with the exterior atmosphere.

f is an automatic valve, arranged in the pipe E in such manner that it will open and permit the exterior air to pass through the pipe into the room A when the latter becomes partially exhausted, and that it will close automatically when an equilibrium has been established. As shown in the drawings, the valve *f* consists of a plate hung above its center of gravity in the pipe E, so as to assume a vertical position by gravity. When the valve *f* is closed its upper part strikes against the outer side of a vertical partition or strip, *g*, depending from the upper part of the pipe E, whereby the valve is prevented from opening outward. The openings by which the pipes E communicate with the rooms are preferably provided with registers or regulating-valves *h*, whereby the influx of the exterior air into the rooms can be controlled.

The air contained in the room or other inclosed spaces A is withdrawn therefrom by the suction-fan and expelled through its blast-pipe. If the amount of air which is withdrawn is so small that the porosity of the walls, floors, and ceilings, and the cracks of windows and doors is sufficient to permit the influx of the same quantity of air, the exhausted air will be replaced with air entirely, or to a large extent, by this means. If this natural ventilation is insufficient to maintain an equilibrium indoors and outdoors, the air-inlet valve *f* opens and permits the exterior air to flow through the pipe E into the space from which the air is being exhausted until an equilibrium is established. When no air is withdrawn from the room or inclosed space the valve *f* closes and prevents the external air from entering the

room, and the air contained in the room from escaping therefrom through the pipe E.

I claim as my invention—

5 1. The combination, with an inclosed space, A, of a fan, B, having its suction-pipe C connected with the inclosed space, an air-inlet passage, E, and an automatic valve, *f*, arranged in said passage, whereby the external air is excluded from the inclosed space except when it
is required to replace the air which is with-
drawn from said space by the suction-fan, sub-
stantially as set forth.

2. The combination, with the air-inlet pas-
sage E, provided with a partition, *g*, depend-
ing from its upper side, of a valve, *f*, hung 15
above its center of gravity in the air-inlet pas-
sage and coming in contact with the outer side
of the partition *g* when the valve is closed,
whereby the valve is prevented from opening
outward, substantially as set forth.

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