

W. F. Ross,

Ventilator.

No. 109056.

Patented Nov. 8. 1870.

Fig. 1.

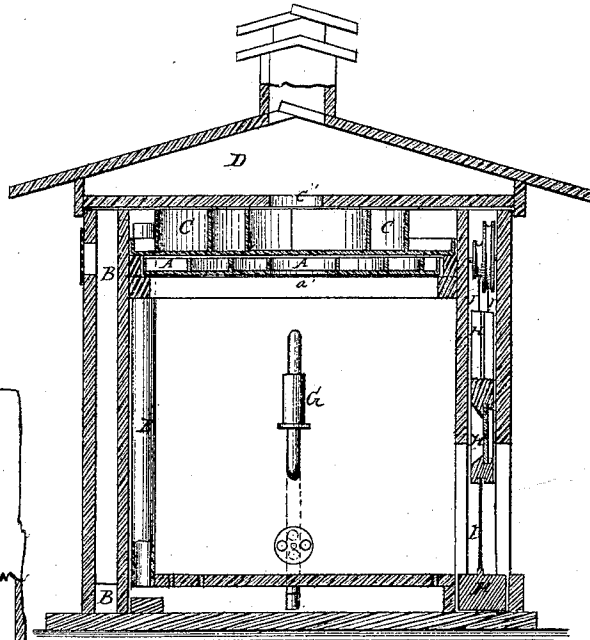


Fig. 3.

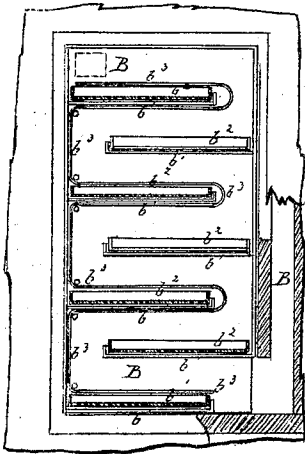


Fig. 4.

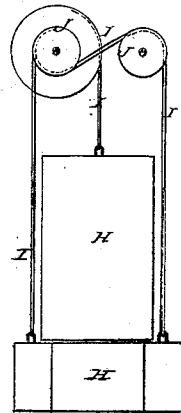
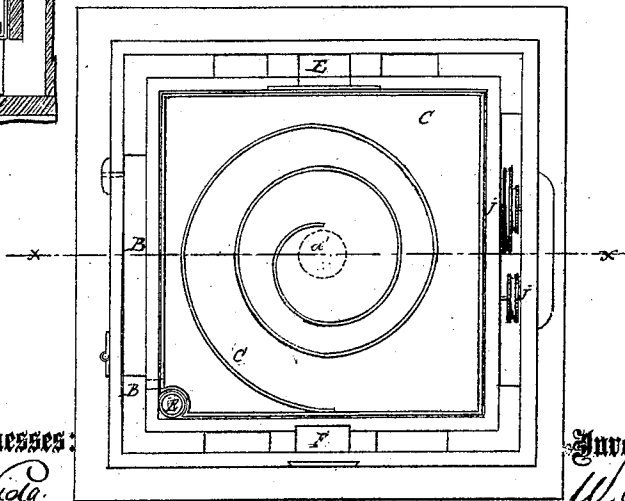


Fig. 2.



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WILLIAM F. ROSS, OF DAVENPORT, IOWA.

Letters Patent No. 109,056, dated November 8, 1870.

IMPROVEMENT IN VENTILATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM F. ROSS, of Davenport, in the county of Scott and State of Iowa, have invented a new and useful Improvement in Ventilators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 is a vertical section of a room or house illustrating my improved ventilator, taken through the line *x x*, fig. 2.

Figure 2 is a horizontal section of the same.

Figure 3 is a detail view, illustrating a modification of the same.

Figure 4 is a detail view of the self-closing door.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved means for ventilating rooms, cars, mines, and other inclosed spaces, with warm or cold fresh air, as may be required, free from dust and other impurities; and

It consists in the construction and combination of the various parts of the apparatus, as hereinafter more fully described.

A is an air-chamber, formed or placed above the apartment to be ventilated, for adapting the temperature of the fresh air to that desired in the apartment to be ventilated, before it is introduced therein.

In cold weather the desired temperature may be maintained in the apartment to be ventilated in any manner, and the warmest air will rise and pass through the aperture *a* in the center of the ceiling, into the chamber A, there meet the fresh air coming in from the fresh-air duct B, form counter currents therewith, warm it, and return with it through the same temperature *a* in the center of the ceiling, into the apartment to be ventilated, thus introducing the fresh air, suitably warmed, into the middle of the upper part of the apartment to be ventilated, so that it may reach the occupants or contents of the same uncontaminated by impurities at the side or in the lower part thereof, and avoiding counter currents of cold air and warm air in the apartment to be ventilated.

The chamber A may be formed by a spiral or other partition into a long passage-way, and in warm weather the fresh air may be made to pass under an evaporating-pan, C, of corresponding form, and thus be cooled in the chamber A to the temperature desired before it is introduced into the apartment to be ventilated. The chamber A may be made water tight, &c.

B is an air-passage, for introducing air upward into the chamber A, so that the warm air from the apartment to be ventilated cannot escape through such pas-

sage, and it is made in the form of an inverted siphon, that the air may be introduced from the outside of the building, above, below, or upon a level with the ingress-opening of the chamber A, and also that a part or all of the downward passage of the duct B may be made wide and receive a zigzag or other form from partition *b*¹, extending partially across it, and so arranged as to serve as shelves to support tanks *b*², which may contain water, charcoal, lime, and salt, or other suitable purifier, disinfectant, or chemical, for the removal of dust, spores, or other impurities from the air as it comes in contact with the contents of the tanks in its downward passage, or for imparting any desired quality to the air before it is introduced into the apartment to be ventilated.

As a further provision for arresting impurities in the air, the sides of this zigzag duct which are not covered by the tanks may be covered with cloths *b*³, kept wet by extending into the water-tanks, and extending from one to another of such tanks, as shown in fig. 3.

C is a metallic chamber or basin, placed directly over the air-chamber A, and formed into a long passage by a spiral or other partition, and adapted to contain water or other volatile substance, so that the air passing from the apartment being ventilated may cool the air-chamber A, and, consequently, the air passing through said chamber to the apartment being ventilated.

From the chamber C the escaping air passes through the opening *c* into the chamber D, which is coated with lamp-black or other heat-absorbing material, and exposed to the rays of the sun, so that the air therein may be warmed, and rarefied, and escape through suitable openings to the outside of the building, and thus create a draught from the apartment being ventilated, and at the same time cool the upper rooms of the building by passing a current of air over them.

More warmth may be secured in D by allowing the sun's rays to enter therein through a double or triple glass sky-light or observatory over it, the black inside surface of D absorbing the heat, and the confined air between the glass plates preventing its escape through the sky-light.

The impure air escapes from the apartment being ventilated through openings in the floor or lower part of the side walls of said apartment, into pipes or passages E F, through which it passes into the chamber C, and escapes thence in the manner hereinbefore described.

One or more of the pipes or passages E F may be made wholly or partially of iron or other suitable heat-absorbing material, and exposed to the heat of the apartment being ventilated, or to the heat of some other warmer apartment, so that the air within said

pipe or passage may be warmed and rarefied to cause a draught from the apartment being ventilated in absence of solar heat operating through D or F, and in absence of other artificial means, or to co-operate therewith. Or one or more of the pipes or passages F may be made wholly or partially of iron, or coated with lamp-black, or made of or coated with any suitable heat-absorbing substance, and so arranged as to be exposed to the sun's rays, so as to be thus heated to cause a draught from the apartment being ventilated, in absence of artificial heat or the chamber D, either or both, or to co-operate therewith.

G is a part of the pipe or passage E F, or a branch pipe connected with said passage and projecting into the apartment to be ventilated, the middle part of which is detachable and is made of glass or other suitable transparent material, and which is connected with the gas-burner, lamp-burner, or other illuminator, in such a way as to support the combustion with air escaping from the lower part of the apartment being ventilated, and to carry off the products of combustion without allowing them to enter the said apartment.

This construction prevents the illuminator from warming the apartment being ventilated, and economizes the heat of the illuminator to create a draught in the duct or passage E F, and thus carry on the ventilation of the apartment in the absence of other appliances, or in co-operation therewith, and also admits of the burning of impure gases, oils, or fluids, without contaminating the atmosphere of the room with impure and offensive gases and odors.

To obtain the best results from this system of ventilation, it is essential that the windows and doors be kept closed as much as possible. To accomplish this I divide the doors H and the windows, either or both, horizontally into two parts, of which the upper is the larger, connected by cords I with a set of large and small pulleys, J, or with a set of long and short levers, so that a slight downward movement of the lower part of said door or window may raise the upper part to the desired or necessary distance, and so that, when left to itself, the weight of the upper part will raise

the lower part until the two parts meet and close the door or window automatically. In the case of a door, a threshold or flange may be attached to or connected with the lower part of the door, so that the weight of a person or animal on said threshold or flange will open the door and hold it open until said weight is removed.

Having thus described my invention,

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

1. The chamber A, arranged above and opening into the apartment to receive the warm air therefrom, combined with a cold-air duct, for the purpose of tempering the fresh air before its introduction into the room.

2. The zigzag siphonic duct B, having partitions b^1 , tanks b^2 , and cloths b^3 , arranged with respect to the air-chamber A, as and for the purpose specified.

3. The arrangement, with respect to outlet-pipes E F, of a branch projecting into the apartment, and having a detachable central glass tube, G, to produce a draught in said pipes, and to admit of the unhealthy products of combustion being carried off, in the manner described.

4. The basin or chamber C, constructed as described, in combination with the air-chamber A, air-pipes or passages E F, either or both, and with the apartment or space to be ventilated, substantially as herein shown and described, and for the purpose set forth.

5. The combination of the chamber D with the chamber or basin C, air-chamber A, air-passages or pipes E F, and apartment or space to be ventilated, substantially as herein shown and described, and for the purpose set forth.

6. The pipes or passages E F, either or both, constructed as described, in combination with the chamber or basin C, air-chamber A, and apartment or space to be ventilated, substantially as herein shown and described, and for the purpose set forth.

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Witnesses:

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