3 Sheets—Sheet 1.

D. K. CARTTER.

VENTILATING DEVICES FOR WINDOWS, &c.

No. 184,338. Patented Nov. 14, 1876.

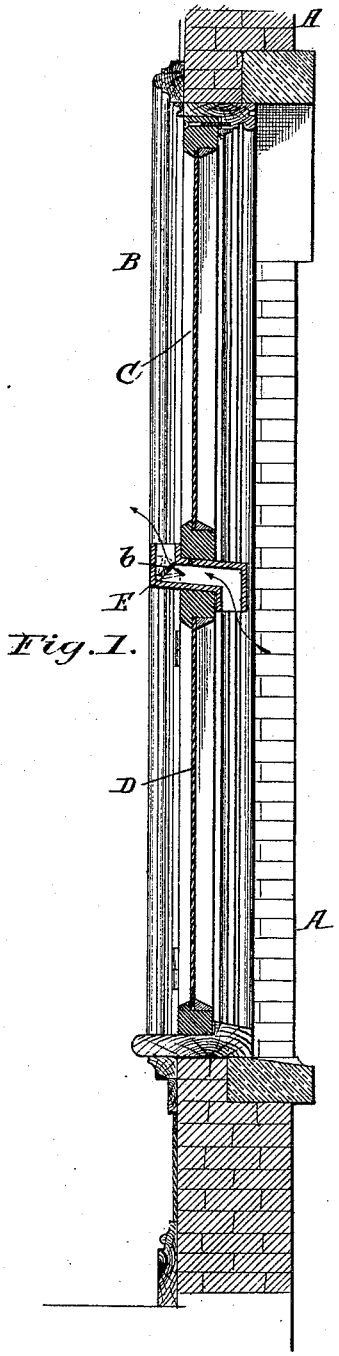
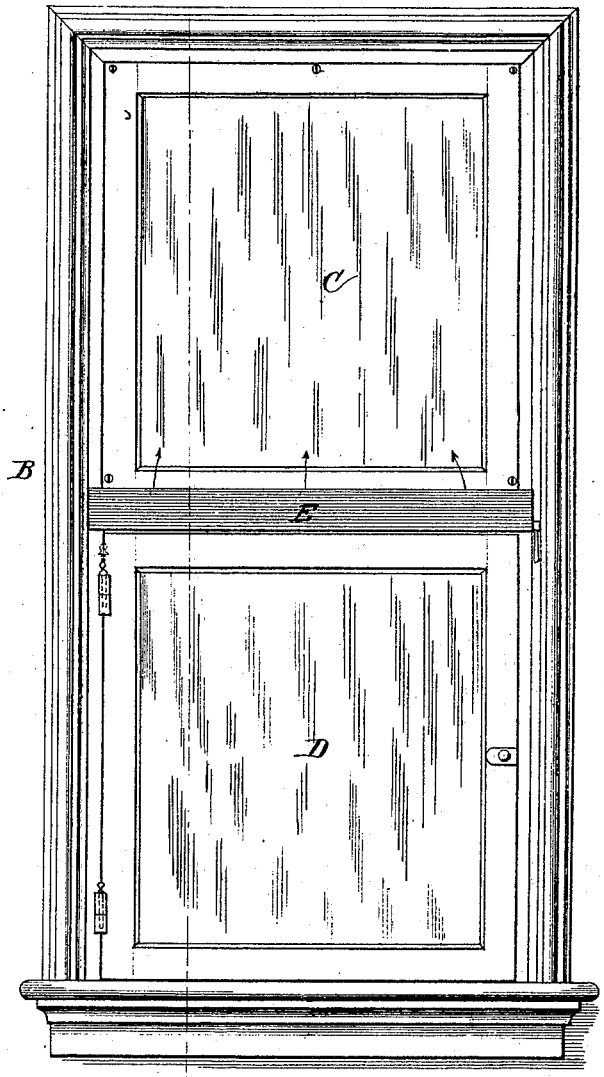


Fig. 1.

Fig. 2.



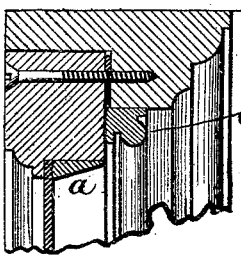


Fig. 3.

Attest:
H. C. Dennis
J. L. Coombs

David K. Carttter.
Inventor.
By. James L. Norris.
Attorney.

3 Sheets—Sheet 2.

D. K. CARTTER.

VENTILATING DEVICES FOR WINDOWS, &c.

No. 184,338. Patented Nov. 14, 1876.

Fig. 4.

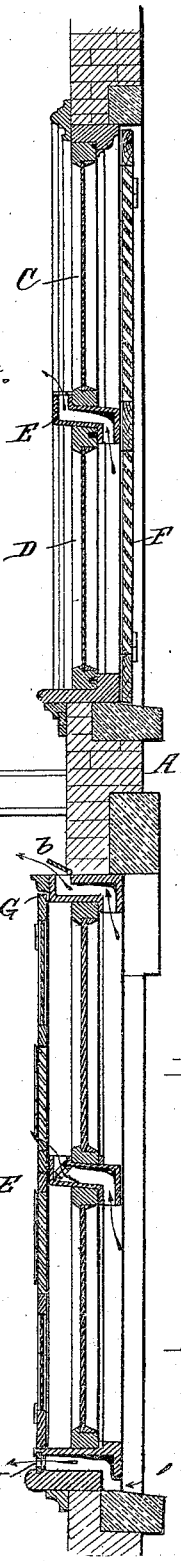


Fig. 5.

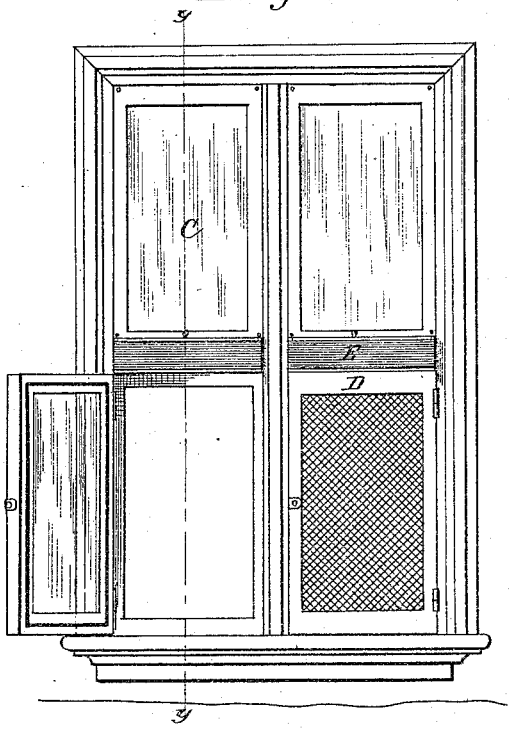


Fig. 9.

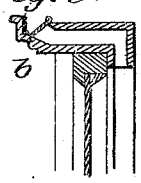


Fig. 6.

Fig. 7.

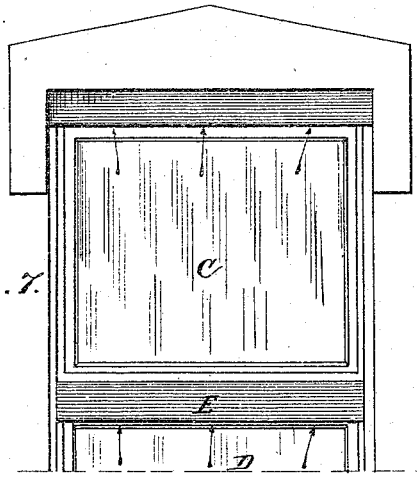
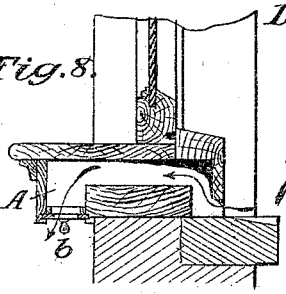


Fig. 8.



Attest
H. L. Burnett
Wm. S. Coombs

David K. Cartter.
Inventor.
By.
James L. Norris.
Attorney.

3 Sheets—Sheet 3.

D. K. CARTTER.

VENTILATING DEVICES FOR WINDOWS, &c.

No. 184,338. Patented Nov. 14, 1876.

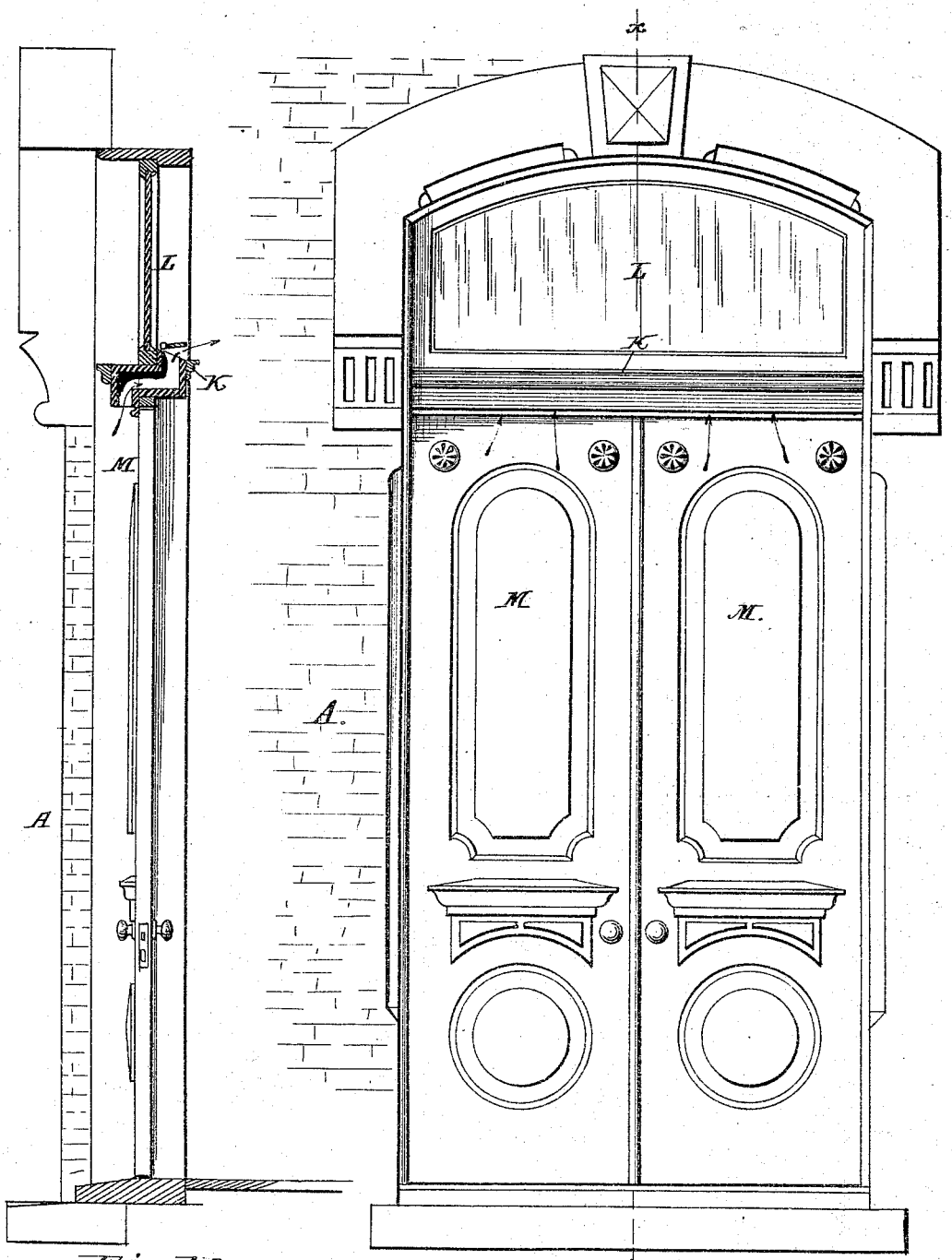


Fig. 10.

Fig. 11.

Attest:
H. C. Perrine
W. G. Coombs

David K. Carttter.
Inventor.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

DAVID K. CARTTER, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN VENTILATING DEVICES FOR WINDOWS, &c.

Specification forming part of Letters Patent No. **184,338**, dated November 14, 1876; application filed November 6, 1876.

To all whom it may concern:

Be it known that I, DAVID K. CARTTER, of Washington, in the District of Columbia, have invented certain new and useful Improvements in the Construction of Weather-Windows, Transoms, &c., and ventilating apparatus for the same, of which the following is a specification:

This invention relates to certain improvements in the construction of weather-windows, transoms, &c., and ventilating apparatus for the same, its object being to provide a constant current of fresh and pure air through the room without the irregular drafts and currents attendant upon open doors and windows—the means usually relied upon for ventilating. This object is effected by introducing air from the external atmosphere into the room by means of the currents automatically established by the difference in the temperatures of the external atmosphere and interior of the room, through one or more ventilating-chambers permanently connected with the windows or doors of the room, and provided with proper registers to control and regulate the currents. Several of said ventilators are preferably used, as they afford better facility for obtaining a constant circulation of the air, the pure air entering through a portion of said ventilators and displacing the air through the remaining portions, the two sets or portions being so located relatively to each other that the difference of temperature between the external air and the air of the room will serve to automatically establish the current, and as the air in the room is generally warmer than the external air in winter and cooler than the same in summer, it is evident that the difference at all seasons will serve to keep up the proper ventilation.

My method of ventilation is particularly designed to be used in connection with the ordinary windows of a building or other structure; but it is also contemplated to use the same with transom-windows, or windows located over doors or portals to admit light into the passages or hallways of a house.

My invention consists, essentially, of the following features: First, of a ventilating casing or chamber permanently located between the frame and sash of a permanent weather-window, opening downwardly into the external air, and upwardly into the interior of the room, whereby a continuous current of fresh air may be admitted to the room, and thus provide for the efficient ventilation of the same; second, in the combination, with the frame of a door or window, of ventilating casings or chambers located at the top and bottom of the frame, for the purpose of establishing automatically a current of air through the room by the difference between the external and internal temperature; third, in the combination, with the upper and lower sashes of a window, of a ventilating casing or chamber interposed between said sashes, and communicating with the external and internal air, for the purpose of supplying fresh air to the interior of the room; fourth, in combination with the ventilator located in the upper or lower part of the frame of a window, the ventilator interposed between the upper and lower sashes of the window, the whole arranged to operate as described; fifth, in combination with the frame of a window and the shutter or shutters thereof, a ventilator-chamber interposed between the two sashes, one end of which opens into the space between the shutter or shutters and the sash, for the purpose of allowing the air to circulate through the room when the shutters are closed.

In the drawing, Figure 1 is a vertical sectional elevation, representing a stationary top window, a hinged bottom window, and an intermediate ventilator. Fig. 2 is a front view of the same. Fig. 3 is a detail view of the hermetically-closed upper sash or window. Fig. 4 is a vertical sectional view, representing the outside wall of a house with windows having ventilator and outside shutters. Fig. 5 is a front view, showing two parallel windows, a lower hinged window in an open position, and a sash covered with netting for summer use. Fig. 6 is a sectional view, illustrating the arrangement of three ventilators in respect to an upper and lower window and inside blinds. Fig. 7 is a front view, showing two ventilators. Fig. 8 is a detail sectional view of a window with the trunk located between the sash and sill. Fig. 9 is a

detail view of a ventilator which discharges the air in an upward direction; and Figs. 10 and 11 are sectional and front views, representing my mode of ventilation applied to a transom or door window.

Referring to Fig. 1 of the drawing, the letter A denotes the outside wall of a building, into which is set the window casing or frame B. The casing is adapted to receive an upper window-sash, C, which is firmly secured to the same by means of screws or other fastening devices, a packing, *a*, of india-rubber or other suitable material, being interposed between the window-frame and the casing, as shown in Fig. 3, for the purpose of forming a hermetically-sealed window which shall exclude the external air, and be weather-tight in every respect.

D represents a lower sash, which is hinged at one side of the window-casing, so as to open in an inward direction therefrom. Between the top rail of the lower sash and the bottom rail of the upper sash there is arranged an air or ventilator trunk or box, E, which may be made of wood, metal, or other proper material. It is preferably made of wood ornamented in a suitable manner; and it extends the entire width of the window, and has its ends embedded or held in mortises formed in the window-casing.

The ventilator may be made in one piece or in sections, and it is also attached to the lower rail of the upper sash by means of suitable fastening devices. The outer portion of the ventilator-trunk is branched in a downward direction, and is open to receive the external air, which is discharged into the room by an inner upward branch of the air-trunk. A hinged or sliding damper or valve, *b*, is arranged in proper relation to the discharge-opening of the air-trunk, for the purpose of regulating the supply of air or shutting the same off entirely. Said damper is preferably hinged at one angle of the trunk or chamber, so that when opened a passage of the full area of the ventilator will be formed, thus allowing the largest possible amount of air to be admitted.

The ventilation of the room is constantly taking place, notwithstanding the fact that the windows are closed, which is very desirable during the absence of the occupants of the house, or in summer time, when insects or flies are to be excluded.

The inlet of the air-trunk may be covered with wire-gauze, to guard against the entrance of insects, but not obstruct the free passage of the air.

In winter time or stormy weather it is always possible to obtain a fresh supply of air, as the damper or valve of the ventilator can be manipulated to admit a variable and regulated supply. The upper sash being hermetically closed and stationary, and the lower sash hinged and movable, all noise and rattling is prevented, and the joints always kept weather-tight. The hinges of the lower sash are provided with loose pintles, as shown in dotted lines, so that by withdrawing the same the sash can be readily removed.

In Fig. 4 I have illustrated an upper and lower sash, and an intermediate air-trunk, with sliding register or damper, *b*, also outside shutters F, which are constructed and hinged in the ordinary manner. Instead of having only a single top and bottom window, I propose using two stationary and parallel top windows and two hinged bottom windows, as is shown in Fig. 5. The ventilators are, in this case, duplicated and held by the side rails of the casing and a central rail thereof, in addition to being secured to the upper sashes.

In Fig. 6 is illustrated a triplication of ventilators, which can be used to obtain an increased supply of air, and also to produce a constant admission of pure air and discharge of vitiated air. In this instance a ventilator trunk or box, G, is secured to the top of the upper sash and to the casing. The central ventilator E and lower ventilator H are arranged and constructed in the manner already described, and the lower ventilator H located between the window and sill.

In Fig. 6 is also shown the use of inside blinds of the Venetian pattern, the slats of which can be manipulated to admit air into the room.

When more than one ventilator is used the pure air entering through one will replace the impure air going out through another ventilator.

As shown in Fig. 8, the ventilator formed by the window-sill is provided with an inner downwardly-extending branch, which serves to discharge the incoming air toward the floor of the room. The outlet is, in this instance, provided with sliding register plates or valves *b*. In Fig. 9 is illustrated a ventilator applied to the top of a sash, and having an upward branch for discharging the air toward the ceiling of the room, and its opening may be covered by a suitable register. In all the different modes of arranging the ventilators the sashes serve to retain the same, and the parts are so arranged that none will interfere with the operation of the other. When outside shutters or inside blinds are used, the same will, when closed, bear upon the ventilator-boxes, so as to brace and support the same, this being made possible by locating the transverse frame-bars of the shutters or blinds so as to bear upon the ventilator when closed.

In Figs. 10 and 11 a ventilator, K, is illustrated as being arranged between a transom-window, L, and the cross or head bar P of the door-frame, thus enabling passages and rooms to be ventilated without necessitating the opening of the doors or the transoms. The ventilator is, in this instance, retained in position by the transom-frame, the door-frame, and the cross or head bar, and the door or doors, when closed, abuts against the said cross or

head bar. Thus the ventilating-trunk is interposed and seated between the frame of the transom and the cross or head bar without disfiguring the appearance of either. The outer face of the ventilator, which falls down over the cross-bar, may be variously ornamented, and the ornamental work usually placed upon the cross or head bar may be dispensed with, and the ventilator may be mortised in at the ends over the head-block in the same manner that the ventilator is secured in the windows.

As shown and heretofore described, the ventilator, whether one or more be used, extends the entire length of the window, and is provided with a long slit or aperture for the discharge of air. I also propose closing the ventilator at all points except at the ends, where I arrange valves, dampers, or slat-registers of the customary form generally resorted to for controlling the admission of air.

It will be evident that, by reason of the ventilator interposed between the upper and lower sashes, it will be impossible to elevate the lower sash or sashes, as the same can only be moved inwardly on their hinges for the purpose of opening, and thus the usual burglar-proof devices and fastenings can be dispensed with, and the window securely locked by any simple fastening device or catch.

What I claim, and desire to secure by Letters Patent, is—

1. A ventilating trunk or chamber located between the top of a permanent weather-window and the window-frame, its outer end opening downwardly into the external air, and its inner end opening upwardly above the cornice into the room, and provided with a suitable damper or register for controlling the passage of the air, substantially as described.

2. A ventilating trunk or chamber located between the sash and sill of the window, leading from the external air into the room or chamber, and opening directly into the room, or vertically upward or downward into the same, so as to conduct the air horizontally across the room, or vertically upward or downward into the room, substantially as described.

3. In combination with the upper and lower sashes of a window, a ventilating trunk or chamber interposed between said sashes, and communicating with the external air and the interior of the room, whereby the air may be admitted at the center of the room, as and for the purpose set forth.

4. In combination with the ventilator-chamber located in the upper or lower part of the frame of a window, a ventilator-chamber interposed between the two sashes of the window, for the purpose of admitting the air at either the top, bottom, or center of the room at will, substantially as described.

5. In combination with the frame of a window and the shutters thereof, a ventilator-chamber interposed between the sashes, one end of which opens into the space between the shutters and the sashes, to provide for ventilating the room when the shutters are closed, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

D. K. CARTTER.

Witnesses:

JAMES L. NORRIS,

JOS. L. COOMBS.