

May 17, 1960

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2,936,692

VENTILATION SYSTEM FOR BUILDINGS

Filed May 23, 1955

2 Sheets-Sheet 1

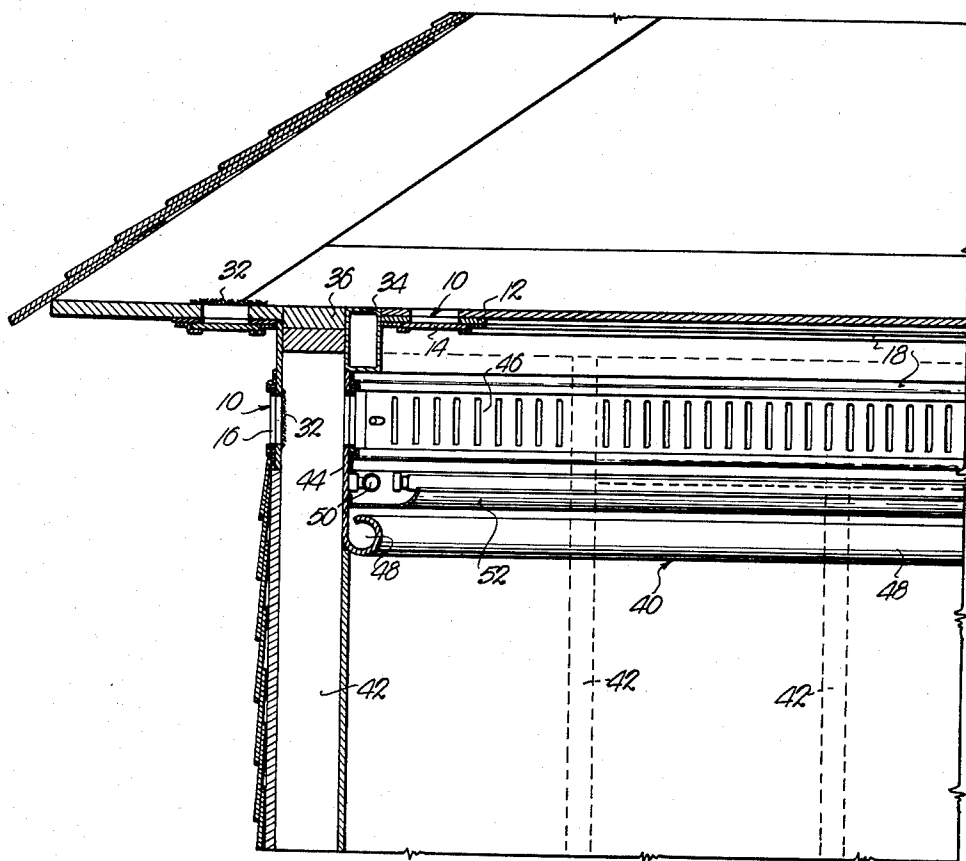


Fig. 1.

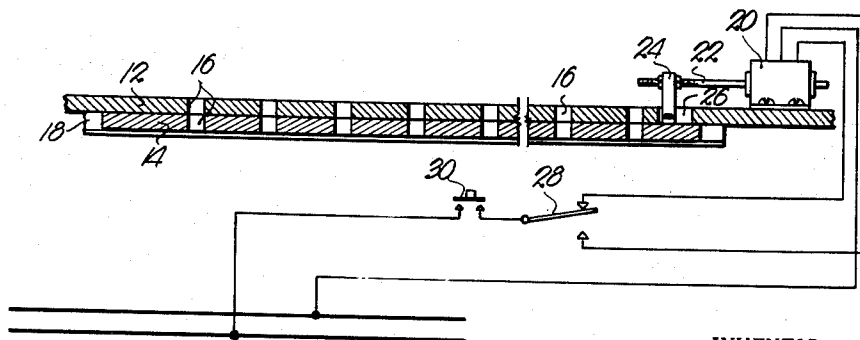


Fig. 2.

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2 Sheets-Sheet 2

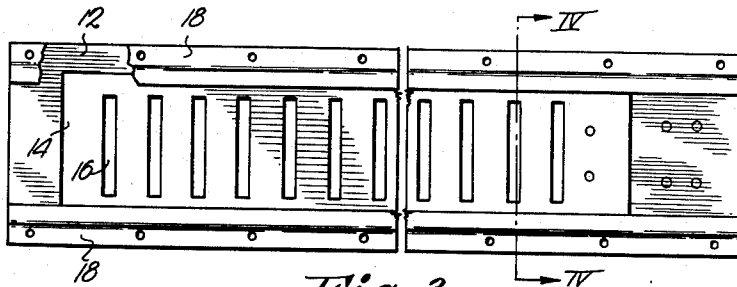


Fig. 3.

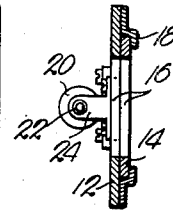


Fig. 4.

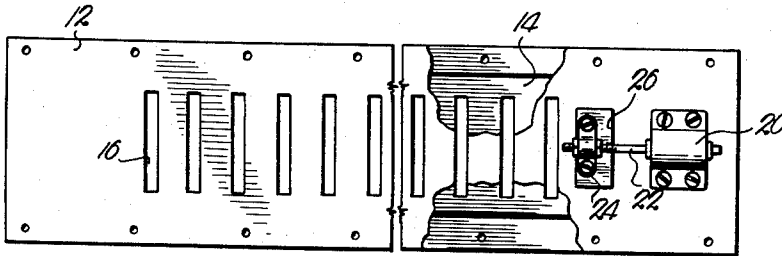


Fig. 5.

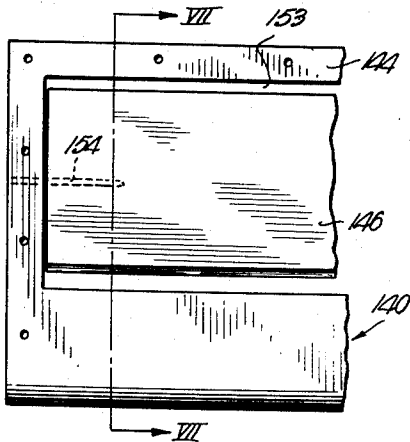


Fig. 6.

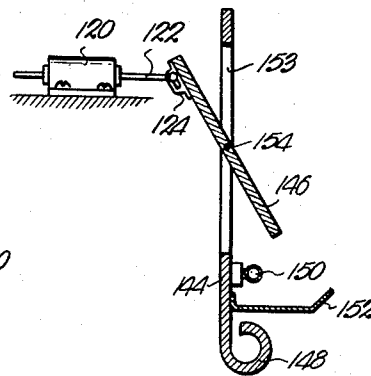


Fig. 7.

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2,936,692

VENTILATION SYSTEM FOR BUILDINGS

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Application May 23, 1955, Serial No. 510,423

1 Claim. (Cl. 98—32)

This invention relates to a building construction and, more particularly, to a ventilation system for buildings and for the individual rooms and compartments thereof.

The most important object of the present invention is to provide ventilation devices for incorporation in the various walls and partitions of a building, each of which devices has parts movable to and from a position permitting the flow of air to or from a particular room.

A further important object of the present invention is the provision of a finished building construction in which said ventilation devices are so situated as to facilitate cross-ventilation of the whole building or of a particular room and to permit natural circulation of air upwardly in the building without the need of any means for creating an artificial draft and regardless of the wind and weather conditions at the time.

Another object of the present invention is to provide a ventilation device adapted for incorporation in the wall of a building and including, as an integral element thereof, a finished portion which is so formed as to present a means for mounting auxiliary electrical appliances, pictures, drapes, wiring circuits and the like.

Other objectives of the present invention include the provision of ventilation devices each extending through the length of a room and coupled with an electrical actuator for shifting the movable parts thereof which actuator may be energized from a remote position; the location of such ventilation devices in each wall of a building adjacent the ceiling and in the ceiling adjacent each wall so as to facilitate cross-ventilation between adjacent spaces of the building; and other, more minor objectives which will be apparent in the following specification and from a study of the appended drawings, wherein:

Figure 1 is a fragmentary, vertical, sectional view of a building construction in which is incorporated a plurality of the ventilation devices of the present invention.

Fig. 2 is a fragmentary, longitudinal, sectional view of one of the ventilation devices of Fig. 1 and associated electrical components.

Fig. 3 is an enlarged, fragmentary, top, plan view of one of the ventilation devices of Fig. 1.

Fig. 4 is a vertical section taken on line IV—IV of Fig. 3.

Fig. 5 is a fragmentary, bottom, plan view of the device of Fig. 3.

Fig. 6 is a fragmentary, plan view of a modification of the ventilation device of the present invention; and

Fig. 7 is a vertical section taken on line VII—VII of Fig. 6.

Referring now to the drawings, wherein like numerals indicate similar parts, the ventilation devices and system of the present invention are illustrated in association with a residential type building construction having a sloping roof and eaves. In Fig. 1, it may be seen that the contemplated system of ventilation includes the provision of an elongated ventilation device in each wall of each room of a building, adjacent the ceiling, which device

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may be opened to place the room in communication with the adjacent space through another ventilation device which has been incorporated in the corresponding wall of the adjacent space or through an opening provided therefor in the wall. Similarly, a ventilation device is placed in the ceiling of each room, adjacent each wall, which devices permit the flow of air, by natural circulation, to the space above. In this manner, a ventilation system is provided in which any one or more of the ventilation devices in a single room may be opened, according to the temperature condition of the room, outside weather conditions or a number of possible variants, either to clear the room of smoke and other impurities, permit the flow of heated air to a space above or to permit the flow of air through a building in the direction of the prevailing wind.

The ventilation devices of the system illustrated in Fig. 1 are broadly designated by the numeral 10 and further illustrated in detail in Figs. 2 to 5, inclusive. Each of the ventilation devices 10 includes, as elements thereof, an elongated, primary panel 12 and a secondary panel 14. Each of the panels 12—14 is provided with a plurality of spaced, transverse slots 16 and, in each ventilation device 10, the panel 14 is slidably mounted on the panel 12 by means of longitudinally extending, spaced, parallel channel members 18 which are fastened to the panel 12. On the opposite side of the panel 12 from the channel members 18, there is mounted a two way solenoid 20 having an elongated stem 22 on which is adjustably mounted a depending bracket 24. Bracket 24 extends through a transverse slot 26 in panel 12 and is fastened to the panel 14 for reciprocation of the latter in channel members 18 upon energization of the solenoid 20. The arrangement of parts is such and slot 26 is so located as to cause movement of slots 16 of panel 14 alternately into and out of registry with the slots 16 of panel 12 each time solenoid 20 is actuated. As shown in the circuitry illustrated in Fig. 2, each solenoid 20 has associated therewith a remote position switch 28 and a push button switch 30. Thus, when the position switch 28 is changed and the switch 30 pushed, the panel 14 is reciprocated in channel members 18 to move the slots 16 of panel 14 either into or out of registry.

Referring now to Fig. 1, it may be seen that the ventilation devices 10, as described, have been incorporated also in the ceiling of the room illustrated, in the eave and on the exterior of the outside wall. The outside devices 10 have associated therewith a screen 32.

In the embodiment chosen for illustration, the ventilation devices 10 in the ceiling of the room are fastened to the ceiling in abutting engagement to a wire duct 34 which has been mounted in place within the room. As illustrated, the duct 34 projects downwardly below the plates 36 of the building construction in such a manner that the ducts are accessible for connection of wiring therein with the conventional outlets of the building. Ducts 34 may also carry the wiring for various electrical devices (not shown). Beneath the duct 34, in each wall of the room illustrated, a side wall ventilation device 40 is fastened to the studs 42 which are included in the walls of the building. The ventilation devices 40 are in all respects similar to the ventilation devices 10 except that each includes a primary panel 44 which is enlarged to extend laterally outwardly from a secondary panel 46. Along its outermost longitudinal edges, each enlarged primary panel 44 is formed to present a rolled edge 48 through which may extend the various low voltage, direct current control circuits for the ventilation devices 10, 40 and for various other electrical attachments now being developed for use in building constructions.

Additionally, there is presented a space between secondary panel 46 and the rolled edge 48 for mounting auxiliary attachments such as the string of incandescent lamps 50 and associated shades 52 illustrated in the drawing.

In operation, therefore, after a building has been equipped with the ventilation system herein described and illustrated, one or more of the interior ventilation devices 10, 40 may be actuated to permit the flow of warm air upwardly in the building or to permit cross-ventilation between rooms on the same level. In warm weather, the devices 10 in the attic or top floor, such as that shown in the eave of the building in Fig. 1, may be opened to ventilate the attic and to cause a natural flow of warm air upwardly in the building. Similarly, the exterior devices 10, 40 in the side walls may be opened in conjunction with the corresponding interior devices 10, 40 to permit cross-ventilation of the entire building in the direction of then existing winds. Such a system is entirely flexible in use and may be employed under widely varying conditions in any season of the year to improve both the ventilation and heating characteristics of a building.

In other words, depending upon prevailing winds, ambient and internal temperatures, the various ventilating units in the ceiling, side walls, partitions and eaves may be selectively opened as desired to cause proper circulation of air throughout the building.

In Figs. 6 and 7 of the drawing, there is illustrated a modification of the side wall ventilation device which modification is designated broadly by the numeral 140 and includes as elements thereof an enlarged primary panel 144 which also is formed along its lowermost longitudinal margin into a rolled edge 148 and on which there is presented a space for mounting lamps 150 and shades 152. The panel 144 has an elongated, longitudinal opening 153 formed therein and within which is positioned an imperforate secondary panel 146. The secondary panel 146 is pivotally attached to the panel 144 by means of pins 154 at each end thereof and to the stem 122 of a two way solenoid 120 by means of a slotted bracket 124, as best shown in Fig. 7. It is obvious that ventilation devices 140 may be placed in use in those situations where it is desired to make an installation only above a door or a window and which will not extend through the length of a room. Similarly, the ventilation devices 140 may be placed in use to extend through the length of a room in those situations where the building construction is such that swinging movement of the secondary panel 146 will not be blocked by studs 42, plates 36 and other structural elements.

Although not illustrated, it is contemplated that the control circuits for the solenoids 20 and 120 and for other electrical and electronic appliances may be passed through the rolled edges 48 or 148 to the associated switches 28, 30. It is further contemplated that the switches 28, 30 for each solenoid 20 will be placed in the same room as the ventilation device 10 which they control, in a convenient location, and, additionally, that each solenoid 20 will be connected with a central panel from which all of the ventilation devices 10 and the like in a building may be controlled. It must also be considered that the solenoids 20 may well be connected electrically with thermostats or other devices which are responsive to temperature, amount of tobacco smoke or similar conditions in a building.

Manifestly, devices such as those which have been described may be used either in new constructions or in remodeling and the same may be incorporated into the walls of a building in such a manner as to add eye appeal as well as a thorough and efficient system of cross-ventilation and natural circulation of air currents in and through the building. Obviously, the ventilation

devices 10, 40 and 140 may be fabricated so as to present an attractive finish construction for the upper portion of the individual rooms of a building. The structure of the side wall ventilation devices 40 and 140 is such that the outer surface of the rolled edges 48 and 148 may be employed as the point of suspension for drapery hooks, picture hangers and the like. Additional or different auxiliary attachments 50 and 52 may be installed on the panels 44 between rolled edge 48 and panel 46 and the inclusion of ducts 34 within the rooms of a building is made possible by the incorporation thereof with the ventilation devices as a portion of the interior finish construction of the building. This mounting of ducts 34 or their equivalent within a room has not previously been deemed practicable because of the adverse effect thereof on the appearance of the room but the incorporation of ducts 34 with panels 10, 40, rolled edges 48, lamps 50 and shades 52 has been found highly practicable in that the conventional circuitry of the building may be run without the need of altering and defacing the studs 42 and other structural elements.

While details of construction may be varied to render the ventilation system and devices of the present invention suitable for use in a variety of building constructions, it is clear that any such structural variations fairly coming within the principles of operation and fabrication set forth are contemplated and it is, therefore, desired that the present invention be limited only by the scope of the appended claim.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

In combination, a building having a plurality of rooms each having outside and inside walls, a ceiling and a roof provided with eaves presenting an attic above the ceiling, there being at least one elongated opening in each of said walls of each room adjacent the ceiling thereof whereby to place the rooms in communication with the atmosphere and with each other, at least one elongated opening in each eave respectively, said openings placing said attic in communication with the atmosphere and at least one elongated opening in the ceiling of each room adjacent each wall thereof, said openings placing the room in communication with the attic and thus the atmosphere; a closure for each opening respectively, each of said closures including a primary, perforated panel mounted on the corresponding walls, eaves and ceilings and a secondary, perforated panel slidably carried by said primary panel, said panels being horizontally shiftable relatively and longitudinally thereof for alignment of their respective perforations whereby to selectively allow air from the atmosphere to circulate freely within a given room or rooms of the building and to prevent passage of the air between rooms, the attic and the atmosphere as desired; and power means for the secondary panel of each closure respectively operable from a remote position whereby said secondary panel may be shifted so as to cause movement of the perforations thereof into and out of registry with the perforations of its corresponding primary panel.

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