Nov. 6, 1956 G. SILVERNAIL 2,769,386

WINDOW VENTILATOR

Filed May 11, 1954 2 Sheets-Sheet 1

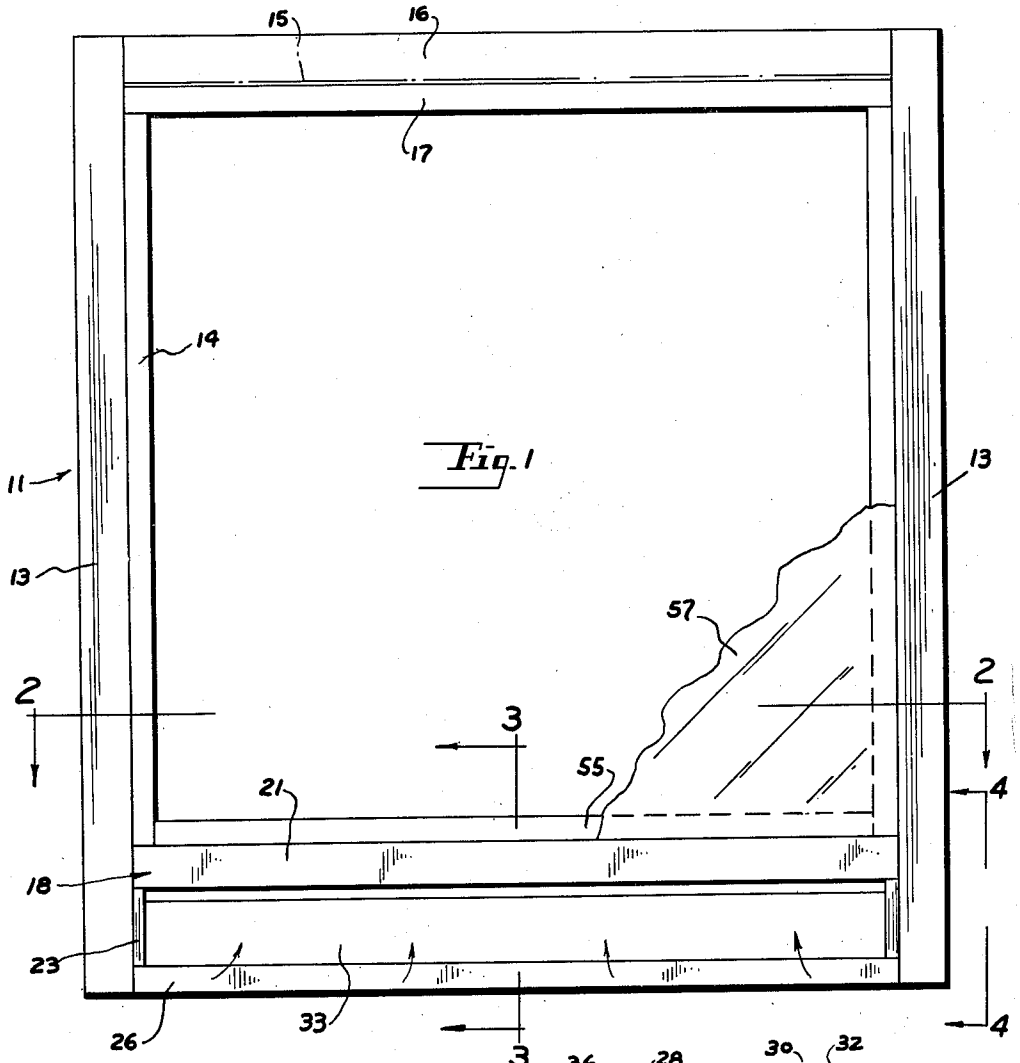


Fig. 1

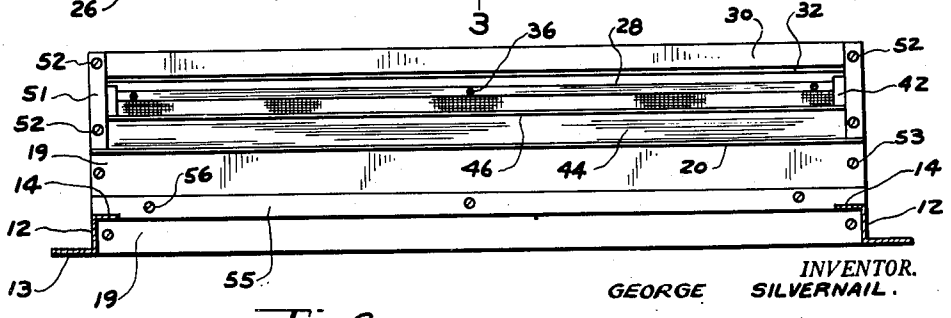


Fig. 2

INVENTOR.
GEORGE SILVERNAIL.

BY

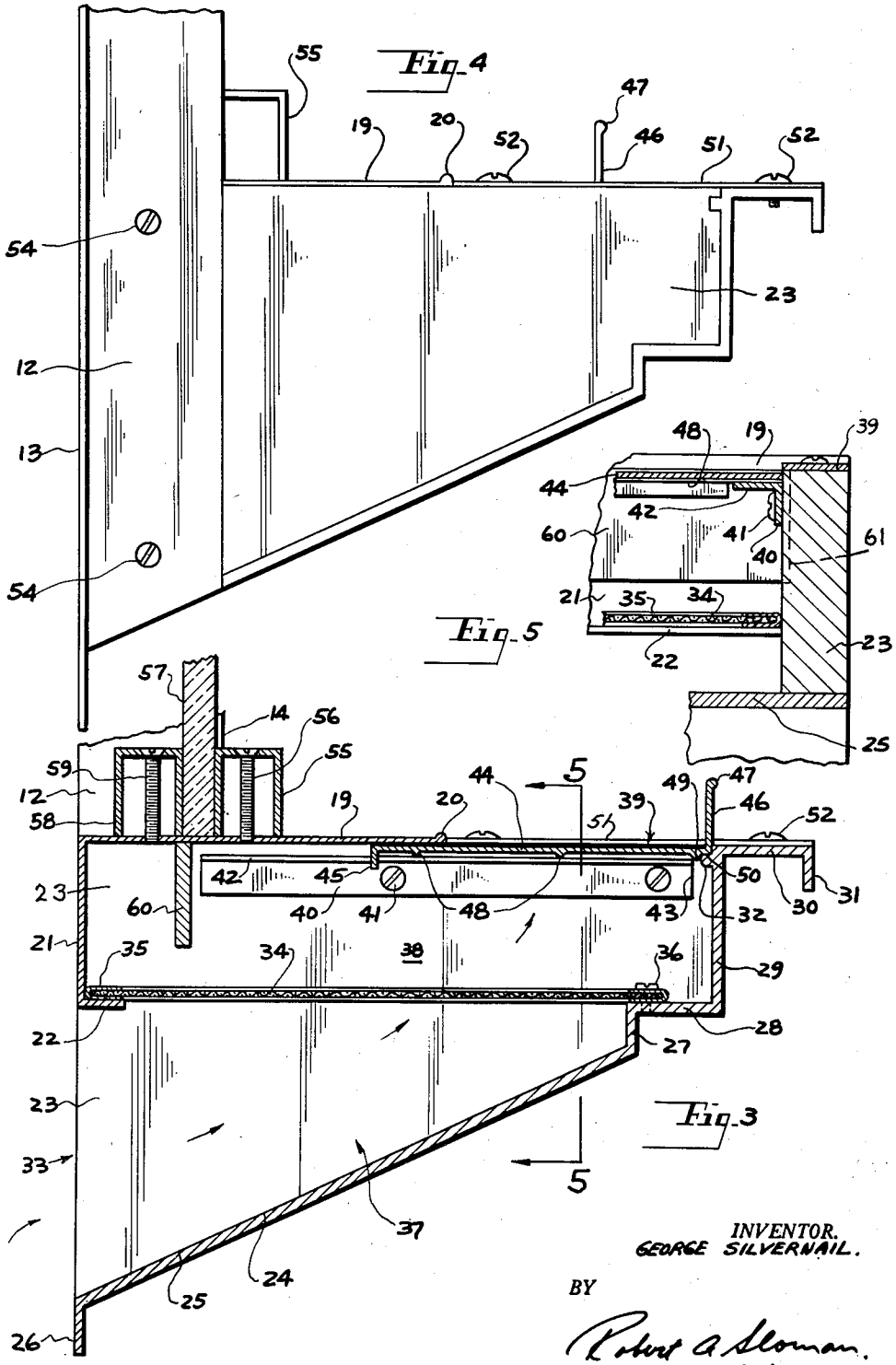
Robert G. Sloman

ATTORNEY.

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INVENTOR.
GEORGE SILVERNAIL.

BY

Robert A. Sloman.
ATTORNEY.

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WINDOW VENTILATOR

George Silvernail, St. Petersburg, Fla.

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13 Claims. (Cl. 98—88)

This invention relates to a window ventilator construction and is a continuation-in-part of my copending patent application Serial Number 289,093 filed May 21, 1952.

More particularly, the present invention pertains to a novel ventilator construction particularly adapted for use in conjunction with plate glass, store front windows, or other non-openable windows in a building wall.

It is the object of the present invention to provide an improved window ventilator, wherein the window frame and the ventilator construction are formed as a unit and may be so mounted within a building wall.

It is the further object of the present invention to provide a novel and simplified structure for permitting the introduction of air from the exterior of a building through an opening formed in the ventilator construction whence the outside air may travel inwardly below the window sill, up through the sill and along the interior surface of the window.

It is the further object of the present construction to provide a window ventilator which prevents clouding of the window or condensation thereon and which upon the other hand provides for the draft free circulation of air into the building.

It is the further object of the present invention to incorporate a window ventilator or a plurality thereof within a building, the interior of such building being in communication with a natural draft or a forced draft, whereby the exterior air may be drawn through such ventilators.

It is the still further object of the present invention to construct the ventilator mechanism as a separate unit from the building wall as a supporting structure for the window and its frame.

It is the still further object of this invention to provide a sliding control forming a part of the window sill upon the interior of the window to thereby regulate the width of the air inlet opening therein.

These and other objects will be seen from the following specification and claims in conjunction with the appended drawings, in which:

Fig. 1 is a front elevational view of the present window and ventilator construction, partially broken away, for illustration.

Fig. 2 is a section taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary section taken on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary view or section taken on line 4—4 of Fig. 1; and

Fig. 5 is a fragmentary section taken on line 5—5 of Fig. 3.

It will be understood that the above drawings illustrate merely one preferred embodiment of the invention, and that other embodiments are contemplated within the scope of the claims hereafter set forth.

Referring to the drawings, in Fig. 1 the window frame and ventilator are shown as a unit at 11, which includes the spaced upright side frames 12 with upright outturned mounting flanges 13 extending throughout the length

thereof. Frame members 12 also have the opposed inturned upright flanges 14 against which the opposed edges of the window glass 57 are positioned, being secured thereto as by the beading 58, Fig. 3, in the manner hereafter explained.

The window frame also includes a top horizontally extending frame element 15 shown in dotted lines in Fig. 1, which terminates in the elongated upright flange 16 coplanar with flanges 13. Frame element 15 also has the inwardly projected rearwardly arranged depending and upright flange 17 which is coplanar with glass engaging flanges 14 and which also engages the upper longitudinal edge of window glass 57.

The window frame construction includes at its lower end a ventilator mechanism, generally indicated at 18, Fig. 1, which includes the horizontally extending plate 19 shown in Fig. 3, which extends throughout the width of the window frame and terminates at its inner longitudinal edge in the upright elongated bead 20.

Said ventilator also includes the upright end plate 21, which depends from the forward edge of sill 19 and at its lower end is inturned at right angles defining the longitudinal flange 22. Both said flange and plate 21 extend throughout the width of interior portions of the window frame.

The present ventilator construction is of an elongated box formation and includes the relatively thick end walls 23 shown in Figs. 1, 3, 4 and 5 and which are of generally triangular shape, the lower edges thereof being upwardly and rearwardly inclined as at 24, Fig. 3.

The bottom closure wall for said box is of an extruded formation 25 extending throughout the width of the sill 19 and spans the lower inclined edges of the spaced end supports 23 of the ventilator, the lower forward end of plate 25 terminating in the downwardly extending plate 26, which is coplanar with plate 21 to thereby define the rectangular shaped air inlet opening 33 for the ventilator.

The upper end of the bottom wall 25 terminates in the upright wall 27, which is of short height and this in turn terminates in the rearwardly extending longitudinal ledge 28. The inner end of said ledge terminates in the upright rearward wall 29, and at its upper end there is a rearwardly extending horizontal sill element 30 adapted for cooperation with sill 19, and this sill element 30 terminates in the longitudinally extending depending construction flange 31.

Adjacent the upper longitudinal edge of rear wall 29 there is provided a forwardly extending longitudinal ledge 32 adapted to provide a seal when the sliding closure 44 is moved to the fully closed position shown in Fig. 3, in the manner further described hereafter.

Within the box construction defined by end walls 23, the sill 19 and the inclined wall 25, there is provisioned an elongated rectangularly shaped screen 34, the forward longitudinal edge thereof 35 resting upon housing flange 22, and the opposed longitudinal edge of said screen resting upon the flange or wall 28 as in Fig. 3, being removably secured thereto by a series of spaced screws 36.

Said screen thereby defines within the ventilator box construction the lower air inlet chamber 37 below said screen and the upper air chamber 38 through which atmospheric air is delivered up through the window sill through opening 39 therein as hereafter described.

Upon the opposite end walls 23 of the ventilator box construction at their ends, there are provided a pair of opposed supports 40 secured thereto by the screws 41 and having the inwardly directly aligned right angularly arranged slide support flanges 42. The inner upright edges of plates 40 as at 43 are spaced forwardly of the ledge 32 thereby defining a space forwardly of said ledge adapted to receive the lower portion of the transversely arranged rib 49 upon the sliding closure 44, which in the

position shown in Fig. 3 completely closes the air inlet opening 39.

Closure plate 44 is elongated and of rectangular shape and at its forward longitudinal edge has a depending flange 45. The opposite outer upright edges thereof loosely and slidably engage the inner longitudinal edges of flanges 42 for guiding the sliding movements of closure plate 44.

Said plate at its inner longitudinal edge has a longitudinally extending upright flange 46 terminating in the bead 47 whereby closure 44 may be manually slid forwardly and inwardly for regulating the amount of ventilating air which can flow through opening 39. This opening 39 is rearwardly of the longitudinal rib 20 of sill 19 and is further defined by the plates 51 shown in Fig. 2, which bear upon the elements 30 forming a part of the ventilator construction, being secured thereto by the screws 52.

Upon the undersurface of closure 44 there are provided a plurality of longitudinally extending spaced parallel ribs 48 which supportedly engage the flange 42 of support plates 40 for minimizing friction during sliding movements of said closure. For this purpose there is also an additional rib 49 parallel to ribs 48 and spaced therefrom.

As shown in Fig. 3, with the closure 44 fully closed the rear portion thereof as at 50 overlies and cooperatively engages ledge 32 to thereby effect an air seal for completely closing off the flow of air through the inlet opening 39. Furthermore it will be noted that rib 49 performs the additional function of engaging the rear edges 43 of plates 40 to thereby retain the closure against accidental dislodgment from the sealed position shown.

The sill plate 19 is secured to the top edges of the end blocks 23 by the screws 53, and it is also clear from Figs. 2 and 3 that the small strips 51 at their forward ends are also secured thereto as by the screws 52.

The box construction is furthermore anchored within the window frame by the inwardly directed screws 54 which extend through window frame flanges 12 and into opposite sides of blocks 23.

There is provided upon sill 19 the hollow beading 55 of inverted U-shape, which extends longitudinally across said sill and is secured thereto by the screws 56, the inner upright edge of said beading being coplanar with the interior glass plate receiving flanges 14 and 17 for anchoring the lower longitudinal edge of glass plate 57. The glass plate is secured in position within the frame by the external beading 58 of the same type which rests upon sill 19 and is secured thereto by the screws 59. Said beading would also extend completely around the periphery of the glass and would bear against and be secured to window frame elements 12 and 15, thereby completing the window and ventilator construction.

In order to function properly the present ventilator mechanism contemplates that there will be an internal draft upon the building, such as would be provided by communication of the internal areas of the building through a cupula or chimney through which prevailing winds would create a natural draft.

It is also contemplated that there may be times when the natural draft will not be sufficient for effecting the flow of ventilating air through the air inlet 33 and consequently a forced draft must be created in a conventional manner as by the use of an exhaust fan.

The structure and illustration of such exhaust fan and cupula are omitted as they are of a conventional construction.

It has been found that the present ventilator construction forming a part of the window framework may be installed as original equipment in a building, or may be added thereto.

The primary purpose of the present construction is to provide an improved mechanism for permitting the introduction of ventilating air into the interior of a building by bringing the same in under the windows and through the window sill and in controlling the amount of this flow of air, it being contemplated that there must be a natural draft or forced draft in order to effect the proper flow of air through the ventilators.

As shown in Figs. 3 and 5 provision is made for reinforcing the window pane supporting sill 19 or top wall 19. This is accomplished by the elongated beam 60 which is positioned directly under top wall 19 in supporting relation with the ends of said beam supportably positioned within the upright opposed slots 61 formed in the interior surfaces of upright supporting walls 23. Beam 60 is of substantially greater thickness than wall 19 to thereby rigidly support top wall 19 and the load thereon produced by the window pane 57 and the beading 55 and 58.

Having described my invention, reference should now be had to the claims which follow for determining the scope thereof.

I claim:

1. A window ventilator comprising an elongated hollow box positioned within the lower end of a window frame, said box consisting of an upright front wall having an upright enlarged air inlet aperture therethrough, a horizontal flange projecting inwardly from said front wall above said aperture, an upright rear wall of less height than said front wall, an upwardly and rearwardly extending bottom wall interconnecting said front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls completing the box construction, a rectangularly shaped screen within said box supported at its front longitudinal edge upon said flange and secured along its rear longitudinal edge to said rear wall adjacent its lower end, and a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and slidable towards and away from the front wall for controlling the flow of air through said inlet opening.

2. The ventilator of claim 1, elongated opposed supports of right angular cross section mounted upon the interior of said end walls adjacent their upper ends, upon which said closure plate is slidably supported.

3. The ventilator of claim 1, and an elongated upright operating handle of rectangular shape projecting upwardly from the rear longitudinal edge of said closure plate throughout its length.

4. The ventilator of claim 1, elongated opposed supports of right angular cross section mounted upon the interior of said end walls adjacent their upper ends, upon which said closure plate is slidably supported, and an elongated inwardly projecting ledge upon said rear wall adjacent its upper end cooperable with said supports for receiving the rear longitudinal edge of said closure plate when in fully closed position for sealing said air inlet opening.

5. In combination, a hollow rectangularly shaped window frame including an outwardly projecting peripheral flange cooperable with portions of a building wall which define a window opening, a second inwardly directed oppositely extending peripheral flange rearwardly displaced from said first flange and lying in a plane parallel to the plane of said first flange defining a window pane engaging beading, and a window ventilator comprising an elongated hollow box positionable within the lower end of said frame and immovably secured thereto, said box consisting of an upright front wall having an enlarged air inlet aperture therethrough, a horizontal flange projecting inwardly from said front wall above said aperture, an upright rear wall of less height than said

front wall, an upwardly and rearwardly extending bottom wall interconnecting said front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls completing the box construction, a rectangularly shaped screen within said box supported at its front longitudinal edge upon said flange and secured along its rear longitudinal edge to said rear wall adjacent its lower end, and a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and inwardly and outwardly slidable for controlling the flow of air through said inlet opening, the said end walls of said box being of appreciable width for structurally supporting said window frame.

6. A window ventilator comprising an elongated hollow box positioned within the lower end of a window frame, said box consisting of an upright front wall having an upright enlarged air inlet aperture therethrough, an upright rear wall of less height than said front wall, an upwardly and rearwardly extending bottom wall interconnecting said front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls completing the box construction, and a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and slidable towards and away from the front wall for controlling the flow of air through said inlet opening.

7. The ventilator of claim 6, elongated opposed supports of right angular cross section mounted upon the interior of said end walls adjacent their upper ends, upon which said closure plate is slidably supported, and a series of parallel spaced elongated ribs projecting from the undersurface of said closure plate slidably engaging said supports.

8. The ventilator of claim 6, elongated opposed supports of right angular cross section mounted upon the interior of said end walls adjacent their upper ends, upon which said closure plate is slidably supported, and an elongated inwardly projecting ledge upon said rear wall adjacent its upper end cooperable with said supports for receiving the rear longitudinal edge of said closure plate when in fully closed position for sealing said air inlet opening.

9. A window ventilator comprising an elongated hollow box positioned within the lower end of a window frame, said box consisting of an upright front wall having an enlarged air inlet aperture therethrough, a horizontal flange projecting inwardly from said front wall above said aperture, an upright rear wall of less height than said front wall, an upwardly and rearwardly extending bottom wall interconnecting said front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls completing the box construction, a rectangularly shaped screen within said box supported at its front longitudinal edge upon said flange and secured along its rear longitudinal edge to said rear wall adjacent its lower end, a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and inwardly and outwardly slidable for controlling the flow of air through said inlet opening, and a horizontally disposed elongated ledge projecting inwardly of said rear wall at its lower end aligned with said flange, the rear longitudinal edge of said screen resting upon said ledge and removably secured thereto.

10. A window ventilator comprising an elongated hollow box positioned within the lower end of a window frame, said box consisting of an upright front wall having an enlarged air inlet aperture therethrough, a horizontal flange projecting inwardly from said front wall above said aperture, an upright rear wall of less height than said front wall, an upwardly and rearwardly extending bottom wall interconnecting said front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls completing the box construction, a rectangularly shaped screen within said box supported at its front longitudinal edge upon said flange and secured along its rear longitudinal edge to said rear wall adjacent its lower end, a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and inwardly and outwardly slidable for controlling the flow of air through said inlet opening, elongated opposed supports of right angular cross section mounted upon the interior of said end walls adjacent their upper ends, upon which said closure plate is slidably supported, and a series of parallel spaced elongated ribs projecting from the undersurface of said closure plate slidably engaging said supports.

11. A window ventilator comprising an elongated hollow box positioned within the lower end of a window frame, said box consisting of an upright front wall having an enlarged air inlet aperture therethrough, a horizontal flange projecting inwardly from said front wall above said aperture, an upright rear wall of less height than said front wall, an upwardly and rearwardly extending bottom wall interconnecting asid front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls completing the box construction, a rectangularly shaped screen within said box supported at its front longitudinal edge upon said flange and secured along its rear longitudinal edge to said rear wall adjacent its lower end, a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and inwardly and outwardly slidable for controlling the flow of air through said inlet opening, elongated opposed supports of right angular cross section mounted upon the interior of said end walls adjacent their upper ends, upon which said closure plate is slidably supported, and a series of parallel spaced elongated ribs projecting from the undersurface of said closure plate slidably engaging said supports, the rear upright ends of said supports being spaced forwardly of said rear wall, one of said ribs in fully closed position of said plate operatively engaging said upright rear edge normally retaining said closure plate in fully closed position.

12. In a store window construction including a window opening defined by a pair of spaced upright jams and vertically spaced horizontal supports; a window ven-

tilator extending across the lower support, said ventilator comprising a hollow box positioned in the window opening and upon said lower support, said box consisting of an upright front wall having an upright enlarged air inlet aperture therethrough, an upright rear wall of less height than said front wall, an upwardly and rearwardly extending wall interconnecting said front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls, completing the box construction, a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and towards and away from the front wall for controlling the flow of air through said inlet opening, and a screen supported in said box in advance of said inlet opening.

13. In combination, a hollow rectangularly shaped window frame including an outwardly projecting peripheral flange cooperable with portions of a building wall which define a window opening, a second inwardly directed oppositely extending peripheral flange rearwardly displaced from said first flange and lying in a plane parallel to the plane of said first flange defining a window pane engaging beading, a window ventilator comprising a elongated hollow box positionable within the lower end of said frame and immovably secured thereto, said box consisting of an upright front wall having an enlarged air inlet aperture therethrough, an upright rear wall of less height than said front wall, an upwardly and rearwardly extending bottom wall interconnecting said front wall at the bottom of its aperture with said rear wall, a horizontal top wall extending rearwardly of said front wall forming a window sill and with its rear longitudinal edge parallel to the plane of said frame being spaced forwardly of said rear wall defining an elongated air inlet opening, spaced upright supporting walls at opposite ends of said front, rear, top and bottom walls completing the box construction, a rectangularly shaped screen within said box in advance of said air inlet opening, and a closure plate positioned within said box slidably supported upon said side walls adjacent said top wall and movable thereunder normally closing said air inlet opening and inwardly and outwardly slidable for controlling the flow of air through said inlet opening, the said end walls of said box being of appreciable width for structurally supporting said window frame.

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