Feb. 2, 1937. W. W. EAGER 2,069,435

WINDOW CONSTRUCTION

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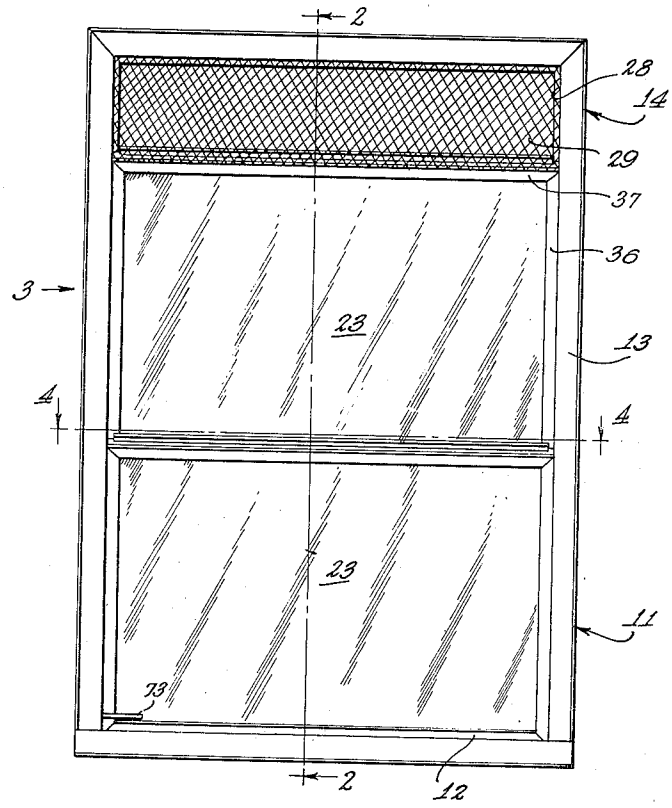


Fig. 1.

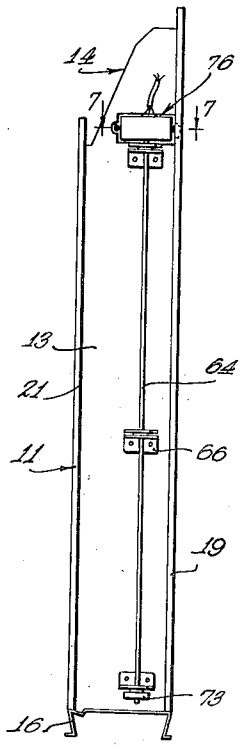


Fig. 3.

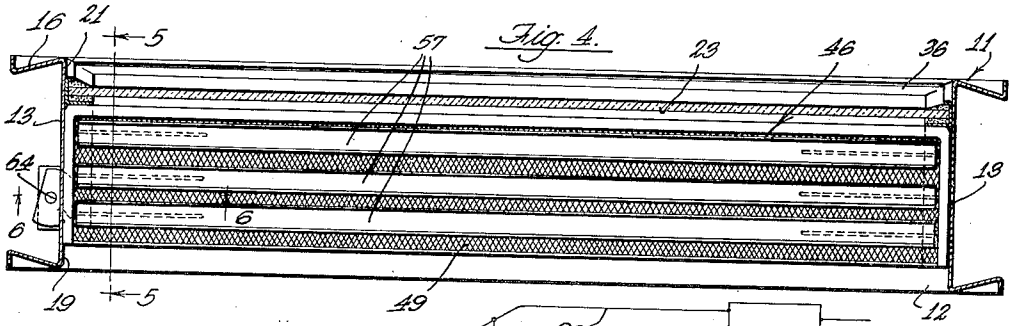


Fig. 4.

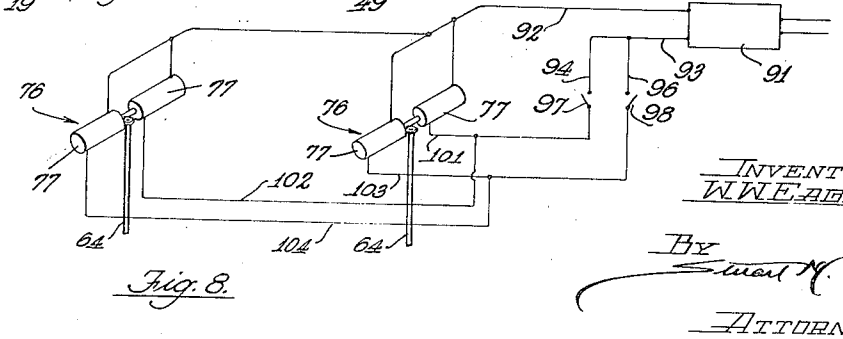


Fig. 8.

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WINDOW CONSTRUCTION

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Fig. 2.

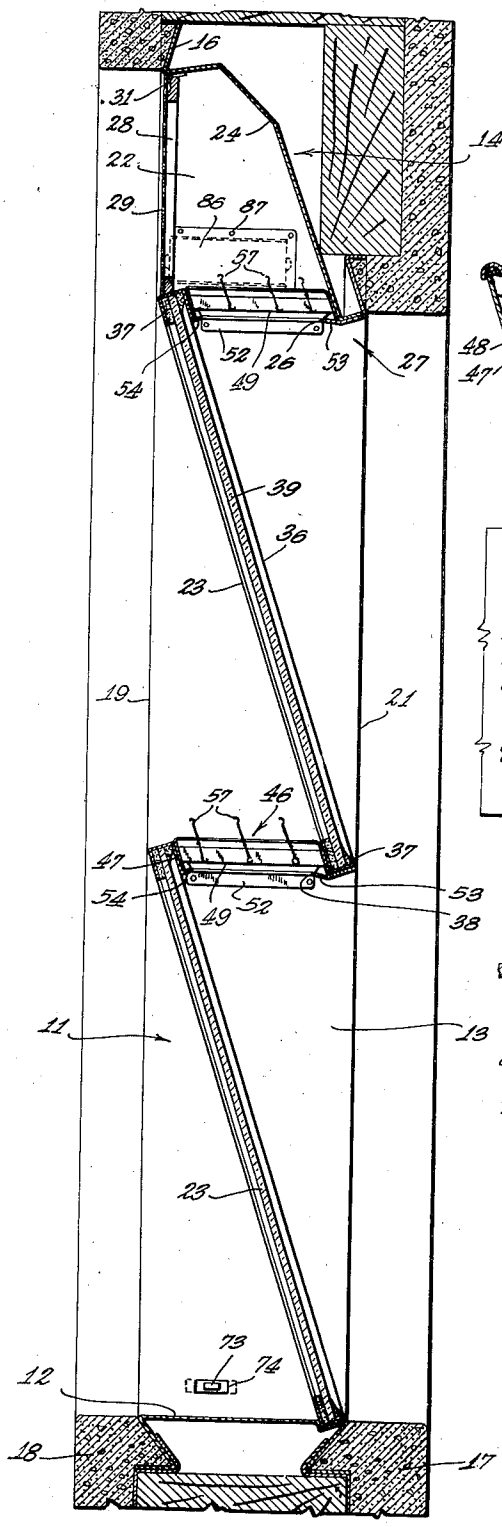


Fig. 5.

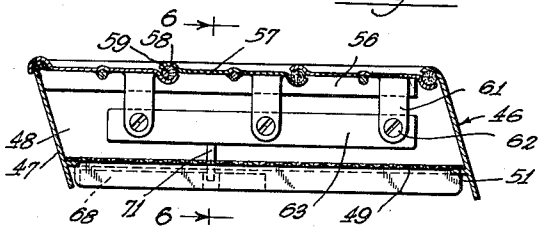


Fig. 6.

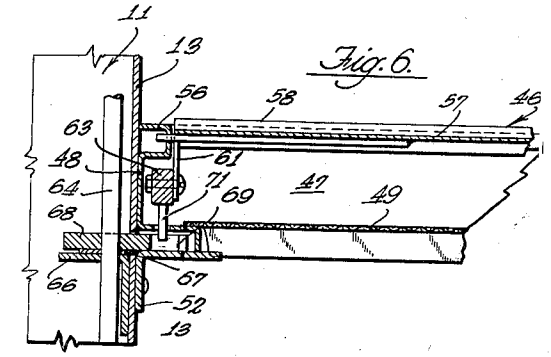
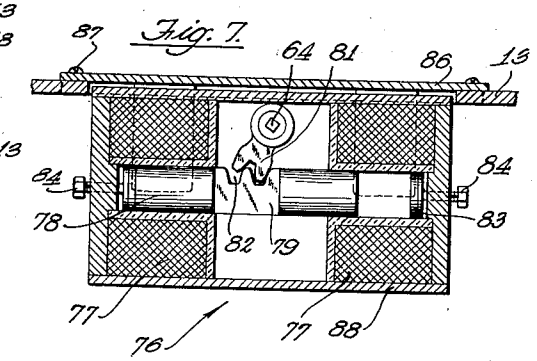


Fig. 7.



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WINDOW CONSTRUCTION

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Fig. 9.

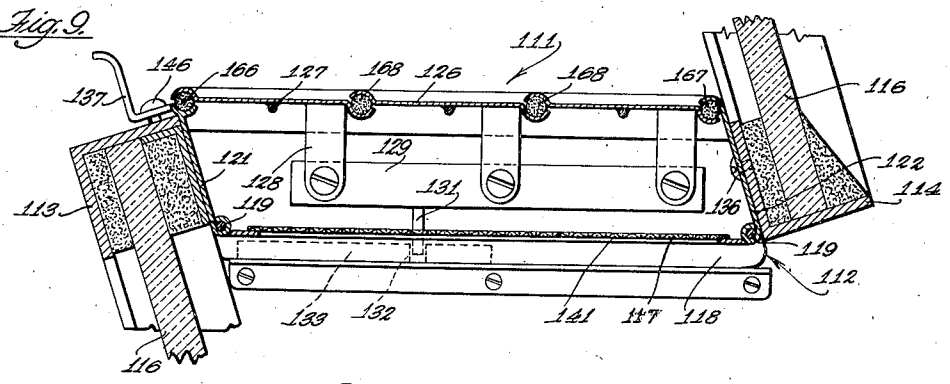


Fig. 10.

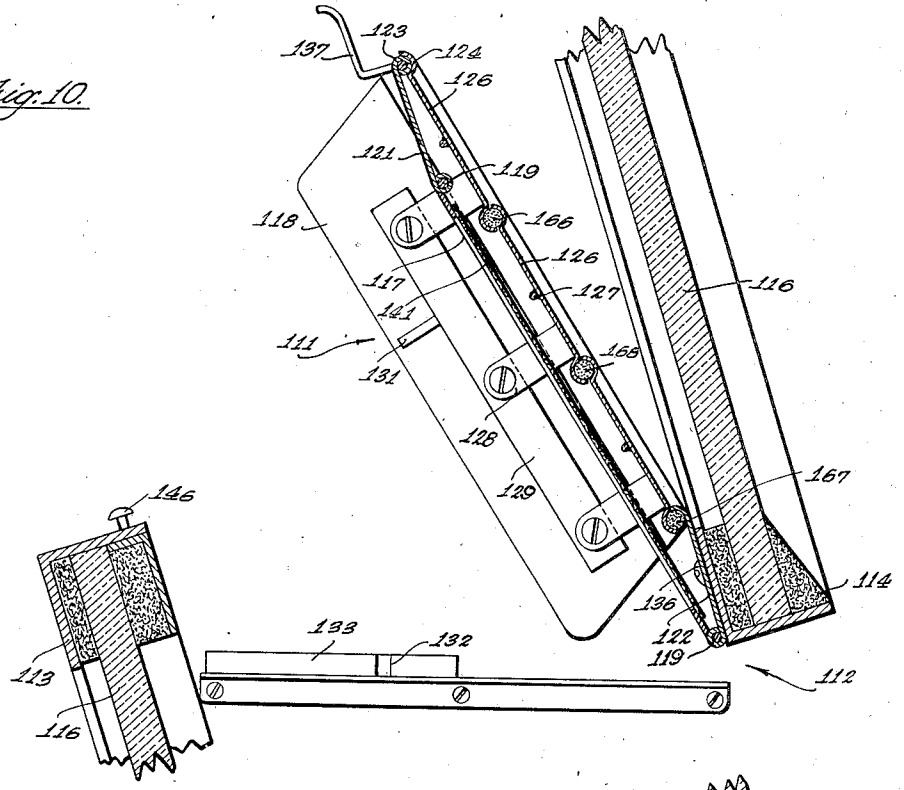
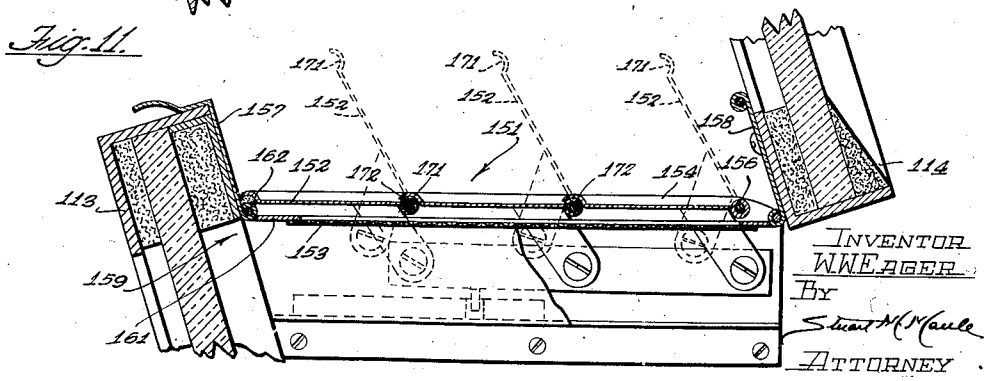


Fig. 11.



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Patented Feb. 2, 1937 2,069,435

UNITED STATES PATENT OFFICE

2,069,435

WINDOW CONSTRUCTION

Wesley W. Eager, Los Angeles, Calif., assignor of one-half to Columbus A. Tierney, San Marino, Calif.

Application April 24, 1933, Serial No. 667,627

8 Claims. (Cl. 98—88)

My invention relates to building construction, and more particularly to the construction of windows.

An object of this invention is to provide a window of novel and greatly improved design possessed of many features of advantage in respect to illumination and ventilation, simplicity and economy of construction and installation, convenience of adjustment to regulate ventilation therethrough, and the facility of cleansing both surfaces of the glass or other panes which constitute a portion of the window.

A more detailed object is to provide a window construction comprising a plurality of fixed sashes arranged in vertical alinement but with each sash inclined from the vertical, thereby disposing the proximal edges of each two adjacent sashes in spaced relation to define a ventilating aperture therebetween, and a tray disposed within each aperture and carrying adjustable means for regulating the effective area of the aperture so as to control the amount of air permitted to circulate therethrough.

A further object is to screen the window by mounting suitable foraminous material upon each of the trays whereby even though there are screened ventilating apertures providing for an equal or a greater passage of air than in the case of the conventional double-hung window, vision through the window is through clear glass only, unhampered by any screens.

A still further object in this connection is to design the trays and to mount them in such a manner within their respective ventilating apertures that they lie substantially horizontally and completely between the horizontal planes intersected by the top and bottom edges of the rails at the proximal edges of the associated sashes, thereby leaving the entire area of the transparent portions of the window unobstructed for free passage of light therethrough and maximum visibility for persons looking through the window.

Another object is to attain maximum ventilation by disposing the several sashes at such an inclination that the greatest benefit is derived from the upward currents of air which are practically always present adjacent the outside wall of a building, whether that wall be on the windward or on the leeward side. This precise positioning of the sashes assures not only that the maximum volume of air will be admitted, but it also results in inducing a much more efficient circulation of air within the room with which the window is associated but without any drafts or objectionably strong air currents in any occupied portion of the room.

Another object of my invention is to provide a window construction of the general character described wherein the means for controlling ventilation is in the form of a louver, one of which is carried by the tray in each of the several ventilating apertures, and wherein each louver is in the form of a plurality of parallel blades or vanes, pivotally mounted and so interconnected that they all can be adjusted simultaneously.

A further object is to mount each of the trays so that it can be removed from operative position simply by lifting it out of its associated aperture, thereby permitting of ready access to the exterior surface of the proximal sash, and to provide an operating mechanism which is releasably connected to all of the trays of a window in such a manner that it automatically becomes operatively engaged with each louver when the tray carrying that louver is dropped into operative position.

A still further object is to provide electrically operated means for adjusting simultaneously all of the louvers of a plurality of windows and which is so arranged that a person can regulate the ventilation through any window or windows independently of the others or, by pressing a conveniently located button or its equivalent, open or close all of the windows simultaneously.

Another object of my invention is to provide in a window construction a boxed lintel defining a passageway therethrough over the uppermost sash and establishing communication between the interior of the room and the exterior and through which circulation of air may be established without moving the sash or sashes from their closed position.

The present inventive idea involved is capable of receiving a variety of mechanical expressions, one of which, for the purpose of illustrating the invention, is shown herewith. The invention possesses objects and advantageous features in addition to those enumerated hereinabove, however, some of which will be set forth in the following description of the invention's particular embodiment which is illustrated in the drawings accompanying and forming a part of the specification. It should be understood that while these details will be described specifically hereinafter, variation may be effected within the scope of the invention as claimed.

Referring to the drawings:

Figure 1 is an inside elevation of a window construction embodying the principles of the present invention.

Fig. 2 is a vertical sectional view taken upon the line 2—2 of Figure 1 with the direction of view as indicated. This figure shows the window construction operatively mounted in a wall and is considerably enlarged the better to disclose details of construction.

Fig. 3 is a view in side elevation, the direction of view being indicated by the arrow 3 of Fig. 1.

Fig. 4 is a horizontal sectional view somewhat enlarged and taken upon the line 4—4 of Fig. 1 with the direction of view as indicated.

Fig. 5 is an enlarged transverse vertical sectional view taken through one of the louver trays. The plane of section may be assumed to have been taken upon the line 5—5 of Fig. 4, with the direction of view as indicated.

Fig. 6 is an enlarged vertical sectional view taken through a portion of one of the louver trays and the associated jamb, the plane of section being taken upon the line 6—6 of Figs. 4 and 5, with the direction of view as indicated.

Fig. 7 is an enlarged detail view in horizontal section illustrating the electrical apparatus for operating the louvers. The plane of section is taken upon the line 7—7 of Fig. 3 and the direction of view by the arrows.

Fig. 8 is a diagrammatic view illustrating the manner of interconnecting electrically a plurality of windows so that they all can be operated simultaneously.

Fig. 9 is an enlarged transverse vertical sectional view taken through a slightly modified form of louver tray and the adjacent portions of the associated sashes.

Fig. 10 is a view similar to Fig. 9 but showing the louver tray in elevated position.

Fig. 11 is another view similar to Fig. 9, but showing another modified form of louver tray.

The frame 11 of my improved window construction is preferably composed of steel, although I do not wish to be limited to this particular material, and comprises a sill 12, jambs 13, and a lintel 14, each of which is provided with a flange 16 and both of its inner and outer edges in those types of construction which are to be used in conjunction with stucco 17 and the like, and plaster 18 (see Fig. 2). The inner face 19 of the frame 11 is considerably longer than the outer face 21; and the lintel 14 is of boxed construction, thus providing a passageway 22 through the lintel 14 and over the uppermost sash 23. Preferably this passageway 22 is defined by a plate 24, preferably integral with the frame 11 and inclining outwards and downwards from adjacent the upper edge of the inner face 19 of the frame to the upper edge of the outer face 21 of the frame. In this manner a substantially horizontal opening 26 is provided in the soffit 27 of the lintel 14, this aperture 26 being in communication by means of the passageway 22 with a vertical opening 28 immediately above the upper edge of the topmost sash 23. Preferably a grill 29 or its equivalent is provided in the opening 28, this grill being pivotally mounted as by hinges 31 so as to permit access to the outside surface of the pane 23 through the openings 28 and 26.

Within the frame 11 a plurality of sashes 23 are fixedly mounted; and whereas the drawings illustrate but two such sashes within the frame 11, it is to be understood that this number has been chosen simply for convenience of illustration and that whatever number of sashes may be best suited to any particular installation may be employed. Each of these sashes 23 comprises stiles 36 welded or otherwise permanently attached to the jambs 13 and interconnected by horizontal rails 37. The sashes 23 are disposed in vertical alinement with each other but each sash 23 is disposed in an inclined plane, preferably sloping outwards and downwards. This results in spacing the proximal rails 37 of adjacent sashes 23 so as to define a ventilating aperture 38 therebetween. Moreover, each two adjacent sashes are in slightly overlapping relation, so that the lower rail 37 of the upper is in horizontal alinement with the upper rail 37 of the lower sash. The importance of this detail is that it reduces to absolute minimum the amount of opaque material presented to the view of a person standing inside the room with which the window is associated. Obviously this results in increased visibility to a person so situated and in an increased amount of light entering the room through the window. Another advantage is that water running down the outside surface of the glass or other panes 39 which are carried by the sash frames cannot possibly enter the room, inasmuch as it will drip from the lower edge of each sash which is spaced outwards from and is disposed below the upper edge of the next adjacent sash therebelow.

Although the sashes 23 are permanently and nonadjustably fixed to the frame 11, adequate ventilation through the window is provided by circulation of air through the ventilating apertures 38 and 26. By increasing the number of panes and inclining each more nearly horizontally, the number of ventilating apertures therebetween may be increased. However, even in the case where a relatively few such apertures are provided, sufficient ventilation will be assured because of the fact that in order for air to enter the room with which the window is associated it must move in an upward and inward direction, and this in the direction in which air is practically always moving at the outer surface of any building. It has been found that air seldom moves in a truly horizontal direction and that it tends to rise whenever it approaches an obstacle in its path, such as a building. Accordingly, a relatively large volume of air will be caused to enter the ventilating apertures 38 and 26 even on relatively still days, because the angular positioning of the sashes 23 permits them to take full advantage of the direction of the air currents in their immediate vicinity. However, the positioning of the sashes 23 not only results in an increased amount of air entering the room, but it also results in so directing the air thus entrapped that efficient circulation of the air inside the room is assured. All the air entering the room is moving upwards toward the ceiling, thus tending to create a circulation of air upwards along the wall in which the window is mounted, toward the rear of the room along the ceiling, downwards along the rear wall and forwards again along the floor. Moreover, although this circulation is very efficient and creates ample movement of the air in all portions of the room, it is absolutely without draft or objectionable air currents in any portion of the room.

Means are provided for controlling the quantity of air permitted to enter through the ventilating apertures in the form of a tray 46 removably seated within each of the apertures 38 and 26. Each tray 46 comprises sidewalls 47 substantially corresponding in length to the width of the window and retained in spaced parallel

arrangement by endwalls 48, whereas the bottom of each tray 46 is defined by any suitable foraminous member, such as a sheet of wire screening 49. Inasmuch as the tray 46 fits nicely within the associated ventilating aperture 38 or 26 as the case might be, the screens 49 thus provided cover all the openings through which insects and the like might gain access to the room with which the window is associated, and yet the total area of the transparent panes 39 is left unobstructed so that a person within the room is not required to look through any screen when looking out of the window.

The means for positioning the screen 49 in each of the trays 46 comprises a flange 51 on the inner surface of each of the walls 47 and 48 spaced upwards slightly from the extreme lower edges of those walls. This permits the lower edges of the end walls 48 to seat behind cleats 52 which are riveted or otherwise permanently attached to the jambs 13 so as to support the tray 46 in operative position. Similarly, a flange 53 inclines upwards and inwards from the lower rail 37 of each sash 23 and another flange 54 inclines upwards and outwards from the upper rail of each sash 23; and these flanges 53 and 54 are adapted to be engaged by the lower edges of the sidewalls 47 of the associated tray, as best shown upon Fig. 2. Preferably the sidewalls 47 are disposed at an angle with the screen 49 corresponding to the angle of each of the sashes 39 with the horizontal. Moreover, the parts are so proportioned and arranged that when each tray is in operative position within its associated ventilating aperture 38 or 26 as the case might be, it lies substantially entirely between the two horizontal planes which include the upper and lower edges of the proximal rails 37 of the adjacent sashes 23. The importance of this feature is that the entire tray is concealed behind the rail 37 which is nearest to a person looking through the window, with the result that the trays 46 themselves offer no obstruction whatsoever to vision through the window.

Each end 48 of each tray 46 is provided with a bead 56 adjacent the upper edge thereof and the beads 56 at opposite ends of each tray are in alinement, thereby offering convenient means for pivotally mounting a plurality of louver blades or vanes 57, as clearly shown upon Fig. 6. These blades 57 are adapted to be moved into parallel overlapping arrangement as in Figs. 5 and 6 wherein they effectively show the associated ventilating aperture, or to be swung to more nearly vertical position, as illustrated in Fig. 2 wherein they permit of substantially unrestricted passage of air through the associated atmosphere. In order to quiet the operation of the vanes 57 I prefer that each edge of each vane be formed with a groove 58, and that the groove 58 at one edge of each vane carry a strip 59 of suitable packing material, such as wicking, which is adapted to be engaged by an edge of the next adjacent vane when the louver is closed. Moreover, the same type of contact is established between the outermost edges of the two outer blades and the edges of the walls 47 of the associated tray 46. Hence, not only is relatively noiseless operation secured, but also a tight seal is established to prevent circulation of any air whatsoever when the window is closed.

Each of the blades 57 is provided with a lever 61 extending rigidly downwards therefrom and pivoted as by a screw 62 to a horizontal link 63, whereby all the levers 61 of the associated tray 46 are interconnected. Hence by longitudinal reciprocation of the link 63 all of the blades 57 of that tray can optionally be swung from closed to fully opened position or any intermediate position and by reverse movement of the link 63 they may be swung to closed position.

Means are provided for interconnecting the blades 57 of all the trays 46 of a window, so that all the louvers may be adjusted simultaneously. This operating means comprises a rod 64 mounted for rotary motion inside the hollow jamb 13 at one side of the window and extending from top to bottom thereof. Brackets 66 affixed to the jamb 13 provide the means for journaling the rod 64. Immediately above each of the cleats 52 on that jamb 13 an opening 67 is formed in the jamb and through each of these openings 67 a plate 68 carried by the rod 64 extends. Each of these plates 68 has a notch 69 formed in its periphery providing a socket within which a pin 71 carried by the associated link 63 is seated. Thus it may be seen that by turning the rod 64 all the plates 68 may be turned and through the interconnection established by the pins 71 seated within the sockets 69 all the links 63 will be reciprocated, thus imparting the rotary motion to the blades 57 which is necessary to secure their adjustment. Each pin 71 seats loosely within its associated socket 69, the purpose being to permit the pin 71 to drop into its socket 69 as the associated tray 46 moves into operative position. This permits facile assembly of the device and removal of any of the trays without having to pay any attention whatever to securing proper engagement between each tray and the means whereby the louver blades thereof are operated.

An operating lever 73 is secured to the rod 64 adjacent the lower end thereof and extends through an opening 74 in the jamb 13 so as to permit facile turning of the rod 64 whereby adjustment of the effective area of all of the ventilating apertures of a window is attained. However, I also prefer to provide electrically operated means for performing this same function, for which purpose the electrical apparatus illustrated in detail upon Figure 7 is employed. This apparatus 76 comprises a pair of opposed solenoids 77 in axial alinement, the armatures 78 of which are rigidly interconnected by a cylindrical portion 79 of preferably non-magnetic material. A sector gear 81 is mounted upon the upper end of the operating rod 64 and is enmeshed with suitably formed indentations 82 in the cylindrical portion 79, the result being that when the armatures 78 are reciprocated rotary motion is imparted to the rod 64. One of the great conveniences resulting from the use of the electrical operating mechanism 76 is that it permits instant opening or closing of all of the windows of a room from any convenient location. For example, the control switches can be mounted in the wall of the room adjacent the door which is most frequently used when entering or leaving that room and adjacent to the switch whereby the heating system for that room is controlled if such apparatus be employed. This permits a person to turn on the heat and close all the windows instantaneously or to shut off the heat and open all the windows, or to operate either the windows or the heating apparatus independently of the other. However, in view of the fact that the armatures 78 are free to move within their respective solenoids 77 when no current is passing through the latter, it is an easy

matter for each of the several windows to be opened or closed by means of the individual operating levers 73 which are provided, without disturbing the adjustment of the other windows. Noiseless operation of the electrical apparatus 76 is assured by positioning a pad 83 of cushioning material in position to be engaged by each armature 78 as it reaches its outer extreme of movement. Preferably each of these pads 83 is carried by an adjustable plunger 84, whereby the length of the stroke of the armatures 78 may be regulated.

The electrical apparatus 76 for each window preferably is carried by a plate 86 which is removably secured to the associated jamb 13 as by screws in 7. The housing 88 wherein the apparatus 76 is inclosed and is preferably of cylindrical form is affixed to the inner side of the plate 86 so that the apparatus 76 is concealed inside the hollow jamb 13 when in operative position but is capable of being readily removed for the purpose of inspection, repair or adjustment.

Fig. 8 indicates a convenient method of establishing the necessary electrical interconnection between the electrical apparatus 76 of a plurality of windows so that they all can be operated from a single remote point. From a suitable source of electrical energy, such as an ordinary residential transformer 91, one of the main leads 92 is connected to one terminal of each of the solenoids 77 of the entire system, there being two such solenoids for each window as hereinabove described. The other main lead 93 from the transformer 91 is connected by conductors 94 and 96 to control switches 97 and 98, which, as hereinabove stated, preferably are mounted in the wall of the room in the most convenient location. The switch 97 is connected as by conductors 101 and 102 to all of the solenoids 77, energization of which results in opening the louvers of the windows which are included within the system, whereas the switch 98 is connected by conductors 103 and 104 to the other solenoids 77, i. e., to those solenoids 77 energization of which results in closing all the louvers.

Figs. 9 and 10 illustrate a slightly modified form of louver tray 111 which seats within its associated ventilating aperture 112 between the proximal rails 113 and 114 of the adjacent sashes 116, and which is adapted to be removed therefrom by pivoting upwards against the upper of the associated two sashes. Inasmuch as the principal reason for removing a tray from its associated ventilating aperture is to permit a person to thrust his arm through the opening so as to clean the outside surface of the pane immediately below that opening, it is desirable, when a pivoted tray is used, to make the tray collapsible, so that when raised it is of such reduced thickness that it does not interfere when thrusting an arm through the opening 112. Accordingly the bottom 117 of the tray 111 is not connected to the end walls 118, but is hinged along its longitudinal edges 119 to the front and rear walls 121 and 122 respectively. The upper edge of each of the front and rear walls 121 and 122 is rolled adjacent each end thereof as indicated at 123 so as to retain a pintle 124. The ends of each of the pintles 124 are seated in suitable sockets in the upper corners of the end walls 118, so that the front and rear walls 121 and 122 respectively and the bottom wall 117 are free to move with respect to the end walls 118. The louver blades 126 are carried by pintle rods 127, which also are seated in the end walls 118, and preferably these louver blades are constructed similarly to the louver blades 57, described hereinabove, and are similarly operated by means of levers 128 and a link 129, carrying a pin 131 which is adapted to seat within a socket 132 in a plate 133 carried by an operating rod (not shown). The rear wall 122 is affixed as by a plurality of screws 136 to the lower rail 114 of the uppermost of the two sashes 116 which divide the associated ventilating aperture 112, the result being that when it is desired to remove the tray 111 from the aperture 112 it is necessary only to swing the tray upwards by grasping a handle 137 which preferably is rigid with the front wall 121 and which overlies the upper rail 113 of the lower of the two associated sashes. As this upward swinging of the tray occurs, it will collapse, positioning the bottom 117 of the tray closely adjacent or in actual contact with the surface of the louver blades 126. The levers 128 extend downwards past the ends of the bottom wall 117 so that they do not interfere with this motion of the bottom wall and front and side walls.

The bottom wall 117 is preferably a rectangular frame providing a marginal support for a foraminous member such as a wire screen 141, which, when the tray 111 is in lowered or operative position, effectively screens the entire associated ventilating aperture 112.

Should the louver blades 126 be in open position when the tray 111 is raised, their lower edges will be contacted by the bottom wall 117 as the tray collapses causing the louver blades 126 to swing to their closed position and without damage to any of the tray structure. This, of course, will move the link 129 and the pin 131 in such a manner that when the tray is again lowered into operative position the pin 131 will not be in registry with the socket 132 in the operating plate 133 and will consequently come into contact with the upper surface of the plate. This, of course, will prevent the tray 111 from returning all the way to its operative position; as soon as the operating rod (not shown) is turned so as to move the plate 133 and thereby bring the socket 132 into registry with the pin 131 the pin will drop into the socket and the tray will seat in its operative position without any further attention on the part of the operator.

If desired, means may be provided for releasably locking the tray 111 in operative position. Such locking means are conveniently afforded by means of a button 146 mounted in the upper edge of the rail 113 and adapted to slide laterally so as optionally to seat within or be removed from a notch in the side of the handle 137.

Fig. 11 shows a still further modified form of collapsible tray 151, wherein the louver blades 152 instead of being mounted for movement about axes intermediate the lateral edges of the blades, are adapted to swing about axes at the after edges of the blades. Accordingly when the blades 152 swing to open position i. e., to the dotted line position illustrated on Figure 11, no portions of the blades 152 are caused to swing downwards and for this reason the screen 153 can be placed much closer to the axes about which the louver blades 152 turn. Hence the tray 151 is much shallower than any of those hereinabove described and comprises quite narrow end walls 154 in which the rods 156 carrying the louver blades 152 are seated. The front and rear walls 157 and 158 respectively are preferably considerably

wider than the end walls but only for the purpose of facilitating proper seating of the tray in the associated ventilating aperture 159. The front and rear walls 157 and 158 are hinged to the bottom wall 161 as by piano hinges 162, thereby permitting the bottom wall 161 to swing upwards against the rear wall 158 and the front wall 157 to swing into substantial planer alinement with the bottom wall 161 when the tray is in elevated position.

It will be observed that each of these modified forms of trays carry louver blades which are cushioned from each other and from the walls of the tray itself by padding material. In Figure 9 the upper edge of the front wall 121 is provided with a yoke construction, except at the ends thereof, where the pintle pins 124 are carried. In other words, this yoke construction extends throughout the major portion of the length of the front wall 121 between the ends thereof. This yoke construction provides a convenient seat for a strip 166 of wicking or other suitable padding material. Another strip 167 of wicking is seated in a groove which is formed by reversely bending the upper edge of the rear wall 122; and another strip 168 is seated in a similarly formed groove in the forward edge of each of the blades 126, this strip being adapted to become releasably engaged within a complementary shaped groove formed in the after edge of the next adjacent blade. In Figure 11 such a groove 171 is formed in the forward edge of each blade 152 and within each of these grooves a strip 172 of padding is adapted to become seated when the louver blades move to closed position, these strips 172 being preferably of crescent-shaped cross section and affixed to the rolled portion of the next adjacent blade within which the pivot rod 156 of that blade is disposed.

Thus it may be seen that I have provided a novel design of window construction by means of which a greater amount of light is admitted than through a conventionally constructed window of the same area and through the use of which a more efficient ventilation and air circulation are attained. Although the louvers are so inconspicuous as to be practically invisible to persons looking through the window, they operate with the highest efficiency in optionally admitting a maximum flow of air or in tightly sealing the ventilating apertures. Moreover, the specific design of mechanism for operating the louvers which has been hereinabove described requires such little effort and such a short throw that it lends itself with especial efficiency for use in conjunction with electrical controls in which solenoids provide the motivating influence. This is a desirable type of actuating member for this use, for it can be operated on a relatively low current thereby avoiding the necessity for the use of conduit, which of course reduces the cost of installation without impairment of the efficiency thereof.

I claim:

1. In a window construction, a plurality of fixedly mounted sashes spaced to define substantially horizontal ventilating apertures therebetween, a tray removably disposed within each of said apertures, a plurality of blades pivotally mounted in each of said trays, a lever extending from each of said blades, a link pivoted to all of said levers in each tray to hold the associated blades in parallel planes, an operating rod extending adjacent all of said trays, a plate disposed adjacent each of said links and mounted rigidly upon said operating rod, each of said plates having a socket, a pin rigid with each of said links and adapted to move into operative engagement within the associated socket when the associated tray seats within its associated ventilating aperture, each of said plates having means retaining the associated pin operatively disengaged therefrom until the blades of the associated tray occupy positions corresponding to the position of the other blades operatively connected to their associated plates, and means for moving said rod.

2. In a ventilation-controlling device, a removably mounted damper member adjustable while in mounted position to regulate flow therepast, an operating member for adjusting said damper member from a remote point and comprising a rod mounted for rotary movement and extending adjacent said damper member, a plate carried by said rod having a slot therein, a pin operably connected to said damper member and removably seated in said slot, and means retaining said pin operatively disengaged from said plate except when said operating member is in predetermined position with respect to said damper member.

3. In a ventilation-controlling device, a tray adapted to seat within a ventilating aperture and comprising a side wall fixedly mounted at one side of said aperture, a free side wall spaced therefrom, a bottom wall having an opening therein and pivoted along the bottom edges of said side walls, end walls pivoted to said side walls only at points adjacent their upper corners, and a top wall comprising a plurality of louver blades extending between said end walls and pivotally mounted therein whereby they are adapted to lie optionally in spaced, parallel planes or in a continuous, substantially flat plane, said tray being adapted to collapse by swinging upwards about said fixed side wall to bring said bottom wall closely adjacent said top wall.

4. In a ventilation-controlling device, a tray adapted to seat within a ventilating aperture and comprising a side wall fixedly mounted at one side of said aperture, a free side wall spaced therefrom, a bottom wall having an opening therein and pivoted along the bottom edges of said side walls, end walls pivoted to said side walls only at points adjacent their upper corners, and a top wall comprising a plurality of louver blades extending between said end walls and pivotally mounted therein whereby they are adapted to lie optionally in spaced, parallel planes or in a continuous, substantially flat plane, said tray being adapted to collapse by swinging upwards about said fixed side wall to bring said bottom wall closely adjacent said top wall, and means operable when said tray is in lowered position for adjusting said louver blades to selected position.

5. In a ventilation-controlling device, a tray adapted to seat within a ventilating aperture, said tray being pivotally mounted along one edge thereof at one side of said aperture and adapted to be withdrawn from said aperture by swinging about the axis of its pivotal mounting, a plurality of louver blades pivotally mounted in said tray and adapted, when said tray is seated within said aperture, to close the aperture by moving into a substantially continuous plane extending thereacross or to open the aperture by swinging into spaced, parallel planes, means apart from said tray for operating said louver blades, and means engageable when said tray is seated for connecting said blades to such operating means.

6. In a ventilation controlling device, a frame pivotally mounted within a ventilating aperture, and adapted to be withdrawn from said aperture by swinging about the axis of its pivotal mounting, a plurality of louver blades pivotally mounted in said frame and adapted when said frame is seated within said aperture to close the aperture by lying in overlapping relationship or to open the aperture by moving into spaced, substantially parallel relationship.

7. In a ventilation controlling device, a frame adapted to seat within a ventilating aperture, said frame being pivotally mounted along one edge thereof at one side of said aperture and adapted to be withdrawn from said aperture by swinging about the axis of its pivotal mounting, said frame defining an opening, a screen carried by said frame and extending across said opening, a plurality of louver blades pivotally mounted in said frame and adapted when said frame is seated within said aperture to close the aperture by lying in overlapping relationship or to open the aperture by moving into spaced, substantially parallel relationship.

8. In a device for controlling flow through a plurality of apertures, a frame removably receivable within each of said apertures, flow-controlling means adjustably mounted on each of said frames, means remote from all of said frames and operable to adjust all of said flow-controlling means simultaneously, and means disengageably connecting each of said flow-controlling means to said adjusting means, said connecting means comprising a rotatable plate operably connected to said flow-controlling means and having a recess therein, and a pin operably connected to said adjusting means to be moved thereby and receivable within said recess to turn said plate when said adjusting means is operated, said pin being adapted to ride under said plate when disengaged from said recess whereby engagement between said adjusting means and each of said flow-controlling means is avoided until that flow-controlling means is in predetermined position with relation to the others.

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