March 12, 1940. H. C. HUEGLIN 2,193,284

WINDOW VENTILATOR

Filed Sept. 6, 1938 2 Sheets-Sheet 1

Fig. 1.

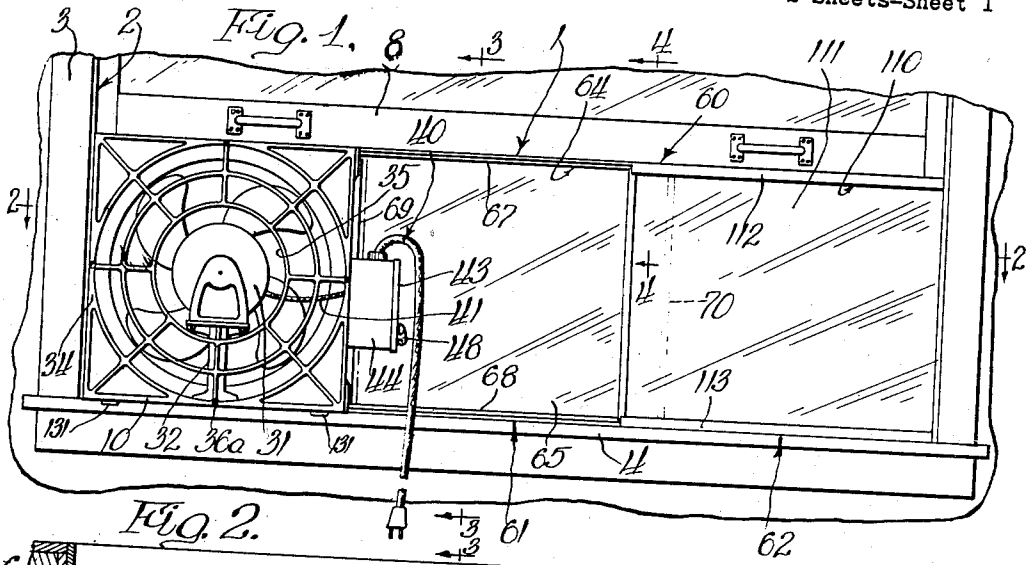

Fig. 2.

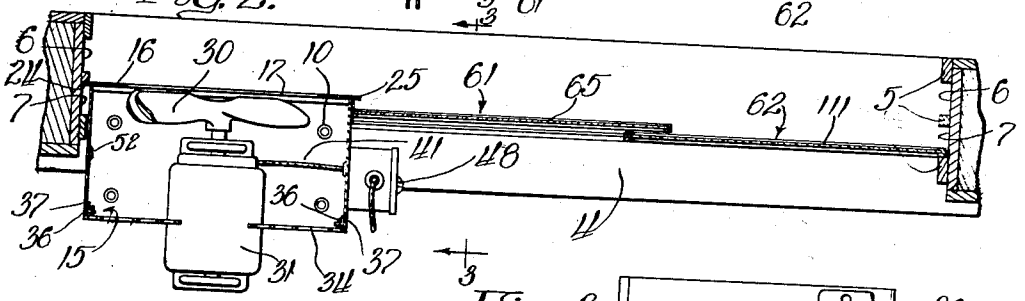

Fig. 3.

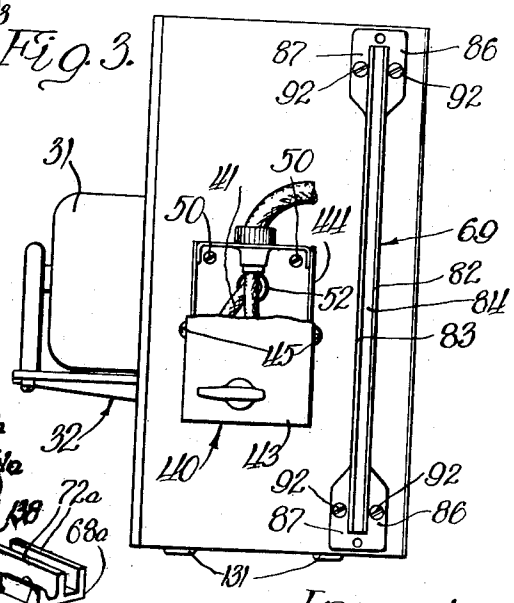

Fig. 4.

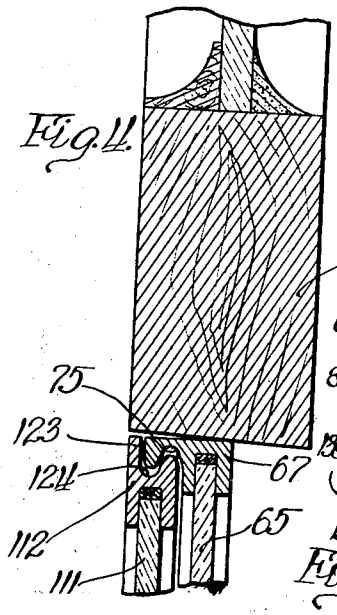

Fig. 9.

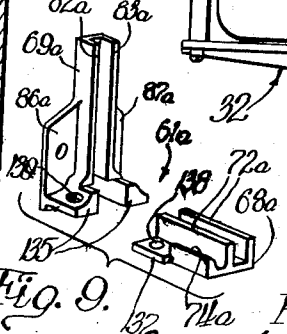

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Fig. 5.

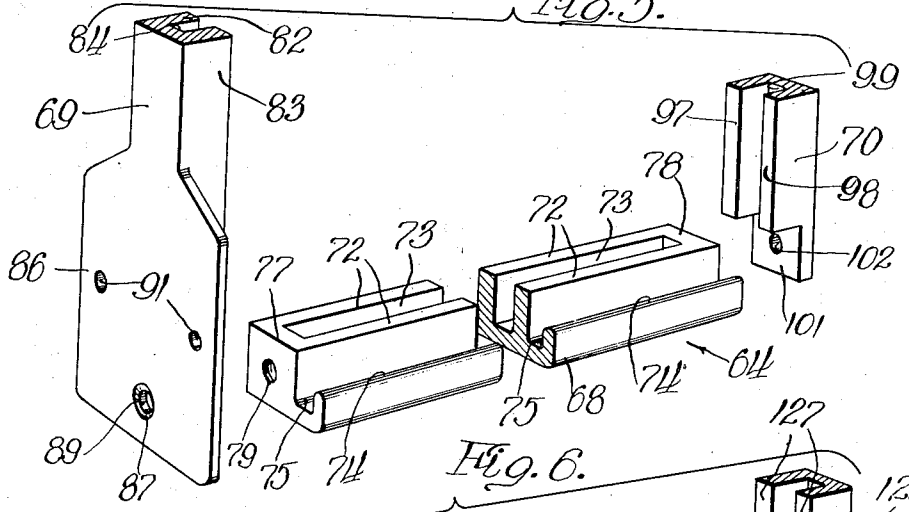


Fig. 6.

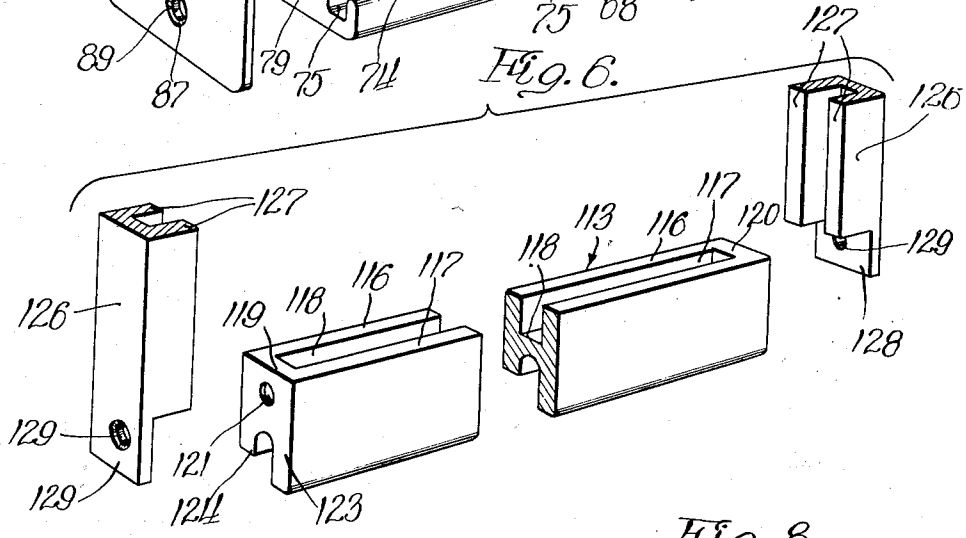


Fig. 7.

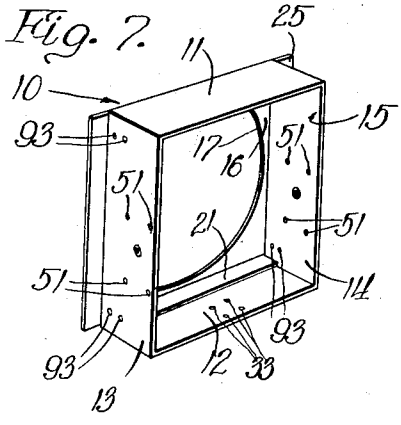
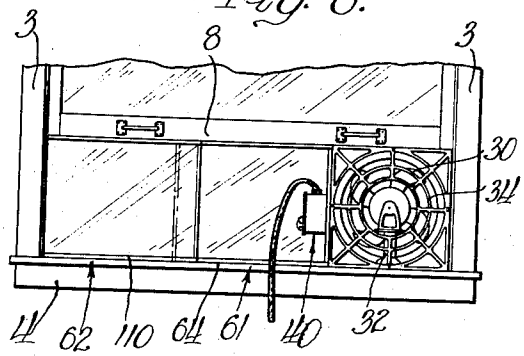


Fig. 8.



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Patented Mar. 12, 1940 2,193,284

UNITED STATES PATENT OFFICE

2,193,284

WINDOW VENTILATOR

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Application September 6, 1938, Serial No. 228,542

4 Claims. (Cl. 98—94)

This invention relates to ventilating fans and more particularly to a window ventilator particularly adapted for domestic use, as for example in a kitchen window to remove vapors, cooking odors, and heat from the kitchen.

Ventilating fans for such purposes have heretofore been provided, but generally they are arranged for relatively fixed mounting at the upper part of the window frame, as, for example, in the space above the upper sash which is lowered about half way to receive the fan. This arrangement, while satisfactory for many installations, requires a more or less permanent mounting of the fan or permanent fittings to receive and support the unit. Moreover, the panel at the upper part of the window to receive the fan frame was generally formed of plywood or other material which shut out an appreciable amount of light from the kitchen.

The object and general nature of this invention is the provision of a window ventilator of the glass panel type which is particularly constructed to be mounted at the lower part of a window and arranged with adjustable sections of glass which make it possible to adjust the ventilator to different sizes of windows with minimum obstruction of light and without requiring permanent fittings or attachments. It is also a feature of this invention to so construct and arrange the adjustable glass sections and the fan frame or housing that the fan may be placed at either side of the window merely by detaching the adjustable sections from one side of the housing and attaching them to the other side. It is also a feature of this invention to provide for a switch or rheostat control which may be placed at either side of the fan housing so as to accommodate the optional disposition of the latter at either side of the window, as desired. There are many situations in which the stove is near a window, in which case it would be desirable to mount the kitchen fan at the side of the window nearer the stove, thereby exhausting the heat and cooking odors directly from the stove. Thus, it is possible to remove more of the vapors, odors, and heat than would be the case if the fan unit were mounted in the upper part of the window.

Another feature of this invention resides in the provision of a window ventilator which is provided with adjustable glass panels, accommodating different widths of windows and adapted merely to set in place on the window sill, the fan casing having a flange adapted to fit in one of the window frame grooves in which the lower sash slides, while the outer of the extensible glass panels is adapted to be extended into the groove at the opposite side of the window frame, where the unit is retained in place. A further feature of my invention in this connection is the provision of adjustable slides or panels, the inner of which is attached to the fan casing and the other of which has a grooved connection therewith, and provided with flanges or otherwise constructed so that their vertical dimension is substantially the same as the fan casing itself, whereby after the unit is in place and the sash lowered, the lower edge of the latter fits substantially against the upper margins of the fan casing and adjustable panels.

These and other objects and advantages of my invention will be apparent from the following detailed description of the preferred form, illustrated in the accompanying drawings.

In the drawings:

Figure 1 is an elevational view of my improved window ventilator, taken from the kitchen side, and showing how the lower sash closes snugly against the upper edge of the unit;

Figure 2 is a section taken along the line 2—2 of Figure 1;

Figure 3 is a section taken generally along the line 3—3 of Figures 1 and 2, certain parts of the extensible panels being removed in order to show the manner in which the inner bar of the inner panel section is fixed to the side of the fan casing;

Figure 4 is an enlarged fragmentary section taken along the line 4—4 of Figure 1; showing the manner of constructing the panel frames to accommodate their relative movement in adjusting a unit for windows of various widths;

Figures 5 and 6 are fragmentary perspective views showing in disassembled relation the manner in which the inner and outer panel frames are constructed;

Figure 7 is a fragmentary perspective view of the fan casing, with the motor, fan, motor support and grille removed;

Figure 8 is a view similar to Figure 1 but showing the window ventilator arranged so that the fan is disposed at the other side of the window; and

Figure 9 is a fragmentary view showing a modified form of frame for the inner glass panel section.

Referring now more particularly to Figures 1, 2, and 3, my new and improved window ventilator is indicated in its entirety by the reference numeral 1 and is shown as mounted in a window 2.

The latter includes a window frame 3 of which the sill is indicated at 4 and suitable strips 5 form grooves 6 and 7 in the window frame which receive, respectively, the upper and lower sashes, the lower sash being indicated in Figure 1 by the reference numeral 8.

My new and improved window ventilator comprises a generally rectangular casing 10, best indicated in Figure 7, and which includes upper and lower walls 11 and 12 and side walls 13 and 14. One face of the casing 10 is open, as at 15, and the other face is closed partially by a plate 16 in which there is a circular opening 17. Preferably the walls 11, 12, 13, and 14 are formed by bending a strip of metal into the desired shape, bringing the ends together to form the shell of the casing and then welding or otherwise fastening the ends together. The plate 16 is formed with upper and lower edges 21 which are bent at right angles to the plane of the plate and serve as attaching flanges by which the plate 16 may be welded or otherwise fastened to the walls 11 and 12. At the sides between the attaching flanges 21, the plate 16 carries laterally extending flanges 24 and 25, either of which, as will be explained more in detail later, is adapted to be disposed in one of the sash receiving grooves 7 of the window. It will be noted that the vertical dimension of the flanges 24 and 25 corresponds to the vertical height of the casing 10.

The ventilating fan is indicated at 30 and is mounted in any suitable manner on the shaft of an electric motor 31 which is supported on a bracket 32 fixed in any suitable manner to the bottom wall 12 of the casing 10, as by screws or the like passing upwardly through holes 33 (Figure 7) in the wall 12 and threaded into the bracket. The fan 30 is positioned so as to run closely adjacent the circular opening 17 in the plate 16. An ornamental grille 34, provided with a central opening 35, is placed in the opening 15 of the fan casing 10, and is secured in place in any suitable manner, as by bolts 36, the inner ends of which are connected to small clips or brackets 37 fixed to the side walls of the casing. The lower fastening member 36*a* (Figure 1) for the grille 34 preferably passes directly into a tapped hole in the bracket 32.

Preferably, the motor 31 is controlled by means of a switch and rheostat unit indicated in its entirety in Figure 1 by the reference numeral 40, the connections from the motor 31 to the switch unit 40 being indicated in Figure 2 by the reference numeral 41. The unit 40 includes a lid or cover 43 which is fastened to the casing 44 by screws 45. The switch and associated mechanism is carried by the cover 43, and the handle 48 forming a part of the control unit and its mechanism provides for starting and stopping the motor 31 and operating it at the desired speed. The casing 44 is secured to the casing 10 by means of four bolts 50, two of which appear in Figure 3, the bolts 50 being inserted in corresponding holes 51 (Figure 7) which are formed in the side walls 13 and 14, thereby providing for mounting the unit 40 at either side of the fan casing. Also, each side wall 13 and 14 of the fan casing is provided with an opening receiving an insulating thimble 52 through which the connections 41 pass.

A panel, indicated in its entirety by the reference numeral 60, is fastened to one side of the fan casing 10 and has the same vertical height, as best shown in Figure 1, so as to fill the space across the window when the ventilator is installed in place. Preferably, the panel 60 consists of two panel sections, indicated at 61 and 62, the inner section being fixed to one side of the fan casing and the other section being slidable with respect to the fixed section, whereby the effective length of the panel 60 may be adjusted to correspond to windows of various widths.

The inner panel section 61 consists of a frame 64 and a pane of glass 65. The construction of the frame 64 is best shown in Figure 5. The frame 64 consists of upper and lower rails 67 and 68, respectively (Figure 1), and end rails 69 and 70. As best shown in Figures 4 and 5, the upper and lower rails 67 and 68 are substantially identical, except that they are rights and lefts. Each includes a pair of flanges 72 forming a glass receiving groove or channel 73 therebetween, and another flange 74 spaced laterally from the central flange 72 by a space that forms a groove 75. The ends of the channel or groove 73 are closed, as at 77 and 78, respectively, and each end is tapped, as indicated at 79. The inner vertical rail 69 of the inner panel section 61 is also in the form of a channel, having flanges 82 and 83 between which is a groove or channel 84. The upper and lower ends of the rail 69 are extended laterally to form short attaching flanges 86 and 87. These attaching flanges are apertured, as at 89, to receive screws which thread into the tapped openings 79 to fasten the upper and lower rails 67 and 68 to the inner rail 69. Also, the attaching flanges 86 are provided with pairs of openings 91 to receive bolts 92 which pass through openings 93 formed in each of the side walls 13 and 14 of the fan casing 10. The screws that thread into the tapped openings 79 preferably have countersunk heads so that the vertical rail 69 may be disposed snugly against either side wall of the fan casing when the bolts 92 are tightened. The outer vertical rail 70 is also of channel section, having flanges 97 and 98 which form a channel or groove 99 therebetween. The flanges 97 and 98 are terminated inwardly of the end of the rail 70, as best shown in Figure 5, so as to leave a projecting lug 101 which is apertured, as at 102, to receive a screw which is adapted to be threaded into a tapped opening 79 formed in the outer end of the lower rails 68. The upper end of the rail 70 is of the same construction. Thus, after the pane of glass has been inserted in the grooves or channels of the various rails, together with any suitable packing necessary or desirable, the attaching screws may be tightened and the panel frame clamped rigidly about the glass pane. After inserting the bolts 92 in the set of openings 93 in whichever one of the side walls 13 and 14 to which it is desired to attach the panel section, tightening the bolts 92 secures the panel section 61 rigidly and firmly in position with the upper and lower edges of the panel section substantially coinciding with the planes of the upper and lower walls 11 and 12 of the fan casing 10.

The outer panel section 62 comprises a frame 110, which is similar to that just described, and a glass pane 111. The frame 110 consists of upper and lower rails 112 and 113 each of which, as best shown in Figure 6, has a pair of flanges 116 and 117 between which a glass receiving groove or channel 118 is formed. The ends of the groove 118 are closed, as at 119 and 120, and each end of the rails 112 and 113 is provided with a tapped hole 121. The outer edge of each of the rails 112 and 113 is provided with an

additional pair of flanges 123 and 124. The end rails of the panel section 62 are practically identical with the outer vertical rail 70 of the inner panel section 61, and is indicated by the reference numeral 126. Each rail 126 has a pair of flanges 127 arranged to embrace the edges of the pane of glass 111, and both ends of each rail are provided with lugs 128 which are apertured at 129 to receive screws which thread into the openings 121 in the upper and lower rails 112 and 113 to secure the frame together.

Mention was made above of the fact that the outer panel section 62 slides in extensible relation with respect to the inner panel section 61, and to accommodate this action, the shorter flanges 124 on the outer edges of the upper and lower rails 112 and 113 are arranged to be disposed in the grooves 75 on the upper and lower rails 67 and 68, respectively, of the inner panel section 61, the outer and longer flanges 123 being disposed alongside the flange 74, the flanges 123 being so dimensioned that the overall width of the outer or extensible panel section 62 is substantially the same as the corresponding dimension of the inner panel section. As a result of this construction, when the ventilator unit is in place in a window and the lower sash lowered until it comes into contact with the fan casing 10, the lower face is also in substantial contact with the panel sections 61 and 62 in whatever adjusted position they may be disposed with respect to each other.

It will be noted from the above description that the window ventilator of my invention does not require any means for its permanent attachment to the window. When it is desired to install and use the ventilator, the lower sash is raised, and then with the extensible panel 62 pushed inwardly of the inner panel 61 the unit is lifted and placed on the window sill with flange 24 disposed in the groove at one side of the window frame in which the lower sash slides. The outer sash panel 62 is then extended until its outer edge is disposed in the other groove 7 at the opposite side of the window. The lower sash is then lowered until it comes into contact with the casing and the upper edges of both of the panel sections 61 and 62. After plugging in a connection for the motor, the fan may be operated at will by suitably manipulating the button 43. Even though one of the sections of the panel 60 slides within the other, the flanges 123 on the slidable section make it possible to secure as snug a fit when the sash is lowered as if the ventilator was especially designed for that particular window. Since the unit is not permanently fixed in position, it may be removed quickly and easily at any time desired.

The fan casing shown and associated parts are particularly constructed to permit the panel 60 being disposed at either side, and, in order to change the panel from one side to the other, all that it is necessary to do is to remove the switch cover 43, detach the four bolts 50 holding the switch unit in place, detach the connections 41 from the motor and extend them out through the other thimble 52 at the other side of the fan casing, remove the bolts 91 and transfer the panel unit to the other side, inserting the bolts 92 through the holes 93 at the other side of the casing 10. Figure 8 shows the parts reversed, as compared with Figure 1, and the fan disposed at the right side of the window. Preferably, although not necessarily, the fan casing 10 is provided with a plurality of feet 131 so that when the unit is set on a window sill the latter is not marred.

A slightly different form of panel frame for the inner panel section is fragmentarily indicated in Figure 9. In this form, the frame 61*a* includes an inner rail 69*a*, having parallel flanges 82*a* and 83*a* and attaching flanges 86*a* and 87*a* to which are joined a pair of lugs 135, and upper and lower rails 68*a* the inner end of the lower rail being shown in Figure 9. Each rail 68*a* includes flanges 72*a* and 74*a*, as in Figure 5, and ears 137 which are apertured at 138. The lugs 135 at the ends of the rail 69*a* are disposed inwardly of the rail and are spaced apart to receive the flanges 72*a* when the ears 137 are disposed against the lugs 135. The latter are tapped, as at 139, and receive screws which pass through the openings 138. This construction is somewhat stronger than the construction shown in Figure 5.

While I have shown and described above the preferred structure in which the principles of the present invention have been embodied, it is to be understood that my invention is not to be limited to the specific details shown and described above, but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

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

1. A window ventilator adapted for lower window mounting comprising a fan casing having an ornamental grille closing one side of the casing and having a central opening receiving the motor, the other side of said casing having an opening adjacent which the fan driven by said motor is disposed, flanges extending laterally from opposite sides of the casing adjacent the space at which the fan is disposed, a pair of glazed extension panels, each including a frame, one of said frames having grooves along its upper and lower edges and the other frame having flanges along its upper and lower edges arranged for sliding movement in the grooves in the other panel, additional flanges carried by said other panel so that its vertical width is substantially the same as said one panel and the width of both panels is equal to the corresponding dimension of said fan casing, and detachable securing means for fastening said one panel at its inner end to either side of said fan casing optionally, whereby the ventilator may be installed below the lower sash of a window by setting the fan casing on the window sill with one flange in the sash receiving groove of the window frame and the outer end of the extensible panel disposed in the opposite sash receiving groove of the window frame.

2. A portable and adjustable window ventilator comprising a fan casing, means on said casing adapted to engage in a sash receiving groove at one side of the window frame, and a pair of extensible panels at the other side of said casing and of substantially the same width as the corresponding dimension of the fan casing, each of said panels including a frame and one of said frames having grooves along its upper and lower edges and the other frame having flanges along its upper and lower edges arranged for sliding movement in the grooves in the other panel, additional flanges carried by said other panel so that its vertical width is substantially the same as said one panel and the width of both panels is substantially equal to the corresponding dimension of said fan casing, whereby when the outer end on the outer panel is disposed in the sash receiving groove at the side of the window frame

opposite the sash receiving groove in which said means is disposed, the associated window sash may be moved in said grooves into contact simultaneously with the fan casing and the edges of both of said panels.

3. A motor driven window ventilator adapted for lower window mounting comprising a fan casing having an opening adjacent which the fan driven by said motor is disposed, flanges extending laterally from opposite sides of the casing adjacent the space at which the fan is disposed, a pair of glazed extension panels, each including a frame, one of said frames having grooves along its upper and lower edges and the other frame having flanges along its upper and lower edges arranged for sliding movement in the grooves in the other panel, additional flanges carried by said other panel so that its vertical width is substantially the same as said one panel and the width of both panels is equal to the corresponding dimension of said fan casing, and detachable securing means for fastening said one panel at its inner end to either side of said fan casing optionally, whereby the ventilator may be installed below the lower sash of a window by setting the fan casing on the window sill with one flange in the sash receiving groove of the window frame and the outer end of the extensible panel disposed in the opposite sash receiving groove of the window frame.

4. A ventilator as defined in claim 3, further characterised by control means for said motor detachably mounted on the side wall of said casing adjacent said extension panels, both side walls of said fan casing having means receiving said control means, whereby the latter may be optionally disposed on either side wall of the casing to accommodate positioning the extension panels at either side of the casing optionally.

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