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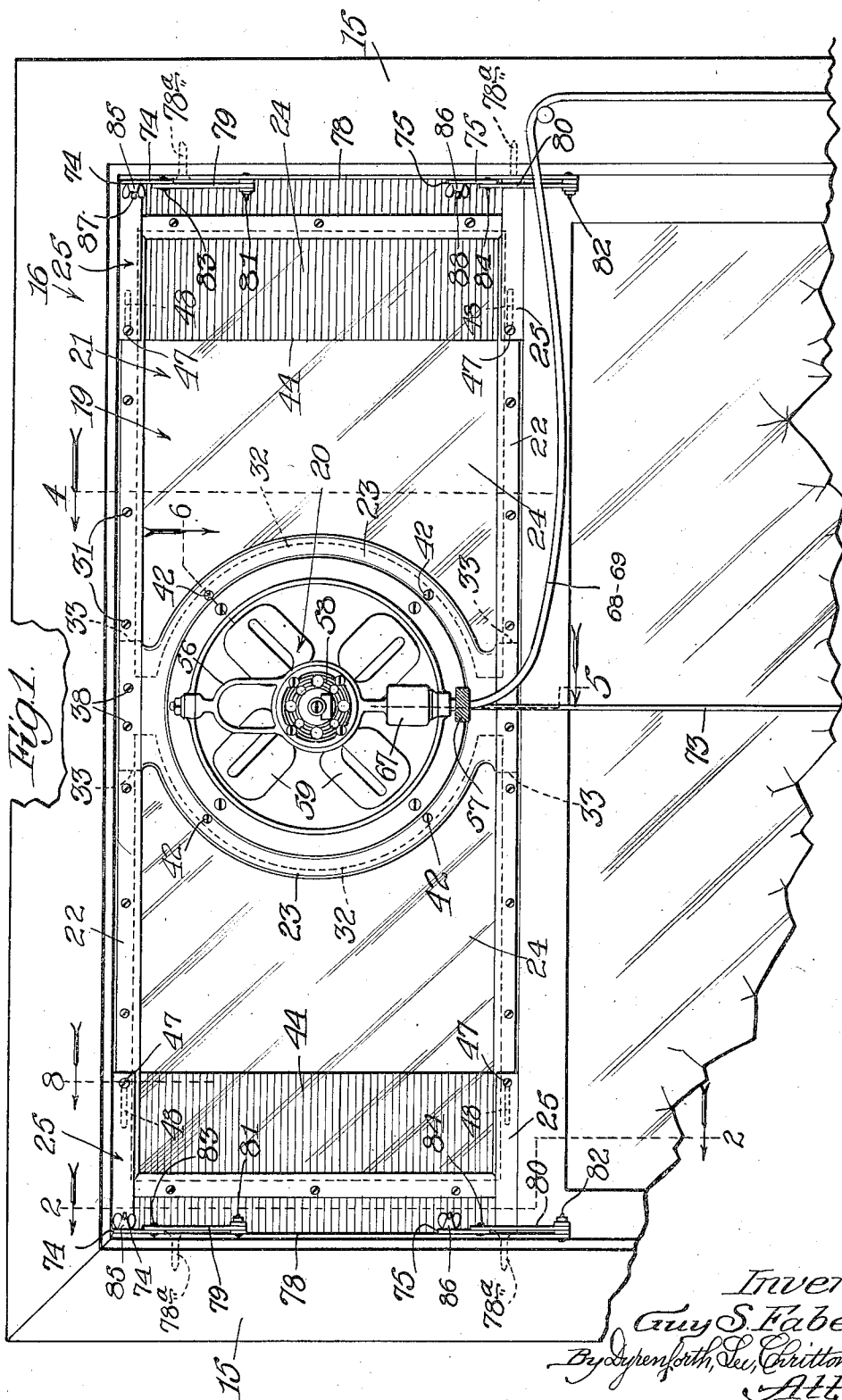
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2,021,684

VENTILATOR

Filed Aug. 25, 1933

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

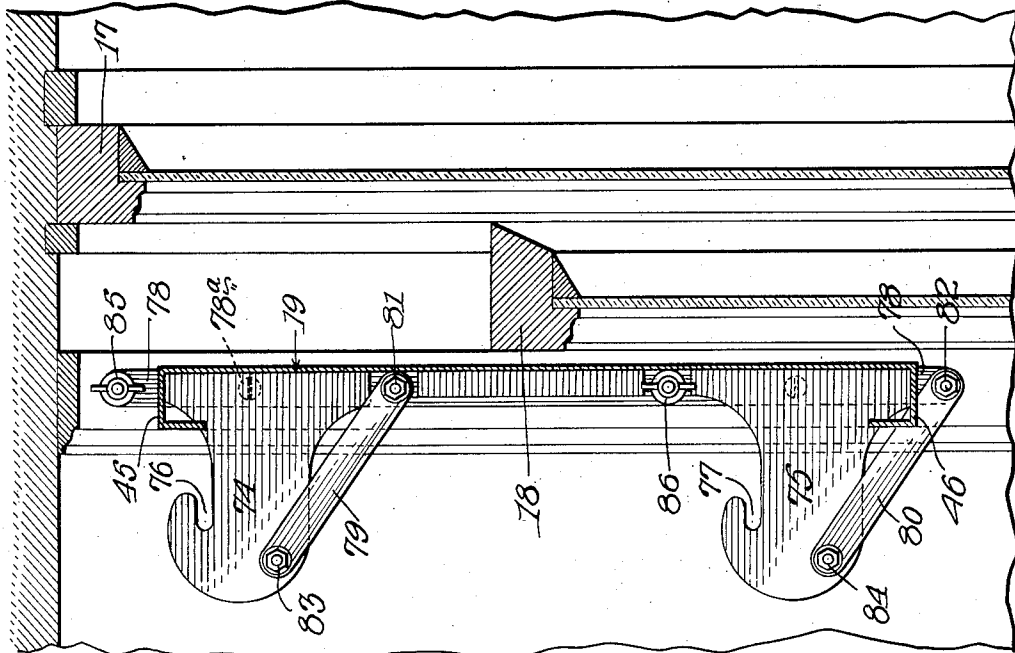


Fig. 3.

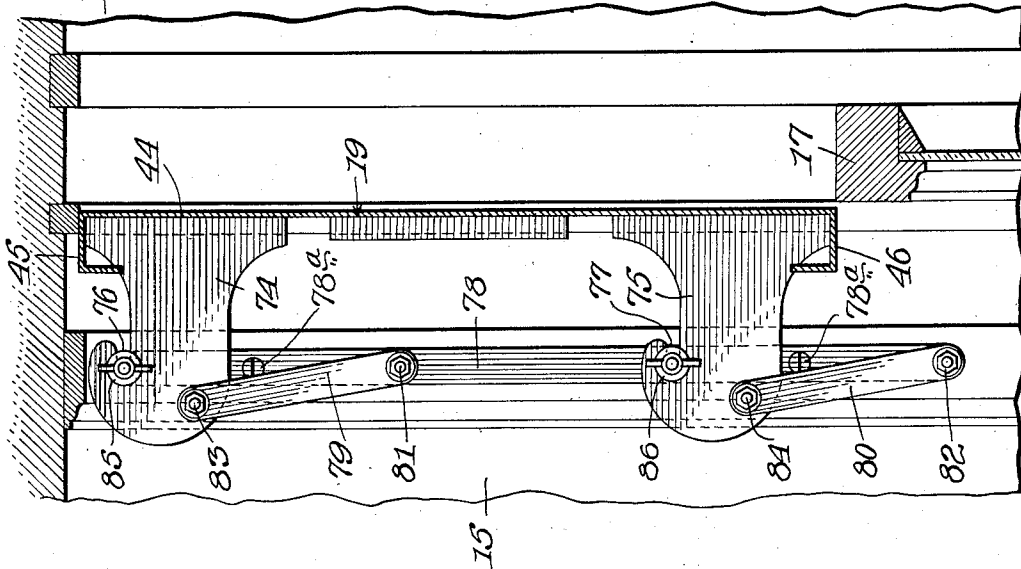


Fig. 2.

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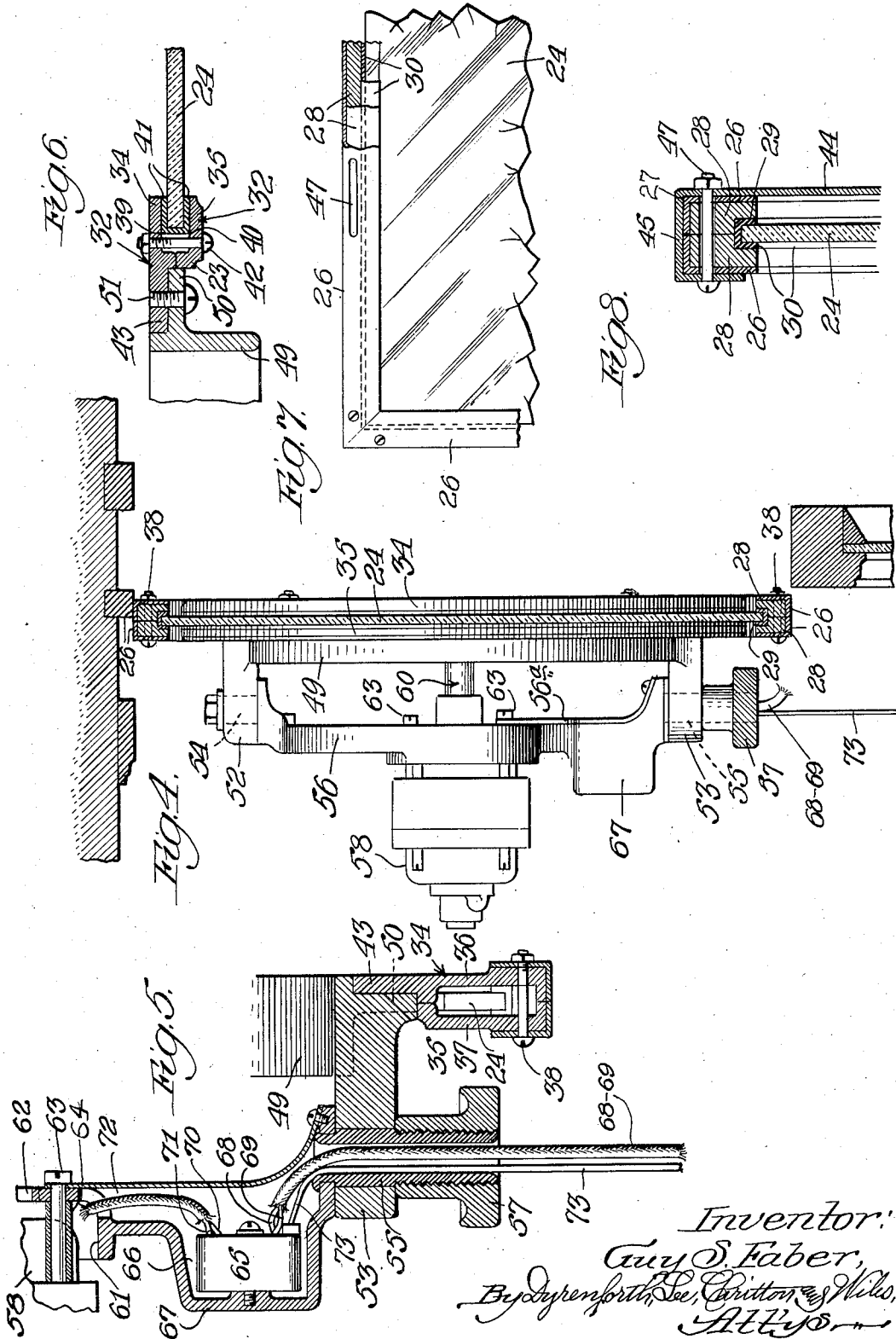
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VENTILATOR

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4 Sheets-Sheet 3



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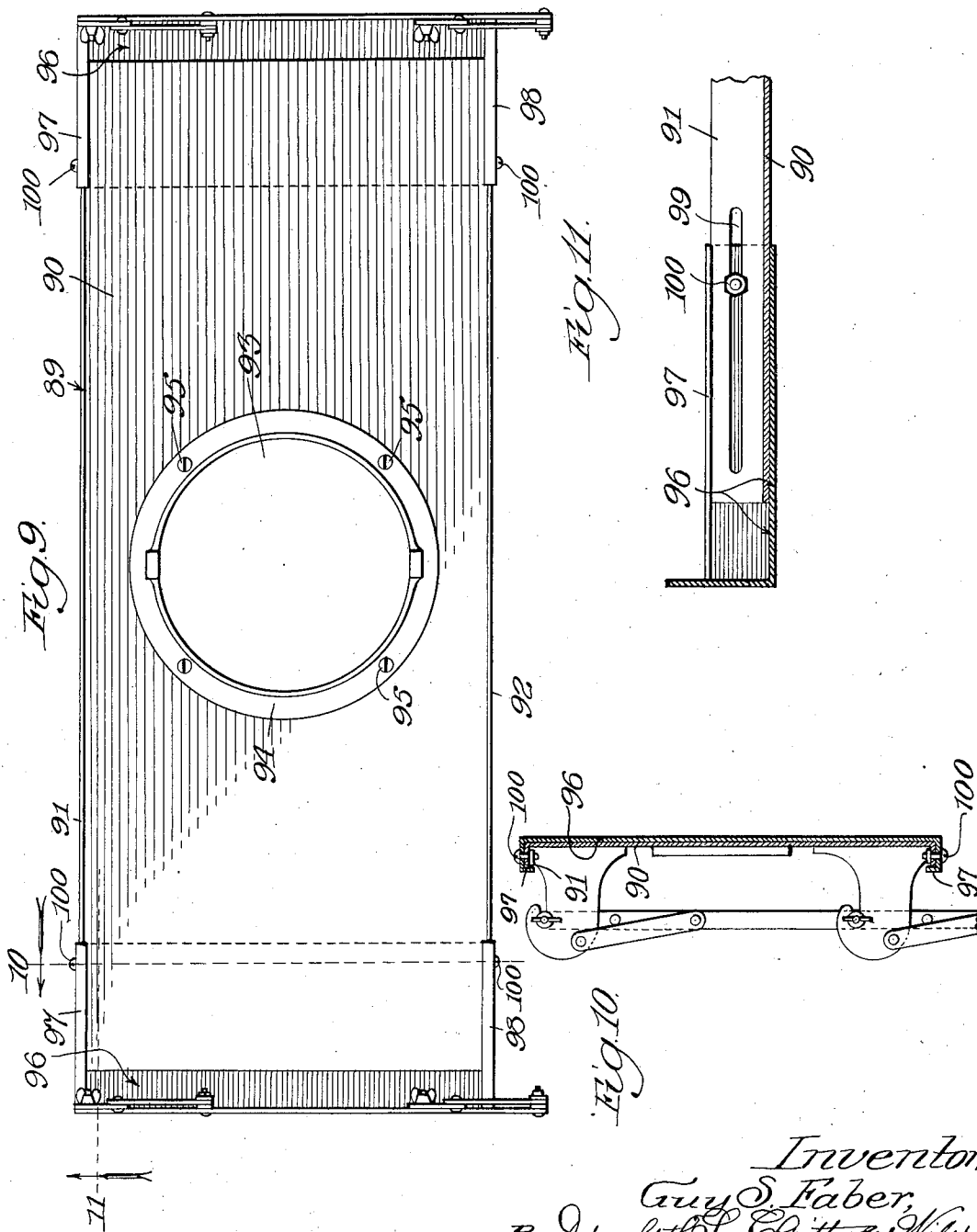
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VENTILATOR

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,021,684

VENTILATOR

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3 Claims. (Cl. 98—94)

My invention relates, more particularly, to ventilators of the type comprising a panel for installation in a window of a room to be ventilated and more especially at the top of a window having the usual sliding sashes, the panel being equipped with a ventilating fan as for example of the electrically driven type.

One of my objects is to provide a construction of ventilator for application to the top of a window, the panel portion of which may be readily adjusted from its position of use in which it extends into the path of upward movement of the lower window sash into a position permitting of the raising of this sash the full height.

Another object is to provide a construction whereby the fan may be used either to withdraw air from, or discharge air into, the room as desired and at different angles as desired.

Another object is to provide a construction having an electric fan mounted to be adjusted into positions for discharging air from, or into, the room, whereby interference between the fan and the wires leading the current thereto will be prevented.

Another object is to provide a construction of panel formed in part of glass plates, whereby the plates may be easily and readily secured in place in the panel frame, permitting of the shipping of the glass separate from the frame of the panel—with reduced danger of breakage—and permitting ready substitution in case of breakage.

Another object is to provide a novel construction of mounting for the motor whereby the construction is adapted for the ready assembly therewith of motors of different makes and cooling of the motor is augmented.

Another object is to provide a construction whereby the mounting for the fan may be readily assembled with the panel, making it commercially feasible to ship these parts in separate packages to reduce possibility of damage.

Another object is to provide a ventilator structure which will be of simple construction, of light weight and durable and where formed in part of glass less liable to breakage of the glass than structures as hitherto provided; and other objects as will be manifest from the following description.

Referring to the accompanying drawings:

Figure 1 is a view in elevation of the upper portion of a window having upper and lower sliding sashes and equipped with a ventilator embodying my invention, the ventilator being shown in normal position in which it extends into the path of upward movement of the lower sash.

Figure 2 is an enlarged broken section taken

at the line 2 on Fig. 1 and viewed in the direction of the arrow, the ventilator being shown in normal position.

Figure 3 is a similar view showing the panel of the ventilator and the parts carried thereby in the positions they assume when adjusted inwardly out of the path of upward movement of the lower sash.

Figure 4 is an enlarged broken sectional view taken at the line 4 on Fig. 1 and viewed in the direction of the arrow.

Figure 5 is an enlarged broken sectional view taken at the line 5 on Fig. 1 and viewed in the direction of the arrow.

Figure 6 is an enlarged broken sectional view taken at the line 6 on Fig. 1 and viewed in the direction of the arrow.

Figure 7 is a fragmentary elevational view partly in section of the main, glass-equipped section of the panel.

Figure 8 is an enlarged broken sectional view taken at the line 8 on Fig. 1 and viewed in the direction of the arrow.

Figure 9 is a face view of a ventilator constituting another embodiment of my invention, the fan being omitted.

Figure 10 is a section taken at the line 10 on Fig. 9 and viewed in the direction of the arrows; and

Figure 11, an enlarged broken sectional view taken at the line 11 on Fig. 9 and viewed in the direction of the arrow.

Referring to the construction shown in Figs. 1 to 8, inclusive, 15 represents the vertical side members of a window frame; 16 the top cross member thereof; 17 the upper, outer, vertically slidable window sash; and 18 the inner, lower, vertically slidable window sash, respectively, all as commonly provided in window constructions of this type.

Located at the top of the window opening are ventilating means embodying my invention and functioning to produce air flow between the top of the window casing and the top of the outer sash 17 when in the partly lowered position shown in Fig. 2.

The ventilator shown comprises generally stated a panel section 19 preferably formed of telescoping sections as hereinafter described to adapt it to fit in window openings of different widths, a fan device represented generally at 20 located in an opening in the panel and means for supporting the panel and the parts carried thereby in the operative position shown in Fig. 2 and adapting these parts to be displaced inwardly to

the position shown in Fig. 3 in which the lower sash 18 is free to be raised the full height.

The panel 19 is shown as comprising a main panel section 21 formed of a rectangular sectional frame 22, a sectional ring frame 23 intermediate its ends, and glass plates 24 forming closures for the ends of the panel section 21; the panel 19 also comprising supplemental panel sections 25 at the ends of the panel section 21 and adjustably telescoped therewith.

Referring to the details of the illustrated panel section 21, the frame 22 comprises two similar rectangular frame sections 26 each formed of similar bars of angle shape in cross section 26 being so positioned as shown as to form an inwardly-opening channel 27 extending entirely around the frame 22 in which bars 28, as for example and preferably of wood and of angle shape as shown, are located to provide an inwardly-opening channel 29 extending continuously around the frame 22 into which the plates 24 extend, with packing strips 30 interposed between the edges of these plates and the bars 28.

The frame 22 is thus formed of separate frame sections disposed face to face and which when separated permit of the setting of the glass plates 24 with the packing 30 and bars 28 into one of the sections 26 of the frame 22 and the secure clamping of these parts together upon the assembling of the other frame section 26 therewith to the position shown in the drawings in which it is securely held as by bolts represented at 31 passing through the frame sections 26 and the bars 28. The adjacent ends of the plates 24 spaced apart as shown at the center of the ventilator, are of arcuate shape as represented at 32 adapting them to be assembled with, and clamped by, the ring frame 23 as hereinafter described, the wood bars 28, at the upper and lower portions of the frame 22 being also spaced apart, their inner terminal ends being represented by the dotted lines 33.

The ring frame 23 comprises a pair of flatwise opposed ring sections 34 and 35 having extensions 36 and 37, respectively, at their upper and lower ends, these extensions being located within the channel formed by the frame members 26 and in the spaces between the plates 24 and the bars 28 and secured in position in the frame 22 by bolts represented at 38.

The opposing surfaces of the rings 34 and 35 are annularly recessed as represented at 39 and 40, respectively, thereby forming an inwardly opening channel into which the arcuate portions 32 of the glass plates 24 extend, with packing strips 41 interposed between these plates and the walls of said channel, the plates 24 being clamped in position by screws 42 engaging these ring sections.

The internal diameter of the ring section 35 is larger than the internal diameter of the ring section 34 thereby causing the latter ring section to present an annular flange 43 about its inner periphery to which the mounting hereinafter described for the fan 20 is secured.

The supplemental panel sections 25 each comprises a plate member 44 shown as located at the outer face of the panel section 21 and having at its upper edge an inwardly and downwardly turned flange portion 45 and at its lower edge an inwardly and upwardly turned flange portion 46 adapting the sections 25 to be telescoped with the ends of the panel section 21, these panel sections being held in their positions of adjustment

relative to each other by bolts 47 extending horizontally through the panel sections 25 and through horizontally elongated slots 48 in the ends of the upper and lower members of the frame 22.

The mounting above referred to for the fan 20 is shown as comprising a ring 49 having an annular peripheral flange 50 fitting against the flange 43 of the ring frame 23 and secured thereto as by the screws 51. The ring 49 is provided with diametrically opposed upper and lower lugs 52 and 53 in which vertically extending trunnions 54 and 55 of a fan-supporting member 56 are trunnioned thus swiveling the member 56 on the ring 49 to permit the member 56 and thus the fan to be adjusted into different positions about a vertical axis, the lower trunnion 55 which is of tubular form having screwed thereon a nut 57 for holding the member 56 in adjusted position.

The fan device 20 is shown as comprising an electric motor 58 mounted on the member 56 and a fan-propeller 59 mounted on the outer end of the shaft 60 of the motor and positioned in the opening in the ring 49, but with sufficient clearance to permit the member 56 and the parts carried thereby to be rotated on the trunnions 54 and 55 for adjustment without obstruction.

The portion of the member 55 at which the motor 58 is connected, is formed with a circular recess or socket portion 61 containing a central opening 62 and into which the adjacent end of the motor extends, the motor being secured therein in spaced relation to the end wall and the surrounding wall of the recess 61 as by screw bolts 63 extending through the end wall of the recess 61 and into the motor casing, with spacers, one of which is shown at 64, surrounding the screw bolts 63 and interposed between the end wall of the recess 61 and the adjacent end of the casing of the motor, the arrangement just described not only adapting the member 56 for the application thereto of motors of different makes, but also permitting of free circulation of air over that end of the motor at which the latter is supported.

The wires for conducting current to the motor 58 extend through the trunnion 55 thereby avoiding tangling of the wires with any of the other parts of the construction particularly in the adjustment of the motor support on its trunnions.

In the particular construction shown the ventilator comprises as a part thereof any suitable switch mechanism of the pull cord type for controlling the operation of the motor. Such a switch mechanism is represented at 65, it being shown as secured in a recess 66 provided in the enlarged portion 67 of the member 55 forming a housing therefor and rendering the switch mechanism concealed when the motor and fan assembly are adjusted in a position for withdrawing the air from the room. In the arrangement shown the wires through which current is supplied to the motor are represented at 68, 69, 70 and 71, the wires 68 and 69 extending from any suitable source of current and through the trunnion 55 to connections on the switch 65 and the wires 70 and 71 leading from the switch to the motor and being partially housed within the recessed portion 72 of the member 55.

The pull cord for operating the switch 65 in accordance with common practice is represented at 73 and preferably likewise extends through the hollow trunnion 55 to avoid the tangling thereof with other parts of the apparatus.

Referring now to the means for adjustably

supporting the panel 19 and the parts carried thereby in position at the top of the window, these means comprise upper and lower inwardly extending brackets 74 and 75 on the terminal end portions of the panel sections 25, these brackets, shown as formed integrally with the plate portions 44 of these panel sections, presenting forwardly opening recesses 76 and 77, respectively.

These supporting means also comprise bars 78 secured, as by screws 78^a, flatwise against the inner surfaces of the window frame members 15 inwardly beyond the path in which the lower window sash 18 is movable. The brackets 74 and 75 are connected with the bars 78 by means of links 79 and 80, respectively, the links 79 and 80 being pivotally connected at their lower ends with the bars 78 as represented at 81 and 82 and at their upper ends with the brackets 74 and 75 as represented at 83 and 84, respectively.

The parts just described are so constructed and arranged as shown that the panel 19 may be swung outwardly to the position shown in Fig. 2 in which it substantially closes the opening at the top of the window, the upper sash being lowered to the position shown, in which position the panel extends into the path of upward movement of the lower sash 18, or may be swung inwardly into the room to the position shown in Fig. 3 in which the panel 19 is removed from the path of upward movement of the sash 18 thereby permitting the latter to be raised the full height.

The panel 19 is shown as releasably held in the position represented in Fig. 2 by wing nuts 85 and 86 screwed upon the ends of studs 87 and 88 extending laterally from the bars 78, these studs becoming entered, respectively, in the recesses 76 and 77 of the brackets 74 and 75 in the swinging of the panel 19 to the position shown in this figure and the wing nuts 85 and 86 being turned down against these brackets to clamp them against the bars 78.

Upon releasing the wing nuts 85 and 86 and swinging the panel 19 inwardly as shown in Fig. 3 the plate portions 44 of the panel sections 25 abut the links 79 and 80 and the wing nuts 86, thus limiting the inward swinging of the panel beyond the desired position.

The construction shown in Figs. 9, 10 and 11 represents an embodiment of my invention, as to certain features thereof, in a ventilator in which the panel portion is unprovided with glass sections. This construction comprises a panel represented generally at 89 and corresponding with the panel 19 and shown as formed of a sheet metal main panel section 90 having upper and lower inwardly extending flanges 91 and 92 and a central opening 93 at which a ring represented at 94 and corresponding with the ring 49 is secured as by screws 95.

The panel 89 also comprises supplemental end panel sections 96 which slidably telescope with the ends of the panel section 90. To this end the panel sections 96 are provided at their upper edges with inwardly and downwardly extending flanges 97 and at their lower edges with inwardly and upwardly extending flanges 98 which receive the flanged upper and lower edges of the panel

section 90. The flanges 91 and 92 contain elongated slots extending lengthwise thereof as represented at 99 of the flange 91 into which bolts 100 on the supplemental panel sections 96 extend, thereby permitting of the relative adjustment of the panel section 89 to fit windows of different widths.

The panel 89 is shown as provided with means, for supporting it in a window casing, of the same construction and operating in the same way as those shown in Figs. 1 to 8, inclusive, and therefore detailed description thereof appears to be unnecessary.

It will be noted that the wires leading to the motor and shown as located in the hollow portion 15 of member 56 are shielded from the air flowing to the fan blades and thus protected against the deposit thereon of lint, dust or grease when the fan is used to exhaust air from a room, it being desirable that the hollow portion of member 56 be closed at its open side as by a cover plate represented at 56^a.

Furthermore, by leading the wires into the fan support beyond the outer ends of the fan blades, danger of those portions of the wires which hang from the ventilator structure becoming pushed up, by raising the window, into a position where they may be struck by the fan blades, is prevented.

While I have illustrated and described certain constructions embodying my invention, I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered and the invention embodied in other forms of structure without departing from the spirit of my invention.

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

1. A ventilator comprising a panel, a fan on said panel and means for adjustably supporting said panel comprising members for attachment to a window casing, upper and lower links pivoted at their lower ends to said members and at their upper ends to said panel, and means on said members and engaging said panel for releasably holding said panel in a set position relative to said members.

2. A ventilator comprising a panel, a fan on said panel and means for adjustably supporting said panel comprising members for attachment to a window casing, links pivoted to said members and to said panel, said panel having a portion containing a recess, and means on one of said members adapted to extend into said recess and engage said panel for holding the latter in one position of adjustment.

3. The combination of a window having upper and lower sliding sashes, and a ventilator at the top of the window opening and comprising a fan, a supporting structure therefor and means for supporting said supporting structure in a position in which it extends into the path of upward movement of the lower one of said sashes, said means comprising upper and lower pivoted links engaging said supporting structure and adapting said supporting structure to be moved out of said path.

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