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SPLIT WINDOW CONSTRUCTION

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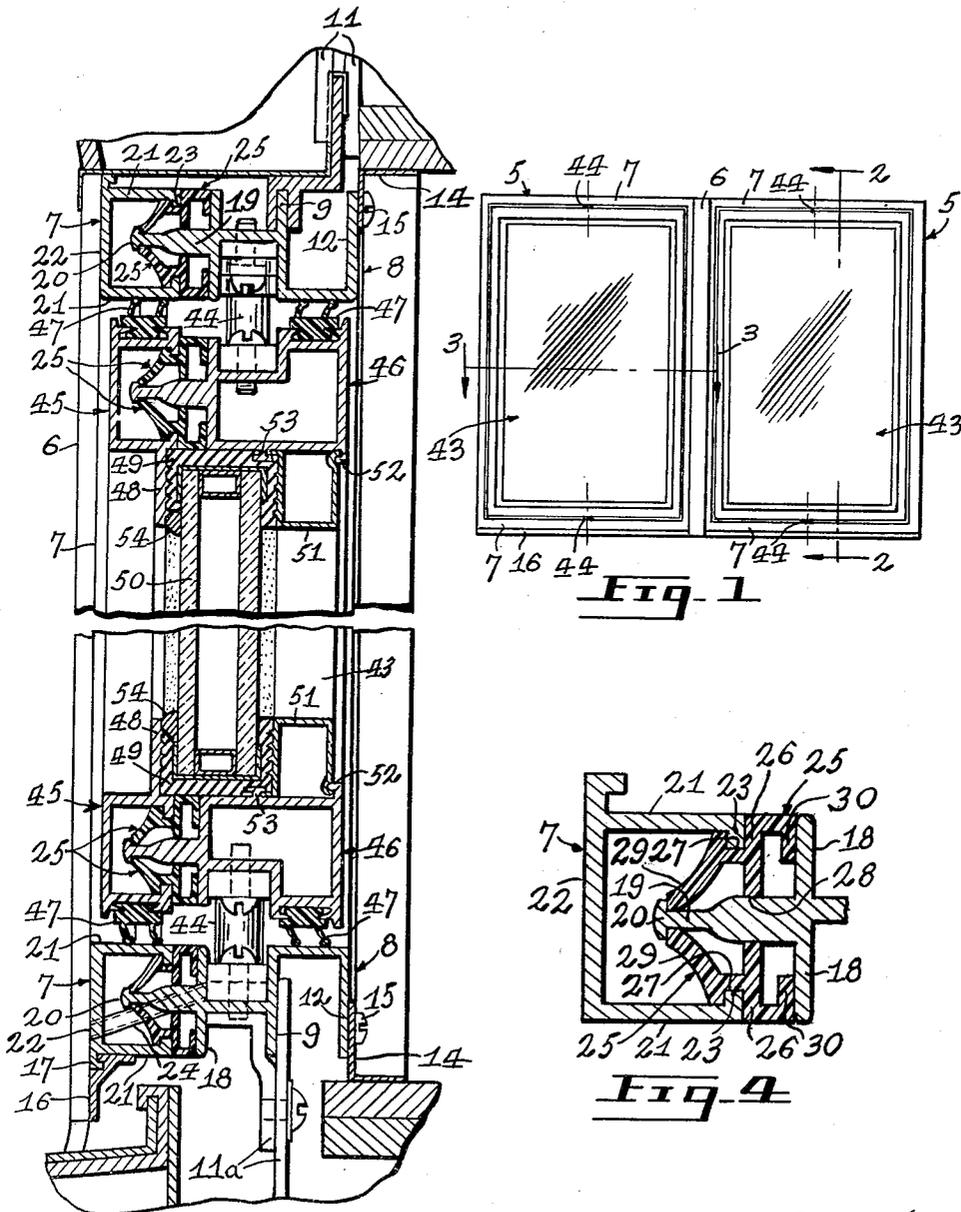


Fig. 1

Fig. 2

Fig. 4

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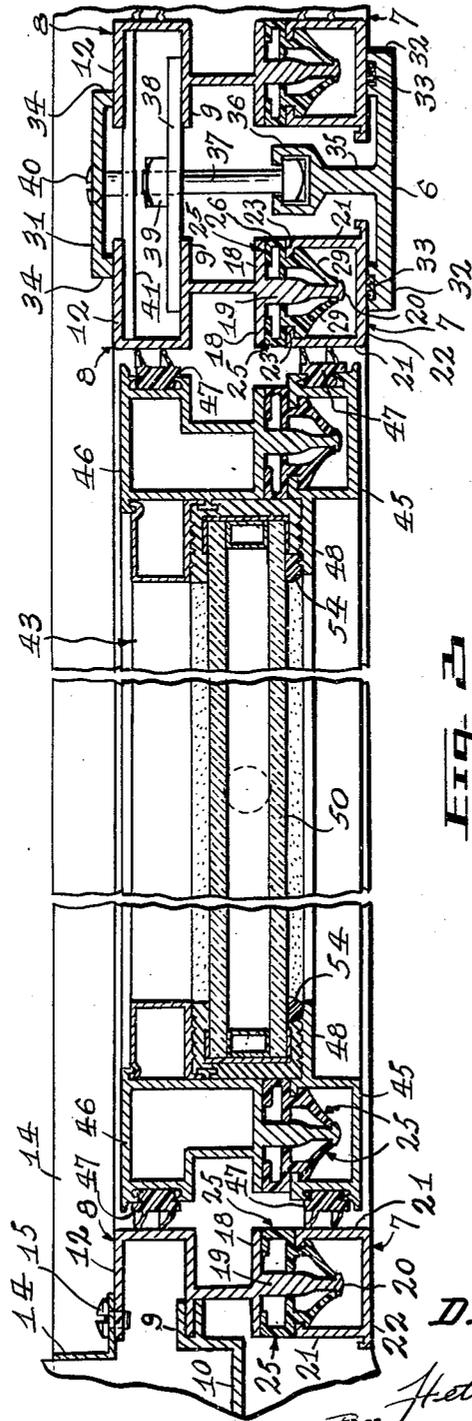
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SPLIT WINDOW CONSTRUCTION

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This invention relates to improvements in window constructions and more particularly to windows of the type in which the ventilator portion is rotatable about a central pivot.

A particular object of this invention is to provide a metallic window assembly comprising a frame and ventilator therefor with split exterior and interior sections and with non-metallic insulation members arranged therebetween for the elimination of frost penetration and the resultant sweating particularly on the interior portions of the window.

One of the main problems in the use of metallic window frames and ventilators has been in the assembly of the exterior and interior sections without providing considerable metal-to-metal contact therebetween which serves to transmit or conduct cold temperatures from the exterior to the interior sections. The latter, which are normally exposed to much higher temperatures, such as room temperatures, when the frost penetrates, produce a condensation or sweat which frequently penetrates between the frame and the ventilator as well as running down onto the interior wall surfaces. When condensation collects between the frame and the ventilator it may be subjected to freezing if the outside temperature drops. This condition usually results in rendering the ventilator immovable until de-icing can take place. However, people too frequently attempt to rotate the ventilator before de-icing has taken place. This can result in considerable damage to the window assembly.

The above defects and disadvantages are readily overcome by applicant's assembly in which the exterior and interior frame and ventilator sections are united by the use of an insulating joint member which is so constructed that, when interposed between an exterior and an interior section the said sections may be secured to the insulating member without the use of bolts or other fastening members which require metal-to-metal contact between portions of the exterior and interior sections.

The above and other objects, advantages and features characteristic of this invention will be understood more readily from the following detailed description taken in connection with the accompanying drawings, in which:

FIG. 1 is an elevational view of a window assembly embodying this invention.

FIG. 2 is a vertical sectional view taken along the lines 2-2 of FIG. 1.

FIG. 3 is a horizontal sectional view taken along the lines 3-3 of FIG. 1.

FIG. 4 is an enlarged detail view showing the manner of assembly of the exterior and interior sections with the insulating joint member according to the present invention.

With reference to the accompanying drawings, FIGS. 1 to 4 show a window assembly adapted to be mounted within a wall opening of a building.

The window assembly according to a preferred embodiment comprises two frame members 5 located at opposite sides of a mullion 6. Each frame member includes an exterior frame section 7 of extruded aluminum or other formed, cast, or extruded metal, extending about the head, jambs and sill of a window opening, and an interior frame section 8 extending about said head, jambs and sill.

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The interior frame section 8 is shaped to provide a flange 9 at the intermediate portion which is directed towards the opening defining portion of the building. A weathering fin 10 is fitted along said flange 9 in the head and jamb portions and has its outer end embedded in the opening of the building and is secured between anchoring clips 11. Sill clips 11a engage flange 9 of the sill portion of frame section 8. A second flange 12 paralleling flange 9 is provided about the inner surface of the interior frame section 8 and is secured by bolts 15 to an interior trim angle member 14 extending around the head, jambs and sill of the wall opening. The exterior frame section 7 is provided with a weathering fin 16 along the sill portion which is interfitted with said exterior frame section 7 as indicated at 17 and depends therefrom.

The forward portion of the interior frame section 8 is rail-shaped as viewed in cross-section to provide base flanges 18 on either side of a central, forwardly projecting, rail 19 and a T-flanged head 20 at the outer end of the central rail 19. The forward rail and T-flanged head 20 project into a channel-shaped opening in the inner side of exterior frame section 7. The channel-shaped opening is defined by a pair of arms 21 extending rearwardly from a bail section 22. Margins 23 of arms 21 are directed inwardly.

A pair of plastic resin insulating joint members 25 are fitted in opposed relation in the channel opening of the exterior frame 7, each with a shoulder 26 of the base thereof engaging the rear of an adjacent inwardly directed margin 23. Each joint member 25 has a recess 27 adjacent shoulder 26 into which said margin 23 of frame 7 is interlocked. A central opening 28 is provided between the bases of joint members 25 to permit projection of rail 19 of interior frame 8 centrally of the joint members. Inwardly and forwardly directed spacer flanges 29 of members 25 engage the under surface of the T-flanged head 20 at either side of the rail and also bring the flanges 18 of the interior frame section 8 into pressure engagement with rearwardly spaced shoulders 30 at the base of said joint members 25.

The jamb side of each exterior and interior frame section 7 and 8 adjacent the mullion, fits between the mullion 6 and mullion cover 31. The mullion 6 is T-sectioned, having marginal flanges 32, recessed to receive a plastic weatherstripping 33 which contacts the bail portion 22 of exterior frame section 7 when the mullion overlaps the same. The mullion cover 31 has flanges 34 which engage the exposed surface of flange 12 of the interior frame section 8. The web 35 of mullion 6 has a channel-shaped inner end section 36 into which the head of a mullion bolt 37 is slidably fitted. The bolt 37 extends through a mullion clip 38 which is arranged to bear against the surfaces of flanges 9 of the interior frame section 8 remote from the mullion. A nut 39 is screw-threaded onto bolt 37 against the clips 38 to secure the mullion in place. The mullion cover 31 is held in place by means of a central fastener 40 which is screw-threaded into a threaded opening in a mullion cover clip 41 on the side of the flanges 12 of said interior frame member 8 remote from the mullion cover.

A ventilator 43 is mounted in the frame 5 for rotation relative to the frame about a central axis by means of pivots 44 extending between frame 5 and the ventilator 43. Although the preferred embodiment shows the axis of the ventilator to be vertical, it is also contemplated to mount a ventilator to rotate about a horizontal central axis. This will be accomplished by placing the pivots 44 between the jambs of the frame and the ventilator.

The ventilator 43 comprises an exterior ventilator sec-

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tion 45 and an interior ventilator section 46 which have interfitting portions substantially identical with the interfitting portions of exterior frame sections 7 and interior frame sections 8 with the insulating joints 25. Identical insulating joints 25 are inserted between the exterior and interior ventilator sections 45 and 46 in the manner as previously described with respect to the interlocking of sections 7 and 8.

As will be seen, the pivots 44 extend between the interior section 8 of frame 5 and the interior section 46 of ventilator 43. The outwardly facing surfaces of ventilator sections 45 and 46 are each recessed on four sides to receive a flexible weatherstripping member 47 which engage the opposing inwardly directed surfaces of the exterior and interior frame sections 7 and 8.

The inner face of the outer ventilator section 45 has an inwardly directed flange 48 against which the exterior of a glazing bed 49 supporting a glazing 50 is compressed by a glazing bead 51. The glazing bead 51 is of the snap-on type having margins which are fitted in recessed projections 52 and 53 on the inwardly directed surface of the interior section 46. A plastic sealing strip 54 is compressed between the outer surface of the glazing 50 and the flange 48.

The sill portion of the interior frame section 8 is H-section between the flanges 9 and 18. This forms a recess in the upper surface in which any moisture condensation is liable to be trapped. At least one drain tube 24 extends outwardly and downwardly from the said recess and through an opening in the bail section 22 of the exterior frame 7. Preferably, a drain tube 24 should be located one on either side of the pivot 44 to ensure that icing will not take place in this area.

Although the preferred embodiment illustrates a double glazing, it is also contemplated for use with a single glazing. This may be accomplished by suitably adjusting the size of the glazing bead 51 and/or the location of the recessed projections 52 and 53 on the surface of the interior section 46. However, if the glazing engaging side of the beading 51 were to be projected laterally a distance compensating for the reduced thickness of a single glazing, the same exterior and interior ventilator sections may be employed for single and multiple glazing panels.

It is also contemplated to adapt this invention to side, top or bottom hinged windows as well as double hung and casement windows. A further modification of this invention contemplates its use for windows or ventilators in separate frames or in curtain wall construction.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A window construction comprising a rectangular frame and a rectangular ventilator therefor, said frame comprising split exterior and interior metallic frame sections and insulation members disposed therebetween in interlocking engagement with said exterior and interior frame sections to compress said exterior and interior

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frame sections together, and said ventilator comprising split exterior and interior metallic ventilator sections and insulation members disposed therebetween in interlocking engagement with said exterior and interior ventilator sections to compress said exterior and interior ventilator sections together, said ventilator being mounted in said frame so that the exterior sections of the frame and ventilator are insulated from the interior sections of the frame and ventilator, each of said exterior frame and ventilator sections being substantially channel-shaped as viewed in cross-section, presenting a pair of rearwardly extending spaced side walls from an exteriorly directed bail portion, said side walls being provided with inwardly directed flanges at the rear margins thereof, said insulating members comprising a pair of insulation members arranged at opposite sides of the associated exterior section, each insulation member being shaped to provide a base having a shoulder butted against the rear margin of an adjacent channel side wall, said insulation member extending into the channel and being provided with a recess adjacent the base into which the intumed margin of said channel side wall is fitted, a forward and inwardly directed flange member at one side of the base and a rearwardly extending spacer at the other side of the base of said insulation member, and each of said interior frame and ventilator sections having an interior portion which is substantially rail-shaped as viewed in cross-section, to provide laterally extending base flanges on opposite sides of a central web, said web having a T-flanged head and being projected between the opposing insulation members into the channel of the corresponding exterior section so that the inwardly and forwardly directed flanges of the insulation members engage the under side of the T-shaped rail head at opposite sides thereof and exert pressure engagement on the rail base flanges against the corresponding rearwardly extending spacer at the base of said insulation member, whereby each exterior frame section is interlocked with a corresponding interior frame section along the length thereof, and each exterior ventilator section is interlocked with a corresponding interior ventilator section along the length thereof in addition to being insulated therefrom.

2. A window construction as set forth in claim 1, including insulating means carried by one of said exterior frame and ventilator sections and engaging the opposing surface of the other.

3. A window construction as set forth in claim 1, including insulating means carried by one of said interior frame and ventilator sections and engaging the opposing surface of the other.

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