June 4, 1963 D. G. DEDDO 3,092,171

AWNING STRUCTURE

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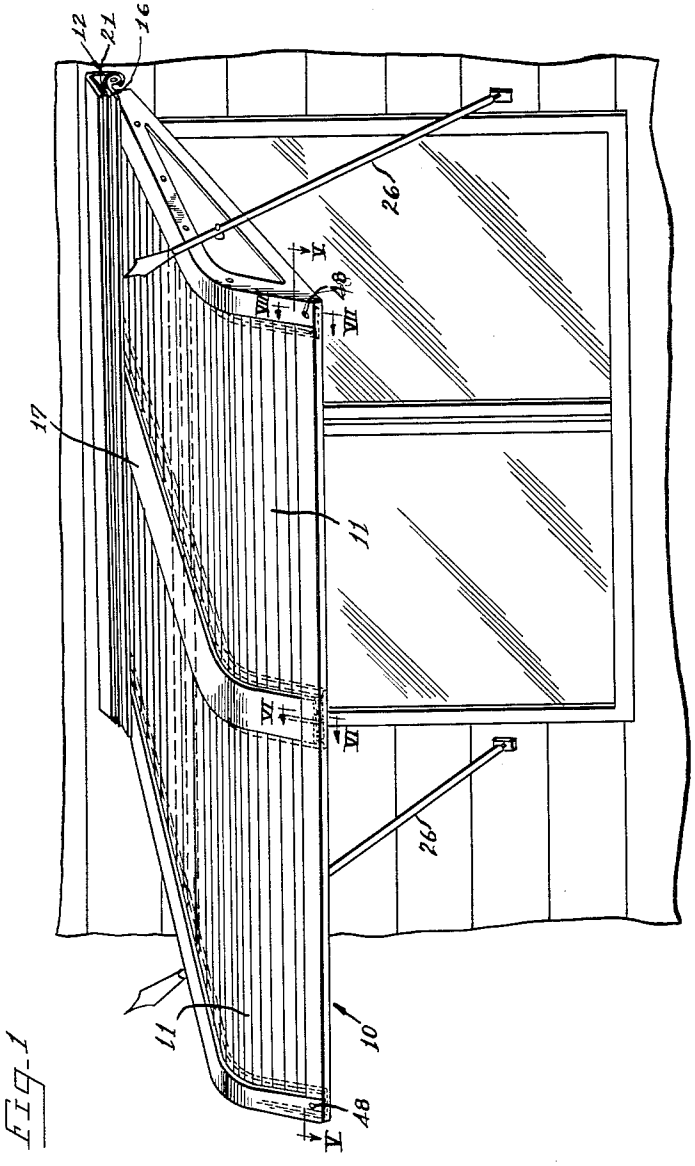



FIG. 1

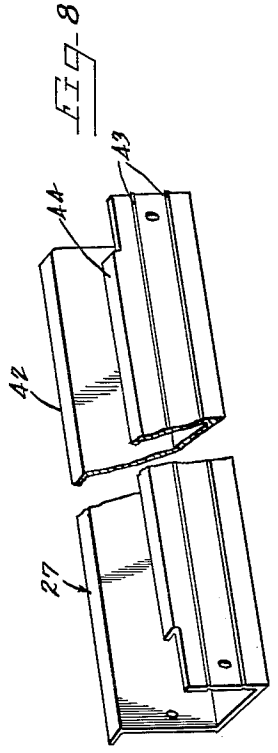



FIG. 8

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AWNING STRUCTURE

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Fig. 2

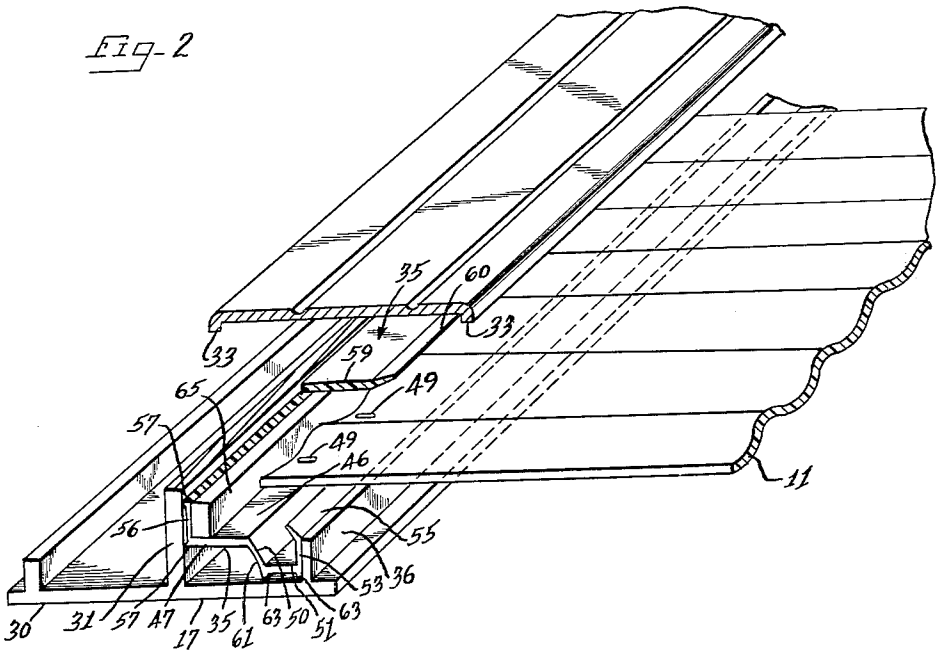
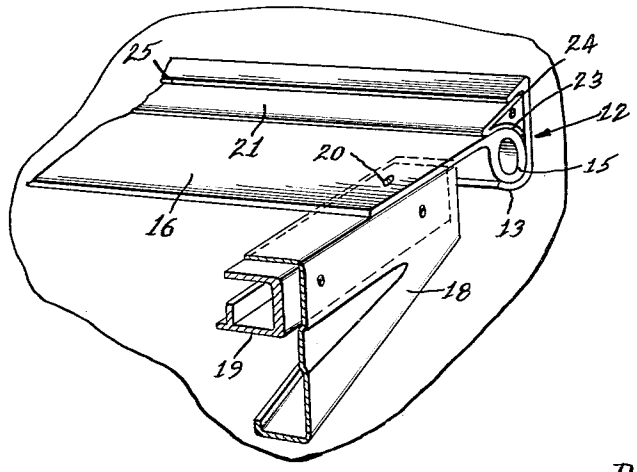



Fig. 3



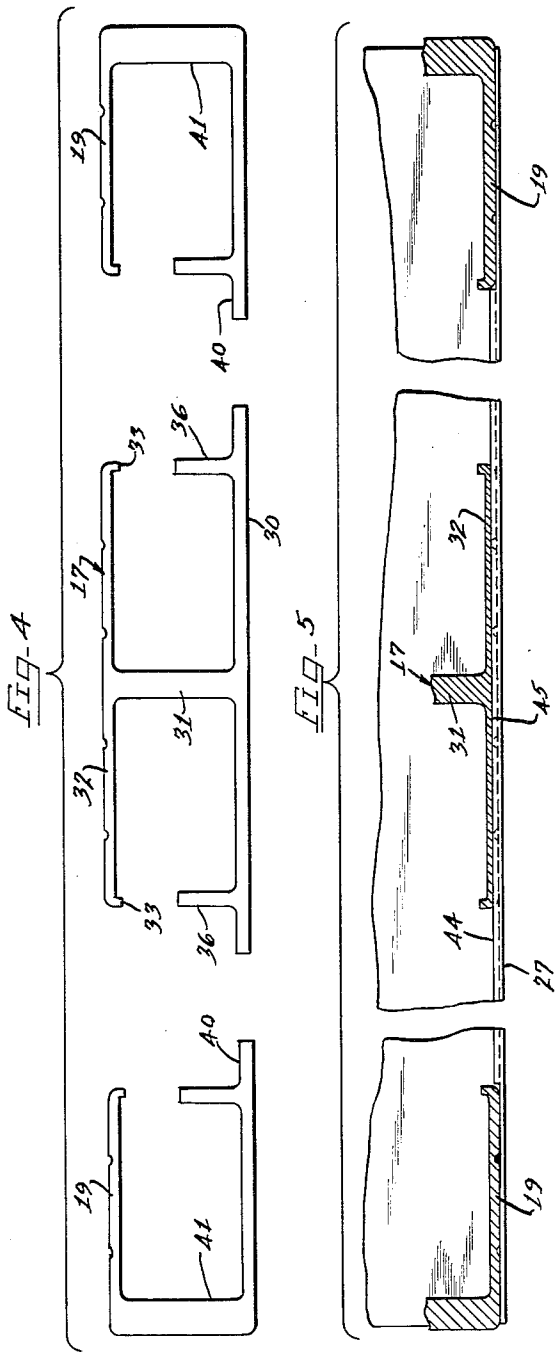

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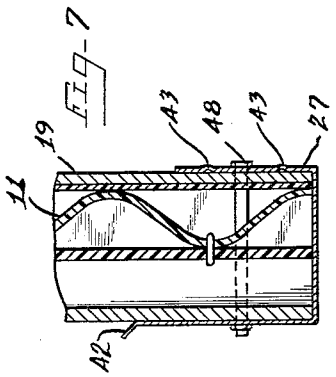
AWNING STRUCTURE

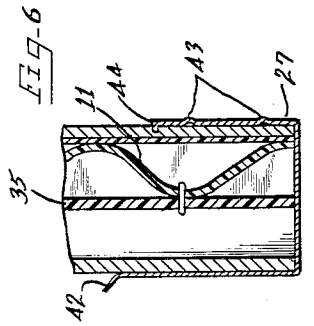
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AWNING STRUCTURE

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Fig. 12

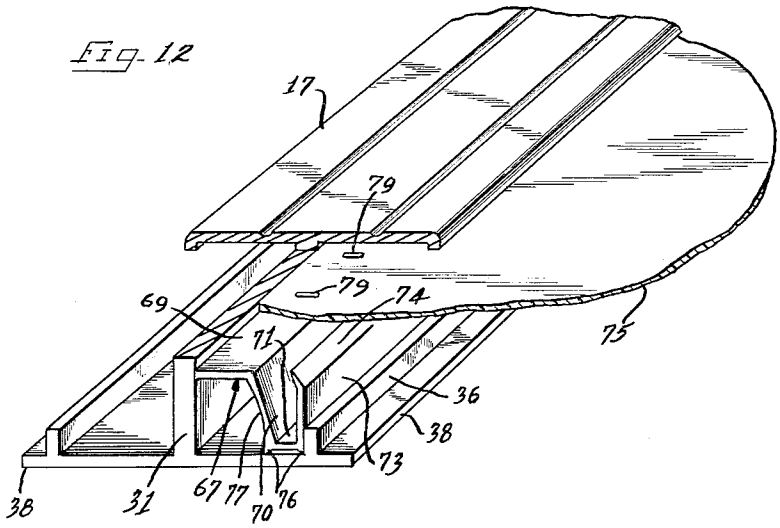



Fig. 9

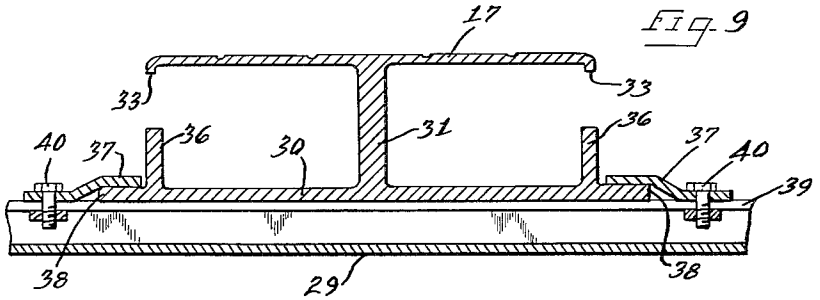
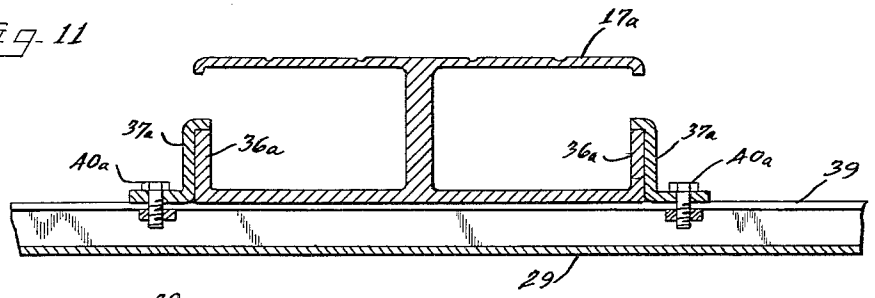



Fig. 11



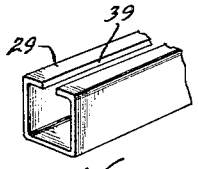




Fig. 10

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3,092,171

# AWNING STRUCTURE

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Filed Jan. 6, 1961, Ser. No. 81,042
12 Claims. (Cl. 160—40)

This invention relates to improvements in awning structures and more particularly relates to an improved form of rigid awning structure.

Heretofore, rigid awning structures and particularly awning structures in which awning panels are supported in a metal framework, have been so constructed that it is necessary to bolt the panels to the metal framework. Such structures are subject to leakage of water between the panel and framework, and are also subject to rattling in the wind, and besides require a series of drilled holes in the framework and panels and the bolting of the panels to the framework along the metal supporting structure in a plurality of places, making it necessary to cover the bolts and requiring an excessive amount of labor to drill and bolt the panels and supporting framework together.

A principal object of the present invention is to provide a simplified and improved form of awning structure which seals the metal framework from the egress of water and reduces to a minimum the bolting of the panels to the supporting framework therefor.

A further object of the invention is to provide a simple and improved form of awning structure in which the awning panels are retained from rattling in the wind and in water tight relation with respect to the supporting framework for the panels by the compressive force of expansible retainers having compressive engagement with the supporting rails of the framework for the awning structure.

Still another object of the invention is to simplify the present rigid awning structures having metal frames and fiberglass panels and prevent rattling of the panels and the leakage of water between the panels and framework, by providing non-metallic retaining structures for the panels slidable along slotted portions of the metal rails of the awning structure and expansible thereagainst and against the awning panels and retained thereto by the compressive force of the retainers to the slotted portions of the metal rails.

A still further object of the invention is to simplify the mounting of fiberglass panels to the supporting rails of the supporting framework for a rigid awning structure by providing plastic retainers compressibly engaging within panel retaining slots in the panel supporting rails of the awning structure, and by stapling the panels to the plastic retainers and sliding the panels and plastic retainers along the panel receiving slots of the awning structure.

A still further object of the invention is to provide a novel and improved form of rigid awning structure having panels and parallel supporting rails therefor, in which the panels are mounted on the rails by slidable movement along slots extending along the rails, and in which an end closure channel is snapped to the end of at least one center rail to retain the panels to the supporting framework therefor.

A still further object of the invention is to provide a simplified and improved metal framework for supporting panels for rigid awning structures in which the parts of the framework structure are retained in assembled relation with respect to each other with a minimum of bolting and are so constructed and arranged as to accommodate the ready expansion of the awning in width.

These and other objects of the invention will appear



from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

FIGURE 1 is a perspective view of a rigid awning constructed in accordance with the invention showing the awning mounted to extend over the window of a building;

FIGURE 2 is a fragmentary perspective view with parts broken away and certain other parts in vertical section showing the mounting of an awning panel to the center rails of the awning structure;

FIGURE 3 is a fragmentary perspective view of the rear end portion of the awning structure showing the mounting of the awning structure on a building;

FIGURE 4 is an end view of the intermediate and end rails of the awning structure;

FIGURE 5 is a fragmentary sectional view taken substantially along line V—V of FIGURE 1, with the end covers for the awning structure and the panels and retaining means therefor removed;

FIGURE 6 is a fragmentary sectional view taken substantially along line VI—VI of FIGURE 1;

FIGURE 7 is a fragmentary sectional view taken substantially along line VII—VII of FIGURE 1;

FIGURE 8 is an enlarged detailed view of the outer end rail for the awning structure;

FIGURE 9 is a fragmentary sectional view taken through the center rail of the awning structure with the panels and retaining means therefor removed and showing one form of means for clipping the rail to the cross-brace therefor;

FIGURE 10 has an enlarged fragmentary perspective view of a portion of the cross-brace for the awning structure;

FIGURE 11 is a view somewhat similar to FIGURE 9, but illustrating a modified form of connection of the center rail to its cross-brace; and

FIGURE 12 is a fragmentary perspective view showing a modified form of retainer for the awning panel to the center rail therefor.

In the embodiment of the invention illustrated in the drawings, I have shown in FIGURE 1 a rigid awning structure mounted on the wall of a building over a window opening. The owning structure includes a metal framework **10** supporting panels **11**, herein shown as being corrugated, but which may be flat as well. The metal framework is hingedly mounted to the wall of a building on a hinge bracket **12** (FIGURE 3) extending across the top of the window and suitably secured to the wall of the building. The hinged bracket **12** has a lower arcuate bearing support or hook portion **13** engaged by a tubular bead **15** extending along the rear end portion of a hinge plate **16** and formed integrally therewith. The hinge plate **16** extends along the top of the awning structure and is secured to a center rail **17** and outer rails **19** of the awning structure as by bolts **20**. As shown in FIGURE 3, the hinge plate extends over covers **18** for the ends of the awning structure and is bolted to said end covers and the outer rails **19** by the bolts **20**.

In mounting the awning on the wall of a building, the bead **15** is engaged with the bearing support portion **13** of the bracket **12**. A lock or retainer **21** made from a resilient material which may be a plastic and is generally V-shaped in end view, having a lower portion **23** conforming to the form of the bead **15** and an upper portion **24** extending under a flange **25** extending along the upper edge of the bracket **12**, is engaged with the bead **15** and snapped under the flange **25**. The resiliency of the retainer **21** will then bias the bead into engagement with the arcuate bearing surface **13**. The awning may then be hinged upwardly and retained in a desired position, as by spears **26** suitably pivoted to the wall of the building beneath the awning and extending angularly upwardly and

outwardly with respect to the wall of the building and secured to the end covers 18 intermediate the ends thereof.

The frame structure 10 includes the intermediate rail 17, the side rails 19, the side covers 18, a front brace and cover 27 and an intermediate crossbrace 29. The intermediate rail 17 is generally H-shaped in cross-section and has a lower plate portion 30, a central web 31 and an upper plate portion 32. The upper plate portion 32 has downwardly turned end portions 33 forming gibs or retainers for plastic panel retainers 35. The lower plate portion 30 as shown in FIGURE 4 has upright legs 36 extending upwardly therefrom in general alignment with the gibs 33 and forming retainer legs or flanges for the plastic panel retainers 35. The intermediate rail 17 thus has two oppositely facing generally C-shaped slots extending for the length thereof for receiving the plastic retainers 35 and the panels 11 secured thereto, as will hereinafter be more clearly described as this specification proceeds.

The portions of the bottom plate 30 extending outwardly of the upright legs 36 form retainer flanges 38 adapted to be engaged by clips 37 on the intermediate cross-brace 29. As shown in FIGURES 9 and 10, the intermediate cross-brace 29 is of a generally box-like form and has a slot 39 extending the length thereof within which fit bolts 40 retaining the clips 37 to said cross-brace and retaining said clips in engagement with the retainer flanges 38 of the intermediate rail 17. The slot 39 in the cross-brace 29 thus accommodates the clipping of the intermediate rail and the side rail to said cross-brace at any desired location, without the customary drilling of the cross-brace, and also makes it possible to extend the awning in width in accordance with the size of the cross-brace used and to utilize more than one intermediate rail, if desired. The side rails 19 have flanges 40 adapted to be clipped to the cross-brace 29 by the clips 37 in the same manner the intermediate rail is clipped thereto. The side rail 19, like the intermediate rail 17 each have a channel or C-shaped slot 41 extending for the length thereof and opening to opposite ends thereof to accommodate the retainers 35 and opposite ends of the panels 11 to be slidably mounted therein.

In FIGURE 11, I have shown a modified clipping means for clipping the rails of the awning frame structure to the cross-beam 29. In this form of the invention, I have shown an intermediate rail 17*a*, like the rail 17, except the rail 17*a* does not have the retainer flanges 38. In this form of the invention, clips 37*a* are bolted to the cross-beam 29 by bolts 40*a* extending through the slot 39 in said cross-beam. The clips 37*a* extend upwardly along legs 36*a* of the rail 17*a* and extend over and are clipped into engagement with the top surfaces of said legs.

The front brace 27 forms a closure for the front end of the awning, concealing the ends of the panels and the plastic retainers therefor, and also forms a stiffening brace for the awning. The front brace 27, as shown in FIGURES 6, 7 and 8, is of a generally channel-like form having stiffening beads 43 extending along the front end thereof and also having an inwardly extending flange 44 extending inwardly of the front wall thereof and cut off adjacent the ends of said front brace for distances substantially equal to the width of the top plates of the side rails 19. The front brace 27 also has a flange 42 turned outwardly of the rear wall thereof and extending therealong and increasing the rigidity of said front brace. The lip 44 is adapted to fit within a slot 45 extending transversely of the top plate 32 of the intermediate rail 17.

In assembling the awning structure, assuming the panel retainers and the panels secured thereto are in place in the slots in the intermediate and end rails 17 and 19, 19 respectively, the end brace is placed across the front of the awning structure and is moved inwardly along the front end of the intermediate rail 17 until the flange 44 snaps into the slot 45, extending transversely of the top plate 32 of the intermediate rail 17. The front brace will then be locked in position on said intermediate rail. Opposite ends of the front brace are then secured to the side rails 19 as by nuts and bolts 48 extending entirely through said brace, the side rails 19 and the panels 11, as well as the retainers therefor.

Referring now in particular to the retainers 35 and the means for retaining the panels 11 to the intermediate and end rails 17 and 19, 19 with a minimum of bolting, each retainer 35, as shown in FIGURE 2, extends for the length of the respective slots in the intermediate and side rails 17 and 19, 19 respectively, and may be made from a thermoplastic material, such as a vinyl thermoplastic material. The retainers are preferably extrusions and are relatively rigid in their completed form.

Each retainer 35, as shown in FIGURE 2, includes a flat surface or ledge 46 spaced upwardly from the bottom thereof and abutting the undersurface of the panel 11 and secured thereto as by staple 49, driven through the valleys of the corrugated panels 11. The ledge 46 terminates at its outer end into an inclined wall 50 of a trough-like portion 51 of the retainer. The trough-like portion 51 has an outer wall 53 abutting the inner side of the leg 36. The outer wall 53 terminates at its upper end into an inwardly turned lip 55 tapering to a feather edge at its outer end. The feather edge of the lip 55 abuts the underside of the panel 11 and is pressed inwardly and downwardly by said panel and forces the wall 53 into pressing engagement with the inner side of the leg 36, the compressive point being adjacent the upper end portion of the leg 36. The feather edge of the lip 55 also maintains a continuing compressive force on the panel and retains the panel from rattling besides draining any water that may lodge underneath the panel away from the supporting framework therefor.

The inner side of the ledge 47 terminates into a vertical wall portion 56 having runners or beads 57 extending along the upper and lower ends thereof for slidable engagement with the wall of the web 31. The vertical wall portion 56 terminates into an inwardly extending flap 59 bent inwardly of the wall 56 and extending over the end of the panel 11. The flap 59 before insertion in its slot is normally biased upwardly and has a feather edge 60 engaging the inside of the gib 33 under compression, and thereby placing the rear wall 56 into compressive engagement with the web 31 and exerting a downward force on the panel 11, to retain said panel from rattling.

The inclined wall 50 of the through-like portion 51 of the retainer 35 has a concave inner or under surface 61 and is placed under compression as the retainer is slidably moved within its slot, and presses ribs 63 into engagement with the upper surface of the plate 30 and also presses the retainer into engagement with the inner side of the leg 36 and the outer side of the web 31 of the rail 17.

A gasket 65 extends along the outer side of the wall 56 and has the end of the panel 11 pressed into engagement therewith, to seal the panel to the retainer 35 and to prevent the leakage of water along the end of the panel 11. The gasket being relatively soft, may conform to various configurations of panels.

While I have herein shown a gasket 65 for sealing the end of the panel, it should be understood that the gasket may be replaced by a caulking compound, mastic, or any other sealing medium, which may be placed along the edge and top of the panel, if desired.

In assembling the awning, the framework 10 is first assembled, except for the front brace 27. The panels are then stapled to the retainers 35 by the staples 49, it being understood that the retainers are stapled to opposite sides of each panel and extend along the edges thereof. The retainers 35 may then be inserted in the C-shaped slots in the intermediate rail 17 and the side rail 19 from the front ends of said slots. The retainers and panel are then slidably moved along said

slots for the length thereof, the beads 57 and 63 reducing sliding friction until the panel is in place in the rails 17 and 19. The fit between the retainers and C-shaped slots is a relatively close fit and the compressive force of the retainer acting on the walls of the slots creates sufficient friction between the retainers and walls of the C-shaped slot to firmly retain the panel in position in the frame structure. After the insertion of a first panel in the frame structure, a second panel may then be inserted in the frame structure in the same manner as the first panel. The front brace 27 may then be slidably moved along the rails 17 and 19 from the forward ends thereof until the flange 44 snaps into the slot 45. The end covers 18 may then be placed along opposite ends of the awning structure closing the ends of the awning structure and covering the side rails 19. The end covers may then be bolted in place, the bolts at the forward end portion of said end covers also retaining the front brace 27 to the forward end portions of the rails 17 and 19.

In the modified form of the invention illustrated in FIGURE 12, I have shown a simplified form of retainer which may be used for either flat or corrugated panels. In this form of the invention, the intermediate and end rails are the same as in the form of the invention illustrated in FIGURES 1 through 9, so the same part numbers will be applied thereto as were applied to the same parts as in form of the invention illustrated in FIGURES 1 to 9. The mounting of the panel on the intermediate rail is the same as the mounting of the panel on the side rails, so that intermediate rail and panel mounting on the intermediate rail need only herein be shown and described.

As shown in FIGURE 12, a retainer 67 similar to the retainer 35, but not having the inner wall 56 and lip 59 of the retainer 35, is slidably mounted in the C-shaped slot of the intermediate rail 17. The retainer 67 has a flat ledge 69, the end of which slidably abuts the outside of the web 31. The leg 69 terminates into an inclined wall 70 of a trough 71. The trough 71 has an outer wall 73 engaging the inner side of the leg 36. The outer wall 73 terminates at its upper end into an angularly inwardly extending lip 74, terminating into a feather edge pressed into engagement with the underside of a panel 75, herein shown as being a flat panel, but which may be a corrugated panel as well. The lip 74 pressed downwardly by the panel 75 presses the wall 73 into engagement with the leg 36 to retain the retainer 67 to said leg. The lip 74 and feather edge thereof also exerts an upward pressure on the panel and retains the panel from rattling in its slot during heavy winds and effects a water seal along the underside of the panel.

The undersurface of the trough 71 has beads 76 extending therealong, engaging the bottom of the C-shaped slot in the rail 19 and reducing the friction between said slot and retainer when sliding said retainer and panel 75 into said slot. The inner side of the inclined wall 70 is slightly concave, as indicated by reference character 77 and is under compression when the retainer is inserted within the C-shaped slot in the rail 17 and exerts compressive forces on said retainer to compressively engage said retainer with the web 31, the bottom of the C-shaped slot and the inside of the leg 36, to further said in holding said retainer to the rail 17.

As shown in FIGURE 12, the panel 75 is stapled to the ledge 69 by staples 79. In this form of the invention, the gasket is eliminated, although a gasket may be provided, if desired.

It may be seen from the foregoing that I have provided a simplified and improved awning structure, eliminating the multiplicity of bolts and bolt holes heretofore required to assemble the panels to the frame structure of the awning by stapling or riveting the panels to friction retainers retaining the panels to the frame structure by frictional engagement of the panels therewith and sealing the panels from the leakage of water along the supporting framework therefor.

It may further be seen that besides materially reducing the bolts, bolt holes and bolting operations formerly required for retaining the panels to the awning frame structure, that I have reduced the tendency of the panels to rattle and have simplified the assembly of the awning making it possible to assemble the panels to the frame structure by simply sliding the panels therein.

It may still further be seen that the retainers of the invention are adapted for either flat or corrugated panels and that one panel may be used interchangeably with the other, and that where the panels are corrugated, if any water should be blown under the panel past the lip 55, it may be drawn along the trough 50 into the front brace 27 for discharge from opposite ends thereof.

While I have herein shown and described several forms in which my invention may be embodied, it should be understood that various modifications and variations in the invention may be attained without departing from the spirit and scope of the novel concepts thereof, as defined by the claims appended hereto.

I claim as my invention:

1. In an awning structure, a frame structure including at least one intermediate rail and parallel spaced side rails spaced to each side of said intermediate rail, said intermediate rail having generally C-shaped slots extending for the length thereof and opening to opposite sides thereof and terminating at the outer end portions thereof into uprights legs extending for the length thereof, said side rails having generally C-shaped slots therein conforming to the slots in said intermediate rail and opening toward the slots in said intermediate rail, awning panels slidable within said slots from the ends thereof, expansible retainers extending along opposite sides of said awning panels guiding said panels for slidable movement along said slots and compressed against the upright legs and walls of said slots to retain said panels thereto, and means securing said panels to said retainers prior to insertion of said panels within said slots.

2. In an awning structure, a frame structure therefor including at least one intermediate rail and parallel side rails spaced to each side of said intermediate rail, said intermediate and side rails having generally C-shaped slots extending for the length thereof and facing each other and having upright legs extending along the lower outer end portions thereof, awning panels slidable within said slots from the ends thereof, plastic retainers extending for the length of said awning panels along opposite sides thereof and having flat ledges underlying said panels and secured thereto, said retainers forming slidable guides for said panels slidably guiding said panels for insertion within said slots and compressed against said legs and the walls of said slots to retain said panels thereto.

3. An awning structure in accordance with claim 2, wherein the panels are fiberglass.

4. An awning structure in accordance with claim 3, wherein the panels are corrugated fiberglass with the corrugations thereof extending transversely of the awning structure and wherein staples extending through the valleys of the corrugations of said panels staple said panels to said retainers.

5. In an awning structure having at least one panel and two connected supporting rails supporting opposite sides of said panel and having facing C-shaped slots extending for substantially the length thereof and terminating at their outer ends into upright legs, plastic retainers extending along each side of said awning panel and having ledges extending along the opposite edges of said awning panel and inwardly from said edges, trough-like portions depending from said ledges, each trough-like portion terminating in an upright wall having an angularly inwardly turned edge portion engageable underneath the awning panel and deflected downwardly thereby and pressing said wall into frictional engagement with said leg upon the sliding of said retainer within an associated slot.

6. In an awning structure having at least one awning panel and at least two connected supporting rails having C-shaped slots extending for the length thereof terminating at their outer ends into upright legs extending for the length thereof, plastic retainers slidable within said slots and extending along each side of the awning panel and having ledges underlying the awning panel and secured thereto, said retainers each having a trough-like portion depending from said ledge inwardly of the edge of the awning panel and terminating into an angularly extending depending wall extending to the bottom of an associated slot, a bottom wall extending outwardly therefrom having beads extending therealong for slidably engaging the bottom of the associated slots and an upright wall extending vertically from said bottom wall having engagement with the inner side of the associated ledge, and means frictionally engaging said upright wall with the edge of the associated slot comprising a lip extending along said upright wall angularly inwardly toward said ledge and having a feather edge engageable with the underside of the awning panel and depressed by said panel and placing said upright wall into compressive engagement with said leg.

7. In an awning structure having at least one awning panel and at least two connected supporting rails having facing C-shaped slots extending for the length thereof and defined at their outer ends by upright legs extending upwardly from the bottoms of said slots, for the length of said slots, plastic retainers extending along each side of the awning panel and having flat ledges underlying the awning panel and stapled thereto, said retainers each having an angularly downwardly extending wall extending from said ledge to the bottom of an associated slot and having one plain side and an opposite concave side, said inclined wall terminating into a bottom extending to said leg and having a vertical wall extending upwardly therefrom along said leg and angularly inwardly extending lip extending angularly upwardly from said last mentioned wall in a direction toward said ledge and having a feather edge engageable with the underside of the panel and deflected downwardly thereby, said lip and the concave face of said inclined wall being deflected by the panel upon slidable movement of the panel along the associated slot and placed under compression thereby and compressively engaging said retainer with said slot, to retain the associated panel in position therein.

8. In an awning structure having at least one awning panel, at least two connected supporting rails having C-shaped slots extending for the length thereof for receiving and supporting said awning panel, said slots having upright legs extending along the outer end portions thereof, and means guiding said panel for insertion within said slots from the ends thereof and retaining said panel to said rails comprising plastic retainers extending along each side of the awning panel and secured thereto for slidably guiding said panel for insertion within said slots, each retainer having a flat ledge underlying the awning panel and extending inwardly of the edge thereof and having a wall extending vertically from said ledge along the edge of the panel having a flap extending angularly upwardly and inwardly therefrom over the top of the panel prior to insertion of the panel within the associated slots, said flap being deflected by the top surface of the associated slot to place said wall into compressive engagement with the inner vertical wall of the associated slot upon insertion of said retainer within the associated slot, said retainer also having a trough-like portion depending from the associated ledge to the bottom of said slot and terminating in an upright wall having an angularly inwardly turned lip portion deflected downwardly by the undersurface of the panel and pressing said wall into compressive engagement with said leg.

9. An awning structure in accordance with claim 7, wherein a seal is provided between the edge of said panel and the wall extending vertically of the outer edge of said ledge along the wall of said panel.

10. An awning structure in accordance with claim 8, wherein the awning panel is corrugated fiberglass and the corrugations extend transversely of the awning.

11. In an awning structure, at least one awning panel, at least two connected supporting rails having facing C-shaped slots extending for the length thereof and terminating at their outer lower ends into upright legs, means slideably guiding said panel within said slots and retaining said panel thereto comprising plastic retainers extending along each side of the awning panel and stapled thereto, each retainer having a flat ledge underlying the awning panel, having a wall extending vertically therefrom along the edge of the panel and having a flap extending angularly upwardly and inwardly from said wall over the top of the panel and deflected by the top surface of an associated slot upon insertion of said retainer within the associated slot to place said wall in compressive engagement with the inner wall of the associated slot upon the sliding of said retainer and panel within the associated slot, said ledge having a trough-like portion depending therefrom into engagement with the bottom of the associated slot and having an upright wall extending from the bottom of said trough-like portion along the inner side of said ledge having a lip extending angularly inwardly from said wall in the general direction of said ledge and depressed by said panel to place said wall in compressive engagement with said leg, upon slidable movement of said retainer within the associated slot, a gasket extending along the first mentioned wall of said retainer into sealing engagement with the edge of said panel, and stapling means stapling said panel to said ledge.

12. In an awning structure having at least one flat nonmetallic panel and two connected supporting rails supporting opposite sides of said panel and having facing C-shaped slots extending for substantially the length thereof and terminating at their outer ends into upright legs, expansible retainers extending along each side of said awning panel and having ledges extending along opposite edges of said awning panel and inwardly from said edges, and trough-like portions depending from said ledges, each trough-like portion terminating in an upright wall having an angularly inwardly turned lip deflected downwardly by the awning panel and exerting an upward force on said awning panel to prevent said panel from rattling under high wind conditions and sealing said panel from the leakage of water thereby.

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