

[54] **FRAME CONSTRUCTION HAVING
ARCUATE CORNERS AND A
CONTINUOUS FEATURE STRIP**

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52/716**

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[58] Field of Search.....**52/211, 311, 312,
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716; 287/189.36 H**

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[57] **ABSTRACT**

A frame construction for an opening in a wall of a mobile home or the like providing continuous weather sealing means for sealing engagement with the wall and providing an arcuate corner construction whereby a feature or molding strip of continuous and unbroken appearance surrounds the opening and enhances the appearance of the frame construction. A corner member having the configuration of a sector of a circle and providing a curved or arcuate continuation of the linear feature strips of the horizontal and vertical frame members of the frame construction.

5 Claims, 12 Drawing Figures

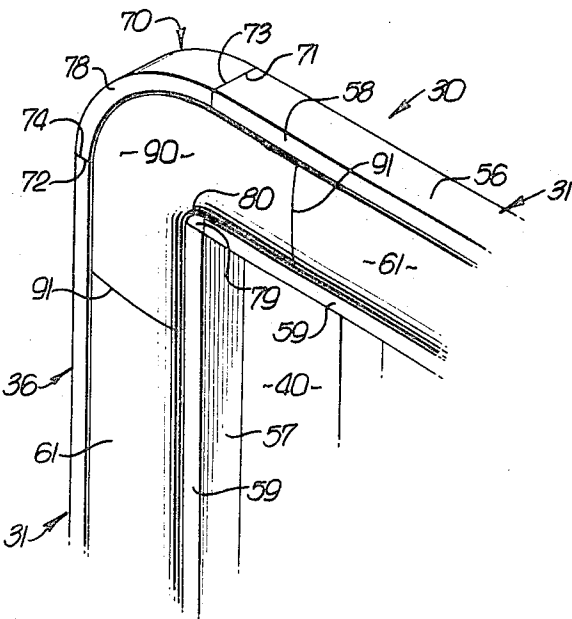


FIG. 1.

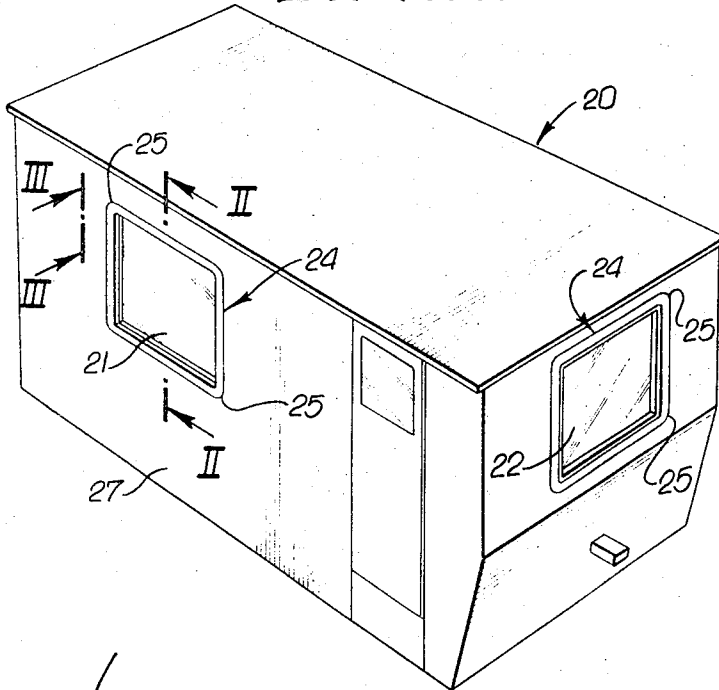


FIG. 2.

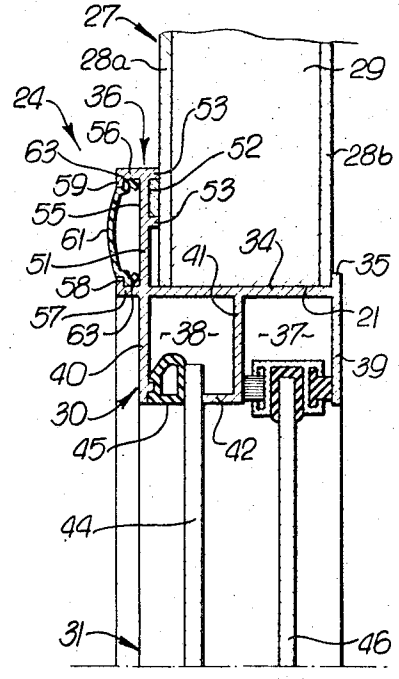
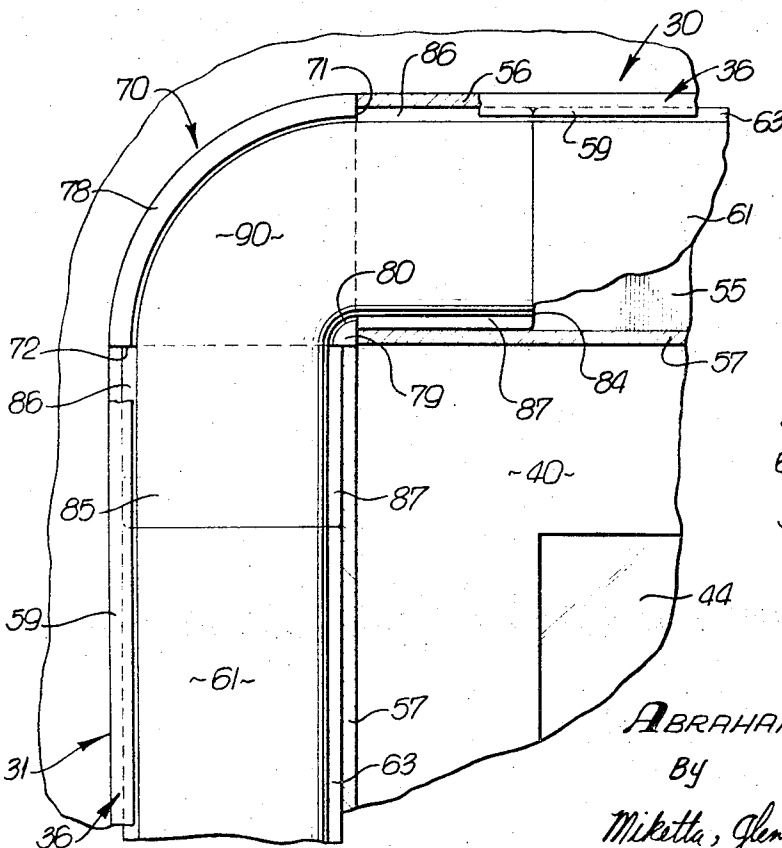
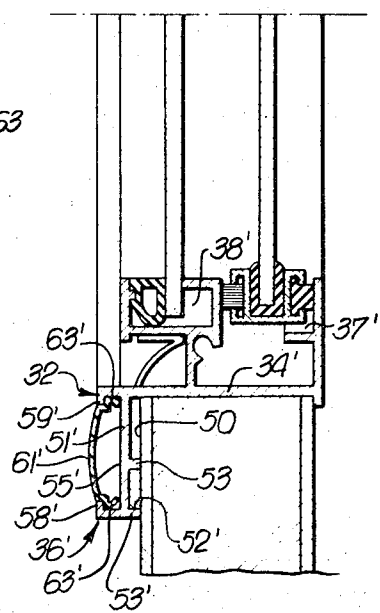


FIG. 3.



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FRAME CONSTRUCTION HAVING ARCUATE CORNERS AND A CONTINUOUS FEATURE STRIP

BACKGROUND OF THE INVENTION

The framing of an opening in a wall has usually included the provision of horizontal head and sill members held in vertical spaced relation by side or jamb members. Usually the horizontal members extend to the outer edge of the jamb members in overlapping fashion. The horizontal joint line in such overlapping construction presents an appearance which is not attractive and embodies a joining or interconnecting of two members which is difficult to weather seal. In another type of corner frame construction, a miter joint attempted to bring into abutment edge faces of 45° cuts on the adjacent ends of horizontal and vertical frame members. Attaching of such miter joints required careful and precise cutting of the frame members and slight discrepancies became readily apparent in the overall appearance of the framing. Moreover, in both types of joints weather sealing material, such as caulking compounds applied to the back faces of the frame members were usually commenced and started at each corner. Often the applicator of the caulking material would leave spaces or gaps at the corner so that weather sealing was not complete and effective at corners of the frame construction.

Mobile homes, trailers, and camper housings include light weight framing and wall construction in which sheet metal such as aluminum sheet are placed on the outer surface of the wall construction. Because of the flexibility and deformability of such sheet metal, frame constructions for window openings must be installed with care to avoid denting, dimpling, or other surface deformation of the outer metal skin of the wall. Thus in prior proposed framing constructions for openings embodying an overlapping or miter joint, it was difficult to achieve a smooth uniform attractive appearance around a window while at the same time making such an installation of a frame weather tight and effectively weather sealed against the outer metal skin.

SUMMARY OF THE INVENTION

The present invention relates to a novel frame construction for an opening in a wall and having enhanced appearance, effective and complete weather tightness, ease of installation, and ease of assembly.

An object of the invention is to disclose a frame means for framing an opening in a wall in a mobile housing construction embodying new features of construction design and appearance.

An object of the present invention is to disclose a frame construction including a molding or feature strip means which provides the appearance of a continuous unbroken molding strip, and wherein corners of such molding strip are of arcuate configuration.

Another object of the invention is to disclose and provide a frame construction for an opening in a wall wherein the corner construction facilitates the application of a continuous strip of weather sealing or caulking material whereby effective sealing at corners of the frame construction is provided.

Another object of the invention is to disclose a frame construction which includes corner members which interlock and retain head, sill and jamb members in selected polygonal relationship and which are designed

to provide corner members which interconnect frame members to provide an attractive appearance and improved weather sealing.

A further object of the invention is to provide a corner frame construction which facilitates installation of a frame construction and which reduces and minimizes deformation of adjacent sheet metal wall coverings.

A further object of the invention is to disclose and provide corner members for a frame construction facilitating assembly and maintenance of an unbroken corner molding effect which is aesthetically pleasant to the eye of an observer.

Other objects and advantages of the present invention will be readily apparent from the following description of the drawings in which exemplary embodiments of the invention are described.

FIG. 1 is perspective view of a mobile housing using the frame construction of this invention at exemplary window openings.

FIG. 2 is an enlarged fragmentary section taken in the vertical plane indicated by line II—II of FIG. 1.

FIG. 3 is an enlarged fragmentary elevational view of the upper left hand corner of the side window shown in FIG. 1, the frame construction including portions broken away and shown in section to better illustrate the structure.

FIG. 4 is a fragmentary perspective view of a corner of a frame construction embodying this invention.

FIG. 5 is an exploded view of the frame construction corner shown in FIG. 4.

FIG. 6 is a back elevational view of a corner member used in the frame construction shown in FIG. 3.

FIG. 7 is a sectional view taken in the vertical plane indicated by line VII—VII of FIG. 6.

FIG. 8 is an enlarged fragmentary elevational view partly in section of a frame corner construction embodying a modification of the corner member.

FIG. 9 is a sectional view taken in the vertical plane indicated by line IX—IX of FIG. 8.

FIG. 10 is a perspective view of the corner member shown in FIG. 8.

FIG. 11 is a back view of the corner member shown in FIG. 10.

FIG. 12 is a sectional view taken in the vertical plane indicated by line XII—XII of FIG. 11.

In FIG. 1 a mobile housing structure generally indicated at 20 includes side and front windows 21 and 22 utilizing frame constructions 24 embodying this invention. The frame constructions 24 provide a curved or rounded corner appearance indicated at 25, the corner construction which creates and provides such rounded appearance being described in detail hereafter.

The side walls and other parts of the mobile housing structure 20 except frame construction 24 may be of well known manufacture and for brevity will not be described in detail. Various types of housing structures for mobile or fixed use such as vehicle, trailer, camper housings, and other types of fixed housing structures may utilize the frame corner construction of the present invention.

An exemplary sidewall 27 of such housing structures may include an outer sheet metal skin 28a spaced from a parallel inner metal skin 28b by suitable studs and in-

sulation material 29 to provide a suitable wall structure. In wall 27 opening 21 may be readily formed by cutting the metal skin and stud and insulation filler material between the metal skins. Front window opening 22 may be provided in similar manner.

In the exemplary embodiment of the frame construction 24 shown in FIGS. 2-7 inclusive, said frame construction includes a top horizontal frame head member 30, vertical frame jamb members 31, and a horizontal frame sill member 32. The head and jamb members 30 and 31 each comprise identical extrusions of suitable metal such as aluminum. Each frame member 30 and 31 includes a main web 34 having an outer face providing a seat for the adjacent edge of the opening in wall 27. An inner lip 35 and an outer flange means 36 are spaced apart to provide reception of the wall margin defining the opening 21. Each frame member 30, 31 includes an inner recess 37 and a parallel outer recess 38 defined by inner and outer walls 39 and 40 and an intermediate wall 41. Intermediate wall 41 includes an outwardly facing bottom lip 42.

In this example the window construction shown in FIG. 2 is that of a sliding window wherein a fixed window frame 44 is secured in peripheral recesses 38 and 38' provided in frame sill member 32 by suitable resilient hollow glazing strips 45. Peripheral recesses 37 provided in the frame members 30, one of the jamb members 31, and in recess 37' provided in frame sill member 32 slidably receive a slidable window panel 46, such slidable panel 46 having its edge margins provided with suitable edge means for sealing engagement with internal surfaces of recesses 37 and 37'. It should be noted that the specific cross-sectional construction of the frame members 30, 31 and 32 inwardly of webs 34 and 34' may be varied in configuration to provide selected types of windows.

The present invention involves the construction of the flange means 36 and the manner of interconnecting the flange means 36 of contiguous frame members 30, 31 and 32 to provide a novel construction facilitating assembly, installation, weather sealing, and in such a manner as to enhance the appearance of the frame construction surrounding an opening in a wall.

Flange means 36 and 36' of frame members 30, 31 and 32 are preferably of identical cross-sectional configuration and extend outwardly from the front extremities of main web 34. Thus flange means 36 and 36' overlie the surrounding marginal outer surfaces 50 of the wall 27 which surround the opening 21. Each flange means 36, 36' includes a vertically disposed web 51 which may be a prolongation of the outer web or wall 40 of each member. The back face of each web 51, 51' includes a peripheral channel 52, 52' defined by spaced parallel rearwardly directed ribs 53, 53' which provide a peripheral channel means adapted to receive a continuous strip of caulking compound or other sealant material for weather sealing the flange means against the outer surface of wall 27. Edge faces of rib 53, 53' preferably seat against the outer surface of the metal skin 28 and are drawn tightly thereagainst under pressure by securing means not shown such as suitable screws.

The front face of flange means 36, 36' includes a groove 55, 55' defined by spaced parallel forwardly extending outer and inner returns 56 and 57 providing

opposed lips 58 and 59. Similar returns are provided on frame member 32 and are identified as outer return 58' and inner return 59'.

Molding strip means 61 and 61' may be made from suitable plastic material having selected resilience and having a selected cross-sectional transverse configuration so that such molding strip means may be snapped into engagement with the returns 58 and 59 to cover the grooves 55, 55'. In this example the molding strip means 61, 61' may include bent or formed longitudinal edge portions 63, 63' adapted to be received between the outer surface of web 51, 51' and the lips 58, 59 of the returns 56 and 57. The material of the molding strip means 61 is selected for good weathering characteristics and the ability to maintain its resilient characteristics for long periods of time. The material for the molding strip means may be extruded and may be of selected color to provide a decorative trim effect.

Means for interconnecting the frame members at corners of the window openings include a corner member 70 at each of said corners. Each corner member 70 is shaped in the configuration of a sector of a circle, in this example a 90° sector having edge faces 71 and 72 lying in planes at right angles to each other and providing joint planes for abutment against end faces 73 and 74 of frame members 30 and 31 respectively. The configuration of end faces 71 and 72 of corner member 70 corresponds to the cross section of the flange means 36 of the frame members. The back face of each corner member 70 includes a pair of arcuate equally spaced ribs 76 defining therebetween a caulking channel 77 which corresponds with and is alignable at each end with the caulking channels 52 on the frame members. A continuous caulking channel is thereby provided from one frame member to the adjacent contiguous frame member so that caulking material laid in the channels will be continuous and uninterrupted.

Front face of the corner member 70 includes an arcuate outer return 78 having a radius centered at the intersection of the planes of edge faces 71 and 72. Returns 78 are of similar configuration as the returns 56 and 57 on the frame members. The inner return 79 forms a 90° quadrant which provides an inner arcuate edge 80 serving to carry the corresponding edge on returns 59 around the corner to the corresponding return on the adjacent frame member. Thus, the arcuate lines provided by the inner and outer returns 80 and 78 provide in appearance a curved corner construction which is aesthetically attractive in the framing of the window opening.

Each corner member 70 includes a body portion 82 which extends beyond the edge faces 71 and 72 in tongues 84 and 85 having forwardly facing rabbeted edges 86 and 87, said edges being connected by a planar front facing surface 88. Tongues 84 and 85 are slidably receivable within the returns 56 and 57 of the adjacent frame members 30, 31 so as to frictionally interlock the frame members in 90° angular relationship.

Molding strip means 90 of suitable plastic material corresponding to the plastic material of the molding strip means 61 may be secured to the front flat face 88 of the corner member 70 by suitable bonding or adhesive means. Molding strip means 90 may be provided with a crowned front face to correspond with the cur-

vature of the molding strip means 61 so that the molding strip means 61 and 90 will appear continuous and unbroken.

Preferably molding strip means 61 and 90 are of the same color and selected to contrast with the metal finish of the frame members 30, 31 and 32. Thus the joint lines 91 between the molding strip means 90 and 61 adjacent each corner become virtually invisible and a continuous feature or molding strip appearance is provided.

In the modification of the corner member shown in FIGS. 8-12 inclusive, each corner member 100 may be die-cast suitable metal material such as aluminum alloy. In this modification the configuration of corner member 100 is generally similar to that of corner member 70 and includes a shape having the configuration of a 90° sector of a circle, such sector being provided with end faces 101 and 102 corresponding to the cross-sectional configuration of the flange means 36 of the frame member. The back face of the member 100 includes an arcuate caulking channel 103 defined by arcuate ribs 104. Since corner member 100 is die-cast, the channel 103 may be located rearwardly of the back face 105 of a wall 106 of slightly curved cross section presenting a convexly curved front surface 107 which may conform with the curvature of the molding strip means 61 carried by frame members 30 and 31. Wall 106 not only extends between the outer curved return portion 108 and inner return portion 109 but also extends beyond edge faces 101 and 102 to provide tongue means 110 and 111 which are slidably interlockingly received within the returns forming the grooves in the frame members 30 and 31. Outer surface 107 of wall 106 is coated or treated to correspond with the color and appearance of the molding strip means 61 to provide the continuous curved corner effect.

The joint line between edge faces 114 and 115 of wall 106 and the abutting edge face of the molding strip means 61 of plastic material may slightly separate under conditions of expansion and contraction of the frame construction due to temperature changes. To obviate and reduce to a minimum the appearance of a joint line between edges 114 and 115 and the normally abutting edge of molding strip means 61, each corner member is provided with tabs 116 and 117 extending beyond edge faces 114 and 115 respectively. Such tabs are provided with a front facing convex surface 118 and 119 respectively which may be treated in the same manner as surface 107 so that any separation at the joint line will not be readily apparent because of the continuation of the color and treatment of surface 107 at the bottom of the separated joint.

In the construction of corner member 100, it may be desirable to secure the corner member to the frame members 30 and 31 in addition to the interlocking interengagement provided by the reception of the tongue means 110 and 111 within the grooves on the frame member. For this purpose wall 106 at its extension into the tongue means 110 and 111 may be provided with rearwardly directed internally threaded integral bosses 121 adapted to receive screws 122 which extend through a counter-sunk part 123 provided in the flange web 55 of a frame member such as 30. Such securement of each corner member 100 to adjacent frame members 30 and 31 limits relative movement between

the corner members and the frame members and thus minimizes separation of the joint between the molding strip means.

It will be apparent that the corner members 70 and 100 provide a corner construction characterized by feature strip lines which curve about the corner both on the outer radius of the feature strip and also on the inner radius of the feature strip. Since the joint lines in the feature strip are virtually unnoticeable, a smooth continuous molding or feature strip means is provided which presents an aesthetically pleasant frame construction for an opening in a wall. It should also be noted that the continuous caulking channel provided in the assembled frame construction permits caulking material to be properly continuously placed on the back face of the frame construction so that it will continuously seat in pressure engagement against the opposed outer surface of the metal skin of the wall. Weather sealing of the frame construction is thus readily accomplished. Moreover, the innermost ribs 53 on the flange means 36 of the frame members may be readily employed to reinforce the frame members when they are secured to the wall by locating the securing screws at spaced ports which extend through the innermost ribs 53. Thus dimpling or irregular recessing of the metal skin of the wall caused by securement or attachment of the frame construction to the wall is obviated and virtually reduced to a minimum which is unnoticed and unobjectionable.

It is understood that changes and modifications may be made in the exemplary embodiment of the invention described above and all such changes and modifications coming within the scope of the appended claims are embraced thereby.

I claim:

1. In a frame construction for a polygonal opening in a building wall or the like, the combination of:
 - a plurality of angularly disposed frame members lying in a common plane,
 - each frame member comprising main web, flange means including a front flange directed internally of said opening for retaining associated panels, and a second front flange directed exteriorly of said opening as a continuation of said before-mentioned front flange and adapted to overlies edge margins of said building wall at said opening;
 - said second front flange providing a front groove for retaining a molding strip means;
 - a molding strip means retained in said groove and extending along said second flange;
 - means on said front flange defining a rearwardly directed back caulking channel;
 - and a corner joint member having in plan the configuration of a sector of a circle including an arcuate outer edge joining outer edges of said frame members and an arcuate inner edge, and means in cross section corresponding at front portions to the groove and molding strip means on said second front flanges,
 - said corner member including means receivable within said front flange grooves for interlocking engagement with said frame members and extending at least to said molding strip means;
 - said molding strip means on said frame members and means corresponding thereto on said corner

member providing a continuously forwardly facing feature strip means of uniform width and extending from one frame member to the other frame member in the form of an arc subtending the angle between end edges of contiguous frame members. 5

2. In a frame construction for a polygonal opening in a wall or the like, the combination of:

at least two frame members angularly disposed and having transverse end faces lying in planes which intersect at approximately the intersection of inner edges of said frame members; 10

each frame member having a flange provided with a front facing longitudinal groove means defined by parallel return portions providing molding strip retention means;

a molding strip retained in said groove means and presenting a front surface means and having strip end edges terminating in spaced relation to the transverse end faces of said frame members;

and corner means extending between said frame member end faces to provide a continuous curved corner appearance joining said frame members; 20

said corner means including

a body portion having the shape of a sector of a circle with its center at the said intersection of said planes and having a continuing outer peripheral edge in the form of an arc joining outer edges of said continuous frame members; 25

said body portion having inner and outer edge portions corresponding in cross section to said frame 30

members and abutting therewith at said planes; said corner means including tongue portions extending into said groove means of the frame members and terminating at least at the strip end edges of the molding strip retained in said frame member;

said corner body and tongue portions having outwardly facing surface means corresponding to the molding strip front surface means and adapted to abut said strip end edges,

whereby the front surface means of the molding strip means and corner members provide a continuous unbroken in appearance feature strip means framing said opening with rounded corners.

3. In a frame construction as stated in claim 2 wherein said corner means includes 15

tongue portions having tabs projecting therefrom beneath the molding strip means on the frame members and having front surfaces corresponding in color to the color of said front surface means whereby separation of said molding strip end edge with respect to the end of said tongue portion is unnoticeable.

4. In a frame construction as stated in claim 2 wherein said molding strip means is a plastic material.

5. In a frame construction as claimed in claim 2 wherein said front surface means of said corner member and of said molding strip means and the material of the frame means and corner member are of contrasting colors.

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