

[54] VENTILATED WINDOWED OVEN DOOR

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[58] Field of Search 126/198, 200; 110/180, 110/173 R, 173 A

[56] References Cited

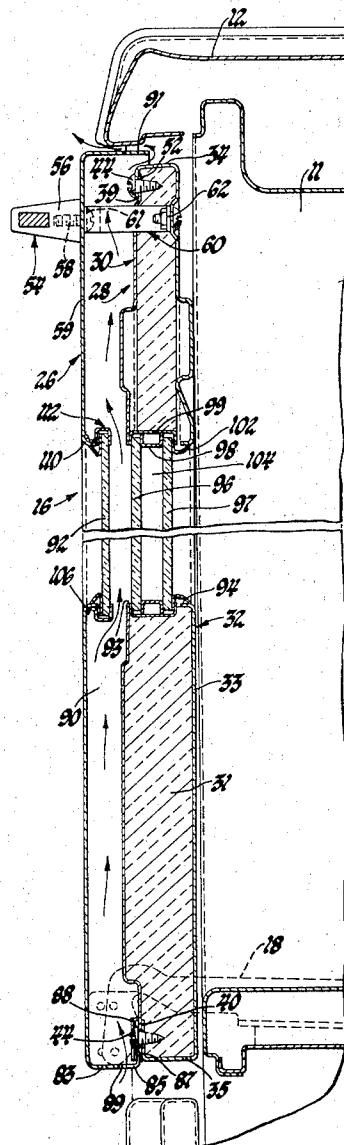
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[57] ABSTRACT

An oven door structure includes an outer pan-shaped cover panel supported in spaced nested relation on a box-casing to provide an air-wash passageway. The box-casing comprises an inner pan-shaped panel having L-sectioned return flanges extending on all four sides for abuttingly receiving a relatively planar face panel to be threadably fastened to the return flange portion of the L-sectioned flanges.

2 Claims, 5 Drawing Figures



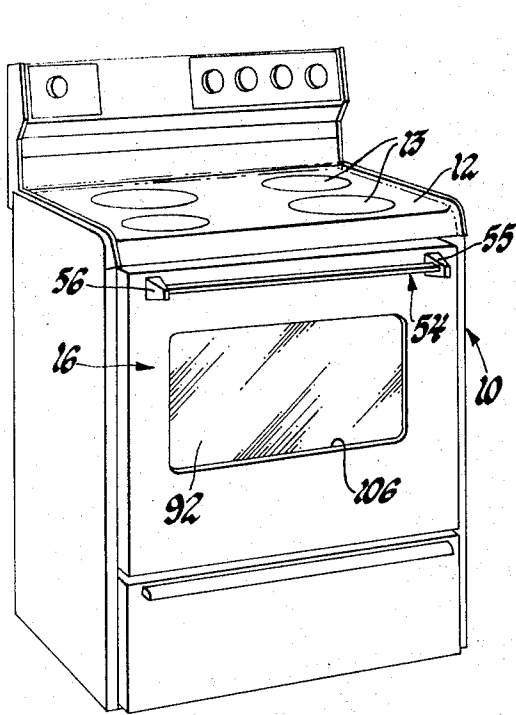


Fig. 1

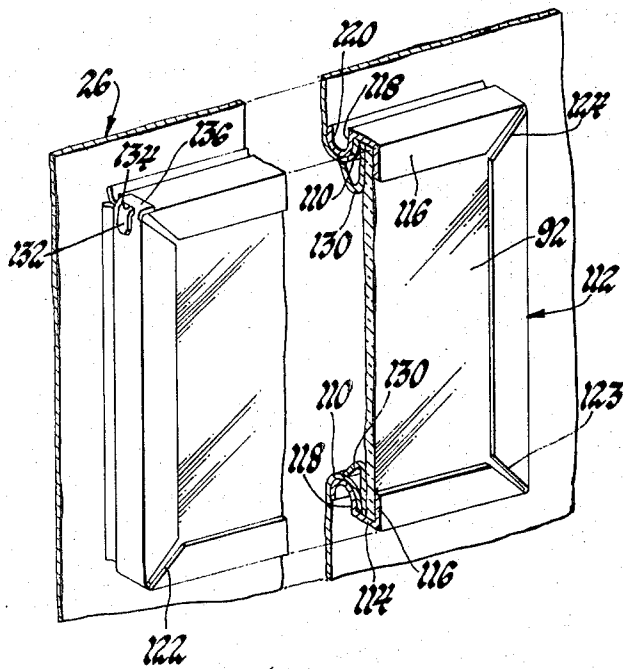


Fig. 3

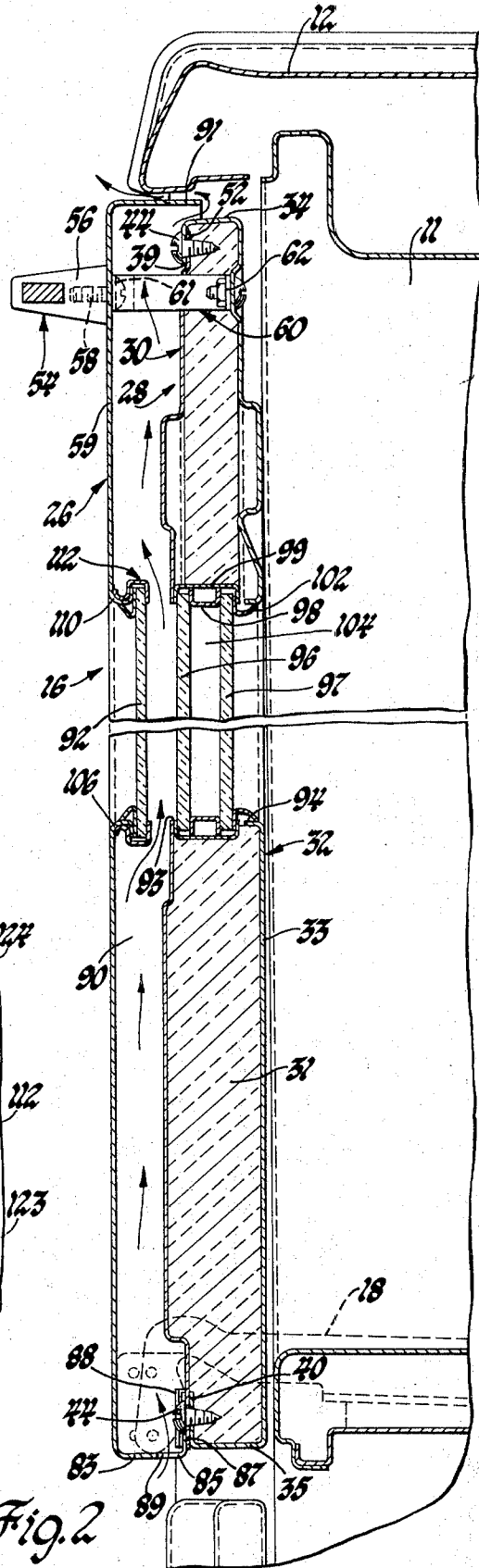
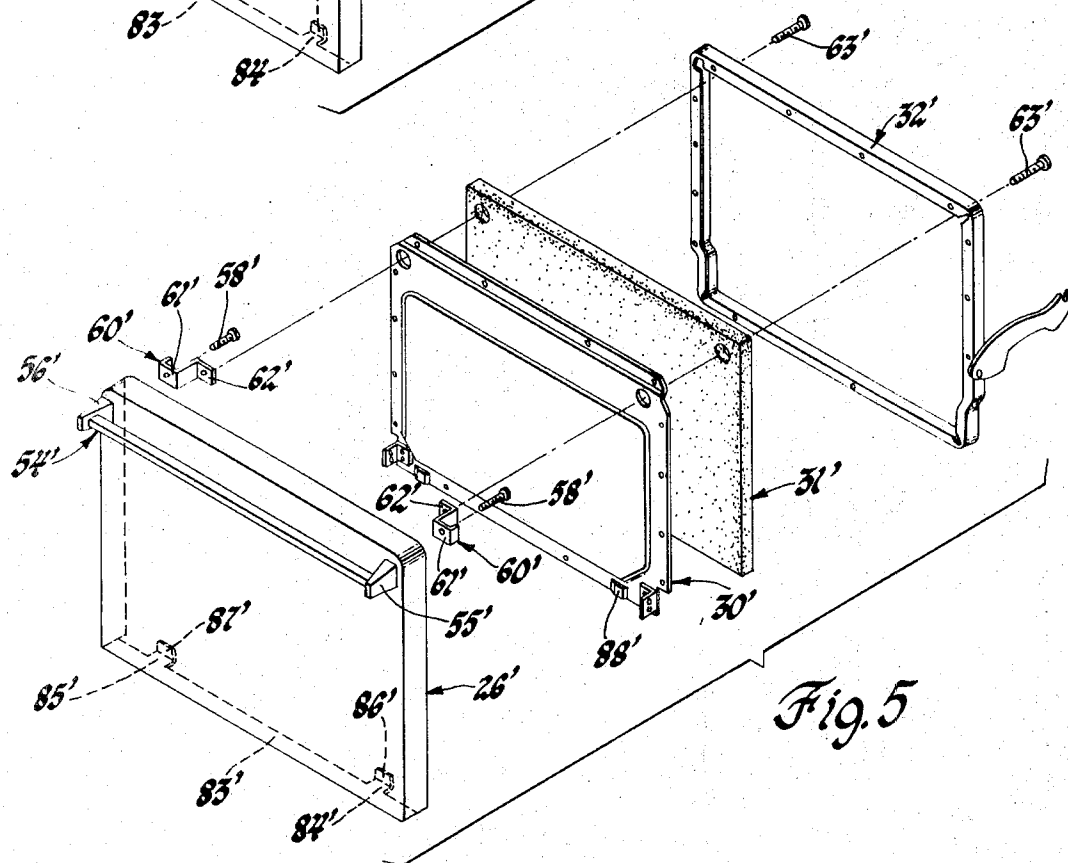
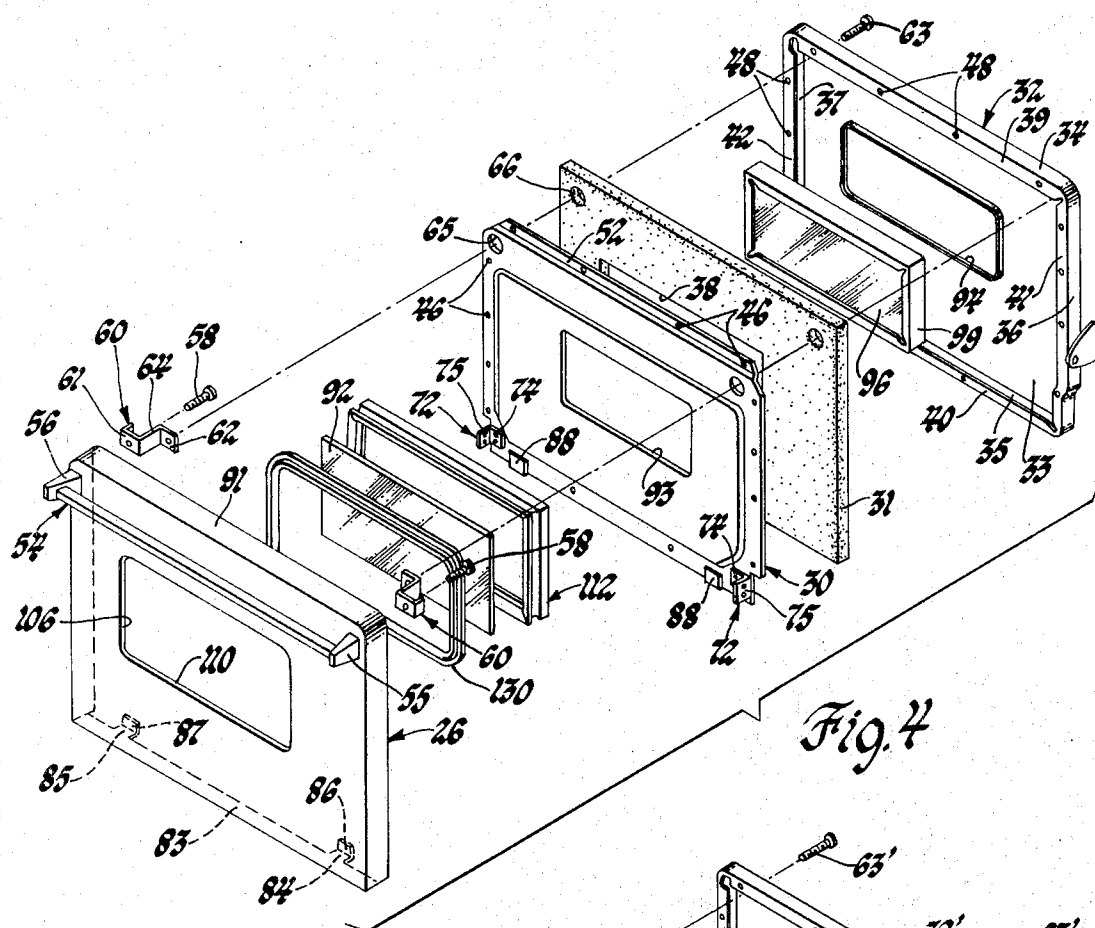


Fig. 2



VENTILATED WINDOWED OVEN DOOR

This invention relates to closures for domestic appliances and more particularly to an improved windowed oven door.

It is an object of this invention to provide an improved oven door structure which includes an outer cover panel supported in spaced nested fashion on a rigid double-walled box-casing to provide an air-wash channel therebetween. The box-casing comprises an inner pan-shaped panel having L-sectioned return flanges on all four sides for abuttingly receiving a relatively planar face panel which is fastened by threaded fasteners to the return flange portion of the L-sectioned flanges.

A further object of the invention is to provide a windowed oven door structure such that a double-wall rigid box panel supports a windowed pan-shaped cover panel in spaced nested relation to provide an air-wash channel therebetween and wherein the cover panel has a rectangular glass sheet receiving aperture defined by its peripheral edges being curled inwardly for receiving a window frame member substantially U-shaped in section adapted to receive the periphery of the glass sheet such that a complementary curled flange on the frame nests in the cover panel curled flange to releasably retain the glass sheet thereto by locking means at one corner juncture of the window frame member.

These and other objects and advantages of the invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the invention is clearly shown.

In the drawings:

FIG. 1 is a perspective view of a free standing domestic range having a windowed oven door embodying the present invention;

FIG. 2 is a cross-sectional, elevational view on an enlarged scale through the center of the door to show the various elements which comprise the door;

FIG. 3 is a fragmentary perspective view of the inner face of the outer cover panel showing the window mounting arrangement thereon;

FIG. 4 is a perspective view in exploded form showing an oven door embodying the windowed construction and arranged in accordance with the present invention;

FIG. 5 is a perspective view in exploded form to show a modified oven door arrangement in accordance with the present invention.

Referring now to FIGS. 1 and 2 of the drawing, the illustrated range structure serves only as an illustrative embodiment of conventional construction. It comprises a free standing cabinet 10, an oven 11 within the same, and a cooktop 12 having a plurality of surface heating devices 13. The oven door assembly 16 is of the drop-type and pivoted to the cabinet at its bottom edge by hinge means, also conventional, including hinge lever arms 18.

The construction of the drop-door assembly 16 will now be explained with reference to FIGS. 2, 3 and 4. As best seen in FIG. 2, the drop-door assembly 16 includes an outer or cover door panel member 26 and an inner double-walled box door 28 comprising a generally planar face or front panel 30 and a rear pan-shaped door panel member 32. It will be noted that the rear panel 32 is formed with a generally planar wall portion

33 the edges of which have peripheral top, bottom and side L-shaped flanges comprising forwardly extending first flanges 34, 35, 36 and 37, respectively, and inwardly extending second or return top, bottom and side flanges 39, 40, 41 and 42, respectively.

As best seen in FIG. 2, the face panel 30 is assembled to abut the second flanges of the inner door panel 32 so as to be secured thereto by means of a plurality of threaded fasteners 44 spaced around the periphery of the face panel 30. The fasteners are threadably received in holes 46 in face panel 30 which are aligned with threaded holes 48 in the return or second flanges of inner panel 32. The face panel 30 has its upper hem portion offset inwardly at 52 for insertion beneath the rear panel 32 return flange 39 such that the upper raw edge of face panel 30 is concealed from view. An insulation batt 31, preferably in the form of mineral or glass wool, is provided between the inner panel 32 and the face panel 30. In this manner the composite rigid double-walled box door panel 28 is formed without the necessity of any expensive edge welding operation or the use of equally expensive internal welded reinforcements.

The upper portion of the outer cover panel 26 is provided with a door handle assembly 54 of extended width, as best seen in FIG. 1. The handle assembly 54 has two support posts 55 and 56 which are spaced apart to align with each end of the handle. Each post 55, 56 accommodates a fastening screw 58 that extends through a hole in the planar portion 59 of the front cover panel 26 from the rear face thereof and assembles the handle 54 in place such that the screw 58 threadably engages suitable spacer means, which in the disclosed form is double L-shaped clip 60 (FIG. 4) having a threaded hole in its outer base leg 61. The inner base leg 62 of the clip 60 abuts the rear panel 32 and has a threaded hole for receiving a threaded fastener 63. The shank portion 64 of the clip 60 extends through aligned openings 65 in face panel 30 and 66 in insulation batt 31.

The box door 28 is secured to the lever arms 18 by suitable attaching means which in the form disclosed are a pair of L-shaped angle brackets 72, each having one leg 74 secured as by threaded fasteners to the face panel 30 with their longitudinally extending legs 75 threadably fastened to the lever arms 18.

As seen in FIG. 4 the cover panel 26 has its inwardly directed bottom flange 83 provided with a pair of gussets 84 and 85 with upwardly directed tabs 86 and 87 respectively, formed thereon which are inserted in slotted openings formed by a pair of spaced draws 88 located along the bottom hem portion 36 of face panel 30 to provide the proper spacing. Thus, ambient or room air entrances or elongated openings 89 are provided in the spaced portions between the outer door panel and the inner door composite package allowing the room air to be drawn through the openings 89 and to rise by convection currents of air in the passage 90 between the outer cover panel 26 and the box door 28, as seen by the arrows in FIG. 2, to exit through the space between the upper first flange 35 of the rear panel 32 and the top flange 91 of the cover panel 26.

In this manner the inner surface of a tempered first outer glass sheet 92 mounted in the outer door panel 26 is provided with a room air-wash on its inner surface to reduce the temperature of the glass sheet 92 during

a baking operation in the oven. The window 92 is aligned with the window opening 93 in the face panel 30 and window opening 94 in the inner door panel 32.

As again seen in FIG. 2, the windowed openings 93 and 94 are covered by paired heat resistant tempered second and third glass sheets 96 and 97, having a peripheral separator 98 and supported by a U-shaped window holding frame member 99 and trim member 102 to provide a sealed hot air cavity 104 therebetween. As seen in FIG. 4, the above-described panel glass sheets 96 and 97 may be incorporated in a preassembled package.

A feature of applicant's novel oven door assembly involves the mounting means for the cover panel glass sheet 92 located over a rectangular window opening 106 circumscribed by an inwardly curled flange 110. A glass sheet 92 mounting frame member, generally indicated at 112 in FIG. 3, is formed with a channel-shaped cross section providing a bottom wall 114 and outer and inner side wall flanges 116 and 118 respectively, with the inner side flange 118 terminating in a semi-circular or curled flange 120, the curvature of which is complementary to the curvature of the cover door panel's curled flange 110. The frame member 112 is preferably formed from stainless steel material having a thickness of the order of 0.010 inches. When making the frame member 112, the elongated frame is cut to length equivalent to the peripheral dimension of the glass sheet 92 and is then V-notched in three places 122, 123 and 124, before folding, corresponding to the position of the corners of the glass sheet in the development of the periphery of the glass sheet.

After the formation of the single frame member 112 a rectangular trim member 130, having a J-shape in cross section, is located in the cover panel opening 106 and the glass sheet 92 is aligned therewith as seen in FIG. 3. The frame member 112 is placed with its channel portion receiving the bottom edge of the glass sheet 92, the J-shaped trim member 30 and the free edge of the curled flange 110 while the curled flange 120 is nested in the curled flange 110 of cover panel 26. The frame is then folded so that the V-notched portions place the four frame lengths in a right-angular relationship to each other to enclose the remaining side of the glass sheet 92, trim member 130 and curled flange 110 in a similar manner. At the extremities of the frame member 112 cooperating securing or locking means are provided which in the instant embodiment comprise a tab 132 for insertion in a slot 134 in right-angled flange 136 which tab when bent downwardly securely retains the glass sheet 92 on the cover panel 26 by means of the nested relationship of curled flanges 110 and 120.

As seen in the exploded view of FIG. 5 a modified form of applicants' oven door structure is shown in the form of a "solid door" wherein the prime numerals represent components identical to those disclosed in the windowed door structure of FIGS. 1-4. It will be seen that except for the deletion of windowed openings 106, 93 and 94 in cover panel 26', face panel 30' and rear panel 32' respectively, the enumerated panels are formed and assembled in an identical manner to the panels 26, 30 and 32 in FIG. 4. Thus, the same tooling can be used to produce either the solid door of FIG. 5 or the windowed door of FIG. 4. It will be noted that the insulation batt 31' of FIG. 5 is also formed without

an opening as contrasted to opening 38 in the insulation batt 33.

While the embodiment of the present invention herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted.

We claim:

1. A windowed door for a range oven, the door combination comprising an outer cover panel and an inner double-walled panel unit, means for locating said panel unit in spaced relationship with said cover panel, said cover panel and said panel unit each having registering rectangular window openings therein, a viewing window assembly in said panel unit opening for viewing the interior of said oven, means for mounting an outer glass sheet on the inner face of said cover panel over said window opening, said mounting means including an inwardly curled flange formed around the four sides of said cover panel opening, a glass sheet mounting frame member for positioning around said outer glass sheet, said frame member formed with a channel-shaped cross section providing a bottom wall together with outer and inner right-angled side wall flanges, said frame side flange positioned adjacent the inner face of said cover panel terminating in an outwardly curled flange whose curvature is complementary to the curvature of said cover panel opening's curled flange, said frame member in its elongated form having a length equivalent to the peripheral dimension of said glass sheet and formed with three V-notches before folding, each said V-notch dimensioned so as to correspond, respectively, to three of the corners of said glass sheet upon being folded into its rectangular form to enclose the edges of said glass sheet with the convex portion of said frame's curled flange being nested in the concave portion of said cover panel curled flange, said frame having cooperating integral attaching means provided at the free ends thereof such that when interlocked at the remaining corner of said glass sheet securely retain said glass sheet and said frame on said cover panel.

2. A windowed door for enclosing a range oven, the door combination comprising an outer cover panel having rearwardly directed peripheral flanges, an inner double-walled box-casing located in spaced partially nested relationship with said outer cover panel peripheral flanges; said box-casing including a rear pan-shaped panel and a face panel, said rear pan-shaped panel having a forwardly extending first peripheral flange terminating in an inwardly extending second return flange, said face panel positioned in substantially parallel spaced relationship to said rear panel such that the marginal portion of said face panel abuts said rear pan-shaped panel second return flange, a plurality of threaded fasteners positioned around said marginal portion securing said second return flange to said face panel thereby forming said double-walled box-casing, means for securing said cover panel in spaced relation to said box-casing; said cover panel and said box-casing each having registering rectangular window openings therein, a viewing window assembly in said box-casing opening for viewing the interior of the oven, means for mounting an outer glass sheet on the inner face of said cover panel over said window opening, said mounting means including an inwardly curled flange formed around the four sides of said cover panel opening, a glass sheet mounting frame member for positioning around said outer glass sheet, said frame member formed with a channel-shaped cross section providing

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a bottom wall together with outer and inner right-angled side wall flanges, said frame side flange positioned adjacent the inner face of said cover panel terminating in an outwardly curled flange whose curvature is complementary to the curvature of said cover panel opening's curled flange, said frame member in its elongated form having a length equivalent to the peripheral dimension of said glass sheet and formed with three V-notches dividing said frame into four lengths before folding; each said V-notch dimensioned so as to correspond, respectively, to three of the corners of said

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glass sheet upon said four lengths being folded into right-angular relationship to enclose the edges of said glass sheet with the convex portion of said frame's curled flange bring nested in the concave portion of said cover panel curled flange, said frame having cooperating integral attaching means provided at the free ends thereof such that when interlocked at the remaining corner of said glass sheet securely retain said glass sheet and said frame on said cover panel.

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