

[54] **CURTAIN WALL WINDOW GASKET CONSTRUCTION**

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[22] Filed: **Nov. 19, 1970**

[21] Appl. No.: **91,035**

[52] U.S. Cl. **52/400, 52/397**

[51] Int. Cl. **E04b 1/62, E06b 3/62**

[58] Field of Search. **52/235, 397, 398, 399, 400, 52/403; 49/485, 488, 504**

[56] **References Cited**

UNITED STATES PATENTS

3,090,083	5/1963	Emmerich	52/400 X
3,411,247	11/1968	Fleming	49/485 X
3,336,707	8/1967	Horgan, Jr.	52/281
3,016,993	1/1962	Owen	52/398 X

FOREIGN PATENTS OR APPLICATIONS

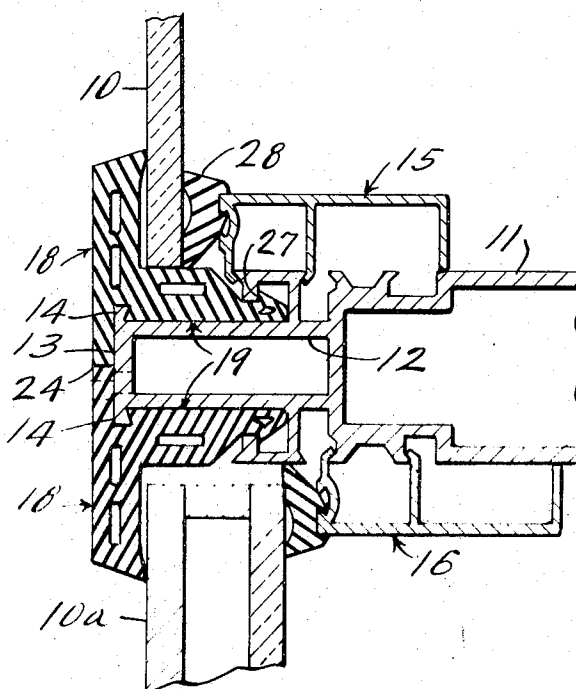
368,296	5/1963	Switzerland	52/399
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Primary Examiner—Alfred C. Perham
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[57] **ABSTRACT**

A glazing gasket construction for a curtain wall installation which secures the glass in place within a rigid structural form and thermally separates all structural members from outside air. The resilient gasket has a configuration, in cross section, which includes a sealing strip with a planar outer face having one edge extending over the adjacent window pane and the second edge over the structural support of the building. Extending inwardly from the sealing strip intermediate its edges is an attachment leg which is secured to the structural member. When side-by-side windows are installed, the gaskets are placed adjacent each other with their second edges in close abutment to cover any exposed structural member and to thus provide a thermal barrier between the outside air and the building structure.

2 Claims, 4 Drawing Figures



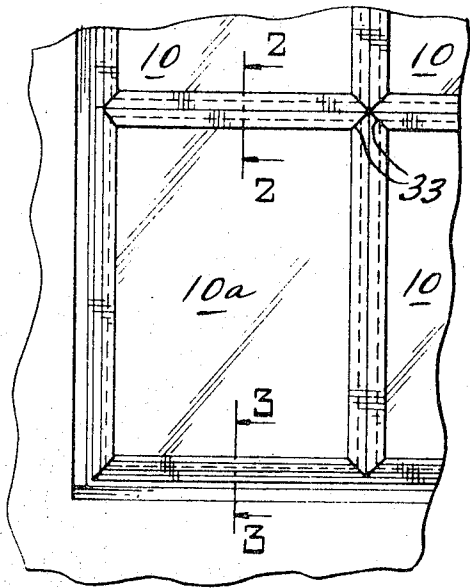


FIG-1-

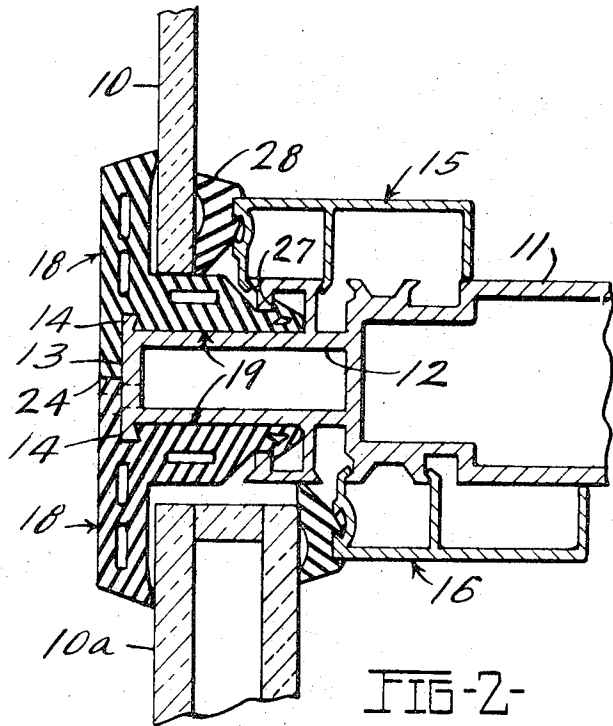


FIG-2-

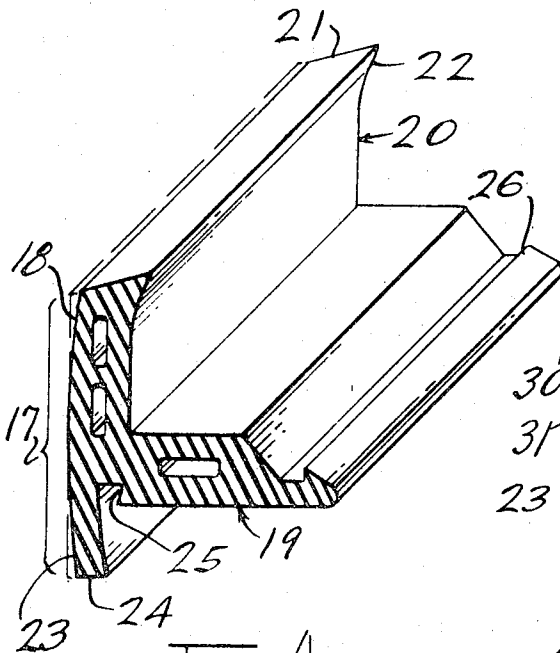


FIG-3-

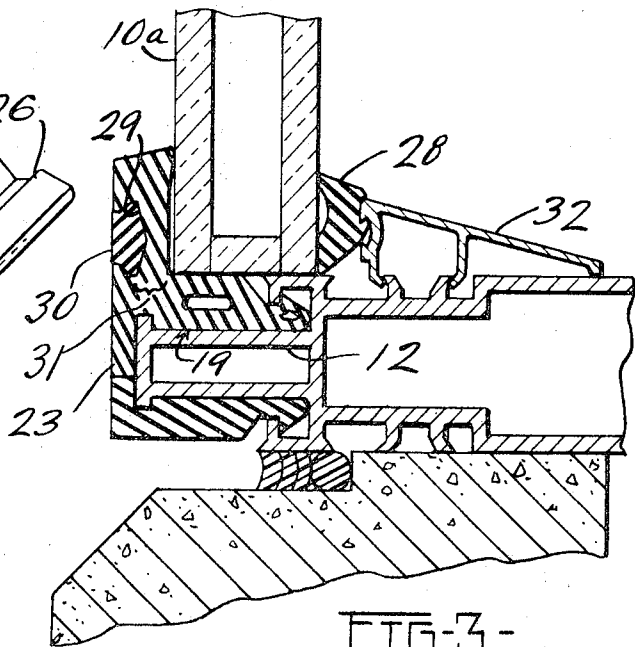


FIG-4-

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CURTAIN WALL WINDOW GASKET CONSTRUCTION

This invention relates to a window gasket glazing construction for curtain wall buildings characterized by a plurality of side-by-side panels or glass panes separated and supported by a relatively narrow rigid structural member.

Modern architectural concepts utilize vast amounts of glass window area in which the frames for the glass are commonly composed of vertical and horizontal extruded members connected together to form a grid. Old fashion manual glazing practices have necessarily been replaced to a very large extent by various types of glazing gasket installations which use extruded resilient gaskets of various configurations to attach the panes within the frames formed by the structural members.

Because the appearance of the building facade is affected by the external appearance of the gaskets, satisfactory gasket design must contemplate both the functional ability to securely hold the panes in place against substantial wind loads, to separate the panes from contact with any rigid member or form contact with adjacent panes, to enable rapid installation and replacement of the panes, and also to provide a satisfactory appearance from inside and out. Another consideration in the design of gaskets of this type is the desirability of insulating the structural members, usually made of extruded aluminum, from the outside so that they do not conduct heat in either direction when the inside temperature is at variance from the outside temperature, in either summer or winter.

U.S. Pat. No. 3,336,707 discloses one type of curtain wall gasket. While this particular construction and others like it in the prior art have proved satisfactory as far as appearance and function are concerned, such prior art gaskets do not enable installation or replacement of the glass panes from inside of the building. This is particularly important in the case of multi-storied office buildings where replacement or installation from the inside is particularly desirable in the upper floors.

It is accordingly an object of this invention to provide a window gasket construction for curtain wall installations which contains the previously mentioned objects of providing a thermal barrier between the building members and outside air, is capable of securely retaining the glass in place within the structural frame, and permits installation of panes from either inside or outside the building.

Other objects and advantages of the invention will be apparent from the following detailed description of a preferred embodiment thereof, with reference being made to the accompanying drawings in which:

FIG. 1 is a view in elevation of a portion of a curtain wall construction having adjacent glass panes supported by structural members and the glazing gasket construction of this invention;

FIG. 2 is a cross sectional view, taken along line 2—2 of FIG. 1 and shown on an enlarged scale;

FIG. 3 is a cross sectional view, taken along line 3—3 of FIG. 1 and shown on an enlarged scale; and

FIG. 4 is a cross sectional view in perspective of a short section of the glazing gasket used with this invention.

Referring first to FIG. 1, a small portion of a typical curtain wall installation is shown at the bottom of the wall with adjacent glass panes 10 and 10a supported by

the gasket construction of this invention within the frames defined by the rigid structural members. Referring next to FIG. 2, an installation is shown which includes a rigid structural member 11 which is a part or an extension of a horizontal floor or building platform. Of course this member 11, in vertical position, would be a part of or an extension of a wall, space divider or curtain wall section. Extending outwardly from the rigid member 11 is a rigid yoke 12 whose end 13 terminates beyond the plane of the outer surface of the glass panes 10. Each side of the end 13 of the yoke 12 has a ridge 14 extending beyond the upper or lower surfaces of the yoke 12 which provides a means of attachment to the glazing gasket as will be subsequently described. Removably secured to the rigid member 11 and yoke 12 are a pair of laterally extending, rigid extruded sections 15 or 16 which can be removably snapped in place as will be apparent to those skilled in the art. The particular configuration of the rigid sections 15 and 16 or the manner of their attachment to the rigid member 11 and yoke 12 is not an important part of the instant invention and the illustrated embodiment is only an example.

Referring to FIG. 4, the glazing gasket construction of this invention includes, in cross section, an outer sealing strip 17 having a generally planar outer face 18 and a normally extending attachment leg 19 extending from the inner surface of the sealing strip 17. The sealing strip 17 has a first upper section 20, as shown in FIG. 4, terminating in an edge 21 which is slightly beveled towards the outer face 18. The inner corner of the edge 21 has a protruding lip 22 which will bear against the glass pane 10 when installed. The lower section 23 of the sealing strip 17 terminates in an abutment edge 24 which is substantially normal to the outer surface 18. The intersection between the inner surface of the lower section 23 and the lower surface of the attachment leg 19 has an undercut groove or re-entrant channel 25 complementarily shaped with the ridge 14 on the rigid yoke 12 as shown in FIG. 2. Finally, the inner end of the attachment leg 19 has a tapered end with a notch or re-entrant channel 26 shaped to catch upon a hook 27 on the rigid yoke 12 as shown in FIG. 2. The gasket configuration, in its non-installed condition as shown in FIG. 4, has the edges 21 and 24 turned slightly inwardly, as shown in the solid line position so that, when installed, these edges are forced outwardly to the dotted line position and tightly bear upon the glass pane 10 and the end 13 of the rigid yoke 12 as shown in FIG. 2.

Installation of the gasket is understood with reference to FIG. 2. FIG. 2 illustrates an installation where the upper pane 10 is a single glass pane and the lower pane 10a is shown as a double pane, insulating type window. Naturally, a single curtain wall would most likely include glass of the same type and this figure is for illustrative purposes only to show the manner in which either type of pane can be accommodated. In installing the glass panes herein, the gasket is attached on all four sides of the building grid by forcing the end of the attachment leg under the hook 27 and then seating the gasket upon the yoke 12 so that the ridge 14 seats within its complementarily shaped channel 25. Next, from inside the building, the glass 10 is inserted within the frame formed by the gaskets so

that it rests upon the upper surface of the attachment leg 19, as shown. The rigid section 15 is next snapped in place. Finally, a resilient wedge member 28 is forced between the inner surface of the pane 10 and the opposed edge of the rigid section 15 to firmly anchor the glass. The same procedure would be carried out with the lower pane 10a with the exception that the rigid section 16 is secured to the structural member 11 in a different position to accommodate the thicker double pane 10a.

With the glass installed as shown in FIG. 2, there is no possible contact between the glass pane 10 and 10a and any of the rigid structural members so that any working due to wind loads or accidental blows from inside the building cannot possibly force the edge of the glass against a rigid member which might cause it to crack. The two lower sections 23 of the adjacent gaskets closely abut each other so that the end 13 of the yoke 12 is fully covered and insulated from outside air. This accomplishes the thermal insulation previously described and also presents a pleasing appearance from outside of the building because the two gasket sections blend together to form one continuous strip extending between adjacent panes. It may be desirable to apply some sort of sealing or mastic between the adjacent abutment edges 24 but is not necessary because it is practically impossible for any moisture to lead into the building or around the glass edges due to the tortuous path between the closely engaged gasket and yoke 12 surfaces.

FIG. 3 shows a modification of the construction shown in FIG. 2 which would typically be used at the bottom window of a curtain wall. In this installation, the general shape of the glazing gasket is identical with that previously described. On the lower side of the yoke 12 is a modified gasket shape which is for use at the bottom or top of the installation and accordingly has no second section for extending down over an adjacent window. In the event that it is desired to enable installation of the pane from outside of the building, a recess 29 may be provided in the outer surface 18 of the upper section 20 of the sealing strip 17, as shown in FIG. 3. This recess is shaped to receive a complementarily shaped resilient wedge or zipper 30. The recess 29 provides a web 31 of reduced cross section so that the entire upper section 20 can be bent outwardly so that its inside surface is substantially horizontal so that the glass pane may be installed directly within the frame. With the glass pane so installed, the upper section is allowed to return to its upright position and the zipper 30 is wedged in the recess 29 to complete the installation. Otherwise, the pane may be installed from the inside using the wedge 28 and a removable rigid piece 32.

A gasket grid for use with a multi window curtain wall can be fabricated from sections of extruded resilient gasket material either at the factory or at the side of installation, depending upon the size of the installation, capabilities of the contractor, etc. If all glass installations are to be made from the inside of the building, it is not necessary to use the configuration shown in FIG. 3 and the adjacent corners of horizontal and vertical gasket members, at their mitered intersections, indicated by reference numeral 33 in FIG. 1, can be sealed together or vulcanized prior to installation on

the rigid yokes 12. If the type of gasket of FIG. 3 is to be used, individual sections should be installed and a sealant between these edges 33 applied after the glass has been installed.

Various modifications of the above described preferred embodiment of this invention will be apparent to those skilled in the art and the same may be made without departing from the scope of the following claims.

What I claimed is:

1. A glazing construction for side-by-side glass panes supported by an interior fixed structural member, said construction comprising

a. a rigid yoke secured to said structural member and extending normal to the plane of said panes between the opposed edges of adjacent glass panes and terminating in an outer end positioned beyond the outer surface of said panes, the upper and lower edges of the outer end of said rigid yoke having a re-entrant ridge extending normal to said yoke and parallel to the plane of said glass panes,

b. a pair of resilient glazing gaskets secured to opposite sides of said yoke to position and hold the edges of said adjacent panes, each of said gaskets comprising, in cross-section,

1. an attachment leg extending parallel to and alongside said yoke normal to said glass pane to provide a generally planar support surface to engage and position the edge of said glass pane with the extreme inner end of said attachment leg having a re-entrant hook portion for insertion within a shaped recess in said yoke by lateral movement of said gasket inwardly parallel to said yoke and normal to said glass pane,

2. a sealing strip extending normal to said attachment leg and adjacent the outer end of said rigid yoke, said sealing strip including a first section adjacent the outer surface of said glass pane and a second section extending away from and parallel to said first section and its respective glass pane over the outer end of said rigid yoke and terminating in an abutment edge closely adjacent that of the other gasket member to cover said yoke outer end with the inner surface of said second section lying adjacent and parallel to said yoke outer end, and

3. a channel extending into said attachment leg along the line of juncture of said inner surface of said second section of said sealing strip with said attachment leg, said channel shaped to receive said ridge of said rigid yoke by movement of said gasket toward said yoke and parallel to said plane of said glass pane whereby engagement of said channel of said gasket with said yoke ridge will prevent lateral movement of said gasket parallel to said yoke and normal to said plane of said glass pane.

2. The construction of claim 1 wherein said rigid yoke includes a normally extending spacer removably secured to said yoke inside the inner surface of said glass pane and extending normally beyond the edges thereof, and a resilient wedge positioned between the opposed inner pane surface of said normally extending spacer.

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