

# PATENT SPECIFICATION

(11)

1 539 504

- (21) Application No. 39111/77 (22) Filed 20 Sep. 1977 (19)  
(31) Convention Application Nos. 51/128309U (32) Filed 22 Sep. 1976  
51/136147U 8 Oct. 1976 in  
(33) Japan (JP)  
(44) Complete Specification Published 31 Jan. 1979  
(51) INT. CL.<sup>2</sup> E06B 7/14  
(52) Index at Acceptance  
E1J GH



## (54) WATER-DRAINABLE GASKET

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumicho, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates to a water-drainable gasket for use between a panel and a frame extending peripherally there-around.

According to the invention, there is provided a water drainable gasket for use between a panel and a frame comprising a substantially U sectioned flexible member of elongate form adapted to receive a panel in the U and to engage of pairs of transversely aligned passage means extending through the member from the inside of the U, the pairs of passage means being located at spaced intervals along the length of the members.

Further according to the invention, there is provided a water-drainable gasket for use between a panel and a frame disposed peripherally around the panel, comprising: a continuous resiliently flexible body of a substantially U-shaped cross-section for extending around and receiving the peripheral edges of the panel, said body including a pair of spaced sidewalls and a bottom extending between and interconnecting said sidewalls and a plurality of pairs of transversely spaced passage means extending through said bottom, said passage means in each pair being transversely aligned with each other, and said pairs of passage means being located at a spaced interval along the length of said continuous body.

The invention will now be described in greater detail, by way of example, with reference to the drawings, in which:-

Figure 1 is a cross-sectional view of a

water-drainable gasket constructed in accordance with a first embodiment of the present invention;

Figure 2 is a fragmentary perspective view, partly cut away, of the gasket shown in Figure 1;

Figure 3 is a cross-sectional view of a water-drainable gasket according to a second embodiment;

Figure 4 is a cross-sectional view of a water-drainable gasket according to a third embodiment;

Figure 5 is a fragmentary perspective view of the gasket shown in Figure 4;

Figure 6 is a front elevational view, on a reduced scale, of a window panel with the gasket according to one of the first, second and third embodiments extending around the peripheral edges thereof;

Figure 7 is a cross-sectional view of a water-drainable gasket provided in accordance with a fourth embodiment;

Figure 8 is a fragmentary perspective view with parts broken away of the gasket of Figure 7;

Figure 9 is a cross-sectional view of a water-drainable gasket according to a fifth embodiment; and

Figure 10 is a cross-sectional view of a water-drainable gasket of a sixth embodiment.

In Figure 1, a water-drainable gasket 11 comprises a continuous resiliently flexible body made of rubber or plastic and having substantially U-shaped cross-section. The gasket 11 is disposed between a panel 12 such as a pane of glass and a frame 13 extending peripherally around the panel 12. The channel-shaped gasket 11 extends around and receives the peripheral edges of the panel 12. The gasket 11 includes a pair of spaced sidewalls 14,15 and a bottom wall 16 extending between and interconnecting the sidewalls 14,15.

A pair of barb-like retaining ribs 17,18

10

are oppositely provided on the inner surfaces of the sidewalls 14,15, respectively. The ribs 17,18 are disposed in parallel relationship with each other and are longitudinally coextensive with the sidewalls 14,15 which carry them. Each rib extends obliquely inwardly at an angle toward the bottom wall 16. When the peripheral edges of the panel 12 are inserted into the channel of the gasket 11, the ribs 17,18 engage the faces of the panel 12. Any tendency for the panel 12 to move out of the gasket 11 will cause the opposed ribs 17,18 to swing outwardly and toward each other, thereby increasing the gripping action on the panel 12.

The gasket 11 is supported on and disposed between a pair of oppositely spaced L-shaped lips 19,20 of the frame 13. The sidewalls 14,15 have a pair of flanges 21,22, respectively, provided at the ends remote from the bottom wall 16. The flanges 21,22 and the sidewalls 14,15 jointly provide recessed surfaces 23,24, respectively, that are disposed in contact with and extend around the corners of the L-shaped lips 19,20, respectively. Thus the gasket 11 is retained in place on the frame 13.

The sidewalls 14,15 have a pair of retaining arms 25,26, respectively, directed away from the flanges 21,22 toward one another. The arms 25,26 grip and support the panel 12 therebetween against sidewise displacement thereof.

A plurality of pairs of transversely spaced passage means 27,28 such as circular through holes are provided in the bottom wall 16. As better shown in Figure 2, the holes 27,28 in each pair are transversely aligned with each other. The pairs of the holes 27,28 are spaced at an interval along the length of the continuous gasket 11. Each pair of the holes 27,28 are located closely to the sidewalls 14,15, respectively, and extend perpendicularly to the bottom wall 16.

Between the spaced holes 27,28, there is a ridge 29 provided on the bottom wall 16 and extending along the continuous gasket 11. The ridge 29 has a raised top surface on which is supported a peripheral edge of the panel 12. Thus a pair of water collection channels 30,31 are provided one on each side of the ridge 29.

Water entering the gasket 11 down along the panel 12 past the arms 25,26 and the ribs 17,18 is collected in the channels 30,31 and drained through the holes 27,28.

According to a gasket 33 of a second embodiment shown in Figure 3, a plurality of pairs of water draining circular holes 34,35 are provided partly through a bottom wall 36 and partly through a pair of sidewalls 37,38. Each pair of the holes 34,35 are located at a point where the bottom wall 36 and the sidewalls 37,38 are intercon-

nected, and extend at an angle to each other and to the sidewalls 37,38.

In a third embodiment illustrated in Figure 4, a gasket 40 has a plurality of pairs of water draining holes 41,42 extending partly through a bottom wall 43 and partly through a pair of sidewalls 44,45. Between each pair of the holes 41,42, there is a transverse slot 46 communicating with the holes 41,42. As best shown in Figure 5, the pairs of the holes 41,42 and the interconnecting slots 46 jointly provide a plurality of transverse grooves 47 located at a spaced interval along the length of the gasket 40.

In the second and third embodiments, a panel edge is directly placed on the bottom wall 36(46), and covers portions of the holes 34,35 or the slots 46 that extend through the bottom wall 36,46. However, the holes 34,35 (41,42) extending partly through the sidewalls 37,38 (44,45) can discharge collected water out of the gasket 33(40).

At the time any one of the gaskets 11, 33, and 40 is installed around the edges of a window panel 48 (Figure 6), the gasket is cut or notched at points where it is bent around the corners of the panel 48. With the drainage holes so spaced along the gasket that some of them will be positioned on the corners of the panel 48, the gasket can be easily cut at the holes so located.

Further, the gaskets 11, 33, and 40 having the water draining holes are flexible enough to be easily mounted around the panel and support the panel elastically against the danger of being broken when subjected to deforming forces.

Figures 7 and 8 illustrate a fourth embodiment in which a continuous gasket 50 is used in a double-glazed window 51 having a pair of spaced panels 52,53 and a frame 54 disposed in peripherally surrounding relation to the panels 52,53. The gasket 50 has a substantially U-shaped cross-section comprising a pair of sidewalls 55,56 and a bottom 57 extending between and interconnecting the sidewalls 55,56.

A central spacer 58 extends from the bottom 57 and is situated between the sidewalls 55,56, the spacer 58 extending along the continuous gasket 50. The spacer 58 is interposed between the panels 52,53 to maintain them spaced a slight distance each from the other. The panels 52,53 have peripheral edges placed on the bottom 57 with a pair of elongate rubber seals 59,60 therebetween, the rubber seals 59,60 being located one on each side of the spacer 58.

An opening 61 is provided in the bottom 57 and extends along the length thereof. The opening 61 communicates with the space between the panels 52,53 through apertures 62 provided at gaps 63 in the spacer 58. Within the opening 61, there is disposed desiccant material 64 housed in a

70

75

80

85

90

95

100

105

110

115

120

125

130

container 65 made of a plastic film, the container 65 having a central slot 65 held in registration with the apertures 62. The desiccant material 64 absorbs trapped moisture within the space which is provided by the panels 52,53 and the bottom 57 of the enclosing gasket 50, so that moisture condensation on the panel surfaces which face each other will be prevented.

The bottom 57 has a pair of water collecting channels 67,68 adjacent to the sidewalls 55,56, respectively, the channels 67,68 extending along the bottom 57 and being provided one on each side of the rubber seals 59,60. A plurality of pairs of water draining holes 69,70 extend across and through the bottom 57, the holes 69,70 in each pair being transversely spaced from and aligned with one another. The pairs of the holes 69,70 are located at an interval spaced along the length of the continuous gasket 50. The holes 69,70 have one ends positioned in the channels 67,68, respectively.

A pair of elongate reservoirs 71,72 are provided in the bottom 57 and extend along the length of the gasket 50. The reservoirs 71,72 extend across and communicate with the pairs of the holes 69,70, respectively, and are spaced from the opening 61 by a pair of partitions 73,74 therebetween.

The gasket 50 is carried on a support 75 placed on a partition 76 of the frame 54. The support 75 has a width which is substantially the same as that of the bottom 57. The other end portion of each of the holes 69,70 is directed diagonally and diverged away from each other such that its discharge port opens at a corner 77 of the bottom 57 that is disposed beyond the support 75.

When the gasket 50 is to be mounted around the edges of the panels 52,53, a length of the gasket 50 that corresponds to the length of one edge of the panels 52,53 is first prepared and mitered at its ends. The opening 61 is then filled with the desiccant material 64 housed in the container 65 and its ends are closed off with suitable material. The piece of the gasket 50 thus provided is attached to the edge of the panels 52,53. The remaining panel edges are furnished with the corresponding lengths of the gasket 50 that are similarly finished.

A gasket 80 provided according to a fifth embodiment shown in Figure 9 is supported on a support 81 having a width substantially the same as a combined width of the spaced panels 52,53. The gasket 80 has a plurality of pairs of water draining holes 82,83 in its bottom 84, the holes 82,83 extending straightly from a pair of water-collecting channels 85,86, respectively, to bottom surfaces 87,88 of the bottom 84 that are out of abutting engagement with the support 81.

Further according to a sixth embodiment

of Figure 10, a gasket 90 includes plural pairs of water draining holes 91,92 provided in a bottom 93, the holes 91,92 extending from a pair of water collection channels 94,95, respectively. The holes 91,92 in each pair become progressively diverged away from each other as they extend away from the channels 94,95, with their discharge ports opening at side surfaces 96,97 of the bottom 93.

#### WHAT WE CLAIM IS:-

1. A water-drainable gasket for use between a panel and a frame disposed peripherally around the panel, comprising: a continuous resiliently flexible body of a substantially U-shaped cross-section for extending around and receiving the peripheral edges of the panel, said body including a pair of spaced sidewalls and a bottom extending between and interconnecting said sidewalls; and a plurality of pairs of transversely spaced passage means extending through said bottom, said passage means in each pair being transversely aligned with each other, and said pairs of passage means being located at a spaced interval along the length of said continuous body.

2. A water-drainable gasket according to claim 1, each of said passage means extending perpendicularly to said bottom.

3. A water-drainable gasket according to claim 1, each pair of said passage means extending partly through said sidewalls.

4. A water-drainable gasket according to claim 3, said each pair of said passage means extending at an angle to each other and to said sidewalls.

5. A water-drainable gasket according to claim 3, there being a slot extending transversely between and communicating with said each pair of said passage means.

6. A water-drainable gasket according to claim 1, including a ridge on said bottom for supporting thereon an edge of the panel, said ridge being located between each pair of said passage means.

7. A water-drainable gasket according to claim 6, said bottom including a pair of elongate water collection channels each located between said ridge and one of said sidewalls.

8. A water-drainable gasket according to Claim 1, said bottom having a pair of elongate reservoirs therein extending along the length of said continuous body, and each of said reservoirs extending across and communicating with one of each pair of said passage means.

9. A water-drainable gasket substantially as herein described with reference to the drawings.

10. A water-drainable gasket for use between a panel and a frame comprising a substantially U sectioned flexible member of elongate form adapted to receive a panel in

(11)



(11)

3

1,539,504

3

container 65 made of a plastic film, the container 65 having a central slot 65 held in registration with the apertures 62. The desiccant material 64 absorbs trapped moisture within the space which is provided by the panels 52,53 and the bottom 57 of the enclosing gasket 50, so that moisture condensation on the panel surfaces which face each other will be prevented.

The bottom 57 has a pair of water collecting channels 67,68 adjacent to the sidewalls 55,56, respectively, the channels 67,68 extending along the bottom 57 and being provided one on each side of the rubber seals 59,60. A plurality of pairs of water draining holes 69,70 extend across and through the bottom 57, the holes 69,70 in each pair being transversely spaced from and aligned with one another. The pairs of the holes 69,70 are located at an interval spaced along the length of the continuous gasket 50. The holes 69,70 have one ends positioned in the channels 67,68, respectively.

A pair of elongate reservoirs 71,72 are provided in the bottom 57 and extend along the length of the gasket 50. The reservoirs 71,72 extend across and communicate with the pairs of the holes 69,70, respectively, and are spaced from the opening 61 by a pair of partitions 73,74 therebetween.

The gasket 50 is carried on a support 75 placed on a partition 76 of the frame 54. The support 75 has a width which is substantially the same as that of the bottom 57. The other end portion of each of the holes 69,70 is directed diagonally and diverged away from each other such that its discharge port opens at a corner 77 of the bottom 57 that is disposed beyond the support 75.

When the gasket 50 is to be mounted around the edges of the panels 52,53, a length of the gasket 50 that corresponds to the length of one edge of the panels 52,53 is first prepared and mitered at its ends. The opening 61 is then filled with the desiccant material 64 housed in the container 65 and its ends are closed off with suitable material. The piece of the gasket 50 thus provided is attached to the edge of the panels 52,53. The remaining panel edges are furnished with the corresponding lengths of the gasket 50 that are similarly finished.

A gasket 80 provided according to a fifth embodiment shown in Figure 9 is supported on a support 81 having a width substantially the same as a combined width of the spaced panels 52,53. The gasket 80 has a plurality of pairs of water draining holes 82,83 in its bottom 84, the holes 82,83 extending straightly from a pair of water-collecting channels 85,86, respectively, to bottom surfaces 87,88 of the bottom 84 that are out of abutting engagement with the support 81.

Further according to a sixth embodiment

of Figure 10, a gasket 90 includes plural pairs of water draining holes 91,92 provided in a bottom 93, the holes 91,92 extending from a pair of water collection channels 94,95, respectively. The holes 91,92 in each pair become progressively diverged away from each other as they extend away from the channels 94,95, with their discharge ports opening at side surfaces 96,97 of the bottom 93.

#### WHAT WE CLAIM IS:-

1. A water-drainable gasket for use between a panel and a frame disposed peripherally around the panel, comprising: a continuous resiliently flexible body of a substantially U-shaped cross-section for extending around and receiving the peripheral edges of the panel, said body including a pair of spaced sidewalls and a bottom extending between and interconnecting said sidewalls; and a plurality of pairs of transversely spaced passage means extending through said bottom, said passage means in each pair being transversely aligned with each other, and said pairs of passage means being located at a spaced interval along the length of said continuous body.

2. A water-drainable gasket according to claim 1, each of said passage means extending perpendicularly to said bottom.

3. A water-drainable gasket according to claim 1, each pair of said passage means extending partly through said sidewalls.

4. A water-drainable gasket according to claim 3, said each pair of said passage means extending at an angle to each other and to said sidewalls.

5. A water-drainable gasket according to claim 3, there being a slot extending transversely between and communicating with said each pair of said passage means.

6. A water-drainable gasket according to claim 1, including a ridge on said bottom for supporting thereon an edge of the panel, said ridge being located between each pair of said passage means.

7. A water-drainable gasket according to claim 6, said bottom including a pair of elongate water collection channels each located between said ridge and one of said sidewalls.

8. A water-drainable gasket according to Claim 1, said bottom having a pair of elongate reservoirs therein extending along the length of said continuous body, and each of said reservoirs extending across and communicating with one of each pair of said passage means.

9. A water-drainable gasket substantially as herein described with reference to the drawings.

10. A water-drainable gasket for use between a panel and a frame comprising a substantially U sectioned flexible member of elongate form adapted to receive a panel in



4

1,539,504

4

5 the U and to engage the frame at an outer position, the member having a plurality of pairs of transversely aligned passage means extending through the member from the inside of the U, the pairs of passage means being located at spaced intervals along the

length of the members.

For the Applicants,  
J. F. WILLIAMS & CO.,  
Chartered Patent Agents,  
113 Kingsway,  
London, W.C.2.

10

Printed for Her Majesty's Stationery Office, by Croydon Printing Company Limited, Croydon, Surrey, 1978.  
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from  
which copies may be obtained.