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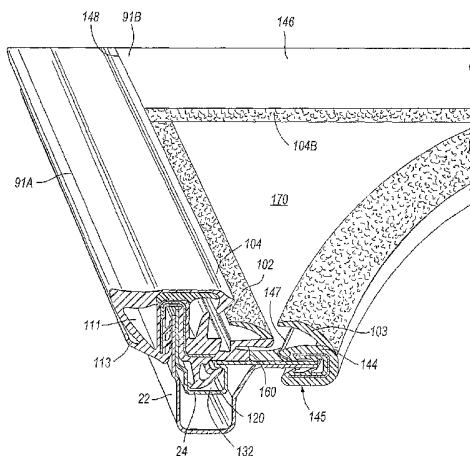
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(54) Title: SEALING OR GUIDING ASSEMBLY AND CORRESPONDING ASSEMBLY METHIOD



(57) Abstract: A sealing or guiding assembly for sealing or guiding a corner of a closure member such as a window 109 for an opening is disclosed. The sealing or guiding assembly is attached to a frame 8 comprising panels 22, 24. Strips 91A, 91B of flexible material extend towards and meet at the corner and are shaped to receive the closure member 109 at the corner and are adapted to be supported by the frame 8. At the region of the corner a corner support is provided which forms part of the frame 8 and bridges across the corner. At the distal edge of the panels 22, 24/corner support a third strip 145 is provided. Away from the corner region the third strip extends generally parallel to the strips 91A and 91B. At the corner region, the strip 145 bridges across the corner. A flap 170 of flexible material is joined to the strips 91A, 91B in the region of the corner and bridges across the corner between the strips 91A, 91B. The join between the flap 170 and the strip 91A is obscured by the lip 102. The join between the flap 170 and the strip 91B is obscured by the lip 104B and moulded part 146. The gap 147 between the moulded flap 170 and the limb 144 of the strip 145 is obscured from view by the lip 103 of the strip 145.

WO 2006/123241 A1

SEALING OR GUIDING ASSEMBLY AND CORRESPONDING ASSEMBLY METHOD

Field of the Invention

The invention relates to sealing or guiding assemblies and methods of making them. Embodiments of the invention, to be described in more detail below, are window sealing and guiding strip assemblies for use in motor vehicle body construction and, in particular, for use in window frames forming the upper part of vehicle doors, the sealing or guiding strip assembly being attached to the window frame and supporting the edge of a window pane which can be raised from and lowered into the lower part of the door. However, the invention is not restricted to such applications.

Summary of the Invention

According to one aspect of the present invention, there is provided a sealing or guiding assembly for sealing or guiding a corner of a closure member for an opening and for attachment to a frame for the opening, the opening including a corner, and a corner support at said corner extending at a proximal end thereof from the frame and bridging across the corner, the assembly including first and second strips of flexible material extending towards and meeting at the corner and shaped to receive the closure member at the corner; a flap of flexible material joined to the first and second strips of the flexible material in the region of the corner and bridging across the corner between the first and second strips and overlying the corner support; and a third strip of flexible material extending over the distal end of the corner support; wherein the third strip includes a lip for sealingly engaging the closure member, the arrangement being such that the lip at least partially obscures from view a gap between the flap and the third strip.

According to another aspect of the present invention, there is provided a method of sealing or guiding a corner of a closure member for an opening having a frame, the

opening including a corner, and a corner support at said corner extending at a proximal end thereof from the frame and bridging across the corner, the method including arranging first and second strips of flexible material to extend towards and meet at the corner and for receiving the closure member at the corner; joining a flap of flexible material to the first and second strips of the flexible material in the region of the corner so that the flap bridges across the corner between the first and second strips and overlies the corner support; and arranging a third strip of flexible material extending over the distal end of the corner support; wherein the third strip includes a lip for sealingly engaging the closure member, the arrangement being such that the lip at least partially obscures from view a gap between the flap and the third strip.

According to a further aspect of the invention, there is provided a channel-shaped sealing or guiding assembly for mounting on a frame and for receiving a closure member that closes an opening in the frame, the assembly including a base from which two spaced apart limbs extend, one of said limbs including a first part integral with the base and a second part separate from the first part and spaced apart therefrom by a gap, wherein the second part includes a sealing lip for sealingly engaging the closure member and for obscuring from view the gap.

Brief Description of the Drawings

For a better understanding of the invention, window sealing and guiding strips embodying the invention and methods of sealing or guiding will now be described, by way of example only, with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a side view of a motor vehicle body;

Figure 2 is a diagrammatic perspective view of a corner region of the window frame

shown in Figure 1 but omitting the window sealing and guiding strip assembly;

Figure 3 is a diagrammatic perspective view of the window frame of Figure 2 and the sealing and guiding strip assembly;

Figure 4 is a cross-sectional view of the frame and sealing and guiding strip on the line A-A of Figure 1 showing an arrangement according to an embodiment of the invention; and

Figure 5 is a cross-sectional view of the frame and sealing and guiding strip on the line B-B of Figure 1 according to the embodiment of the invention.

In the drawings, like elements are generally designated with the same reference numeral.

Detailed Description of Embodiment of the Invention

Figure 1 shows the side of a motor vehicle body having a rear door 5 with a lower part 6 carrying a window frame indicated diagrammatically at 8 for a window opening 10. In the usual way, a window glass for the opening 10 can be raised from and lowered into the lower part 6 of the door. The frame 8 carries the sealing and guiding strip (not visible in Figure 1) which will be described in more detail below.

The frame 8 comprises a generally vertical part 8A alongside the so-called "B" pillar 12 of the vehicle body, and a part 8B running along the top of the door generally parallel to the roof 14.

Where the "B" pillar 12 meets the roof 14 of the vehicle, a sharp angle (substantially 90°) is formed, at 16. In a manner to be explained below, the sealing and guiding strip

assembly to be described combines with the frame 8 to form a corresponding sharp angle 18 of the frame for receiving the matching angle of the window glass.

Although the embodiment relates to the corner of the "B" pillar of the rear door 5 and the roof 14 it should be understood that the invention equally applies to any other corner - for example the corner 17 where the "C" pillar 18 meets the roof 14, the corner 19 where the "B" pillar of the front door 20 meets the roof 14 and the corner 21 where the "A" pillar 23 meets the roof 14. The corner does not have to have a "sharp angle" - the angle may be substantially less than 90° but will generally be at least 45°.

The frame 8 carried by the door 5 is (in this example) made of metal, such as extruded aluminium, or of hard plastics. Figure 2 shows part of the frame 8 at the corner 18. The sealing and guiding strip assembly is omitted from Figure 2. The frame 8 is formed from two panels 22,24 of material which are shaped as shown and spot-welded together (or attached by any other suitable means).

At the region shown in Figure 2, the door frame 8 has a platform 82 (formed by panel 24). Along the roofline, extending generally perpendicularly with respect to the platform is flange 80 (formed by the panels 22,24). Along the "B" pillar, a generally U-shaped channel is formed by the panels 22,24.

Figure 3 shows a perspective view of the sealing strips 91A and 91B and frame 8 in the corner region (cut along line E-E of Figure 1), Figure 4 shows a cross-section taken along line A-A of Figure 1 and Figure 5 shows a cross-section of the rear door 6 "B" pillar taken along line B-B of Figure 1. (A cross-section taken along line A¹-A¹ of the front door 20 frame may have a similar appearance to that of Figure 4 and a cross-section of the front door 20 "B" pillar taken along line B-B may have a similar appearance to that of Figure 5).

Referring mainly to Figure 4, the strip 91A comprises extruded material 92, such as plastics, EPDM, TPE or rubber material, which defines a channel 93 and incorporates a channel-shaped metal carrier 94 embedded within the material of the strip 91A. The carrier 94 may take any suitable form. It may be in the form of a continuous unapertured metal channel. Instead, it may be apertured to increase its flexibility. In another form, it comprises a series of side-by-side generally U-shaped metal elements defining the channel and either entirely disconnected from each other or connected such as by short integral flexible connecting links. In a further form, the carrier comprises looped wire. Other possible forms of carrier may be used, though. As shown, the carrier 94 has an integral extension 96 which extends at right angles to the channel 93.

The strip 91 includes a wall 98 of a window glass receiving channel 100. The wall 98 includes a lip 102, and the opposite wall of the glass-receiving channel 100 is formed by the lip 104. A base lip 106 is formed at the base 107 of the channel 100. As the window glass 109 closes, the glass 109 presses against the base lip 106 to improve the seal with the glass. The base lip 106 extends approximately parallel to the base of the channel 100.

At the opposite side of the carrier extension 96 a generally hook-shaped part 120 is integrally extruded. The hook-shaped part 120 includes walls 122 which meet at a base 124, and between them define a space 126. The base 124 includes projections 128, 130 at opposite ends thereof for engaging a channel 132 formed by the panel 24, and in particular engaging the flange 134 formed by the panel 24 at the entrance to the channel 132. The walls 122 and base 124 are resiliently deformed as the hook-shaped part 120 is pushed into the channel 132, whereafter they resile and locate the strip 91A with respect to the channel 132. The carrier extension 96 increases the rigidity of the

strip 91A in the region of the hook-shaped part 120 to improve this positioning.

The lip 102 includes a base part 140 and a sealing part 142, the latter pressing against window glass 109 in use when the window is closed.

The upper part 138 of the sealing strip (as shown in the Figures) may also be formed of a relatively hard material, as indicated by the cross hatching. The other parts of the sealing strip are relatively soft - including an upper skin which overlies the upper part 138.

The base 140 of the lip 102 integrally extends from the region where the hook-shaped part 120 and base lip 106 meet. The base 140 is generally planar. From approximately mid-way along the base 140 of the lip 102, a generally planar limb 150 extends. The limb 150 extends generally parallel to the base 140 and forms an inner part of the wall 98.

The outer part of the wall 98 is formed by the central limb 144 of reverse E-shaped "cosmetic" member 145. The adjacent end faces of the limb 150 and limb 144 are spaced apart by a gap 146 and may have respective corresponding concave/convex configurations as shown. The upper limb of the member 145 forms an outer lip 103 which includes a sealing part 152, similar to the sealing part 142 of the lip 102. The lower limb of the member 145 forms a cosmetic lip 154 which extends over the panels 22,24 so that the distal edges of these panels (which can be seen in Figure 2) are hidden. A generally U-shaped carrier 156 made of rigid material is embedded with the central limb 144 and the cosmetic lip 154 of the member 145 and extends around the distal ends of the panels 22,24. The carrier 156 serves to clamp the member 145 to the panels 22,24. Integral flexible lips 158 extend from the central limb 144 and cosmetic lip 154 to increase the clamping/gripping force.

In use, the sealing strip 91A is mounted in position on the flange 80 leading towards and up to the corner 18 by positioning the strip so that the flange 80 engages in the channel 93 and the hook-shaped part 120 engages the channel 132. The strip 91A firmly grips the flange 80, the gripping force being assisted by the resilience of the metal carrier 94 and also by the provision of integral flexible lips 108 which extend inwardly of the channel 93. The lips 108 may be extruded so as to be of softer material than the remainder of the extruded material 92, to increase their frictional grip.

The outwardly facing surfaces of the lips 102, 103, 104 and 106 are coated with flock 110 where they meet the window glass 109. The flock can be formed as part of the extrusion process which forms the strip 91A.

As shown in Figure 4, the sealing strip 91A includes a hollow sealing member 111 on the outside of the window frame, that is, on the outside edge of the door. This sealing member 111 engages the frame 112 of the door opening when the door 5 is closed, to provide a seal around the edge of the door. A lip 113 extends from the sealing member 111 and also engages the frame 112 of the door opening when the door 5 is closed.

The strip 91B (Figure 5) extending along the B-pillar 12 is generally U-shaped and does not include the channel 93 but instead is clamped by a U-shaped channel 81 formed by the panels 22, 24. The upper (in the Figure) leg of the U-shaped channel 81 extends generally parallel to the lip 104B of the strip 91B, pressing this lip against the window glass 109. No carrier 94 is provided. The upper leg of the U-shaped channel 81 is covered by a decorative moulding 146, which extends around and covers the ends of the panels 22, 24. Base lip 106A extends from the lower limb 150B of the strip 91B and seals against the end of the window glass 109. The lips 104B and 106B may have a flocked surface 110B in the same way as lips 104 and 106. The hook-shaped part

120 is also omitted as it is not required and no corresponding channel 132 is provided in the U-shaped channel 81. The reverse E-shaped member 145 extends along both the roofline 14 and the "B" pillar 12. The adjacent end faces of the lower limb 150B and limb 146 of the member 145 are spaced apart by a gap 146B and may have respective corresponding concave/convex configurations as shown.

The two strips 91A and 91B are joined at a line 148 (Figure 3). In this way, the strips 91A and 91B present their glass-receiving channels 100 in the plane of the window opening 10 so that the sliding window glass 109 enters the channels 100.

It is generally desired to have a single extruded glass run extending continuously along the B-pillar and another extruded glass run extending continuously along the roof line and the A-pillar. This provides an attractive appearance, without the joins (other than join 148 at the corner 18).

As explained above, the platform 82 is present at the corner 18 but is not present at other areas of the frame 8 (for example as it extends generally parallel to the vehicle roof 14 and generally parallel to the A or B pillars 11,12 - other than at the corner 18). Where the platform 82 is present, the distance between the base of the channels and the distal end of the platform 82/panels 22,24 is increased. In order to accommodate this variation in distance, the following steps are taken. The extruded material of the limb 150 of the strip 91A is cut at cut line 160 (in Figure 4). The extruded material to the right of the cut line 160 is discarded. Similarly, the extruded material of the limb 150B of strip 91B is cut at cut line 160B (in Figure 5), and the extruded material to the right of the cut line 160B is discarded. A planar sheet of rubber material 170 (in Figure 3) is then inserted and moulded onto the limbs 150 and 150B at the points of the cut lines 160,160B to form a flap of flexible material extending over the platform 82. The flap is generally triangular in shape but curved along the hypotenuse.

Advantageously, the join between the inner limb 150 and the moulded part 170 is obscured from view by the base part 140 of the lip 102, and the join between the limb 150B and the moulded part 170 is obscured from view by the moulded part 146 and/or the lip 104B.

The moulded part 170 may be formed of TPE or EPDM or any other suitable material. The end of the base part 140 from which the sealing part 142 integrally extends may be joined to the moulded part 170 at the region 172 during the moulding operation which forms the part 170 in order to better locate the sealing part 142 of the lip 102. The connection between the base part 140 and the moulded part 170 at the region 172 may alternatively be achieved by applying an adhesive. It should be understood that the connection between the base part 140 and the moulded part 170 at region 172 is not necessary or essential to the invention.

At a region along the roof line of the frame 8 but spaced from the corner 18 and the platform 82 and along the "B" pillar 12 but spaced from the corner 18 and the platform 82, the moulded part 170 is not required.

As explained above, the moulded part 170 forms a flap portion which conceals the platform 82. The adjacent end faces of the moulded part 170 and the limb 144 of member 145 are spaced apart by a gap 147 and may have respective corresponding concave/convex configurations as shown. The gap 147 between the moulded part 170 and the limb 144 of the member 145 may be obscured from view by the lip 103.

The provision of two lips 102 and 103 may tend to improve sealing, thereby reducing moisture ingress and improving sound insulation. The lips may be formed from extruded material - avoiding the need for post-flocking. The provision of two lips 102

and 103 is not essential to the invention.

The limbs 150,150B need not be cut along cut lines 160,160B. The material of moulded part 170 may be moulded directly onto the distal ends of the limbs without any cutting.

CLAIMS

1. A sealing or guiding assembly for sealing or guiding a corner of a closure member (109) for an opening and for attachment to a frame (8) for the opening, the opening including a corner (19), and a corner support (82) at said corner (19) extending at a proximal end thereof from the frame (8) and bridging across the corner (19), the assembly including first (91A) and second (91B) strips of flexible material extending towards and meeting at the corner (19) and shaped to receive the closure member (109) at the corner (19); a flap of (170) flexible material joined to the first and second strips (91A,91B) of the flexible material in the region of the corner (19) and bridging across the corner (19) between the first and second strips (91A,91B) and overlying the corner supports (82); and a third strip (145) of flexible material extending over the distal end of the corner (82) support; wherein the third strip (145) includes a lip (103) for sealingly engaging the closure member (109), the arrangement being such that the lip (103) at least partially obscures from view a gap (147) between the flap (170) and the third strip (145).
2. The assembly of claim 1, wherein the lip of the third strip (145) extends over the gap (147) between the flap (170) and third strip (145).
3. The assembly of claim 1 or 2, wherein at least one of the first and second strips (91A,91B) includes a lip (102) for sealingly engaging the closure member (109).
4. The assembly of claim 3, wherein the lip (102) of the first and/or second strips (91A,91B) is arranged for obscuring the join (160) between that or those strips and the flap (170).

5. The assembly of any one of claims 1 to 4, wherein the third strip (145) includes at least one further lip (154) for clampingly engaging the frame (8).
6. The assembly of claim 5, wherein the further lip (154) has a rigid member (156) embedded therein.
7. The assembly of any one of claims 1 to 6, wherein the first strip (91A) includes a channel (93) for grippingly engaging a flange (80) of the frame (8).
8. The assembly of any one of claims 1 to 7, wherein the flap (170) is formed of moulded material.
9. The assembly of any one of claims 1 to 8, wherein the flap (170) is moulded onto the first and second strips (91A,91B).
10. The assembly of any one of claims 1 to 9, wherein the strips (91A,91B) are formed of extruded material.
11. The assembly of any one of claims 1 to 10, wherein the flap (170) and/or strips (91A,91B) comprise EPDM and/or TPE.
12. The assembly of any one of claims 1 to 11, wherein the second strip (91B) is generally channel-shaped and is grippingly engaged by a channel-shaped formation (81) of the frame (8).
13. A method of sealing or guiding a corner of a closure member (109) for an opening having a frame (8), the opening including a corner (19), and a corner support (82) at said corner (19) extending at a proximal end thereof from the frame (8) and

bridging across the corner (19), the method including arranging first and second strips (91A,91B) of flexible material to extend towards and meet at the corner (19) and for receiving the closure member (109) at the corner (19); joining a flap (170) of flexible material to the first and second strips (91A,91B) of the flexible material (170) in the region of the corner (19) so that the flap (170) bridges across the corner (19) between the first and second strips (91A,91B) and overlies the corner support (82); and arranging a third strip (145) of flexible material extending over the distal end of the corner support (82); wherein the third strip (145) includes a lip for sealingly engaging the closure member (104), the arrangement being such that the lip (103) at least partially obscures from view a gap (147) between the flap (170) and the third strip (145).

14. The method of claim 13, wherein the lip (103) of the third strip extends (145) over the gap (147) between the flap (170) and third strip (145).

15. The method of claim 13 or 14, wherein at least one of the first and second strips (91A,91B) includes a lip (102) for sealingly engaging the closure member.

16. The method of claim 15, wherein the lip of the first and/or second strips (91A,91B) is arranged for obscuring the join (160) between that or those strips and the flap (170).

17. The method of any one of claims 13 to 16, wherein the third strip (145) includes at least one further lip (154) for clampingly engaging the frame (8).

18. The method of any one of claims 13 to 17, wherein the further lip (154) has a rigid member (156) embedded therein.

19. The method of any one of claims 13 to 18, wherein the first strip (91A) includes a channel (93) for grippingly engaging a flange (80) of the frame (8).
20. The method of any one of claims 13 to 19, wherein the flap (170) is formed of moulded material.
21. The method of any one of claims 13 to 20, wherein the flap (170) is moulded onto the first and second strips (91A,91B).
22. The method of any one of claims 13 to 21, wherein the strips (91A,91B) are formed of extruded material.
23. The method of any one of claims 13 to 22, wherein the flap (170) and/or strips (91A,91B) comprise EPDM and/or TPE.
24. The method of any one of claims 13 to 23, wherein the second strip (91B) is generally channel-shaped and is grippingly engaged by a channel-shaped formation (81) of the frame (8).
25. A channel-shaped sealing or guiding assembly for mounting on a frame (8) and for receiving a closure member (109) that closes an opening in the frame (8), the assembly including a base (107) from which two spaced apart limbs (104,98) extend, one of said limbs (98) including a first part (150) integral with the base (107) and a second part (144) separate from the first part (150) and spaced apart therefrom by a gap (147), wherein the second part (144) includes a sealing lip (103) for sealingly engaging the closure member (109) and for obscuring from view the gap (147).
26. The assembly of claim 25, wherein the first part (150) includes a flap (170) of

moulded material for bridging across a corner (19) of the frame (8).

1/5

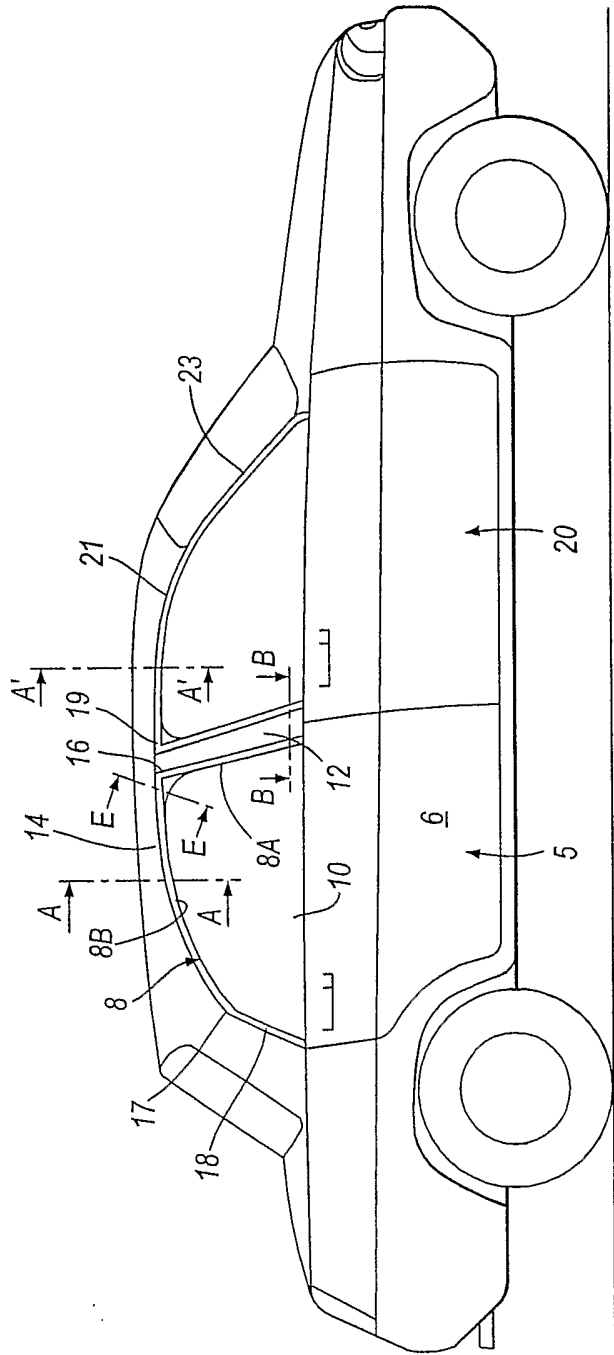


Fig.1

2/5

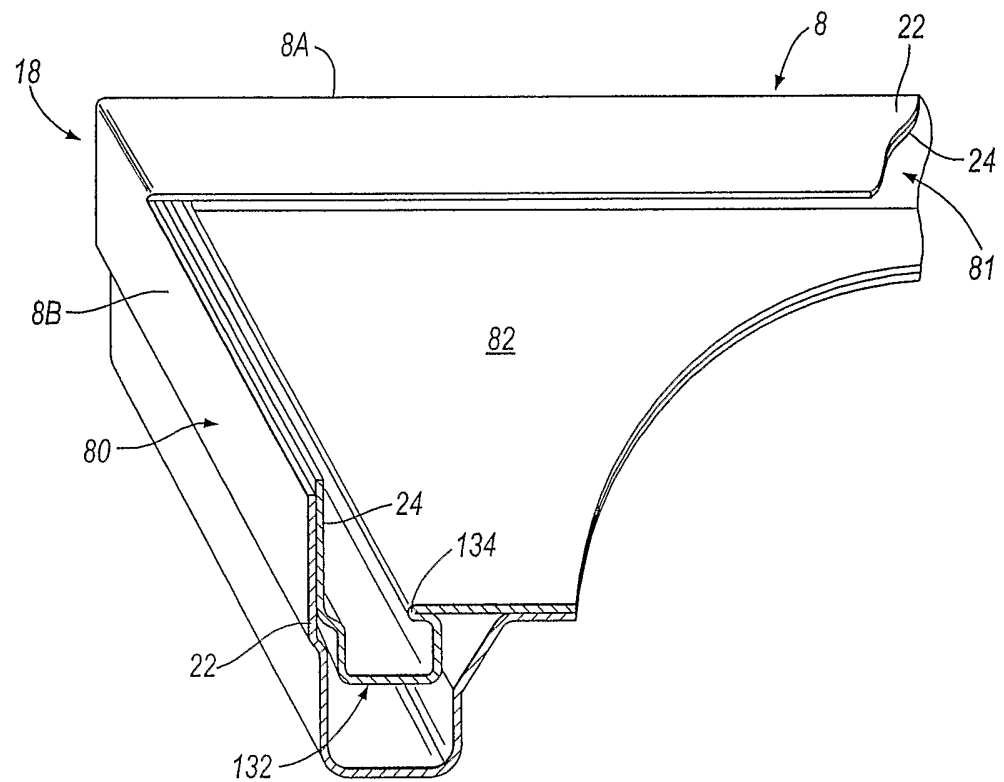


Fig. 2

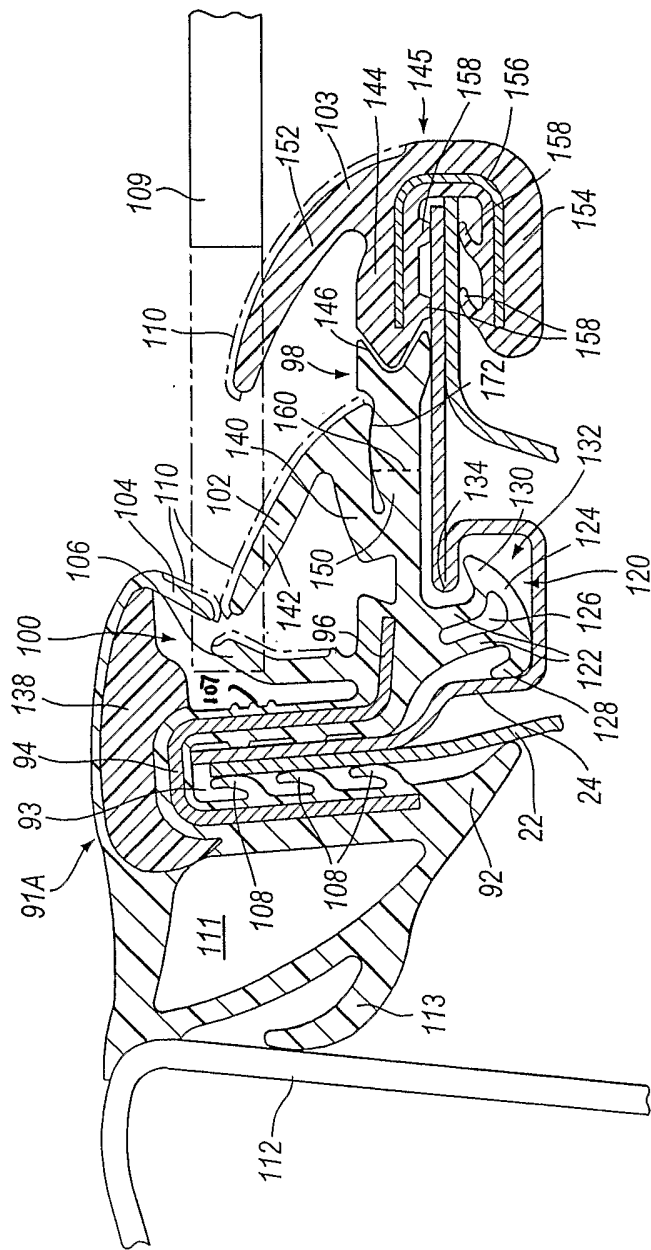


Fig. 4

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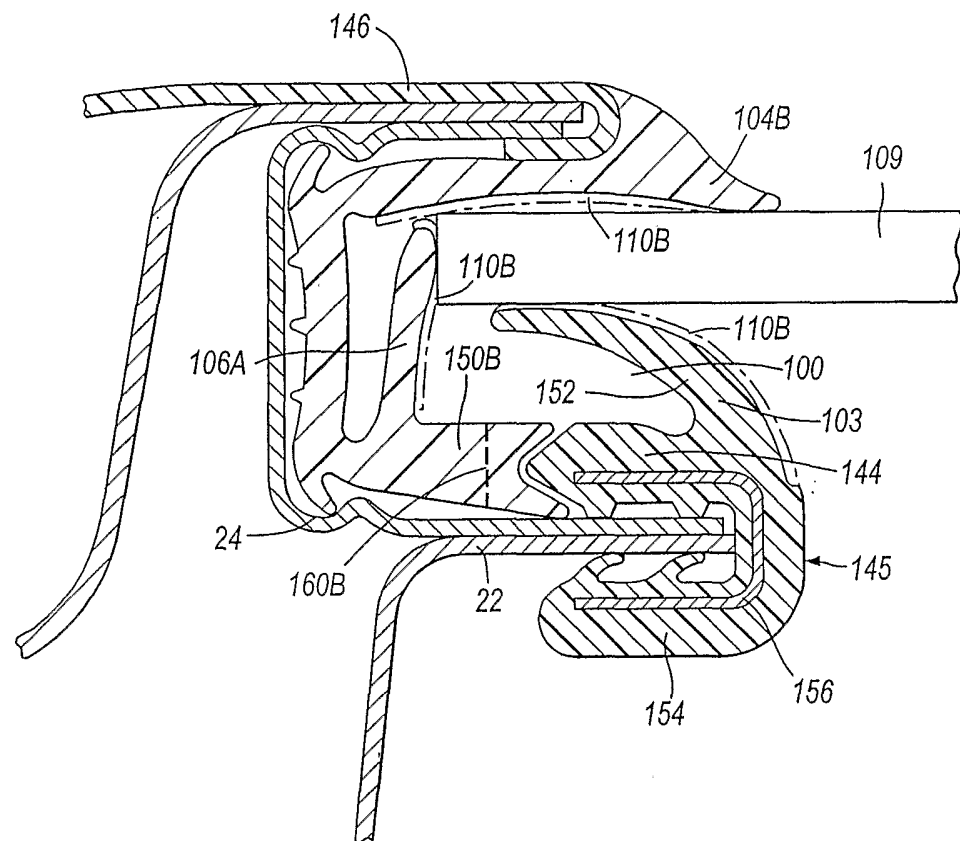


Fig.5

INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER
 INV. B60J10/00 B60J10/04 B60J10/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 B60J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

4 August 2006

Date of mailing of the international search report

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

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