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PANEL JOINT WITH SEALING STRIPS

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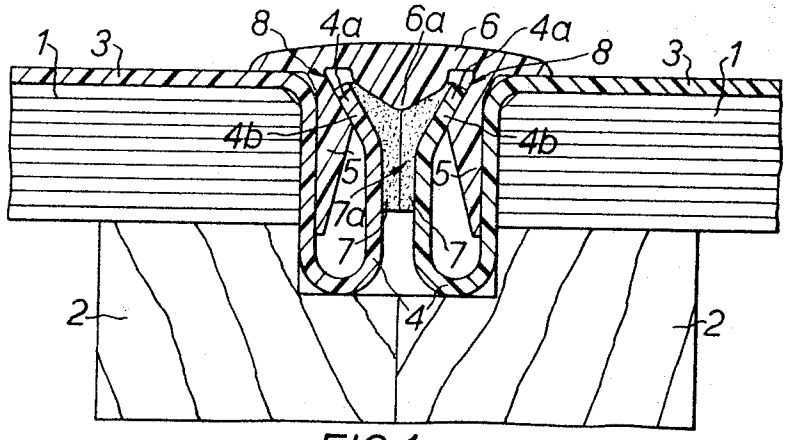


FIG.1.

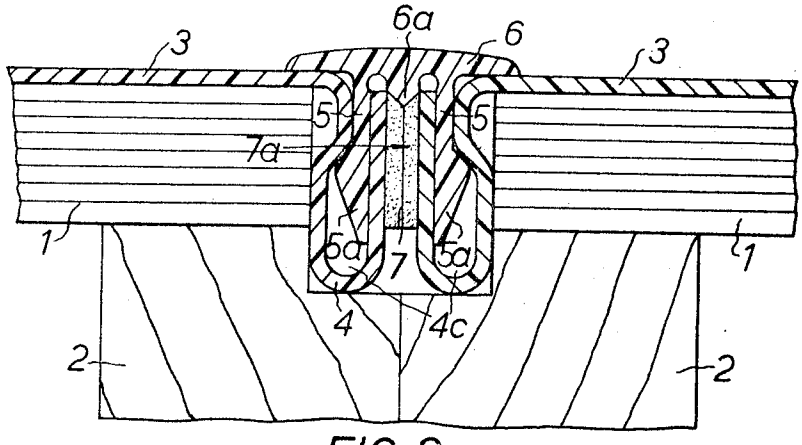


FIG.2.

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PANEL JOINT WITH SEALING STRIPS

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This invention concerns improvements in or modifications of the roof and like structures including wall structures, comprising, for example, prefabricated building panels which are assembled together in the same plane in edge to edge relation, wherein at least some of the abutting edges of the panels are formed with upwardly (or outwardly) opening channels and wherein the abutting channels of adjacent panels are fitted with sealing strips comprising longitudinal edge portions which are engaged respectively one in each of the two abutting channels, each of said strips being provided between said edge portions with a longitudinal rib which is beaded along its outer edge and adapted to be forced between the meeting edges of the channels so as to close said meeting edges on the inside of the panels.

The sealing strips may be of substantially U cross section arranged with the limbs thereof engaged respectively one in each of the two channels with the outer walls of the channels sandwiched between the limbs of the seal and with the closed end of the U covering the upper or outer free edges of said outer walls of the channels.

The object of the present invention is the provision of improved means for bridging and sealing the channels of abutting edges of adjacent panels to ensure that penetration of water between the edges of adjacent panels is prevented.

According to this invention there is provided a roof, wall or the like structure comprising prefabricated building panels which are assembled in the same or substantially the same plane in edge to edge relation, and wherein at least some of the abutting edges of the panels are formed with upwardly (or outwardly) opening channels and wherein the abutting channels of adjacent panels are fitted with substantially U section sealing strips arranged with the longitudinal edge portions thereof engaged respectively one in each of the two abutting channels with the closed end of the U covering the upper or outer edges of the outer walls of the channels, and which is characterised in that the opposed outer faces of the outer walls of the channels have applied thereto a covering of water impervious material which coverings are urged tightly into face to face contact when the U-section sealing strip is engaged in said channels.

The said covering material can be of strip form and used in combination with a water repellent composition.

Alternatively, the covering material may be a synthetic plastics foam and preferably one having a closed cell structure, that is cells which do not inter-communicate; suitable synthetic plastics foam may be polyureathane, polyethylene or P.V.C. The foam may be impregnated or coated with a water repellent solution.

Another suitable covering material is so called "mastic" material in ribbon form, by which is meant a non-setting composition which may contain nitrile, butyl, uncured rubber, bitumen and oils, and designed to accommodate such movement as might be expected in the joint without impairing the seal provided thereby.

When using a covering of impregnated synthetic plastics foam the arrangement is such that when said U section sealing strip is fitted in position the impregnated foam material on said opposed outer faces of the outer

walls of the channels are urged very tightly into intimate face to face contact, and the resulting two layers are each compressed into a thickness which is a fraction of the original thickness, for example each covering is compressed into a quarter of its original thickness.

From experiments it has been found that the seal provided by polyurethane foam impregnated with a water repellent solution and compressed as described above is substantially impermeable to water, which is partly due to the fact that being a cellular material the contacting faces of the foam layers present minute matching and interlocking areas which provide a complete bar against the penetration therethrough of water.

A particularly suitable water repellent solution is "cutback" or thinned-out bitumen.

To enable the invention to be clearly understood, two embodiments thereof using a synthetic plastic foam covering material will now be described by way of example with reference to the accompanying drawings, wherein:

FIGURE 1 is a vertical section taken through two abutting roof panels and illustrating one embodiment, and

FIGURE 2 is a similar view illustrating a second embodiment.

Referring firstly to FIGURE 1 of said drawings, this view shows two roof deck units **1** comprising frames **2**, which are bolted or otherwise secured together.

Each unit **1** comprises a cover **3** of P.V.C. formed along one or more of the edges of the panel with channel section portions **4** in which are located longitudinal edge portions **5** of a substantially U section P.V.C. sealing and bridging strip having its capping or closed end **6** covering the upper outer edges **4***a* of the outer walls of the channel portions **4**.

Each of the outer opposed faces of the outer walls of the adjacent channels has adhered thereto a strip or covering **7** of synthetic plastics foam, that in the embodiment being described being urethane foam impregnated with a water repellent solution, such as thinned out bitumen. Other covering materials referred to herein may alternatively be used.

As previously explained, the nature of urethane foam is such that it can be compressed into about a quarter of its thickness, and the cellular form results in the opposed faces **7***a* matching and interlocking so as to provide a seal which is substantially impermeable to water.

The underside of the cover or capping portion **6** of the sealing strip is formed with a wedge-like projection **6***a* which makes sealing contact with the upper edges of the inter-engaging layers of foam **7**, and this wedge-like part **6***a* also exerts a locking action on the upper parts **4***b* of the outer walls of the channels **4** and causes these parts **4***b* to engage inwardly and downwardly sloping faces **8** of the sealing strip and so acts to lock the strip in position.

Referring now to the second embodiment illustrated by FIGURE 2, the arrangement and construction here is very similar to that of FIGURE 1 and the same reference numerals are used to indicate similar parts. In this embodiment, however, the lower portions **5***a* of the longitudinal edge portions **5** of the sealing strip are thickened to provide locating and retaining nibs which engage and become trapped in enlarged portions **4***c* of the channels **4**, the mouths of these channels only being sufficiently wide after the thickened portion **5***a* of the sealing strip has been forced therethrough to accept the thickness of the edge portions **5** adjacent to the capping part **6**. In this embodiment, the wedge-like projection **6***a* is made small in comparison with that shown in FIGURE 1, because in this second embodiment there is no need to bend the upper ends of the outer walls of the channels outwardly.

As previously explained, the opposed outer faces of the channels of adjacent panels may have applied thereto any suitable covering of water impervious material, and the selected material may be in strip form and used in combination with a water repellent composition.

Synthetic plastics foam other than urethane may be used such as polyethylene or P.V.C. foam. Alternatively, a covering material of so called "mastic" material in ribbon form may be used, by which is meant a non-setting composition which may contain nitrile, butyl, uncured rubber, bitumen and oils and designed to accommodate such movement as might be expected in the joint without imparing the seal provided thereby.

We claim:

1. A roof, wall or the like structure, comprising prefabricated building panels assembled in a common plane in edge to edge relation, outwardly opening channels formed on said panels at their abutting edges, a U-section sealing strip having the parallel side limbs thereof fitted one in each of the two channels at the abutting edges of two adjacent panels with the closed end of the U covering the outer edges of the outer walls of said channels, and a compressible covering of water impervious material applied to the outer faces of the outer walls of the channels, the compressible covering of the channels of two adjacent panels being urged tightly into face to face contact to provide a waterproof seal by fitment of the side limbs of the U section sealing strip in said channels.

2. A roof, wall or the like structure, comprising prefabricated building panels assembled in a common plane in edge to edge relation, a synthetic plastic covering on each of said panels, an outwardly opening channel formed integral with an edge of said covering, a compressible covering of water impervious material applied to the outer faces of the outer walls of the channels, a U-section sealing strip having the parallel side limbs thereof fitted one in each of the two channels at the abutting edges of two adjacent panels with the closed end of the U covering the outer edges of the outer walls of the channels, the water-impervious covering material of two abutting channels being urged tightly into face to face contact to provide a waterproof seal by fitment of the side limbs of the U section sealing strip in said channels.

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