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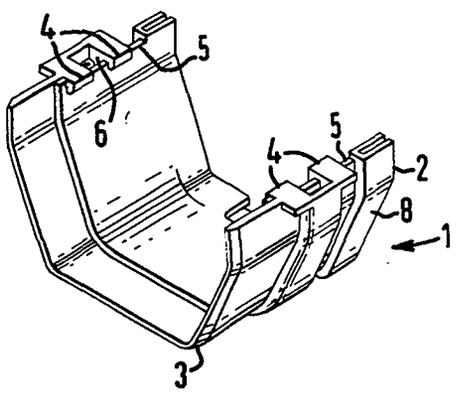
(54) Gutter systems.

(57) An expansion coupling (1) for joining together two components (not shown) in a gutter system comprises two portions (2, 3) joined together in a slidable sealing relationship, each portion (2, 3) being adapted to be connected rigidly and sealingly to a respective component of the system. The coupling (1) may either be adapted to join one gutter to an adjacent gutter in which case both portions are provided with sockets (8) for receiving the ends of respective gutters, or alternatively one of the portions (3) may include a free end in the configuration of a gutter for connection to another component of the system.



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- Gutter Systems -

This invention relates to gutter systems, and particularly such systems made of plastics materials.

In gutter systems when it is desired to join two lengths of gutter it is conventional to use a union in which the respective lengths are located. It is important to make the union watertight and one method of achieving this is to provide seals of rubber or the like and means for holding the gutter lengths against the seals which will conform to the cross-section of the gutter lengths.

It is sometimes difficult to obtain adequate sealing in this manner particularly if the cross-section concerned is not a regular curve. It is therefore known to use unions which have sockets to receive the end portions of the gutter lengths, which are secured in the sockets by means of e.g. solvent welding. Whilst this enables a watertight joint to be made, there are problems with thermal expansion. These place constraints on the design of systems, the maximum length of gutter length which can be used, and so forth.

It is known to use an expansion outlet in such systems, which permits movement of gutter lengths. In such an arrangement, sealing is necessary between the movable gutter lengths and the outlet itself. The effectiveness of this seal depends on the matching of the dimensions and shapes of the gutter lengths with those of the outlet. With gutter lengths which are of e.g. extruded plastics, manufacturing tolerances are such that effective sealing cannot always be guaranteed and one encounters the same problems that solvent welded systems are intended to avoid.

Viewed from one aspect of the invention there is provided an expansion coupling for joining together two components of a gutter system, said coupling comprising, as an integral unit, first and second portions interlocked

in a slidable, sealing relationship, each of said portions being adapted to be connected rigidly and sealingly to a respective component of the system. Viewed from another aspect of the invention there is provided a gutter system comprising two components joined to eachother by means of an expansion coupling, said coupling comprising, as an integral unit, first and second portions interlocked in a slidable sealing relationship, said portions being respectively connected rigidly and sealingly to said two components of the system. In general, at least one of the components will be a gutter although one or both could be another item such as a conventional coupling.

By means of the invention the two portions between which a sliding seal must be provided are part of an integral unit, rather than one of them being a gutter length itself or another, separate component. It is thus possible for a more reliable seal to be obtained, since manufacturing tolerances can be better controlled. In a preferred embodiment, the two portions will be closely matched, injection moulded items.

If the coupling is to be used to join a gutter to another gutter, then both portions could be adapted to be connected to a gutter and be provided for example with a socket into which a gutter end can be solvent welded. In a preferred embodiment, however, whilst one portion is adapted to be connected to a gutter, the other portion has its free end in the configuration of a gutter. Thus, such portion can be connected to all other components of the system, such as angles and outlets, as can gutters. If it is wished to join two gutters together, then a conventional rigid union can be used between such portion and the other gutter.

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of the coupling;

Figure 2 is a side view of the coupling;

Figure 3 is an end view of the coupling in the direction of arrow A on Figure 2;

Figure 4 is a top plan view of the coupling;

Figure 5 is an exploded view of the coupling together with a conventional coupling; and

Figure 6 is a sectional view of the coupling assembled together with two lengths of gutter and a conventional coupling in a gutter system.

Referring now to the drawings, in Figs. 1 to 4 there is shown an expansion coupling 1 comprising a first or socket portion 2 and a second or spigot portion 3, each of which is injection moulded plastics e.g. UPVC, and is of substantially U-shaped cross-section. The coupling is for use in a solvent welded gutter system utilising gutters of plastics e.g. U.P.V.C, which will be in the form of extrusions. It can be assumed that, as in a conventional system, the gutters are all of the same constant cross section, being generally U-shaped.

The portions 2 and 3 are slidably interlocked in telescopic fashion by means of nibs 4 on spigot portion 3 engaging in slots 5 formed in the upper edges of socket portion 2 on both sides thereof. Spigot portion 3 is formed with a peripheral channel 6 in which is disposed a sealing strip 7 of rubber or synthetic rubber. The strip 7 is compressed between portions 2 and 3 so as to provide a seal whilst nevertheless permiting sliding of the two portions relative to each other. The extent of sliding is limited by the end walls of the slots 5.

Portion 2 is provided with a socket 8 at its free end, which is adapted to receive the end of gutter, which can be solvent welded into the socket to provide a rigid, sealed joint. The free end of portion 3 has the form of a section of gutter used in the system; if the coupling was dismantled portion 3 could be received in socket 8 of portion 2. In use of course, portion 3 will be rigidly

and sealingly joined to another component of the system.

Fig. 5 shows the coupling in an exploded view. Also shown is a U-shaped connector 9, one again of injection moulded plastics. In a conventional system such a connector can be used to join two gutter lengths, which will be received in respective sockets 10 and 11 by means of solvent welding. Here, however, connector 9 is to be used to join portion 3 to a length of gutter.

Fig. 6 is a cross sectional view showing the expansion coupling 1 assembled with the connector 9, and two lengths of gutter 12 and 13. Gutter length 12 is solvent welded into socket 8 of portion 2, whilst gutter length 13 is solvent welded into socket 10 of connector 9 and spigot portion 3 is solvent welded into socket 11 of connector 9. To account for thermal expansion, portions 2 and 3 can slide relative to eachother from the solid line position shown in the direction of arrow A to the dotted line position of portion 2 relative to portion 3.

It will be appreciated that whilst the invention has been described with reference to a unit for use only as a coupling, it could be applied to units which have other functions. Thus for example by using a double ended portion 3, and two portions 2, one could construct an outlet or an angle. In such an arrangement, although the double ended portion 3 would generally be injection moulded as a single item, one half of it could be considered as a "portion" of the unit, and the other half as a "component of the system". It might even be desired to use the invention at the end of a gutter run. In such a case, the portion 3 could be provided with a blanking piece and once again, whilst probably moulded integrally this can be considered as a "component of the system" joined to the portion.

CLAIMS

1. An expansion coupling for joining together two components in a gutter system, said coupling comprising, as an integral unit, first and second portions interlocked in a slidable, sealing relationship, each of said portions being adapted to be connected rigidly and sealingly to a respective component of the system.

2. An expansion coupling as claimed in claim 1 adapted to join a gutter to another gutter, said portions including sockets for receiving the ends of respective gutters.

3. An expansion coupling as claimed in claim 1 wherein one said portion has a free end in the configuration of a gutter.

4. An expansion coupling as claimed in claim 3 wherein the other portion is adapted to be joined to a gutter and includes a socket for receiving the end of the gutter.

5. An expansion coupling as claimed in any of the preceding claims wherein the first and second portions are generally U-shaped and are respectively in the form of a spigot portion and a socket portion, the portions being slidably interlocked in telescopic fashion by means of nibs on the spigot portion which engage slots formed in the upper edges of the socket portion on both sides thereof.

6. An expansion coupling as claimed in claim 5 wherein the spigot portion is provided with a resilient sealing member on its inner surface which is compressed between the portions so as to provide a seal.

7. An expansion coupling as claimed in any of the preceding claims wherein the two portions are closely matched injection moulded items.

8. A gutter system comprising two components joined to each other by means of an expansion coupling,

said coupling comprising, as an integral unit, first and second portions interlocked in a slidable sealing relationship, said portions being respectively connected rigidly and sealingly to said two components of the system.

9. A gutter system as claimed in claim 8 wherein the expansion coupling is as claimed in any of claims 2 to 7.

10. A gutter system as claimed in claim 8 or 9 wherein at least one of said portions is connected to its respective component by means of solvent welding.

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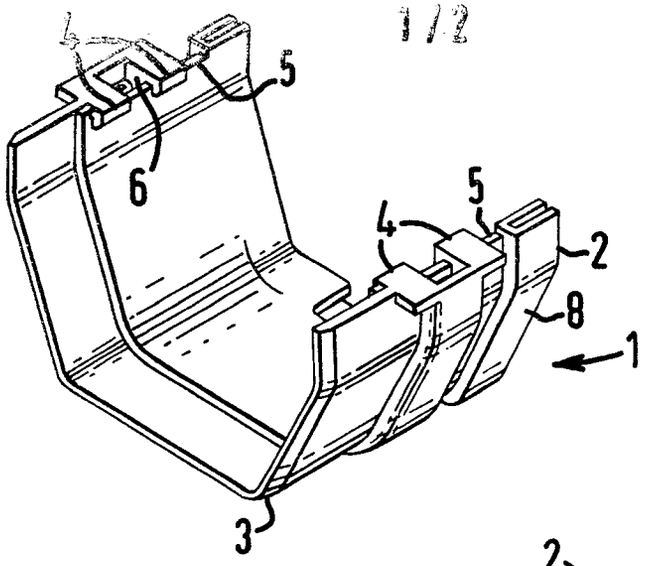

FIG.1

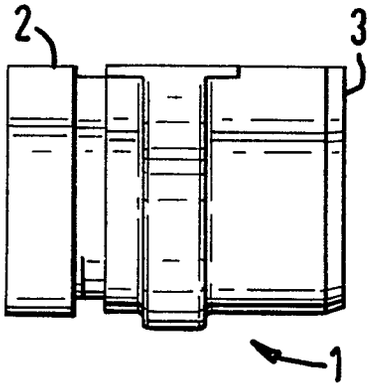

FIG. 2

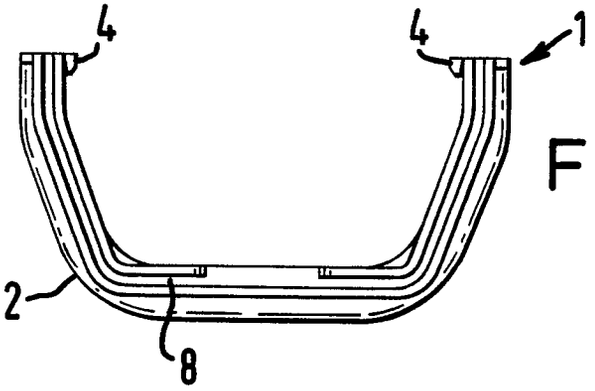

FIG. 3

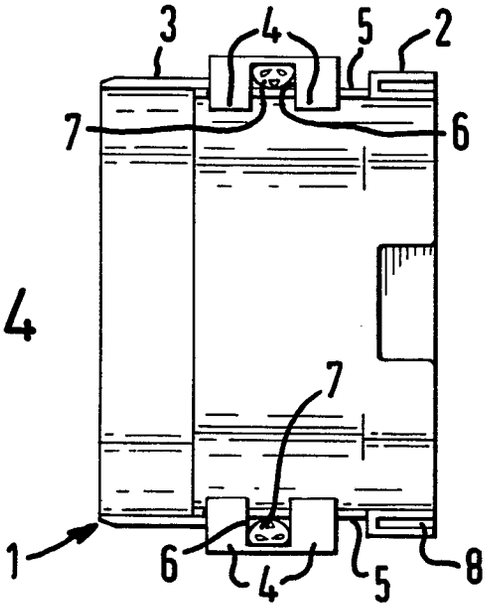

FIG. 4

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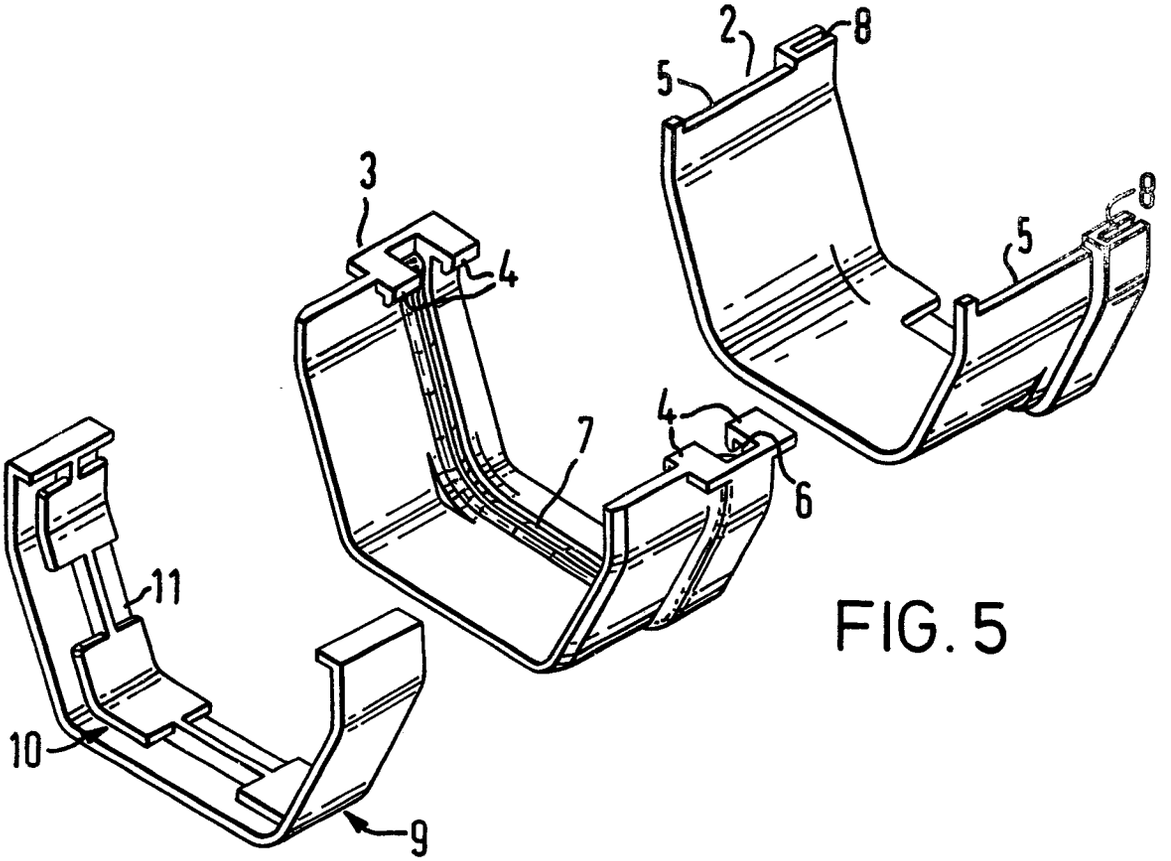

FIG. 5

FIG. 6