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(71) Applicant: **Reynaers Aluminium, naamloze vennootschap**
**2570 Duffel (BE)**

(72) Inventor: **Berghmans, Dries**
**2520 Ranst (BE)**

(74) Representative: **Donné, Eddy**
**Bureau M.F.J. Bockstael nv**
**Arenbergstraat 13**
**2000 Antwerpen (BE)**

## (54) Improved fire-resistant window or door jamb

(57) Improved fire-resistant window or door jamb, characterised in that it is provided with a fire-resistant product (17) which foams when being heated.

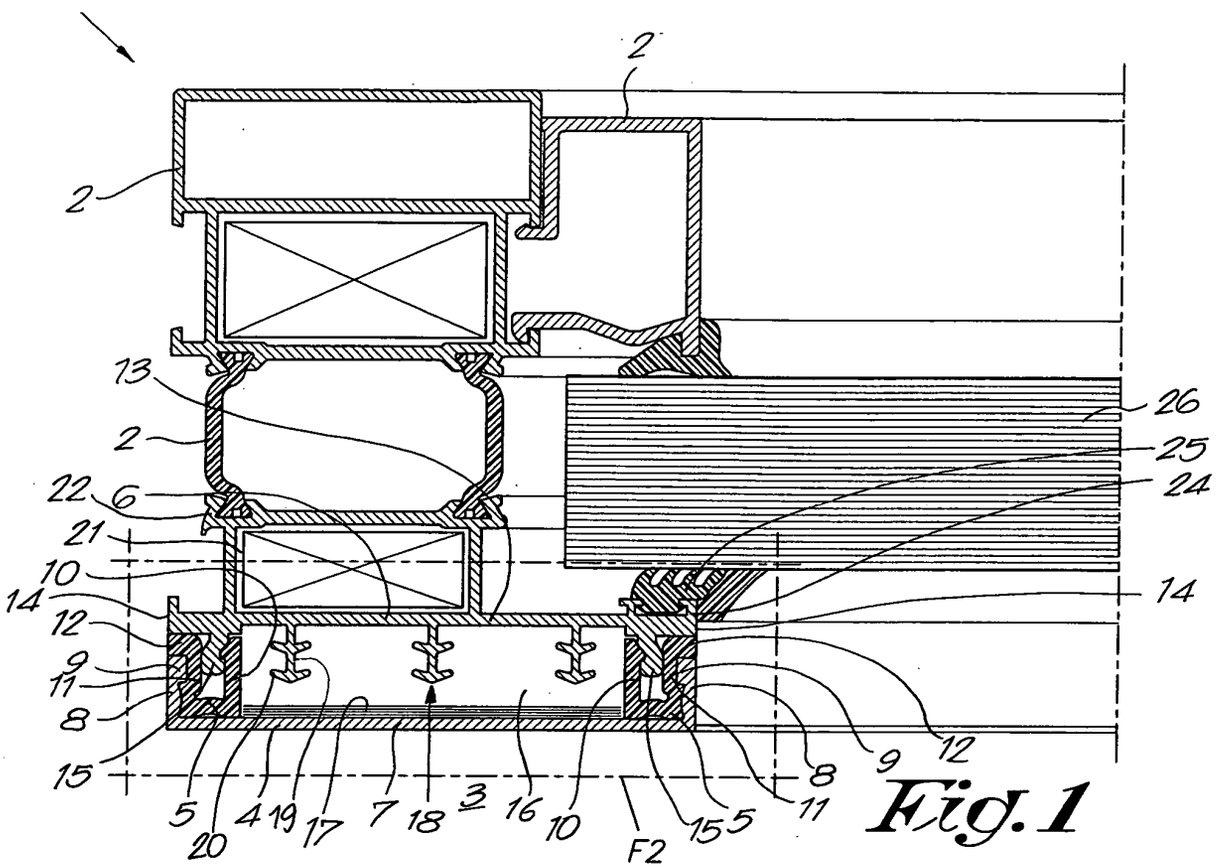


Fig. 1

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## Description

**[0001]** The present invention concerns an improved fire-resistant window or door jamb.

**[0002]** Such a fire-resistant window or door jamb can be made of plastic or a metal, such as for example aluminium.

**[0003]** It is known that such fire-resistant window or door jambs, when being heated, for example due to a fire, lose mechanical strength and that parts thereof can even melt, which is detrimental in that the window or door will break down relatively fast, as a result of which the seat of the fire can spread further.

**[0004]** In the case of metal window or door jambs, for example window or door jambs which are mainly made of aluminium, the known solutions are to make multipart jambs with subjambs, whereby between the composing subjambs, thermal buffers are provided so as to slow down the melting of such a window or door.

**[0005]** The problem is that such thermal buffers are often made of plastic and can only temporarily slow down the heat conduction from one subjamb to another subjamb, as they will quickly give way to the heat themselves.

**[0006]** The invention aims an improved fire-resistant window or door jamb which remedies the above-mentioned and other disadvantages.

**[0007]** To this end, the invention concerns an improved fire-resistant window or door jamb, which is provided with a fire-resistant product which foams when being heated.

**[0008]** An advantage which is thus obtained consists in that the foaming or foamed product forms a heat barrier, such that the heat is transmitted to at least some of the subjambs in a retarded manner.

**[0009]** Moreover, such a fire-resistant product, when being heated, undergoes an endothermic chemical reaction, such that at least a part of the heat is transformed in chemical energy, whereby the heating of the adjacent subjambs is additionally slowed down.

**[0010]** The fire-resistant product remains rigid all the time, also during the considerable increase in volume, and in this manner, the window or door structure is supported and reinforced, partly thanks to the bond of the fire-resistant product to parts of the subjamb.

**[0011]** This bond can be promoted by providing, for example, anchor means on one or several subjambs, for example in the form of ribs which are provided with laterally directed protrusions.

**[0012]** In order to better explain the characteristics of the invention, the following two preferred embodiments of the invention are described as an example only, without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 is a section of an improved fire-resistant window jamb according to the invention;
figures 2 to 4 represent the part indicated by F2 in figure 1 to a larger scale, but in different stages during a fire;
figure 5 represents a section of an improved fire-resistant window jamb according to the invention, but for a special embodiment.

**[0013]** As represented in figure 1, the invention concerns an improved fire-resistant window jamb 1 which is mainly built of the usual subjambs 20, of which a first jamb part 4 is provided on the outside 3 of the window, which is provided on a second jamb part 6 by means of two coupling parts 5.

**[0014]** The first jamb part 4 and the second jamb part 6 are made for example of aluminium, whereas the coupling parts 5 can be made of plastic.

**[0015]** The first jamb part 4 consists in this embodiment of a longitudinal flat plate 7 which is provided with a standing edge 8 on both sides, which is profiled on the inside and which is provided more particularly with a shoulder 9 on the free end.

**[0016]** The coupling parts 5 are jambs with a predominantly U-shaped cross section, but they are made such that they can co-operate with the above-mentioned profiled standing edges 8 in a clasping manner. The U-shaped cross section is thus provided with a first leg 10 and a second leg 11, the latter leg 11 of which works in conjunction with a standing edge 8 and is provided with a shoulder 12, directed crosswise onto the leg 11, which works in conjunction with the crosscut edge of the standing edges 8.

**[0017]** The second jamb part 6 is in this case a jamb with a predominantly flat plate part 13 onto which is provided a protrusion 15 on one side and near each of both side edges 14, whose shape, dimensions and mutual distance are such that they fit in a clasping manner between each time the first leg 10 and the second leg 11 of the coupling parts 5.

**[0018]** The first jamb part 4, the coupling parts 5 and the plate part 13 of the second jamb part 6 thus define a cavity 16 in which, in this embodiment and according to the invention, a layer of a fire-resistant product 17 has been provided which is provided in this case directly on the flat plate 7 of the first jamb part 4.

**[0019]** In this embodiment, the plate part 13 is also provided with anchor elements 18 directed towards the cavity 16, in this case in the form of ribs 19 which carry laterally directed protrusions 20.

**[0020]** On the other side, the plate part 13 is provided with a sleeve 21 with a predominantly rectangular cross section onto which are provided coupling means for the further construction of the other subjambs 2 of the window jamb 1.

**[0021]** On the latter side and near one of the side edges 14, the plate part 13 is provided with a standing edge 23, and near the other side edge 14, it is provided with hook-shaped ribs 24 behind which is provided a sealing 25 which can work in conjunction with a preferably fire-resistant glazing 26.

**[0022]** The working of such an improved fire-resistant window jamb 1 is simple and as follows.

**[0023]** In case of a fire occurring on the outside 3 of the window jamb 1, the first jamb part 4 would initially be heated.

**[0024]** When the first jamb part reaches a temperature of more than 200°C, the layer of fire-resistant product 17 will begin to foam, whereby the volume increases and, as represented in figure 2, the fire-resistant product 17 will gradually fill the cavity 16, whereby it adheres to the anchor elements 18.

**[0025]** Figure 3 shows how, in case of continued heating, the first jamb part 4 and also the coupling parts 5 lose mechanical strength, and how parts thereof can even melt.

**[0026]** Meanwhile, the cavity 16 is entirely filled with the fire-resistant product 17 which adheres to the second jamb part 6 in the meantime. Thanks to the further tendency to foam, the fire-resistant product 17 will exert a pressure on, among others, the first jamb part 4 and the coupling parts 5.

**[0027]** Given the reduced mechanical strength of the above-mentioned parts, the first jamb part 4 and the coupling parts 5 will be forced outward if necessary, and the melting parts thereof will by any means be replaced by a fire-resistant product 17 which foams further. As a result, the parts which are encapsulated or covered by the foaming fire-resistant product 17 will be protected against any direct heat.

**[0028]** Figure 4 shows how the first jamb part 4 has entirely melted, and how the coupling parts 5 have melted to a large extent. The fire-resistant product 17 has foamed further and protects among others the remainders of the coupling parts 5.

**[0029]** The foaming fire-resistant product 17 not only functions as a heat barrier with an increased conductive resistance, but also as an active cooler, as the fire-resistant product 17 undergoes an endothermic chemical reaction during the foaming.

**[0030]** Moreover, the fire-resistant product 17 stays rigid all the time, since, thanks to its bond to the second jamb part 6, the mechanical weakening of the window jamb 1, caused by the weakening or the melting away of the first jamb part 4, is at least partly set off.

**[0031]** Figure 5 represents another preferred embodiment which is different, to be precisely, in that the fire-resistant product 17 is provided on two sides of a support 27 in this case, here in the form of a strip.

**[0032]** The support or strip 27 is provided on the second jamb part 6 by means of fastening means in the shape of spacer sleeves 28 and screws 29, more particularly predominantly in the centre of the cavity 16.

**[0033]** The working of the window jamb 1 according to this embodiment is very similar, and differs in that the fire-resistant product 17 will start to foam a little later, but thanks to the bilateral working, it will fill the cavity 16 faster and it will exert a larger pressure on the surrounding parts.

**[0034]** It is clear that the window jamb 1 can also be built differently, and that the fire-resistant product 17 can also be provided in a jamb 1 in other places. Preferably, however, it is provided in a sealed cavity 16, such that it can first fill the cavity 16 in a controlled manner and can then foam further in the direction of the melting parts.

**[0035]** It is clear, however, that the closer the fire-resistant product 17 is provided near the seat of fire, the faster it will foam and the faster it will form a barrier against the heat.

**[0036]** It is clear that such a fire-resistant product 17 can be provided near the outside 3 as well as near the inside of the door or the window, both on or in the window or door jamb 1.

**[0037]** If necessary, such a fire-resistant product 17 can also be provided near the ribs 24 and/or near the sealing 25, for example in a neighbouring cavity, such that, should the sealing 25 melt, this does not necessarily result in the glazing 26 standing loose in the jamb 1, as a result of which flames could spurt between the glazing 26 and the jamb 1.

**[0038]** The fire-resistant products 17 which foam when being heated and which thereby preferably undergo an endothermic reaction, are well known. The fire-resistant product 17 can preferably be provided as a paint or as a coating.

**[0039]** The present invention is by no means restricted to the embodiments given as an example and represented in the accompanying drawings; on the contrary, such an improved fire-resistant window or door jamb can be made in different shapes and dimensions while still remaining within the scope of the invention.

## Claims

1. Improved fire-resistant window or door jamb, **characterised in that** it is provided with a fire-resistant product (17) which foams when being heated.

2. Improved fire-resistant window or door jamb according to claim 1, **characterised in that** the fire-resistant product (17) is a fire-resistant paint or a fire-resistant coating.

3. Improved fire-resistant window or door jamb according to claim 1, **characterised in that** the fire-resistant product (17) is provided in a cavity (16) of the jamb (1).

4. Improved fire-resistant window or door jamb according to claim 3, **characterised in that** the cavity is defined by a first jamb part (4) and a second jamb part (6) on the one hand, both made out of a metal, and at least two plastic coupling parts (5) on the other hand which connect the aforesaid first jamb part (4) and second jamb part (6) at a mutual distance.

**5.** Improved fire-resistant window or door jamb according to claim 1 or 4, **characterised in that** the fire-resistant product (17) is provided directly on the window or door jamb (1).

**6.** Improved fire-resistant window or door jamb according to claim 1 or 4, **characterised in that** the fire-resistant product (17) is provided on a support (27) and **in that** fastening means are provided to put the support in a cavity (16) of the jamb (1).

**7.** Improved fire-resistant window or door jamb according to claim 3 or 4, **characterised in that** the cavity (16) is provided with anchor means (18) to which the fire-resistant product (17), when it foams, can adhere.

**8.** Improved fire-resistant window or door jamb according to claims 4 en 7, **characterised in that** the anchor means (18) are provided on the second jamb part (6), whereas the fire-resistant product (17) is provided on the first jamb part (4).

**9.** Improved fire-resistant window or door jamb according to claims 7 or 8, **characterised in that** the anchor means (18) consist of ribs (19) which are provided with laterally directed protrusions (19).

**10.** Improved fire-resistant window or door jamb according to claims 4, 6 and 7, **characterised in that** the support (27) consists of a strip which is provided with the fire-resistant product (17) on one or on both sides, and **in that** this strip is fixed to the second jamb part (6) by means of spacer sleeves.

**11.** Improved fire-resistant window or door jamb according to claim 1, **characterised in that** it is mainly made of aluminium.

**12.** Improved fire-resistant window or door jamb according to claim 1, **characterised in that** the fire-resistant product (17) foams at a temperature above 200°C.

**13.** Improved fire-resistant window or door jamb according to claim 1, **characterised in that** the fire-resistant product (17) can be provided near the inside (3) and/or near the inside of the door or window.

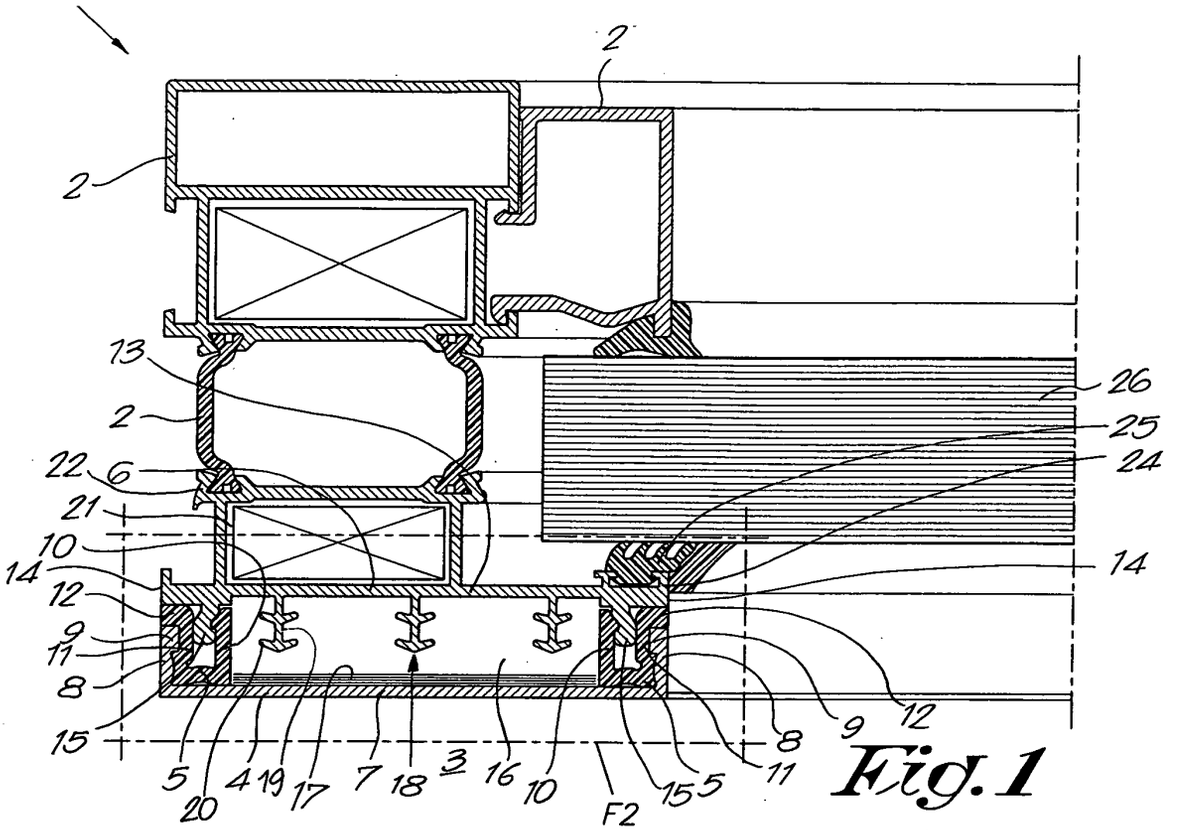


Fig. 1

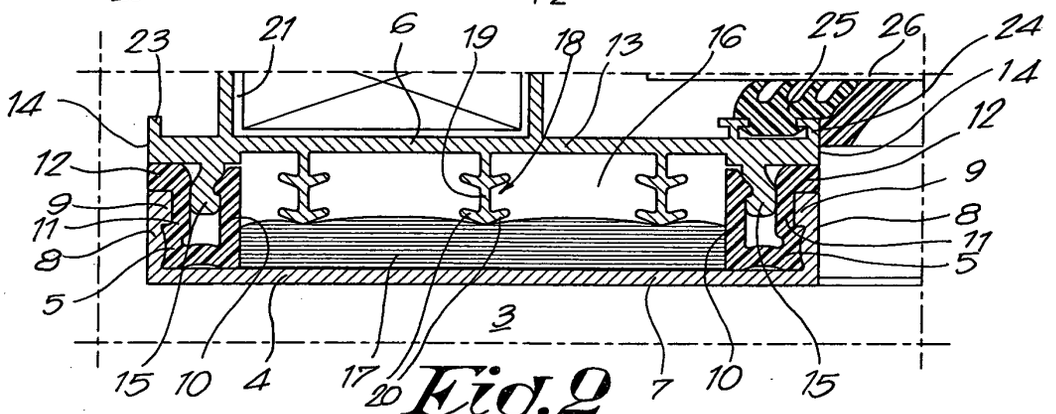


Fig. 2

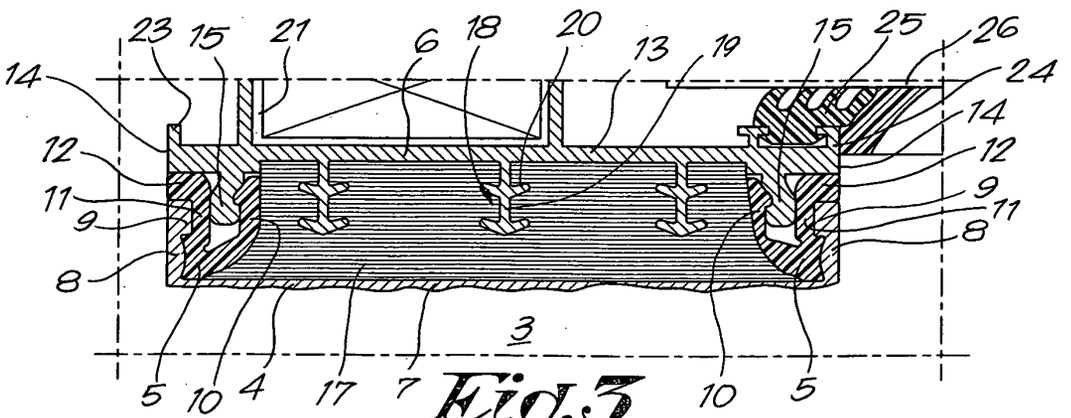


Fig. 3

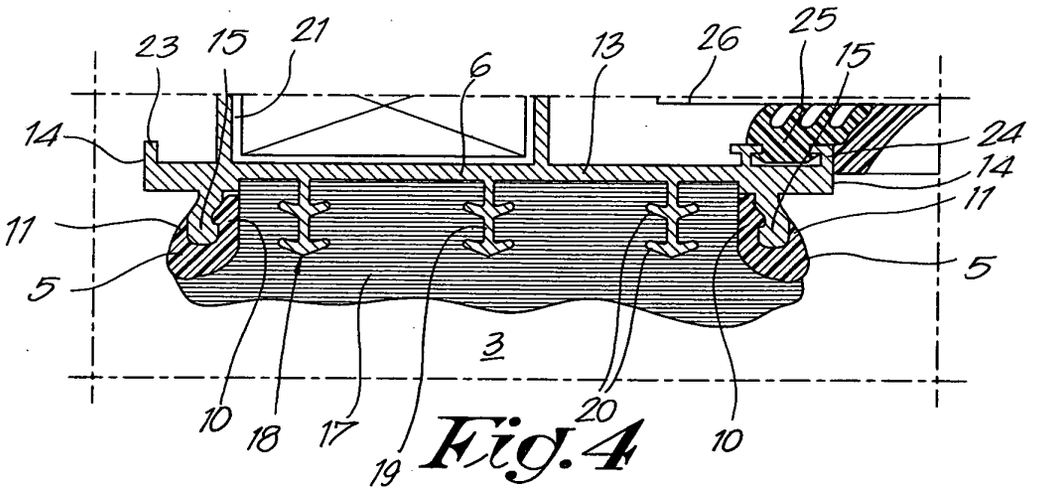
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Fig.4

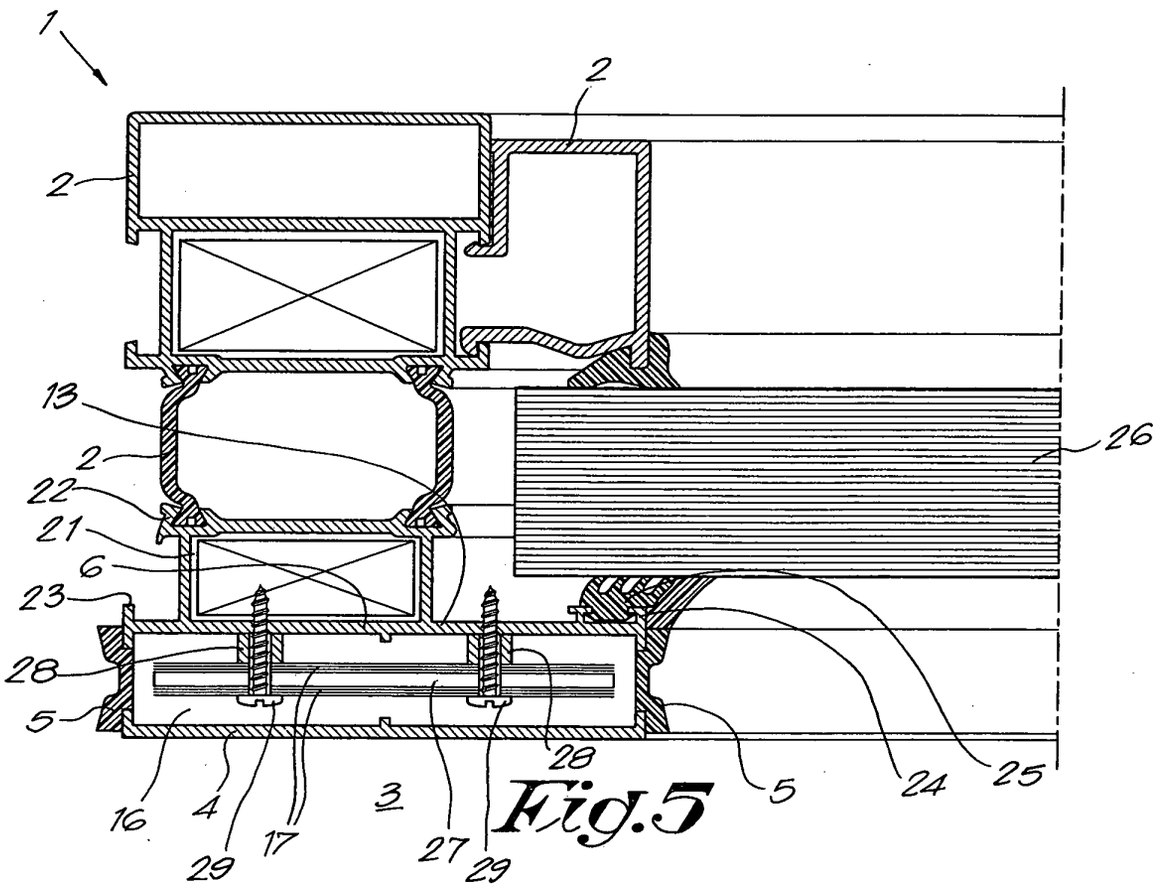
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Fig.5

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Application Number
EP 05 07 6398

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E06B

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| Munich | 16 September 2005 | Kofoed, P |

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 07 6398

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