



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.06.2013 Bulletin 2013/25

(51) Int Cl.:
E04D 3/08 (2006.01)

(21) Application number: **12196305.2**

(22) Date of filing: **10.12.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(30) Priority: **12.12.2011 GB 201121245**

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(54) **Glazing bar assembly**

(57) A glazing bar assembly (1) for supporting first and second adjacent rectilinear panels (14, 15). The glazing bar assembly comprises a pair of complementary glazing bars (2, 9) each of which has an upstanding part (3, 10) which engages with the respective upstanding part of the other glazing bar to form an abutting relationship. Each of the complementary glazing bars (2, 9) having upper (4, 11) and lower limbs (5, 12) extending to one

side laterally of each upstanding part from a lower end of each glazing bar to define an open-ended recess to receive and grip an edge of one of said panels. In addition, each glazing bar (2, 9) comprises an upper component (2a, 9a), on which the upper limb (4, 11) is provided, and a lower component (2b, 9b), on which the lower limb (5, 12) is provided, and wherein the upper and lower components are connected together by connecting means (6, 13).

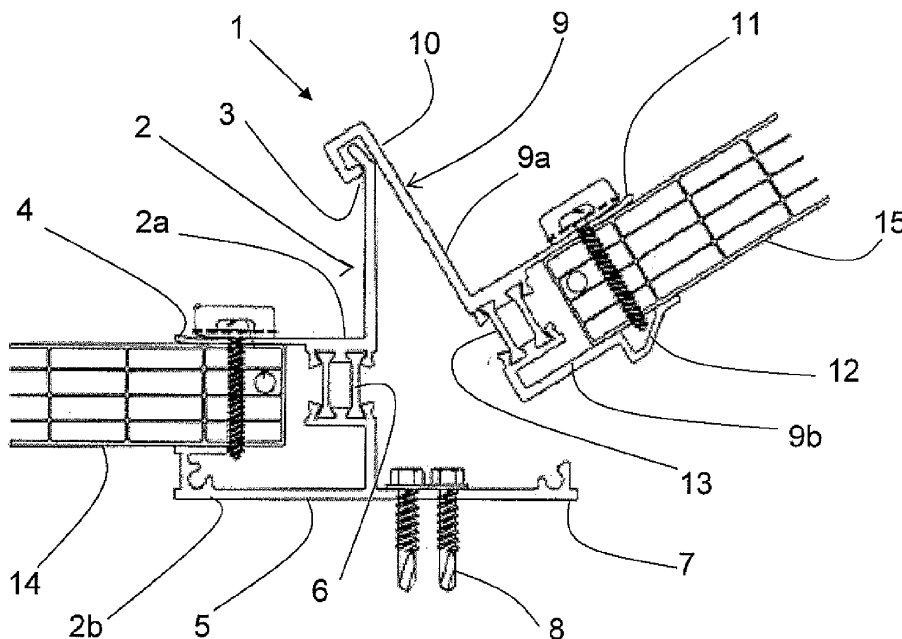


Fig. 2

Description

Field of the Invention

[0001] The present invention relates to a glazing bar for supporting adjacent panels of glazing material.

Background of the Invention

[0002] It is known to use glazing bar assemblies for supporting and securing rectilinear roof-panels made of glass or plastics material.

[0003] Various designs of glazing bar are known, some of which require the roof panels to be fitted to the glazing bar in situ during the roofing process. The process of in situ fitting is generally considered more time consuming as it normally requires the use of scaffolding, which must be moved as the roofing progresses.

[0004] EP0473321 discloses an alternative design of glazing bar assembly which facilitates the prefabrication of roof panels with a glazing bar pre-attached. This greatly increases the ease and therefore speed with which a roof can be constructed.

[0005] The glazing bar assembly described in EP0473321 is made up of two cooperating glazing bars, each of which receives the edge of a separate roof panel such that when the glazing bars link/connect together the two roof panels are mounted adjacent to one another.

[0006] The glazing bar assembly of EP0473321 provides many advantages over the previously known 'in situ' glazing bars. However the design has some limitations.

Summary of the Invention

[0007] The present invention provides an improved design of glazing bar assembly with additional benefits to both the user and the manufacturer.

[0008] The present invention provides a glazing bar assembly for supporting first and second adjacent rectilinear panels, the glazing bar assembly comprising: a pair of complementary glazing bars each of which has an upstanding part which engages with the respective upstanding part of the other bar to form an abutting relationship; upper and lower limbs extending to one side laterally of each upstanding part from a lower end of each glazing bar to define an open-ended recess to receive and grip an edge of one of said panels; and **characterised in that** each glazing bar comprises an upper component, on which the upper limb is provided, and a lower component, on which the lower limb is provided, and wherein the upper and lower components are connected together by connecting means.

[0009] In the past glazing bar assemblies such as those described in EP0473321 have comprises glazing bars formed as a single component, usually by way of extrusion moulding. As a consequence size of the open-end recess, which is provided to receive and grip

the edge of a glazing panel, is fixed for a particular moulding. Thus multiple extrusion moulds are required to accommodate the various thicknesses of glazing panel.

[0010] By constructing each glazing bar from the upper and lower component parts it is possible to greatly reduce the number of extrusion moulds required to accommodate different panel thicknesses by instead varying the connecting means used to connect the upper and lower components of each glazing bar together.

[0011] Preferably the upstanding part may be provided on the lower component. Alternatively the upstanding part may be provided on the upper component of the glazing bar.

[0012] Preferably the connecting means may provide a thermal break between the upper component of the glazing bar and the lower component of the glazing bar. In this way the upper component, which is generally directed to the exterior environment, is insulated from the lower component, which is generally directed to the inside of a building. This reduces heat loss through the glazing bars.

[0013] Preferably the lower component of one of the glazing bars in said pair of glazing bars may further comprise a further limb extending in the opposite direction laterally to the lower limb.

[0014] Further preferably the further limb may be provided with means for enabling the glazing bar assembly to be secured to a roof support structure.

[0015] Preferably the further limb may extend up to or beyond the other glazing bar in the pair when the upstanding parts of the glazing bars are engaged with one another. In this way the further limb provides a neater appearance from the underside of the roof structure as viewed from within the building.

Brief Description of the Drawings

[0016] Preferred embodiments of the glazing bar assembly of the present invention will now be described with reference to the drawings, wherein:

Figure 1 is a perspective view showing glazing bars and roof-glazing panels engaged to form a roofing structure;

Figure 2 is a longitudinal section of the glazing bar assembly in an assembly disposition; and

Figure 3 is a longitudinal section of the glazing bar assembly in a roofing disposition;

Figure 4 is a longitudinal section of an alternative embodiment of glazing bar assembly in a roofing disposition.

Detailed Description of the Preferred Embodiment

[0017] The glazing bar assembly 1 comprises a pair of complementary first and second glazing bars 2 and 9. The first glazing bar 2 has an upstanding (male) part 3 which engages with the respective upstanding (female)

part 10 of the second glazing bar 9.

[0018] The first glazing bar 2 is formed from an upper component 2a and a lower component 2b which are connectable using one or more connecting components 6. The upper and lower ends of each connecting component 6 are shaped to be receivably retained by grooves provided in the lower surface of the upper glazing bar component 2a and the upper surface of the lower glazing bar component 2b respectively.

[0019] Similarly the second glazing bar 9 is formed from an upper component 9a and a lower component 9b which are connectable using one or more connecting components 13. The upper and lower ends of each connecting component 13 are shaped to be receivably retained by grooves provided in the lower surface of the upper glazing bar component 9a and the upper surface of the lower glazing bar component 9b respectively.

[0020] It is envisaged that alternative connecting components may be used which provide grooves in to which projections alternatively provided on the lower surface of the upper glazing bar component and the upper surface of the lower glazing bar component might be received.

[0021] In a further envisaged alternative arrangement one end of the connecting components might comprise a groove that receives a glazing bar component with the opposite end comprising a portion which is received within a groove provided in a glazing bar component.

[0022] Preferably the connecting components 6, 13 extend along the entire length of the glazing bars 2, 9 of the glazing bar assembly 1. However it is also envisaged that multiple connecting components 6, 13 may be spaced along to the length of the glazing bars 2, 9 thereby providing multiple connection points rather than a single continuous connection between the upper and lower bar components 2a, 2b and 9a, 9b.

[0023] The connecting components 6, 13 are preferably made from a material with lower heat conducting characteristics, such as polyamide. In this way the connecting components 6, 13 provide a thermal break between the upper glazing bar components 2a 9a, which is oriented towards the exterior of a building, and the lower glazing bar components 2b, 9b, which is oriented towards the interior of a building.

[0024] Each of the complementary glazing bars 2, 9, which make up the glazing bar assembly 1 of the present invention, is provided with upper and lower limbs 4, 5 and 11, 12 that extend laterally to one side of their respective bar.

[0025] Glazing bar 2 is provided with upper limb 4 and lower limb 5 that cooperate to define an open-ended recess which receives and grips the edge of a rectilinear roof panel 14. Similarly, glazing bar 9 is provided with upper limb 11 and lower limb 12 that cooperate to define an open-ended recess which receives and grips the edge of a rectilinear roof panel 15.

[0026] Additional fixing means, shown in figures 2 and 3 as screws, may be used to secure the roof panels 14, 15 within glazing bars 2 and 9 respectively. It is envisaged

that alternative fixing means may be used.

[0027] The upper 4, 11 and lower 5, 12 limbs of each glazing bar 2, 9 are provided on the upper 2a, 9a and lower 2b, 9b components of the bar respectively. By locating the upper and lower limbs separately it is possible to control the distance between them, and thus the size of the open-ended recess, by varying the size of connecting component(s) 6, 13 used to connect the upper and lower components of each glazing bar together.

[0028] In the broadest sense of the present invention the upper and lower components of complementary glazing bars may have generally similar profiles. With this arrangement the lower components of neighbouring glazing bars come together to provide a continuous lower surface, which is then secured to the support structure of the building's roof.

[0029] However in the preferred embodiment of the present invention each lower component 2b, 9b of a pair of neighbouring, complementary glazing bars 2, 9 has a different configuration.

[0030] Referring now to figure 2 it will be appreciated that the lower component 2b of glazing bar 2 is provided with an additional limb 7, which extends laterally in the opposite direction to the lower limb 5. Additional limb 7 is provided with means for receiving the fixings 8 (e.g. screws) that secure the glazing bar assembly 1 to the support structure of the building's roof.

[0031] The lower limb 5 and the additional limb 7 combine to form a continuous lower surface. The upper surface of the additional limb 7 defines a space in to which the lower limb 12 of the complementary glazing bar 9 is received. Preferably the additional limb 7 extends a suitable distance from the upstanding portion of the glazing bar so as to completely receive the lower limb 12 of the complementary glazing bar 9 (see figure 3).

[0032] It is envisaged that the upper surface of the lower limb 5, the additional limb 7 and limb 12 help define drainage channels within the glazing bar assembly 1 to dispose of any ingressing water.

[0033] In order to facilitate the attachment of the neighbouring complementary glazing bars 2, 9 shown, the upper ends of the upstanding parts 3, 10 are provided with a complementary shape to one another. It is envisaged that various arrangements of complementary shaped ends are possible and are considered to fall within the scope of the present invention provided they facilitate the formation of an abutting relationship between the neighbouring complementary glazing bars.

[0034] Figures 2 and 3 show a preferred example of a complementary arrangement considered suitable for the glazing bar assembly 1 of the present invention.

[0035] The very end of the upstanding part 3 of the first glazing bar 2 is bent off centre from the plane of the rest of the upstanding part 3. An angle of about 45° is preferable, although the angle can vary provided the bent portion still engages within the complementary receiving portion of the neighbouring glazing bar 9.

[0036] The complementary receiving portion of the

neighbouring glazing bar 9 is located at the end of the upstanding part 10 thereof. The receiving portion comprises a groove in to which the bent end of the neighbouring glazing bar 2 can be slotted. The opening to the groove is further provided with a lip which reduces the size of the opening to the groove, preventing glazing bar 9 being lifted from glazing bar 2 when fully linked to each other.

[0037] As will be appreciated from figure 2, the opening of the groove enables the bent end to be slotted into the groove. The size of the bent end and the space within the groove is such that the glazing bars 2 and 9 can be rotated in to the abutting relationship shown in figure 3.

[0038] It will be appreciated that the abutting relationship formed between the neighbouring complementary glazing bars 2, 9 is such that the upper components 2a, 9a of the glazing bars are not in direct contact with the lower components 2b, 9b of the glazing bars. In this way connecting components 6, 13 of a suitable material ensure the formation of a thermal break between the interior and exterior of a building.

[0039] Figure 4 shows an alternative embodiment of the glazing bar assembly of the present invention. The assembly 16 differs from that shown in Figures 2 and 3 in two ways.

[0040] Firstly, the connecting components 6a and 13a are kinked rather than straight, as is the case with the connecting components 6 and 13 shown in Figures 2 and 3. The kinking of the connecting components enables them to have an increased level of surface contact with the upper 4, 11 and lower 5, 12 limbs of each glazing bar. The large surface area gives a slightly better heat transfer figure.

[0041] Secondly, lower limb 5a is provided with a further structural support 17 for the portion of the limb that engages with the connecting components 6a. It is envisaged that this feature provides additional structural strength.

[0042] It is envisaged that either one or both of the above features might be readily adopted in the preferred embodiment shown in Figures 2 and 3 without departing from the scope of the present invention.

Claims

1. A glazing bar assembly (1, 16) for supporting first (14) and second (15) adjacent rectilinear panels, the glazing bar assembly comprising:

a pair of complementary glazing bars (2, 9) each of which has an upstanding part (3, 10) which engages with the respective upstanding part of the other bar to form an abutting relationship; upper (4, 11) and lower (5, 12) limbs extending to one side laterally of each upstanding part (3, 10) from a lower end of each glazing bar (2, 9) to define an open-ended recess to receive and

grip an edge of one of said panels (14, 15); and **characterised in that** each glazing bar (2, 9) comprises an upper component (2a, 9a), on which the upper limb (4, 11) is provided, and a lower component (2b, 9b), on which the lower limb (5, 12) is provided, and wherein the upper and lower components are connected together by connecting means (6, 6a, 13, 13a).

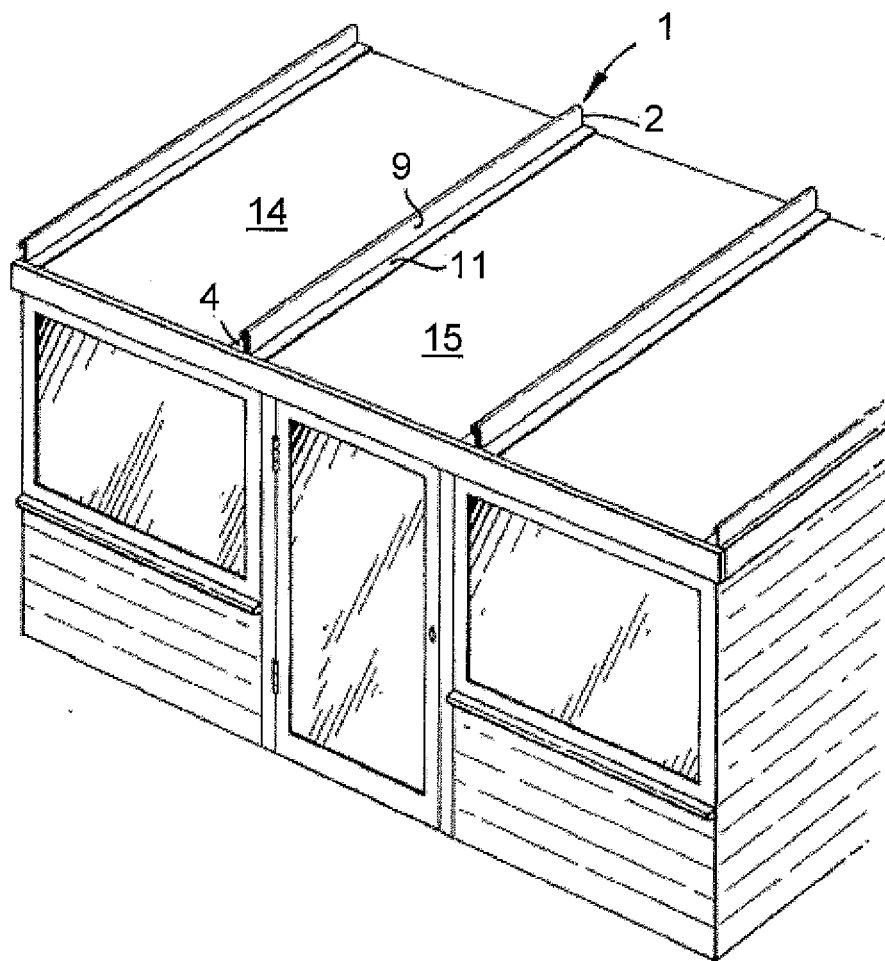
2. The glazing bar assembly of claim 1, wherein the upstanding part (3, 10) is provided on the lower component (2b, 9b).
3. The glazing bar assembly of claim 1, wherein the upstanding part (3, 10) is provided on the upper component (2a, 9a).
4. The glazing bar assembly of claim 3, wherein the connecting means (6, 6a, 13, 13a) provide a thermal break between the upper component (2a, 9a) of the glazing bar and the lower component (2b, 9b) of the glazing bar.
5. The glazing bar assembly of claim 1-4, wherein the lower component (2b) of one of the glazing bars in said pair of glazing bars further comprises a further limb (7) extending in the opposite direction laterally to the lower limb (5).
6. The glazing bar assembly of claim 5, wherein the further limb (7) is provided with means (8) for enabling the glazing bar assembly to be secured to a roof support structure.
7. The glazing bar assembly of claim 5 or 6, wherein the further limb (7) extends up to or beyond the other glazing bar (9) in the pair when the upstanding parts of the glazing bars are engaged with one another in an abutting relationship.

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Fig. 1



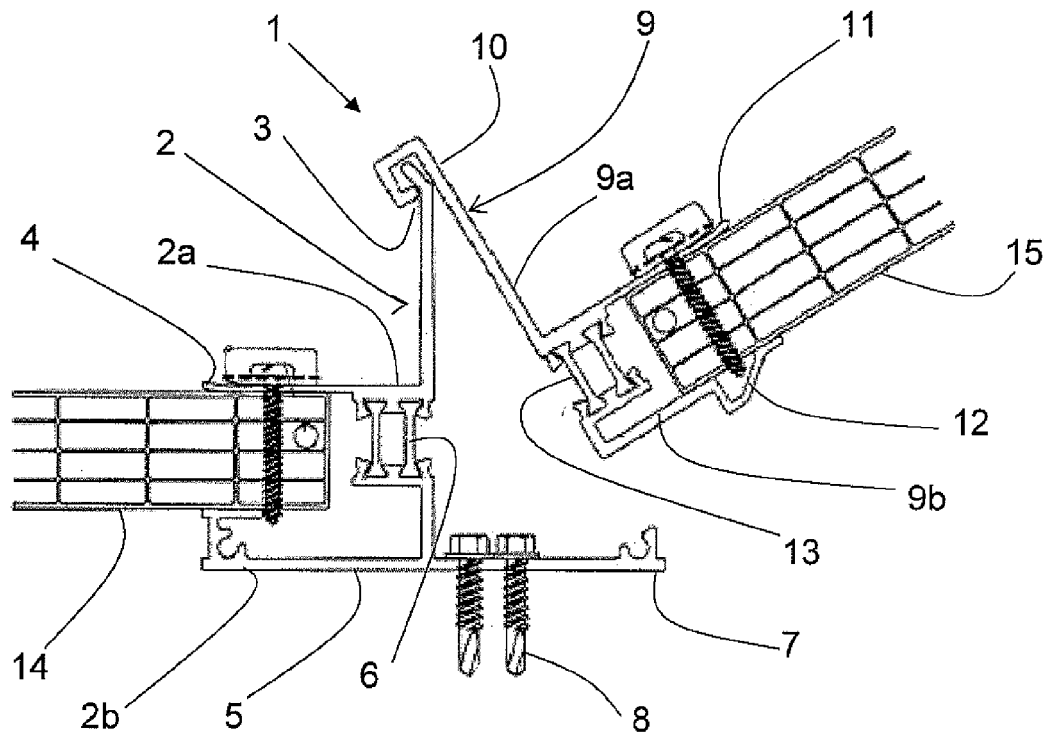


Fig. 2

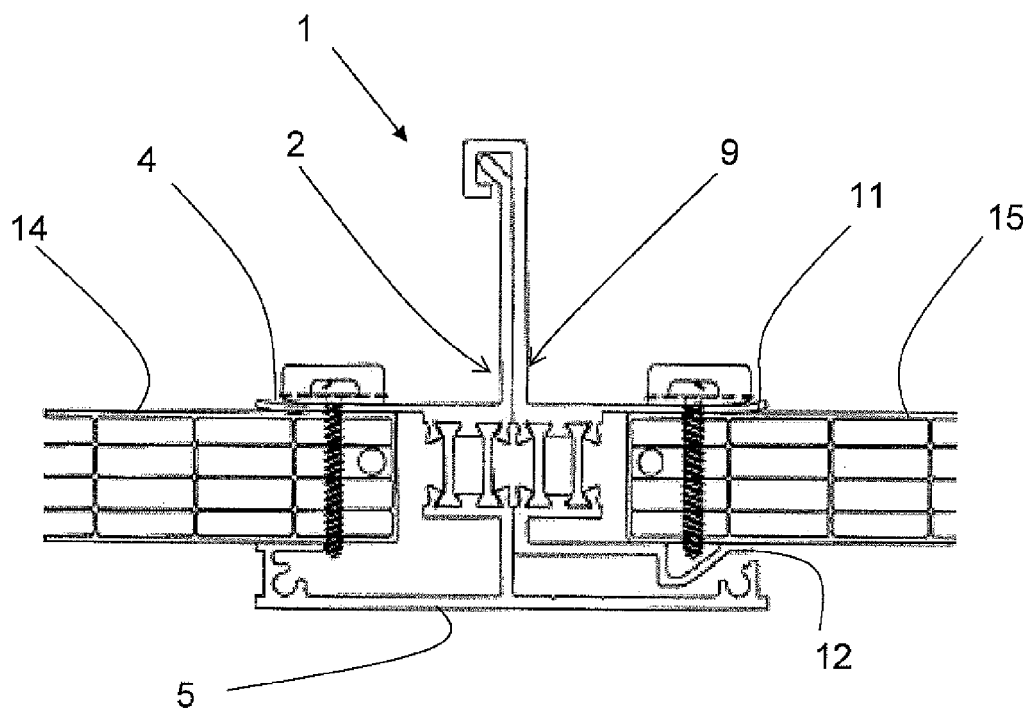


Fig. 3

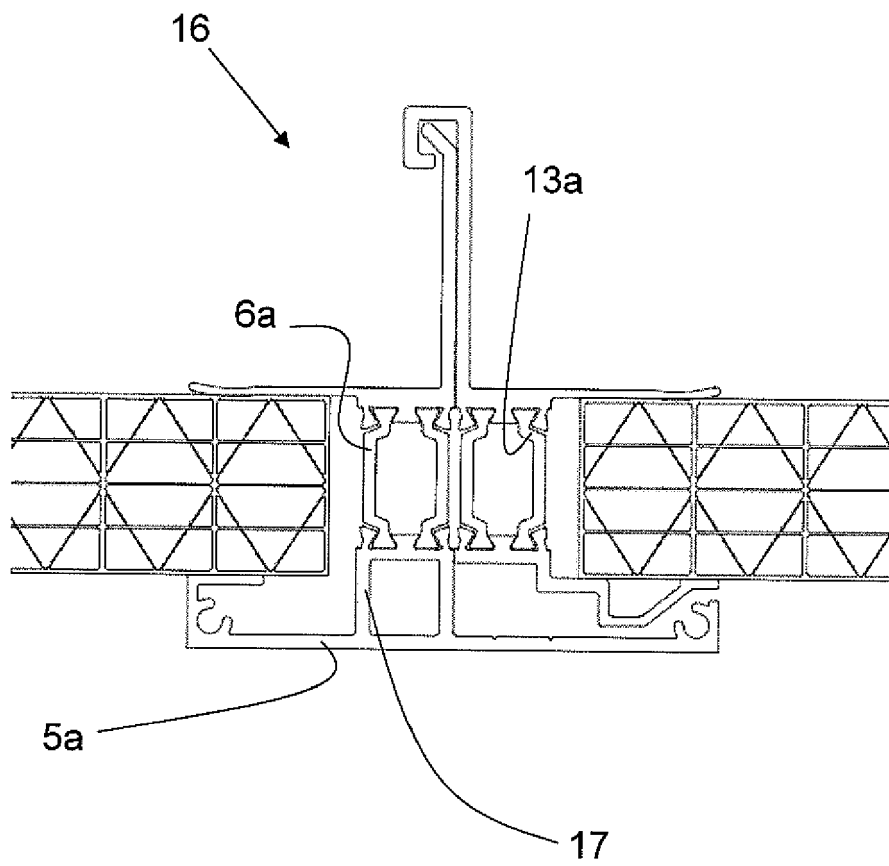


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 12 19 6305

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 884 376 A (DEBLOCK DAVID A [US] ET AL) 5 December 1989 (1989-12-05) * figure 4 *	1-7	INV. E04D3/08
X	WO 92/01122 A2 (SYCAMORE ROMNEY [GB]) 23 January 1992 (1992-01-23) * figure 14 *	1-7	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 3 April 2013	Examiner Bauer, Josef
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503.03.82 (P04G01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 19 6305

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03-04-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4884376	A	05-12-1989	NONE
WO 9201122	A2	23-01-1992	DE 69122869 D1 28-11-1996
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REFERENCES CITED IN THE DESCRIPTION

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- EP 0473321 A [0004] [0005] [0006] [0009]