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Remarks:

Claims 16 and 17 are deemed to be abandoned due to non-payment of the claims fees (Rule 45(3) EPC).

(54) **BEAM ASSEMBLY IN A SCREEN DEVICE**

(57) The present invention relates to a beam assembly in a screen device (1), comprising

- a beam element (2) which is provided for lateral attachment to a structural element (3), such as a wall;
- a connecting profile (4) which forms part of the beam element (2) at the top of this beam element (2) or, in its fitted position, is arranged at least partly above the latter, wherein this connecting profile (4) is provided with a fitting groove (7) which is open at the connecting side for connection to the structural element (3); and
- a sealing means (6) to be applied in the fitting slot (7) for sealing the connection between the connecting profile (4) and the structural element (3).

In addition, the present invention relates to a method for converting a screen device (1).

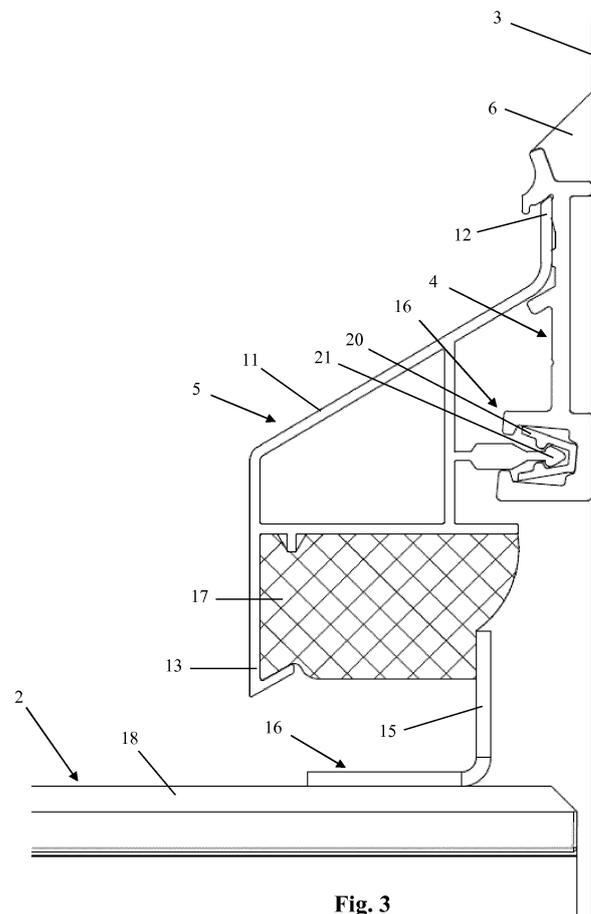


Fig. 3

Description

[0001] The invention relates to a beam assembly in a screen device, comprising

- a beam element which is provided for lateral attachment to a structural element, such as a wall;
- a connecting profile which forms part of the beam element at the top of this beam element or, in its fitted position, is arranged at least partly above the latter; and
- a sealing means for sealing, in the fitted position of the connecting profile, a connection between the connecting profile and the structural element.

[0002] In addition, the present invention relates to a terrace covering comprising such a beam assembly.

[0003] Furthermore, the present invention relates to a method for converting a screen device.

[0004] The terms under, above and lateral in this patent application refer to under, above and lateral as seen in a fitted position of the respective parts, respectively.

[0005] Screen devices are usually installed to screen off a location which is outside or rather to expose it. Thus, such screen devices are often used in dwellings, restaurants, shops and the like to protect an outdoor terrace or the like from solar radiation, precipitation and/or wind or, on the contrary, to temporarily allow solar radiation to enter. These screen devices may be designed in the form of awnings, pergolas, verandas, terrace coverings, carports, etc.

[0006] Such screen devices are often placed against an external structural element, such as for example an external wall. Typically, a beam element from such a screen device is then attached to this structural element. This beam element may assume many forms and may, for example, be a wooden beam or may be made from metal and/or plastic, consisting of one or several profiles. This beam element may be of a solid design or may be of a hollow design, in which case, typically, drive means and/or a screen roller and/or lighting fixtures and/or heating elements and/or a drainage system, etc. are fitted in the cavity.

[0007] If the screen device is provided to form a protection against precipitation, then the connection of this beam element with this structural element also has to be of a water-tight design in order to ensure adequate protection. Until now, this connection is to this end sealed by means of a sealing agent, such as for example silicone or polyurethane, etc.

However, it is usually no mean feat to seal this connection in a satisfactory, water-tight manner and to ensure the watertightness even after sealing for the service life of the screen device.

The reason for this is that the structural element typically comprises uneven structures. This is the case, for example, when this structural element is an external brick wall. Due to these uneven structures, it is difficult to produce

a satisfactory continuous seal using the sealing agent with respect to such a structural element.

In addition, the beam elements of screen devices are increasingly often of multifunctional construction, in which case a cavity in this beam element has to remain accessible at all times. This may be achieved, for example, by assembling such a beam element from different profiles to form a beam-shaped unit. If such a cavity in such a beam element is protected by means of a sealing profile to which, in addition, this sealing agent is applied (this sealing profile then serves as said connecting profile), then this sealing agent will be removed in order to gain access to this cavity. It is then no mean feat to re-seal this connection a second or third or umpteenth time using sealing agent when such a sealing profile is replaced.

[0008] An example of such a screen device can be found in WO2015/104675A1.

[0009] It is therefore also the object of the present invention to ensure the watertightness of such a connection in a more reliable manner.

[0010] This object of the invention is achieved by providing a beam assembly in a screen device, comprising:

- a beam element which is provided for lateral attachment to a structural element, such as a wall;
- a connecting profile which forms part of the beam element at the top of this beam element or, in its fitted position, is arranged at least partly above the latter;
- a sealing means for sealing, in the fitted position of the connecting profile, a connection between the connecting profile and the structural element;

wherein the connecting profile is provided with a fitting groove which is open at the connecting side for connection to the structural element and is provided for applying the sealing means therein for sealing said connection.

[0011] By applying the sealing means in such a fitting groove against the structural element, it is possible to control the thickness and the position of the sealing means with respect to this structural element in a satisfactory manner, resulting in greater certainty with regard to producing a watertight connection. Thus, it is easier to apply a sufficient amount of sealing means in the correct location to produce a watertight connection.

To this end, this fitting groove preferably extends over virtually the entire length of the connecting profile.

It is, for example, possible to provide one single connecting profile which is at least as long as the connection of the beam element to the wall. It is also possible to provide several connecting profiles in such a way that they adjoin or partly overlap each other along the length of this connection of the beam element to the wall.

[0012] The beam assembly and the structural element together form an attachment set for attaching the beam element to the structural element.

[0013] More specifically, the sealing means may be

provided in the form of sealing agent, as is the case in the prior art. Alternatively, it is also possible, for example, to provide a sealing cord as the sealing means.

[0014] Preferably, the fitting groove is also open at the top which, more specifically, facilitates the application of the sealing agent in this fitting groove, since sealing agent can also readily be applied in this fitting groove in the fitted position of the connecting profile.

[0015] In a specific embodiment, the connecting profile comprises an upright flange which laterally delimits the fitting groove away from the structural element.

[0016] In a simple embodiment, the connecting profile of a beam assembly according to the present invention may also form the beam element of this beam assembly. Alternatively, this connecting profile may, for example, form part of a beam element assembled from several profiles, for example as a sealing profile, which, as has been described in the prior art, closes off an entrance to a cavity in the beam element.

[0017] In a preferred embodiment of a beam assembly according to the present invention, the connecting profile, in the fitted position, is arranged at least partly above the beam element and is attached to the structural element.

[0018] If, for example, a cavity of the beam element has to remain accessible from the top of this beam element, then the connecting profile is preferably configured as a separate profile which is arranged at least partly above this beam element. Thus, it is also possible to ensure that this connecting profile may remain fitted securely against the structural element through the watertight connection of the sealing means, whereas a profile of the beam element may be provided underneath so as to be displaceable in order to provide access to this cavity.

[0019] When the connecting profile, in the fitted position, is arranged at least partly above the beam element, the beam assembly preferably also comprises a drainage profile which, in the fitted position, is arranged between the connecting profile and the beam element in order to drain precipitation incident on the screen device away from the structural element.

By means of such a drainage profile, the watertightness of the connection between such a connecting profile and the beam element may continue to be ensured, by discharging incident precipitation away from the structural element.

A separate drainage profile also makes it more readily possible for the connecting profile with the applied sealing means to remain in place against the structural element for the service life of the screen device.

[0020] It is, for example, possible to provide one single drainage profile which is at least as long as the connection of the beam element to the wall. It is also possible to provide several drainage profiles in such a way that they adjoin or partly overlap each other along the length of this connection of the beam element to the wall.

[0021] A drainage profile of this kind preferably comprises a drainage surface which, in the fitted position, adjoins the connecting profile and, towards the bottom,

extends increasingly further from the structural element. Such a design makes simple drainage possible.

[0022] In a preferred embodiment of a beam assembly having said drainage profile, the connecting profile preferably comprises a hooking groove which is open at the bottom in order to allow a top edge of the drainage profile to hook into it.

By hooking this top edge of the drainage profile into a hooking groove in the connecting profile, it is possible to ensure, in a relatively simple way, that precipitation incident on the connecting profile ends up on the drainage profile and is furthermore discharged via this drainage profile.

Such a hooking groove may also be provided sufficiently large in a simple manner in order thus to compensate for any tolerances. Such tolerances may, for example, result from the production of these profiles. They may also result from the installation of the profiles. In cases where a connecting profile cannot, for example, adjoin the structural element so as to be flat against the structural element, this connecting profile will often also not extend in a flat manner after it has been fitted against this structural element.

In addition, it is also readily possible to provide this hooking groove so as to be sufficiently large to allow, for example, overlapping drainage profiles or corner elements to hook into this hooking groove in an adjoining manner. Such corner elements are useful, for example, where beam elements which are arranged at an angle with respect to each other are both attached to corresponding structural elements which adjoin each other at an angle. In this case, connecting profiles are preferably also attached to these structural elements at such an angle with respect to each other that they adjoin said structural elements. These connecting profiles may to this end, for example, be mitred. It is then possible, for example, to provide a corner element in order to overlap drainage profiles which are attached to connecting profiles which have been fitted at said angle with respect to each other.

[0023] The top edge of the drainage profile which, in this embodiment, is configured to be hooked into the hooking groove preferably also forms the top edge of the abovementioned drainage surface.

[0024] If the beam element has to, for example, remain accessible from the top of this beam element, the drainage profile is preferably provided so as to be displaceable with respect to this beam element and/or with respect to the connecting profile. Preferably, this drainage profile is then detachably attachable to the connecting profile in order to be able to free up space above the beam element in a simple manner.

This may be achieved, for example, by means of a click-fit connection.

By means of a detachable drainage profile, it is more easily possible to provide parts of the beam element so as to be displaceable, without this displacement being hampered by the connecting profile.

[0025] A click-fit connection is a simple way of attach-

ing such a drainage profile to the connecting profile in a detachable manner. By means of such a click-fit connection, it is also possible to compensate for tolerances of the profiles and the positioning thereof in a relatively simple manner. Such a click-fit connection can be achieved in a large variety of ways, for example by providing the connecting profile and/or the drainage profile with elastic click-fit legs and/or by fitting one or several elastic click-fit elements between the two.

[0026] The beam element of a beam assembly with a drainage profile is preferably provided with an upright flange which, in the fitted position, is arranged under the drainage profile, wherein a bottom edge of the drainage profile, in the fitted position, extends away from the structural element next to this upright flange of the beam element. By means of such an upright flange, the watertightness of the connection between the drainage profile and the beam element can be ensured further in a simple manner.

[0027] The bottom edge of the drainage profile which, in this embodiment, is configured to extend laterally next to the upright flange of the beam element, preferably also forms the bottom edge of the abovementioned drainage surface.

[0028] A beam assembly in which the beam element is provided with such an upright flange preferably furthermore comprises a sealing element which, in the fitted position, extends between the drainage profile and the upright flange of the beam element.

By means of such a sealing element flange, the watertightness of the connection between the drainage profile and the beam element can be ensured still further in a simple manner.

To this end, such a sealing element may, for example, be attached to the drainage profile or to the upright flange. To this end, the drainage profile may, for example, be provided with a fitting slot in which this sealing element can be partly fitted in order to be attached.

[0029] The connecting profile of a beam assembly according to the present invention preferably comprises a boundary surface which laterally delimits the fitting groove away from the structural element and which, in the fitted position, is arranged increasingly further from the structural element upwards. When the fitting groove widens upwards between the structural element and the lateral boundary thereof, this simplifies, more specifically, the application of sealing agent in such a manner that it is applied in sufficient quantity and in the correct location with a large degree of certainty in order to ensure a watertight connection.

[0030] In embodiments in which the fitting groove is laterally limited by an upright flange, this boundary surface may form part of this upright flange.

[0031] The connecting profile preferably furthermore also comprises a laterally directed flange which delimits the fitting groove at the bottom and is provided for connection against the structural element.

If the connecting profile has to adjoin the structural ele-

ment just below the fitting groove only by means of such a laterally directed flange, then, despite the uneven structures in the structural element, it is simpler to make this connecting profile adjoin the structural element more closely than if a larger surface of the connecting profile is fitted against the structural element here.

[0032] The object of the present invention is, in addition, also achieved by providing a screen device which comprises an above-described beam assembly according to the present invention.

More specifically, this screen device may in this case be configured as a terrace covering.

[0033] The object of the present invention is furthermore also achieved by providing a method for converting a screen device which comprises a beam element which is attached laterally to a structural element, such as a wall, wherein a connecting profile is arranged at least partly above the beam element, adjoining the structural element, wherein the connecting profile is provided with a fitting groove which is open at the top and at the connecting side, by means of which the connecting profile adjoins the structural element, and wherein a sealing means is applied in the fitting groove in order to seal the connection between the connecting profile and the structural element.

[0034] By means of such a method, it is therefore also easily possible to convert an existing screen device into a screen device according to the present invention, in which the watertightness of the connection of a beam element of this screen device with a structural element against which this beam element is attached laterally can be better ensured.

In this case, an existing screen device is preferably converted to a screen device which comprises an above-described beam assembly according to the present invention.

[0035] The present invention will now be explained in more detail by means of the following detailed description of some preferred beam assemblies according to the present invention and a method according to the present invention. The sole aim of this description is to give illustrative examples and to indicate further advantages and features of the present invention, and can therefore by no means be interpreted as a limitation of the area of application of the invention or of the patent rights defined in the claims.

[0036] In this detailed description, reference numerals are used to refer to the attached drawings, in which:

- 50 - Fig. 1 shows a part of a screen device with a beam assembly according to the present invention in perspective;
- Fig. 2 shows a connecting profile of the beam assembly from Fig. 1 separately in side view;
- 55 - Fig. 3 shows the beam assembly of the screen device from Fig. 1 in cross section, with a diagrammatic representation of a part of the beam element and a part of the structural element to which this beam assem-

bly is attached.

[0037] The illustrated screen device (1) is attached to a structural element (3), such as for example an external wall, by means of a beam element (2).

This screen device (1) may have various known forms, such as for example, a slatted roof.

[0038] The beam element (2) may be made of various known materials and in various known ways.

The illustrated beam element (2) is composed of various profiles, in which a top profile (18) of this beam element (2) is configured so as to be detachable in order to offer access to an internal cavity of the beam element (2).

Alternatively, this beam element (2) could, for example, also be produced as a single piece.

[0039] In the illustrated embodiment, a connecting profile (4) is attached against the structural element (3) at a distance above the beam element (2). To this end, this connecting profile (4) may be attached to this structural element (3), for example by means of screws.

[0040] Here, in the illustrated embodiment, this connecting profile (4) is arranged entirely above the beam element (2), but in alternative embodiments, it could, for example, also extend as far as laterally next to the beam element (2), in which case the beam element (2) may then, for example, also be attached to this connecting profile (4) in order to attach this to the structural element (3).

As yet a further alternative, it is for example possible for this connecting profile (4) to form part of the beam element (2) itself.

The illustrated arrangement with the illustrated connecting profile (4) and the further parts which have been described, inter alia offers the advantage that an existing screen device (1) can be converted to an illustrated screen device (1) according to the present invention in a simple manner.

[0041] At its top side, the illustrated connecting profile (4) is provided with a laterally directed flange (9) by means of which it adjoins the structural element (3) and an upright flange (8) which is arranged obliquely. The upright flange (8) and the laterally directed flange (9) together delimit a fitting groove (7). The boundary surface (22) by means of which the upright flange (8) delimits the fitting groove (7), extends increasingly further from the structural element (3) upwards. Sealing agent (6) is applied in the fitting groove (7) in order to seal the connection between the connecting profile (4) and the structural element (3).

[0042] Various known sealing agents may for example be used as sealing agent (6), such as for example silicone or polyurethane, etc.

[0043] In the illustrated embodiment, the fitting groove (7) is delimited by means of flanges (8, 9). Alternatively, it is also possible to delimit such a fitting groove (7) by means of larger boundary bodies which form part of this connecting profile (4).

In the illustrated embodiment, the surfaces by means of

which the laterally directed flange (9) and the upright flange (8) of the connecting profile (4) delimit the fitting groove (7) are substantially flat and disposed at an angle with respect to each other. Alternatively, this fitting groove (7) could, for example, also be designed to have an arch-shaped or triangular cross section, etc.

[0044] In the illustrated embodiment, a drainage profile (5) is hooked to the connecting profile (4) and click-fitted by means of click-fit means (16).

[0045] In order to hook the drainage profile (5) to the connecting profile (4), the connecting profile (4) is provided with a hooking groove (10) which is open at the bottom. A top edge (12) of the drainage profile (5) is hooked into this hooking groove (10).

[0046] The illustrated hooking groove (10) is sufficiently large to be able to compensate for tolerances and for a corner element to be hooked in before the drainage profile (5) by a top edge of this corner element, so that this corner element can overlap the drainage profile (5).

[0047] In order to be able to click-fit the drainage profile (5) to the connecting profile (4), elastic click-fit elements (20) are arranged at a distance apart in a fitting cavity (19) of the connecting profile (4). A click-fit leg (21) of the drainage profile (5) is click-fitted in these click-fit elements (20).

[0048] In the illustrated embodiment, the illustrated drainage profile (5) is provided separately from the connecting profile (4) and attached to the latter so as to be detachable. Alternatively, this drainage profile (5) could, for example, also form part of the connecting profile (4) or could, for example, be attached thereto in a hinged manner.

[0049] In the illustrated embodiment, an L-shaped profile (16) is arranged under the drainage profile (5) and is attached at the top of the beam element (2) by one leg of the L-shaped profile (16), while the other leg of this L-shaped profile forms an upright flange (15).

A bottom edge (13) of the drainage profile (5) extends at an intermediate distance from this upright flange (15), laterally next to this upright flange (15), on the side away from the structural element (3).

[0050] In the illustrated embodiment, the upright flange (15) forms part of a separate L-shaped profile (16) which is attached to the beam element (2). Alternatively, this upright flange (15) could, for example, also form part of this beam element (2) itself.

[0051] In the illustrated embodiment, the drainage profile (5) extends between the connecting profile (4) and the beam element (2) in order to drain incident precipitation away from the structural element (3). To this end, a drainage surface (11) of this drainage profile (5) gradually extends further from the structural element (3) from the top edge (12) of this drainage profile (5) to the bottom edge (13) of this drainage profile (5).

[0052] In the illustrated embodiment, a sealing element (17) is fitted between the drainage profile (5) and the L-shaped profile (16) and is attached in a fitting slot in the drainage profile (5) to this end. Alternatively, this sealing

element (17) could, for example, also be attached to the upright flange (15).

[0053] An existing screen device (1) can simply be converted to a screen device (1) according to the present invention by providing it with the missing parts of a beam assembly according to the present invention.

In order to configure this in a similar way to the illustrated screen device (1), an L-shaped profile (2) may be attached on top of the beam element (2) to this end. In addition, a connecting profile (4), such as the illustrated connecting profile (4), can then be attached above the beam element (2) against the structural element (3) and sealing agent (6) may be applied in the fitting groove (7). Furthermore, a drainage profile (5), such as the illustrated drainage profile (5), may be attached to the connecting profile (4), this with a sealing element (17) between the drainage profile (5) and the upright leg (15) of the L-shaped profile (16).

Claims

1. Beam assembly in a screen device (1), comprising

- a beam element (2) which is provided for lateral attachment to a structural element (3), such as a wall;
- a connecting profile (4) which forms part of the beam element (2) at the top of this beam element (2) or, in its fitted position, is arranged at least partly above the latter;
- a sealing means (6) for sealing, in the fitted position of the connecting profile (4), a connection between the connecting profile (4) and the structural element (3);

characterized in that the connecting profile (4) is provided with a fitting groove (7) which is open at the connecting side for connection to the structural element (3) and is provided for applying the sealing means (6) therein for sealing said connection.

2. Beam assembly according to Claim 1, **characterized in that** the sealing means (6) for sealing said connection is a sealing agent (6) for sealing this connection.

3. Beam assembly according to one of the preceding claims, **characterized in that** the fitting groove (7) is open at the top.

4. Beam assembly according to Claim 3, **characterized in that** the connecting profile (4) comprises an upright flange (8) which laterally delimits the fitting groove (7) away from the structural element (3).

5. Beam assembly according to one of the preceding claims, **characterized in that** the connecting profile

(4), in the fitted position, is arranged at least partly above the beam element (2) and is attached to the structural element (3).

6. Beam assembly according to Claim 5, **characterized in that** the beam assembly comprises a drainage profile (5) which, in the fitted position, is arranged between the connecting profile (4) and the beam element (2) in order to drain precipitation incident on the screen device (1) away from the structural element (3).

7. Beam assembly according to Claim 6, **characterized in that** the drainage profile (5) comprises a drainage surface (11) which, in the fitted position, adjoins the connecting profile (4) and, towards the bottom, extends increasingly further from the structural element (3).

8. Beam assembly according to Claim 6 or 7, **characterized in that** the connecting profile (4) comprises a hooking groove (10) which is open at the bottom in order to allow a top edge (12) of the drainage profile (5) to hook into it.

9. Beam assembly according to one of Claims 6 to 8, **characterized in that** the drainage profile (5) is detachably attachable to the connecting profile (4).

10. Beam assembly according to Claim 9, **characterized in that** the drainage profile (5) is attachable to the connecting profile (4) by means of a click-fit connection.

11. Beam assembly according to one of Claims 6 to 10, **characterized in that** the beam element (2) is provided with an upright flange (15) which, in the fitted position, is arranged under the drainage profile (5), and **in that** a bottom edge (13) of the drainage profile (5), in the fitted position, extends away from the structural element (3) next to this upright flange (15) of the beam element (2).

12. Beam assembly according to Claim 11, **characterized in that** the beam assembly comprises a sealing element (17) which, in the fitted position, extends between the drainage profile (5) and the upright flange (15) of the beam element (2).

13. Beam assembly according to one of the preceding claims, **characterized in that** the connecting profile (4) comprises a boundary surface (22) which laterally delimits the fitting groove (7) away from the structural element (3) and which, in the fitted position, is arranged increasingly further from the structural element (3) upwards.

14. Beam assembly according to one of the preceding

claims, **characterized in that** the connecting profile (4) comprises a laterally directed flange (9) which delimits the fitting groove (7) at the bottom and is provided for connection against the structural element (4).

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15. Terrace covering (1), **characterized in that** this screen device (1) comprises a beam assembly according to one of the preceding claims.

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16. Method for converting a screen device (1) which comprises a beam element (2) which is attached laterally to a structural element (2), such as a wall, **characterized in that** a connecting profile (4) is arranged at least partly above the beam element (2), adjoining the structural element (2), **in that** the connecting profile (4) is provided with a fitting groove (7) which is open at the connecting side, by means of which the connecting profile (4) adjoins the structural element (3), and **in that** a sealing means (6) is applied in the fitting groove (7) in order to seal the connection between the connecting profile (4) and the structural element (3).

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17. Method for converting a screen device (1) according to Claim 16, **characterized in that** a screen device (1) is formed thereby which comprises a beam assembly according to one of Claims 1 to 14.

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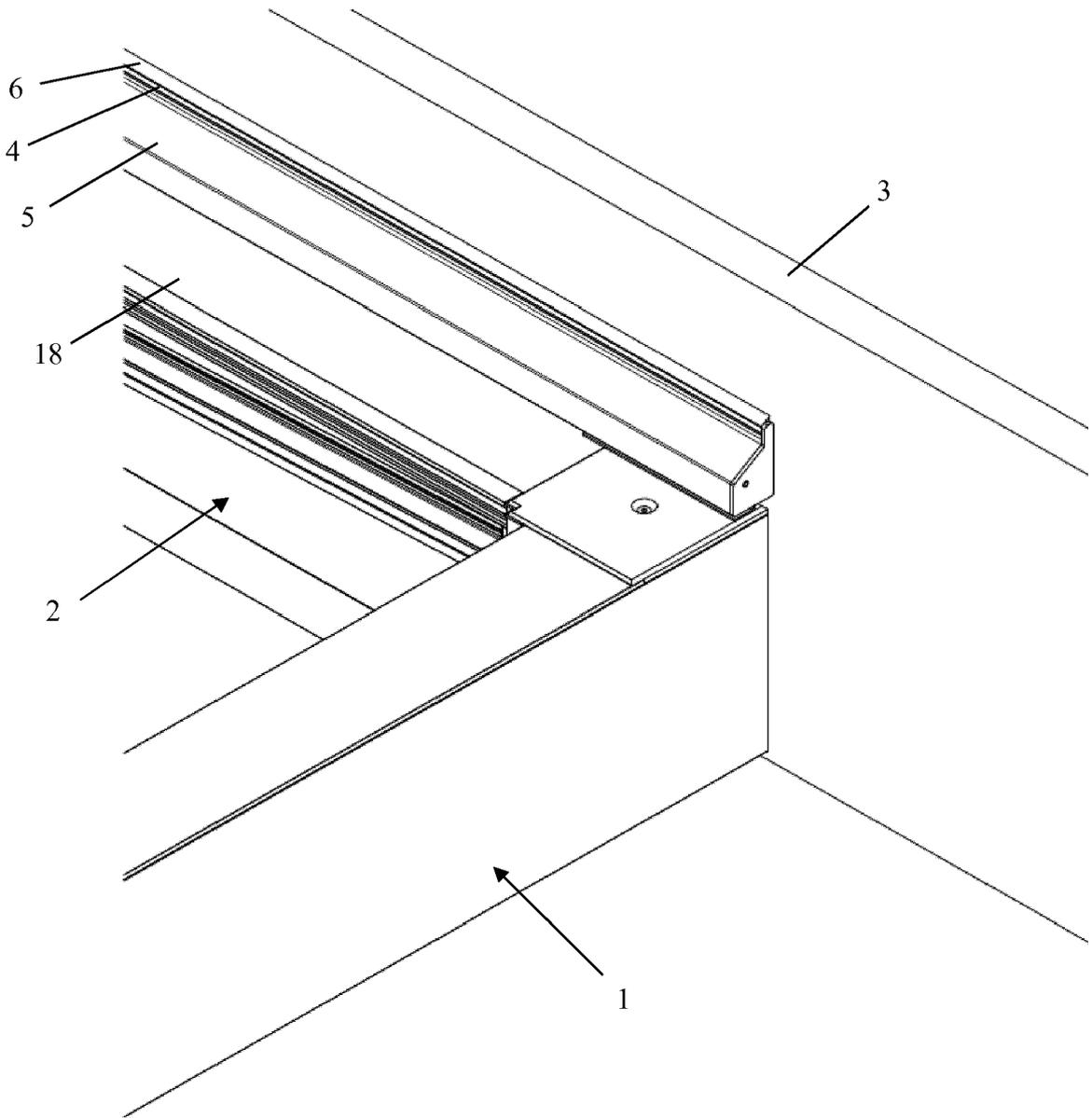


Fig. 1

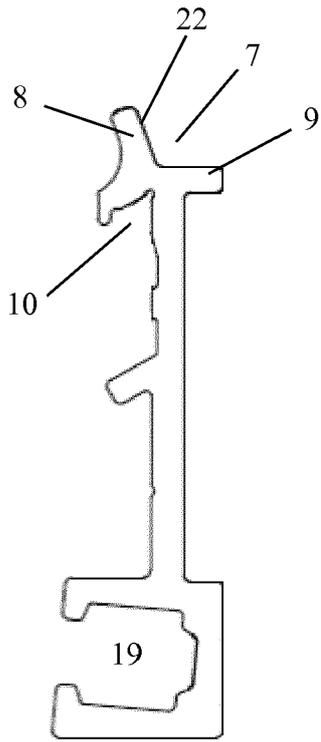


Fig. 2

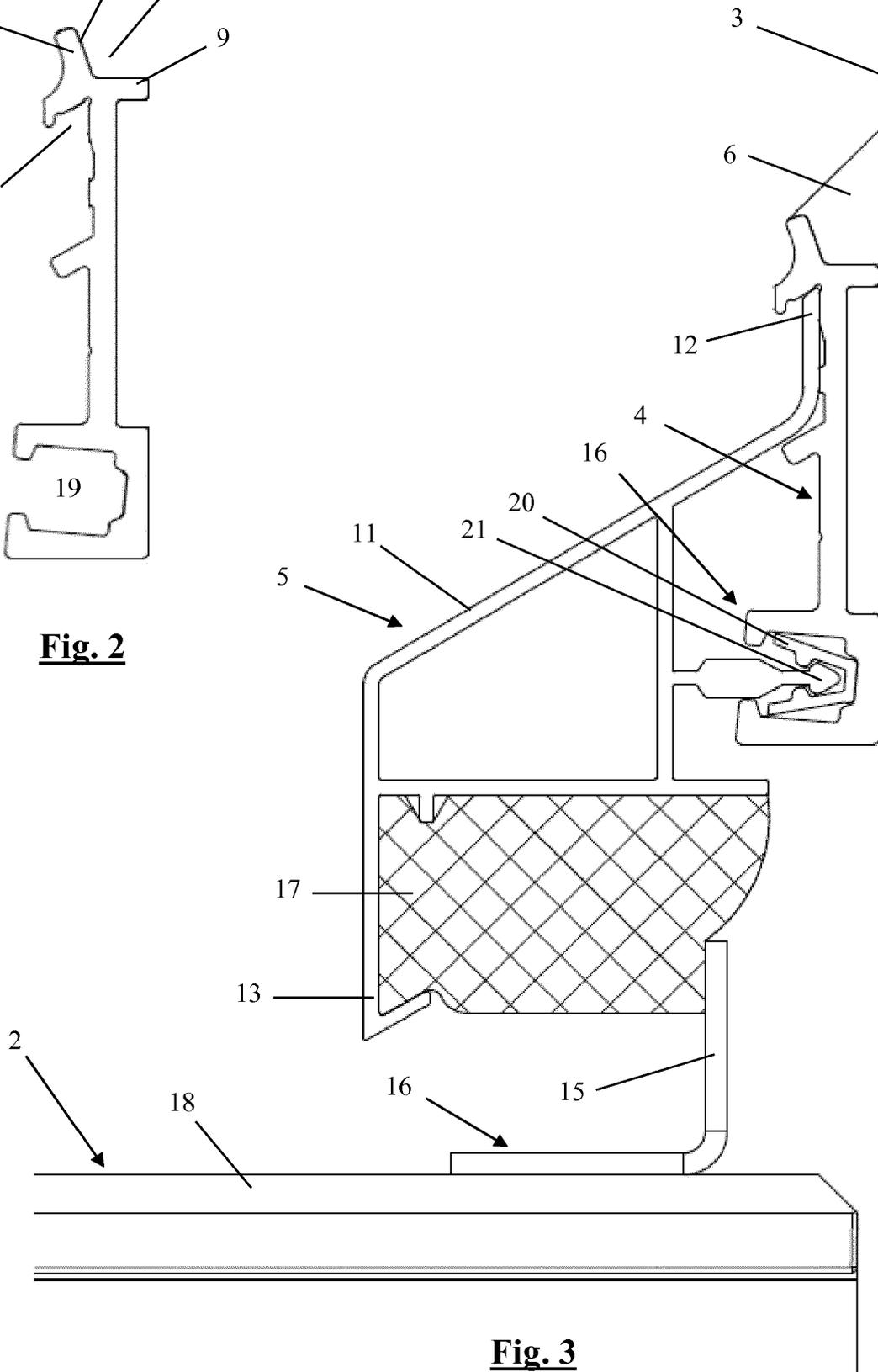


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 19 17 7814

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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			

EPO FORM 1503 03.02 (P04C01)

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

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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