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(54) Dormer window and method for manufacturing such a dormer window

(57) The invention relates to an improved dormer window, comprising: a front wall, a plurality of side walls positioned laterally relative to the front wall, and an upper wall supporting at least partially on the front wall and side wall. The invention also relates to a method for manufacturing such a dormer window according to the invention.

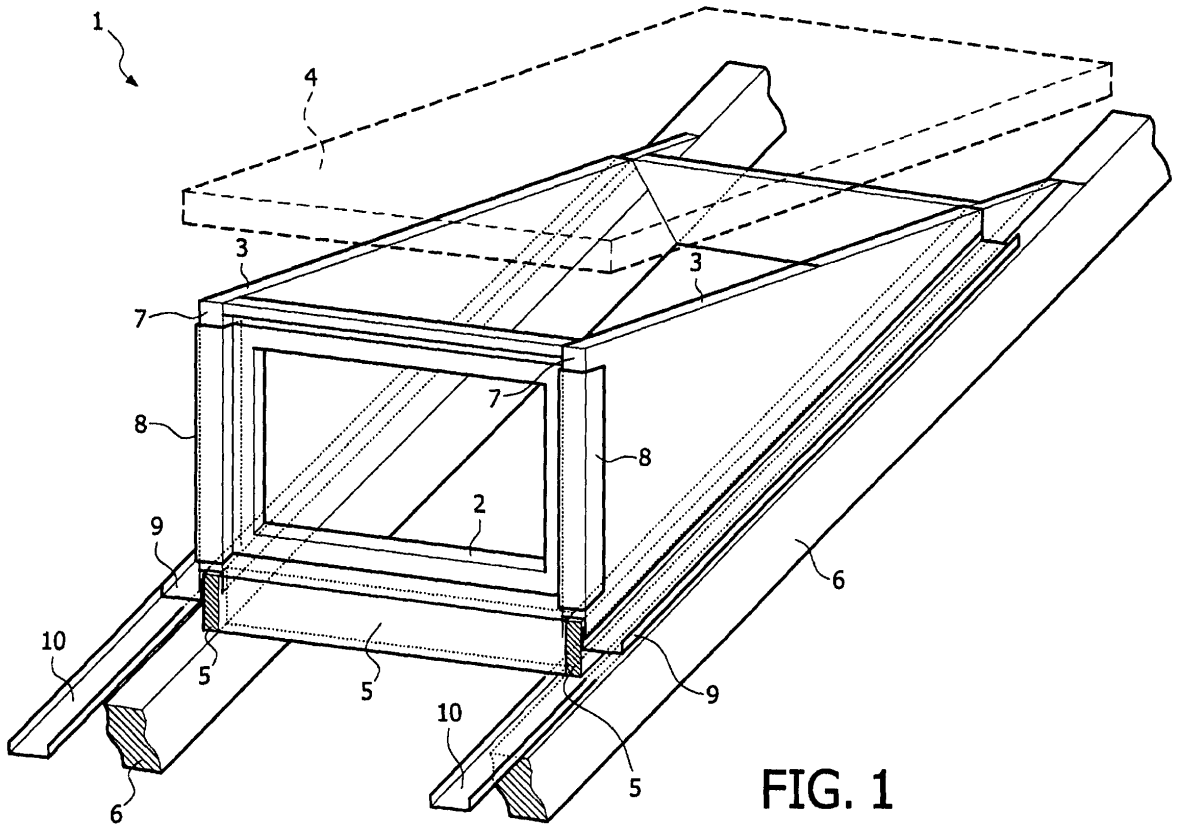

FIG. 1

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Description

[0001] The invention relates to a dormer window, comprising: a front wall, a plurality of side walls positioned laterally relative to the front wall, and an upper wall supporting at least partially on the front wall and side wall. The invention also relates to a method for manufacturing such a dormer window.

[0002] The dormer window referred to in the preamble is generally arranged on pitched roofs of already existing houses, wherein an opening is first made in the roof, whereupon the dormer window is then placed over the hole and finished. The dormer window can herein be assembled on site or placed in prefabricated state over the opening on the roof. Since there exists a wide diversity of roof pitches, making the walls, in particular the side walls, to size is generally a relatively time-consuming and costly activity. The dormer window described in the German patent DE 38 01 373 attempts to obviate these drawbacks to some extent by applying a profile permanently connected to each side wall for pivoting by means of a pivot shaft, wherein the profile is adapted to protect the front end surfaces of the relevant side wall. In this manner the known dormer window can be applied on roofs with different roof pitches without the aesthetic appearance thereof changing and without the geometry of the side walls having to be modified with relatively high precision to the magnitude of the roof pitch. The known dormer window nevertheless still has a number of drawbacks. A significant drawback of the known dormer window is that the installation of the dormer window on a roof is usually relatively difficult and labour-intensive because of the relatively unwieldy assembly of the side wall and the profile coupled pivotally to each other. The change in orientation between the side wall and the profile is moreover relatively limited due to the pivot shaft which passes through the side wall and the profile, which likewise limits the applicability of the known dormer window to a roof with a roof pitch complying with relatively strict preconditions.

[0003] The invention has for its object to provide an improved dormer window which can be arranged on a roof in relatively rapid and simple manner.

[0004] The invention provides for this purpose a dormer window of the type stated in the preamble, characterized in that the dormer window also comprises covering means for at least partially covering front end surfaces forming part of the side walls, wherein the covering means are coupled releasably to the front wall and/or the side walls. By not already (pivotally) coupling the covering means beforehand to the side wall, but arranging them only after fixing of the side walls to the front wall and thus realizing a covering of the front end surface of the side panels, a structurally relatively simple dormer window is provided which can moreover be installed on a roof relatively quickly and easily, and therefore in not very labour-intensive manner. In addition, the cost-price of the dormer window is usually also reduced as a consequence of the relatively simple construction applied. Another significant advantage of the dormer window according to the invention is that there is a greater freedom to apply the dormer window on roofs with different roof pitches. The applicability of dormer windows is after all no longer determined by the - now no longer present - permanent mutual coupling between the side wall and the covering means, whereby the applicability of the dormer window according to the invention extends to roofs with a wide range of roof pitches. The invention thus provides a relatively inexpensive, uniform dormer window which can be installed in relatively rapid, simple and therefore inexpensive manner on a relatively large number of different roof pitches, wherein the dormer window can be finished in aesthetically attractive manner by means of the covering elements.

[0005] Because the dormer window is adapted for use on a relatively large number of different roof pitches, and is therefore of universal nature, a first plane defined by the front end surface of a side wall and a second plane defined by the front wall enclose a mutual angle which depends on the roof pitch of the roof supporting the dormer window. However, the relative orientation between the front wall and the covering means will generally already be predefined. The covering means are preferably coupled only to the front wall so as to further facilitate assembly of the dormer window. The covering means will usually be clamped releasably here in a peripheral part of the front wall. However, the clamping must preferably still be sufficiently stable to enable durable covering of the front end surfaces of the side walls. The covering means will usually also be fixed to the front wall by means of mechanical fixing elements, such as for instance by means of pins or screws, in order to further strengthen the dormer window construction.

[0006] In a preferred embodiment, the covering means comprise a plurality of covering elements, wherein each covering element is adapted to cover a front end surface of a side wall. The covering elements can herein be of very diverse nature, and can for instance be formed by strips or by more robust beam-like bodies. The covering means are however preferably adapted to enclose the front end surfaces of the side walls so as to enable optimal covering of the front end surfaces by the covering elements. Each covering element is more preferably formed for this purpose by a U-profile for enclosing the front end surface of a side wall. The U-profile is here generally of the same form as a part of the outer periphery of the side wall in question. The U-profile preferably connects to the side wall with clamping fit so as to minimize a gap formed between the U-profile and an outer side of the side wall, whereby migration of vapour and dirt residues via this gap can be countered, and even prevented. Since no mechanical fastening means, such as for instance a screw or locking pin, are present for mutual coupling of the side wall and the U-profile, the U-profile can be removed relatively simply from the side wall in the case the dormer window is disassembled, which therefore facilitates disassembly. In order to be able to cover at least

an outer side of the side wall, i.e. a side of the side wall remote from the opposite side wall, in optimal manner without having the side wall protrude excessively relative to the front wall, it is advantageous that the U-profile takes an asymmetrical form, wherein the longest bent part of the U-profile is placed against the outer side of the side wall.

[0007] In another preferred embodiment, each side wall is adapted to receive a part of a drainage gutter for water. The drainage gutter herein functions in fact as rainwater discharge for draining rainwater dripping along the side wall. By incorporating the drainage gutter partly in the side wall, downward trickling rainwater can be directly collected by the drainage gutter and then be discharged, usually to a conventional roof gutter or rainpipe. In a particular preferred embodiment, the lower end surface of each side wall is adapted to receive a part of the drainage gutter. The lower end surface of the side wall will here usually be provided with a (U-)profile, the receiving opening of which is directed downward, wherein the receiving opening is specifically adapted to receive (inter alia) the part of the rainwater discharge. Such a configuration of the dormer window is generally particularly advantageous because the usually unattractive, conventional and environmentally-unfriendly lead flashing is thus no longer necessary to enable reliable discharge of the quantity of collected rainwater. The rainwater discharge can however be arranged here under the covering layer of the roof, usually formed by roof tiles, to thus enable discharge of the rainwater. The drainage gutter preferably still extends here beyond a plane defined by the front wall, and more preferably debouches into a roof gutter, rainpipe or other collecting device for rainwater located nearby.

[0008] The geometry of the side panels can be very diverse in nature. Preferably however, each side wall takes a substantially triangular form, wherein at least two side end surfaces of the side wall enclose a mutual angle of more than 90□. This obtuse angle preferably lies laterally relative to an upper part of the front wall, and will usually amount to between 93□ and 95□. The use of a side wall with such an obtuse angle is usually advantageous in the case the dormer window is arranged on a roof with a - common - roof pitch of 450, in order to generate a run-off for rainwater falling onto the dormer window. This already takes into account a roof pitch usually differing to some extent in practice from the architectural drawing. The forming of pools on the slightly diagonally oriented upper wall can thus be prevented, or at least countered. The obtuse top angle of the side walls can also have higher values, such as for instance between 105□ and 115□, more preferably 110□, so as to make the upper wall suitable for supporting roof tiles covering the dormer window. Such side panels are also adapted for relatively easy adjustment to roofs with a roof pitch of 110□ ± 3□.

[0009] The invention also relates to a method for manufacturing a dormer window according to the invention, comprising the steps of: A) positioning the front wall on a roof, B) positioning two side walls laterally relative to the front wall, C) fixing the front wall and the side walls to each other, D) substantially covering the front end surface of each side wall with a covering element, and E) positioning and fixing an upper wall on the front wall and the side walls. Using the method according to the invention a universal dormer window can be manufactured which can be applied to a relatively wide range of roof pitches. Advantages of the method and of the dormer window have already been described at length in the foregoing. It will be apparent that the dormer window will usually be placed over a roof opening, wherein additional steps can also be performed to enable correct positioning of the dormer window. It is for instance possible here to envisage arranging support beams supporting the dormer window, as well as arranging a bearer or lower frame on which the (upright) walls can be positioned.

[0010] The invention will be elucidated on the basis of non-limitative exemplary embodiments shown in the following figures. Herein:

figure 1 shows a perspective transparent view of a dormer window according to the invention,
figure 2 shows a cross-section of the dormer window of figure 1,
figure 3 shows another cross-section of a part of the dormer window of figure 1,
figure 4 shows a schematic side view of a part of the dormer window of figure 1, and
figure 5 shows a detail view of a roof panel for use in the dormer window of figure 1.

[0011] Figure 1 shows a perspective, transparent view of a dormer window I according to the invention. Dormer window 1 comprises a frontage 2, two cheeks 3 shown laterally relative to frontage 2, and a roof panel 4, wherein for purposes of elucidation of the building structure of dormer window 1 the roof panel 4 is shown here at a distance from frontage 2 and cheeks 3. The upright walls 2, 3 of dormer window 1 are arranged on a lower frame 5, which lower frame 5 supports on a plurality of underlying support beams 6. The front end surfaces 7 of cheeks 3 are here each at least substantially covered by a U-profile 8 preferably manufactured from aluminium, in order enable an aesthetic covering of a position of front end surfaces 7 which may not be vertical. U-profiles 8 are herein preferably clamped releasably in frontage 2 (see figure 3). Use of the U-profiles 8 coupled releasably to frontage 2 makes dormer window 1 particularly suitable for application on roofs of differing roof pitch. Dormer window 1 also comprises a rainwater discharge 9 coupled to each cheek 3, whereby conventional lead flashing need no longer be applied to enable effective draining of collected rainwater. Each rainwater discharge 9 herein connects via an extension 10 to a roof gutter (not shown) of the roof. Assembly of dormer window 1 according to the invention is relatively simple. Frontage 2 is first posi-

tioned and fixed on lower frame 5. Cheeks 3 are then positioned along frontage 2, preferably such that the upper end surface of frontage 2 and a part of the upper end surface of cheeks 3 adjacent to the upper end surface of frontage 2 lie at substantially the same height, whereafter cheeks 3 and frontage 2 are fixed to each other. U-profiles 8 are further placed over the front end surfaces 7 of cheeks 3, wherein U-profiles 8 are clamped in frontage 2. U-profiles 8 are here generally fastened mechanically to frontage 2 in releasable manner. Roof panel 4 is then positioned on the upper end surfaces of frontage 2 and cheeks 3, wherein the resulting seams are generally covered by means of angle profiles (not shown). An addition rainwater discharge (not shown) can optionally also be arranged here for the purpose of draining the rainwater that collects close to the upper end surface of frontage 2, so as to prevent rainwater tricking along frontage 2.

[0012] Figure 2 shows a cross-section of the dormer window 1 of figure 1. This shows clearly that dormer window 1 is arranged over a roof opening 12 arranged in a roof 11, wherein support beams 6 are incorporated in roof 11. Arranged in the usual way on the roof is an insulation layer 13 on which tile battens 14 are positioned for supporting roof tiles 15 covering the roof 11. The bottom end surfaces of cheeks 3 are provided with a profile 16 for engaging partially round lower frame 5, wherein the rainwater discharge 9 is also partially incorporated in profile 16 to enable efficient discharge of rainwater 17. Cheeks 3 are preferably each manufactured from a laminar panel constructed from two aluminium plates between which is arranged an extruded polystyrene foam, usually referred to as Styrofoam®LB, whereby a cheek 3 which thermally insulates relatively well and is relatively strong can be provided.

[0013] Figure 3 shows another cross-section of a part of the dormer window 1 of figure 1. As shown, frontage 2 comprises an H-profile 18 for clamping a free outer end of the U-profile 8 substantially covering the front end surface 7 of a cheek 3. U-profile 8 takes an asymmetrical form to enable optimal covering of front end surface 7 of cheek 3 if it is askew. A sealing layer 19 is also arranged between frontage 2 and cheek 3 to enable medium-tight sealing of dormer window 1.

[0014] Figure 4 shows a schematic side view of a part of the dormer window 1 of figure 1. Specifically shown is the relative orientation between cheek 3 and the front end surface 7 of the U-profile 8 covering cheek 3. Cheek 3 takes a triangular form, wherein two side end surfaces of cheek 3 enclose a mutual obtuse angle ∀ which amounts preferably to about 93□ in order to enhance run-off of rainwater when dormer window 1 is applied on roofs with a roof pitch of 45□. A usual precondition is that the front end surface 7 of cheek 3 must be covered by U-profile 8. This makes it possible to still change the relative orientation between U-profile 8 and cheek 3, wherein cheek 3 can be rotated through a maximum angle 3 relative to U-profile 8 so as to be able to guarantee covering of front end surface 7 of cheek 3 when dormer window 1 is placed on roofs with a roof pitch lying between the critical angles μ_1 and μ_2 defined by angle ∃.

[0015] Figure 5 shows a detail view of a roof panel 9 for use in dormer window I of figure 1. Roof panel 9 is constructed in modular manner from a plurality of mutually coupled sub-panels 20, wherein sub-panels 20 usually have a standard dimensioning. Sub-panels 20 are here usually formed, as are cheeks 3, by a laminar panel constructed from two aluminium plates between which is arranged an extruded polystyrene foam, usually referred to as Styrofoam®LB. Sub-panels 20 are generally glued together, wherein the seams 21 formed on the top side are covered with a sealing layer 22. In this way it is possible to adjust the width of the dormer window 1 to be manufactured in relatively simple manner to the situational conditions.

[0016] It will be apparent that the invention is not limited to exemplary embodiments shown and described here, but that, within the scope of the appended claims, numerous variants are possible which will be self-evident to the skilled person in this field.

Claims

1. Dormer window, comprising:

   - a front wall,
   - a plurality of side walls positioned laterally relative to the front wall, and
   - an upper wall supporting at least partially on the front wall and side wall, **characterized in that** the dormer window also comprises covering means for at least partially covering front end surfaces forming part of the side walls, wherein the covering means are coupled releasably to the front wall and/or the side walls.

2. Dormer window as claimed in claim 1, **characterized in that** a first plane defined by the front end surface of a side wall and a second plane defined by the front wall enclose a mutual angle which depends on the roof pitch of a roof supporting the dormer window.

3. Dormer window as claimed in claim 1 or 2, **characterized in that** the covering means are only coupled to the front wall.

4. Dormer window as claimed in any of the foregoing claims, **characterized in that** the covering means comprise a plurality of covering elements, wherein each covering element is adapted to cover a front end surface of a side wall.

5. Dormer window as claimed in claim 4, **characterized in that** the covering means are adapted to enclose the front end surfaces of the side walls.

6. Dormer window as claimed in claims 4 and 5, **characterized in that** each covering element is formed by a U-profile for enclosing the front end surface of a side wall.

7. Dormer window as claimed in claim 6, **characterized in that** each U-profile takes an asymmetrical form.

8. Dormer window as claimed in any of the foregoing claims, **characterized in that** each side wall is adapted to receive a part of a drainage gutter for water.

9. Dormer window as claimed in claim 8, **characterized in that** the lower end surface of each side wall is adapted to receive a part of the drainage gutter.

10. Dormer window as claimed in claim 8 or 9, **characterized in that** the drainage gutter extends beyond a plane defined by the front wall.

11. Dormer window as claimed in any of the foregoing claims, **characterized in that** each side wall takes a substantially triangular form, wherein at least two end sides of the side wall enclose a mutual angle of more than 900.

12. Method for manufacturing a dormer window as claimed in any of the claims 1-11, comprising the steps of:

A) positioning the front wall on a roof,
B) positioning two side walls laterally relative to the front wall,
C) fixing the front wall and the side walls to each other,
D) substantially covering the front end surface of each side wall with a covering element, and
E) positioning and fixing an upper wall on the front wall and the side walls.

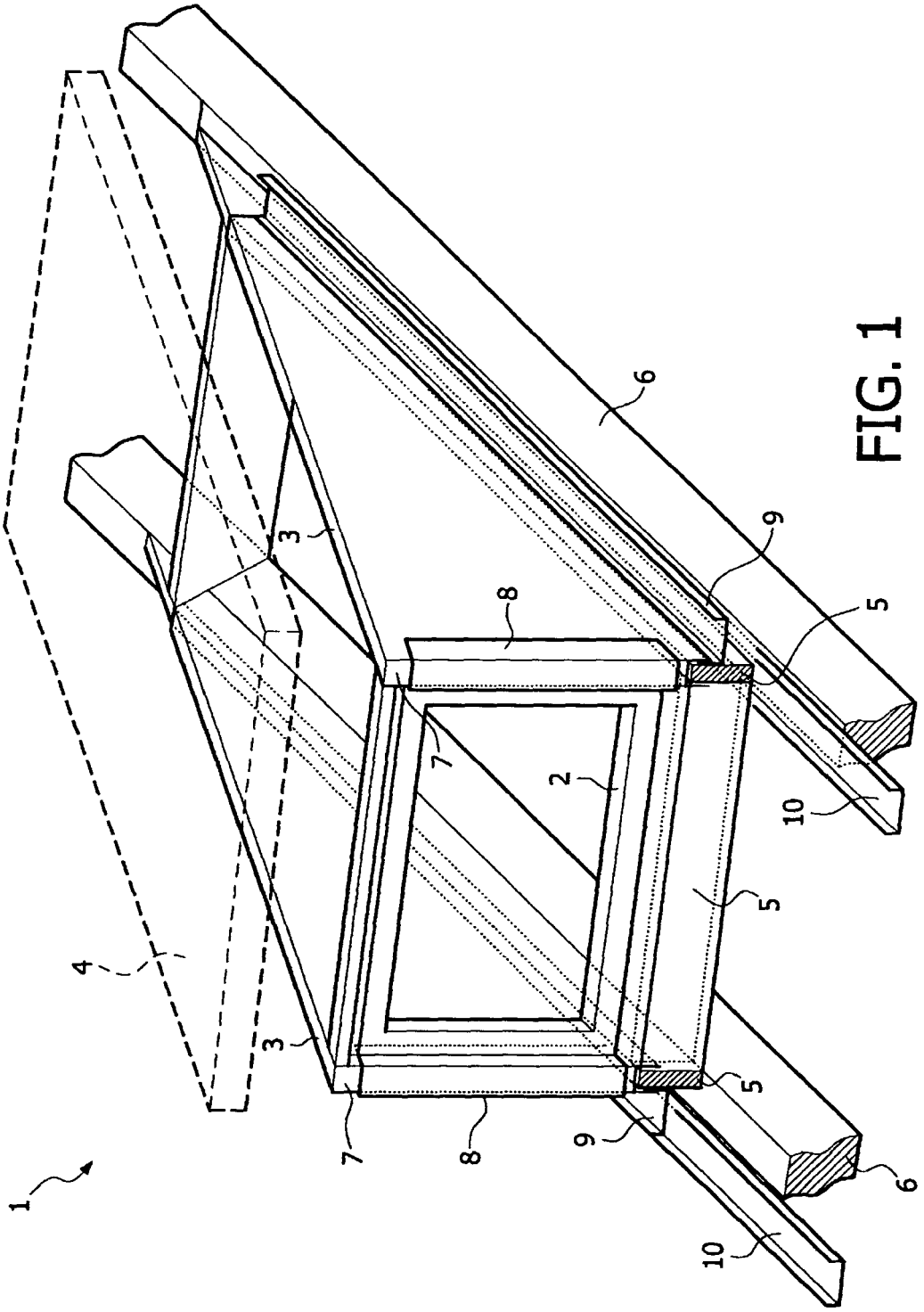

FIG. 1

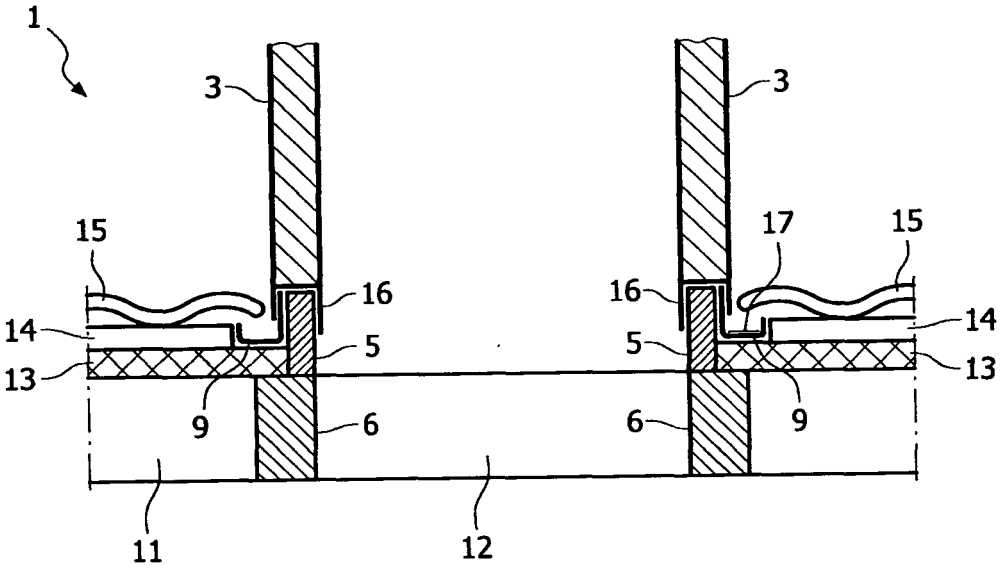

FIG. 2

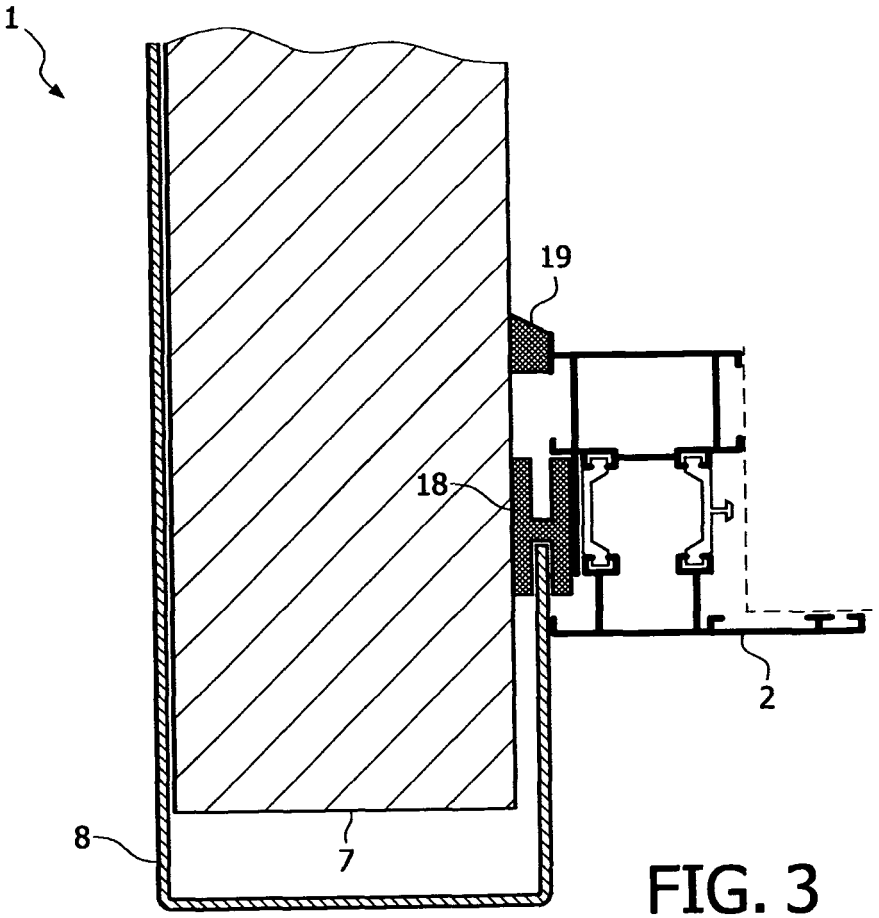

FIG. 3

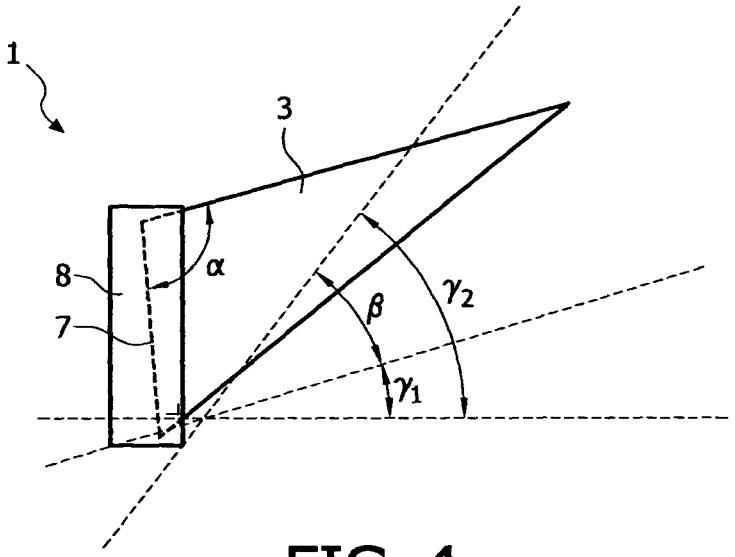

FIG. 4

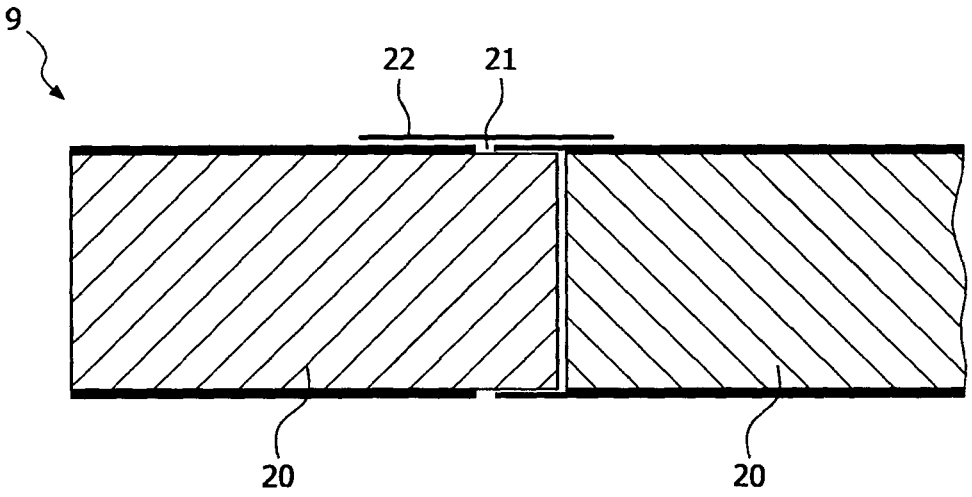

FIG. 5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 10 8021

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

E04B
E04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	23 December 2005	Demeester, J

CATEGORY OF CITED DOCUMENTS

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