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(54) THERMALLY INSULATING MOULDED ARTICLE UNDERNEATH OUTER WALL AND AGAINST INNER WALL

(57) A description is given of a thermally insulating moulded article comprising a supporting surface for an outer wall or façade and an elevation for a cavity. The moulded article comprises a supporting element which may or may not be situated in the supporting surface and which may be integrated in the moulded article. In a possible embodiment, the supporting element forms part of a supporting structure extending, on the side of the supporting surface, through the moulded article, and being designed, on the lower side thereof, so as to be supported on a base. Such a moulded article can be used as a coupling element between façade insulation and roof insulation.

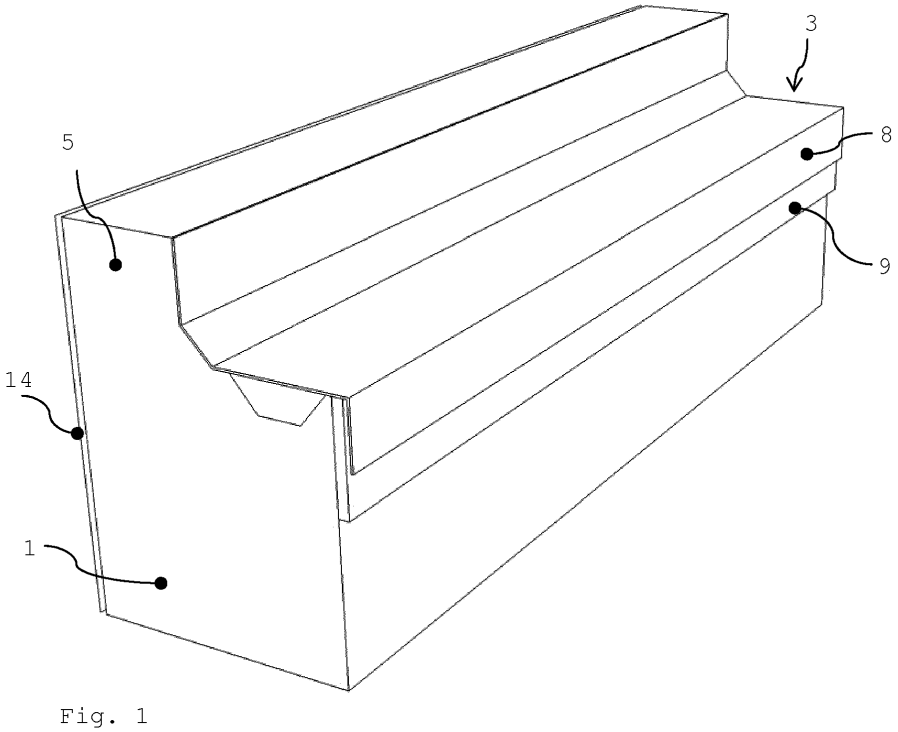

Fig. 1

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Description

[0001] The present invention relates to a thermally insulating moulded article used in the construction industry.

[0002] The present invention also relates to a building system in which said moulded article is used.

[0003] Known building constructions between an outer wall or exterior façade and an inner wall or inner brickwork make use of a thermal bridge interrupter to be provided in the outer wall and comprising, for example, cellular glass (Foam Glass), gas concrete or a thermal block (Marmox). Between the exterior façade comprising a thermal bridge interrupter and the inner wall situated behind said exterior façade, a completely or partially filling insulating layer is applied which may or may not be bevelled at the upper edge. A water-repellent layer, which may or may not contain lead, is provided at the required location and the whole is provided with the exterior façade including cavity wall insulation, to which the roof insulation with roofing, such as APP, EPDM or roof tiles are connected in a watertight manner.

[0004] It is an object of the present invention to provide a cost price-friendly, universally applicable, alternative building system comprising a moulded article which enables, in particular, the development of linear thermal bridges to be prevented in a simple manner.

[0005] To achieve this object, the moulded article according to the invention is characterized in that the thermally insulating moulded article comprises a supporting surface for an outer wall or façade and an elevation for a cavity.

[0006] An advantage of the moulded article resides in that it provides a universal coupling between façade insulation and the abutting roof insulation for sloping roofs, flat roofs or sun rooms. The moulded article hermetically seals the entire cavity situated behind it. The load on the exterior façade can be transferred by means of steel façade carriers to the construction situated behind said exterior façade. Alternatively, the load on the exterior façade can be transferred to the underlying structural part via supporting features in the moulded article.

[0007] An embodiment of the moulded article according to the invention is characterized in that it may comprise a supporting element situated in the supporting surface, which supporting element may be integrated in the moulded article, and which is located at the upper side of the moulded article so as to support the outer wall or exterior façade.

[0008] Advantageously, the load of the outer wall is exerted on the strong supporting element laid out therefor and is subsequently guided to a subjacent structure.

[0009] In a possible further embodiment of the moulded article according to the invention, the supporting element is provided with a reinforced top layer, which may or may not be recessed in the supporting surface of the moulded article, and which may be in the form of a supporting plate. For example, the exterior façade is supported by additional, steel façade carriers, which may or may not be integrated in the element, or the supporting element forms part of a supporting structure which, on the side of the supporting surface, extends through the moulded article and which is designed, on the lower side thereof, so as to be supported on a subjacent structure.

[0010] Further detailed, possible embodiments explained in the other claims are mentioned, together with the associated advantages, in the following description.

[0011] Next, the moulded article together with the building system in which it is employed will be elucidated by means of the figures given below, in which corresponding parts are provided with the same reference numerals. In the figures:

Figure 1 shows a first embodiment of the thermally insulating moulded article according to the invention, comprising an integrated supporting structure;
Figure 2 shows an exploded view of the first embodiment, comprising elements added to the moulded article;
Figure 3 shows a second embodiment of the thermally insulating moulded article according to the invention, without the integrated supporting structure but with a façade carrier;
Figure 4 shows an exploded view of the second embodiment, comprising elements added to the moulded article;
Figure 5 is a sectional view of the first embodiment of the moulded article shown in figure 1;
Figure 6 is a sectional view of the second embodiment of the moulded article shown in figure 2;
Figure 7 shows a detail of a first variant of a building system, in which the moulded article of figures 1 and 5 is used;
Figure 8 shows a detail of a second variant of the building system, in which the moulded article of figures 3 and 6 is used; and
Figure 9 shows a detail of a third variant of the building system, in which the moulded article of figures 1 and 5 is used;

[0012] Figures 1 through 6 show possible embodiments of a thermally insulating moulded article 1 which can be used in the partially shown building systems 2 depicted in figures 7 through 9. The moulded article 1 is made from a thermally insulating material, such as rock wool or glass wool, both hard pressed, EPS, XPS, PIR, PUR, Resol foam, cellular glass, gas concrete and the like. The moulded article 1 comprises a supporting surface 3 for an outer wall 4 or façade, and an elevation 5 for a cavity 6 comprising suitable cavity wall insulation 7 shown in figures 7 through 9. Said figures show that the moulded article 1 comprises a water-repellent layer 8 which is provided at least on the supporting surface 3. Said layer 8 reaching into the cavity 6 may be made of metal, such as lead, steel, zinc, aluminium, copper et cetera, or it may be made of rubber, or bitumen, such as APP or SBS, but also of synthetic resin, such as PVC,

EPDM, FPO, TPO, DPC, PE, butyl or the like. It is also shown that the moulded article 1 may comprise a cladding 9 for the adjoining water-repellent layer 8, said cladding being provided at least partially under said water-repellent layer 8. The cladding 9 may be made from, for example, wood, metal, metal foil, fibre cement, cement mortar, bitumen, synthetic resin or the like. It is further shown that the moulded article 1 comprises a façade cladding 9 which is provided at least partially under said water-repellent layer 8. Said cladding 9 may be made from, for example, wood, metal, metal foil, fibre cement, cement mortar, bitumen, synthetic resin or the like.

[0013] The moulded article comprises a top layer, which is situated in the supporting surface 3 and which, in the figures, is integrated in said moulded article 1, said top layer being provided at the upper side of the moulded article 1 in order to support the outer wall 4 or façade, which is achieved by providing the top layer with a reinforcement. If it is massive, said reinforced top layer is made of cellular glass or gas concrete, but it may further be made of, for example, concrete, polymer concrete, metal, fibre cement, wood, synthetic resin, composite material or the like. The reinforced top layer, which is preferably recessed in the supporting surface 3, comprises a supporting plate 11-1 (see, inter alia, figures 3 and 4) which is further shaped as a, in section, trapezoidal supporting part 11-2. Said part 11-2 is the uppermost part of a supporting structure 12 extending from the supporting surface 3 through the moulded article 1, and being designed, on the lower side thereof, so as to be supported on a base 13. If it is massive, said supporting structure 12 is made of cellular glass or gas concrete, but it may further be made of, for example, concrete, polymer concrete, metal, wood, synthetic resin, composite material or the like.

[0014] The outside of the moulded article 1 may be provided, at least partly, with a vapour-reducing layer 14. Said vapour-reducing layer 14 is made from, for example, synthetic resin, such as PE foil, PVC, PIB, metal- as mentioned hereinabove- metal foil, such as aluminium foil, bitumen, such as APP, SBS, bituminized or plasticized paper, polyester fleece, glass fibre, oil-based paint or rubber-based paint or the like.

[0015] Figure 7 shows a detail of a first variant of the building system 2, in which the moulded article of figure 1 is incorporated. Said moulded article 1 forms an insulating coupling between insulation 16 of, in this case, a floor and the cavity insulation 7. The moulded article 1 is placed against an interior wall 15 on a mortar bed 18, which is provided on an subjacent structure 13. The moulded article 1 is provided with an elevation 5, so that moisture from the cavity 6 cannot reach the interior wall 15, but instead can issue to the exterior through openings in the exterior façade 4. To deal with the moisture from the cavity 6, the upper side of the moulded article 1 must be made water-repellent by means of a water-repellent layer 8. The end portion of the water-repellent layer 8 is mouldable, so that adjoining water-repellent provisions 20 can be provided therebelow, on the cladding 9, if any. The upper side of the moulded article 1 is provided also with the supporting surface 3, on which the exterior façade 4 can rest. The weight of the exterior façade 4 rests on the supporting part 11-2 integrated in the moulded article 1. Said supporting part 11-2 is provided with the supporting structure 12, which transfers the forces, through the mortar bed 18, to the subfloor 17. The elevation 5 is made straight, allowing the cavity insulation 7 to seamlessly adjoin the elevation. The rear side and the bottom side of the moulded article 1 are provided with a damp-proof foil 14, which serves to preclude internal condensation in the moulded article 1.

[0016] Figure 8 shows a detail of a second variant of the building system 2, in which the moulded article 1 of figure 3 is incorporated. Said moulded article 1 forms an insulating coupling between insulation 16 of, in this case, a horizontal roof and the cavity insulation 7. The moulded article 1 is placed against the interior wall 15 on a mortar bed 18, which is provided on a subjacent structure 13. The moulded article 1 is provided with an elevation 5, so that moisture from the cavity 6 cannot reach the interior wall 15, but instead can issue to the exterior through openings in the exterior façade 4. To deal with the moisture from the cavity 6, the upper side of the moulded article 1 must be made water-repellent by means of a water-repellent layer 8. The end portion of the water-repellent layer 8 is mouldable, so that water-repellent provisions 20 of the roof system can be connected in a watertight manner, on the cladding 9, if any. The upper side of the moulded article 1 is provided also with a supporting surface 3, on which the exterior façade 4 can rest. The weight of the exterior façade 4 rests on a supporting part 11-1 integrated in the moulded article 1. The majority of the weight of the exterior façade 4 is transferred, through a façade carrier 19, to the interior wall 15. The elevation 5 is made straight, allowing the cavity insulation 7 to seamlessly adjoin the elevation. The rear side and the bottom side of the moulded article 1 are provided with a damp-proof foil 14, which serves to preclude internal condensation in the moulded article 1.

[0017] Figure 9 shows a detail of a third variant of the building system 2, in which the moulded article 1 of figure 1 is incorporated. The detail relates to a connection between a sloping roof and a cavity-wall structure. The moulded article 1 forms an insulating coupling between insulation 16 of, in this case, a sloping roof and the cavity insulation 7. The moulded article 1 is placed against the interior wall 15 on a mortar bed 18, at the same angle of inclination as the sloping roof, which mortar bed is provided on a subjacent structure 13. The moulded article 1 is provided with an elevation 5, so that moisture from the cavity 6 cannot reach the interior wall 15, but instead can issue to the exterior through openings in the exterior façade 4. To deal with the moisture from the cavity 6, the upper side of the moulded article 1 must be made water-repellent by means of a water-repellent layer 8. The end portion of the water-repellent layer 8 is mouldable, so

that adjoining water-repellent provisions 20 of the roof system can be provided in a watertight manner, on the cladding 9, if any. The upper side of the moulded article 1 is provided also with a supporting surface 3, on which part of the exterior façade 4 can rest in the case of a sloping roof. The weight of the exterior façade 4 rests on a supporting part 11-2 integrated in the moulded article 1. The elevation 5 is made straight, allowing the cavity insulation 7 to seamlessly adjoin the elevation. The rear side and the bottom side of the moulded article 1 are provided with a damp-proof foil 14, which serves to preclude internal condensation in the moulded article 1.

Claims

1. A thermally insulating moulded article comprising a supporting surface for an outer wall or façade and an elevation for a cavity.

2. The moulded article according to claim 1, **characterized in that** the moulded article comprises a water-repellent layer which is provided at least on the supporting surface.

3. The moulded article according to claim 2, **characterized in that** the moulded article comprises a cladding against which the adjoining water-repellent layer can be attached.

4. The moulded article according to any one of claims 1 to 3, **characterized in that** the moulded article comprises a supporting element situated in the supporting surface.

5. The moulded article according to claim 4, **characterized in that** the supporting element is integrated in the moulded article.

6. The moulded article according to claim 4 or 5, **characterized in that** the supporting element is located at the upper side of the moulded article so as to support an outer wall or façade.

7. The moulded article according to any one of claims 4 to 6, **characterized in that** the supporting element is provided with a reinforced top layer.

8. The moulded article according to claim 7, **characterized in that** the reinforced top layer is in the form of a supporting plate.

9. The moulded article according to claim 7 or 8, **characterized in that** the reinforced top layer is recessed in the supporting surface of the moulded article.

10. The moulded article according to any one of claims 4 to 9, **characterized in that** the supporting element forms part of a supporting structure extending, on the side of the supporting surface, through the moulded article, and being designed, on the lower side thereof, so as to be supported on a base.

11. The moulded article according to claim 10, **characterized in that**, viewed in cross-section, the supporting element on the upper side of the supporting structure is trapezoidal, rectangular or square in shape.

12. The moulded article according to any one of claims 1 to 11, **characterized in that** the outside of the moulded article is provided, at least partly, with a vapour-reducing layer.

13. The moulded article according to any one of claims 1 to 12, **characterized in that** the moulded article is made from at least one of the following thermally insulating materials: rock wool or glass wool, both hard pressed, EPS, XPS, PIR, PUR, Resol foam, cellular glass, gas concrete.

14. A building system comprising:

    - a moulded article according to any one of claims 1 to 13 comprising a supporting surface for an outer wall or façade, and an elevation for a cavity;
    - an outer wall or façade supported on the supporting surface;
    - an inner wall separated from the outer wall by a cavity, which inner wall abuts against the rear side of the moulded article; and
    - a cavity insulation which rests on the upper side of the elevation.

15. The building system according to claim 14, **characterized in that** the building system comprises a mortar bed provided on a subfloor, the lower side of the moulded article resting on said mortar bed.

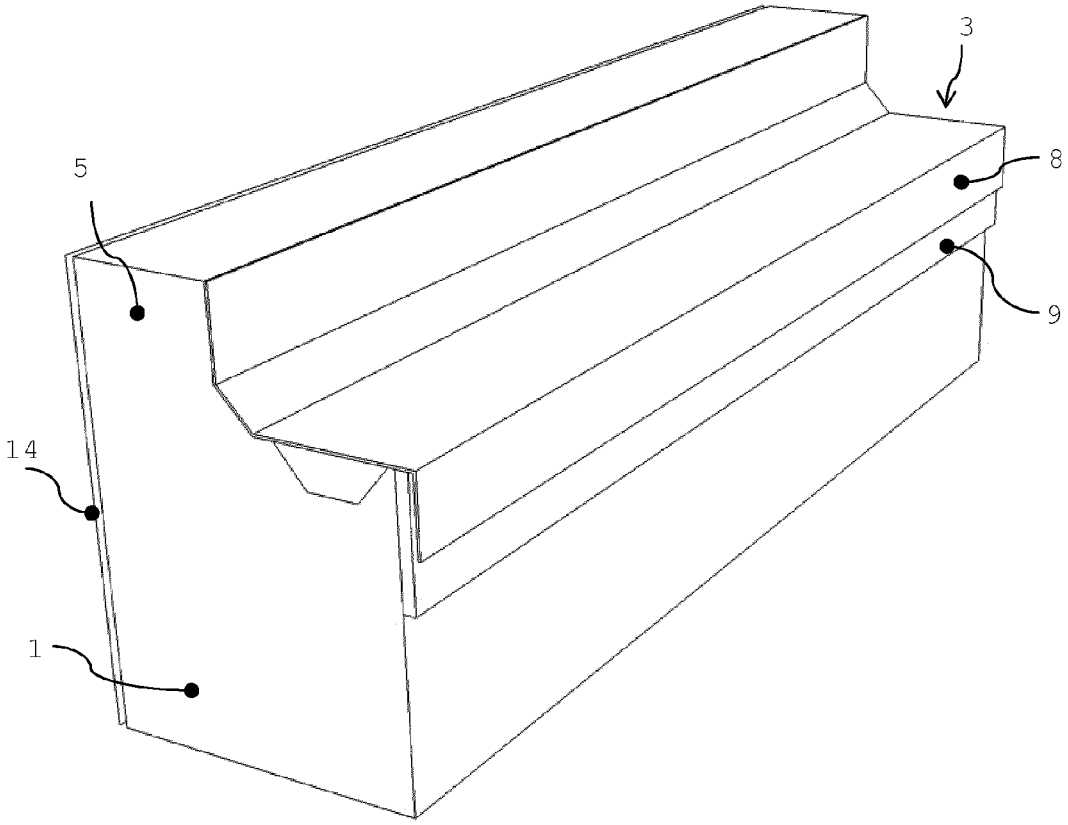

Fig. 1

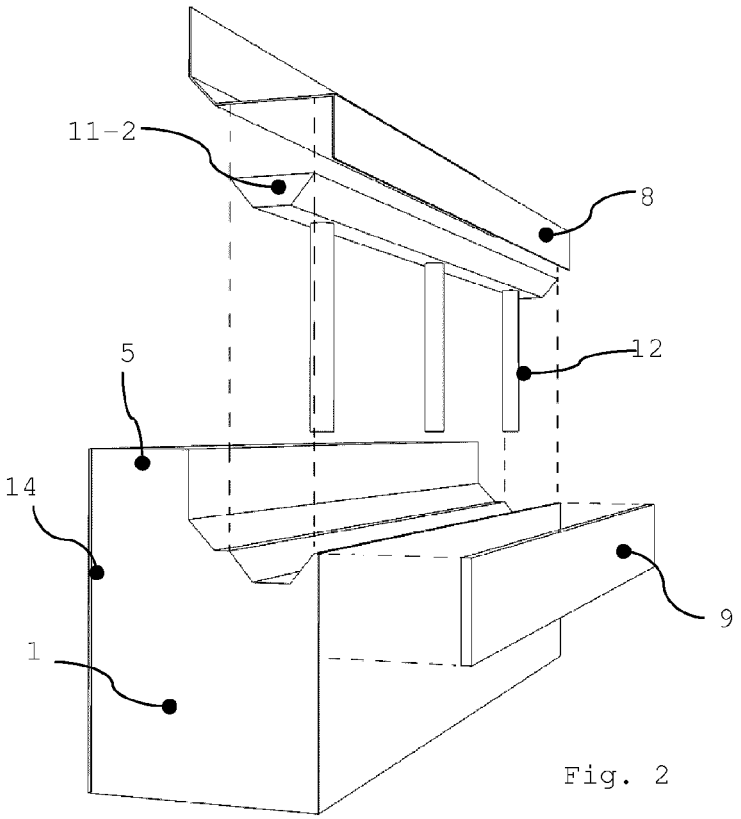

Fig. 2

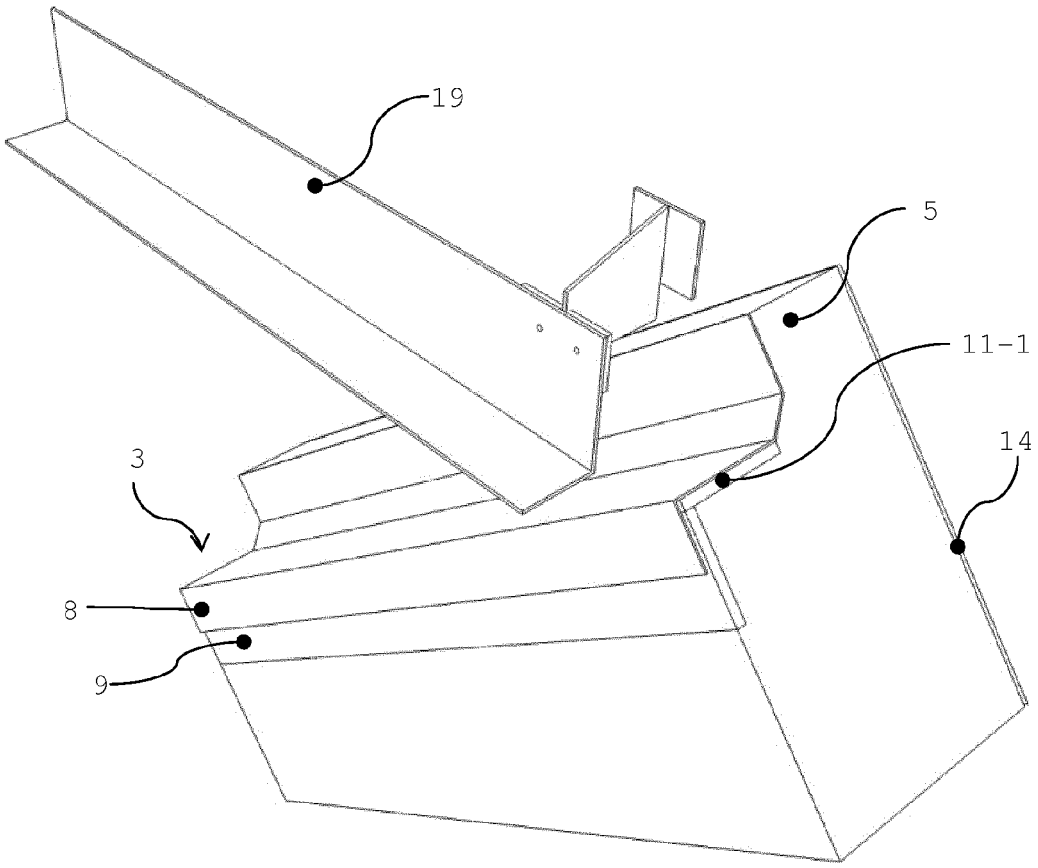

Fig. 3

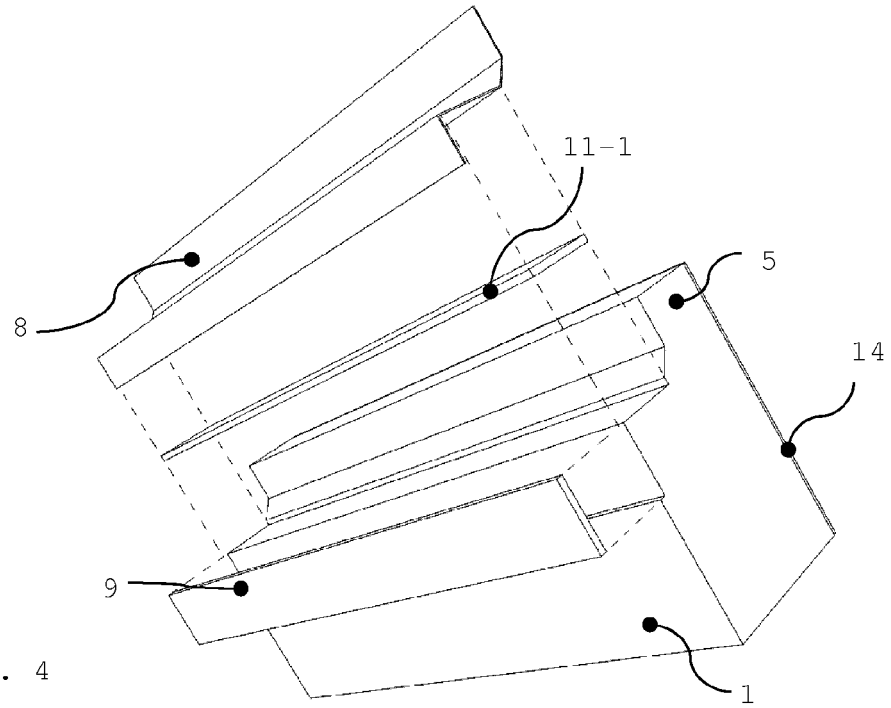

Fig. 4

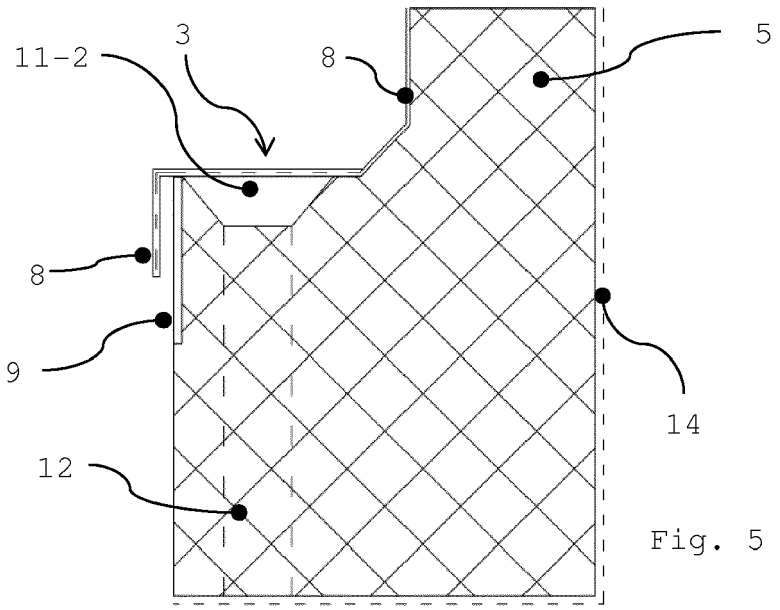

Fig. 5

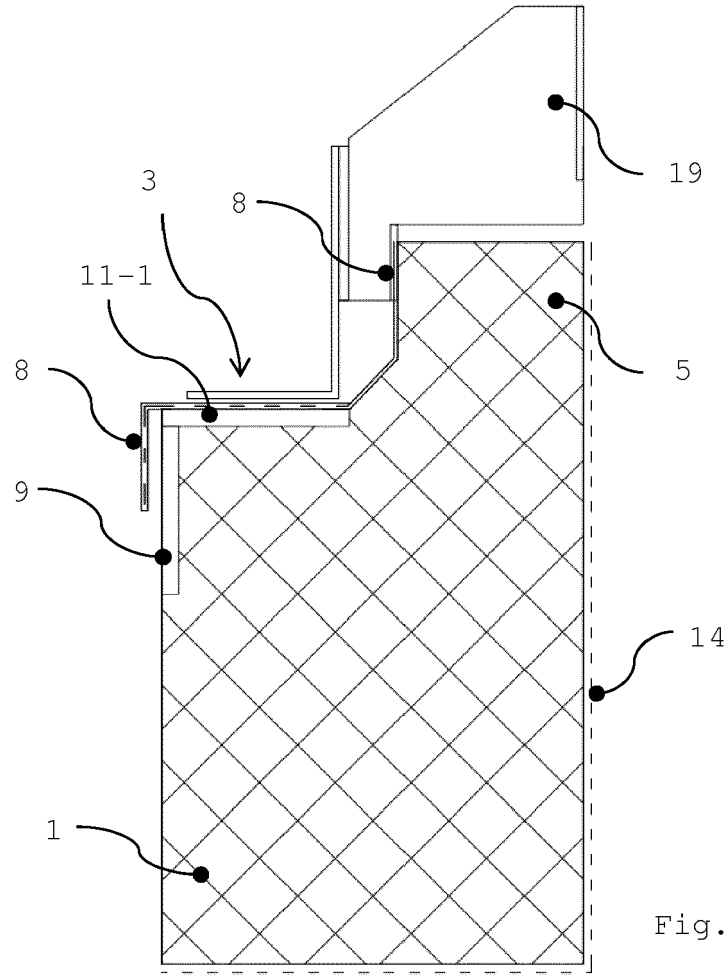

Fig. 6

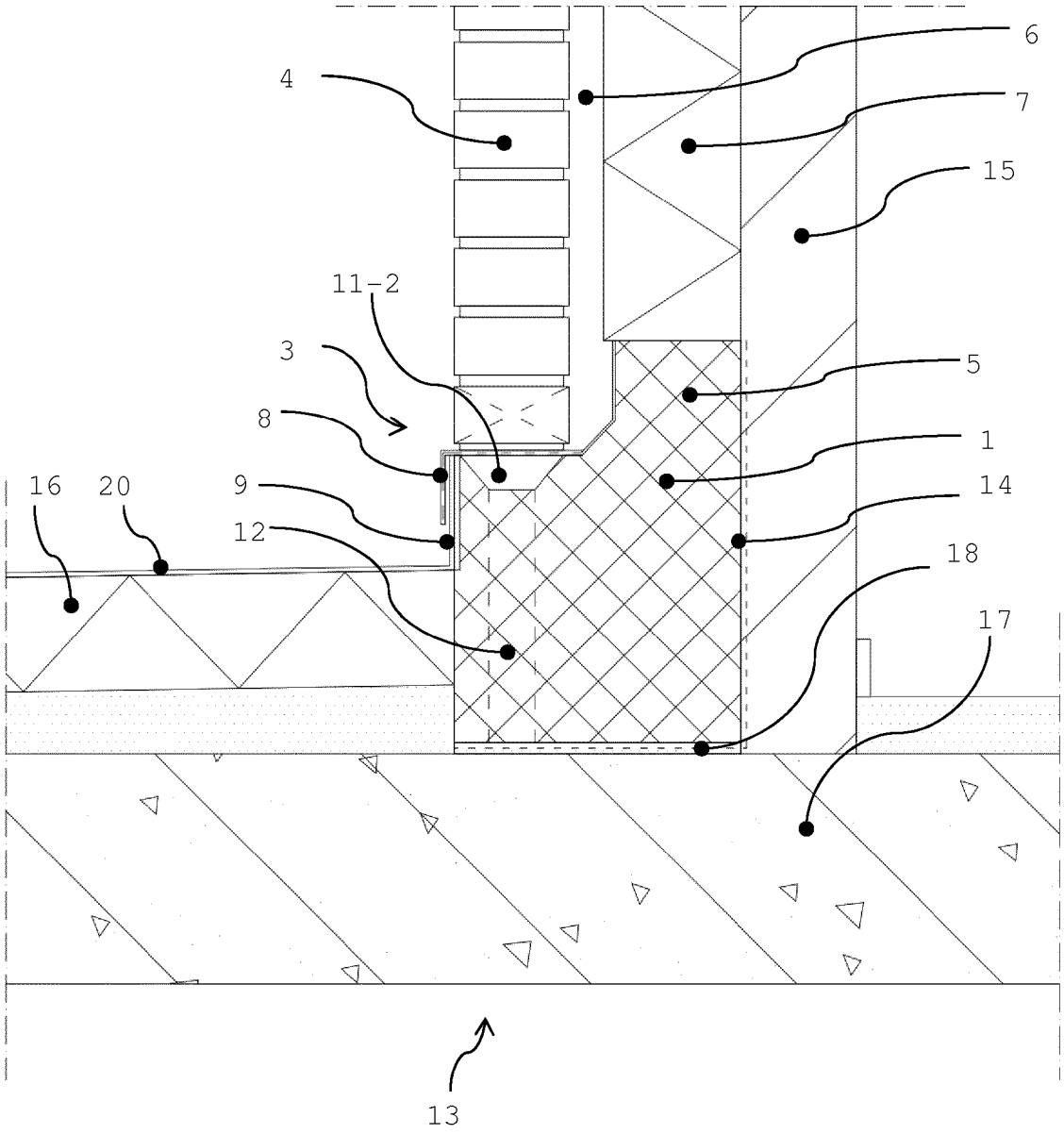

Fig. 7

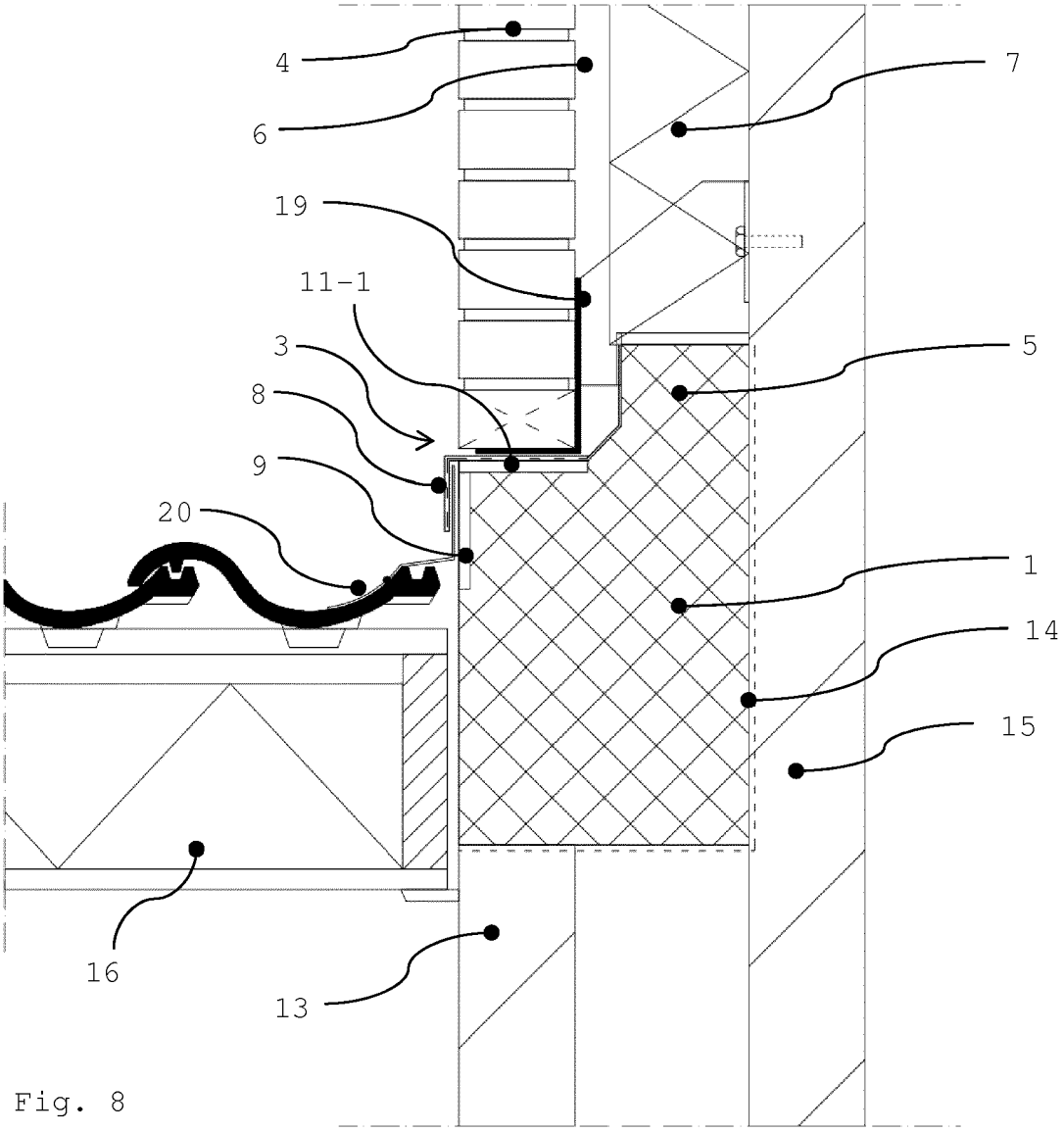

Fig. 8

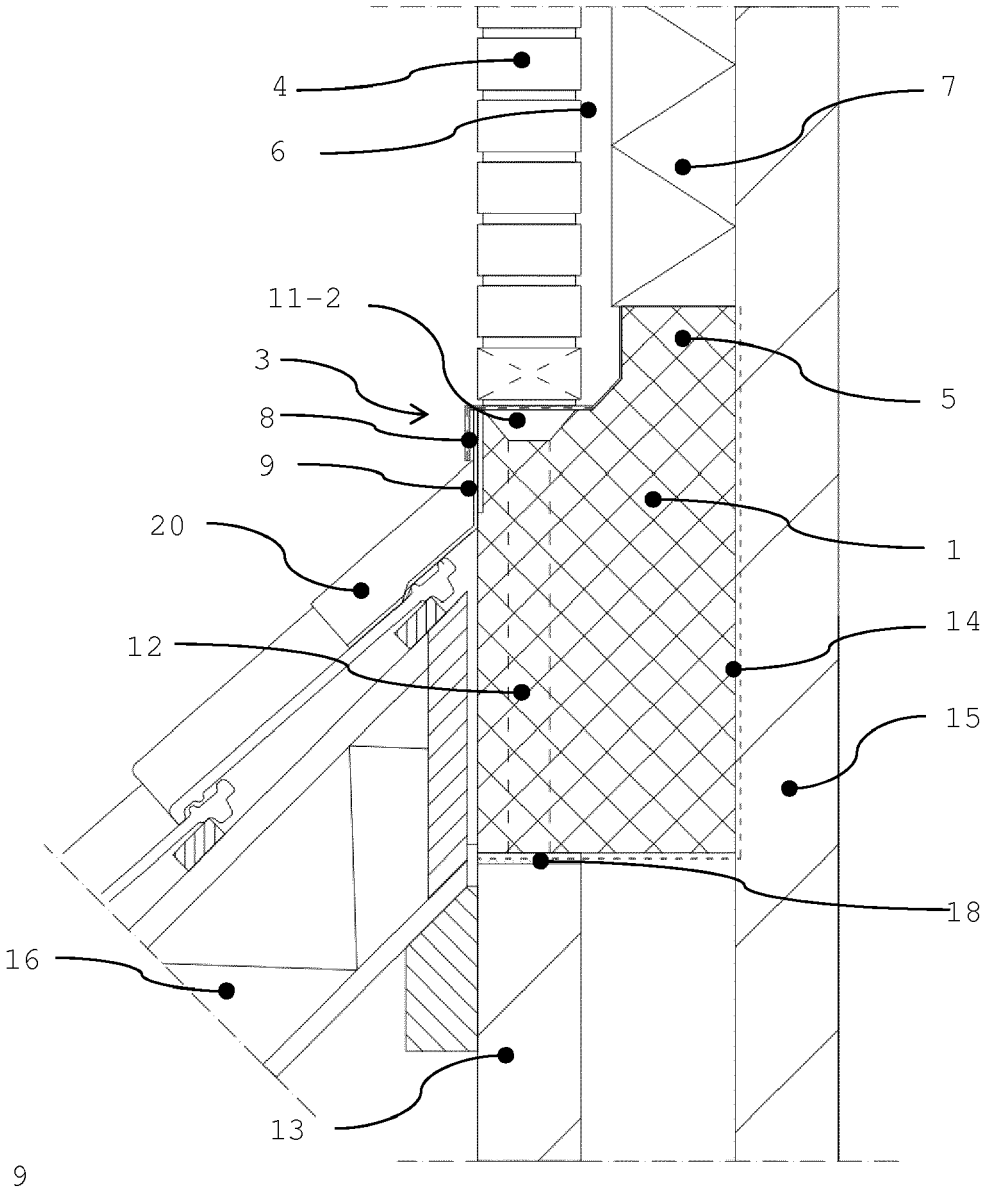

Fig. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 15 17 9483

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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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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 October 2015	Dieterle, Sibille

CATEGORY OF CITED DOCUMENTS

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