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(54) **Insulating construction element**

(57) An insulating construction element comprising a panel having at least one layer formed of an insulating plastic material, and an element for connecting the lateral edges of the panel to the corresponding lateral edges of adjacent panels so as to form an insulating surface. The panel layer (1) comprises along each of its lateral edges (1A-D) a continuous seat (3A, B), said seats being provided at different heights (H1, H2) such that the seat (3A) of a first lateral edge (1B) of the panel is located at a height (H2) different from that of the seat (3B) of a lateral edge (1A) adjacent to the first, the seats

provided in mutually parallel edges being located at the same height, the connection elements (2) being shaped such that on being forced they penetrate in a sealed manner partially into the seats of a first panel and partially into the seats of the lateral edge of the panel adjacent to the first, at least one of said connection elements (2) extending continuously from one panel to the other along the entire insulating surface obtained by connecting the panels together.

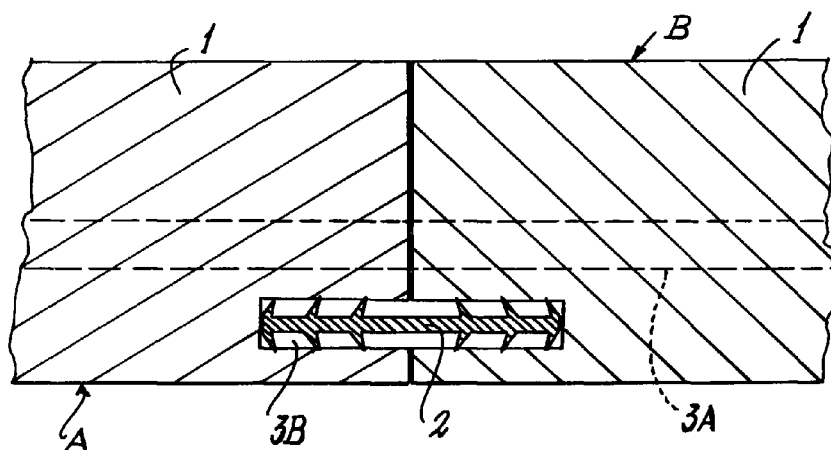


Fig. 2

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Description

This invention relates to an insulating construction element in accordance with the pre-characterising part of the main claim.

In particular the insulating element is of the type suitable for use as an insulating, load-bearing roofing element for supporting flat tiles, bent tiles and the like. The insulating element according to the invention could however also be used in the building field for forming an insulating intermediate layer for vertical walls.

Extruded or moulded plastic panels have been known for some time, particularly in the field of insulating elements for roof coverings. The known panels are arranged side by side with their lateral edges in mutual contact. For connecting the edges of the various panels together, along their sides these generally comprise parts which are shaped such that the side part of one panel fit together with that of the other panel. These solutions do not ensure a perfect seal against the water or moisture which comes into contact with one face of the panel. In this respect, infiltration frequently occurs especially in the corners between one panel and the next in which the shaped parts are interrupted. To obviate this drawback a layer of silicone is applied between one panel and the next. Besides being relatively lengthy, complicated and costly, this solution ensures a seal only for a limited number of years, in which respect it is known that silicone or similar materials degrade within a period of a few years.

It should also be noted that the operations involved in shaping the panel edges so that they can be fitted to the edges of the adjacent panels increase the panel production time and cost. Moreover the shaped parts of the panels are more fragile than the rest of the panel and are therefore frequently subject to breakage, requiring the damaged panel to be scrapped.

An object of the present invention is to provide a covering element which ensures a perfect seal between one panel and the next, although maintaining the same thermal insulation characteristics.

A further object is to provide a covering element which does not comprise weakened parts and is of simple and quick production.

These and further objects which will be apparent to the expert of the art are attained by a panel in accordance with the characterising part of the main claim.

The present invention will be more apparent from the accompanying drawings, which are provided by way of non-limiting example and on which:

Figure 1 is a schematic perspective view of a panel of a construction element according to the invention.

Figure 2 is an enlarged schematic sectional view of two panels connected together (the panels are only partly represented).

Figure 3 is an enlarged schematic cross-section

through a tape for connecting the two panels together.

Figure 4 is a partial schematic perspective view of two panels according to the invention (of a different type from that of Figure 1).

Figure 5 is an enlarged schematic sectional view thereof.

With reference to said figures, an insulating construction element according to the invention comprises a panel 1 and a tape 2 for connecting several panels together.

The panel 1 is preferably of regular geometric shape, for example rectangular, and comprises a slot 3A, B along each of its lateral edges 1A-D. The slots are not all at the same height. The slots provided in its two parallel edges 1A and 1D are at a height from the lower face A of the panel which is less than the height H2 of the slots 3A provided in the other two parallel edges 1B, 1C.

The slots 3A, B extend along the entire length of the panel edges 1A-D and for example could have a depth of about 30 mm and a height of 8 mm.

The panels can be constructed of any known material suitable for the purpose, and in particular the panel could be constructed of extruded or moulded expanded polystyrene. For example the panel could be constructed using the material marketed by DOW ITALIA under the name "STYROFORM".

It should be noted that the panel could comprise both on its upper face B and on its lower face A further known finishing elements, such as foils, sheets or layers of a different material, such as aluminium (on its outer face B) or wood (on its inner face) and/or usual elements (not shown) could be provided for facilitating the mounting of roof covering elements such as flat or bent tiles. For this purpose, for example, the panel could comprise a plurality of slots 4 (shown by dashed lines in Figure 1) for facilitating the mounting of the flat or bent tiles, while at the same time ensuring correct ventilation of the under-tile. The panels, in particular if used for roofing, have a length variable between 200 and 300 cm, a width variable between 50 and 90 cm and a thickness variable between 2 and 10 cm.

In particular, Figures 4 and 5 show roofing panels 10 comprising two grooves 11 and 12 extending along the entire width of the panel and having different depths. The grooves 11 and 12 are arranged to improve the under-tile ventilation, those of smaller depth allowing the housing, if necessary, of wooden laths 13 of a usual tile support structure (not shown).

The tape 2 is flat in shape and is dimensioned to sealedly copenetrate the slots 3A, B of the panel 1. Advantageously, from one or both faces 2A, B of the tape there extend arched projections 5 having the double function of further improving the seal against water or moisture infiltration and of improving the mutual retention between two panels, preventing detachment

or separation of the edges of two mutually connected panels.

The tape can be constructed of any known flexible material suitable for the purpose, for example it could be constructed of polypropylene, modified polyethylene or another plastic material.

When a surface, for example a roof floor, is to be insulated with a plurality of covering elements of the invention, a first panel is laid on the floor and a first portion of four separate tapes 2 is inserted into each of the four slots 3A, B, after which a second panel is fitted to the side of the first panel such that the tape already inserted into the slot in the edge which is to bear against the edge of the second panel also copenetrates the slot in the second panel, the tapes already inserted in slots in those edges of the first panel aligned with edges of the second panel then being inserted in the aligned slots in the second panel. This procedure is continued until the surface to be insulated is totally covered. This procedure ensures that a perfectly sealed connection is also achieved at the corners between one panel and another, preventing water or moisture infiltration from the exposed surface B to the internal surface A. It should be noted that a similar result is obtained if the panels are connected together by continuous tapes inserted in the slots 3A in the panels and by tape pieces only as long as the panel edges 1A, D and inserted in the slots 3B.

Claims

1. An insulating construction element comprising a panel having at least one layer formed of an insulating plastic material, and an element for connecting the lateral edges of the panel to the corresponding lateral edges of adjacent panels so as to form an insulating surface, characterised in that the panel layer (1) comprises along each of its lateral edges (1A-D) a continuous seat (3A, B), said seats being provided at different heights (H1, H2) such that the seat (3A) of a first lateral edge (1B) of the panel is located at a height (H2) different from that of the seat (3B) of a lateral edge (1A) adjacent to the first, the seats provided in mutually parallel edges being located at the same height, the connection elements (2) being shaped such that on being forced they penetrate in a sealed manner partially into the seats of a first panel and partially into the seats of the lateral edge of a panel adjacent to the first, at least one of said connection elements (2) extending continuously from one panel to the other along the entire insulating surface obtained by connecting the panels together.

2. An element as claimed in claim 1, characterised in that the panel seats (3A, B) are slots.

3. An element as claimed in claim 1, characterised in

that the panel layer comprising the slots is constructed of an expanded, extruded or moulded plastic material.

4. An element as claimed in claim 1, characterised in that the connection elements (2) are tape-like and flexible.

5. An element as claimed in claim 4, characterised in that projections (5) extend from at least one face (2A, B) of the tape-like element, to improve the sealing and retention of the panels.

6. An element as claimed in claim 1, characterised in that the connection elements are constructed of an at least partly flexible plastic material.

7. An element as claimed in claim 1, characterised in that the panel is of rectangular shape, along each of its minor edges (1A, 1D) there being provided a first continuous slot (3B) at a first height (H1), along each of the major lateral edges (1B, 1C) there being provided a second continuous slot (3A) equal to the first but at a second height (H2), which is different from the first height.

8. An element as claimed in claim 1, characterised in that the connection elements have a length equal at least to the entire length of the surface obtained by connecting the panels together.

9. An element as claimed in claim 1, characterised in that the connection elements have a length equal at least to one of the panel dimensions.

10. A panel for construction elements, characterised by being conformed as indicated in one of claims 1, 2, 3, 7.

11. A connection element for insulating panels, characterised by being conformed as indicated in one of claims 1, 4, 5, 6, 8, 9.

