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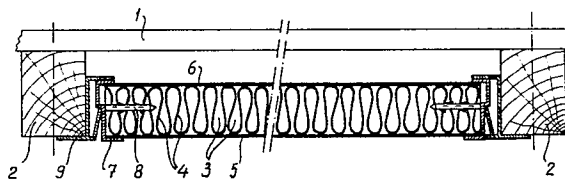
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⑤ Roof or wall construction, provided with heat- and/or sound insulation panels.

⑤ Roof or wall construction of a building, which inwardly is provided with regularly spaced beams (2) against which somewhat rigid insulation panels (3) are attached, each insulation panel (3) being placed between facing sides of two juxtaposed beams (2), said sides of said beams (2) being provided with profile sections (9) and the corresponding endfaces of the insulation panel (3) being provided with fixed profile sections (7) cooperating in a snapping way with the profile sections (9) applied to the beams (2).



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Roof or wall construction, provided with heat- and/or sound insulation panels.

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The invention relates to a roof or wall construction of a building, which inwardly is provided with regularly spaced parallel beams, against which somewhat rigid insulation panels are attached, each insulation panel being placed between facing sides of two juxtaposed  
5 beams, said sides of said beams being provided with profile sections.

A construction of this kind is known from Dutch patent application 78.00197. According to said patent application compressible strips of mineral wool are placed between the beams and the longitudinal edges of the rigid panels facing said beams. By this it is possible  
10 to mount the rigid panels, while no cold bridges are created and the distance between the beams is not very critical. Further no difficulties will be encountered in case the cross-section of the rafters or girders, thus the beams, is not rectangular because profile sections are applied before. After assembling the longitudinal edges of the  
15 rigid panels and also the strips of mineral wool rest on the flanges of the profile sections.

Special fixing members are applied, which at distances from each other are connected with the profile sections attached to the rafters or girders.

20 As said strips and said edges have to rest on the flanges of the profile sections the latter have to be rather wide, which is detrimental to the appearance of the construction.

Because the fixing members are gripping behind the upright leg of each profile section, said profile section cannot be invisibly  
25 attached to the beams.

Disassembling of the panels is very difficult.

Because the panels must consist of insulating material they are not strong.

It is the object of the invention to provide a construction which,  
30 while maintaining all advantages of the known construction will make

superfluous the special fixing elements and the strips of mineral wool and by which are avoided all mentioned disadvantages.

According to the invention said object is attained in that the corresponding endfaces of the insulation panel are provided with  
5 fixed profile sections cooperating in a snapping way with the profile sections applied to the beams.

Thus the panels are, as it were, surrounded by a frame, in consequence of which they are self-supporting.

The profile sections need not to be wide. The panels are assembled  
10 and disassembled transversely with respect to their plane.

The profile sections can be invisibly attached to the beams.

When the profile sections are attached to the beams use can be made of a gauge to space the profile sections in the proper way. If said spacing does not correspond to the spacing of the beams, fitting  
15 lathes can be placed between the profile sections and the beams. This is also necessary if the cross-section of the beams are not rectangular, but for example half round, such as these may be found in old buildings.

After application of all profile sections in the building the insulation is very simple. The profile sections provided with insulation  
20 panels only have to be pushed between the beams until the cooperating profile sections snap into each other.

It will be clear that the invention also may be applied to walls. In that case first of all beams have to be attached against the innerside of the wall.

25 Also then a static air volume remains between the insulation panels and the wall to be insulated, which improves the insulation.

It is without saying that the invention is not only intended for old building constructions. It can be applied with the same effect to new building constructions. Also then the spacing of rafters or  
30 girders is not always constant.

The invention will be explained with reference to the drawings, in which examples of the embodiment of the invention are shown.

Fig. 1 shows a section of a part of a roof construction provided with an insulation panel;

35 figures 2 and 3 show enlarged details; and

Figure 4 corresponds to fig. 3 and shows a modified embodiment.

In fig. 1 a roof is designated by 1, which roof can be of any type. It can be a flat roof or an inclined roof. The roof can be covered with plates, rooftiles, etc. However, such a roof is always inwardly  
5 provided with parallel rafters or girders, designated by 2.

The insulation panels, known per se, are designated by 3 and for example may consist of glass fiber web designated by 4, covered on both sides with a rigid layer 5 resp. 6. The lowermost layer 5 may be for example a fire resisting or fire delaying layer, which possibly  
10 also can serve as a decoration. By this layer 5 the rigidity of the panel 3 is improved. The insulation panel 3 must have a sufficient rigidity to show only a slight deflection at normal distance between the girders 2 of 110-120 cm. The upper plate 6 can consist of a water-proof web to prevent possible moisture weepage from penetrating into  
15 the insulating panel 3. The air space between the panel 3 and the roof 1 serves as ventilation and discharge of vapour.

At least two endfaces of the insulation panel 3 are provided with a profile section designated by 7. This profile section 7 is enlarged shown in fig. 3. The profile section has a substantial U-shaped cross-  
20 section with right angles and preferably consists of plastic material. The bottom of the U is designated by 7a and is stepped. Both legs are designated by 7b and 7c. Bottom 7a is provided with a fixing member 8, by means of which the profile section 7 can be attached to the insulation panel 3. Both legs 7b and 7c grip around the edge of  
25 the insulating panel 3.

Also the girders 2, which in fig. 1 and 2 have a rectangular cross-section, are provided with profile sections designated by 9. This profile section preferably consists also of plastic material. This profile section 9 is enlarged shown in fig. 2. The profile section  
30 9 has in cross-section a Z-shaped form with right angles. The central web is designated as 9a and the both legs as 9b and 9c. The profile section 9 may be attached to the girder 2 by means of screws or nails 10. It is without saying that it is also possible to glue the profile section 9 to the girder 2.

35 The profile section 9 contains a somewhat resilient flange 9d, which

is joined at the transition between the legs 9a and 9b. This flange 9d is directed to the roof l.

From the drawing it will be clear that if the insulation panel 3 is moved upwardly between the two girders 2, the free edge of the flange 9d will snap behind the step in the leg 7a of the profile section 7.

The profile sections 7 can be applied beforehand in the factory or in the workshop to the insulation panel 3. In the building to be insulated all profile sections 9 are attached first to the girders concerned. If the girder spacing shows variations, a fitting lath can be applied between the leg 9a and the sidewall of each girder 2. In old building constructions it can be found that the girders do not have a rectangular cross-section. In that event it will also be necessary to make use of fitting lathes. Said fitting lathes are not shown in the drawing. To obtain the proper spacing of the profile sections 9 use may be made of a gauge not shown.

As the profile sections 7 and 9 consist of plastic material, no cold bridges are formed. Moreover, air volumes are created between the profile sections 7 and 9, giving additional insulation.

To cover the gap between the profile sections 7 and 9 is it possible to apply an additional leg 7d to the profile section 7, in fig. 2 designated in dotted lines.

Fig. 4 nearly corresponds to fig. 3; however, the bottom 7a extends in the same direction as the lip 9d. Consequently the gap between the bottom 7a and the lip 9d is smaller, so that an additional lip 7d is not required.

For demounting the insulation panels 3 it is necessary to push the flanges 9d outwardly by means of a screw driver or the like. This would be impossible if the leg 7d is present. However, said leg 7d has then to be provided with an aperture to be able to apply a screw driver or the like.

The same profile sections 7 could be used on the other end faces of the insulation panel 3 to join two adjacent insulation panels with a groove. For that purpose each of the end faces is provided with a profile section 7, without a lip 7d, which profile sections 7 are rotated with respect to each other over  $180^{\circ}$ .

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The lip 7d may possibly also be applied to the profile section 9 and then extend in line with the leg 9d. This is not shown in the drawing.

Instead of having a Z-shape the profile section 9 can also be L-shaped. In that case leg 9b is lacking.

C L A I M S

1. Roof or wall construction of a building, which inwardly is provided with regularly spaced parallel beams, against which somewhat rigid insulation panels are attached, each insulation panel being placed between facing sides of two juxtaposed beams, said sides of  
5 said beams being provided with profile sections, c h a r a c t e r i z e d in that the corresponding endfaces of the insulation panel provided with fixed profile sections cooperating in a snapping way with the profile sections applied to the beams.
2. Roof or wall construction according to claim 1, c h a r a c -  
10 t e r i z e d in that the profile section of a beam has a Z-shaped cross-section with right angles and a somewhat resilient flange directed to the roof or the wall.
3. Roof or wall construction according to claim 1, c h a r a c -  
15 t e r i z e d in that the profile section of a beam has a L-shaped cross-section with a right angle and a somewhat resilient flange directed to the roof or the wall.
4. Roof or wall construction according to claim 2 or 3, c h a r a c -  
t e r i z e d in that the flange joins the web of the profile section near one of the right angles or one of the ends.
- 20 5. Roof or wall construction according to claim 1, 2, 3 or 4, c h a r a c t e r i z e d in that the profile section on the insulation panel has a L-shaped form, of which the leg lying against the endface of the insulation panel is provided with a projecting edge snapping behind the free edge of the flange of the profile section  
25 on the beam cooperating therewith, which leg being further provided with fixing means to connect the profile section with the insulation panel.
6. Roof or wall construction according to claim 5, c h a r a c -  
30 t e r i z e d in that the leg lying against the endface of the insulation panel is stepped, whereby the projecting edge is formed by the step.



7. Roof or wall construction according to claim 1, 2,3, 4, 5 or 6, c h a r a c t e r i z e d in that a second leg is joining to the leg of the profile section lying against the endface of the insulation panel, so that the profile section has a U-shaped cross-section, whereby  
5 both parallel legs are lying against the front- and backside of the insulation panel.

8. Roof or wall construction according to claim 1, 2, 3, 4, 5, 6 or 7, c h a r a c t e r i z e d in that also the other endfaces of each insulation panel contain a same profile section, both profile  
10 sections being directed in opposite directions, so that adjacent profile sections of adjacent insulation panels are fitting into each other as a groove.

9. Roof or wall construction according to claim 1, 2, 3, 4, 5, 6 or 7, c h a r a c t e r i z e d in that the profile section on  
15 each insulation panel contains a lip on the side turned away from the roof or the wall, said lip being directed from the endface of the insulation panel, said lip covering the gap between profile sections cooperating with each other.

10. Roof or wall construction according to claim 1, 2, 3, 4, 5, 6  
20 or 7, c h a r a c t e r i z e d in that the profile section on the beams contains a lip on the side turned away from the roof or the wall, said lip being directed from the corner of the profile section on the beam to the endface of the insulation panel, said lip covering the gap between profile sections cooperating with each other.

25 11. Roof or wall construction according to claim 9 or 10, c h a r a c t e r i z e d in that the lip is provided with interruptions to make possible demounting of the insulation panels.

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fig-1

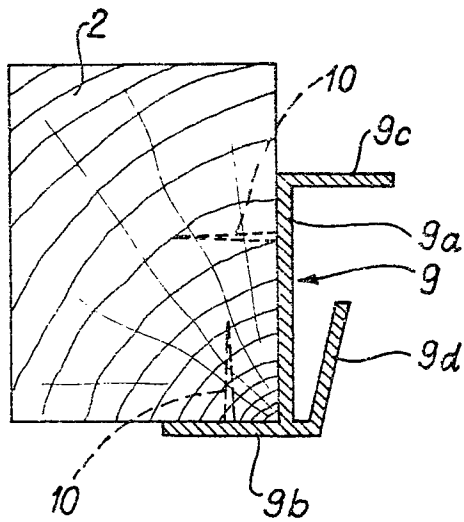
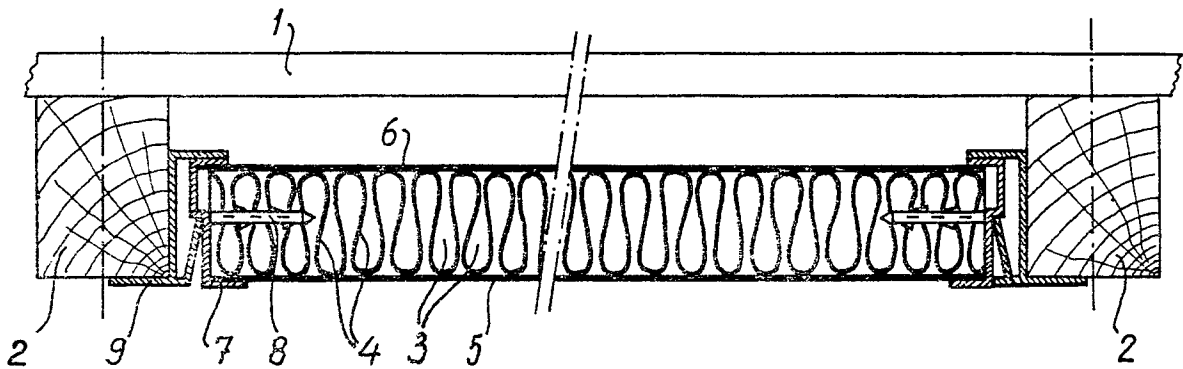
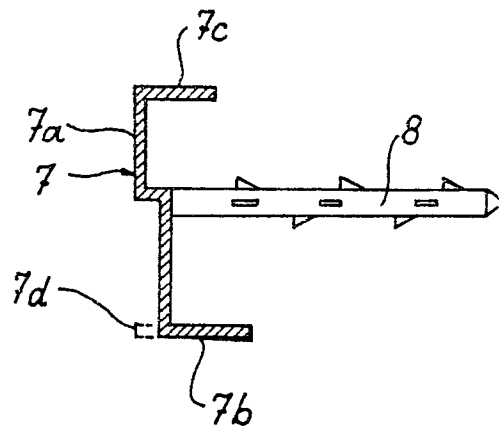
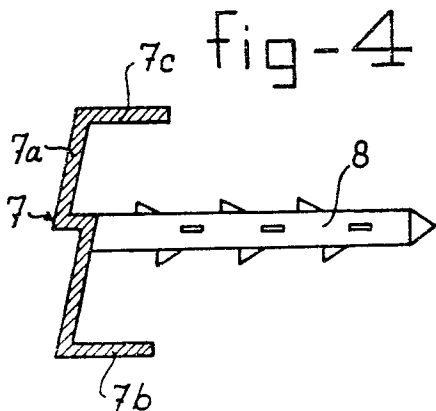


fig-2

fig-3





DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.) <sup>3</sup>
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
D	<u>NL - A - 78 00197 (REDLAND)</u> * Page 5, lines 31-35; page 6, lines 1-35; page 7, lines 1-12; figures 1-3 * --	1	E 04 B 1/90 1/80 E 04 D 13/16
	<u>US - A - 4 155 206 (PLAYER)</u> * Column 3, lines 56-69; column 4, lines 1-68; column 5, lines 1-36; figures 1-4 * --	1	
A	<u>DE - A - 2 537 604 (SCHNEIDER)</u> * Page 3, lines 15-31; page 4, lines 1-12; figures 1-4 * --	1	TECHNICAL FIELDS SEARCHED (Int. Cl.) <sup>3</sup>  E 04 B E 04 D
A	<u>DE - A - 2 162 193 (ROOF-ELEMENT)</u> * Page 2, lines 11-31; page 3, lines 1-20; figure 1 * ----	1	
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
<input checked="" type="checkbox"/> The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	19-02-1981	SCHOLS	