(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 684 348 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **95201078.3**

(51) Int. Cl.[6]: **E04B 1/94**, E04C 2/26

(22) Date of filing: **26.04.95**

(30) Priority: **24.05.94 NL 9400839**

(43) Date of publication of application:
29.11.95 Bulletin 95/48

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

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(54) Panel.

(57) The invention relates to a panel provided with two cover plates (1,2) and with insulating material located between said cover plates. A layer (9) of a fire-retardant material is provided between the cover plates (1,2), which is arranged between two layers (7,8) of an insulating material. At least one of the cover plates (1,2) may be profiled, seen in its longitudinal direction, in such a manner that parts of the cover plate (1,2) are staggered with respect to each other in a direction perpendicularly to the longitudinal direction of the panel.

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The invention relates to a panel provided with two cover plates and with layers of an insulating material and of a fire-retardant material located between said cover plates.

A panel of this type is known from DE-A-4 137 241.

With this known construction layers of a fire-retardant material abut against the inside of the cover plates, whilst a layer of insulating material is arranged between said layers of fire-retardant material. This arrangement seems to be the only logic arrangement, since the layers of fire-retardant material are located closest to those surfaces that will be exposed to great heat in case of a fire.

According to the invention, however, a layer of a fire-retardant material is provided between two layers of a thermally insulating material abutting against said cover plates.

Surprisingly it has become apparent, that with such a construction of the panel it is still very well possible to meet the requirements with regard to the fire-retarding effect that are made of such panels, which are for example used for making walls in buildings. The provision of layers of an insulating material on the outside of the core of the panel, which is to be clad with the cover plates, thereby offers great advantages in comparison with a construction wherein the outsides of the panel to be clad with the cover plates are made up of layers of a fire-retardant material.

In many cases the outer surfaces of the core of the panel made up of the layers of insulating material and fire-retardant material require machining, for example trimming or milling, so as to give the core its correct thickness and/or to form grooves which are to correspond with a profiled version of a cover plate.

The outer surfaces of a core can be worked much more easily when said outer surfaces are made up of an insulating material than when said outer surfaces are made up of a fire-retardant material, which is usually much harder than the thermally insulating material. Furthermore, when providing the cover plates on the core it will be readily possible to press any roughnesses still present in the insulating material or any impurities present on the insulating slightly into the layers of insulating material, so that an adequate smoothness and a taut outline of the cover plates can be ensured, while retaining conventional simple methods of providing the cover plates, which is of great importance in order to ensure an attractive appearance of the panels.

The invention will be explained in more detail hereafter with reference to the accompanying Figure, which is a diagrammatic perspective view of a part of a panel according to the invention.

The panel shown in Figure 1 comprises two cover plates 1 and 2 of a metal, for example steel, which make up the outside of the panel. As is shown in the Figure, the cover plates are profiled, in such a manner that for example parts 3 and 4 of cover plate 1 are staggered with respect to each other, in a direction perpendicularly to the longitudinal direction of the panel. In a similar manner the cover plate 2 comprises parts 5 and 6 which are staggered in a direction perpendicularly to the longitudinal direction of the panel.

The longitudinal edges of the cover plates 1 and 2 are flanged in the manner shown in the Figure, which is known per se, such that a longitudinal edge of corresponding panels fits between the flanged parts of the cover plates 1 and 2 of another longitudinal edge of a correspondingly shaped panel.

Two layers 7 and 8 of a thermally insulating material, generally expanded polystyrene, are provided between the cover plates 1 and 2, whilst a layer 9 of a special fire-retardant material is provided between said layers 7 and 8.

As already explained above, the outer layers of polystyrene can be readily machined, inter alia with a view to forming longitudinal grooves for receiving the deflected parts 4 and 5 of the cover plates 1 and 2. Partly because of the slightly resilient nature of the polystyrene said cover plates 1 and 2 can thereby be glued to the layers 7 and 8 of an insulating material in such manner as to closely abut against said layers.

It is preferred to form grooves 10 and 11 extending in the longitudinal direction of the profile in the longitudinal edges of the layer 9 of a fire-resistant material. When assembling a wall consisting of panels of this type tongues may be inserted in the grooves 10 and 11 of adjoining panels in order to prevent the occurrence of a leak near the layers of fire-retardant material.

Another possibility is to coat the sides of the layers 7 - 9 with a fire-resistant paint, which will foam at high temperatures, thus providing a seal between adjoining panels.

Furthermore a fire-retardant putty may be provided between adjoining panels when assembling a wall on the construction site.

Claims

1. A panel provided with two cover plates and with layers of an insulating material and of a fire-retardant material located between said cover plates, characterized in that a layer of a fire-retardant material is provided between two layers of a thermally insulating material abutting against said cover plates.

2. A panel according to claim 1, characterized in that at least one of said cover plates is profiled, seen in its longitudinal direction, in such a manner that parts of said cover plate are staggered with respect to each other in a direction perpendicularly to the longitudinal direction of the panel, and that said layers of a thermally insulating material are provided with recesses for receiving parts of said cover plate.

3. A panel according to claim 1 or 2, characterized in that the longitudinal edges of said panels are profiled in such a manner that a longitudinal edge of corresponding panels can be inserted into ends of the cover plates of another panel projecting from said thermally insulating material of said other panel.

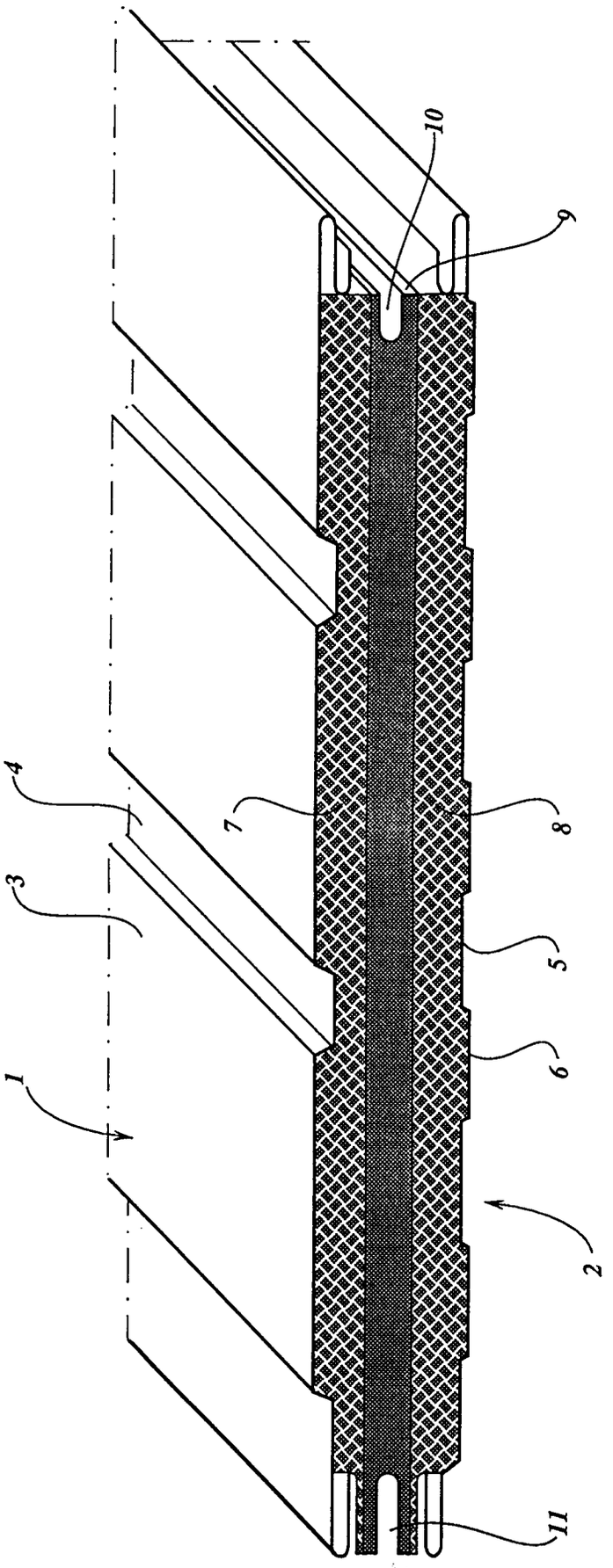
4. A panel according to any one of the preceding claims, characterized in that grooves are formed in the longitudinal edges of said layer of a fire-resistant material.

5. A panel according to any one of the preceding claims, characterized in that said cover plates are made of a metal.

6. A panel according to any one of the preceding claims, characterized in that said insulating material is expanded polystyrene.

7. A panel according to any one of the preceding claims, characterized in that edges of said layers of material are coated with a fire-resistant paint.

8. An assembly comprising panels according to any one of the preceding claims, characterized in that a fire-resistant putty is provided between adjoining panels.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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 1078

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,A	DE-A-41 37 241 (D. STADTER) 19 May 1993 * column 2, line 28 - line 45; figure 1 *	1,5	E04B1/94 E04C2/26
A	FR-A-2 293 656 (BRODERNA WESTMANS PLATSLAGERI) 2 July 1976 * page 6, line 2 - line 7; figures 9,10 *	2	
A	GB-A-2 259 887 (MODULAR ERECTORS) 31 March 1993 * page 9, line 6 - page 11, line 14; figures 1,2 *	3,6	
A	DE-A-36 22 648 (MÄRKISCHE BAUELEMENTE) 21 January 1988 * column 3, line 51 - line 56; figure 1 *	4	
A	DE-U-93 16 000 (GEBR. KNAUF WESTDEUTSCHE GIPSWERKE) 5 January 1994 * page 4, paragraph 6; figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E04B
E04C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 September 1995	Kriekoukis, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

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EPO FORM 1503 03.82 (P04C01)