



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
09.12.2009 Bulletin 2009/50

(51) Int Cl.:
E04D 13/08 (2006.01) E04D 12/00 (2006.01)

(21) Application number: **08425735.1**

(22) Date of filing: **19.11.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(71) Applicant: **Pre-Bit S.p.a.**
84091 Battipaglia (SA) (IT)

(72) Inventor: **Piazzì, Manlio**
84091 Battipaglia (SA) (IT)

(30) Priority: **06.06.2008 IT NA20080036**

(54) **System for manufacturing ventilated walls and roofs with preassembled supporting insulating panels**

(57) This invention is based on a system for manufacturing undertile roofs or ventilated walls. It is made of a metal frame consisting of metal section bars and special pieces jointly fixed to a sheet made from an in-

sulating material (extruded foam polystyrene, sintered foam polystyrene, foam polyurethane, rock wool, etc.) made supporting by the insertion of metal section bars on its lower surface.

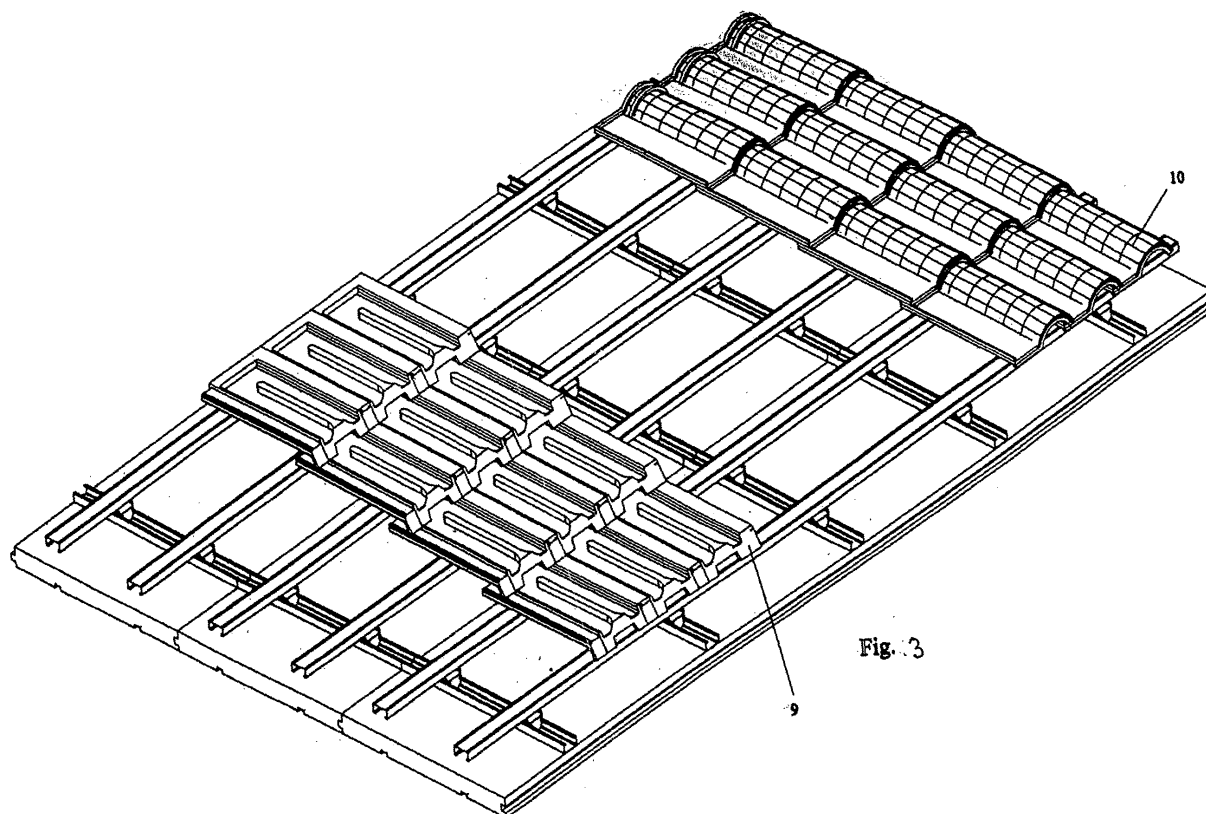


Fig. 3

Description

Technical field

[0001] This invention is based on an innovative system for manufacturing undertile roofs or ventilated walls. It is made of a metal frame consisting of metal section bars and special pieces jointly fixed to a sheet made from an insulating material (extruded foam polystyrene, sintered foam polystyrene, foam polyurethane, rock wool, etc.) made supporting by the insertion of metal section bars on its lower surface.

State of technique

[0002] Today systems with pre-fabricated panels for the manufacturing of undertile ventilated roofs do not exist. The existing panels are not modular and do not allow the universal application of tiles and pantiles of any size. They are also not provided with zinc plated battens and are not self-protected with a transpiring and water resistant membrane. They cannot always support the load of snow and men. The existing prefabricated undertile systems are only microventilated and therefore they are not conforming with the rule on ventilated roofs, which requires a minimum thickness of 5 cm of the air blade. As regards ventilated walls, the applicant knows that they are manufactured by first applying a metal frame and then, within the frame, the insulating material with big costs and long working times.

[0003] Purpose and advantages of this invention

[0004] The purpose of this invention is that of developing a preassembled panel system which allows to obtain a supporting covering of a ventilated roof.

[0005] Another purpose is that of providing a modular panel system allowing the application of any kind of tile or pantile.

[0006] A further purpose of this invention is that of obtaining a panel with its own supporting structure which by its application on the wall, allows to have a ventilated wall with an external insulation.

[0007] These and other advantages will emerge from the following description of the system.

[0008] Description of drawings and procedure for implementing this invention

[0009] The idea of this system is that of manufacturing a composed metal frame being supporting thanks to metal section bars and pieces jointly fixed to an insulating material sheet (extruded foam polystyrene, sinterized polystyrene foam, polyurethane foam, rock wool, etc.) provided with metal section bars on its lower surface. This idea will be better understood if you refer to the enclosed figures, where it is reported in a version which is only as an example.

[0010] Fig.1 is an exploded view of the system, it well shows the components of the system itself.

[0011] Fig.2 is an exploded view in which the mounting of the system components is shown.

[0012] Fig.3 shows the frame with some tiles and pantiles applied on it.

[0013] Fig.4 shows a kind of panel for wall linings to be wall applied.

5 **[0014]** Fig. 5 shows the composition of more panels for walls.

[0015] With reference to the figures, the system avails itself of an insulating material sheet (1), to the lower surface side of it metal omega section bars (2) are embedded and transversally applied.

10 **[0016]** On the upper surface of the above said sheet spaced and parallel pitch U bars (3) with turned edges (4) are applied.

[0017] An element (5) with a quadrangular base having holes in the middle and end specially mushroom shaped wings, with opposed and turned faces, two of them upwards (6) and the other two ones downwards (7), functions as junction element between the section bar (3) and the section bar (8) orthogonally superimposed over the former, this one being a U bar too and having turned edges.

[0018] The junction element (5) is provided with an end wing (6) or (7), two notchings (11). The wings (7) are shorter than the wings (6).

25 **[0019]** Being the components so described and illustrated, it is evident that after having fixed the section bars (3) to the sheet (11), the junction elements (5) can be applied to the above said section bars, by inserting the wings (7) within the U bar by a light snap pressure, then they can be suitably spaced from each other.

30 **[0020]** Then, on the wings (6) the section bars (7) can be snap inserted and fixed by a bolt.

[0021] The above described and illustrated mounting represents a whole module which can be used as under roof element on which tiles (9) and pantiles (10) can be applied and fixed.

35 **[0022]** The mounting described and illustrated above represents a module which can be used as a ventilated wall element with external insulation. In this case the panel is joined to the wall surface by a mechanic fixing with screws inserted in the special holes of the rail structurally fixing the panel, provided with ledges on four sides, allowing a rapid fixing to other panels, during mounting.

[0023] The above said panels can support different kinds of lining: wood, aluminium, polycarbonate, etc.

45 **[0024]** The junction elements (5) can be more or less high to determine the existing space between the section bar (3) and the section bar (8), according to the desired ventilation corridor. They are made, as well as U and omega shaped section bars and the fixing screws from 6/10 zinc plated steel.

[0025] The advantages of the above described system are:

55 a supporting panel reinforced by lower metal section bars, linked to metal upper section bars, is obtained; it becomes modular in order to allow the wall application with any kind of lining and

the roof application with any kind of tile or pantile, since the pitch is decided at the moment of installation and it does not need any modification or special equipment;

it guarantees a perfect ventilation, ventilation channels have got a minimum light of 5 cm., as it is provided by the regulations in force;

reduction of stock amounts for retailers, since this product is suitable for any kind of existing tiles;

an only system for both thermal and acoustic insulation is obtained;

the laying of the covering allows to operate with the utmost safety, because all panels are made of a supporting kind by the two section bars inserted on the side of panels to be laid on the underlying structure.

[0026] The ventilated walls manufactured according to the present invention, can reduce heat in the building during the hot season, thanks to the partial reflection of solar radiation from the lining, the air space ventilation and the insulating material application, thus obtaining a big reduction of air conditioning costs.

[0027] Viceversa, in the winter season, the ventilated faces keep the heat fostering a big reduction of heating costs.

[0028] The "chimney" effect gives place to a natural ventilation, from which the term ventilated face is born, guaranteeing big benefits due to the elimination of heat and moisture and a high inhabiting comfort.

[0029] Moreover ventilated walls easily cause the reflection of external noises thanks to their composition made from facing layers, air spaces and insulating material which facilitate acoustic absorption.

[0030] Formal and structural changes, within the same invention idea, which is defined by the following claims, can be made to the above described solution.

Claims

1. System for manufacturing ventilated walls and roofs with supporting insulated preassembled panels consisting of a sheet made from insulating material with metal section bars inserted on the lower surface, **characterized by** a variable number of metal parallel arranged U bars set on the upper surface, which function as rails for receiving junction elements (5) which, pitch arranged, receive, on their turn, U shaped section bars on which tiles or pantiles are then fixed.

2. System for manufacturing ventilated walls and roofs with supporting insulated preassembled panels as referred to by claim 1), **characterized by** junction elements (5) which can be snap inserted into the special U bars (3) and (8) receiving them.

3. System for manufacturing ventilated walls and roofs

with supporting insulated preassembled panels as referred to by claim 1), **characterized by** elements (5) which cannot come out from their housings because of their notchings which are held by the shaped edges of the section bar on which they are fixed.

4. System for manufacturing ventilated walls and roofs with supporting insulated preassembled panels as referred to by claim 1) **characterized by** junction elements (5) which can snap receive, on their turn, the section bars on which tiles or pantiles or the external lining of the building are fixed.

5. System for manufacturing ventilated walls and roofs with supporting insulated preassembled panels as referred to by claim 1) **characterized by** section bars which are fixed to the upper surface of the sheet (1) and those ones which are fixed to them by the element (5), are orthogonal to each other.

6. System for manufacturing ventilated walls and roofs with supporting insulated preassembled panels as referred to by claim 1) **characterized by** the elements (5) functioning as spacers between the tiles or pantiles and the insulating panels, in the case of a roof, or between the external lining and the insulating panels, in the case of a wall, for giving place to a suitable ventilation corridor.

7. System for manufacturing ventilated walls and roofs with supporting insulated preassembled panels as referred to by claim 1) **characterized by** the elements (5) which can be chosen in the size which best helps to create a suitable ventilation corridor.

8. System for manufacturing ventilated walls and roofs with supporting insulated preassembled panels as referred to by claim 1) **characterized by** the elements (5) which can be sliding within and along the section bars (3) when they are not fixed by screws.

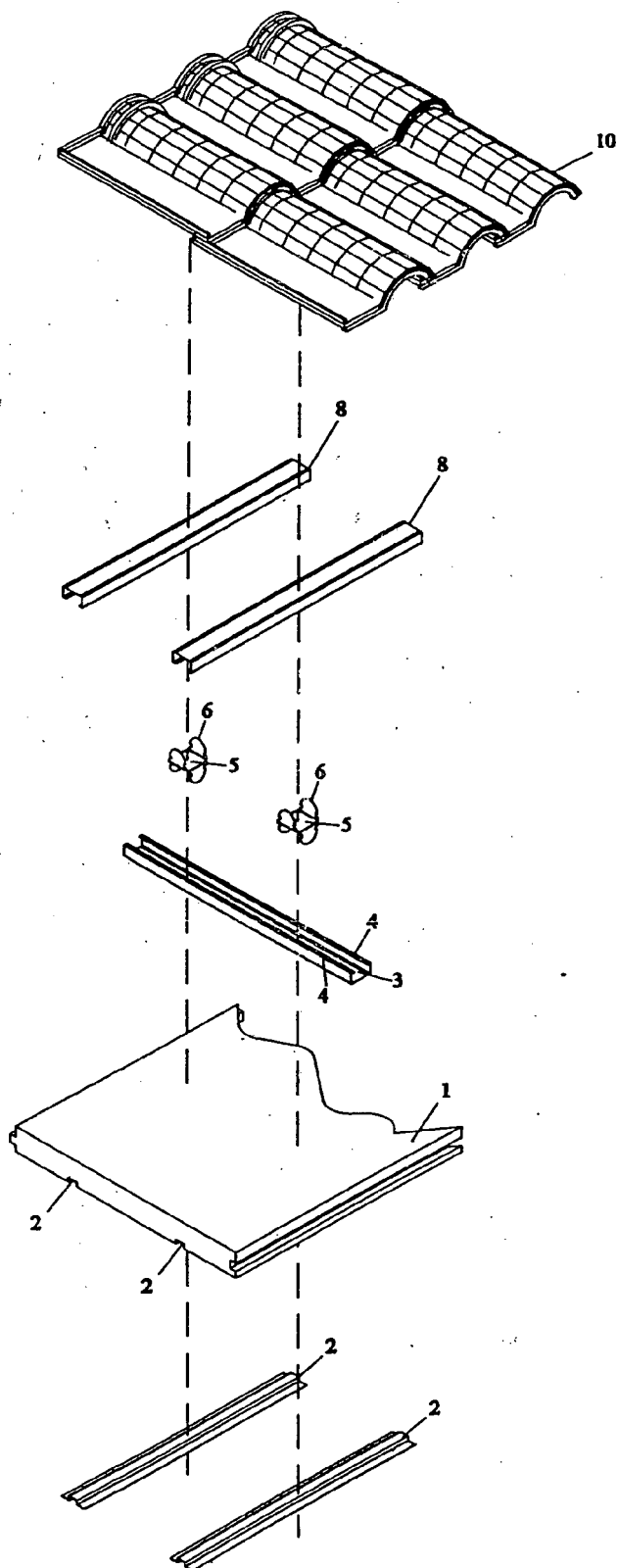


Fig. 1

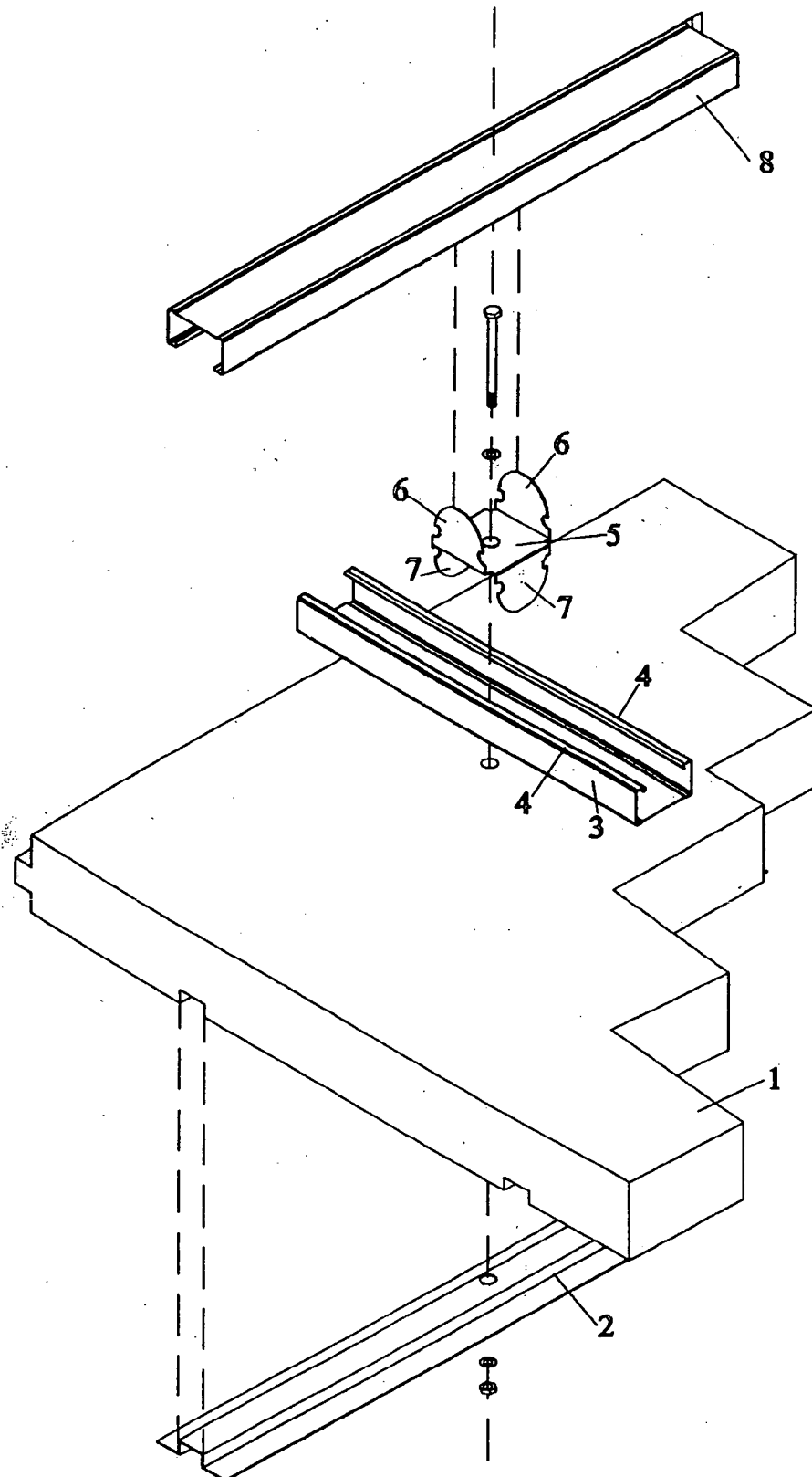
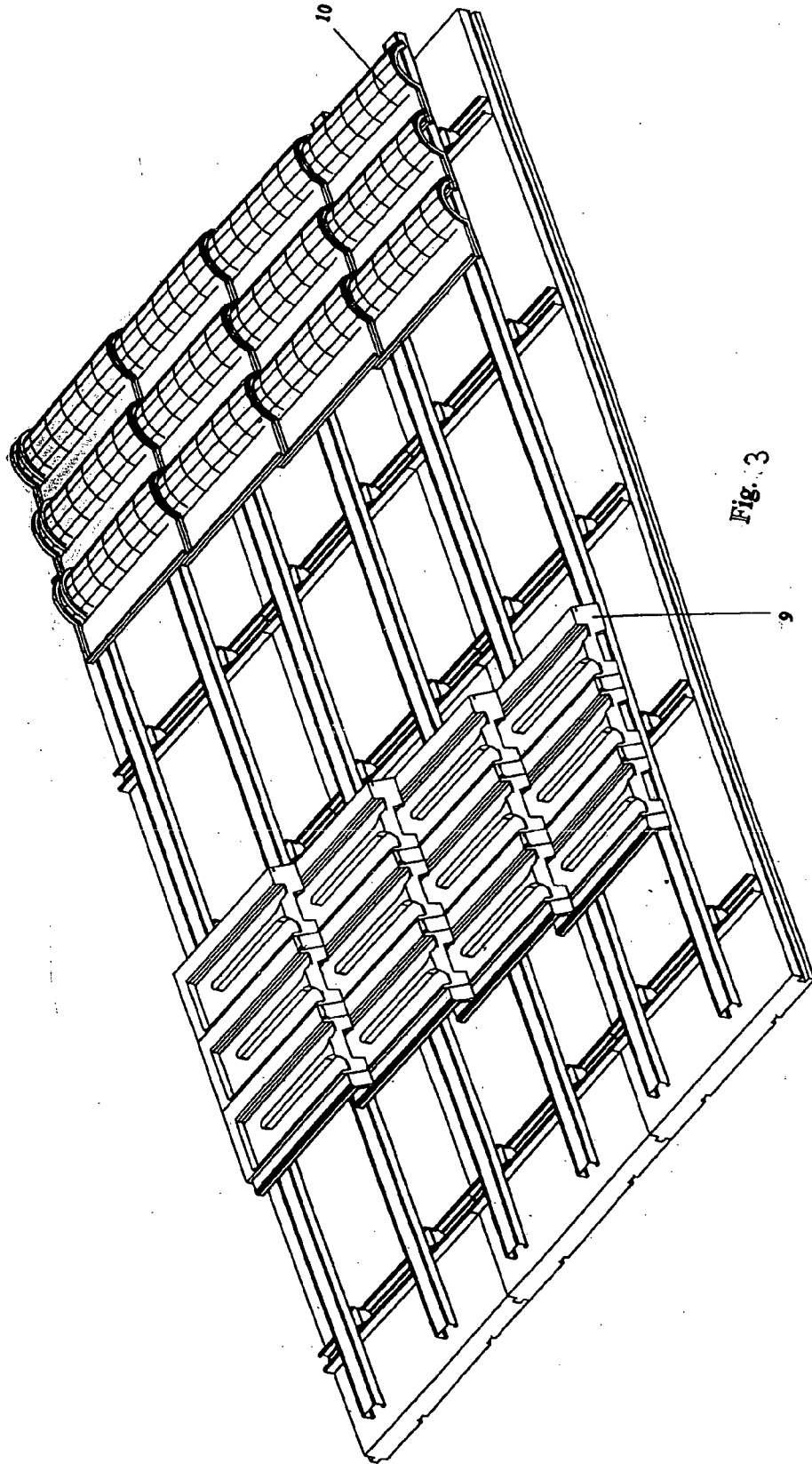


Fig. 2



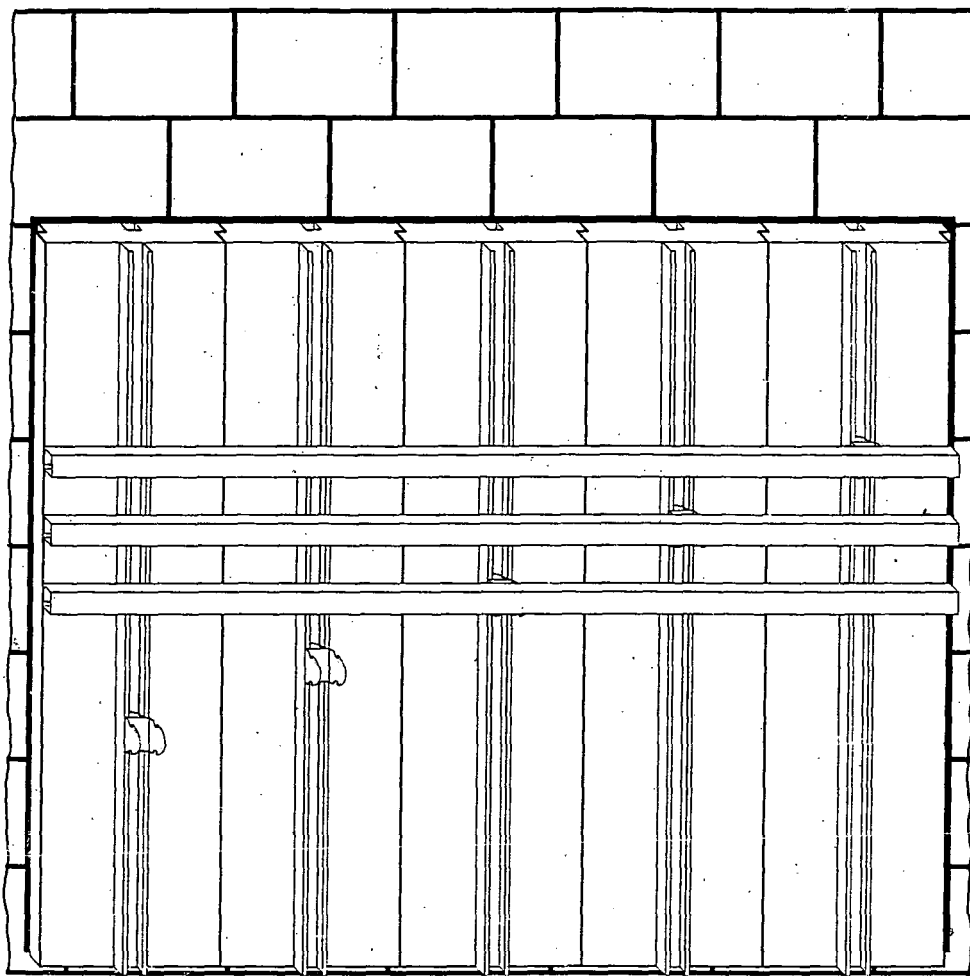


Fig. 5

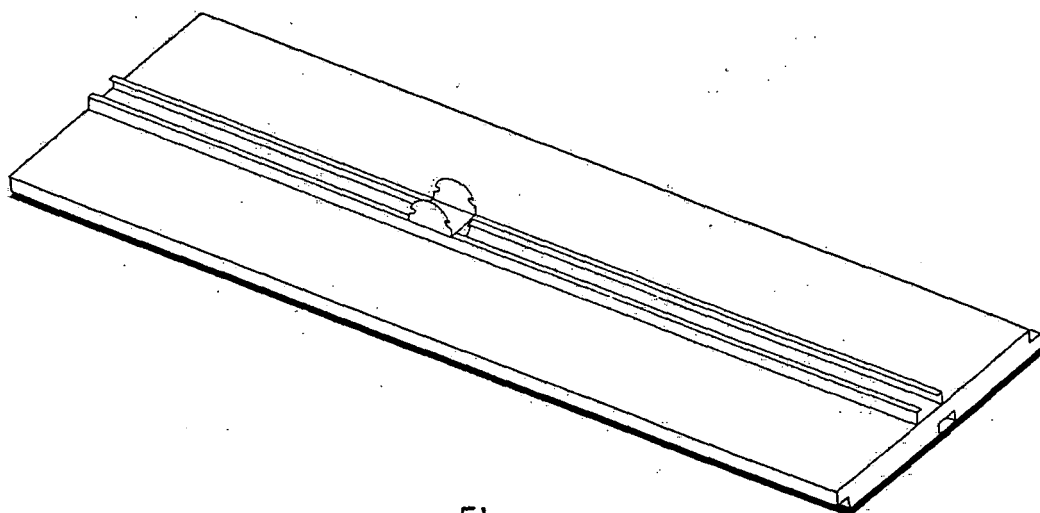


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 08 42 5735

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2007/227086 A1 (BEAVERS JAMES L [US] ET AL) 4 October 2007 (2007-10-04) * figures 6,10a *	1	INV. E04D13/08 E04D12/00
X	US 5 799 462 A (MCKINNEY CRAIG B [US]) 1 September 1998 (1998-09-01) * figure 1 *	1	
X	EP 0 085 011 A (CALAFELL CLAUDE) 3 August 1983 (1983-08-03) * figures 5-7 *	1	
A	WO 03/100189 A (UMICORE [BE]; VERHEYEN STEFAAN [BE]) 4 December 2003 (2003-12-04) * figure 3 *	1	
A	DE 29 44 241 A1 (LANDOLT FRITZ AG) 14 May 1980 (1980-05-14) * figure 1 *	1	
A	FR 2 878 876 A (SAINT GOBAIN ISOVER SA [FR]) 9 June 2006 (2006-06-09) * figure 1 *	1	TECHNICAL FIELDS SEARCHED (IPC)
A	FR 2 517 800 A (SFP SARL [FR]) 10 June 1983 (1983-06-10) * figures 1,2 *	1	E04D E04F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 August 2009	Examiner Demeester, Jan
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 3
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 42 5735

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-08-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007227086 A1	04-10-2007	NONE	
US 5799462 A	01-09-1998	US 6036471 A	14-03-2000
EP 0085011 A	03-08-1983	NONE	
WO 03100189 A	04-12-2003	AT 307241 T	15-11-2005
		AU 2003273149 A1	12-12-2003
		CA 2485139 A1	04-12-2003
		DE 60301964 T2	27-07-2006
		DK 1509662 T3	06-03-2006
		EP 1509662 A1	02-03-2005
		ES 2251694 T3	01-05-2006
		NZ 536589 A	28-10-2005
		US 2006096211 A1	11-05-2006
DE 2944241 A1	14-05-1980	NONE	
FR 2878876 A	09-06-2006	EP 1880066 A1	23-01-2008
		WO 2006061538 A1	15-06-2006
		KR 20070085802 A	27-08-2007
FR 2517800 A	10-06-1983	NONE	