



(19)

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 866 188 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.09.1998 Bulletin 1998/39

(51) Int. Cl.⁶: E04B 1/348, E04B 1/343

(21) Application number: 98104743.4

(22) Date of filing: 17.03.1998

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: Fattorini, Francesco
00128 Roma (IT)

(30) Priority: 18.03.1997 IT RM970152

(74) Representative:
Gervasi, Gemma, Dr.
Notarbartolo & Gervasi S.p.A.,
Corso di Porta Vittoria, 9
20122 Milano (IT)

(71) Applicant:
CENTRO SVILUPPO MATERIALI S.p.A.
I-00128 Roma (IT)

(54) Metallic structure for temporary architecture

(57) A substantially parallelepiped-shaped metallic structure for temporary architecture, comprising a first plurality of longitudinal structural support members (1) forming at least the apices and the outer sides of the structure, a second plurality of structural members (4, 5), each one of which placed between at least two members (1) of said plurality of structural support members (1) and a plurality of panel members (20, 21) made integral with said first and second plurality of structural members (1, 4, 5), characterized in that at least a portion of said first plurality of structural members (1) have a profile consisting of a substantially C-shaped cross section with at least two adjacent sides (2) having substantially same dimensions and with at least one of their end portions facing at least partially the inner side of the profile, and in that it further comprises fixing means (22, 23, 24) of said plurality of panel members (20, 21) on said first and second plurality of structural members (1, 4, 5), ground-based supporting means (6) of said metallic structure removably connected therein and, optionally, ground fixing means (7, 8, 9, 10, 11).

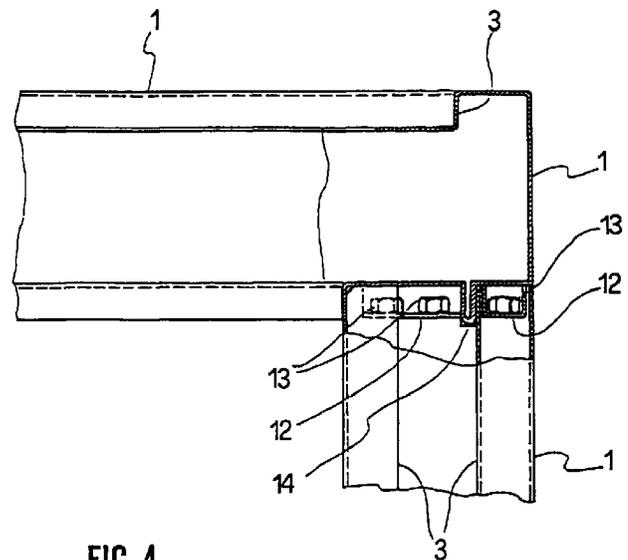


FIG 4

EP 0 866 188 A1

Description

The present invention refers to a metallic structure for a temporary architecture for creating enclosed housing environments and modular temporary housing.

Metallic and non metallic structures forming enclosed environments for modular temporary housing are already known. Generally, said modular structures are constituted of substantially parallelepiped-shaped structures and formed by a plurality of structural support members that are "the bones" of the structure. The chosen support members are usually profiles commonly available both for practical reasons and to cut the costs.

Anyway, realizing such structures implies the use of a large number of structural members that are remarkably bulky and heavy thus having evident repercussions on their transportation. Considering the growing demand for metallic structures of such kind and for such purposes, it is therefore necessary to make their assembling and transportation as practical as possible.

A kind of metallic structure for temporary architecture partially solving the above mentioned problems related to weight is known from the French patent application No. 86 14647 filed 22 October 1986 in the name of ALGECO.

In this patent application a metallic structure having a plurality of semitubular structural members as to weigh less with respect to the prior art is described. However, such a solution does not solve the dimension problems relating to the high number of structural members. Furthermore, the arrangement of said members within the structure is quite complicated, thus making the structure assembling complicated and slow.

An object of the present invention is to solve the above mentioned prior art problems by providing a metallic structure for temporary architectures comprising structural members shaped in such a manner as to be easily transported and assembled and having also a strong structural resistance and a low weight/volume ratio.

According to the present invention, a substantially parallelepiped-shaped metallic structure for temporary architecture is provided, comprising a first plurality of longitudinal structural support members forming at least the apices and the outer sides of the structure, a second plurality of structural members, each one of which placed between at least two members of said structural support members and a plurality of panel members made integral with said first and second plurality of structural members,

characterized in that at least a portion of said first plurality of longitudinal structural members have a substantially C-shaped cross section with at least two adjacent sides having substantially the same dimensions and with at least one of their ends facing at least partially the inner side of the profile, and in that it comprises fixing means of said panel members on said first and second plurality of structural members, ground-based

supporting means of said metallic structure removably connected therein and, optionally, ground fixing means.

The present invention will be illustrated herebelow by referring to a preferred embodiment thereof, explained by way of a non-limiting example and with reference to the annexed drawings, wherein:

figures 1a, 1b and 1c are partial perspective views of structural support members to be used in the structure of the present invention;

figure 2 is a partial front view of a portion of the structure according to the present invention;

figure 3 is a top plan view of a portion of the structure according to the present invention;

figure 4 is an elevational enlarged front view of a detail of the structure in figure 3;

figure 5 is an enlarged top plan view of a detail of the structure in figure 3;

figures 6, 7, 8 and 9 are schematic views illustrating different embodiments of supports for the structure of the present invention; and

figure 10 is a partial plan schematic view of the connection between two panels of the structure according to the present invention.

Referring now to the figures 1a, 1b and 1c, three embodiments of structural members to be used as support members in the structure of the present invention are shown.

In particular, the above mentioned structural members have an elongated body 1 having a substantially C-shaped cross section and a central portion constituted of two adjacent sides 2 having substantially same dimensions whose ends 3 face at least partially the inner side of the profile. Furthermore, as it is better shown in figure 1c, it is provided that one of the ends 3 partially faces the outer side of the profile.

With reference to figure 2, a front and partial portion of the roof structure according to the present invention is shown.

The structure has a plurality of structural support members 1 and a second plurality of structural members 4 transversally connected thereto, for example of the squared section box-type kind.

Furthermore, a crossed connection at the apices of a third plurality of structural members 5 is provided, in order to increase the structural stiffness. The joints among the structural members of the first, second and third plurality occur in a manner already known to those skilled in the art.

With reference to figure 3, a second portion of the structure of the present invention is shown in a top plan view.

At the sides of the horizontal and vertical portions of the structure such as, for example, the base or the vertical walls, a plurality of structural support members 1 of the already described kind is provided which are longitudinally or perpendicularly connected therebetween as

better illustrated herebelow. Furthermore, structural stiffening members 4 are provided transversally in the manner already described.

With reference to the figures 4 and 5, a detailed portion of the structure is shown, respectively in a front and in a top plan view.

More precisely, the figures show the arrangement of the connection of two or more structural support members 1 at the apices of the structure according to the invention.

Within the structure, whenever plural structural members 1, e.g. three members, are substantially perpendicularly linked to each other, their arrangement is such as to allow the union between the structural horizontal members along a substantially 45° diagonal line and, respectively, the joint of the vertical member.

The joint of the vertical member 1 is made integral with the two horizontal structural members by means of a pair of connection supports 12 integrally placed on the horizontal structural members 1. Each support 12 has a pair of nuts 13 welded thereto and connected with the respective bolts (not shown) placed on the horizontal members 1.

Further, the horizontal members 1 are to be chosen having a rib 14 for the connection with the respective edges of the structural vertical member 1.

Furthermore, the vertical structural member is to be chosen having a transversal section that is to be connected with said supports 12 at the ends 3 realizing therefore a non slidable joint in both perpendicular directions.

Referring now to figures 6, 7, 8 and 9, different embodiments of ground-based supporting members for the structure of the present invention are illustrated.

In figure 6, the structure lays on a ground S through C-shaped beams made integral with the structural members 1 in a manner already known in the art. Furthermore, the structure is provided with a panel P integrally connected with the structural members 1 and with the C-shaped beams (better illustrated herebelow).

According to figure 7, the structural members 1 are integrally connected with the beam members 6 having bolts 7 and nuts 8 screwed thereon. The bolts 7 have respective base members 9 laying on the ground S and their excursion can be adjusted by screwing the bolts 7.

According to figure 8, the structure lays immovably on the ground by means of the beams 6, made integral thereon through bolts 10 and nuts 8. The bolts 10 are integral with plinth foundations in a manner already known in the art.

According to figure 9, the structure lays slidably on the ground by means of rotatable wheels 11 integral with the beams 6 through the nuts 8.

With reference to figure 10, a partial top plan schematic view of the connection of two panels to the structure of the present invention is shown.

The panels are composed of members 20 made of suitable material having on top a covering material 21.

The panel 20 is peripherally enclosed by C-shaped members 22 having in their inner side at least one threaded nut member 23 integrally connected thereon.

On the respective structural member 4, a threaded member 24 with two nuts 25 slidably placed thereon and inside the structural element 4 is slidably mounted.

The arrangement is such that, successively to the connection of the threaded end portions of the member 24 with the respective nuts 23 on the members 22, the member 24 is rotated as to approach the panels 20 to the member 4 until the members 22 get in contact with it.

Therefore, the nuts 25 are locked to the inner walls of the member 4 in order to prevent the member 24 from rotating and therefore the panels 20 from parting. Furthermore, the blockage among the members 22 and the side walls of the structural member 4, guarantees the required perpendicularities in the structural couplings.

The present invention is not limited to the embodiment described up to now, but comprises any embodiment falling within the scope of the annexed claims.

Claims

1. A substantially parallelepiped-shaped metallic structure for temporary architecture, comprising a first plurality of longitudinal structural support members (1) forming at least the apices and the outer sides of the structure, a second plurality of structural members (4, 5), each one of which placed between at least two members (1) of said plurality of structural support members (1) and a plurality of panel members (20, 21) made integral with said first and second plurality of structural members (1, 4, 5),

characterized in that at least a portion of said first plurality of structural members (1) have a profile consisting of a substantially C-shaped cross section with at least two adjacent sides (2) having substantially same dimensions and with at least one of their end portions facing at least partially the inner side of the profile, and in that it further comprises fixing means (22, 23, 24) of said plurality of panel members (20, 21) on said first and second plurality of structural members (1, 4, 5), ground-based supporting means (6) of said metallic structure removably connected therein and, optionally, ground fixing means (7, 8, 9, 10, 11).

2. A metallic structure for temporary architecture according to claim 1, wherein said fixing means of said plurality of panel members comprise:

- a plurality of substantially C-shaped members (22), each one made integral with a corresponding panel member;
- at least one threaded member (24); and
- a plurality of nuts (23, 25), a portion of which is

made integral with said at least a pair of C-shaped members (22) for the connection with said at least one threaded member (24).

3. A metallic structure for temporary architecture according to claim 1 or 2, wherein said ground-based supporting means comprise a plurality of substantially C-shaped members (6) made integral with said metallic structure and, optionally, integral with ground fixing means (7, 8, 9, 10, 11).
4. A metallic structure for temporary architecture according to claim 3, wherein said second supporting means are chosen from the group comprising:
- ground-based members formed by height adjustable members (7, 8, 9); and
 - rotatable members (8, 11) formed by wheels translating and rotating on their vertical axis and connected to the structure in a height adjustable manner.
5. A metallic structure for temporary architecture according to claims 1 to 3, wherein said fixing means comprise ground-based supporting members (10) formed by cement plinths and metallic anchors, the latter connected with said C-shaped supporting members (6) by respective nuts (8).
6. A metallic structure for temporary architecture according to any of the preceding claims, wherein said second plurality of structural members (4, 5) comprises rectangular and/or squared section box-type members.

35

40

45

50

55

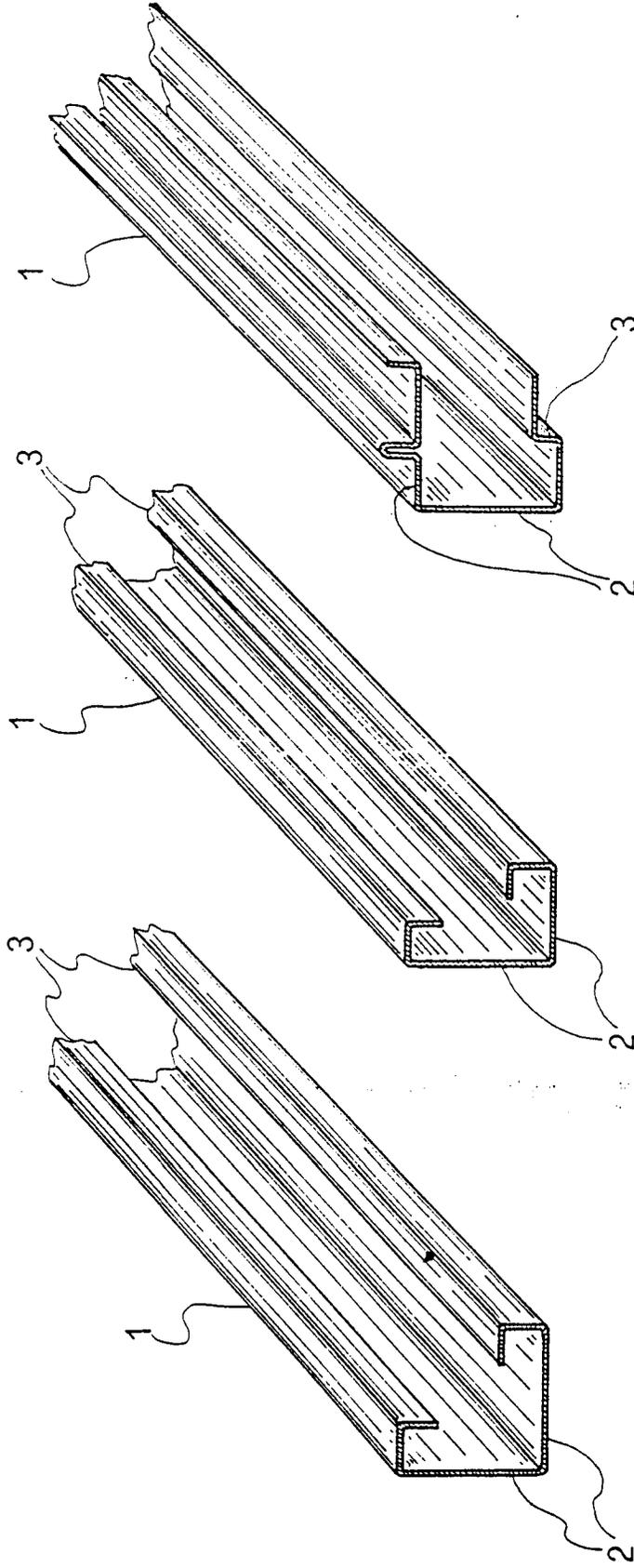


FIG 1C

FIG 1B

FIG 1A

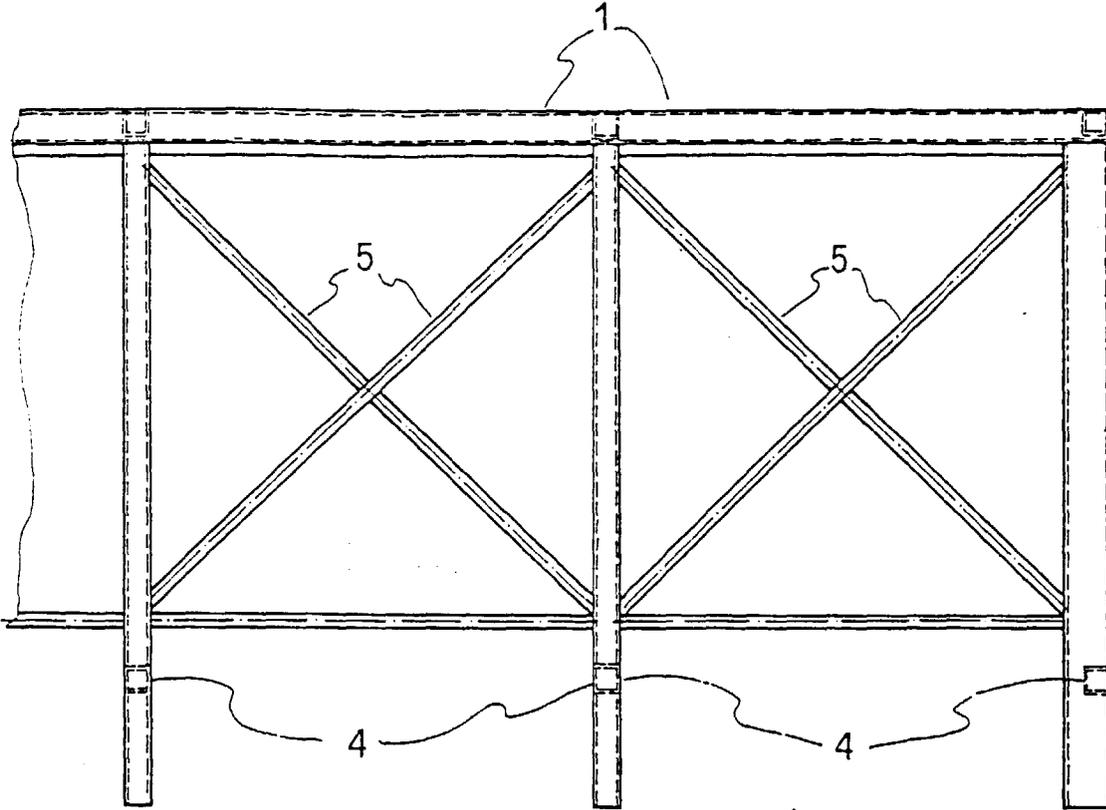


FIG 2

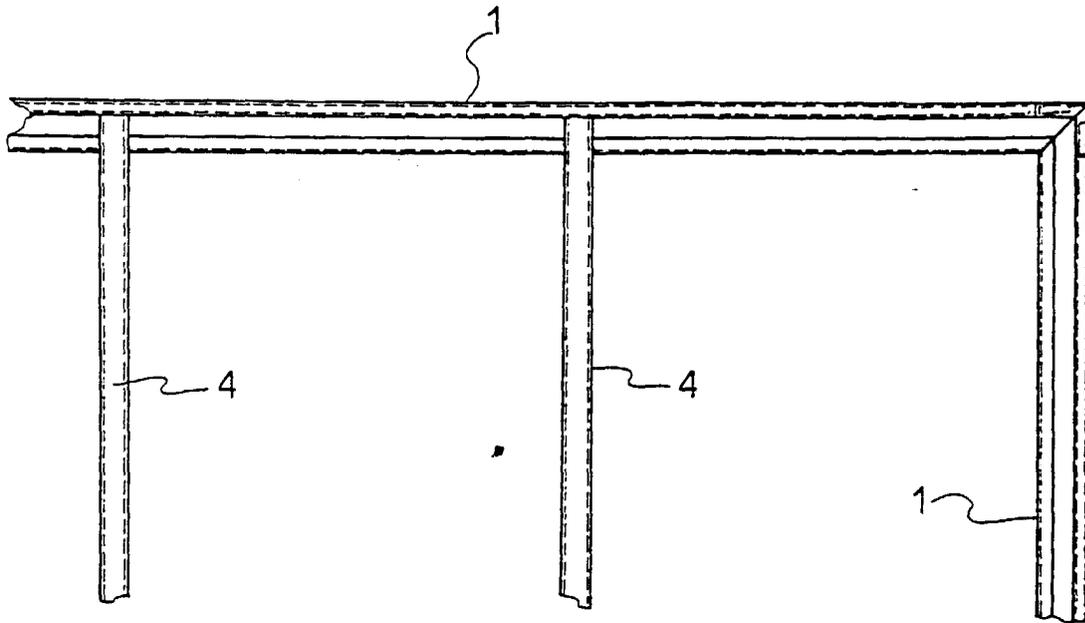


FIG 3

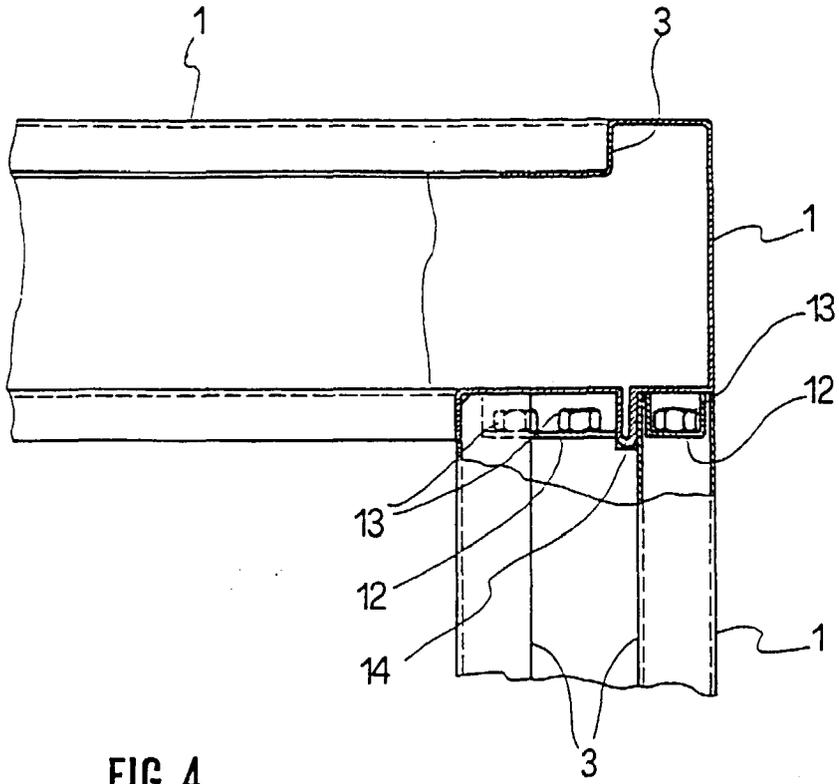


FIG 4

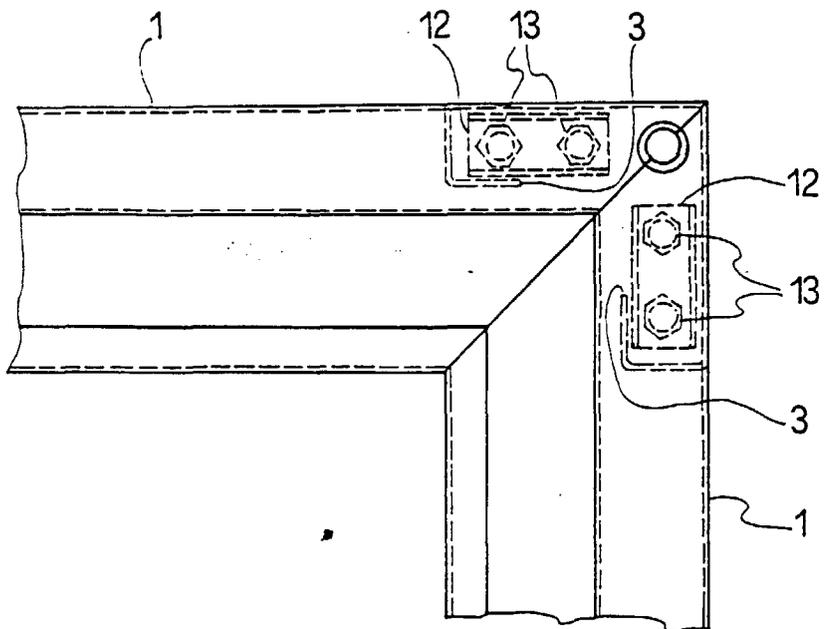


FIG 5

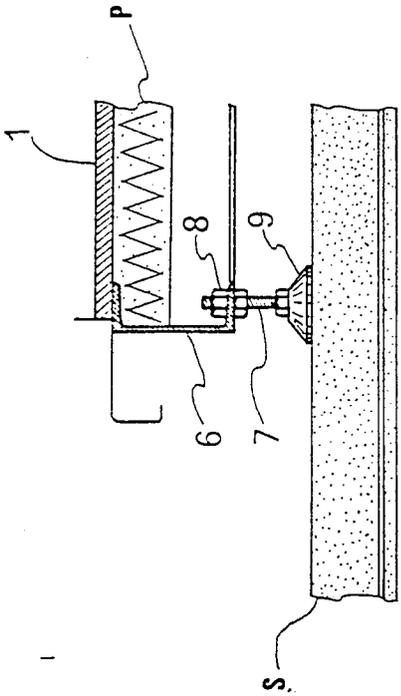


FIG 6

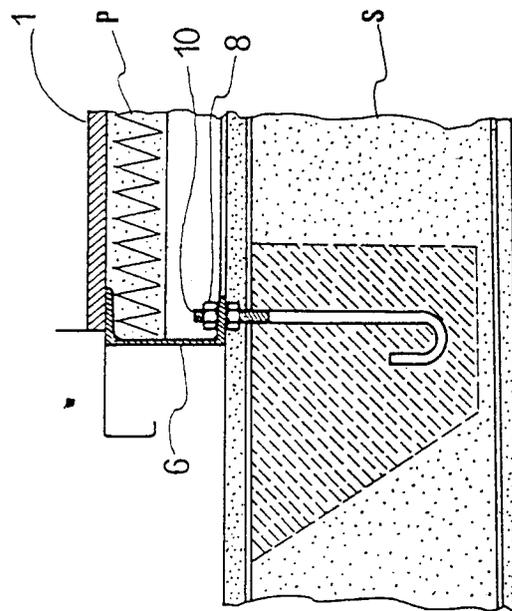


FIG 7

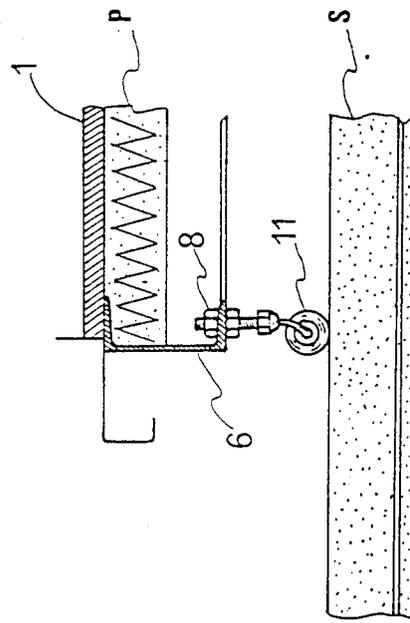


FIG 8

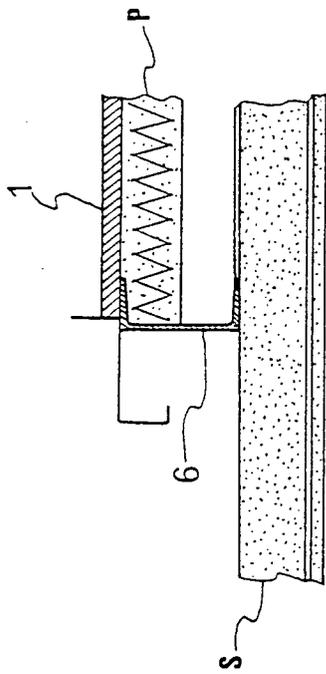


FIG 9

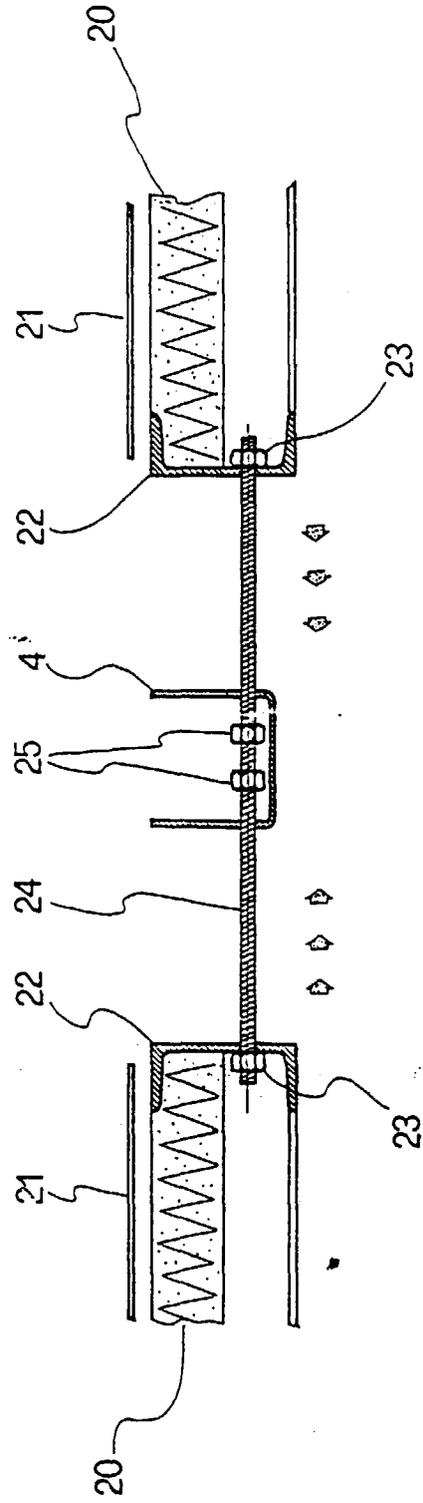


FIG 10

European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 10 4743

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)
Y	WO 96 11307 A (F A E IND ALLOGGI PREFABBRICAT ;FOGLIANI LUIGI (IT)) 18 April 1996 * page 5, line 7 - page 6; figures * ---	1,3	E04B1/348 E04B1/343
Y	EP 0 485 317 A (GOYENECHÉ FLOREZ JOSE CARLOS) 13 May 1992 * column 12, line 4 - line 35; figures 13-15 *	1,3	
A	---	4	
A	FR 2 270 398 A (SOMI) 5 December 1975 * page 3, line 27 - page 5, line 13; figure 3 *	1	
A	---	2	
A	US 3 279 132 A (J. SLAYTER) 18 October 1966 * column 9, line 5 - line 34; figure 16 *	2	
A	FR 644 931 A (SOCIÉTÉ FRANÇAISE DES ORNEMENTS EN ZINC) 16 October 1927 * page 2, line 8 - line 30; figures 22,24 *	2	TECHNICAL FIELDS SEARCHED (Int.Cl.6) E04B
A	---	4	
A	US 4 546 530 A (RIZK JIHAD F) 15 October 1985 * column 18, line 66 - column 19, line 35; figures 20-22 *	4	
A	---	5	
A	FR 1 478 627 A (BOULENGER) 12 July 1967 * page 1, column 2, line 20 - line 29; figures 3,5 *	5	
A	---	6	
A	FR 2 471 454 A (LAPALU JEAN PAUL) 19 June 1981 * figures 2,3 * -----	6	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		19 June 1998	Kriekoukis, S
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category		E : earlier patent document, but published on, or after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	

EPO FORM 1503 03 82 (P04C01)