



**EUROPEAN PATENT APPLICATION**

Application number : **91830390.0**

Int. Cl.<sup>5</sup> : **E04F 13/08**

Date of filing : **25.09.91**

Priority : **01.10.90 IT 4253090**

Date of publication of application :  
**08.04.92 Bulletin 92/15**

Designated Contracting States :  
**AT BE CH DE DK ES FR GB GR LI LU NL SE**

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**A system of elements for securing wall tiles to ventilated frontages.**

The system is designed for use in the art field of construction and more especially in the erection of ventilated frontages, and provides a means by which to secure tiles (19) or other infill panels to the ventilated wall (1). Use is made of an assembly of easily installed elements matched in appearance to the tiles, which comprise an upright (3) affording longitudinal tracks (4, 5) and anchored to the wall (1) with angle brackets (6), and plates (14) by which the tiles (19) are supported at the four corners ; the single tile is made secure by springs (16) and lugs (18) associated with the plates.

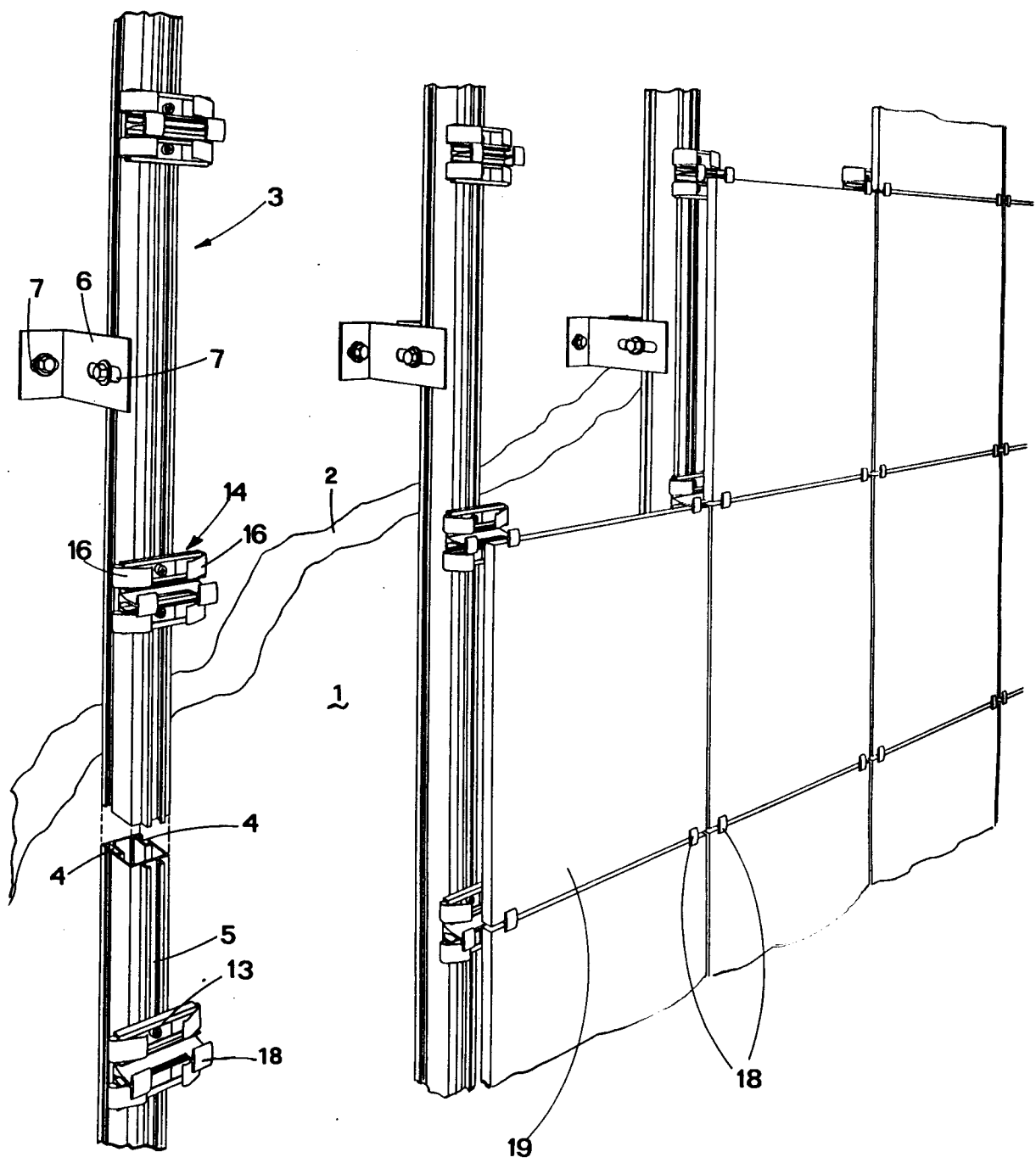


fig.1

The invention relates to a system of elements for securing wall tiles to the ventilated frontage of a building.

For the purposes of the present specification, a ventilated frontage may be understood as describing an elevation of a building clad with ceramic tiles or other infill panels that are distanced from the masonry by means of a metal framework in a manner such as to create a ventilation channel between the subsurface of the wall and the cladding.

The tiles are fixed and spaced purely by mechanical means, without the use of mortar or adhesives.

It is acknowledged that a ceramic tiled exterior can enhance the frontage of a building decoratively and architecturally, and a ventilated frontage of this nature both enables the wall to "breathe", and allows the inclusion of a layer of heat insulation between the masonry and the exterior cladding. The fixing components in conventional devices for securing wall tiles to a ventilated frontage are somewhat crude and inflexible, affording limited possibilities either of adjustment, or, in the event of the ceramic tiles being damaged or broken, of replacement (see Utility Model DE 8 810 439 and patent CH 407 509).

A further drawback is reflected commonly in the excessive waste of material used in construction of the metal frameworks for such ventilated frontages, and consequently in high construction costs (see patent FR 2 540 910).

The object of the present invention is one of enabling the construction of a ventilated frontage utilizing a system of mechanical components such as will render the operation of fixing the tiles a more simple procedure, besides allowing adjustments to be made during installation, and replacement of the tiles thereafter.

A further object is that of ensuring an improved appearance in comparison with conventional fixing systems, and of harmonizing the exposed metal elements with the remainder of the cladding.

The stated objects are fully realized in a system of elements according to the present invention for securing wall tiles to ventilated frontages, which is characterized in that it comprises:

- an upright member affording two longitudinal tracks disposed mutually parallel and on opposite faces of the member, and a longitudinal track occupying a face of the member normal to the opposed faces;
- an angle bracket of 'L' profile affording two slots, one in each wing, accommodating means by which the bracket is anchored to the wall of a building on the one hand and secured to one of the longitudinal tracks of the upright member on the other;
- a plate affording at least one spring and at least one retaining element, and anchored to one of the longitudinal tracks of the upright member in such

a way as to permit of restraining the corner of one or more tiles between the spring and the retaining element.

The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- fig 1 is a perspective showing the application of a system of elements for fixing wall tiles to a ventilated frontage,, according to the invention;
- fig 2 illustrates a system of elements as in fig 1 in plan from above;
- fig 3 illustrates a system of elements as in fig 1 in a side elevation;
- figs 4, 4a and 4b illustrate an intermediate plate serving to retain four corners of four tiles, in views-from the front, from above and from one end, respectively;
- figs 5, 5a and 5b are views as in fig 4, 4a and 4b of a corner plate serving to retain one corner of one tile;
- figs 6, 6a and 6b are views as in fig 4, 4a and 4b of a top or bottom end plate serving to retain two corners of two tiles;
- figs 7, 7a and 7b are views as in fig 4, 4a and 4b of a side end plate serving to retain two corners of two tiles.

With reference to the drawings, 1 denotes a brick or concrete wall lined with a layer of insulating material 2.

3 denotes a first element in the system disclosed, consisting in a tubular upright member, vertically disposed and of continuous embodiment (broken only by expansion joints with connecting sleeves, not illustrated), which affords two longitudinal guide tracks 4 disposed mutually parallel on two opposite sides, and a third track 5 occupying a side normal to the sides occupied by the first two tracks 4. 6 denotes one of a plurality of angle brackets, a second element of the system, which exhibits an 'L' profile and affords two slots 7, one to each wing. The brackets 6 are spaced apart one from the next at a prescribed distance and fixed to the wall of the building on the one hand by means of expanding plugs 8 or other suitable hardware, and secured to the tubular upright member on the other by way of threaded fasteners 9 consisting in bolts, of which the heads 10 are insertable in the corresponding tracks 4, and relative nuts 11.

The expanding plugs 8 and the bolts 9 engaged in the longitudinal tracks 4 thus constitute means by which to anchor and secure each bracket to the wall and to the upright member, respectively.

12 denotes a clip retained by the third track 5, which affords a threaded hole to accept a screw 13 insertable through a plate 14 constituting a third element of the system.

The plate 14 affords two guides 15, each of which accommodating two springs 16 fastened to the plate itself, and will be seen in figs 1...4 to afford two retain-

ing elements 18, or lugs, positioned to restrain the four adjacent corners of four tiles 19 in square formation, each inserted between one spring 16 and the corresponding lip of the relative element 18.

Whilst the accompanying drawings show a commonplace ceramic tile 19, the exposed part of the frontage might equally well consist in infill panels, or in tiles of special angle profile.

In the example illustrated, each tile 19 is located between the springs 16 and retaining elements 18 in such a way that the four corners are restrained by four adjacent plates 14 (fig 1).

The full expanse of the ventilated frontage is clad utilizing a plurality of the upright members 3, vertically disposed and parallel one with the next, anchored to the wall by way of a suitable quantity of angle brackets 6.

With the uprights in position, the plates 14 can be fitted and the tiles 19 then secured in place.

The plate 14 may assume any of the embodiments in figs 4 to 7 according to its position in the matrix of tiles, thus, fig 4: intermediate, serving to secure any group of four mutually adjacent tile corners; fig 5: serving to secure one corner of a corner tile; fig 6: serving to secure two corners of two top or bottom border tiles, and fig 7, to secure two corners of two lateral border tiles. Should the need arise, any single tile 19 can be replaced by manoeuvring the adjacent tiles and the respective plates 14.

The system of elements according to the invention might comprise a further plate element (not shown) identical to the plate 14 described and illustrated when viewed from the exterior, though embodied with removable retaining elements and designed for use in the event that one or more tiles should need replacing. The retaining elements or lugs of such an additional plate could be equipped with caps, applied on completion of the refitment operation, serving to match the replacement elements to the retaining elements 18 of the standard plate 14.

## Claims

1) A system of elements for securing wall tiles to ventilated frontages, characterized in that it comprises:

- an upright member (3) affording two longitudinal tracks (4) disposed mutually parallel and on opposite faces of the member, and a longitudinal track (5) occupying a face of the member normal to the opposed faces;
- an angle bracket (6) of 'L' profile affording two slots (7) one in each relative wing, accommodating means by which the bracket (6) is anchored to the wall (1) on the one hand and secured to one of the longitudinal tracks of the upright member

on the other;

– a plate (14) affording at least one spring (16) and at least one retaining element (18), anchored to one of the longitudinal tracks of the upright member in such a way as to permit of restraining the corner of a tile (19) between the spring and the retaining element.

2) A system of elements as in claim 1, wherein the upright member (3) is of tubular embodiment.

3) A system of elements as in claim 1, wherein the plate (14) affords two guides (15), each of which accommodating one or two springs (16) fastened to the plate.

4) A system of elements as in claim 1, wherein means by which to anchor the bracket (6) to a wall (1) consist in an expanding plug (8), and means by which the bracket is secured to the longitudinal track (4) of the upright member (3) consist in a bolt (9), of which the head (10) is insertable in the track (4), and locking nuts (11).

5) A system of elements as in claim 1, wherein the plate (14) affords a hole through which to insert a screw (13) engaging in the threaded hole of a clip (12) accommodated internally of the corresponding longitudinal track (5) in such a way as to secure the plate (14) to the upright member (3).

6) A system of elements as in claim 1, wherein the retaining element (18) can be separated from the plate (14) and made fast thereto with the tile (19) in position.

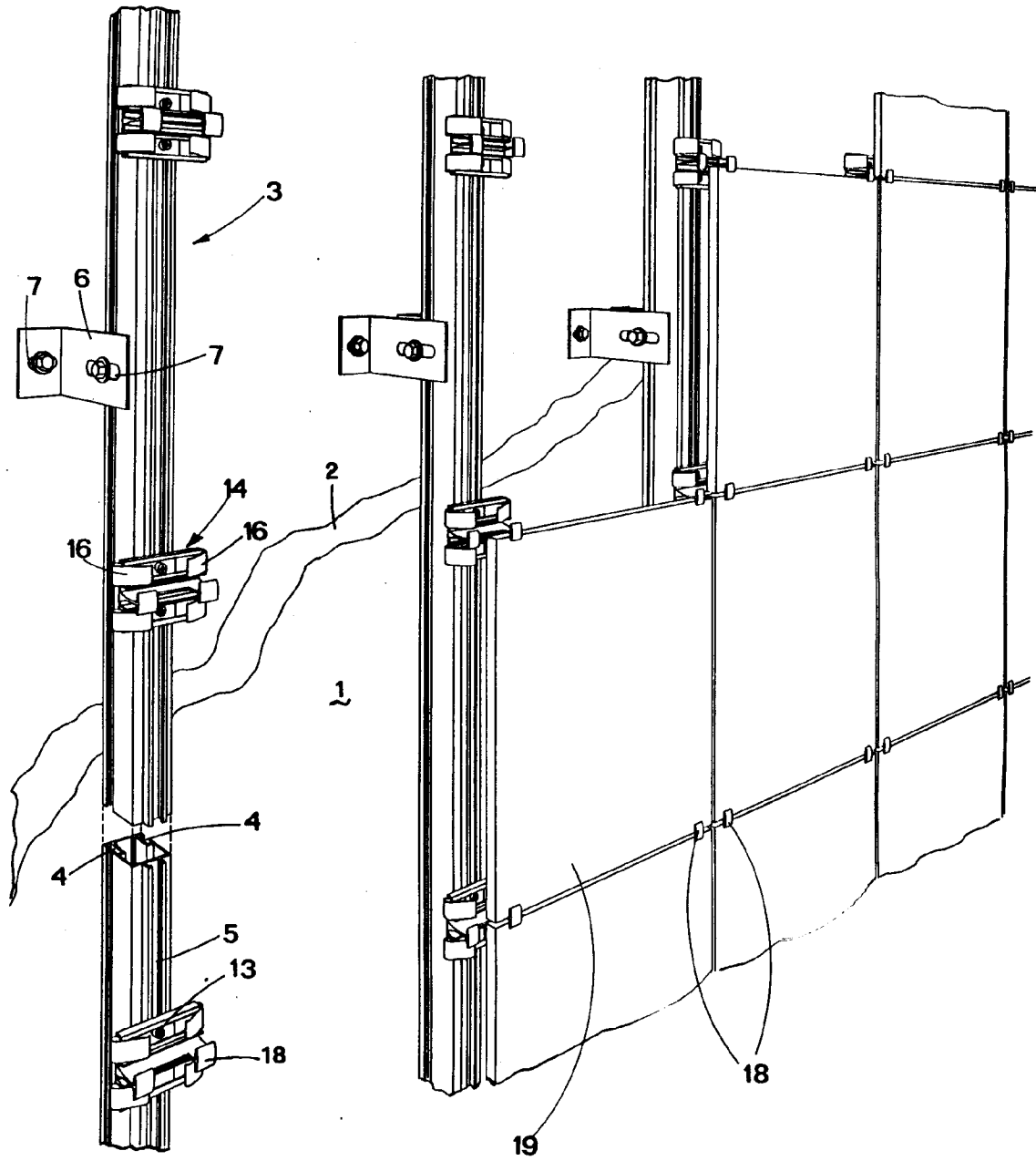


fig.1

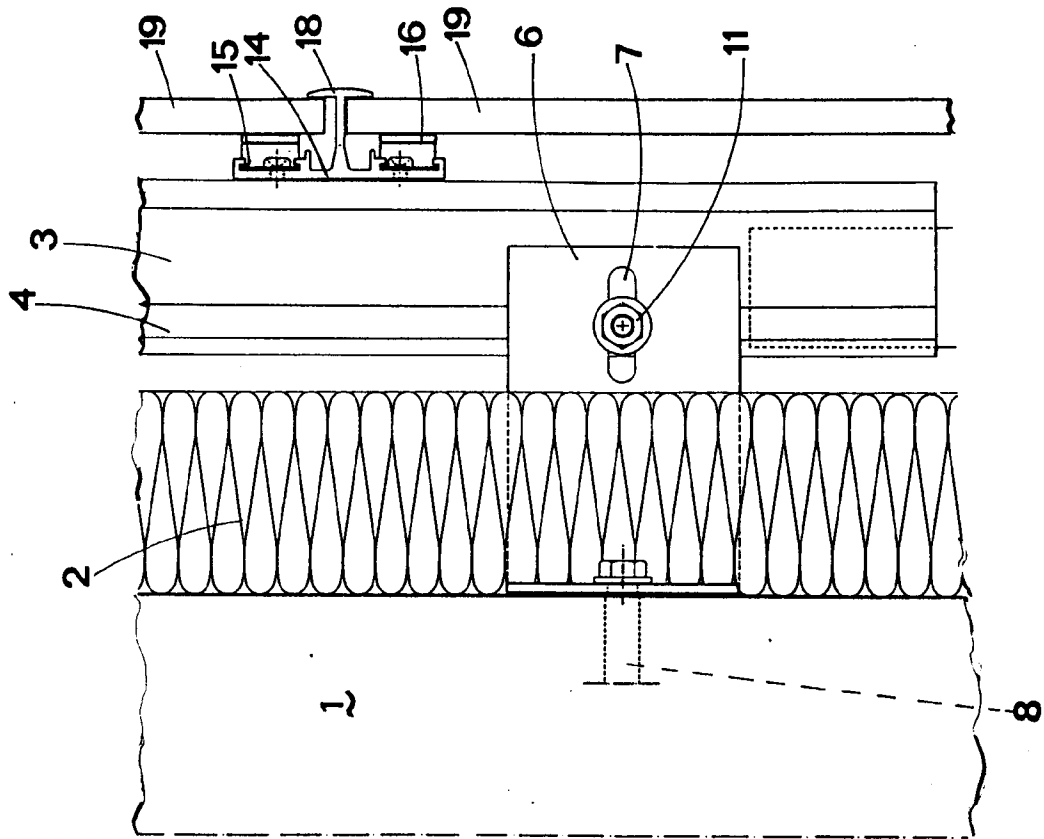


fig.3

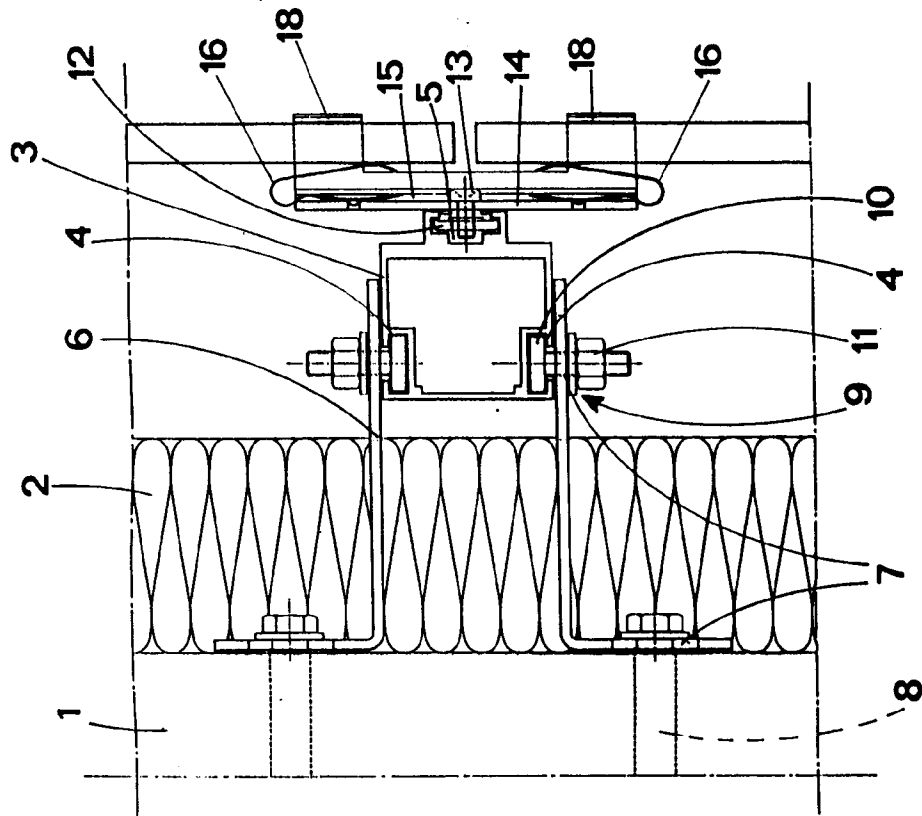
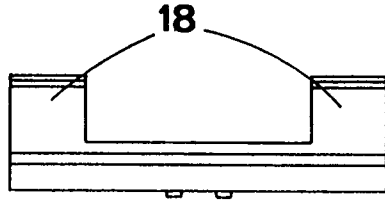
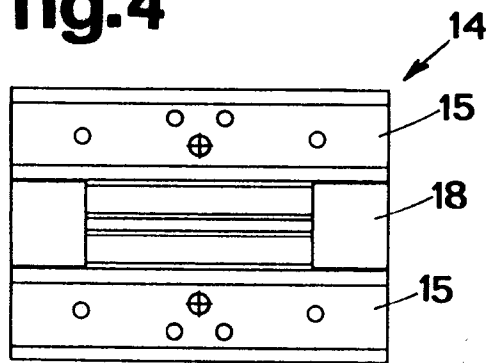


fig.2

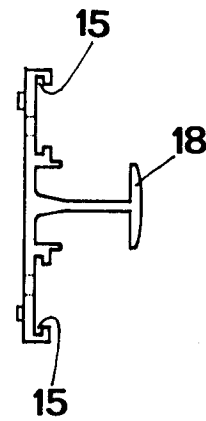
**fig.4 a**



**fig.4**



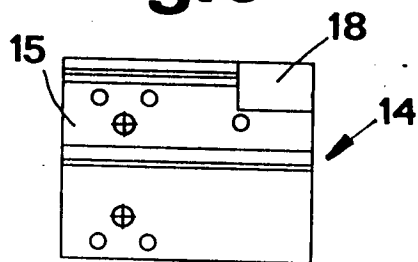
**fig.4 b**



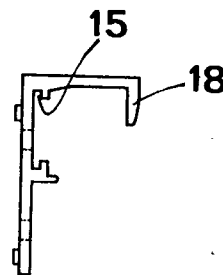
**fig.5a**

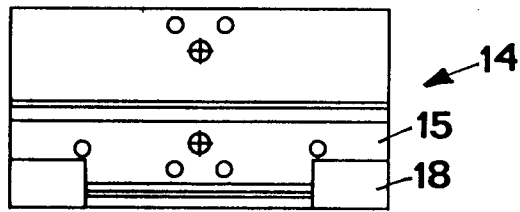


**fig.5**

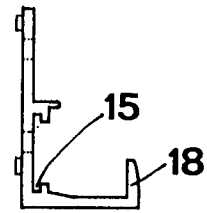


**fig.5b**

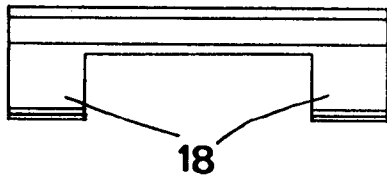




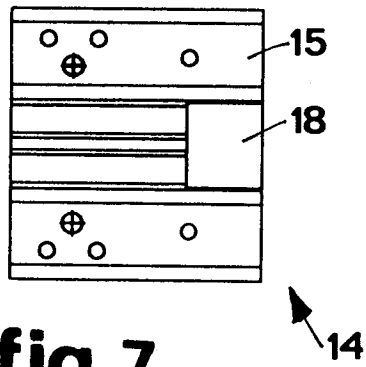
**fig.6**



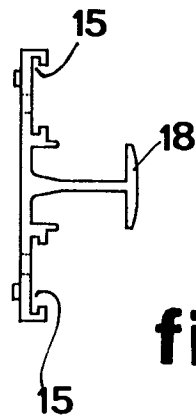
**fig.6b**



**fig. 6a**



**fig.7**



**fig.7b**



**fig. 7a**





European Patent  
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# EUROPEAN SEARCH REPORT

Application Number

EP 91 83 0390

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.5)
A	FR-A-2 540 910 (BOUYGUES) * page 4, line 1 - page 8, line 15; figures 1-6 *	1, 4	E04F13/08
A	DE-U-8 909 856 (SCHNEIDER) * page 3, line 14 - page 7, line 25; figures 1,2 *	1, 4	
A	DE-U-8 810 439 (ICKLER S.A.) * page 4, line 2 - page 7, line 13; figures 1-5 *	1	
A	CH-A-407 509 (FAHRNI & CO. AG) * page 1, line 66 - page 3, line 7; figures 1-3 *	1-3, 5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E04F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 06 JANUARY 1992	Examiner AYITER J.
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