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(54) **Ceiling interior coating**

(57) Ceiling interior coating comprising panels (1) which are suspended from fillets (2) fixed to the ceiling. The panels comprise a front decorative layer (7) and a back layer (8) with thermal insulation, which are joined together by an adhesive element. The panels are sus-

pended from the fillets using hooks (9) comprising a lower branch (10) inserted between the two layers of the panels, from at least two opposite edges of said panels, an upper branch (3) resting on the fillets, and a central branch between the upper and lower branches, attached to the edge of the panel and to the fillet.

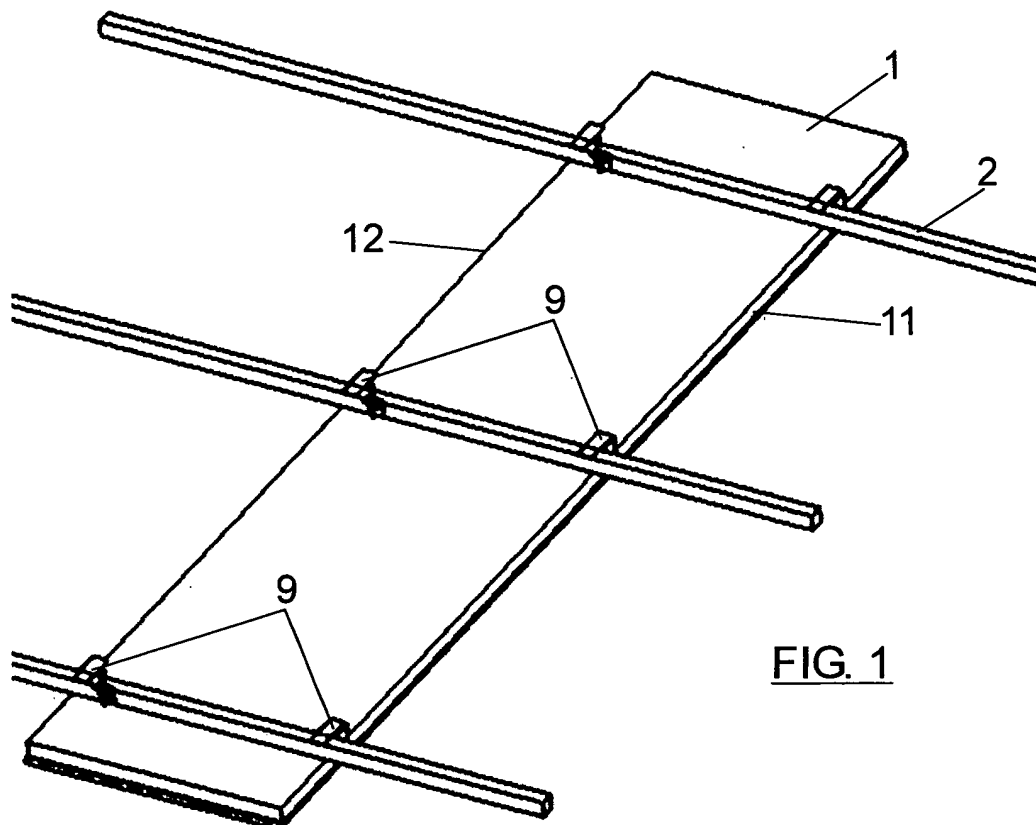


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present invention refers to a ceiling interior coating comprising panels which are suspended from fillets fixed to the ceiling.

[0002] The coating of the invention can be applied interiorly under any kind of cover, which does not have thermal insulation or decorative coating, to serve both purposes, being especially suitable for concrete covers, beam covers and small vaults, etc.

BACKGROUND OF THE INVENTION

[0003] Ceiling interior coatings are normally made of frieze slats or planking nailed on wooden fillets which are in turn fixed to the cover with nails, plug screws or glue. Between the frieze and the wall, the insulating sheets will be inserted.

[0004] Traditional coatings, although they serve as thermal insulating means, do not offer many finishing options.

DESCRIPTION OF THE INVENTION

[0005] The present invention refers to a ceiling interior coating, comprising panels with good thermal insulation, wide possibilities for decoration and which are resistant and long-lasting.

[0006] Another object of the present invention is to simplify the mounting, with simple constitution and low cost elements, enabling to reduce the installation time.

[0007] The coating of the invention, as it was initially indicated, comprises panels which are suspended from fillets fixed to the ceiling.

[0008] According to the invention, the panels comprise a front decorative layer and a back layer with thermal insulation, which are joined together by an adhesive element.

[0009] With the constitution described, the panel can have different finishes on the lower face, for example for wooden friezes of different widths, plywood, plaster, acoustic conditioning elements, fibre cement, fibre plaster, etc. As for the thermal insulating back layer, it can be made of expanded polystyrene, extruded polystyrene, etc. The different layers forming the panel can be joined together using polyurethane glue, during the pressing or panel formation process. Depending on the rooms and the finishes chosen, the panel can have a third back reinforcing layer made of another material (metal, wood, plastic...) or it can be lumber-cored.

[0010] The fillets used for suspending the panels are preferably wooden fillets.

[0011] The panels are suspended from the fillets using hooks with a lower branch inserted between the two layers of the panels, from at least two of the opposite edges of said panels, from an upper branch resting on the fillets,

and from a central branch between the upper and lower branches, attached to the edge of the panel.

[0012] The aforementioned hooks can consist of U-shaped pieces with flat branches. One of the end branches of the U-shaped profile will be in a lower position, to be inserted between the two layers of the panel. The central layer will be in vertical position, attached by its inner surface to the edge of the panel. This central branch also upwardly protrudes from the back surface of the panel in a section which is as high as the profile of the fillets. The other external branch of the U-shaped piece is in an upper position and features a lateral extension directed towards and resting on a fillet.

[0013] The hooks can be made of plating, folded to define the three branches of the U-shaped profiles, with the lateral branches perpendicular to the central branch. This central branch will rest, by the edge adjacent to the aforementioned lateral extension of the upper end branch, on the fillet on which said lateral extension rests.

[0014] The lower end branch of the hook, which is to be inserted between both panel layers, can have a pointed end section, to facilitate its insertion between both panel layers. Moreover, it can feature an axial central groove from the free edge, to facilitate its insertion and prevent a wide insulating section from detaching, thus securing a good fixing to the panel.

[0015] According to an embodiment variant, the upper and lower branches of the hooks are perpendicular to the central branch and run in opposite directions, from said central branch. The hook adopts a Z-shaped configuration, with straight angles. Moreover, the upper branch of the hooks has a hole for the passage of a binding screw to fix them to the fillets.

[0016] The hole of the upper branch will preferably have an oblong shape, in perpendicular direction to the central branch of the hook.

[0017] With this arrangement, the hooks can be easily mounted, since through the lower branch they are inserted between the panel layers, while the upper branch, in opposite direction, will rest on the lower or exterior face of the fillets or profiles to which they are fixed by screws inserted through the oblong hole of the upper branch, thus being the position of the panels secured with respect to the fillets, preventing them from sliding or moving in any direction.

[0018] Another advantage of this type of hooks is the possibility of mounting panels on vertical walls, where a conventional fillet system has been installed, butt joined to said wall. The invention also enables to fix the coating directly to the wall, as coating thereof, since the hook used as fixing means can be directly anchored on the wall, using a screw inserted through the oblong hole of the hook and screwed in a plug in a hole previously drilled in the wall.

[0019] The oblong shape of the hole of the upper branch will enable to adjust the position of the hooks, with their central branch resting on the edge of the panels, thus offering a safer structure, preventing undesired

movements of the panels, and a perfect positioning and adjustment between panels.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The attached drawings show a non-limiting example of an embodiment, wherein:

Figure 1 shows a partial upper perspective view of a coating made according to the invention.

Figure 2 shows a perspective view of the system of fillet fixing to the ceiling.

Figure 3 shows a perspective view of the hook used to suspend the panels from the fillets.

Figure 4 shows a perspective view of a first phase of the mounting of the hooks to the wall.

Figure 5 shows an upper perspective view of a panel suspended from a fillet, using a hook of figure 3.

Figure 6 shows a cross-sectional view, according to a cutting line VI-VI of figure 4, of a hook fixed to a panel.

Figures 7 and 8 show an upper perspective view of the components of the coating in a head mounting of panels without using tongue and groove joints.

Figure 10 shows a perspective view of a panel suspended with the hook of figure 9.

Figure 11 shows a section of the panel mounting with the hook of figure 9, taken along one of the fillets of figure 10.

Figure 9 shows a perspective view of an embodiment variant of the hook for suspending the panels.

DETAILED DESCRIPTION OF AN EMBODIMENT

[0021] Figure 1 shows an upper perspective view of part of a coating made according to the invention, comprising panels 1 which are suspended from fillets 2 which, as it can be seen in figure 2, are fixed to the inner surface of the ceiling using connecting pins 3 which are fixed to the fillets 2 and suspended from threaded ribs 4 which are anchored to the ceiling by means of plug 5. The regulation of the fillets 2 height and their fixing into position is attained through nuts 6.

[0022] The fillets 2 are preferably made of wood, and they are formed, for example, by rectangular crossbars.

[0023] The panels 1, as it can be seen better in figure 6, comprise a front layer 7, which will define the surface seen from the panel and which can be made of different materials to offer different finishes, and a back layer 8

with thermal insulation, being both layers joined to each other by an adhesive element, for example, during the process of panel formation.

[0024] The panels 1 are suspended from the fillets 2 using hooks 9 which have a flat lower branch 10, which is to be inserted between both panel layers 7 and 8, from at least one of the opposite edges 11 and 12 of the panel according to the panel finish, figure 1, to serve as an anchoring or fixing means between the hook and the panels. The hooks 9 also have an upper branch 13, which will rest on the fillets 2, as it will be indicated later, and a central branch 14 between the lower branch 10 and the upper one 13.

[0025] In the example shown in the drawings, the hook 9 is made of U-shaped plating, being the lower end branch 10 longer than the upper end branch 13, and also being this lower end branch 10 pointed to facilitate its insertion between the panel layers 7 and 8, and featuring a central longitudinal groove 15, from the free edge, to secure the panel layers 7 and 8 position, preventing its separation.

[0026] Figure 4 shows how the lower branch 10 of the hooks faces the edge of the panels 1, for its insertion between the layers 7 and 8, as shown in figure 6.

[0027] When the hooks 9 are fixed into the panels 1, the central branch 14 of the hooks is attached by its inner surface to the edge of the panel, as it can be seen in figure 5.

[0028] The central branch 14 of the hooks will protrude from the back surface of the panels 1, as shown in figure 6, in a section with a height equal to the height H of the fillets 2, as shown in figure 6. Thus, the upper end branch 13 of the hooks is located at the same height as the upper surface of the fillets 2.

[0029] As it can be seen in figure 3, the upper end branch 13 of the hooks 9 has a lateral broadening 16 which in the mounting position, as shown in figure 5, rests on the upper surface of the fillets 2, thus serving as a means to suspend the hooks 13 from the fillets.

[0030] When the panels do not have tongue and groove joints with heads, they can have a hook 2 with inverted pins 3 and head 2, as shown in figures 7 and 8, for the cantilever section to serve as a stop to prevent the elevation of the panels 1 over their correct mounting position and to generate a false tongue and groove joint using the angular pieces 3 screwed to the fillet as shown in figure 7.

[0031] The ribs 4 which suspend the fillets 2 from the ceiling can be fixed using standard plugs.

[0032] The coating of the invention is installed by laying out, marking guidelines on the ceiling which will indicate the position of the fillets. Next, on these lines holes will be drilled to fix the ribs 4 using appropriate plugs.

[0033] The fillets 2 will be fixed to the angle irons 3 using screws, next, the angle irons 3 will be placed, all of them at the same height using nuts 6 in the ribs 4.

[0034] Between the panel layers 7 and 8 the hooks 9 are fixed as it has been already described. These hooks

are placed in the panel at a distance equal to the distance between the fillets 2, each panel having a specific number of hooks according to the panel finish and size.

[0035] Finally, the panel is installed simply by suspension using the hooks 9 which, through the extension 16 of the upper end branch 13, are suspended from the fillets 2.

[0036] With the arrangement described, it is possible to have a coating with different decorative surfaces and an extremely fast installation, which will benefit the work final costs.

[0037] As it can be seen in figures 5 and 6, the central branch 14 of the hooks rests at its inner surface on the edge of the panels 1, while at the edge attached to the extension 16 of the upper end branch 13, it rests on the fillets 2, thus preventing any accidental movement, once the coating is mounted.

[0038] As it can be seen in figures 7 and 8, the hooks 9 can be placed in the position shown in figures 5 and 6, with the branch 13 and the extension 16 longitudinally located on them, as shown with reference 9' in figure 8 to simulate a tongue and groove joint.

[0039] Figure 9 shows a hook 9 which adopts a Z-shaped configuration, with straight angles.

[0040] This hook, as the hook shown in figure 3, includes an upper end branch 13' and a lower end branch 10 which are perpendicular to the central branch 14, but oriented in opposite directions. The lower end branch 10, like the hook in figure 3, has a longitudinal groove 15 from its end transverse edge, delimiting two arms 18 with an end transversal oblique edge 19, to facilitate its insertion between the panel layers 7 and 8, from their edges, as shown in figure 11. The upper end branch 10 will rest on the fillets 2 and it has an oblong hole 20, figure 9, perpendicular to the central branch 14 of the hook, for the passage of a binding screw 21 to fix them to the fillets.

[0041] With the arrangement described, the mounting of the hooks 9 can be made in a simple way, since the end branches 10 and 13' are oriented in opposite directions and the intermediate branch 14 is attached at one side to the panels 1 and at the opposite side to the fillets 2.

[0042] Thanks to the oblong hole 20 it is possible to adjust or correct the position of the hooks 9, with respect to the fillets 2, to secure the correct consecutive positioning of the panels 1 which will form the inner coating of the ceiling.

[0043] The hook shown in figure 9 can also serve to mount wall reinforced lines, which can be made using screws with their respective plugs, for example screwing them to a series of fillets, on the wall or using any other system.

Claims

1. Ceiling interior coating, comprising panels (1) which are suspended from fillets (2) fixed to the ceiling, **characterized in that** the panels comprise a front

decorative layer (7) and a back layer (8) with thermal insulation, which are joined together by an adhesive element, being both panels suspended from the fillets using hooks (9) comprising a lower branch (10) inserted between the two layers of the panels, from at least two opposite edges of said panels, an upper branch (3) resting on the fillets, and a central branch (14) between the upper and lower branches, attached to the edge of the panel and to the fillet.

2. Coating according to claim 1, **characterized in that** the hooks (9) comprise grooved U-shaped pieces, with flat branches, being one of these end branches (10) in a lower position to be inserted between both layers (7 and 8) of the panel (1), being the central branch (14) in vertical position, attached at its inner surface to the edge of said panel and upwardly protruding from the back surface of the panel in a section with the same height as that of the fillets (2) profile, while the other end branch (13) of the U-shaped piece is in an upper position, attached to a fillet (2).
3. Coating according to claim 2, **characterized in that** the upper end branch (13) extends laterally in a section (16) which rests on a fillet (2).
4. Coating according to claim 3, **characterized in that** the hooks (9) rest on the fillets (2) through the lateral extension (16) of the upper end branch (13), resting the central branch (14) through the edge adjacent to said lateral extension, on the fillet (2) on which said extension (16) rests.
5. Coating according to claim 1, **characterized in that** the lower end branch (10) of the hook, to be inserted between both layers of the panel, features a pointed end section with a central axial groove (15) from its free edge.
6. Coating according to claim 1, **characterized in that** the hook is made of U-shaped folded plating, with the end branches (10 and 13) perpendicular to the central branch (14), being the lower end branch (10) longer than the upper end branch (13).
7. Coating according to claim 1, **characterized in that** the panels also include a third reinforcing back layer.
8. Coating according to claim 1, **characterized in that** the upper (13') and lower (10) branches of the hooks are perpendicular to the central branch (14) and they run in opposite directions, from said central branch, with a Z-shaped straight angle arrangement; and **in that** the upper branch (13') has a hole (20) for the passage of a binding screw (21) to fix them to the fillets (2).
9. Coating according to claim 8, **characterized in that**

the aforementioned hole (20) is oblong in perpendicular direction to the central branch (14) of the hook.

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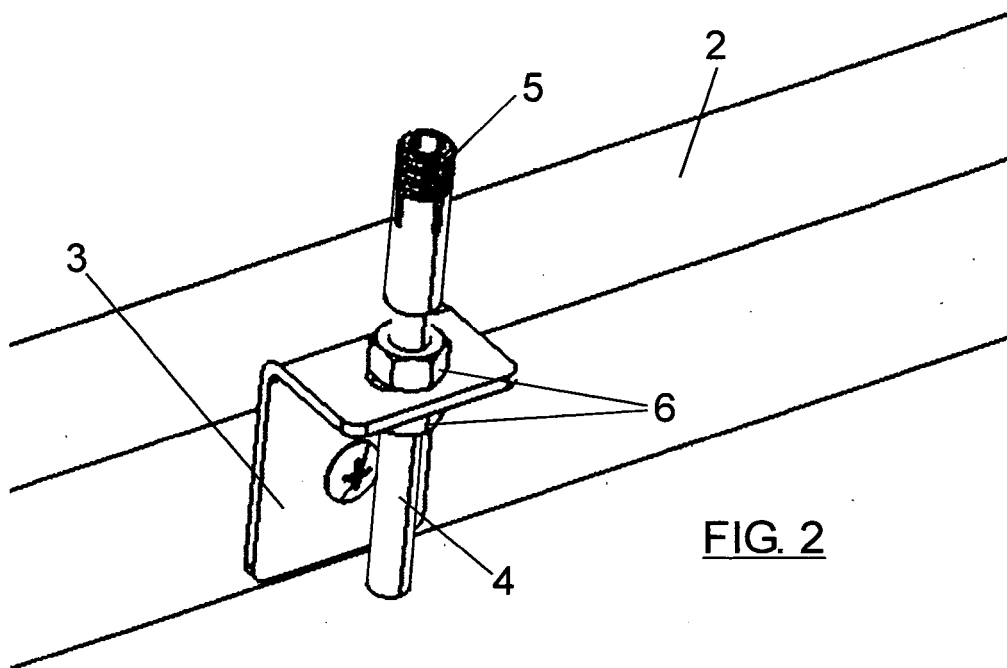
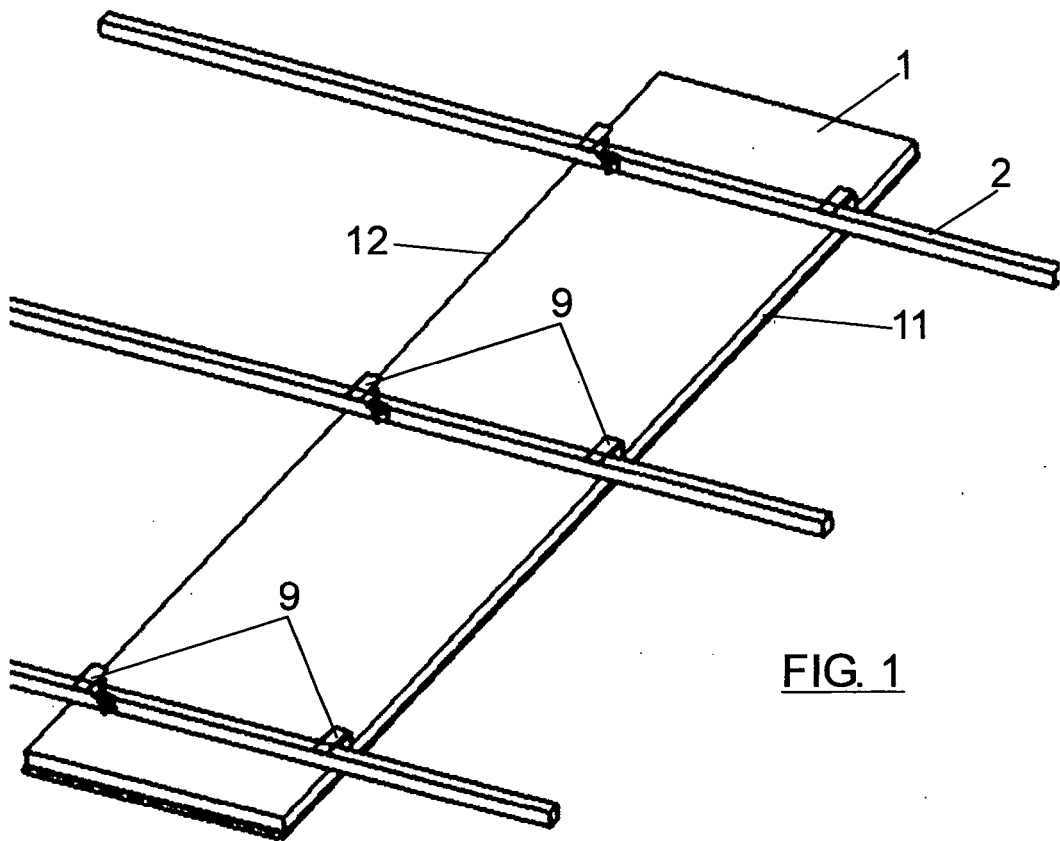
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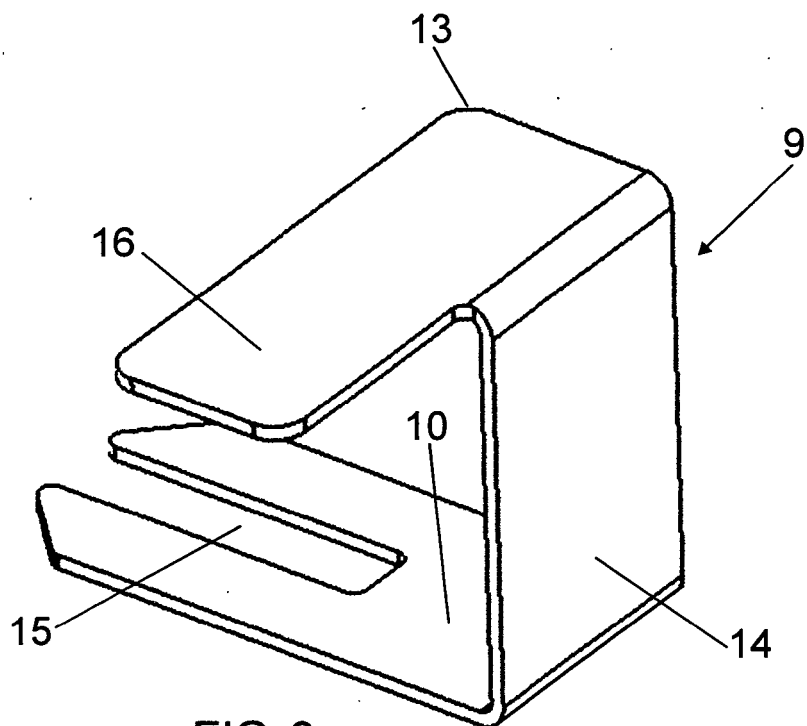


FIG. 3

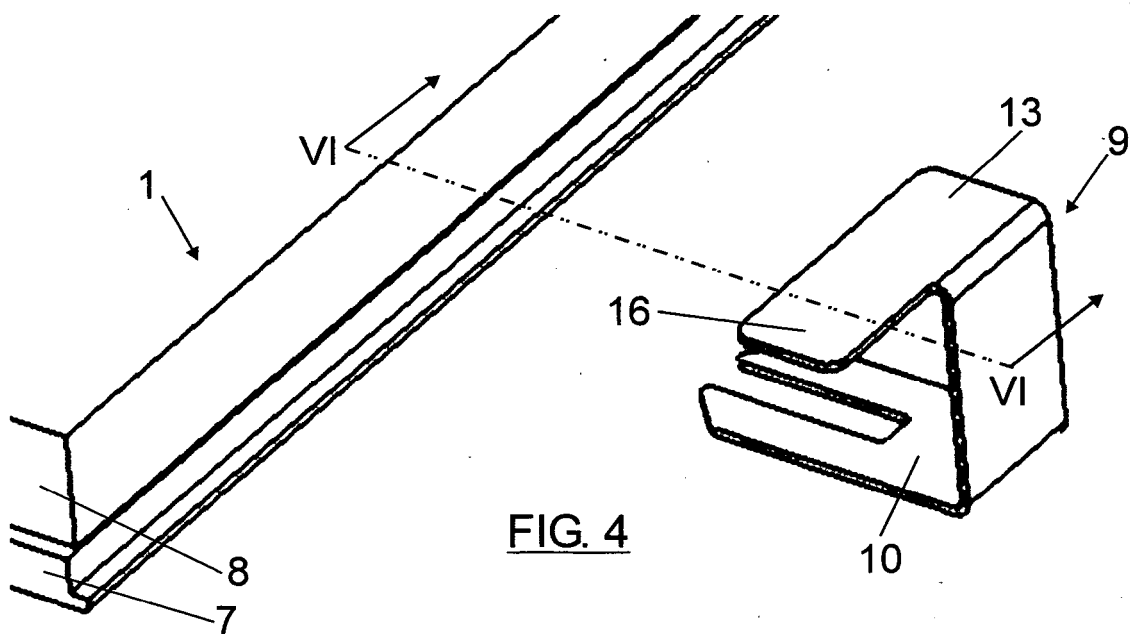
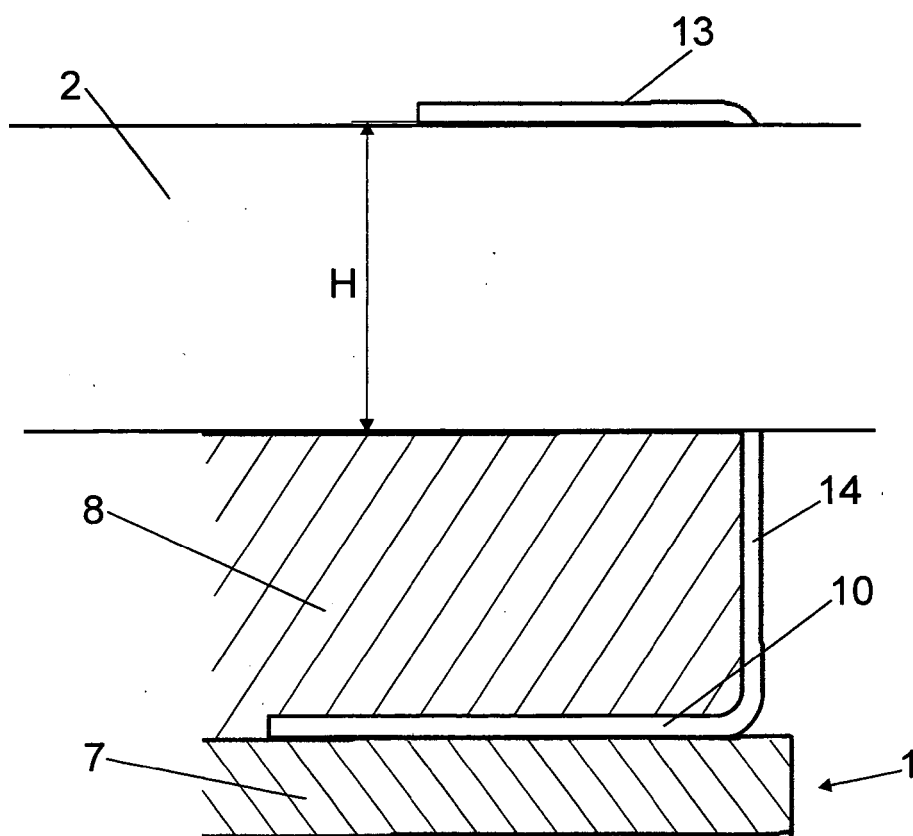
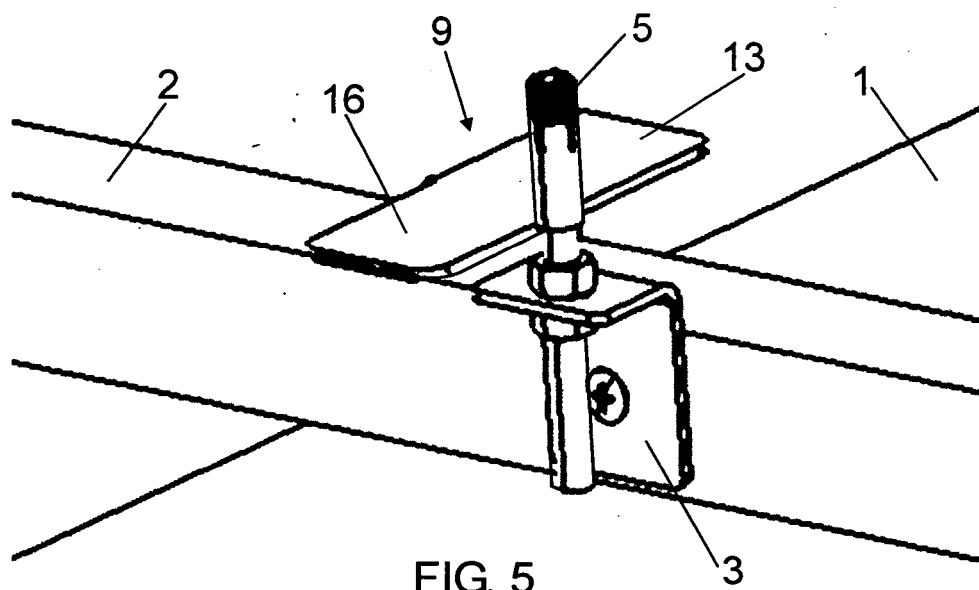
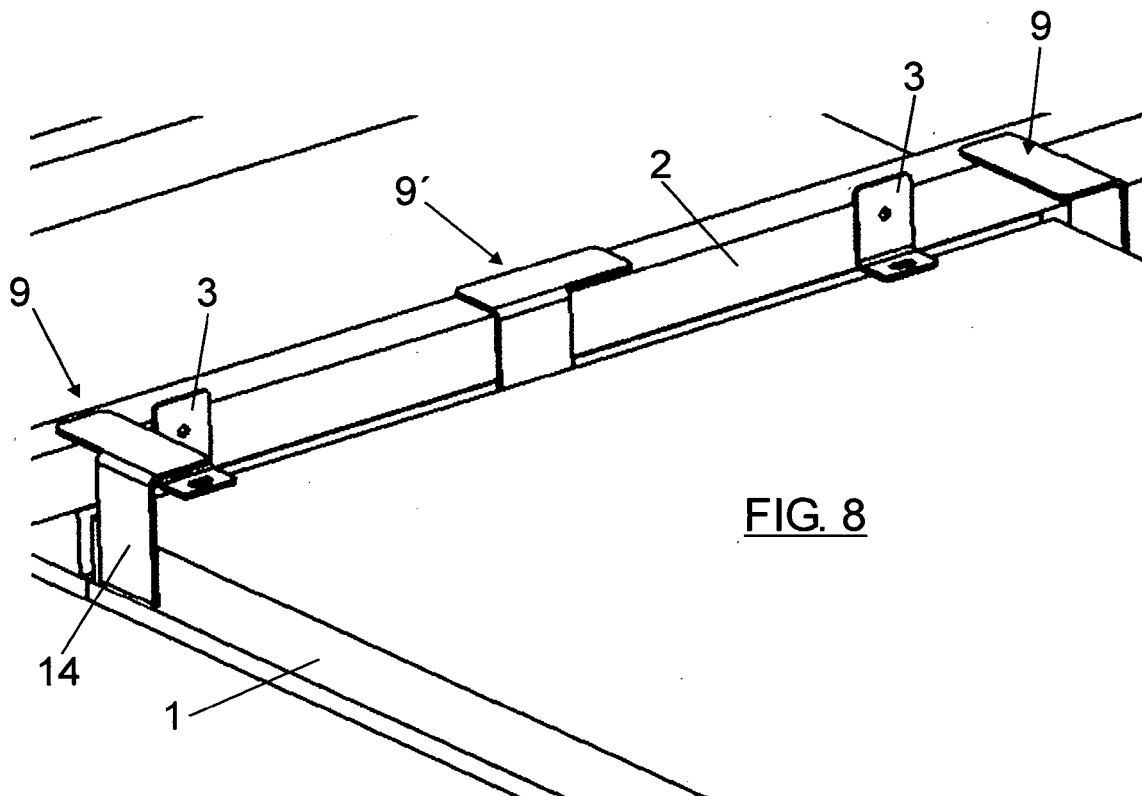
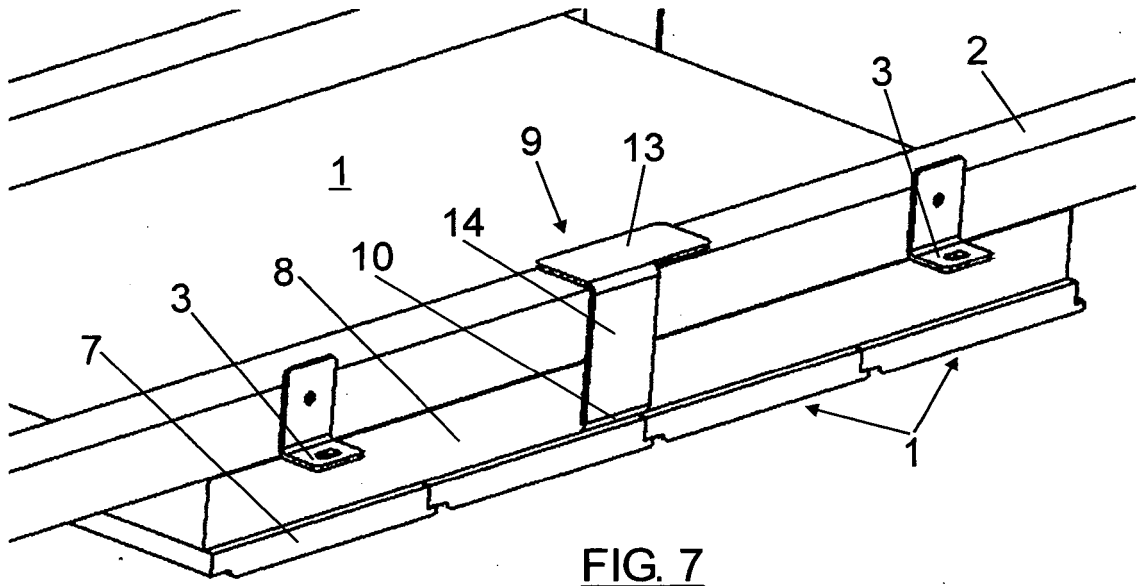
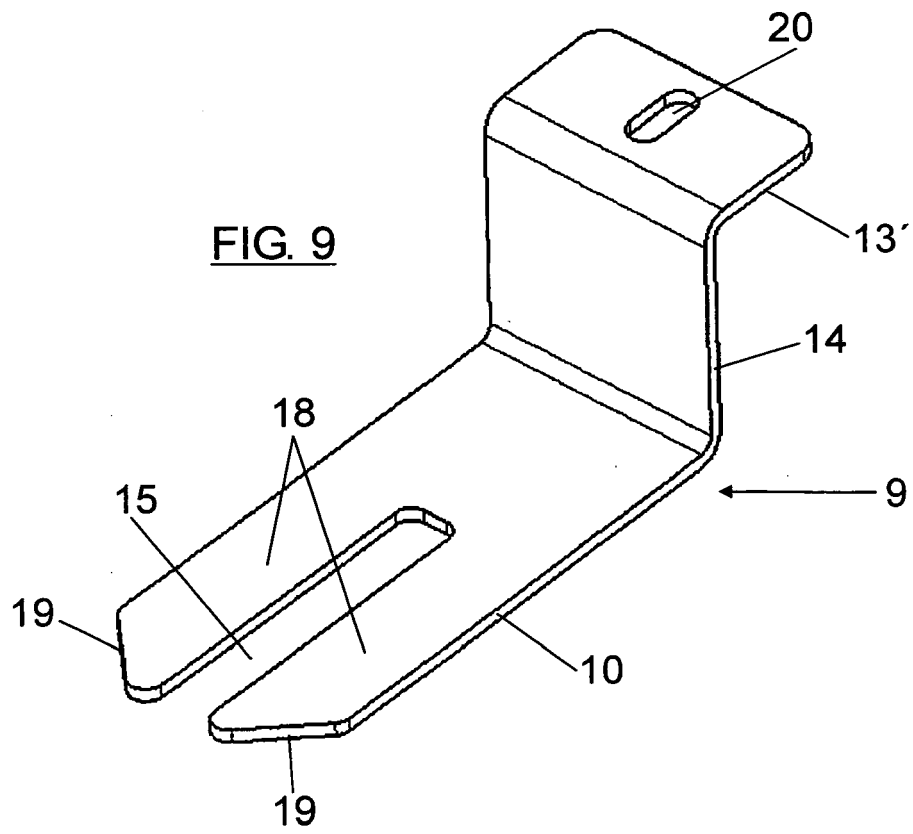
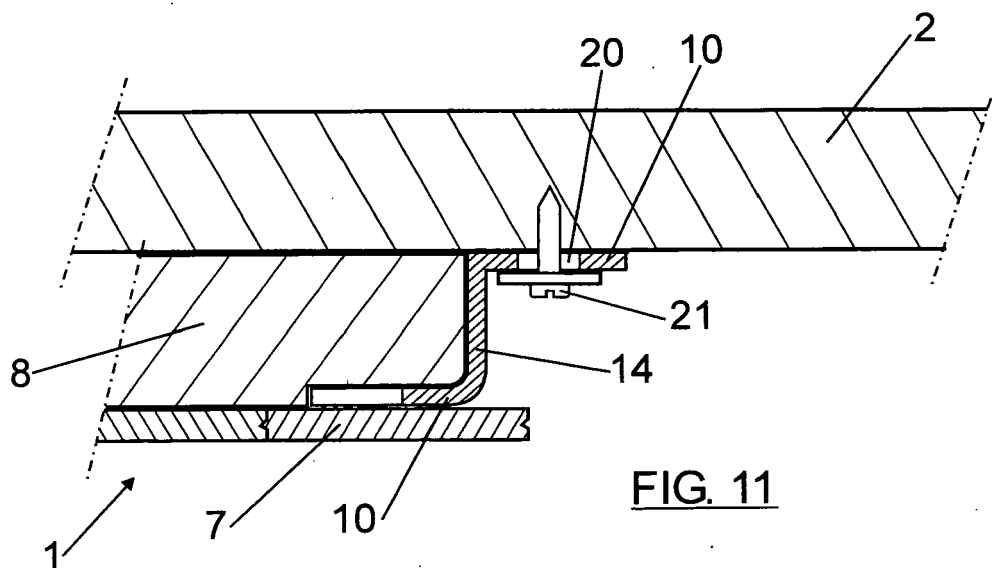
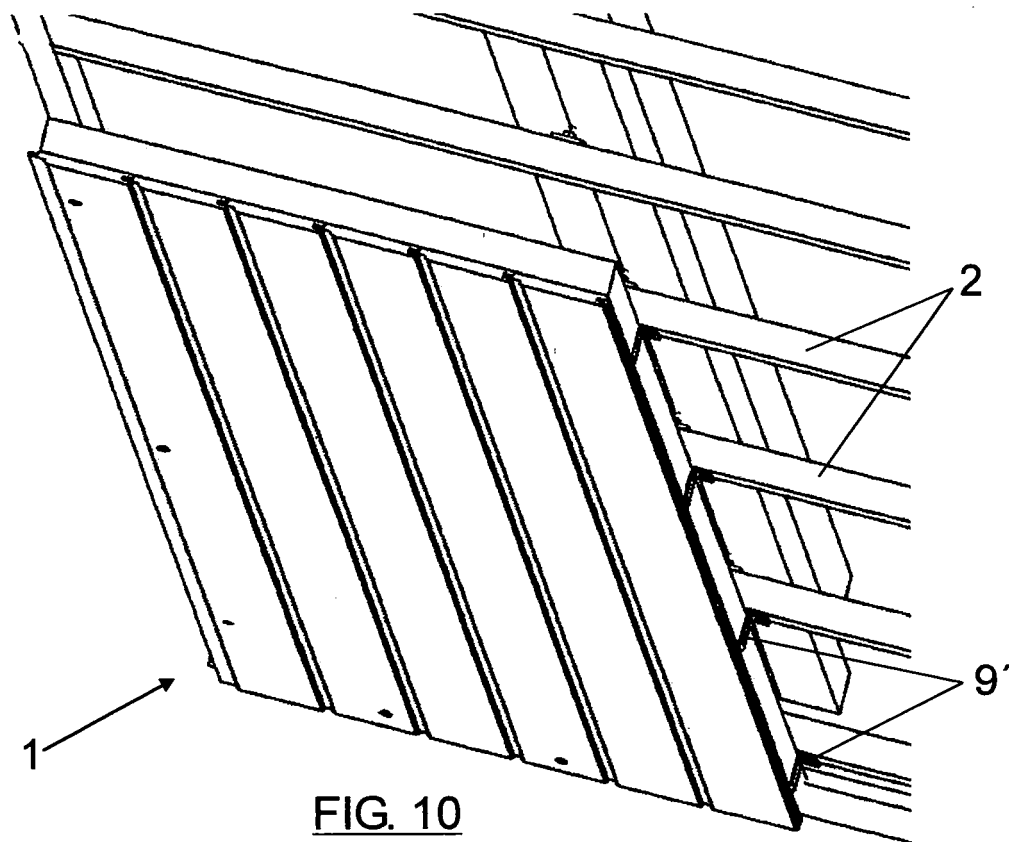


FIG. 4











EUROPEAN SEARCH REPORT

Application Number
EP 09 38 0076

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 2 968 070 A (WOLSTEAD OLAF P) 17 January 1961 (1961-01-17) * figures 1,2,4 * * column 3, line 41 - line 66 * -----	1-3,6-9	INV. E04B9/22 E04B9/24 E04F13/08
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A	US 2 229 064 A (FINCH HAROLD L) 21 January 1941 (1941-01-21) * figures 1,3,4 * -----	1-9	
A	GB 812 008 A (EAST SEA TRADING COMPANY LTD) 15 April 1959 (1959-04-15) * figures 1-3 * -----	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04B E04F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 July 2009	Examiner Bauer, Josef
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	

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EPO FORM 1503 03.92 (P04C01)

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

EP 09 38 0076

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
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16-07-2009

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