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(54) **Floor System**

(57) The present invention discloses a floor system comprising coupling means (1) for coupling of at least two floor plates (2,2') positioned side by side forming a joint (3) between the floor plates. The floor plate (2) is provided with an engagable portion (4) with an undercut (5),

wherein the coupling means (1) has an engaging portion (6) with an engaging part (7) which is dimensioned to, when mounted, extend into said undercut (5) of the engagable portion (4) of the edge side opposite the joint edge of the floor plate (2).

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Description

Field of the invention

[0001] The present invention relates to a floor system comprising coupling means for coupling of at least two floor plates positioned side by side forming a joint between the floor plates.

Technical background

[0002] It is common to use floor racks, consisting of wood board, as floor covering for patios, balconies, wet rooms, restaurants etc. However there are sometimes an unwanted clattering sound if the floor racks are put on hard and/or uneven ground. Further an uneven ground could tend to cause the floor racks to separate. There can also be problems covering a surface with an attractive pattern if the surface does not correspond exactly with the dimensions of the floor racks. Different sizes of floor racks are usually designed of different sizes of wood boards, which makes it impossible to combine different sizes of floor racks with out any visible notice.

Summary of the invention

[0003] One object of the present invention is to achieve a cheap and improved floor system.

[0004] A further object according to the present invention is to achieve a floor system that will solve at least one of the objects above.

[0005] The above mentioned objects and other objects, that will be clear from the following description is obtained by a system according to the enclosed claims.

[0006] According to an aspect of the invention a floor system is disclosed comprising coupling means for coupling of at least two floor plates positioned side by side forming a joint between the floor plates. The floor plate is provided with an engagable portion with an undercut, wherein the coupling means has an engaging portion with an engaging part which is dimensioned to, when mounted, extend into said undercut of the engagable portion of the edge side opposite the joint edge of the floor plate. In this way a connecting force is achieved, which forces two floor plates against each other. Since the engaging part is engaged in the undercut a stable connection is achieved that will not run the risk of coming loose unintentionally. The engagable portion with undercut can be integrated in the floor plate or the distance element and does not request any extra parts that would increase the cost.

[0007] Preferably the dimension of the part A, extending into the undercut and engaged in the vertical direction, somewhat exceeds the dimension of the undercut B in the same direction. This will provide a barb effect and when the coupling element is in mounted position this difference in extension tend to keep the engaging portion in the undercut. This retaining effect can be achieved by

self-locking, geometrical locking and/or friction in combination with the geometrical differences in dimension/extension.

[0008] Preferably the coupling part has a guiding surface in connection with the engaging part for temporary movement of the engaging part, which by a resilient snap action will fall into said undercut for connection of two floor plates. The geometry, for instance the guiding surface, and the resilient characteristics of the coupling means makes it easy to snap a number of floor plates together by positioning them next to each other and press them towards the ground, such that the coupling means will snap into the floor racks. Further the guiding surface will increase the tolerances for positioning of a floor rack next to another when they are about to be interconnected. Due to the geometry of the coupling means and the resilient properties it is also possible to disassemble the floor racks from each other.

[0009] In a preferred embodiment the guide surface has a sharp gripping edge, which in mounted position will engage with the floor plate. This in combination with the above mentioned barb effect will provide a retaining effect of the coupling means in the undercut.

[0010] Advantageously the guide surface has an angle approximately 45° relatively to the horizontal plane. Of course it is possible to use other angles for the guiding surface, for example in the range 30-60° in relation to the horizontal plane. The angle of the guiding surface will affect the force that guides the engaging part which will snap resilient into the undercut when connecting. Further this angle will also affect the tolerance and force that is needed to force a floor rack to connection with a coupling means and another floor rack.

[0011] Preferably the coupling means is made of a strip of resilient material. In a preferred embodiment the coupling means is manufactured by bending of a resilient strip of steel.

[0012] Advantageously there are space provided for the distance elements, which holds the floor plates together, and are positioned in the same plane when two floor plates are packaged with their under sides against each other. One of the floor plates provides a free space for the distance element of the other floor plate. By packing the floor racks with the under sides against each other with crossbar/distance elements in the same plane approximately 33% of the space can be saved compared to if the floor racks would have been piled straight on top of each other.

[0013] Preferably at least a third of the under side of the floor plate is free from distance element in at least one direction. This provides the floor racks to fit into each other in a space saving way.

[0014] Advantageously the floor plate is provided with distance parts made of an elastomer material which is thicker than the material of the coupling means, this provides drainage under the floor plate. These distance parts are preferably positioned at certain points under the distance elements of the floor plates to provide a possible

passage also across an elongated distance element. Distance parts made of an elastomer material does also provide a shock- and sound absorbing effect.

Brief description of drawings

[0015] By way of example, currently preferred embodiments of the present invention will now be described with reference to the accompanying figure of drawing in which;

Fig 1 discloses a perspective view seen at an angle from below of a floor system according to the invention.

Fig 2 discloses a perspective view of a coupling means.

Fig 3a-c shows a side view of a sequence for coupling two floor racks together.

Fig 4 discloses a side view of floor plates piled on top of each other.

Fig 5a-b discloses perspective views of floor plates of different sizes.

Fig 6 shows a side view of a floor plate and a coupling means.

Fig 7 discloses in a side view a part of a floor plate and a coupling means in coupled position.

Fig 8 shows a perspective view at an angle from below of a part of two connected floor plates.

Description of Preferred Embodiment

[0016] The floor system consist of floor plates 2, or racks, and coupling means 1 for connecting the floor plates. The floor plates 2 consist of a number of upper boards 13 kept together by two cross bars (distance elements) 10 which are attached, for example, with nails, screws or glue on the under side of the upper boards 13. It is also possible to hold the boards of the plates together in other ways than with underlying cross bars 10 for example with fasteners direct between the boards 13.

[0017] The underlying distance elements 10 has a L-shaped cross section that is mounted in such a way that an undercut 5 is formed on the inner edges of the distance elements 10. Four shorter distance elements 11 are also mounted, with a similar undercut as for the crossbars 10, on the under side of the floor plates such that the distance elements 10,11 together forms a pattern of two C-shapes positioned with their openings towards each other. The shorter distance elements 11 makes it possible to connect the floor plates along all four joint edges.

[0018] To achieve the undercuts 5 of the plates it is possible to use a number of different alternative (not shown) like for example holes with different diameters at different dept, special fasteners forming an undercut or shorter machined portions of the crossbars to achieve the undercuts. Further it is also possible to create the undercuts direct in the upper boards for example in the embodiment where the upper boards are held together

by fasteners direct between the boards.

[0019] The coupling means 1 according to the invention is made of a resilient strip of metal approximately 15cm long, 10-15mm wide and a thickness less than 1mm, but it can also be designed with other dimensions and materials. By three bendings of the metal strip in each end, a profile is achieved according to fig 2. The C-shaped engaging portion 6 is formed for engaging the crossbar 10 and the engagable portion 4 with relatively good fitting. The upper part of the C-shaped engaging portion 6 forms, together with the tilted guiding surface, an engaging part 7 which resiliently will snap into the undercut 5 of the floor plate 2. In the shown embodiment this resilience is performed mainly in the long straight bottom portion of the coupling means 1. In alternative embodiments the resilience can be provided by other portions of the coupling means or even by separate parts. In a further alternative embodiment a coupling means 1 is used having an engaging portion 6 and engaging part 7 corresponding to what has been described above in one end, as the other end is attached, for example, pivoting in the plane of the plate with a screw or rivet direct in the floor plate.

[0020] The connection of two floor plates 2,2' to each other is performed by first mounting desired number of coupling means 1, suitably two on each joint side, of the first plate which is positioned with the right side up on the ground. Due to that the upper edge of the guiding surface 8 of the coupling means provides a remaining barb effect when the coupling means 1 initially is engaged in the undercut of the plate 2, all coupling means will remain in position which facilitates the assembly. In this way the coupling means 1 are also prevented from coming out of position during the assembly. The barb effect is achieved by positioning the engaging part 7 of the coupling means at the undercut 5 of the plate and pressing it slightly into the undercut. Due to that the dimension A in fig 6 is slightly larger than the dimension B a resilient detaining compression of the engaging part is achieved when it is mounted in the undercut 5. Next step in the connection is to position the neighbouring plate 2', of course with desired coupling means attached to the plate 2', adjacent the first plate 2 and move the second plate towards the ground (fig 3a). The guiding surfaces 8 of the coupling means of the first plate will help to guide the other plate 2' to correct position at the same time as the other plate will press towards the guiding surfaces 8 of the coupling means and in this way the coupling means 1 will be resiliently tensioned (fig 3b). At the continued movement of the second plate downwards towards the ground the engaging parts 7 of the coupling means will resiliently snap into the undercut 5 of the second plate and in this way connect the two plates without tools (fig 3c).

[0021] It is also possible to adjust the two plates 2,2' in relation to each other by pushing them sideways after they have been engaged. Further it is also possible to mount a single plate at an empty position in the middle of a pattern of plates.

[0022] Dismounting of floor plates is performed in the opposite way compared to the mounting. It is also possible to dismount a plate from the middle of a pattern of plates, in this case a tool will facilitate disengagement of the coupling means from above through the slit between the plates.

[0023] In fig 1 is shown a system according to the invention where different sizes of plates are combined. The plates 2,2' can also be placed in check pattern or with all the upper boards in the same direction.

[0024] Fig 4 shows how the floor plates efficiently and space-saving can be stacked in pairs with the undersides against each other to, for example, be loaded in a container.

[0025] Fig 8 shows how the shorter distance elements 11 makes it possible to connect two floor plates 2,2' in the direction across the upper boards 13.

[0026] In the preferred embodiment the coupling means does not constitute distance element in the joint between two plates, but if a slit is desired between the floor plates the distance parts, for example made of wood, can be used. In this way it is possible to achieve a distance between the plates that corresponds to the distance between the boards of the floor plates.

[0027] Distance parts 12 made of rubber with a thickness of 3mm which are attached under the floor plates 2 makes it possible to use the floor plates also in bath rooms and showers since the water is allowed to flow under the floor plates. The coupling means 1 can be mounted both across and along the direction of the boards of the rack to achieve a desired pattern of for example parallel boards or check pattern. The upper boards 13 which the plates are made of has the same dimensions (15x45mm) independent of the size of the plate. This makes it possible to combine different sizes of plates without causing an unattractive impression.

Claims

1. A floor system comprising coupling means (1) for coupling of at least two floor plates (2) positioned side by side forming a joint (3) between the floor plates **characterized in that** said floor plate (2) is provided with an engagable portion (4) with an undercut (5), wherein the coupling means (1) has an engaging portion (6) with an engaging part (7) which is dimensioned to, when mounted, extend into said undercut (5) of the engagable portion (4) of the edge side opposite the joint edge of the floor plate (2).
2. A floor system according to claim 1, wherein the dimension of the engaging part (7), extending into the undercut and engaged in the vertical direction, somewhat exceeds the dimension of the undercut (5) in the same direction.
3. A floor system according to any of the preceding

claims, wherein said coupling part (1) has a guiding surface (8) in connection to the engaging part (7) for temporary moving of the engaging part (7), which by a resilient snap action will fall into said undercut (5) for connection of two floor plates (2,2').

4. A floor system according to claim 3, wherein said guide surface (8) has a sharp gripping edge (9), which in mounted position will engage with the floor plate (2).
5. A floor system according to any of the claims 3 to 4, wherein the guide surface (8) has an angle approximately 45° relatively to the horizontal plane.
6. A floor system according to any of the preceding claims, wherein the coupling means (1) is made of strip of a resilient material.
7. A floor system according to any of the preceding claims, wherein said coupling means (1) is manufactured by bending of a resilient strip of steel.
8. A floor system according to any of the preceding claims, wherein the distance element (10), which holds the floor plates (2) together, is positioned in the same plane when two floor plates (2,2') are packaged with their under sides against each other, wherein one of the floor plates provides a free space for the distance element (10) of the other floor plate.
9. A floor system according to claim 8, wherein at least a third of the under side of the floor plate (2) is free from distance element (10) in at least one direction.
10. A floor system according to any of the preceding claims, wherein said floor plate (2) is provided with distance parts (12) made of an elastomer material that is thicker than the material of the coupling means (1), which provides drainage under the floor plate (2).

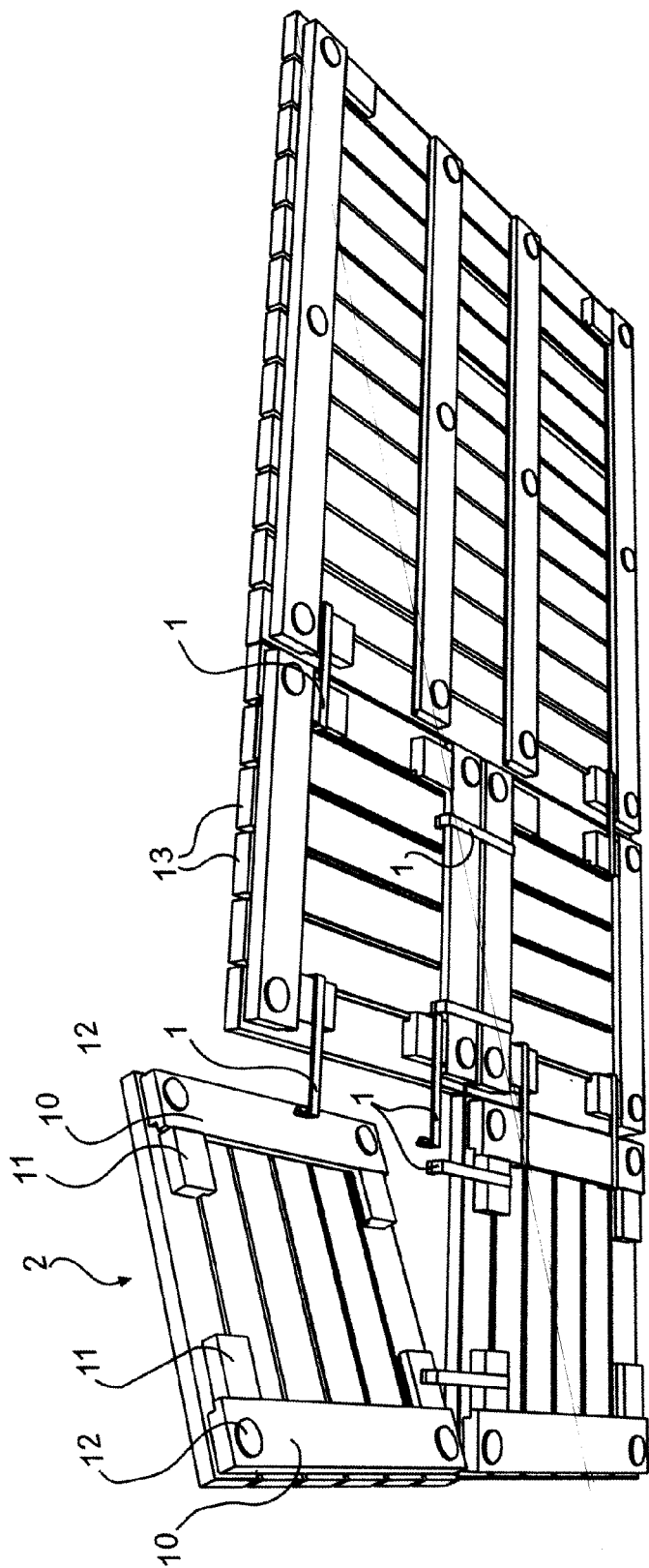
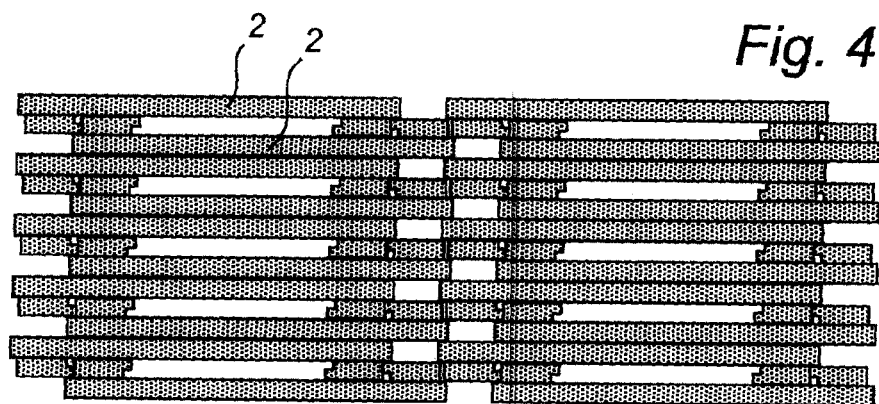
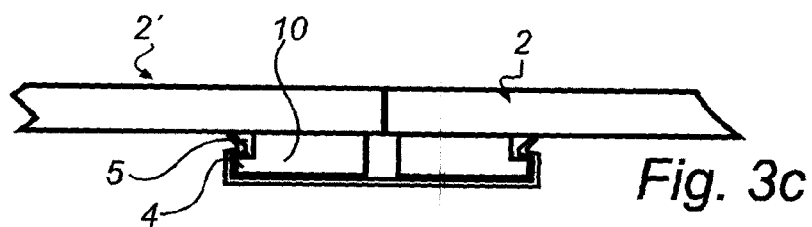
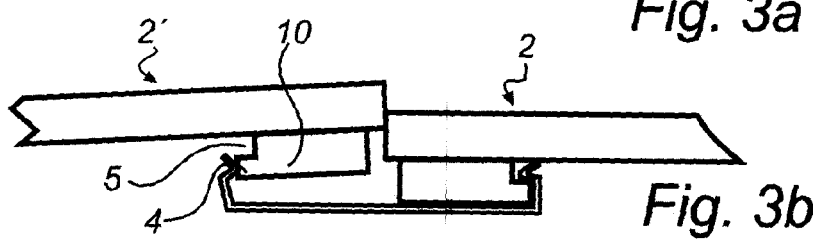
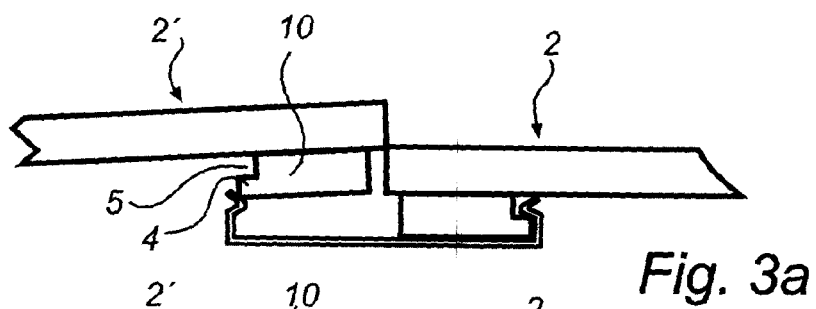
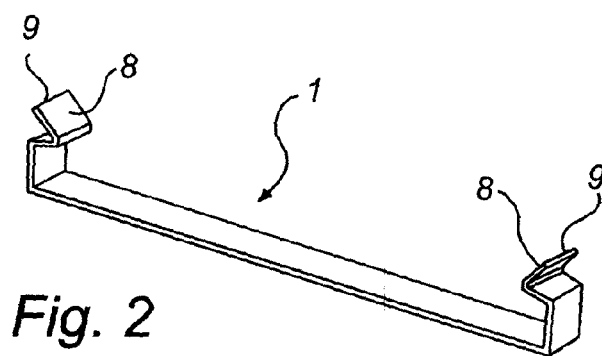


Fig. 1



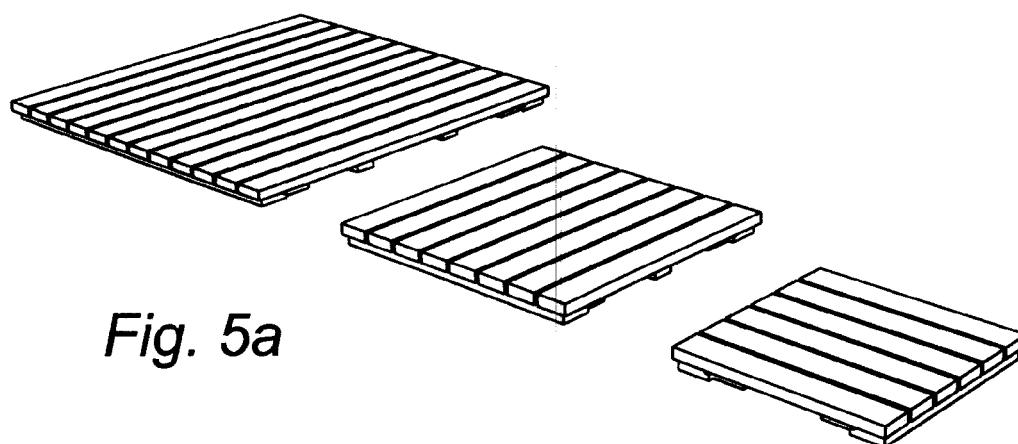


Fig. 5a

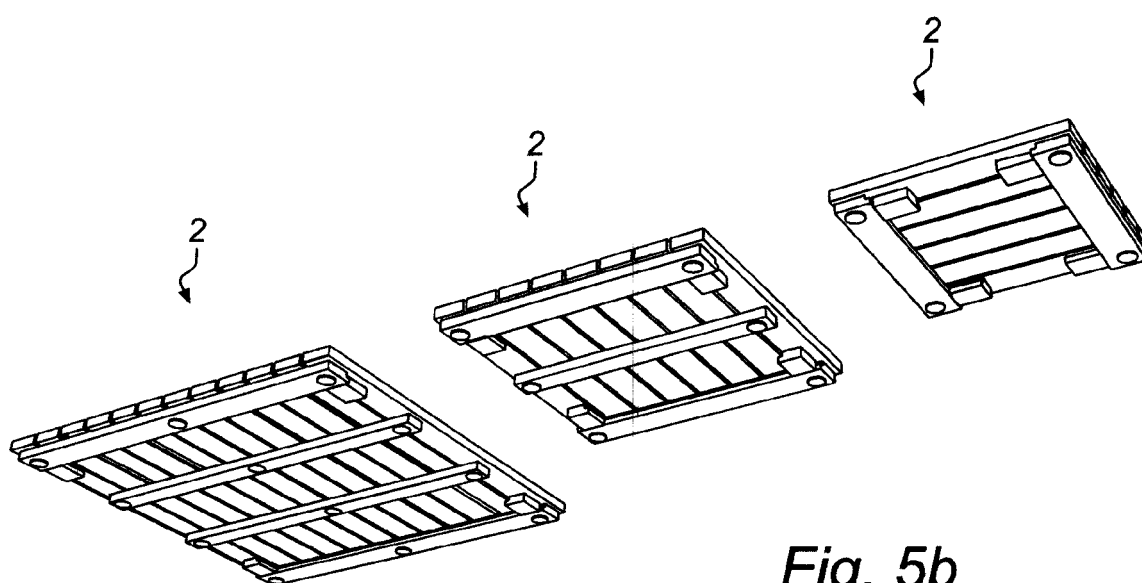


Fig. 5b

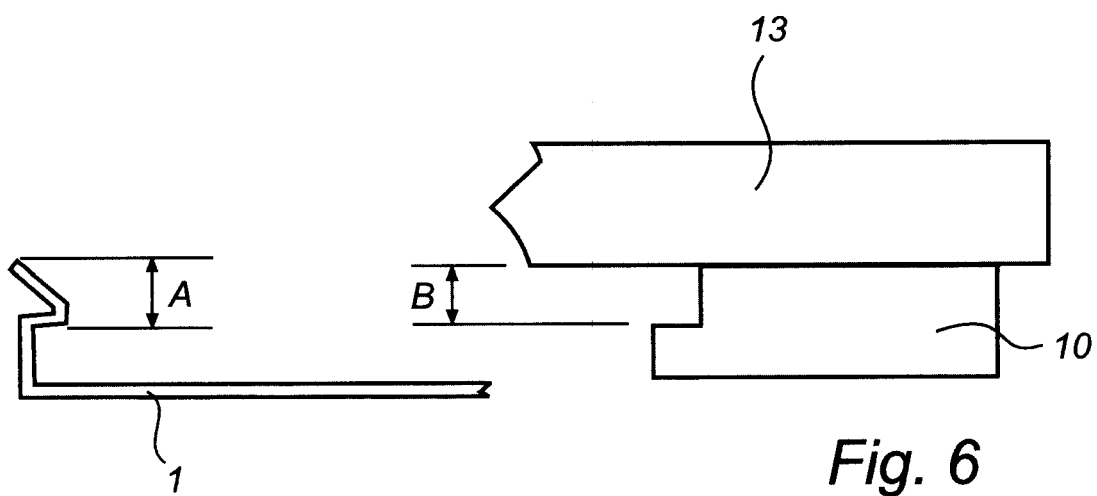


Fig. 6

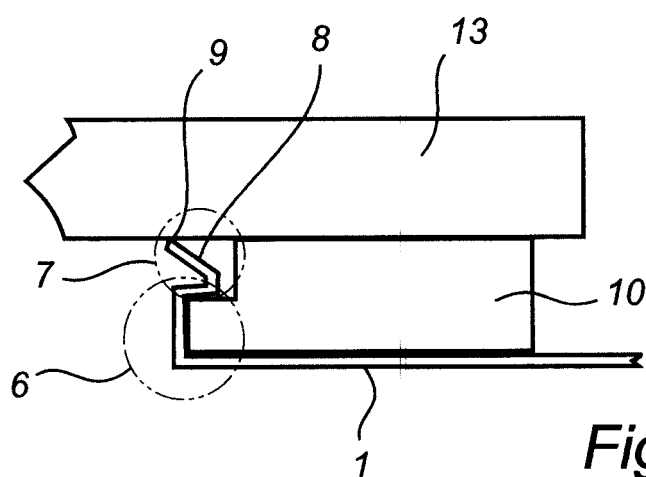


Fig. 7

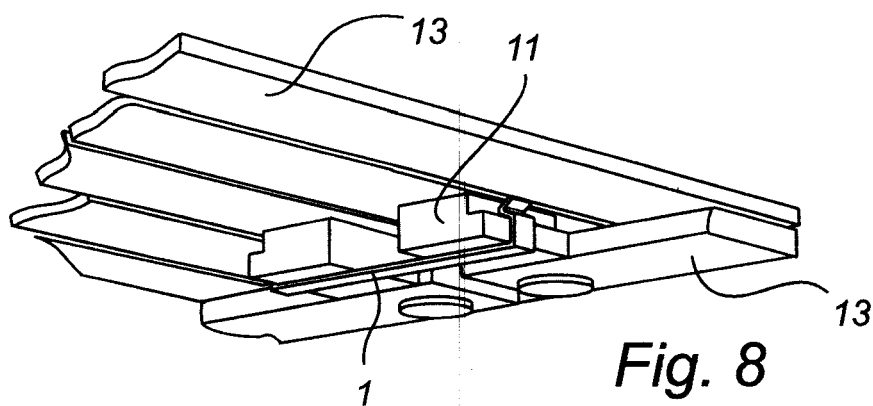


Fig. 8



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Application Number
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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