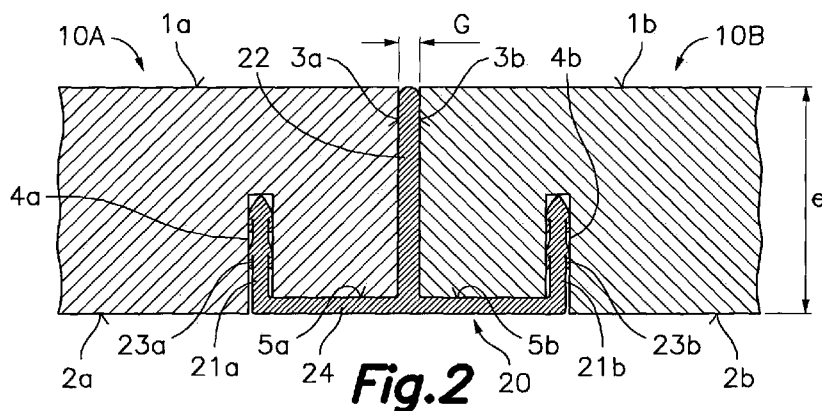




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(54) Title: SYSTEM FOR A FLOOR COVERING



(57) Abstract: The invention relates to a system for a floor covering, comprising covering panels (10A, 10B) made of a hard material, having relatively little thickness (e), with upper and lower surfaces (1a, 2a; 1b, 2b), perimetral edges (3a, 3b) and recesses (4a, 4b), and attachment parts (20) made of a relatively flexible material and having projecting members (21a, 21b) and spacing members (22a, 22b). In practice, the projecting members (21a, 21b) of the attachment parts are introduced in the recesses (4a, 4b) of the covering panels (10A, 10B) assuring the link between covering panels (10A, 10B), and the spacing members (22a, 22b) of the attachment parts (20) remain between the facing edges (3a, 3b) of the covering panels (10A, 10B) filling a gap (G) between them in the form of a joint.

SYSTEM FOR A FLOOR COVERING

Technical field

The present invention relates to a system for a floor covering comprising planar covering
5 panels made of stone, stone aggregate, or ceramic, such as slabs, tiles, or the like, and attachment
parts for connecting said covering panels to one another.

State of the Prior Art

In the case of covering panels such as tiles, small slabs, mosaic tiles and glazed tiles,
10 according to a classic system, the covering panels are first applied on a bed previously prepared
in a floor arranging the edges of one covering panel facing the edges of the adjacent covering
panels, leaving a narrow gap between them, and then the facing edges of adjacent covering
panels are grouted by filling the aforementioned gaps comprised between the edges with a grout
15 based on lime, plaster and/or cement or the like. A drawback of this system is that the covering
panels are not linked to one another, such that they can separate, the gap between them becoming
wider.

Other systems for attachment contiguous covering panels to one another that are made of
a hard material such as marble or a marble aggregate for floor covering are also known. Such
20 systems have in common the fact that the edges of the covering panels are attached by means of
the mutual fitting of respective recesses and projections. Nevertheless, due to the maneuver for
carrying out said fitting or coupling, the recesses and projections on the edges of covering panels
of a single part have the drawback of being very prone to sustaining breaks or spalling. Relatively
sinuous or complicated auxiliary fixing elements are sometimes used to prevent this.

Document US-A-4840825, for instance, relates to a tile for covering floors having a stone
25 layer attached to a substrate made up of three sub-layers, each of them having substantially the
same shape as the stone layer. A first sub-layer adjacent to the stone layer is aligned with the
latter, a second intermediate sub-layer is displaced in two directions to define two projecting
tongues from two edges and two grooves on the opposite edges. The third or outer sub-layer is
displaced in one direction to define a projecting tab provided with two fixing holes. Therefore the
30 tiles allow a fixing with the projecting tongues interlocking in the grooves of the adjacent tiles.
The stone layer itself does not have any recess or projection for coupling it with another adjacent
stone layer, but it has the drawback of needing said additional sub-layers which define the
projections and grooves in order to perform the tongue and groove coupling with tiles adjacent.

On the other hand, document WO 01/38668 relates to a covering, particularly for a floor,
35 ceiling or wall, which is characterized in that it comprises a number of successive solid covering
panels of a single layer, and fixing elements. The fixing elements consist of supports which, by
means of fixing portions, retain the panels in a disconnectable manner by coupling with
connection elements formed through a portion of the thickness of the panels. The same document
describes that the supports are fixed to a base surface and have end portions in the form of hooks
40 which engage and hold a respective panel by opposite ends, and that each panel has profiled

tongued and grooved opposite edges, which are susceptible to being coupled with another adjacent panel held in a similar manner. Nevertheless, this tongue and groove coupling of recesses and projections formed in the edges of covering panels of a single solid part has the drawback of being prone to breaking or spalling of the edges of the covering panels.

5 On the other hand, document DE-A-10355370 relates to a system for covering a floor comprising covering panels and attachment elements. The covering panels have an upper stone or ceramic layer, and a lower layer defining recesses in its edges. The attachment elements have holes for fixing them to a base surface and projections which are coupled to the recesses of the lower layers of two adjacent covering panels. In a coupled condition, the coupling elements are
10 covered by the upper layers of the covering panels. This system has the drawback of needing a lower layer placed against the upper stone or ceramic layer.

Document EP-A-1146182 discloses a surface covering system comprising planar covering panels made of laminate material and attachment parts for joining the covering panels together. The covering panels have upper and lower surfaces and perimetral edges, and include
15 channel-shaped recesses formed in said perimetral edges, while the attachment parts comprise two projecting members which are introduced in said recesses of two adjacent covering panels and a spacing member filling a gap between the opposite edges of the two adjacent covering panels. A drawback with this system, especially if it is applied to relatively thin covering panels made of a relatively hard and fragile material, such as stone, stone aggregate, or ceramic, is that
20 the recesses formed in the perimetral edges weakens the region of the covering panels adjacent the edges and makes it prone to breaking due to loads or knocks applied thereon.

Document US-2007/0107359 discloses planar floor covering panels made of wood or laminate material and attachment parts for joining the covering panels together. The covering panels have upper and lower surfaces and perimetral edges, and include channel-shaped recesses
25 having a hook-shaped cross-section formed in the lower surface close to said perimetral edges. The attachment parts comprise a bottom portion with two projecting members which are introduced in said recesses of two adjacent covering panels. A drawback with this system, especially if it is applied to relatively thin covering panels made of stone, stone aggregate, or ceramic, is that the recesses having a hook-shaped cross-section formed in the lower surface of
30 the covering panels are very difficult to mechanize and involve high productions costs.

Disclosure of the invention

The present invention provides a system for a floor covering, comprising as is conventional covering panels, such as tiles or the like, having opposite upper and lower surfaces
35 and several perimetral edges perpendicular to said upper and lower surfaces, and attachment parts having connection elements which interact with corresponding connection elements formed in said covering panels. The covering panels are solid planar panels made of a hard material, such as stone, for example marble or a marble aggregate, or ceramic having a relatively little thickness, for example in the range of 15 to 25 mm, and they have recesses formed in or close to said
40 perimetral edges. Said attachment parts are made of a relatively flexible material and comprise

two projecting members which are introduced in said recesses of two adjacent covering panels assuring the link of one covering panel with another covering panel.

The recesses of the covering panels comprise channels formed in the lower surface close to the perimetral edges thereof, and the projecting members of the attachment parts are
5 configured to interact with said channels. Each recess has the shape of a relatively narrow and deep channel having mutually parallel planar side inner surfaces extending perpendicular to the lower surface and parallel to the edges of the covering panels.

The recesses can be readily made in the stone, stone aggregate or ceramic covering panel by means of a conventional radial abrasive wheel, and the fact that the recesses are made in the
10 lower surface of the covering panel avoids breaking of portions adjacent the perimetral edges of the covering panel due to loads or knocks applied thereon which typically occur when the recesses are made in the edges of the covering panel.

Advantageously, each of the attachment parts further comprises a spacing member extending parallel to the edges of the covering panels and arranged in the form of a joint filling a
15 gap between the opposite edges of two adjacent covering panels when they are both coupled to one another.

The system of the present invention has the advantage of providing a technically reliable and aesthetically suitable attachment between covering panels made of a single solid piece of marble or marble aggregate without the need for one or more additionally lower layers attached
20 to the solid layer, as occurs with some of the systems of the state of the art, and without the risk of breaks or spalling on the edges of the covering panels, as occurs with other systems of the state of the art.

The system for a floor covering of the present invention further simplifies the composition of the covering and the assembly thereof, assuring correct coplanar leveling of the
25 upper surfaces of all the covering panels and a uniform width of the joints between them.

It is to be emphasized the simplicity of the system of the present invention since it only comprises two different elements, namely, the covering panels in the form of tiles, panels or the like, and the attachment parts. In relation to conventional covering panels, the covering panels of the present invention have only added the recesses, preferably in the form of a channel, which
30 can be formed with relative ease using techniques that are well-known in the field of the manufacturing pieces of marble or aggregate marble, and the attachment parts can be industrially manufactured at a relatively low cost using techniques for extruding or molding plastic material.

In some applications it is common to include a flexible material layer between the lower surface of the covering panel and the floor on which the covering is applied. In such case, the
35 flexible material layer can be adhered to the lower surface of each covering panel or it can be extended on the floor in the form of a mat for placing the attachment parts and covering panels thereon. The flexible material layer can alternatively be in the form of separate flexible layer elements and the attachment parts can be attached to the flexible layer elements.

The foregoing and other features and advantages will be better understood from the following detailed description of several embodiments with reference to the attached drawings, in which:

5 Fig. 1 is a perspective view of two covering panels and an attachment part before being attached, which form part of a system for a floor covering according to a first embodiment of the present invention;

Fig. 2 is a sectioned elevational view of the two covering panels and the attachment part of Fig. 1 in a coupled position;

10 Fig. 3 is a perspective view of two covering panels and an attachment part before being attached, which form part of a system for a floor covering according to a second embodiment of the present invention;

Fig. 4 is a sectioned elevational view of the two covering panels and the attachment part of Fig. 3 in a coupled position;

15 Fig. 5 is a cross-sectional view of two covering panels, an attachment part and a flexible material layer before assembly, which form part of a system for a floor covering according to a third embodiment of the present invention;

Fig. 6 is a plan view of a flexible layer element having several attachment parts adhered thereto forming a lattice, and which constitute an application of the third embodiment shown in Fig. 5; and

20 Fig. 7 is a plan view of a lattice made of attachment parts constituting an application of the third embodiment shown in Fig. 5.

Detailed Description of Preferred Embodiments of the Invention

25 Referring first to Figs. 1 and 2, there is shown a system for a floor covering according to a first embodiment of the present invention comprising a set of covering panels 10A, 10B to be placed adjacent to one another to form the floor covering, and attachment parts 20 for connecting the covering panels 10A, 10B to one another.

30 The aforementioned covering panels 10A, 10B are essentially all the same, although to facilitate the description the covering panel depicted on the left side of Figs. 1 and 2 has been designated as covering panel 10A and the covering panel depicted on the right side of Figs. 1 and 2 has been designated as covering panel 10B.

35 Each of the covering panels 10A, 10B has an upper surface 1a, 1b, or visible surface, a lower surface 2a, 2b, or non-visible surface opposite the upper surface 1a, 1b, and perimetral edges 3a, 3b demarcating the contour thereof. In practice, and in a covering position, said lower surface 2a, 2b will be placed against a base surface of a floor (not illustrated). The covering panels 10A, 10B, which are planar and have a polygonal contour, have relatively little thickness "e" in relation to the extension of the upper and lower surfaces 1a, 2a; 1b, 2b, for example in the range of 15 to 25 mm..

40 In this first embodiment shown in Figs. 1 and 2, the covering panels 10A, 10B have recesses 4a, 4b in the form of notches or relatively narrow and deep channels formed in the lower

surface 2a, 2b close to the corresponding facing edges 3a, 3b thereof, which channels extend towards the inside of the covering panel 10A, 10B without reaching the upper surface 1a, 1b. Each of said recesses 4a, 4b has mutually parallel planar side inner surfaces facing each other which extend perpendicular to the lower surface 2a, 2b, and therefore parallel to the edge 3a, 3b.

5 The aforementioned recesses 4a, 4b span substantially the entire length of the lower surface of the covering panel 10A, 10B.

The attachment part 20 is made of a relatively flexible material, such as a plastic material, and has the form of an elongated strip having a length substantially equal to the length of the edges 3a, 3b of the covering panels 10A, 10B adjacent to the corresponding recesses 4a, 4b.

10 4b.

Here the attachment part 20 is configured as a profile having a cross-section in the form of a trident having a bottom 24 from the ends of which there extend in the same direction two projecting members 21a, 21b in the form of mutually parallel flanges perpendicular to the lower surface 2a, 2b, and therefore parallel to the edges 3a, 3b, of the covering panels 10A, 10B. A spacing member 22 also in the form of a flange parallel to the two projecting members 21a, 21b extends from a middle region of said bottom 24 of the attachment part 20 and in the same direction as the projecting members 21a, 21b. This spacing member 22 of the attachment part 20 spans a height substantially equal to the thickness "e" of the covering panels 10A, 10B, although this condition is not essential.

15 20 spans a height substantially equal to the thickness "e" of the covering panels 10A, 10B, although this condition is not essential.

Here each of the projecting members 21a, 21b of the attachment part 20 comprises a pair of protuberances 23a, 23b intended for forcing the fitting of the projecting member 21a, 21b inside the corresponding recess 4a, 4b of the covering panel 10A, 10B. Preferably, each of said protuberances 23a, 23b comprises a dual flap the cross-section of which has a harpoon shape favorable for its introduction in the respective recess 4a, 4b of the covering panel 10A, 10B but not favorable for its extraction therefrom, thus preventing the attachment part 20 from coming out of their housings and assuring the mutual link of the covering panels 10A, 10B. Each projecting member 21a, 21b could alternatively have a single protuberance 23a, 23b or more than two protuberances 23a, 23b with an equivalent result.

20 25 Here each of the projecting members 21a, 21b of the attachment part 20 comprises a pair of protuberances 23a, 23b intended for forcing the fitting of the projecting member 21a, 21b inside the corresponding recess 4a, 4b of the covering panel 10A, 10B. Preferably, each of said protuberances 23a, 23b comprises a dual flap the cross-section of which has a harpoon shape favorable for its introduction in the respective recess 4a, 4b of the covering panel 10A, 10B but not favorable for its extraction therefrom, thus preventing the attachment part 20 from coming out of their housings and assuring the mutual link of the covering panels 10A, 10B. Each projecting member 21a, 21b could alternatively have a single protuberance 23a, 23b or more than two protuberances 23a, 23b with an equivalent result.

In the first embodiment shown in Figs. 1 and 2, the covering panels 10A, 10B have undercuts 5a, 5b formed in the lower surface 2a, 2b between the edges 3a, 3b and the recesses 4a, 4b. These undercuts 5a, 5b have a depth substantially equal to the thickness of the bottom 24 of the attachment part 20.

30 35 In the first embodiment shown in Figs. 1 and 2, the covering panels 10A, 10B have undercuts 5a, 5b formed in the lower surface 2a, 2b between the edges 3a, 3b and the recesses 4a, 4b. These undercuts 5a, 5b have a depth substantially equal to the thickness of the bottom 24 of the attachment part 20.

In practice, for coupling or attaching one covering panel 10A to another covering panel 10B (Fig. 2) one of the projecting members 21a of the attachment part 20 is fully introduced in the recess 4a of one of the covering panels 10A and the other projecting member 21b of the attachment part 20 is fully introduced in the recess 4b of the other covering panel 10B. The two covering panels 10A and 10B are therefore positioned such that the spacing member 22 is housed tightly between the facing edges 3a, 3b and in contact therewith. The spacing member 22 of the attachment part 20 thus acts as a joint filling a gap "G" between the opposite edges 3a, 3b of the two adjacent covering panels 10A, 10B when they are both linked by the attachment part 20.

40 45 In practice, for coupling or attaching one covering panel 10A to another covering panel 10B (Fig. 2) one of the projecting members 21a of the attachment part 20 is fully introduced in the recess 4a of one of the covering panels 10A and the other projecting member 21b of the attachment part 20 is fully introduced in the recess 4b of the other covering panel 10B. The two covering panels 10A and 10B are therefore positioned such that the spacing member 22 is housed tightly between the facing edges 3a, 3b and in contact therewith. The spacing member 22 of the attachment part 20 thus acts as a joint filling a gap "G" between the opposite edges 3a, 3b of the two adjacent covering panels 10A, 10B when they are both linked by the attachment part 20.

In this position, the bottom 24 of the attachment part 20 is housed in the undercuts 5a, 5b of the covering panels 10A and 10B, such that the attachment part 20 does not project downwards from the lower surface 2a, 2b of the covering panels 10A and 10B.

Now in relation to Figs. 3 and 4, a second embodiment of the present invention is described, which is completely similar to the first embodiment described above in relation to Figs. 1 and 2, except in that here said undercuts 5a, 5b are not provided. Instead, the covering panels 10A, 10B have added respective flexible material layers 6a, 6b fixed on their lower surfaces 2a, 2b. Each of said flexible material layers 6a, 6b covers the entire corresponding lower surface 2a, 2b of the covering panel 10A, 10B except a portion of lower surface 7a, 7b extending between the corresponding edge 3a, 3b and the recess 4a, 4b adjacent thereto.

The aforementioned flexible material layers 6a, 6b can be made of foam, rubber, or another flexible material including thermoplastics, expanded polystyrene (EPS) and the like, and have a thickness substantially equal to the thickness of the bottom 24 of the attachment part 20. Thus, in the coupling position (Fig. 4), the bottom 24 of the attachment part 20 is housed between the edges of the flexible material layers 6a, 6b fixed to the covering panels 10A and 10B, such that the attachment part 20 does not project downwards from the lower surface of the flexible material layers 6a, 6b. These foam layers exert an anti-impact action.

Fig. 5 illustrates a third embodiment of the present invention, which comprises covering panels 10A, 10B and attachment parts 20 similar to those of the first embodiment described in relation to Figs. 1 and 2, and furthermore a flexible material layer 6 separated from the covering panels 10A, 10B and arranged under the attachment parts 20. The attachment parts 20 can optionally be attached, for instance by means of adhesive, to the flexible material layer 6. In an assembled position (not shown), the bottom 24 of the attachment part 20 is housed in the undercuts 5a, 5b of the covering panels 10A and 10B and flush with the lower surfaces 2a, 2b of the covering panels 10A, 10B, such that both the lower surfaces 2a, 2b of the covering panels 10A, 10B and the bottom 24 of the attachment parts 20 rest on the flexible material layer 6.

Fig. 6 shows an application of the third embodiment described in relation to Fig. 5. In this application, the flexible material layer 6 is in the form of a plurality of regularly shaped flexible layer elements 30, which can be arranged adjacent to one another on a floor covering a desired extension thereof. Several attachment parts 20 in the form of elongated profiles arranged forming a lattice 25 with a mesh size adapted to the size of the covering panels 10A, 10B are fixed on the flexible layer elements 30. The bottom 24 of the attachment parts rests on the flexible material layer 6 of the flexible layer elements 30.

In the application example of Fig. 6, the mesh of the lattice 25 is square, adapted to square covering panels 10A, 10B, and the flexible layer elements 30 have edges 31 arranged diagonally at 45° with respect to the directions of the attachment parts 20. The lattice 25 has intersection nodes 26 in the intersections between the attachment parts 20 and the edges 31 of the flexible layer element 30 are aligned with some of said intersections providing intersection semi-nodes 27 in the intersections adjacent to the edges 31 of the flexible layer element 30. These intersection nodes and semi-nodes 26, 27 are configured such that the ends of the projecting

members 21a, 21b of the attachment parts 20 adjacent to the intersections do not interfere with the corners of the covering panels 10A, 10B.

Fig. 7 shows a lattice 25 of attachment parts 20 similar to that described in relation to Fig. 6, separated from the flexible layer element 30. In this application example, the lattice 25 is a one-piece body obtained by molding a plastic material and can be fixed, for instance by adhesive, to the flexible layer element 30, or simply placed on one or more flexible layer elements 30 previously arranged on the floor forming a flexible material layer 6. In this second case, the configuration of the flexible layer elements 30 does not have to coincide with the configuration of the lattice 25.

Although Figs. 6 and 7 show the flexible layer element 30 and the lattice 25 adapted to square covering panels 10A, 10B, they could alternatively be adapted to covering panels 10A, 10B of other shapes. The lattice 25 can span several entire meshes for housing several covering panels 10A, 10B, as shown in Figs. 6 and 7, or a single entire mesh, or simply one or more partial meshes, for instance having four sectors of attachment part 20 forming a cross or two sectors of attachment part 20 forming an L shape.

In any of the first, second and third embodiments shown in Figs. 1 to 5, the attachment between the covering panels 10A, 10B and the attachment parts can be reinforced by placing strips of two-sided adhesive tape (not shown) between an upper surface of the bottom 24 of the attachment parts 20 and the undercuts 5a, 5b (Figs. 1, 2 and 5) or the portions of lower surface 7a, 7b (Figs. 3 and 4) of the covering panels 10A, 10B, such that the portions of lower surface of the covering panels 10A, 10B extending between the corresponding edge 3a, 3b and the recesses 4a, 4b adjacent thereto are adhered to the bottom 24 of the attachment parts 20.

In another alternative embodiment (not shown), the covering panels 10A, 10B have one or more short recesses similar to the recesses 4a, 4b shown in Figs. 1 and 2 formed on their lower surfaces 2 but spanning only one or more portions of the length of the lower surface 2a, 2b in the direction of the corresponding edge 3a, 3b, in combination with one or more short attachment parts similar to the attachment part 20 shown in Figs. 1 and 2 but having a length suitable for the length of said one or more short recesses.

A person skilled in the art will be able to introduce changes and modifications in the embodiments shown and described without departing from the scope of the invention as it is defined in the attached claims.

CLAIMS

- 1.- A system for a floor covering, comprising covering panels (10A, 10B) and attachment parts (20), wherein the covering panels (10A, 10B) have opposite upper and lower surfaces (1a, 2a; 1b, 2b), perimetral edges (3a, 3b) perpendicular to said upper and lower surfaces (1a, 2a; 1b, 2b), and recesses (4a, 4b) formed in or close to said edges (3a, 3b), and said attachment parts (20) comprise two projecting members (21a, 21b) which are introduced in said recesses (4a, 4b) of two adjacent covering panels (10A, 10B) assuring the link of one covering panel (10A) with another covering panel (10B), characterized in that:
- 5 the covering panels (10A, 10B) are made of a hard material selected from a group comprising stone, stone aggregate, and ceramic, and have a relatively little thickness (e);
- said recesses (4a, 4b) are formed in the lower surface (2a, 2b) close to the edges (3a, 3b) of each covering panel (10A, 10B); and
- each recess (4a, 4b) has the shape of a relatively narrow and deep channel having mutually parallel planar side inner surfaces extending perpendicular to the lower surface (2a, 2b) and parallel to the edges (3a, 3b) of the covering panels (10A, 10B).
- 15 2.- The system for a floor covering according to claim 1, characterized in that each of the attachment parts (20) is made of a relatively flexible material and further comprises a spacing member (22; 22a, 22b) extending parallel to the edges (3a, 3b) of the covering panels and arranged in the form of a joint filling a gap (G) between the opposite edges (3a, 3b) of two adjacent covering panels (10A, 10B) when they are both coupled to one another.
- 20 3.- The system for a floor covering according to claim 1 or 2, characterized in that the recesses (4a, 4b) span substantially the entire length of the lower surface of the covering panel in which they are formed.
- 25 4.- The system for a floor covering according to claim 1 or 2, characterized in that the recesses (4a, 4b) are formed in one or more portions of the length of the lower surface of the covering panel in which they are formed.
- 5.- The system for a floor covering according to claim 1, characterized in that the attachment part (20) is configured as a profile having a cross-section in the form of a trident with a bottom (24) from the ends of which there extend two projecting members (21a, 21b) in the form of mutually parallel flanges perpendicular to the lower surface (2a, 2b) of the covering panels (10A, 10B), and said spacing member (22) also in the form of a flange parallel to the two projecting members (21a, 21b) extends from a middle region of said bottom (24).
- 30 6.- The system for a floor covering according to claim 5, characterized in that the spacing member (22) of the attachment part (20) spans a height substantially equal to said thickness (e) of the covering panels (10A, 10B).
- 35 7.- The system for a floor covering according to claim 5, characterized in that each of the projecting members (21a, 21b) of the attachment part (20) comprises at least one protuberance (23a, 23b) intended for forcing the fitting of the projecting member (21a, 21b) inside the corresponding recess (4a, 4b) of the covering panel (10A, 10B).
- 40

8.- The system for a floor covering according to claim 7, characterized in that said at least one protuberance (23a, 23b) comprises a dual flap the cross-section of which has a harpoon shape favorable for its introduction in the respective recess (4a, 4b) of the covering panel (10A, 10B) but not favorable for its extraction therefrom.

5 9.- The system for a floor covering according to claim 5, characterized in that undercuts (5a, 5b) are formed in the lower surface (2a, 2b) of the covering panels (10A, 10B) between the edges (3a, 3b) and the recesses (4a, 4b) adjacent thereto, said undercuts (5a, 5b) having a depth substantially equal to the thickness of the bottom (24) of the attachment part (20).

10 10.- The system for a floor covering according to claim 5, characterized in that flexible material layers (6a, 6b) are fixed on the lower surfaces (2a, 2b) of the covering panels (10A, 10B) covering substantially all the lower surfaces (2a, 2b) with the exception of portions of lower surface (7a, 7b) between the edges (3a, 3b) and the recesses (4a, 4b) adjacent thereto, said flexible material layers (6a, 6b) having a thickness substantially equal to a thickness of the bottom (24) of the attachment part (20).

15 11.- The system for a floor covering according to claim 5, characterized in that it comprises a plurality of regularly shaped flexible layer elements (30) which can be arranged adjacent to one another on a floor to form a flexible material layer (6), and several of the attachment parts (20) are arranged and fixed on each of said flexible layer elements (30) forming a lattice (25) with a mesh size adapted to the size of the covering panels (10A, 10B).

20 12.- The system for a floor covering according to any one of the preceding claims, characterized in that said thickness is in the range of 15 to 25 mm.

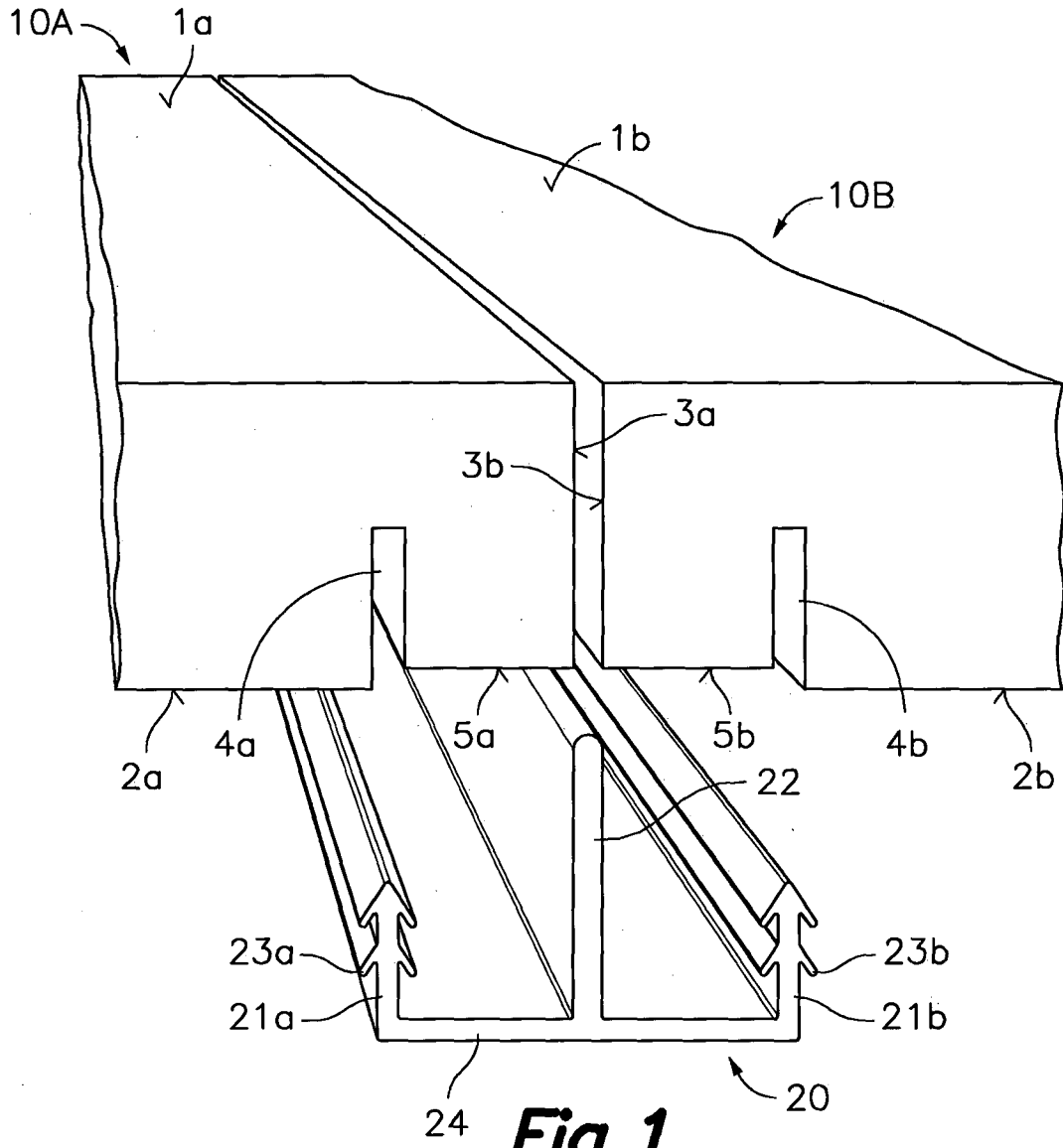


Fig. 1

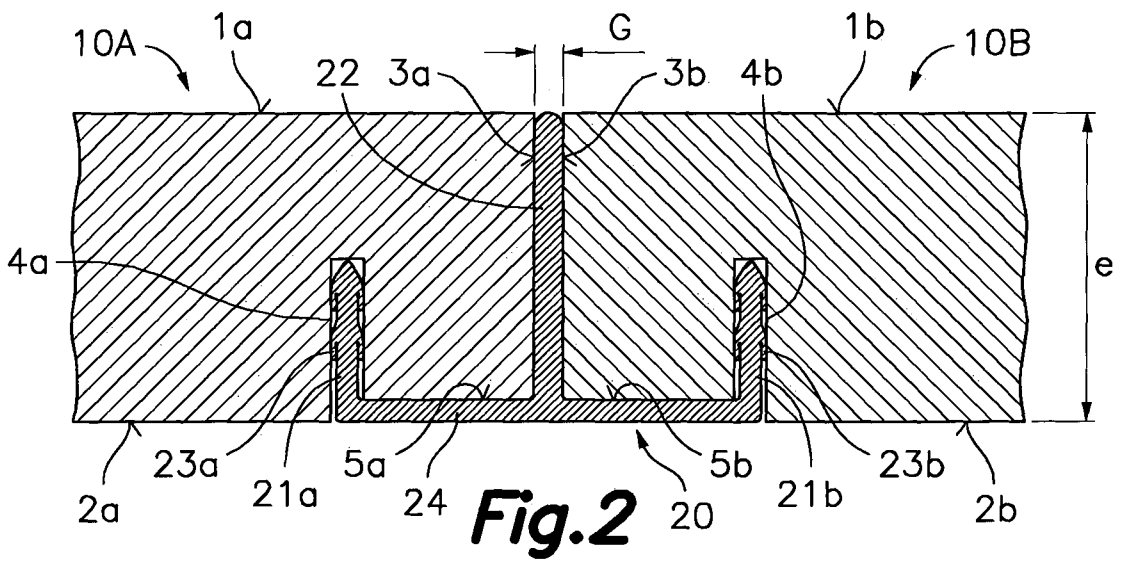


Fig. 2

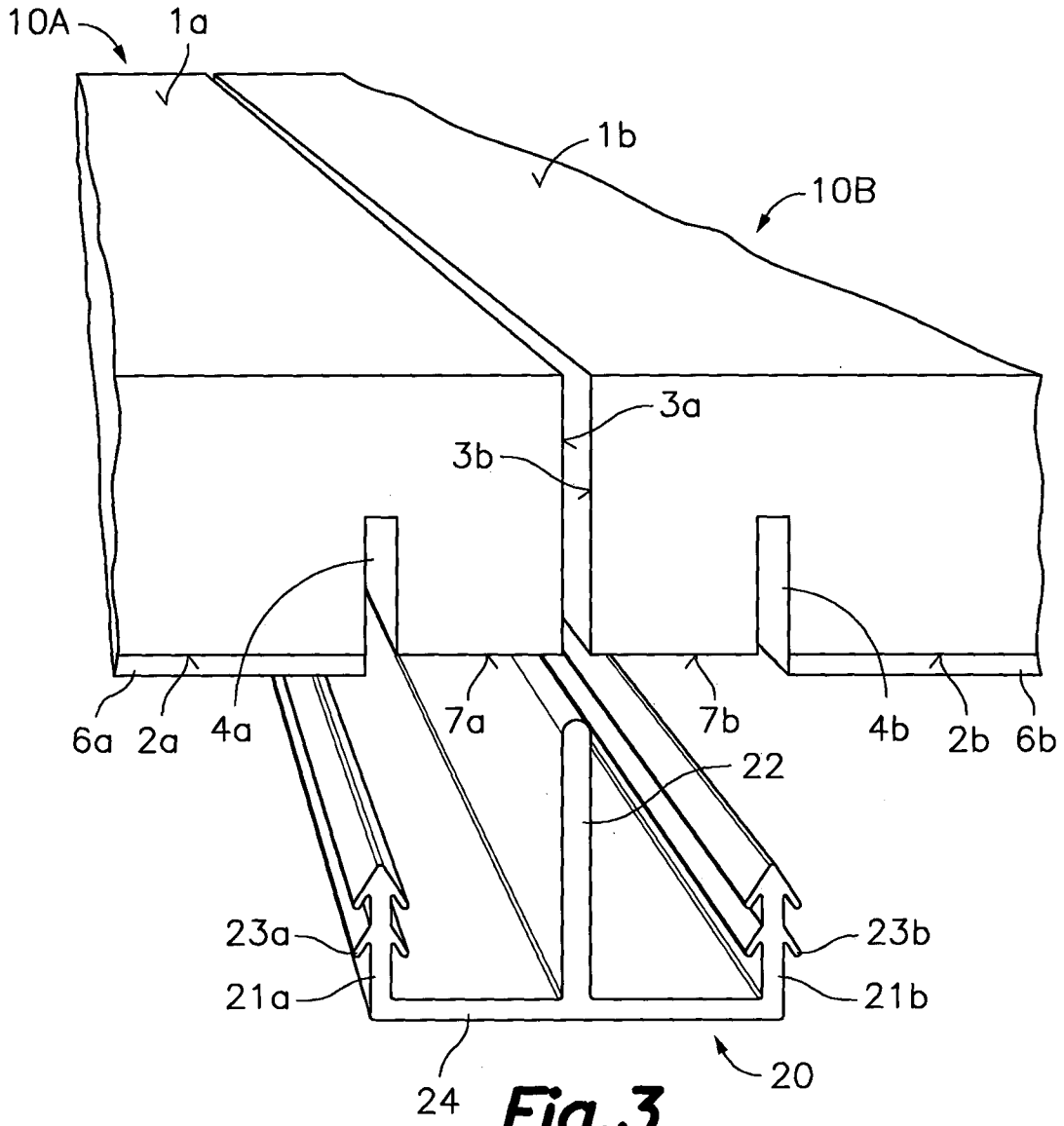


Fig.3

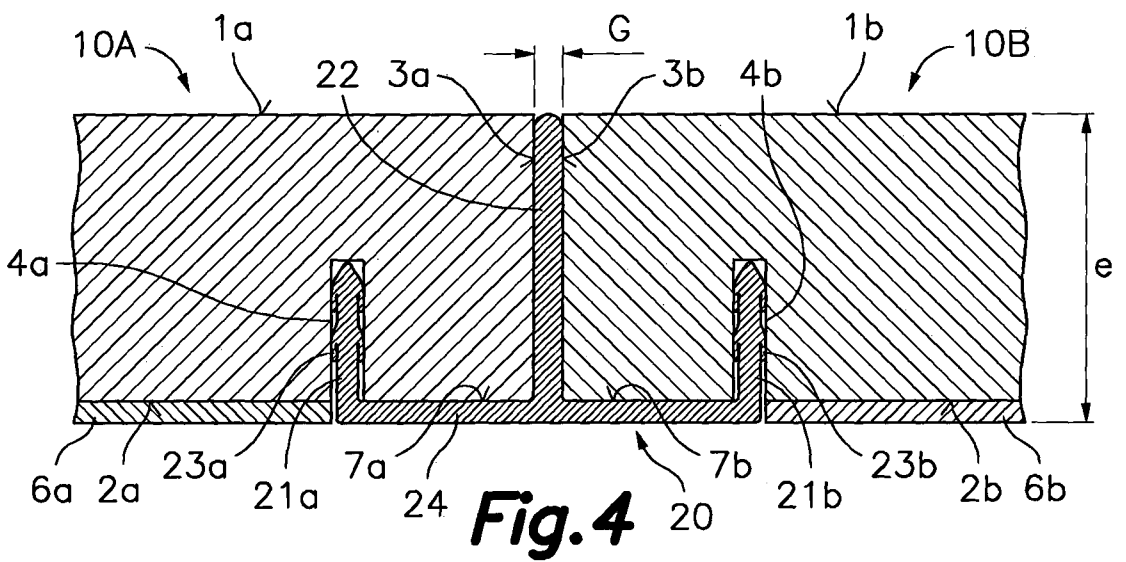


Fig.4

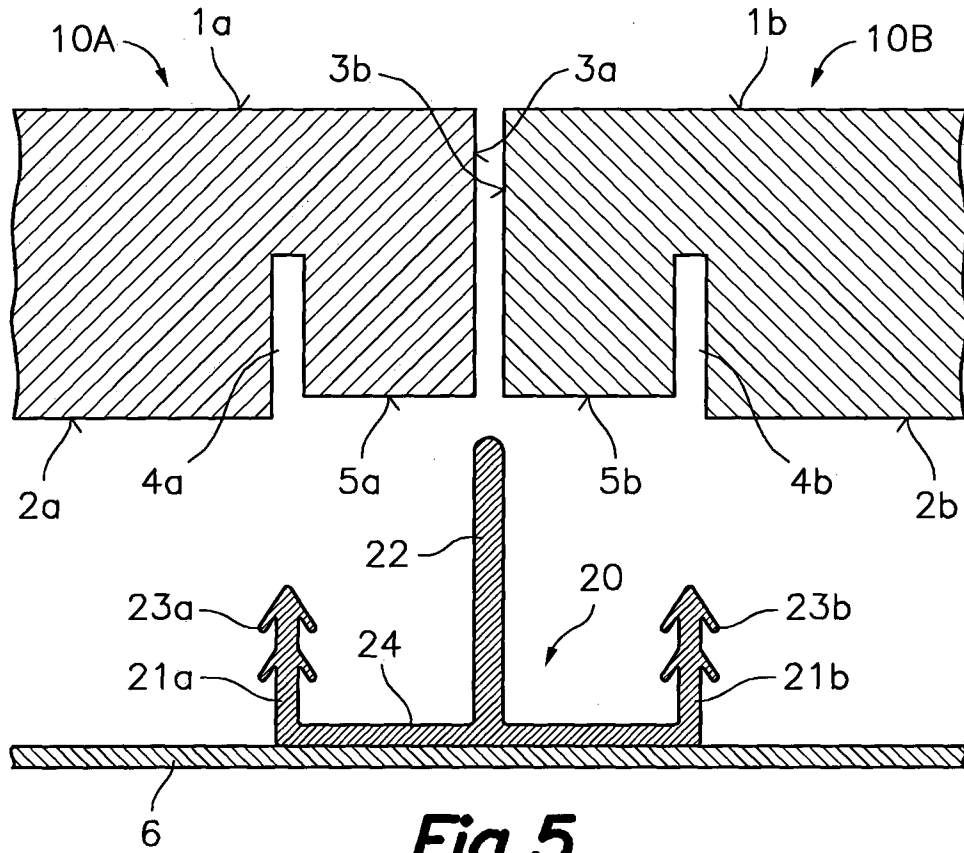


Fig. 5

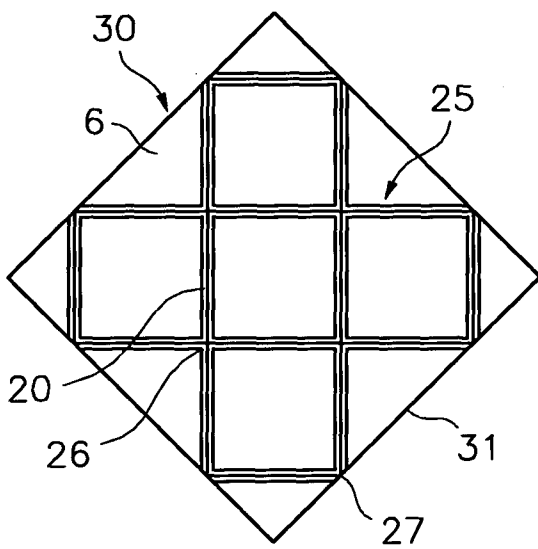


Fig. 6

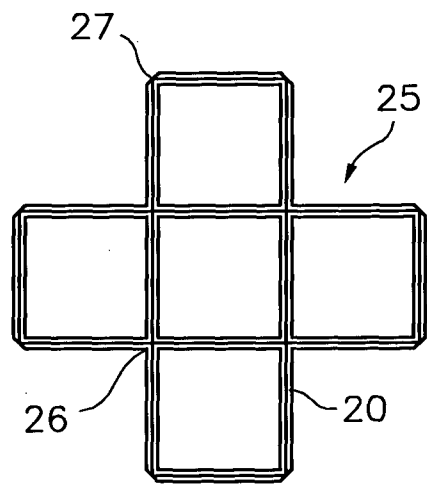


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/000370A. CLASSIFICATION OF SUBJECT MATTER
INV. E04F15/08
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ES 2 265 796 A1 (OVER TECHNOLOGIC FLOOR S L [ES]) 16 February 2007 (2007-02-16) figures 1-8	1-6,9-12
X	FR 2 906 285 A1 (GRAU JEAN PIERRE [FR]) 28 March 2008 (2008-03-28) page 24, line 15 - line 21; figures 1,2,4,5a,5b,6,8	1-9
X	EP 1 788 166 A2 (INSCA INT SL [ES]) 23 May 2007 (2007-05-23) figures 3,4,5,7	1-12
A	US 2007/107359 A1 (ZHANG WEIGANG [CN]) 17 May 2007 (2007-05-17) figures 8,9,11	1,2,5,6, 9
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 Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search

10 May 2012

Date of mailing of the international search report

18/05/2012

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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2012/000370

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 20 2008 002361 U1 (GERBERICH NORBERT [DE]; GERBERICH SABINE [DE]) 24 April 2008 (2008-04-24) figure 3 -----	8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/000370

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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