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(54) **A flooring material of sheet-shaped floor elements joined with joining members.**

Fussbodenmaterial aus plattenförmigen Fussbodenelementen verbunden mit Verbindungselementen.

Matériau de plancher comprenant des éléments de plancher joints par des éléments de liaison.

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Description

[0001] The present invention relates to a flooring material according to the preamble of claim 1, comprising sheet-shaped floor elements which are joined by means of joining members. Such flooring material is known from WO 01/02669.

[0002] Prefabricated floor boards provided with tongue and groove at the edges are quite common nowadays. These can be installed by the average handy man as they are very easy to install. Such floors can, for example, be constituted of solid wood, fibre board or particle board. These are most often provided with a surface layer such as lacquer, or some kind of laminate. The boards are most often installed by being glued via tongue and groove. The most common types of tongue and groove are however burdened with the disadvantage to form gaps of varying width between the floor boards in cases where the installer hasn't been thorough enough. Dirt will easily collect in such gaps. Moisture will furthermore enter the gaps which will cause the core to expand in cases where it is made of wood, fiber board or particle board, which usually is the case. The expansion will cause the surface layer to rise closest to the edges of the joint which radically reduces the useful life of the floor since the surface layer will be exposed to an exceptional wear. Different types of tensioning devices, forcing the floor boards together during installation can be used to avoid such gaps. This operation is however more or less awkward. It is therefore desirable to achieve a joint which is self-guiding and thereby automatically finds the correct position. Such a joint would also be possible to utilize in floors where no glue is to be used.

[0003] Such a joint is known through WO 94/26999 which deals with a system to join two floor boards. The floor boards are provided with a locking device at the rear sides. In one embodiment the floor boards are provided with profiles on the lower side at a first long side and short side. These profiles, which extends outside the floor board itself, is provided with an upwards directed lip which fits into grooves on the lower side of a corresponding floor board. These grooves are arranged on the second short side and long side of this floor board. The floor boards are furthermore provided with a traditional tongue and groove on the edges. The intentions are that the profiles shall bend downwards and then to snap back into the groove when assembled. The profiles are integrated with the floor boards through folding or alternatively, through gluing.

[0004] According to WO 94/26999, the floor boards may be joined by turning or prizing it into position with the long side edge as a pivot point. It is then necessary to slide the floor board longitudinally so that it snaps into the floor board previously installed in the same row. A play is essential in order to achieve that. This play seems to be marked A in the figures. A tolerance of 0.2mm is mentioned in the application. Such a play will naturally cause undesired gaps between the floor boards. Dirt and

moisture can penetrate into these gaps.

[0005] WO 00/47841 describes floor boards that are joined by being pressed downwards. According to its abstract, the floor boards are provided with lower joining lips at two adjacent edges while the two remaining edges are provided with upper joining lips. The lower joining lips are provided with essentially vertical lower lip surfaces arranged parallel to the closest edge. The lower lip surfaces are intended to interact with mainly vertical upper lip surfaces arranged on the upper joining lips. Two joined adjacent floor boards are hereby locked together in the horizontal direction. The joining lips are furthermore provided with one or more heels intended to snap join with recesses adapted thereto which, by being provided with essentially horizontal locking surfaces, limits vertical movement between two joined adjacent floor boards.

[0006] It is also known through WO 97/47834 to manufacture a joint where the floor boards are joined by turning or prizing it into position with the long side edge as a pivot point. According to this invention a traditional tongue has been provided with heel on the lower side. The heel has a counterpart in a recess in the groove of the opposite side of the floor board. The lower cheek of the groove will be bent away during the assembly and will then snap back when the floor board is in the correct position. The snap-joining parts, i. e. the tongue and groove, is in opposite to the invention according to WO 94/26999 above, where they are constituted by separate parts, seems to be manufactured monolithically from the core of the floor board. WO 97/47834 does also show how the tongue and groove with heels and recesses according to the invention is tooled by means of cutting machining. This invention does also have the disadvantage that the best mode of joining floor boards includes longitudinal sliding for joining the short sides of the floor boards, which also here will require a play which will cause unwanted gaps between the floor boards. Dirt and moisture can penetrate into these gaps.

[0007] It is, through the present invention, made possible to solve the above mentioned problems whereby a floor element which can be assembled without having to be slid along already assembled floor elements has been achieved. It is thereby made possible to achieve tighter joints.

[0008] The invention is defined in the appended claims.

[0009] Accordingly, the invention relates to a flooring material comprising sheet-shaped floor elements with a mainly square or rectangular shape, which floor elements are provided with edges, a lower side and an upper decorative layer, whereby the floor elements are intended to be joined by means of joining members. The floor elements are provided with male joining members on a first edge, while a second edge of the floor elements is provided with a female joining member, whereby the male joining member is provided with a tongue and a lower side groove while the female joining member is provided with a groove and a cheek, the cheek being provided with a lip. The floor elements are intended to mainly be joined

together by tilting the floor element to be joined with an already installed floor element or a row of already installed floor elements, with the male joining member of the floor element angled downwards, and the first edge is allowed to be mainly parallel to the second edge of the already installed floor element or elements. The tongue of the tilted floor element is inserted into the groove of the female joining member of the already installed floor element or elements, whereby the tilted floor element is turned downwards, with its lower edge as a pivot axis, so that the lip eventually snaps or falls into the lower side groove where the decorative upper layer of the floor elements are mainly parallel.

[0010] The floor elements, on a third edge, are provided with a male vertical assembly joining member, while a fourth edge is provided with female vertical assembly joining member, the fourth edge being arranged on a side opposite to the third edge. The male vertical assembly joining members are provided with mainly vertical lower cheek surfaces arranged parallel to the closest edge, which lower cheek surfaces are intended to interact with mainly vertical upper cheek surfaces arranged on the female vertical assembly joining members so that two joined adjacent floor elements are locked against each other in a horizontal direction. Two adjacent edges of a floor element, at the same time, and in the same turning motion, can be joined with a floor element adjacent to the first edge and a floor element adjacent to the third or fourth edge. The male vertical assembly joining member is provided with a plurality of hooks intended to interact with matching undercuts arranged on the female vertical assembly joining member, and the snapping hooks and matching undercuts, by being provided with mainly horizontal locking surfaces, limit the vertical movement between two joined adjacent floor elements.

[0011] The force needed to overcome the static friction along the joint between two completely assembled male and female joining members is preferably larger than 10N per meter of joint length, suitably larger than 100N per meter of joint length.

[0012] The joint between a third and a fourth edge of two joined floor elements preferably comprises contact surfaces which are constituted by the horizontal locking surfaces of the under cuts and hooks, the mainly vertical upper cheek surfaces and lower cheek surfaces as well as upper mating surfaces.

[0013] The joint between two joined floor elements suitably also comprises cavities.

[0014] The flooring material including the floor boards above is most suited when installing floors where it isn't desired to use glue. It is, however, possible to use glue or twin-faced adhesive tape in order to make the installation irreversibly permanent. The glue or tape is then suitably applied on, or in connection to, possible cavities or faces below the upper mating surfaces.

[0015] The invention is described further in connection to enclosed figures showing different embodiments of a flooring material whereby,

- figure 1 shows, in cross-section, a first and a second edge 2^I and 2^{II} respectively, during joining;
- figure 2 shows, in cross-section, a second embodiment of a first and a second edge 2^I and 2^{II} respectively, during joining;
- figure 3 shows, in cross-section, a third embodiment of a first and a second edge 2^I and 2^{II} respectively, during joining;
- figure 4 shows, in cross-section, a fourth embodiment of a first and a second edge 2^I and 2^{II} respectively, during joining;
- figure 5 shows, in cross-section, a third and a fourth edge 2^{III} and 2^{IV} respectively, during joining;
- figure 6 shows, in cross-section, a second embodiment of a third and a fourth edge 2^{III} and 2^{IV} respectively, during joining;
- figure 7 shows, in cross-section, a third embodiment of a third and a fourth edge 2^{III} and 2^{IV} respectively, during joining; and
- figure 8 shows, in cross-section, a fourth embodiment of a third and a fourth edge 2^{III} and 2^{IV} respectively and a vertical assembly joining profile 30, during joining.

The flooring material of Figs. 6, 7 and 8 is not in accordance with the presently claimed invention.

Accordingly figure 1 shows, in cross-section, a first and a second edge 2^I and 2^{II} respectively, during assembly. The figure shows parts of a flooring material comprising sheet-shaped floor elements 1 with a mainly square or rectangular shape. The floor elements 1 are provided with edges 2, a lower side 5 and an upper decorative layer 3. The floor elements 1 are intended to be joined by means of joining members 10. The floor elements 1 are provided with male joining members 10^I on a first edge 2^I while a second edge 2^{II} of the floor elements 1 are provided with a female joining member 10^{II}. The second edge 2^{II} is arranged on a side opposite to the first edge 2^I. The male joining member 10^I is provided with a tongue 11 and a lower side 5 groove 12. The female joining member 10^{II} is provided with a groove 13 and a cheek 14, the cheek 14 being provided with a lip 15. The floor elements 1 are intended to mainly be joined together by tilting the floor element 1 to be joined with an already installed floor element 1 or a row of already installed floor elements 1, with the male joining member 10^I of the floor element 1 angled downwards and that the first edge 2^I is allowed to be mainly parallel to the second edge 2^{II} of the already installed floor element 1 or elements 1. The tongue 11 of the tilted floor element 1 is then inserted into the groove 13 of the female joining member 10^{II} of the already installed floor element 1 or elements 1, whereby the tilted floor element 1 is turned downwards, with its lower edge as a pivot axis, so that the lip 15 eventually falls into the lower side 5 groove 12 where the decorative upper layer 3 of the floor elements 1 are mainly parallel.

The embodiment shown in figure 2 corresponds mainly

with the one shown in figure 1. The lip 15 and lower side 5 groove 12 are, however, provided with a cam 16 and a cam groove 17 which provides a snap action locking. The embodiment shown in figure 3 corresponds mainly with the one shown in figure 1 and 2 above. The lip 15 and lower side 5 groove 12 are, however, provided with a cam 16 and a cam groove 17 which provides a snap action locking.

The embodiment shown in figure 4 corresponds mainly with the one shown in figure 1 above. The lip 15 and cheek 14 is however shaped as a thin resilient section which provides a snap action locking.

Figure 5 shows, in cross-section, a third and a fourth edge 2^{III} and 2^{IV} respectively, of a floor element 1 according to any of the figures 1 to 4. The floor elements 1 are provided with a male vertical assembly joining member 10^{III} on a third edge 2^{III} while a fourth edge 2^{IV} is provided with a female vertical assembly joining member 10^{IV}. The fourth edge 2^{IV} is placed on a side opposite to the third edge 2^{III}.

The male vertical assembly joining members 10^{III} are provided with mainly vertical lower cheek surfaces 21 arranged parallel to the closest edge 2. The lower cheek surfaces 21 are intended to interact with mainly vertical upper cheek surfaces 22 arranged on the female vertical assembly joining members 10^{IV} so that two joined adjacent floor elements 1 are locked against each other in a horizontal direction. The male vertical assembly joining members 10^{III} are moreover provided with two snapping hooks 23 while the female vertical assembly joining members 10^{IV} are provided with matching undercuts 24, which by being provided with mainly horizontal locking surfaces limits the vertical movement between two joined adjacent floor elements 1.

The joint between a third and a fourth edge 2^{III} and 2^{IV} respectively of two joined floor elements 1 further comprises contact surfaces which are constituted by the horizontal locking surfaces of the undercuts 24 and hooks 23, the mainly vertical upper cheek surfaces 22 lower cheek surfaces as well as upper mating surfaces 25.

The joint between two joined floor elements 1 also comprises cavities 6.

The embodiment shown in figure 6 corresponds in the main with the one shown in figure 5. The male vertical assembly joining members 10^{III} are, however, provided with only one snapping hook 23 while the female vertical assembly joining members 10^{IV} are provided with a matching undercut 24, which by being provided with mainly horizontal locking surfaces limits vertical movement between to joined adjacent floor boards 1.

The embodiment shown in figure 7 corresponds in the main with the one shown in figure 6. The snapping hook 23 on the male vertical assembly joining member 10^{III} is, however, moved somewhat inwards in the floor element 1 whereby a guiding angle is formed above the undercut 24 of the female vertical joining member 10^{IV}.

The embodiment shown in figure 8 corresponds mainly with the one shown in figure 7. Both the third and the

fourth edges 2^{III} and 2^{IV} respectively are, however, provided with male vertical assembly joining members 10^{III}. A vertical assembly joining profile 30, provided with a female vertical assembly joining profile 10^{IV} on both sides of a vertical symmetry line, is used for joining the two floor elements 1.

The female vertical assembly joining members 10^{IV} of the vertical assembly joining profile 30 are equipped similar to the female vertical assembly joining members 10^{IV} in figure 7 above.

Two adjacent edges 2 of a floor element 1 can at the same time, and in the same turning motion, be joined with a floor element 1 adjacent to the first edge 2^I and a floor element 1 adjacent to the third or fourth edge 2^{III} and 2^{IV} respectively, when assembling floor elements 1 according to the above described embodiments.

The floor elements 1 according to the present invention most often comprises a core. The core is most often comprised of particles or fiber of wood bonded with resin or glue. It is advantageous to coat the surface closest to the joint in cases where the floor will be exposed to high levels of moisture since the cellulose based material is sensitive to moisture. This coating may suitably incorporate resin, wax or some kind of lacquer. It is not necessary to coat the joint when it is to be glued since the glue itself will protect from moisture penetration. The upper decorative layer 3 is constituted of a decorative paper impregnated with melamine-formaldehyde resin. One or more so called overlay sheets of a-cellulose, impregnated with melamine-formaldehyde resin may possibly be placed on top of the decorative layer. The abrasion resistance may be improved by sprinkling one or more of the sheets with hard particles of for example alpha-aluminum oxide, silicon carbide or silicon oxide. The lower side 5 may suitably be coated with lacquer or a layer of paper and resin.

The invention is not limited by the embodiments shown since they can be varied within the scope of the invention as defined in the appended claims.

Claims

1. Flooring material comprising sheet-shaped floor elements (1) with a mainly square or rectangular shape, which floor elements (1) are provided with edges (2), a lower side (5) and an upper decorative layer (3), whereby the floor elements (1) are intended to be joined by means of joining members (10), wherein

- the floor elements (1) are provided with male joining members (10^I) on a first edge (2^I), while a second edge (2^{II}) of the floor elements (1) is provided with a female joining member (10^{II}), whereby the male joining member (10^I) is provided with a tongue (11) and a lower side (5) groove (12) while the female joining member

(10^{II}) is provided with a groove (13) and a cheek (14), the cheek (14) being provided with a lip (15), whereby the floor elements (1) are intended to mainly be joined together by tilting the floor element (1) to be joined with an already installed floor element (1) or a row of already installed floor elements (1), with the male joining member (10^I) of the floor element (1) angled downwards, and that the first edge (2^I) is allowed to be mainly parallel to the second edge (2^{II}) of the already installed floor element (1) or elements (1), whereby the tongue (11) of the tilted floor element (1) is inserted into the groove (13) of the female joining member (10^{II}) of the already installed floor element (1) or elements (1), whereby the tilted floor element (1) is turned downwards, with its lower edge as a pivot axis, so that the lip (15) eventually snaps or falls into the lower side (5) groove (12) where the decorative upper layer (3) of the floor elements (1) are mainly parallel;

- the floor elements (1), on a third edge (2^{III}), are provided with a male vertical assembly joining member (10^{III}), while a fourth edge (2^{IV}) is provided with female vertical assembly joining member (10^{IV}), the fourth edge (2^{IV}) being arranged on a side opposite to the third edge (2^{III}), wherein the male vertical assembly joining members (10^{III}) are provided with mainly vertical lower cheek surfaces (21) arranged parallel to the closest edge (2), which lower cheek surfaces (21) are intended to interact with mainly vertical upper cheek surfaces (22) arranged on the female vertical assembly joining members so that two joined adjacent floor elements (1) are locked against each other in a horizontal direction, and - two adjacent edges (2) of a floor element (1), at the same time, and in the same turning motion, can be joined with a floor element (1) adjacent to the first edge (2^I) and a floor element adjacent to the third or fourth edge (2^{III} and 2^{IV}, respectively), **characterized in that** the male vertical assembly joining member (10^{III}) is provided with a plurality of snapping hooks (23) intended to interact with matching undercuts (24) arranged on the female vertical assembly joining member, (10^{IV}) and **in that** said snapping hooks (23) and matching undercuts (24), by being provided with mainly horizontal locking surfaces, limit the vertical movement between two joined adjacent floor elements (1).

2. Floor material according to claim 1, **characterized in that** the joint between a third and a fourth edge (2^{III} and 2^{IV} respectively) of two joined floor elements (1) comprises contact surfaces which are constituted by the mainly horizontal locking surfaces of the undercuts (24) and hooks (23), the mainly vertical up-

per cheek surfaces (22) and lower cheek surfaces as well as upper mating surfaces (25).

3. Floor material according to any of the preceding claims, **characterized in that** said floor elements comprise a core material and that said hooks (23) and undercuts (24) are formed in the material of the core.
4. Floor material according to any of the preceding claims, **characterized in that** a lower side (5) recess is formed at said fourth edge (2^{IV}) so that the bottom side of said lower cheek (21) is recessed from said lower side (5).
5. Flooring material according to any of the preceding claims, **characterized in that** the force needed to overcome the static friction along the joint between two completely assembled male and female joining members (10^I and 10^{II} respectively) is larger than 10N per meter of joint length, preferably larger than 100N per meter of joint length.
6. Flooring material according to any of the preceding claims, **characterized in that** the joint between two joined floor elements (1) also comprises cavities (6).
7. Flooring material according to any of the preceding claims, **characterized in that** the floor elements (1) have a core comprised of particles or fiber of wood bonded with resin or glue.

Patentansprüche

1. Bodenbelagmaterial, umfassend plattenförmige Bodenelemente (1) mit einer im Wesentlichen quadratischen oder rechteckigen Form, welche Bodenelemente (1) mit Kanten (2), einer Unterseite (5) und einer oberen dekorativen Schicht (3) versehen sind, wobei die Bodenelemente (1) zum Verbinden mittels Verbindungselementen (10) vorgesehen sind, wobei
 - die Bodenelemente (1) an einer ersten Kante (2^I) mit männlichen Verbindungselementen (10^I) versehen sind, während eine zweite Kante (2^{II}) der Bodenelemente (1) mit einem weiblichen Verbindungselement (10^{II}) versehen ist, wobei das männliche Verbindungselement (10^I) mit einer Feder (11) und einer Nut (12) der Unterseite (5) versehen ist, während das weibliche Verbindungselement (10^{II}) mit einer Nut (13) und einer Backe (14) versehen ist, wobei die Backe (14) mit einer Lippe (15) versehen ist, wobei die Bodenelemente (1) dazu vorgesehen sind, im Wesentlichen zusammengefügt zu werden durch Kippen des mit einem bereits verleg-

ten Bodenelement (1) oder einer Reihe bereits verlegter Bodenelemente (1) zu verbindenden Bodenelements (1), wobei das männliche Verbindungselement (10^I) des Bodenelements (1) nach unten gewinkelt ist, und zugelassen wird, dass die erste Kante (2^I) im Wesentlichen parallel zur zweiten Kante (2^{II}) des bereits verlegten Bodenelements (1) oder -elemente (1) ist, wobei die Feder (11) des gekippten Bodenelements (1) in die Nut (13) des weiblichen Verbindungselements (10^{II}) des bereits verlegten Bodenelements (1) oder -elemente (1) eingebracht wird, wobei das gekippte Bodenelement (1) nach unten geschwenkt wird, mit seiner unteren Kante als Schwenkachse, sodass die Lippe (15) schließlich in die Nut (12) der Unterseite (5) rasst oder fällt, wo die dekorative obere Schicht (3) der Bodenelemente (1) im Wesentlichen parallel sind;

- die Bodenelemente (1) an einer dritten Kante (2^{III}) mit einem männlichen Vertikalmontage-Verbindungselement (10^{III}) versehen sind, während eine vierte Kante (2^{IV}) mit einem weiblichen Vertikalmontage-Verbindungselement (10^{IV}) versehen ist, wobei die vierte Kante (2^{IV}) an einer der dritten Kante (2^{III}) gegenüberliegenden Seite angeordnet ist, wobei die männlichen Vertikalmontage-Verbindungselemente (10^{III}) mit im Wesentlichen vertikalen unteren Backenflächen (21) versehen sind, die parallel zu der dichtgelegensten Kante (2) angeordnet sind, welche unteren Backenflächen (21) zur Wechselwirkung mit im Wesentlichen vertikalen oberen Backenflächen (22), die an den weiblichen Vertikalmontage-Verbindungselementen angeordnet sind, vorgesehen sind, sodass zwei verbundene benachbarte Bodenelemente (1) in einer horizontalen Richtung gegeneinander verriegelt sind, und

- zwei benachbarte Kanten (2) eines Bodenelements (1) zur selben Zeit und in derselben Schwenkbewegung mit einem Bodenelement (1) benachbart zu der ersten Kante (2^I) und einem Bodenelement benachbart zu der dritten oder vierten Kante (2^{III} beziehungsweise 2^{IV}) verbunden werden können,

dadurch gekennzeichnet, dass das männliche Vertikalmontage-Verbindungselement (10^{III}) mit einer Vielzahl von Rasthaken (23) versehen ist, die dazu vorgesehen sind, mit an dem weiblichen Vertikalmontage-Verbindungselement (10^{IV}) angeordneten, dazu passenden Unterschnitten (24) zusammenzuwirken, und dass besagte Rasthaken (23) und passende Unterschnitte (24) dadurch, dass sie mit im Wesentlichen horizontalen Verriegelungsflächen versehen sind, die vertikale Bewegung zwischen zwei verbundenen benachbarten Fußboden-

elementen (1) begrenzen.

2. Bodenbelagmaterial nach Anspruch 1, **dadurch gekennzeichnet, dass** die Verbindung zwischen einer dritten und einer vierten Kante (2^{III} beziehungsweise 2^{IV}) zweier miteinander verbundener Bodenelemente (1) Kontaktflächen umfasst, die durch die im Wesentlichen horizontalen Verriegelungsflächen der Unterschnitte (24) und Haken (23), die im Wesentlichen vertikalen oberen Backenflächen (22) und unteren Backenflächen sowie obere ineinanderpasende Flächen (25) gebildet werden.
3. Bodenbelagmaterial nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Bodenelemente ein Kernmaterial umfassen und dass besagte Haken (23) und Unterschnitte (24) im Material des Kerns ausgebildet sind.
4. Bodenbelagmaterial nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** eine Ausnehmung der Unterseite (5) an besagter vierter Kante (2^{IV}) gebildet ist, sodass die Unterseite der besagten unteren Backe (21) von besagter Unterseite (5) einspringt.
5. Bodenbelagmaterial nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Kraft, die benötigt wird, um die statische Reibung entlang der Verbindung zwischen zwei vollständig montierten männlichen und weiblichen Verbindungselementen (10^I beziehungsweise 10^{II}) größer als 10N pro Meter Verbindungslänge ist, bevorzugt größer als 100N per Meter Verbindungslänge.
6. Bodenbelagmaterial nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Verbindung zwischen zwei miteinander verbundenen Bodenelementen (1) auch Hohlräume (6) umfasst.
7. Bodenbelagmaterial nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Bodenelemente (1) einen Kern aufweisen, bestehend aus Partikeln oder Fasern von Holz, gebunden mit Harz oder Leim.

Revendications

1. Matériau pour le revêtement de sols comprenant des éléments de sol en forme de feuilles (1) possédant une configuration principalement de forme carrée ou de forme rectangulaire, lesdits éléments de sol (1) étant munis de bords (2), d'un côté inférieur (5) et d'une couche décorative supérieure (3), les éléments de sol (1) étant destinés à être joints au moyen de membres de raccordement (10), dans lequel :

- les éléments de sol (1) sont munis de membres de raccordement mâles (10^I) sur un premier bord (2^I), tandis qu'un deuxième bord (2^{II}) des éléments de sol (1) est muni d'un membre de

5 raccordement femelle (10^{II}), le membre de raccordement mâle (10^I) étant muni d'une languette (11) et d'une rainure (12) du côté inférieur (5), tandis que le membre de raccordement femelle (10^{II}) est muni d'une rainure (13) et d'une joue (14), la joue (14) étant munie d'une lèvre (15), les éléments de sol (1) étant destinés à être principalement joints les uns aux autres en inclinant l'élément de sol (1) qui doit être joint à un élément de sol (1) déjà monté ou à une rangée d'éléments de sol (1) déjà installés, le membre de

10 raccordement mâle (10^I) de l'élément de sol (1) formant un angle orienté vers le bas, et le premier bord (2^I) pouvant venir se disposer principalement parallèle au deuxième bord (2^{II}) de l'élément (1) ou des éléments (1) de sol déjà installés, la languette (11) de l'élément de sol incliné (1) étant insérée dans la rainure (13) du membre de raccordement femelle (10^{II}) de l'élément (1) ou des éléments (1) de sol déjà installés, l'élément de sol incliné (1) étant soumis à une rotation orientée vers le bas, son bord inférieur faisant office d'axe de pivotement, si bien que la lèvre en définitive vient s'insérer par déclic ou tombe dans la rainure (12) du côté inférieur (5), la couche décorative supérieure (3) des éléments de sol (1) étant principalement parallèle ;

- les éléments de sol (1), sur un troisième bord (2^{III}), sont munis d'un membre de raccordement d'assemblage vertical mâle (10^{III}), tandis qu'un quatrième bord (2^{IV}) est muni d'un membre de

15 raccordement d'assemblage vertical femelle (10^{IV}), le quatrième bord (2^{IV}) étant disposé sur un côté opposé au troisième bord (2^{III}), lesdits membres de raccordement d'assemblage vertical mâles (10^{III}) étant munis de surfaces de joues inférieures principalement verticales (21) disposées parallèlement au bord le plus proche (2), lesdites surfaces de joues inférieures (21) étant destinées à entrer en interaction avec des surfaces de joues supérieures principalement verticales (22) disposées sur les membres de

20 raccordement d'assemblage vertical femelles (10^{IV}), de manière telle que deux éléments de sol adjacents joints (1) sont verrouillés l'un à l'autre dans une direction horizontale ; et

- deux bords adjacents (2) d'un élément de sol (1), en même temps, et dans le même mouvement de rotation, peuvent être joints à un élément de sol (1) adjacent au premier bord (2^I) et à un élément de sol adjacent au troisième ou au

25 quatrième bord (2^{III} et 2^{IV}, respectivement), **caractérisé en ce que** le membre de raccorde-

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ment d'assemblage vertical mâle (10^{III}) est muni de plusieurs crochets d'encliquetage (23) destinés à entrer en interaction avec des contre-dépouilles correspondantes (24) disposées sur le membre de raccordement d'assemblage vertical femelle (10^{IV}), et **en ce que** lesdits crochets d'encliquetage (23) et lesdites contre-dépouilles correspondantes (24), en étant munis de surfaces de verrouillage principalement horizontales, limitent le mouvement vertical entre deux éléments de sol adjacents joints (1).

2. Matériau pour le revêtement de sols selon la revendication 1, **caractérisé en ce que** le joint entre un troisième et un quatrième bord (2^{III} et 2^{IV}, respectivement) de deux éléments de sol joints (1) comprend des surfaces de contact qui sont constituées par les surfaces de verrouillage principalement horizontales des contre-dépouilles (24) et des crochets (23), par les surfaces de joues supérieures principalement verticales (22) et par les surfaces de joues inférieures ainsi que par des surfaces supérieures correspondantes (25).
3. Matériau pour le revêtement de sols selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits éléments de sol comprennent une matière de partie centrale et **en ce que** lesdits crochets (23) et lesdites contre-dépouilles (24) sont réalisés dans la matière de la partie centrale.
4. Matériau pour le revêtement de sols selon l'une quelconque des revendications précédentes, **caractérisé en ce que** un évidement du côté inférieur (5) est formé audit quatrième bord (2^{IV}), d'une manière telle que le côté inférieur de ladite joue inférieure (21) est évidé à partir dudit côté inférieur (5).
5. Matériau pour le revêtement de sols selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la force requise pour vaincre la friction statique le long du joint entre deux membres de raccordement mâle et femelle complètement montés (10^I et 10^{II}, respectivement) est supérieure à 10 N par mètre de longueur de joint, de préférence supérieure à 100 N par mètre de longueur de joint.
6. Matériau pour le revêtement de sols selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le joint entre deux éléments de sol joints (1) comprend également des cavités (6).
7. Matériau pour le revêtement de sols selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les éléments de sol (1) possèdent une partie centrale comprenant des particules ou des fibres de bois liées avec de la résine ou avec de la colle.

Fig. 1

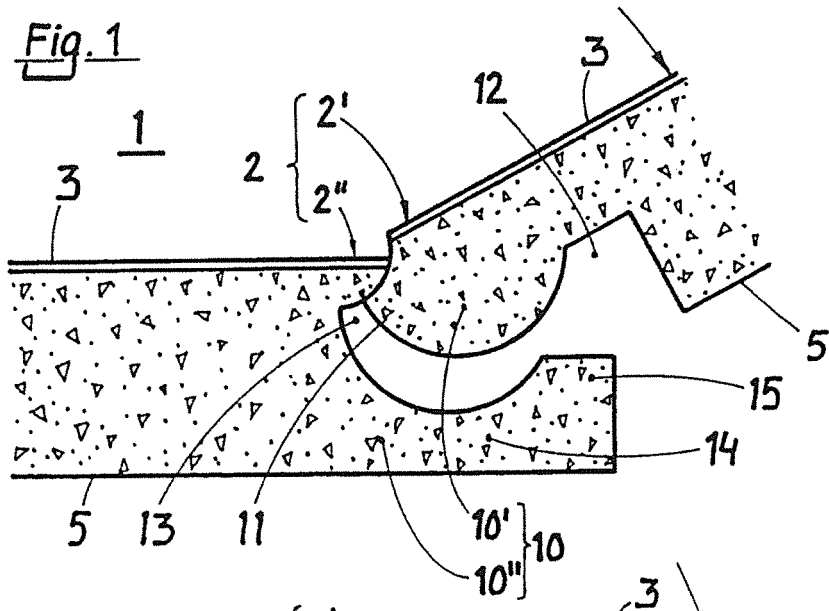


Fig. 2

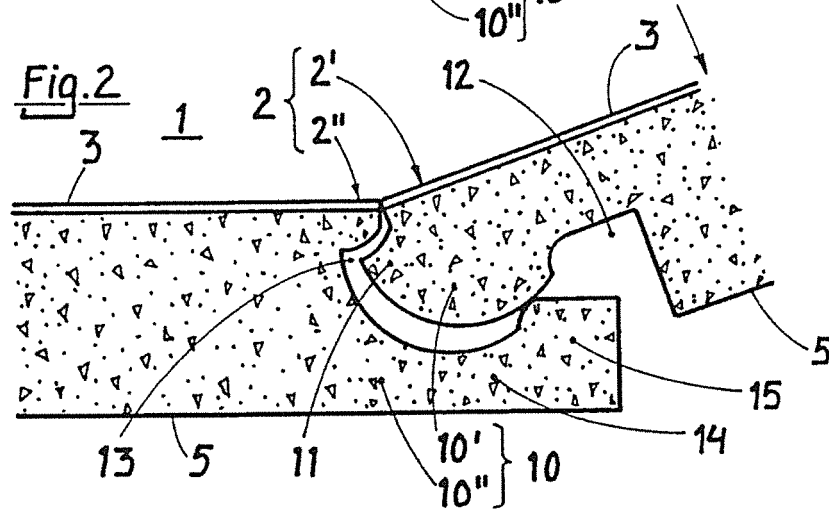


Fig. 3

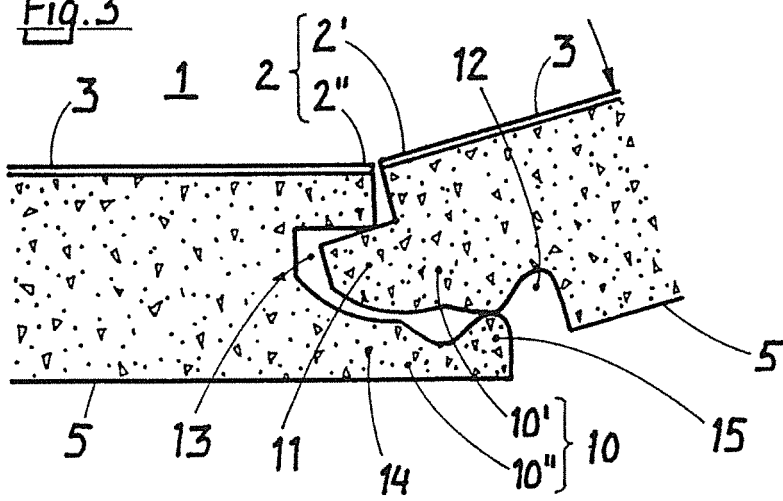


Fig. 4

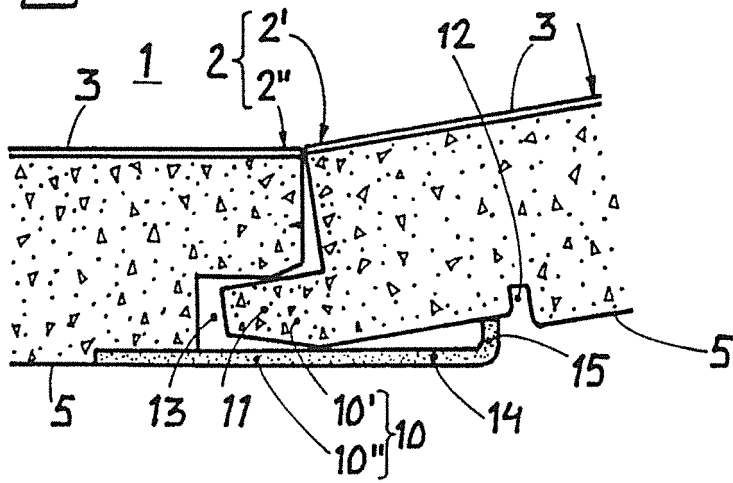


Fig. 5

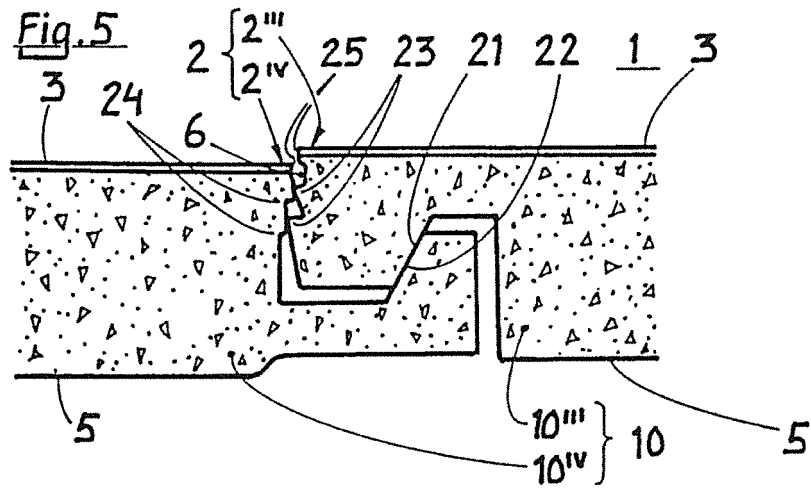
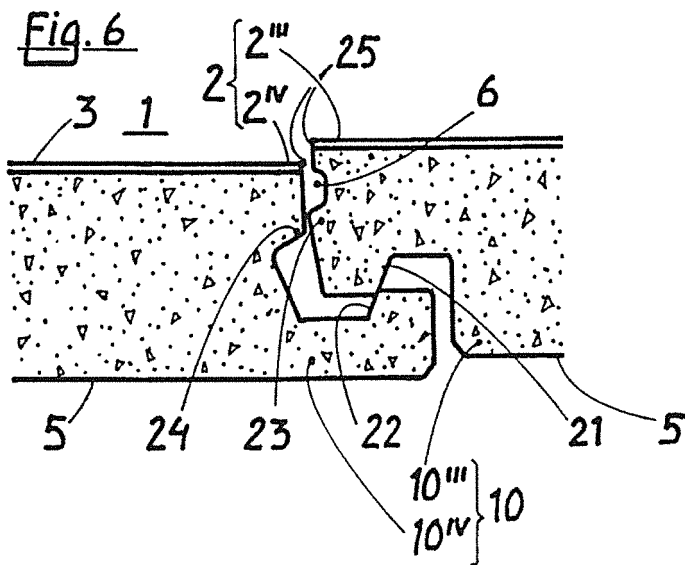
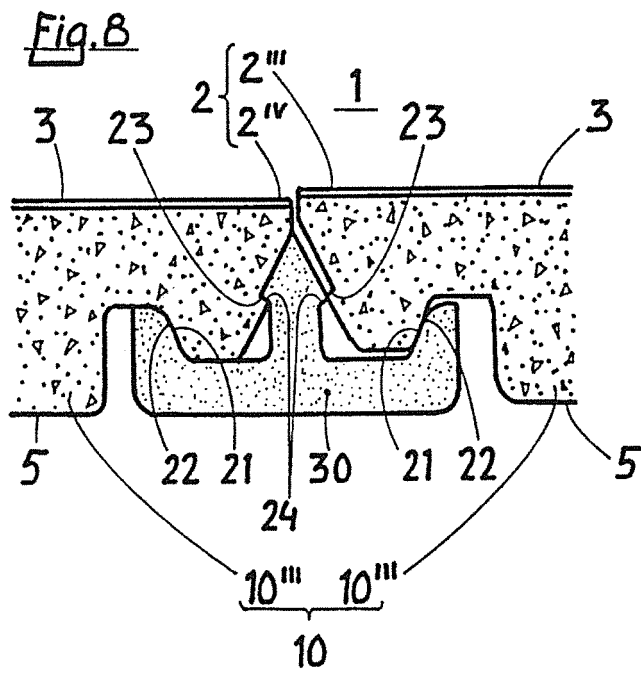
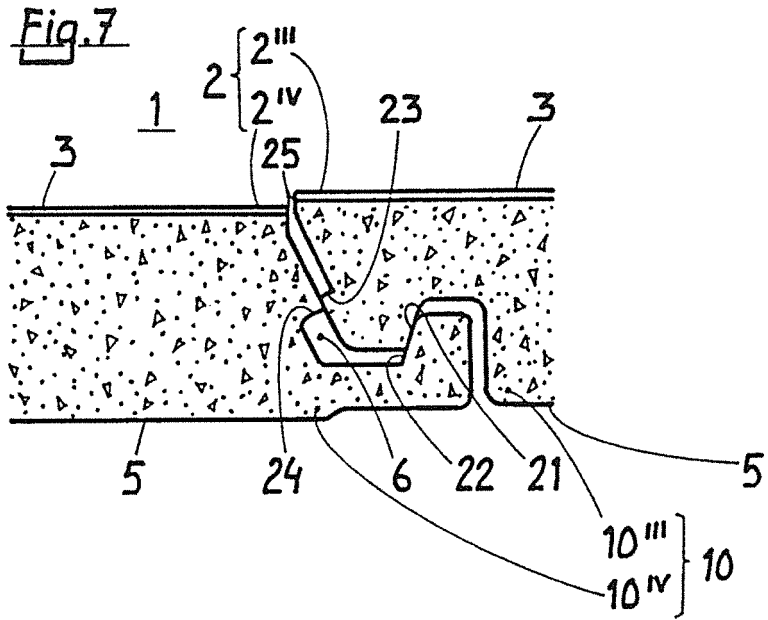


Fig. 6





REFERENCES CITED IN THE DESCRIPTION

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