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Amended claims in accordance with Rule 137(2) EPC.

(54) **KIT OF TILES FOR MAKING A FLOOR COVERING**

(57) Kit (1) adapted for being assembled on a floor (3) for making a floor covering (5), the kit comprising a first plurality of tiles (7) and a second plurality of tiles (9), the tiles (7) of the first plurality having a same composition and comprising a first floor covering (15) having a thickness F1 in a direction (V) intended to be perpendicular to the floor, the tiles of the second plurality having a same composition and comprising a second floor covering (19) having a thickness F2 distinct from the thickness F1.

Each of the first plurality of tiles comprises a first substrate (13) arranged under the first floor covering and having a thickness E1. Each of the second plurality of tiles comprises a second substrate (17) arranged under the second floor covering and having a thickness E2.

Each of the thicknesses F1 and F2 is larger than or equal to 1 mm, and the sum of the thicknesses E1 and F1 does not differ from the sum of the thicknesses E2 and F2 by more than 0.5 mm.

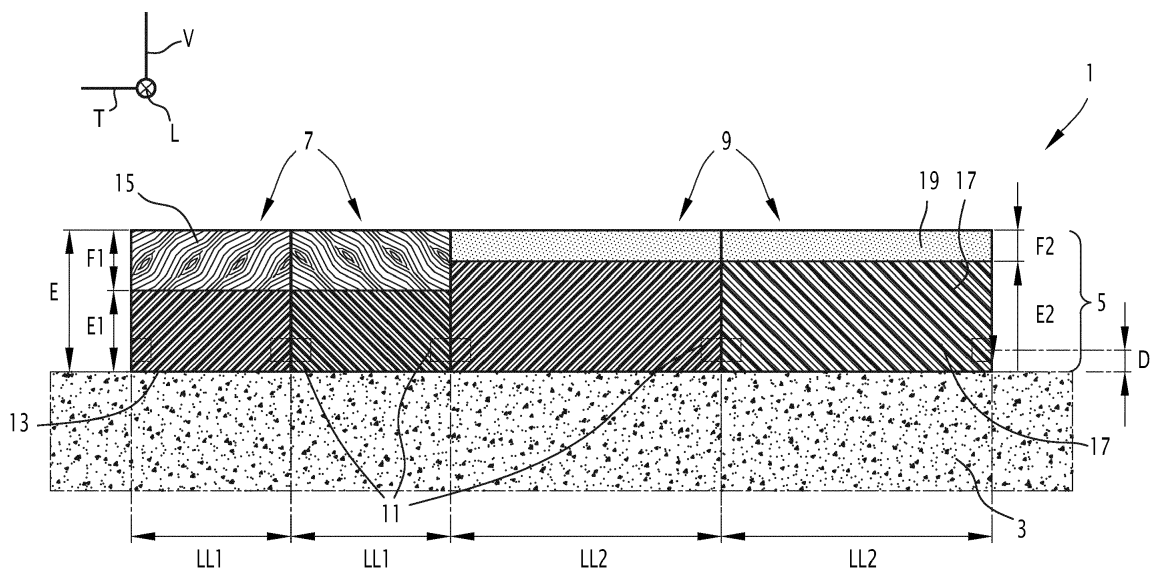


FIG.2

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Description

5 **[0001]** The present invention deals with a kit adapted for making a floor covering, the kit comprising a first plurality of tiles and a second plurality of tiles, the kit being adapted to be assembled on a floor, the tiles of the first plurality having a same composition and comprising a first floor covering having a thickness F1 in a direction intended to be perpendicular to the floor, the tiles of the second plurality of tiles having a same composition and comprising a second floor covering having a thickness F2 distinct from the thickness F1.

10 **[0002]** When two floor coverings do not have the same thickness and are assembled on a floor, the two pluralities of tiles forming the two floor coverings cannot be well adjusted to each other. This creates a risk of a person stumbling when walking at the junction of the two floor coverings. Also, the resulting floor covering is often considered as unaesthetic.

[0003] In order to overcome this problem, a well-known solution is to install a threshold strip, usually a metal one, or an equivalent system, in between the two floor coverings. Such a solution gives satisfaction to some extent. However, it requires implementing one or several threshold strips, that is to say additional elements, and it does not fully solve the problem.

15 **[0004]** An aim of the invention is to provide a kit that better solves the problem, while remaining simple to implement, and cost effective.

[0005] To this end, the invention proposes a kit adapted for being assembled on a floor for making a floor covering, the kit comprising a first plurality of tiles and a second plurality of tiles, the tiles of the first plurality having a same composition and comprising a first floor covering having a thickness F1 in a direction intended to be perpendicular to the floor, the tiles of the second plurality having a same composition and comprising a second floor covering having a thickness F2 distinct from the thickness F1, characterized in that:

- each of the first plurality of tiles comprises a first substrate arranged under the first floor covering and having a thickness E1,
- 25 - each of the second plurality of tiles comprises a second substrate arranged under the second floor covering and having a thickness E2,
- each of the thicknesses F1 and F2 is larger than or equal to 1 mm, and
- the sum of the thicknesses E1 and F1 does not differ from the sum of the thicknesses E2 and F2 by more than 0.5 mm.

30 **[0006]** In other embodiments, the kit comprises one or several of the following features, taken in isolation or any technically feasible combination:

- each of the first substrate and the second substrate (17) comprises polyvinyl chloride or fibrocement;
- each of the thicknesses E1 and E2 is comprised between 3 mm and 12 mm, and/or each of the thicknesses F1 and F2 is comprised between 5 mm and 30 mm;
- 35 - the first substrate and the second substrate respectively comprise one or several materials having a Young's modulus higher than 300 MPa;
- said materials show a deformation larger than 0.55 mm when subjected to the following flexure test: obtaining a sample of each of said materials, the sample having a length of 6.0 cm, a width of 1.0 cm and a thickness of 0.6 cm in a vertical direction; using a three point flexure machine, for example an Instron® dynamometer, in order to apply a vertical pressure force in the middle of the sample supported by two points of the dynamometer separated by a horizontal distance of 5.0 cm, and obtaining a progressive deformation of the sample lowering by third point of the dynamometer at a constant speed of 0.5 mm/minute in the vertical direction; and recording the applied pressure versus the progressive deformation, the deformation being a value of the progressive deformation when the applied pressure reaches a maximum;
- 40 - the kit further comprises a connecting system adapted for connecting the tiles of the first plurality and the tiles of the second plurality one to another, the connecting system being adapted to be located in a lower part of the first substrate and the second substrate when the kit is assembled, the connecting system being preferably adapted to be located a distance D from the floor higher than 1 mm when the kit is assembled;
- 50 - each of the tiles of the first plurality and the tiles of the second plurality has a length between 250 mm and 2000 mm, and a width between 80 mm and 1000 mm;
- the first floor covering or the second floor covering is a resilient thermoplastic covering;
- the first floor covering or the second floor covering comprises at least 40 wt% of PVC, and/or the thicknesses E1 and E2 are comprised between 2 mm and 7 mm;
- 55 - the first floor covering or the second floor covering comprises more than 50 wt% of wood;
- the first floor covering or the second floor covering is a laminate wood covering or an engineered wood covering;
- the first floor covering or the second floor covering comprises a carpet;
- the first floor covering or the second floor covering comprises more than 50 wt% of ceramic; and

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- the thicknesses E1 and E2 are comprised between 7 mm and 15 mm.

[0007] The invention and its advantages will be better understood upon reading the following description, given solely by way of example and with reference to the appended drawings, in which:

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- Figure 1 is a schematic upper view of a kit according to the invention, the kit being in an assembled configuration, and
- Figure 2 is a schematic sectional view of the kit shown in Figure 1 along a vertical plane.

[0008] With reference to Figure 1 and 2, a kit 1 according to the invention is described. The kit 1 is adapted to be assembled on a horizontal floor 3 and to form a floor covering 5 on the floor having a thickness E along a vertical direction V.

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[0009] By "floor covering" it is meant elements adapted for covering an upper surface defined by a floor, at least partly, advantageously totally.

[0010] The thickness E for example ranges between 8 mm and 42 mm.

[0011] When not assembled, the kit 1 is for example stored in several boxes (not represented).

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[0012] As a variant (not shown), the kit 1 may be assembled on another surface, for example defined by a wall (not shown).

[0013] The kit 1 comprises a first plurality of tiles 7, a second plurality of tiles 9, and a connecting system 11 (Figure 2).

[0014] The tiles 7 of the first plurality have a same composition, and for example the same shape as shown in Figure 1, advantageously a rectangular one. The tiles 7 have a length L1 (Figure 1) along a longitudinal direction L perpendicular to the direction V, and a width LL1 along a transversal direction T perpendicular to the longitudinal direction and the vertical direction V.

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[0015] Similarly, the tiles 9 of the first plurality have a same composition, and for example the same shape, advantageously a rectangular one. The tiles 9 have a length L2 and a width LL2.

[0016] For example L1 and L2 range between 250 mm and 2000 mm. In the example shown in Figures 1 and 2, L1 and L2 are different from each other.

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[0017] As a variant (not shown), L1 and L2 are approximately equal.

[0018] For example LL1, LL2 range between 80 mm and 1000 mm. In the example, LL1 and LL2 are different from each other.

[0019] As a variant (not shown), LL1 and LL2 are approximately equal.

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[0020] Each of the tiles 7 comprises a first substrate 13 extending perpendicularly to the direction V and having a thickness E1, and a first floor covering 15 arranged on the first substrate and having a thickness F1.

[0021] Similarly, each of the tiles 9 comprises a second substrate 17 having a thickness E2, and a second floor covering 19 arranged on the second substrate and having a thickness F2.

[0022] According to a particular embodiment, the first floor covering 15 and/or second floor covering 19 are/is respectively fixed on the first substrate 13 and/or the second substrate 17.

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[0023] Each of the first and second "floor coverings" is advantageously of a type known in itself for being adapted to cover a floor without any additional layer. Such floor coverings usually comprise a core layer, one or more decoration layers, and optionally one or several wear layers adapted to increase the durability of the floor covering. Usually, these floor coverings are directly applied on the floor 3.

[0024] Each of the thicknesses E1 and E2 is for example comprised between 3 mm and 12 mm.

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[0025] Each of the thicknesses F1 and F2 is larger than or equal to 1 mm, so that the first floor covering 15 and the second floor covering 19 must not be mistaken with thin (less than 1 mm) decorative layers that would be unfit to be directly applied on a floor.

[0026] In fact, each of the thicknesses F1 and F2 is advantageously comprised between 5 mm and 30 mm.

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[0027] The thicknesses F1 and F2 are distinct from each other. In the present case, they differ by more than 0.5 mm, preferably by more than 1 mm, so that, if the first floor covering 15 and the second floor covering 19 were directly applied on the floor 3, the problem mentioned above in the preamble would occur.

[0028] The thicknesses E1 and E2 are such that the sum $E1 + F1$ does not differ from the sum $E2 + F2$ by more than 0.5 mm, preferably 0.2 mm, and are advantageously approximately equal. As a result, the floor covering 5 is uniform in terms of thickness. In other words the tiles 7 and 9 have approximately the same thickness E.

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[0029] Each of the first substrate 13 and the second substrate 17 may comprise polyvinyl chloride (PVC) or fibrocement. In the example, the first substrate 13 and the second substrate 17 have the same composition, and advantageously consists of one layer made of a material having a Young's modulus higher than 300 MPa.

[0030] Said material shows a deformation larger than 0.55 mm when subjected to the following flexure test.

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[0031] A sample of the material to be tested is obtained, the sample having a length of 6.0 cm, a width of 1.0 cm and a thickness of 0.6 cm in a vertical direction.

[0032] A three point flexure machine, for example an Instron® dynamometer, is then used. Two points, separated by a horizontal distance of 5.0 cm, support the sample. A vertical pressure force is applied by the third point in the middle

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of the sample and a progressive deformation of the sample in the vertical direction is obtained by lowering the third point at a constant speed of 0.5 mm/minute.

[0033] The applied pressure, in N, is recorded versus the progressive deformation, in mm. The applied pressure first increases, then reaches a maximum, and finally decreases.

[0034] The deformation is the value, in mm, of the progressive deformation when the applied pressure reaches its maximum.

[0035] The above mentioned Young's modulus can advantageously be determined using the slope of the curve representing the applied pressure versus the progressive deformation, the slope being assessed at the very beginning of the progressive deformation.

[0036] Each of the first substrate 13 and the second substrate 17 may have the composition defined in the following table.

	Material	Name	Supplier	PHR	%
1	PVC	Vynova 5730	Vynova	100	27.8
2	CaCO ₃ Filler	OMYA VS35	OMYA	250	69.5
3	Stabilizer	Baeropan 90704P	Baerlocher	4.5	1.3
4	Processing aid (CPE)	Durastrength 200 or 3000	Arkema	3.0	0.8
5	Processing Aid	Plastistrength 530	Arkema	1.0	0.3
6	Processing aid (PE Wax)	A-C629	Honeywell	0.5	0.1
7	Processing aid (Stearic Acid)	Stearina RG	Brentag	0.5	0.1
			Total:	359.5	100.0

[0037] The first floor covering 15 and/or the second floor covering 17 may be a resilient thermoplastic covering, for example comprising at least 25 wt% of PVC, advantageously with a thickness F1, F2 comprised between 2 mm and 7 mm.

[0038] For resilient floor coverings, reference is made to the norm EN ISO 10581 of October 2013.

[0039] The first floor covering 15 and/or the second floor covering 17 may comprise more than 50 wt% of wood. The first floor covering 15 or the second floor covering 17 may be a laminate wood covering or an engineered wood covering (multi-layer parquet).

[0040] For wood floor coverings, reference is made to the norms EN 13489 of December 2002 (engineered wood, multi-layer parquet) and EN 13329:2006+A1 of October 2008 (laminate floor covering).

[0041] The first floor covering 15 and/or the second floor covering 17 may be a carpet, i.e. a textile floor covering, for which reference is made to the norm EN 1307 of May 2014.

[0042] The first floor covering 15 and/or the second floor covering 17 may comprises more than 50 wt% of ceramic, advantageously with a thickness F1, F2 comprised between 7 mm and 15 mm.

[0043] For ceramic floor coverings, reference is made to the norm EN 14411 of December 2012.

[0044] The connecting system 11 is adapted for connecting the tiles 7 and 9 one to another. The connecting system 11 is adapted to be located in a lower part of the first substrate 13 or the second substrate 17 when the kit 1 is assembled.

[0045] The connecting system 11 is preferably located a distance D from the floor 3, D being higher than 1 mm when the kit 1 is assembled.

[0046] The connecting system 11 is advantageously integral with the tiles 7 and 9. For example, it comprises hooks and housings (not shown) defined by the tiles 7 and 9 and adapted to cooperate with each other in a snap-fit manner.

[0047] As a variant (not shown), the connecting system 11 comprises connecting members (not shown), for example bars, that are not integral with the tiles 7 and 9, and are adapted to cooperate with the housings defined by the tiles in a snap-fit manner.

[0048] Thanks to the above features, the tiles 7 and the tiles 9 can form a sufficiently planar floor covering 5, so that the kit 1 better solves the problem of adjusting two types of floor coverings one with each other, while remaining simple to implement and cost effective.

Claims

1. Kit (1) adapted for being assembled on a floor (3) for making a floor covering (5), the kit (1) comprising a first plurality of tiles (7) and a second plurality of tiles (9), the tiles (7) of the first plurality having a same composition and comprising

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a first floor covering (15) having a thickness F1 in a direction (V) intended to be perpendicular to the floor (3), the tiles (9) of the second plurality having a same composition and comprising a second floor covering (19) having a thickness F2 distinct from the thickness F1, **characterized in that:**

- 5
- each of the first plurality of tiles (7) comprises a first substrate (13) arranged under the first floor covering (15) and having a thickness E1,
 - each of the second plurality of tiles (9) comprises a second substrate (17) arranged under the second floor covering (19) and having a thickness E2,
 - each of the thicknesses F1 and F2 is larger than or equal to 1 mm, and
 - the sum of the thicknesses E1 and F1 does not differ from the sum of the thicknesses E2 and F2 by more than 0.5 mm.
- 10
2. Kit (1) according to claim 1, in which each of the first substrate (13) and the second substrate (17) comprises polyvinyl chloride or fibrocement.
- 15
3. Kit (1) according to claim 1 or 2, in which:
- each of the thicknesses E1 and E2 is comprised between 3 mm and 12 mm, and/or
 - each of the thicknesses F1 and F2 is comprised between 5 mm and 30 mm.
- 20
4. Kit (1) according to any of claims 1 to 3, in which the first substrate (13) and the second substrate (17) respectively comprise one or several materials having a Young's modulus higher than 300 MPa.
- 25
5. Kit (1) according to claim 4, in which said materials show a deformation larger than 0.55 mm when subjected to the following flexure test:
- obtaining a sample of each of said materials, the sample having a length of 6.0 cm, a width of 1.0 cm and a thickness of 0.6 cm in a vertical direction,
 - using a three point flexure machine, for example an Instron® dynamometer, in order to apply a vertical pressure force in the middle of the sample supported by two points of the dynamometer separated by a horizontal distance of 5.0 cm, and obtaining a progressive deformation of the sample by lowering by third point of the dynamometer at a constant speed of 0.5 mm/minute in the vertical direction, and
 - recording the applied pressure versus the progressive deformation,
- 30
- the deformation being a value of the progressive deformation when the applied pressure reaches a maximum.
- 35
6. Kit (1) according to any of claims 1 to 5, further comprising a connecting system (11) adapted for connecting the tiles (7) of the first plurality and the tiles (9) of the second plurality one to another, the connecting system (11) being adapted to be located in a lower part of the first substrate (13) and the second substrate (17) when the kit (1) is assembled, the connecting system (11) being preferably adapted to be located a distance D from the floor (3) higher than 1 mm when the kit (1) is assembled.
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7. Kit (1) according to any of claims 1 to 6, in which each of the tiles (7) of the first plurality and the tiles (9) of the second plurality has a length (L1, L2) between 250 mm and 2000 mm, and a width (LL1, LL2) between 80 mm and 1000 mm.
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8. Kit (1) according to any of claims 1 to 7, in which the first floor covering (15) or the second floor covering (19) is a resilient thermoplastic covering.
- 50
9. Kit (1) according to claim 8, wherein:
- the first floor covering (15) or the second floor covering (19) comprises at least 40 wt% of PVC, and/or
 - the thicknesses E1 and E2 are comprised between 2 mm and 7 mm.
- 55
10. Kit (1) according to any of claims 1 to 7, in which the first floor covering (15) or the second floor covering (19) comprises more than 50 wt% of wood.
11. Kit (1) according to claim 10, wherein the first floor covering (15) or the second floor covering (19) is a laminate

wood covering or an engineered wood covering.

12. Kit (1) according to any of claims 1 to 7, in which the first floor covering (15) or the second floor covering (19) comprises a carpet.

13. Kit (1) according to any of claims 1 to 7, in which the first floor covering (15) or the second floor covering (19) comprises more than 50 wt% of ceramic.

14. Kit (1) according to claim 13, wherein the thicknesses E1 and E2 are comprised between 7 mm and 15 mm.

Amended claims in accordance with Rule 137(2) EPC.

1. Kit (1) adapted for being assembled on a floor (3) for making a floor covering (5), the kit (1) comprising a first plurality of tiles (7) and a second plurality of tiles (9), the tiles (7) of the first plurality having a same composition and comprising a first floor covering part (15) having a thickness F1 in a direction (V) intended to be perpendicular to the floor (3), the tiles (9) of the second plurality having a same composition and comprising a second floor covering part (19) having a thickness F2 distinct from the thickness F1, **characterized in that:**

- each of the first plurality of tiles (7) comprises a first substrate (13) arranged under the first floor covering part (15) and having a thickness E1,
- each of the second plurality of tiles (9) comprises a second substrate (17) arranged under the second floor covering part (19) and having a thickness E2,
- each of the thicknesses F1 and F2 is larger than or equal to 1 mm, and
- the sum of the thicknesses E1 and F1 does not differ from the sum of the thicknesses E2 and F2 by more than 0.5 mm.

2. Kit (1) according to claim 1, in which each of the first substrate (13) and the second substrate (17) comprises polyvinyl chloride or fibrocement.

3. Kit (1) according to claim 1 or 2, in which:

- each of the thicknesses E1 and E2 is comprised between 3 mm and 12 mm, and/or
- each of the thicknesses F1 and F2 is comprised between 5 mm and 30 mm.

4. Kit (1) according to any of claims 1 to 3, in which the first substrate (13) and the second substrate (17) respectively comprise one or several materials having a Young's modulus higher than 300 MPa.

5. Kit (1) according to claim 4, in which said materials show a deformation larger than 0.55 mm, the deformation being obtained using the following flexure test:

- obtaining a sample of each of said materials, the sample having a length of 6.0 cm, a width of 1.0 cm and a thickness of 0.6 cm in a vertical direction,
- using a three point flexure machine, for example an Instron® dynamometer, in order to apply a vertical pressure force in the middle of the sample supported by two points of the dynamometer separated by a horizontal distance of 5.0 cm, and obtaining a progressive deformation of the sample by lowering by third point of the dynamometer at a constant speed of 0.5 mm/minute in the vertical direction, and
- recording the applied pressure versus the progressive deformation,

the deformation being a value of the progressive deformation when the applied pressure reaches a maximum.

6. Kit (1) according to any of claims 1 to 5, further comprising a connecting system (11) adapted for connecting the tiles (7) of the first plurality and the tiles (9) of the second plurality one to another, the connecting system (11) being adapted to be located in a lower part of the first substrate (13) and the second substrate (17) when the kit (1) is assembled, the connecting system (11) being preferably adapted to be located a distance D from the floor (3) higher than 1 mm when the kit (1) is assembled.

7. Kit (1) according to any of claims 1 to 6, in which each of the tiles (7) of the first plurality and the tiles (9) of the

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second plurality has a length (L1, L2) between 250 mm and 2000 mm, and a width (LL1, LL2) between 80 mm and 1000 mm.

- 5
8. Kit (1) according to any of claims 1 to 7, in which the first floor covering part (15) or the second floor covering part (19) is a resilient thermoplastic covering.
9. Kit (1) according to claim 8, wherein:
- 10
- the first floor covering part (15) or the second floor covering part (19) comprises at least 40 wt% of PVC, and/or
 - the thicknesses E1 and E2 are comprised between 2 mm and 7 mm.
10. Kit (1) according to any of claims 1 to 7, in which the first floor covering part (15) or the second floor covering part (19) comprises more than 50 wt% of wood.
- 15
11. Kit (1) according to claim 10, wherein the first floor covering part (15) or the second floor covering part (19) is a laminate wood covering or an engineered wood covering.
12. Kit (1) according to any of claims 1 to 7, in which the first floor covering part (15) or the second floor covering part (19) comprises a carpet.
- 20
13. Kit (1) according to any of claims 1 to 7, in which the first floor covering part (15) or the second floor covering part (19) comprises more than 50 wt% of ceramic.
- 25
14. Kit (1) according to claim 13, wherein the thicknesses E1 and E2 are comprised between 7 mm and 15 mm.
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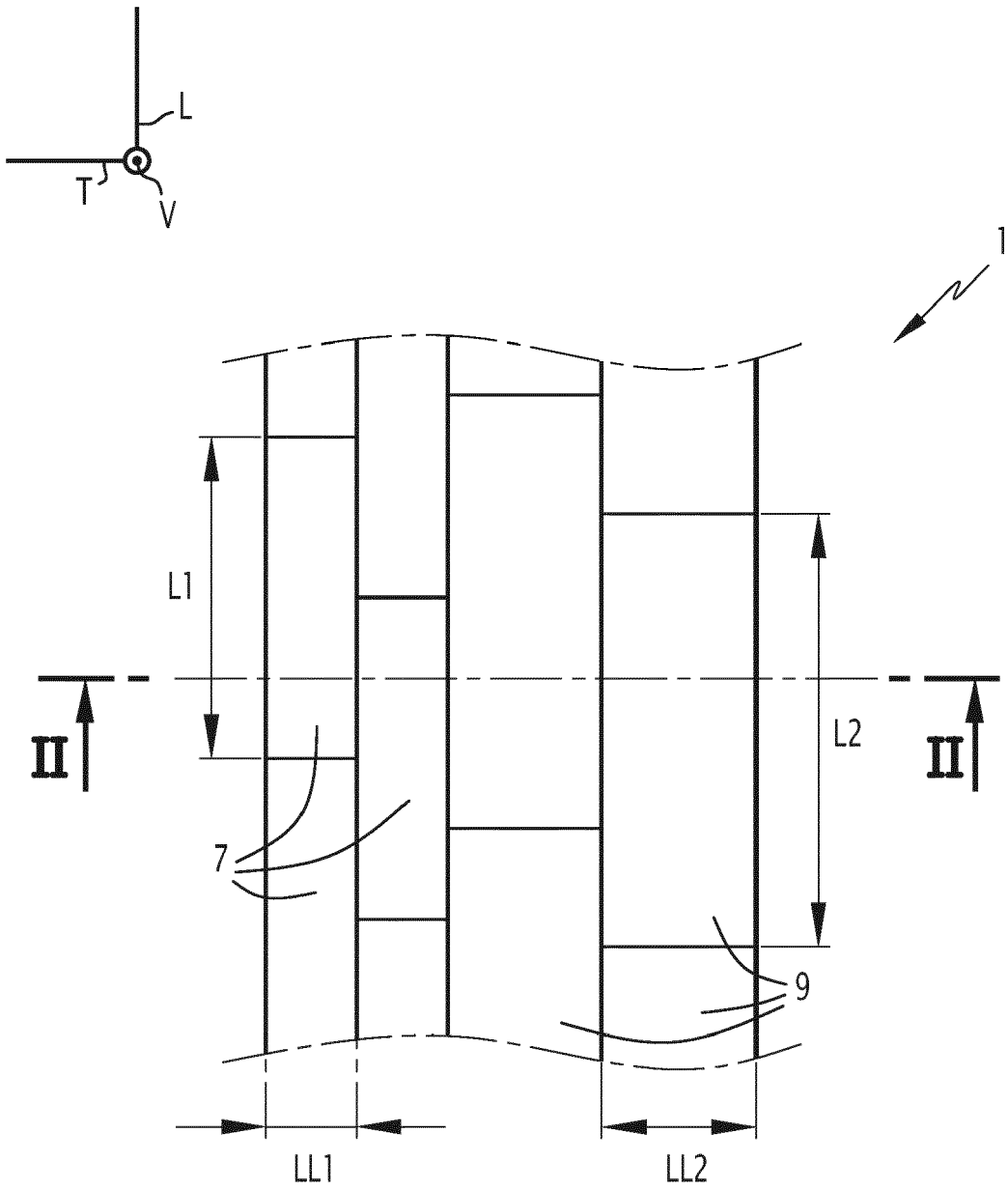


FIG.1

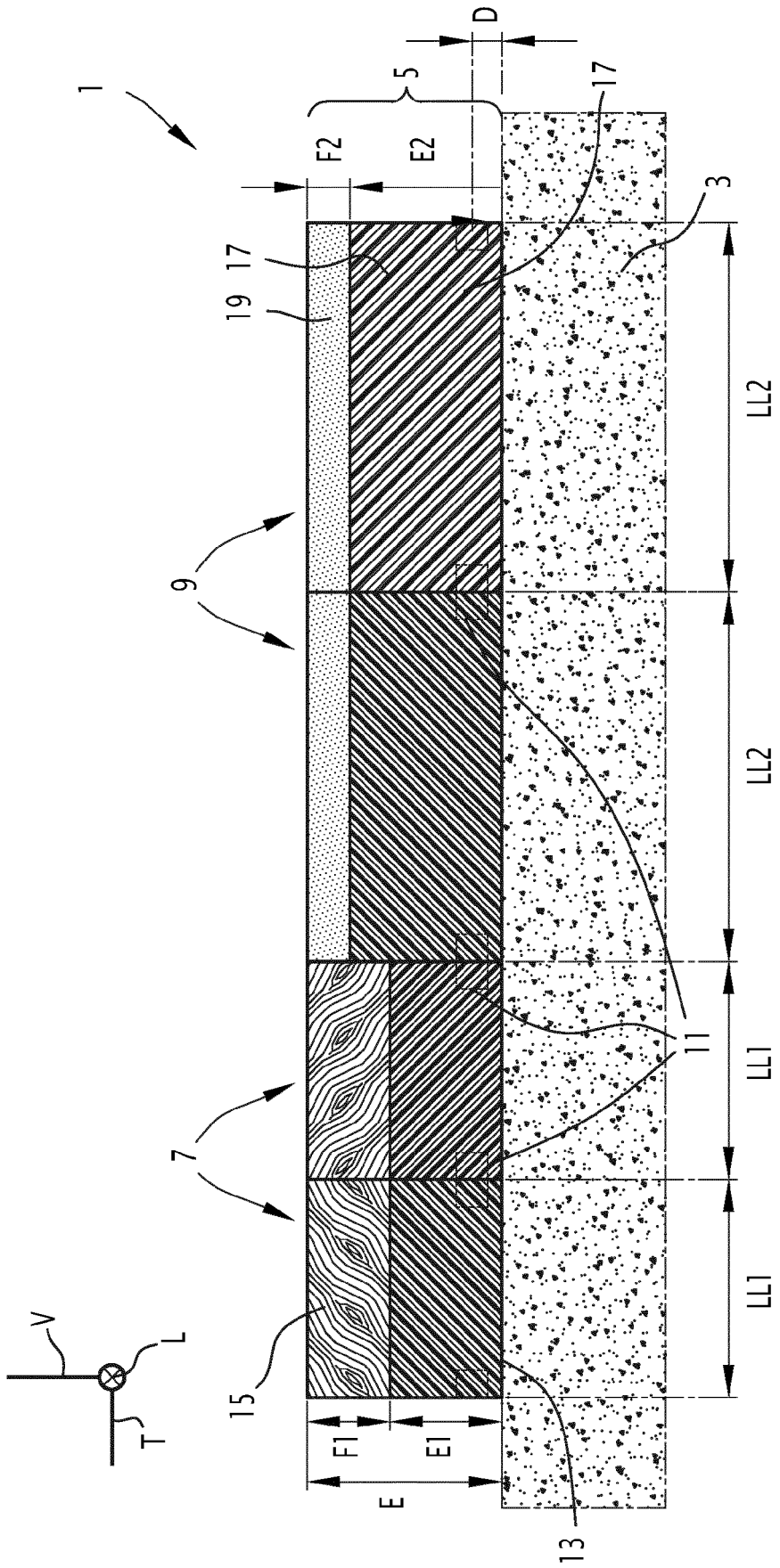


FIG.2



EUROPEAN SEARCH REPORT

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<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

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ANNEX TO THE EUROPEAN SEARCH REPORT
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