

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 May 2009 (22.05.2009)

PCT

(10) International Publication Number
WO 2009/064211 A2

(51) International Patent Classification:

B32B 9/02 (2006.01) **E04F 15/02** (2006.01)
B32B 21/08 (2006.01) **E04F 15/20** (2006.01)
B32B 27/30 (2006.01) **B32B 37/00** (2006.01)

(21) International Application Number:

PCT/PT2008/000049

(22) International Filing Date:

17 November 2008 (17.11.2008)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

102007054516.0

15 November 2007 (15.11.2007) DE

(71) Applicant (for all designated States except US):
AMORIM REVESTIMENTOS, S.A. [PT/PT]; Rua
do Ribeirinho, nº 202, P-4536-907 S. Paio de Oleiros (PT).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **CHAGAS, José An-
tónio Marchão das** [PT/PT]; Urbanização do Formal, nº
10, P-4500-669 Silvade (PT).

(74) Agent: **MOREIRA, Pedro Alves**; Rua do Patrocínio, 94,
P-1399 - 019 Lisboa (PT).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE,
EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID,
IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK,
LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW,
MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
ZW.

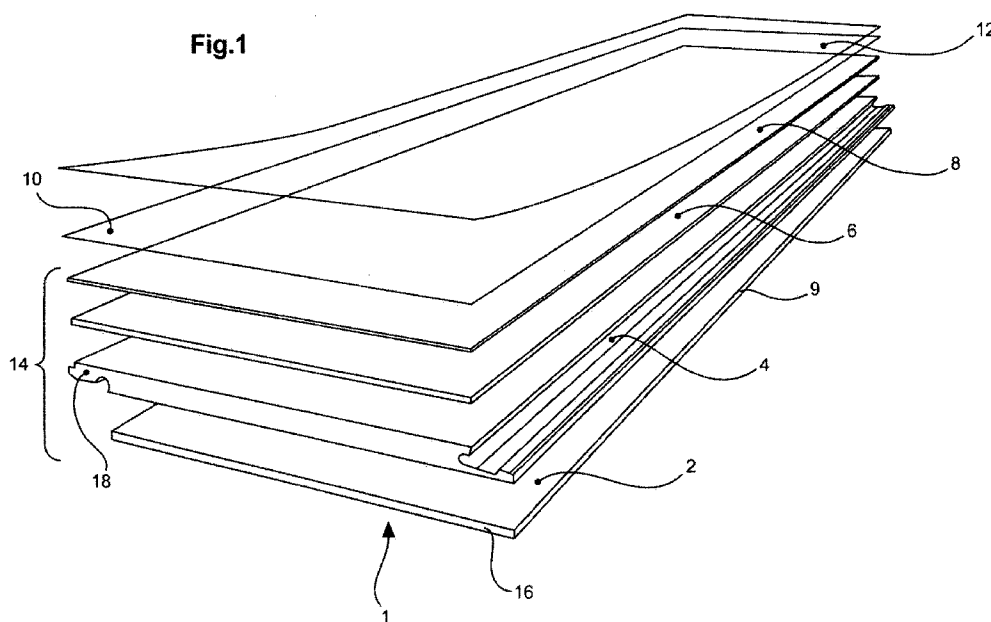
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,
NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG,
CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished
upon receipt of that report

(54) Title: PROCESS FOR THE PRODUCTION OF A FLOOR COVERING PANEL

Fig.1



(57) Abstract: The invention concerns a process for the production of a floor covering panel comprising the steps: providing a base panel having a natural surface of wood or cork, arranging a protective layer on the natural surface, pressing a resilient auxiliary layer against the protective layer and thereby pressing the protective layer against the natural surface so that the protective layer sub-stantially adopts the surface structure of the natural surface, and removing the auxiliary layer from the protective layer. The invention further concerns a correspondingly produced floor covering panel.

WO 2009/064211 A2

“PROCESS FOR THE PRODUCTION OF A FLOOR COVERING PANEL”

5 The present invention concerns a process for the production of a floor covering panel in which a protective layer is disposed on a base panel in order to protect the floor covering panel from abrasion wear and other damage which can occur when such a floor covering panel is walked upon in ordinary use. The invention further concerns a floor covering panel having a protective layer and a floor covering which is composed of a
10 plurality of such floor covering panels.

 Floor covering panels are generally known. They are used to be assembled with further floor covering panels to form a floor covering. They include for example laminate panels or panels for producing a completed parquet floor.

15

 In a variant the floor covering panel comprises a plurality of layers of which one is an HDF panel. The HDF panel substantially serves as a carrier material and to achieve the desired stiffness for the floor covering panel. Often further layers are provided for stabilisation or sound-insulating purposes. A layer with a design can be provided as a
20 cover layer disposed thereon, in order to impart an attractive appearance to the floor covering panel and therewith the floor covering to be produced therefrom.

 Frequently however an artificial design is unwanted and the floor covering panel is rather intended to give the impression of a natural product. In particular the impression
25 of wood or cork is often desired. For cost reasons for that purpose a multi-layer floor covering panel is frequently employed, in which only an uppermost thin layer of the respective natural product is disposed. A thin layer of that kind, that is to say in particular a thin layer of wood or cork, is however not very durable and requires a protective layer in order to be able to withstand use, namely in particular to withstand people con-
30 tinuously walking thereon.

A known variant for the production of a protective layer involves the application of a protective lacquer. A lacquer layer of that kind however only affords limited resistance so that the floor covering panel is only in a low loading class and accordingly can be reasonably used only in rooms involving a low traffic loading. In accordance with the
5 classification of resilient floor coverings set out in EN 685 lacquered cork floor coverings can be used at a maximum for a loading class 23/31. Cork floor coverings with a PVC protective layer can be used up to a loading class of 33/42.

In that respect such a PVC protective layer as the protective layer portion is glued
10 on a natural layer in manufacture and then permanently fixed by means of pressing. The result of this has been that the surface of the protective layer is smooth and flat and that has impaired the desired effect of giving the impression of a natural panel.

Other processes have followed the approach of using special pressing plates which
15 have a negative surface contour with the respectively desired pattern. Such pressing plates however are only capable of always applying the same pattern. A floor covering comprising such floor covering panels thus has repeatedly recurring patterns. In addition special pressing plates have to be prepared and appropriately changed when there is a change in product.

20

Accordingly the object of the present invention is as far as possible to reduce or to eliminate the above-indicated problems. In particular the object of the present invention is to provide a process for the production of a floor covering panel which has an appearance which is as close to nature as possible and which in that respect has a durable sur-
25 face with a surface structure which is as realistically natural as possible. Another object of the invention is to provide a corresponding floor covering panel and a corresponding floor covering.

In accordance with the invention therefore there is proposed a process as set forth
30 in claim 1.

Accordingly firstly a base panel is prepared, which has a natural surface. In particular that natural surface can comprise wood or cork. Accordingly, the natural surface also has a surface structure as is known for example from wood or cork. Such a surface structure is afforded in particular when a wood veneer or a cork veneer is used.

5

A protective layer is then arranged on such a surface. Such a protective layer involves a durable material such as for example a portion of a plastic material web or film or the like which is glued on to the natural surface. The claimed protective layer is in that respect to be clearly distinguished from a protective lacquer or another material which is applied in liquid form and which already comes to lie in recesses in a surface structure upon being applied. Rather the protective layer is laid in the solid condition in the form of a flat sheet, plate or the like on the natural surface and then initially carried substantially by raised regions of the structure of the natural surface.

15 Then, in one configuration, the resilient auxiliary layer is placed on the protective layer. In that respect the word 'on' relates to an orientation of the floor covering panel to be produced, which corresponds to the orientation involved in later use in ordinary conditions. In principle the floor covering panel could also involve a different orientation for example by the protective layer being disposed downwardly, in the production procedure or in at least one or some steps of the production process.

25 After that step, in this embodiment, what is then present is a stack comprising at least the base panel, the protective layer and the resilient auxiliary layer. That stack is then compressed by means of two pressing tools, between which the stack is disposed. In that case a lower pressing tool is used as a counterpart plate which holds the stack against the pressure of the second pressing tool. That second pressing tool presses the auxiliary layer against the protective layer. In that case the protective layer is firstly pressed against the natural surface and thus against the raised regions of the surface of the structure. At those locations therefore a counteracting pressure is built up, with which the protective layer presses against the auxiliary layer and opposes the movement of the auxiliary layer at that location in the pressing direction. By virtue of its resiliency the auxiliary layer however deflects away from the counteracting pressure at the raised loca-

30

tions and can thus press the protective layer even into the deeper regions of the surface structure.

5 In another configuration the resilient auxiliary layer is arranged on the pressing tool.

10 Because the described compensating operation substantially takes place in the auxiliary layer and not or at least only in part in the protective layer, not only is the protective layer laid in the recesses of the structure, but rather substantially assumes the surface structure in its entire thickness. In other words the surface structure of the natural surface is also apparent on the side of the protective layer which is remote from the natural surface and faces towards the auxiliary layer.

15 After the pressing operation, that is to say after or with removal at any event of one of the pressing tools, the auxiliary layer is removed. By virtue of the resiliency of the auxiliary layer, the auxiliary layer returns substantially to its previous form again after the pressure of the pressing tools has been released again. The auxiliary layer therefore comes out of the recesses which were produced in the pressing operation at the corresponding side of the protective layer. In addition the auxiliary layer substantially returns
20 to its flat straight form which it enjoyed prior to the pressing operation and as a result can be used again for the next pressing operation for the next floor covering panel. That next floor covering panel can differ from the preceding one and usually will differ therefrom as the natural surfaces from one floor covering panel to the next will already differ at least in detail.

25

In accordance with an embodiment a panel composed of a plurality of base layers is used and the natural surface is formed by a wood or cork veneer layer. Such a wood or cork veneer layer is cut out of a piece of wood or cork and possibly composed of a plurality of portions and in that case forms a comparatively thin layer of the natural material
30 in question. That veneer layer thus provides a natural surface consisting of the actual natural material without in that case requiring a very large amount of the natural material. The use of the actual natural material means that each floor covering panel produced

has its own individual appearance. Such veneer layers consisting of natural material themselves involve a low level of resistance. The resistance involved is achieved by the arrangement of a protective layer in accordance with the invention, while at the same time the surface structure of the veneer layer is apparent on the surface of the protective layer.

When using a transparent protective layer a floor covering panel thus acquires the appearance of a natural product at its surface and at the same time entails substantially the surface structure of the visible natural surface while at the same time providing a protective layer having a high load-bearing capability.

It is desirable to use a base plate with at least one HDF layer. In that respect the term HDF layer denotes a 'high density fibreboard' layer. It is equally also possible to use a chipboard panel or a plywood panel. Such a wood layer is basically known and simple and inexpensive to manufacture. In that respect the wood layer offers a good stable base for the base plate. Usually a wood layer of that kind is about 6 – 10 mm thick, in particular about 8 mm thick. It is desirable if the floor covering panel production process also includes the step of assembling the base panel from the base layers. Such an assembly operation is usually effected before the protective layer is applied.

Preferably a resilient plastic panel is used as the resilient auxiliary panel in order to achieve good resiliency properties and a high level of durability and in particular a high number of use cycles. Preferably the plastic panel is heat-resistant in order to be able to withstand the heat during the pressing operation. In particular the plastic panel or other auxiliary layer should be adapted in respect of its resistance to heat to the pressing operation and should retain its resiliency even under the effect of the heat during the pressing operation and thermal deformation should in particular not occur.

Preferably the auxiliary layer is of a thickness of 1 – 10, preferably 1 – 5 and in particular about 2 mm. The thickness of the auxiliary layer should in that respect be substantially greater than the depth of the surface structure so that the auxiliary layer can

perform the above-described compensating operations. However for reasons of cost and efficiency the process should refrain from using an excessively thick auxiliary layer.

Preferably a PVC layer is used as the protective layer. Such a PVC layer has proven to be durable and has been tried and tested over many years overall as a material for a floor covering. In that respect the process according to the invention makes it possible to provide a floor covering panel which has the durability of a PVC covering and in that respect – at any event when using a transparent PVC layer – involves the appearance and a surface structure of a natural product.

Preferably the pressing operation is carried out in such a way that a pressing tool with a substantially flat pressing surface is pressed against the auxiliary layer. That makes it possible to achieve a uniform pressure applied to the floor covering panel. In principle it is also possible to use a pressing roller in order to pass it over the auxiliary layer under a substantially constant pressure, in which respect however care must be taken to ensure that no displacement of the individual layers or layer portions relative to each other takes place. That can be achieved by the use of the auxiliary layer because that avoids directly rolling over the protective layer.

In accordance with the invention there is also proposed a floor covering panel having a base panel, a wood or cork veneer layer arranged thereon with a natural surface having a natural surface structure and a PVC protective layer arranged thereon, characterised in that the PVC protective layer has substantially the surface structure of the natural surface, on the side remote from the natural surface. That provides a floor covering panel which is adapted in visual and touch terms at any event in respect of its utility surface, to a natural wood or natural cork panel. At the same time that affords a high level of resistance for the surface of the floor covering panel. Preferably such a floor covering panel is produced with a process at least in accordance with one of the embodiments of the invention.

In accordance with an embodiment the floor covering panel has a base panel which comprises at least one HDF panel, a wood or cork veneer layer and an insulating layer,

in particular of cork, which is arranged at the side of the floor panel that is remote from the PVC layer. That therefore provides a floor panel which is simple and inexpensive to produce, with at the same time a surface which is attractive both visually and also to the touch and which is also durable.

5

Preferably a floor covering panel, viewed from above downwardly, has a PVC protective layer which is intended to provide for the durability of the surface of the floor covering panel. Such a PVC protective layer is of a thickness of about 0.3 – 0.5 mm, in particular about 0.4 mm. The PVC protective layer is applied directly to a wood or cork veneer layer. The wood or cork veneer layer serves to provide the floor covering panel with a corresponding appearance. At the same time that wood or cork veneer layer provides the surface structure that the PVC protective layer substantially assumes. The wood or cork veneer layer can be of a thickness of about 0.4 – 0.8 mm, in particular 0.5 mm. In that respect, a material which is of high a grade as possible is used as the wood or cork veneer layer in order to achieve a correspondingly desired visual appearance for the surface of the floor covering panel.

The wood or cork veneer layer is arranged on a cork layer as a carrier layer. That cork layer as a carrier layer can be about 2 mm in thickness. Pressed cork is used for that purpose. Pressed cork of that kind is usually pressed from comminuted cork provided with binding agent. Such a pressed cork layer can achieve inter alia a certain resiliency for the floor covering panel and in addition can prevent or reduce the occurrence and transmission of the sound of footsteps.

The cork layer as the carrier layer is arranged on an HDF layer as the main carrier panel which in turn can be arranged on a lower wood backlayer. In that case the HDF layer forms the main carrier panel or carrier layer of a thickness of the order of magnitude of 8 mm. Such an HDF panel is substantially produced from wood fibres which is pressed together with a binding agent to form a panel or layer. Such an HDF panel is comparatively hard but can also be reinforced to resist tensile loadings and therewith also flexural loadings by a wood backlayer. Such a wood backlayer is substantially of a thickness of about 0.8 mm and is made from real wood which however may be of low quality.

Finally, a further layer of pressed cork is arranged under the HDF panel or – if present – under the lower wood backlayer. The further layer of pressed cork is substantially of a thickness of 2 mm and is provided as means for absorbing or damping the sound of footsteps, that is to say for reducing the noise which is produced upon traffic over the floor covering panel. Due to the flexibility of the cork that pressed cork layer also serves to compensate for minor unevenness in the underfloor. Without the cork layer some other means for damping the sound of footsteps for the floor covering panel would necessarily have to be laid on the underfloor. Accordingly it is possible to save on both the cork layer as the means for damping the sound of footsteps and also the cork layer as the carrier layer for the wood or cork veneer layer. Particularly if the floor covering panel has a cork veneer layer the lower wood backlayer is redundant.

The process for the production of such a floor covering layer is usually effected in such a way that firstly the HDF panel – or other wood panel – is provided. The wood or cork veneer layer is then pressed to the cork layer of pressed cork as the carrier material and glued. The resulting dual-layer panel is then pressed to the HDF panel and glued. Prior to that or thereafter the HDF panel is provided with the wood backlayer, if provided. Next the footstep sound absorbing means comprising pressed cork is pressed thereonto and glued in place.

20

The panel produced in that way including the wood or cork veneer layer is covered by the term 'base panel'. A transparent PVC layer is then arranged on that base panel and thus on the wood or cork veneer layer. The PVC layer, as already described above, is also provided with an auxiliary layer and is then pressed to the base panel in order to provide that the protective layer comes to lie in the structure of the wood or cork veneer layer and at least partially assumes it by virtue of the resilient auxiliary layer on its top side. The auxiliary layer can then be removed and the floor covering panel is finished in terms of its layers. The procedure can then also involve an operation of cutting the floor covering panel to size and it can also be provided with tongue and groove so that a floor covering can be easily produced from a plurality of floor covering panels.

30

The protective layer can in addition also be made in turn from two layers. One layer in that case is applied to the wood or cork veneer layer and in particular provides the surface hardness which is provided for the surface of the floor covering panel to enjoy particular resistance. A further layer can be applied to that particularly hard layer, the further layer having for example good cleaning properties and compensating for differences in shine which can occur in the operation of hot pressing of the PVC layer. For example a highly matt surface with a degree of shine of 10% - 15% is produced in order to make the appearance as realistically natural as possible.

10 In accordance with a further embodiment it is also possible to produce a floor covering panel which is provided for finishing a floor covering which is fixedly laid. Such a floor covering panel involves the following layers from top downwardly in the condition of being laid in the regular fashion:

- 15
- a. a PVC protective layer,
 - b. a pressed cork layer, and
 - c. a PVC layer.

Such a floor covering panel is usually glued with its lower PVC layer on a floor such as for example a cement floor for laying purposes. The pressed cork layer and the lower PVC layer thus form the base panel. In a simple embodiment, a transparent PVC protective layer is arranged on the pressed cork layer so that the pressed cork layer is visible. In other configurations, arranged on the pressed cork layer is a cork or wood veneer layer so that the latter is visible in the laid condition. All of those floor covering panels which are to be fixedly laid can be of a thickness of 3 - 6 mm, preferably 3.2 mm. Those floor covering panels also usually have a further protective layer, in particular a protective lacquer, on the PVC protective layer, as has already been described in connection with other embodiments.

30 Such floor covering panels for fixed laying are thus also to be produced in accordance with the invention and have a durable surface at which a natural surface is visible and wherein a structure in accordance with the natural surface also stands out at the

surface of the protective layer. At least in that respect it is possible to achieve an improvement over previously known vinyl floor coverings.

In accordance with an example a highly finished silicone layer is used as the auxiliary layer. That silicone layer is transparent and is of a density of 1.2 g/cm^3 . The Shore hardness (ASTM D 2240) is 50 ± 5 , it can also be for example in the range of 20 – 80, the tearing strength (ASTM D 412 C) is 9 Mpa, the elongation at rupture (ASTM D 412 C) is 650% and 400% respectively after pressing for four hours at 200°C , the tearing strength (ASTM D 624 B) is 40 kN/m and 35 kN/m respectively after pressing for four hours at 200°C . Compression after 22 h at 177°C is less than 50%. The range of use of that material is between -40°C and $+210^\circ\text{C}$. Such a material can be obtained for example from 'Ammeraal Beltech' under the name PLATINUM CURED TRANSPARENT 240 / PLT 2mm.

The invention is described in greater detail hereinafter by means of two embodiments with reference to the accompanying Figures in which:

Figure 1 shows the structure of a floor covering panel with a cork veneer layer, and

Figure 2 shows a floor covering panel with a wood veneer layer.

Referring to Figure 1 the floor covering panel is provided on its underside with an integrated insulating lower cork layer 2. An HDF panel 4 is arranged on that lower cork layer 2. In that respect Figure 1 shows the individual layers with a spacing between them, which serves only for greater clarity of illustration and which more readily shows the layers. In actual fact however in a finished floor covering panel 1 all the layers are arranged in superposed relationship without an intermediate space between them.

Arranged on the HDF panel 4 is a pressed cork layer 6 which serves for damping the sound of footsteps and for carrying the cork veneer layer 8. The cork veneer layer 8 has a natural surface 9 of cork. Only the cork veneer layer 8 has a natural surface 9 of

cork with a large-area structure corresponding to a piece of cork or a plurality of smaller pieces of cork. The lower cork layer 2 and also the middle pressed cork layer 6 are each layers of pressed cork and therefore do not have a natural surface like the natural surface 9 of cork but rather appear as a large number of small cork pieces. Nonetheless if desired it is also possible to use a surface of a cork layer consisting of pressed cork as a visual surface for a floor covering panel. The use of a natural surface 9 as shown in Figure 1 however gives a substantially higher-quality impression. Applied to the cork veneer layer 8 and thus to the natural surface 9 thereof is a protective layer 10 which affords a high level of resistance to wear and tear at the surface and in that case adopts the structure of the natural surface 9. Arranged on that protective layer 10 is a further protective layer 12 with further protective properties in particular in relation to soiling. From the production engineering point of view the protective layer 10 is arranged on a base panel 14 and pressed with the assistance of an auxiliary layer in order to adopt the structure of the natural surface 9. In that respect the base panel is formed from the lower cork layer 2, the HDF panel 4, the insulating cork layer 6 and the cork veneer layer 8. After the protective layer 10 is fixed on the base panel 14 the auxiliary layer (not shown) is removed and finally the protective layer 12 can be applied. It is also possible to see the arrangement of a groove 16 and a tongue 18 in Figure 1. Usually the tongue and groove are milled in the panel both at the longitudinal edges and also the transverse edges.

Referring to Figure 2 shown therein is a floor covering panel 51 having a lower cork layer 52 and thereon a wood backlayer 53. Such a wood backlayer 53 is additionally provided in this case, in comparison with the structure of the floor covering panel 1 of Figure 1. An HDF panel 54 with groove 66 and tongue 68 is then arranged on the wood backlayer 53. The HDF panel 54 in turn carries thereon a pressed cork layer 56. The wood veneer layer 58 is arranged thereon, with its natural surface 59. The natural surface 59 is finally protected by the protective layer 60 and in addition the protective layer 62. In the floor covering panel 51 shown in Figure 2 the base panel 64 correspondingly consists of the lower cork layer 52, the wood backlayer 53, the HDF panel 54, the pressed cork layer 56 and the wood veneer layer 58.

Accordingly both of the embodiments of Figure 1 and Figure 2 provide a floor covering panel 1 and 51 respectively which visually provides a natural surface 9 of cork or a natural surface 59 of wood. Those natural surfaces 9 and 59 are protected by the protective layer 10 and the protective layer 12, or the protective layers 60 and 62 respectively, wherein the natural surface 9 or 59 can be seen through the protective layer 10 and the protective layer 12 or the protective layers 60 and 62 respectively and is also visually apparent in respect of its contour.

CLAIMS

1. A process for the production of a floor covering panel comprising the steps:

5

providing a base panel having a natural surface of wood or cork,
arranging a protective layer on the natural surface,
pressing a resilient auxiliary layer against the protective layer and thereby pressing
the protective layer against the natural surface so that the protective layer substan-
tially adopts the surface structure of the natural surface, and
removing the auxiliary layer from the protective layer.

10

2. A process according to claim 1 wherein the resilient auxiliary layer is arranged on
the protective layer prior to the pressing step.

15

3. A process according to claim 1 or claim 2 characterised in that
a panel composed of a plurality of base layers is used as the base panel, and
the natural surface is formed by a wood or cork veneer layer.

20

4. A process according to claim 3 wherein the base panel includes at least one HDF
layer, a chipboard panel or a plywood panel and/or the process includes assembling
the base panel from the base layers.

25

5. A process according to one of claims 1 to 3 wherein the base panel has a pressed
cork layer and at least one PVC layer.

6. A process according to one of the preceding claims characterised in that a resilient
plastic panel, in particular a heat-resistant plastic panel, is used as the resilient aux-
iliary layer.

30

7. A process according to one of the preceding claims characterised in that the auxiliary layer is of a thickness of 1 – 10 mm, preferably 1 – 5 mm and in particular about 2 mm.
- 5 8. A process according to one of the preceding claims characterised in that the auxiliary layer is of a Shore hardness in accordance with ASTM D 2240 in the range of 20 – 80, in particular 45 – 55.
9. A process according to one of the preceding claims characterised in that a PVC
10 layer is used as the protective layer.
10. A process according to one of the preceding claims characterised in that the pressing step is carried out in such a way that a pressing tool is pressed against the auxiliary layer with a substantially flat pressing surface.
- 15 11. A floor covering panel having a base panel with a wood or cork veneer layer with a natural surface with a natural surface structure and a PVC protective layer arranged thereon, characterised in that the PVC protective layer on the side remote from the natural surface has substantially a surface structure corresponding to the surface
20 structure of the natural surface and/or is produced by one of the processes in accordance with the foregoing claims.
12. A floor covering panel according to claim 11 characterised in that the base panel is composed of at least one HDF layer, a wood or cork veneer layer and an absorbent
25 layer, in particular of cork, which is arranged at the side of the floor panel that is remote from the PVC layer.
13. A floor covering panel according to claim 11 or claim 12 which has the following layers from above downwardly when laid in the regular fashion:
30
 - a. a PVC protective layer,
 - b. a wood or cork veneer layer,

- c. a cork layer as a carrier layer for the wood-cork veneer layer,
- d. an HDF layer as a main carrier panel,
- e. a thin wood layer as a lower wood backlayer, and
- f. a cork layer as a means for absorbing footstep sounds.

5

14. A floor covering panel according to claim 13 which when laid in the regular fashion under the HDF layer has

- a thin wood layer as a lower wood backlayer and/or
- a cork layer as a means for absorbing footstep sound.

10

15. A floor covering panel according to claim 11 which has the following layers from above downwardly when laid in the regular fashion:

15

- a. a PVC protective layer,
- b. a pressed cork layer, and
- c. a PVC layer.

20

16. A floor covering according to claim 15 further including a cork or wood veneer layer between the PVC protective layer and the pressed cork layer.

17. A floor covering comprising a plurality of floor covering panels according to one of claims 11 to 16.

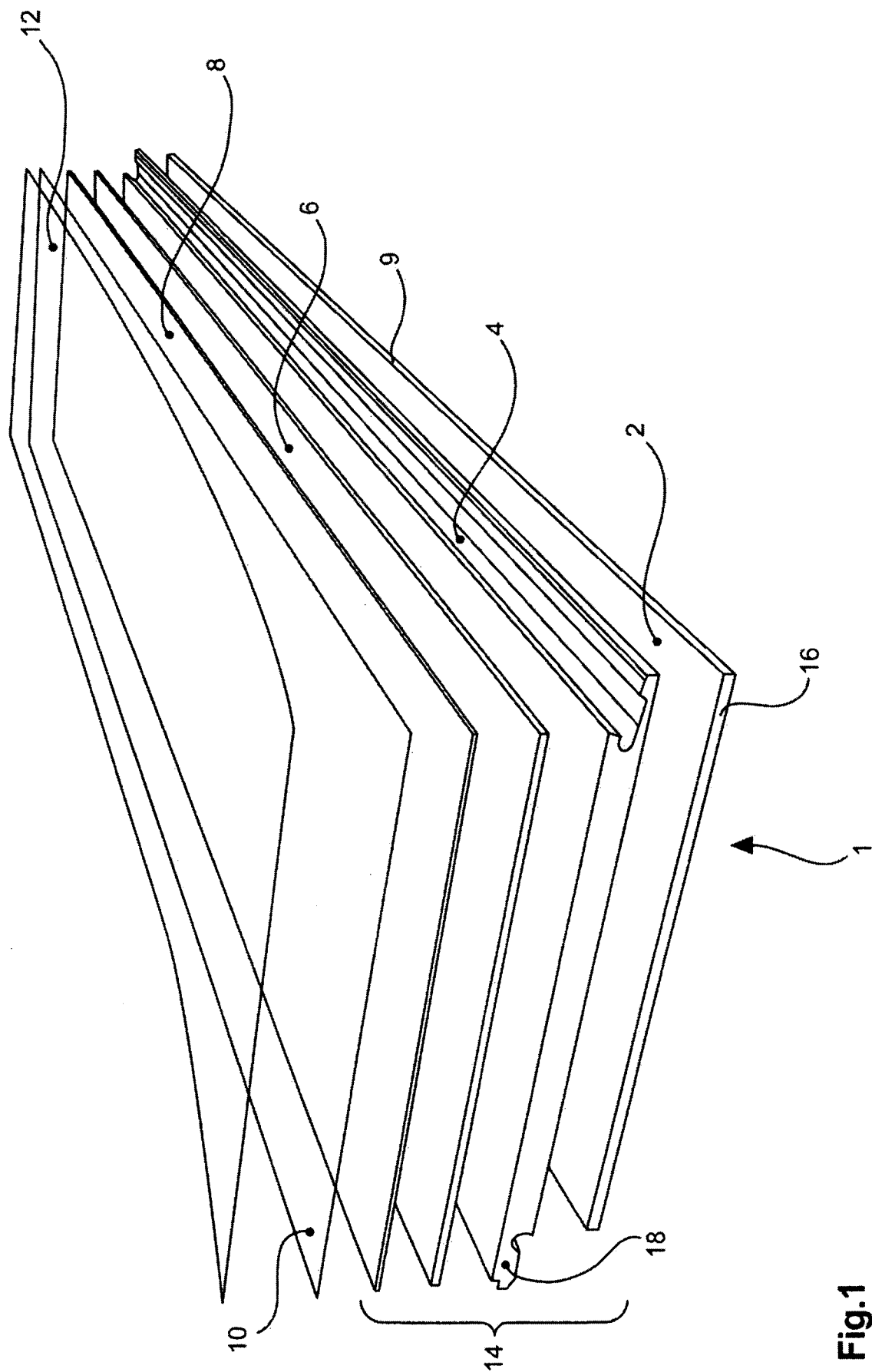


Fig. 1

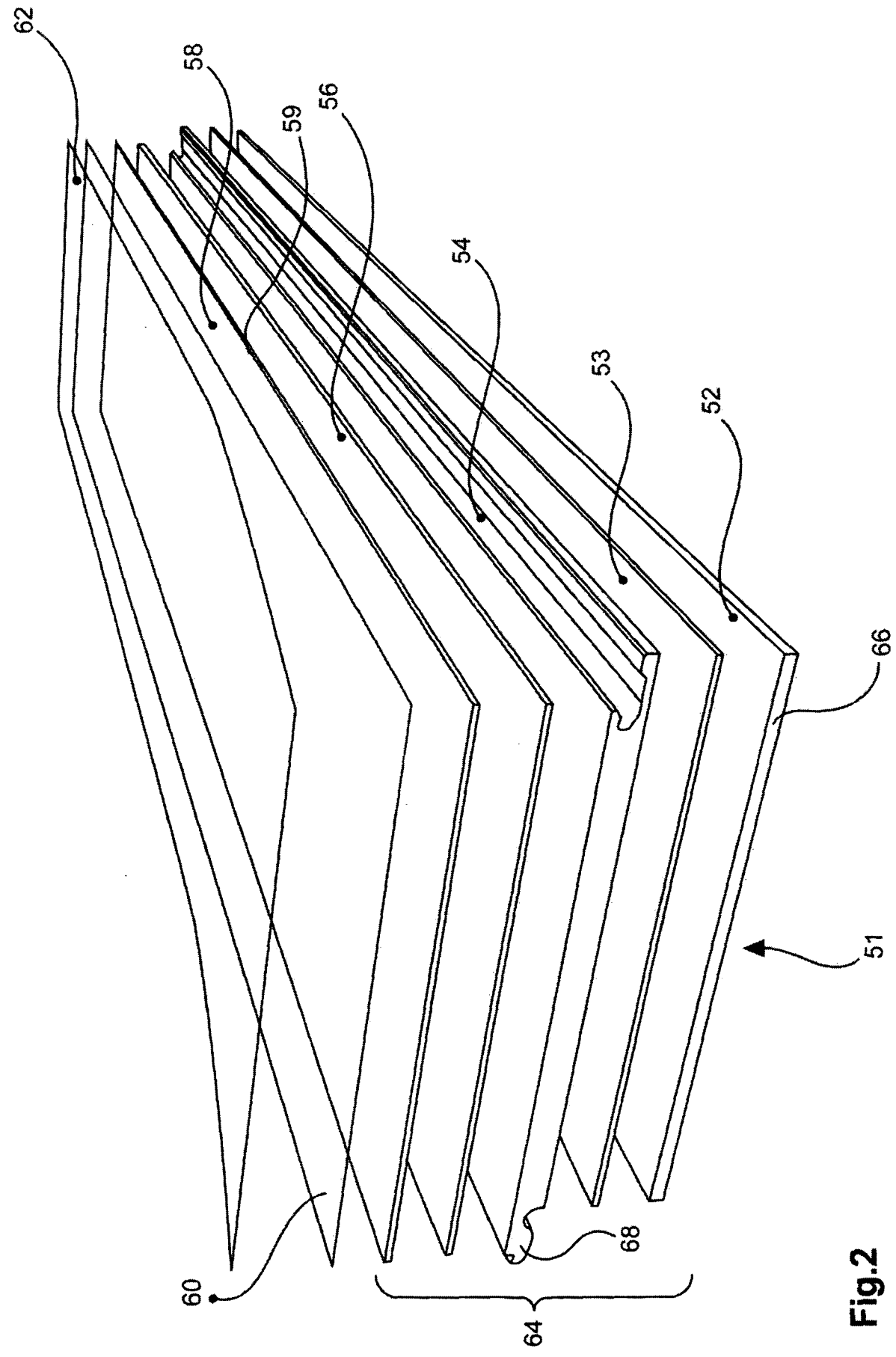


Fig. 2