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## (54) Composite floor

(57) A composite floor includes a base layer (10), a middle layer (20), a surface layer (30), a bonding member (15), and a releasing member (16). The base layer has a first side (11) provided with a plurality of inserts (111), a second side (12) provided with a plurality of slots (121), a third side (13) provided with a protrusion (131), and a fourth side (14) provided with a recess (141), a lug (144) and a breach (145). Thus, a plurality of composite floors are combined together by an engagement between the inserts and the slots, an engagement between the lug and the breach and an engagement between the protrusion and the recess so that the composite floors are assembled easily and quickly without needing aid of any hand tool.

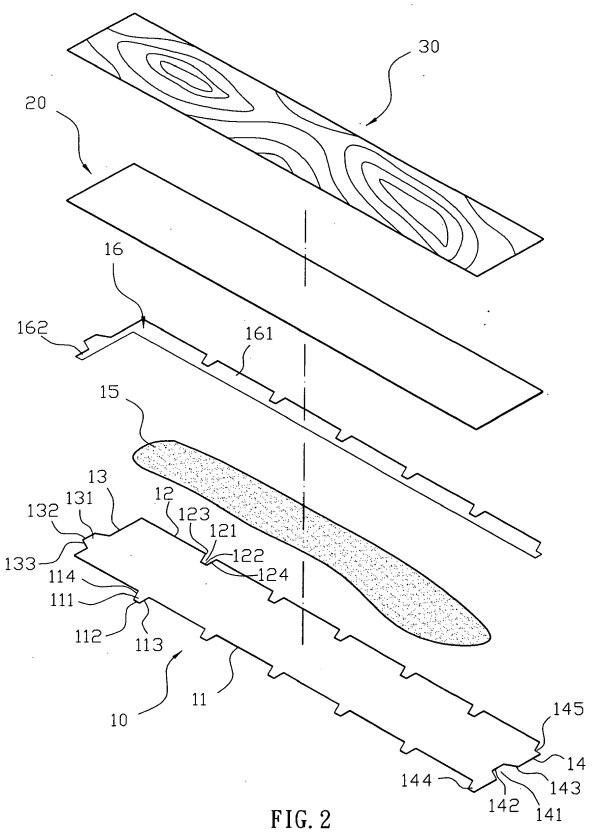


FIG. 2

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## Description

**[0001]** The present invention relates to a floor and, more particularly, to a composite floor.

**[0002]** A conventional composite floor in accordance with the prior art shown in Fig. 9 comprises a plurality of boards 40 juxtaposed to and connected with each other. Each of the boards 40 is fixed on the ground 42 by a plurality of fastening nails 41 which are in turn extended through each of the boards 40 and are nailed into the ground 42. However, it is difficult to nail the fastening nails 41 through each of the boards 40 into the ground 42 so that the boards 40 are connected by hand tools and are not assembled easily and quickly. In addition, a user cannot easily nail the fastening nails 41 through each of the boards 40 into the ground 42 so that the boards 40 have to be mounted by a professional technician, thereby increasing the costs of assembly. Further, the fastening nails 41 are inserted into the ground 42 to break the structure of the ground 42 so that many holes are formed in the ground 42 after removal of the boards 40, thereby decreasing the outer appearance of the ground 42, and thereby increasing the costs of maintenance and mending. The boards 40 are broken after being removed from the ground 42 so that the boards 40 cannot be reused after removal, thereby wasting the material.

**[0003]** In accordance with the present invention, there is provided a composite floor, comprising a base layer, a middle layer mounted on the base layer, a surface layer mounted on the middle layer, a bonding member located between the base layer and the middle layer, and a releasing member releasably mounted on the bonding member and partially covering the base layer.

**[0004]** The base layer has a first side, a second side located opposite to the first side, a third side located between the first side and the second side, and a fourth side located between the first side and the second side located opposite to the third side. The first side of the base layer is provided with a plurality of inserts. Each of the inserts of the base layer has a distal end provided with a first stop portion. Each of the inserts of the base layer has a first side provided with a first abutting face and has a second side provided with a first tapered face. The second side of the base layer is provided with a plurality of slots which correspond to the inserts of the first side respectively. Each of the slots of the base layer has a bottom wall provided with a second stop portion corresponding to the first stop portion of the respective insert. Each of the slots of the base layer has a first side provided with a second abutting face corresponding to the first abutting face of the respective insert and has a second side provided with a second tapered face corresponding to the first tapered face of the respective insert. The third side of the base layer is provided with at least one protrusion. The protrusion of the base layer has a distal end provided with a third stop portion. The protrusion of the base layer has two opposite sides each provided with a third tapered face. The fourth side of the base layer is provided with at least one recess which corresponds to the protrusion of the third side. The recess of the base layer has a bottom wall provided with a fourth stop portion corresponding to the third stop portion of the protrusion. The recess of the base layer has two opposite sides each provided with a fourth tapered face corresponding to the third tapered face of the protrusion. The fourth side of the base layer has a first corner provided with a lug and a second corner provided with a breach which corresponds to the lug.

**[0005]** The primary objective of the present invention is to provide a composite floor that is assembled easily and quickly without needing aid of any hand tool. The fourth side of the base layer has a first corner provided with a lug and a second corner provided with a breach which corresponds to the lug.

**[0006]** According to the primary advantage of the present invention, the composite floors are in turn combined together by an engagement between the inserts and the slots, an engagement between the lug and the breach and an engagement between the protrusion and the recess so that the composite floors are assembled easily and quickly without needing aid of any hand tool.

**[0007]** According to another advantage of the present invention, after the releasing member is removed from the second side and the third side of the base layer of one of the composite floors, the second side and the third side of the base layer of one of the composite floors are covered and positioned by the middle layer of another one of the composite floors so that the composite floors are combined solidly and stably.

**[0008]** According to a further advantage of the present invention, the composite floors are directly placed on the ground and are combined together by an insertion connection so that the composite floors will not break the structure of the ground so as to maintain the outer appearance of the ground after removal of the composite floors and to save the costs of maintenance and mending.

**[0009]** According to a further advantage of the present invention, the composite floors can be reused after removal, thereby enhancing the utility of the composite floors.

**[0010]** Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

**[0011]** In the drawings:

Fig. 1 is a partially perspective view of a composite floor in accordance with the preferred embodiment of the present invention.

Fig. 2 is an exploded perspective view of the composite floor as shown in Fig. 1.

Fig. 3 is a locally enlarged perspective cross-sectional view of the composite floor as shown in Fig. 2.

Fig. 4 is a locally enlarged cross-sectional view of the composite floor as shown in Fig. 3.

Fig. 5 is a bottom perspective view of the composite floor as shown in Fig. 1.

Fig. 6 is a locally enlarged view of the composite floor as shown in Fig. 5.

Fig. 7 is a schematic operational view of the composite floor as shown in Fig. 1 in use.

Fig. 8 is a top view showing combination of a plurality of composite floors in accordance with the preferred embodiment of the present invention.

Fig. 9 is a front cross-sectional view of a conventional composite floor in accordance with the prior art.

**[0012]** Referring to the drawings and initially to Figs. 1-6, a composite floor in accordance with the preferred embodiment of the present invention comprises a base layer 10, a middle layer 20 mounted on the base layer 10, a surface layer 30 mounted on the middle layer 20, a bonding member 15 located between the base layer 10 and the middle layer 20, and a releasing member 16 releasably mounted on the bonding member 15 and partially covering the base layer 10.

**[0013]** The base layer 10 has a first side 11, a second side 12 located opposite to the first side 11, a third side 13 located between the first side 11 and the second side 12, and a fourth side 14 located between the first side 11 and the second side 12 located opposite to the third side 13. The first side 11 and the second side 12 of the base layer 10 are longer sides and are parallel with each other. The third side 13 and the fourth side 14 of the base layer 10 are shorter sides and are parallel with each other.

**[0014]** The first side 11 of the base layer 10 is provided with a plurality of inserts 111. The inserts 111 of the base layer 10 are equally spaced from each other. Each of the inserts 111 of the base layer 10 has a distal end provided with a first stop portion 112. The first stop portion 112 of each of the inserts 111 is parallel with the first side 11 of the base layer 10. Each of the inserts 111 of the base layer 10 has a first side provided with a first abutting face 113 and has a second side provided with a first tapered face 114. The first abutting face 113 of each of the inserts 111 is perpendicular to the first side 11 of the base layer 10. The first tapered face 114 of each of the inserts 111 and the first side 11 of the base layer 10 have an obtuse angle defined therebetween.

**[0015]** The second side 12 of the base layer 10 is provided with a plurality of slots 121 which correspond to the inserts 111 of the first side 11 respectively. The slots 121 of the base layer 10 are equally spaced from each other. Each of the slots 121 of the base layer 10 has a bottom wall provided with a second stop portion 122 corresponding to the first stop portion 112 of the respective insert 111. The second stop portion 122 of each of the slots 121 is parallel with the second side 12 of the base layer 10. Each of the slots 121 of the base layer 10 has a first side provided with a second abutting face 123 corresponding to the first abutting face 113 of the respective insert 111 and has a second side provided with a second tapered face 124 corresponding to the first tapered face 114 of the respective insert 111. The second abutting face 123 of each of the slots 121 is perpendicular to the second side 12 of the base layer 10. The second tapered face 124 of each of the slots 121 and the second side 12 of the base layer 10 have an obtuse angle defined therebetween.

**[0016]** The third side 13 of the base layer 10 is provided with at least one protrusion 131. The protrusion 131 of the base layer 10 has a distal end provided with a third stop portion 132. The third stop portion 132 of the protrusion 131 is parallel with the third side 13 of the base layer 10. The protrusion 131 of the base layer 10 has two opposite sides each provided with a third tapered face 133. The third tapered face 133 of the protrusion 131 and the third side 13 of the base layer 10 have an obtuse angle defined therebetween.

**[0017]** The fourth side 14 of the base layer 10 is provided with at least one recess 141 which corresponds to the protrusion 131 of the third side 13. The recess 141 of the base layer 10 has a bottom wall provided with a fourth stop portion 142 corresponding to the third stop portion 132 of the protrusion 131. The fourth stop portion 142 of the recess 141 is parallel with the fourth side 14 of the base layer 10. The recess 141 of the base layer 10 has two opposite sides each provided with a fourth tapered face 143 corresponding to the third tapered face 133 of the protrusion 131. The fourth tapered face 143 of the protrusion 131 and the fourth side 14 of the base layer 10 have an obtuse angle defined therebetween.

**[0018]** The fourth side 14 of the base layer 10 has a first corner provided with a lug 144 and a second corner provided with a breach 145 which corresponds to the lug 144. The lug 144 of the base layer 10 is located at a connection of the first side 11 and the fourth side 14 of the base layer 10. The breach 145 of the base layer 10 is located at a connection of the second side 12 and the fourth side 14 of the base layer 10. The recess 141 of the base layer 10 is located between the lug 144 and the breach 145.

**[0019]** The middle layer 20 is bonded onto the bonding member 15 and is sandwiched between the base layer 10 and the surface layer 30. The middle layer 20 has a size smaller than that of the base layer 10. The middle layer 20 covers and protrudes outward from the first side 11 and the fourth side 14 of the base layer 10, while the second side 12 and the third side 13 of the base layer 10 evades and protrudes outward from the middle layer 20.

**[0020]** The surface layer 30 has a size flush with that of the middle layer 20. Preferably, the surface layer 30 is arranged on the middle layer 20 by printing, doping or coating.

**[0021]** The bonding member 15 is bonded onto and distributed on a whole surface of the base layer 10 evenly and completely. The bonding member 15 is located between the base layer 10 and the releasing member 16.

**[0022]** The releasing member 16 surrounds the middle layer 20 and covers the second side 12 and the third side 13 of the base layer 10. The releasing member 16 has a

substantially L-shaped profile and has a first side 161 having a shape matching that of the second side 12 of the base layer 10 and a second side 162 having a shape matching that of the third side 13 of the base layer 10. The releasing member 16 is removed from the bonding member 15 to partially expose the bonding member 15 covering the second side 12 and the third side 13 of the base layer 10.

**[0023]** In assembly, referring to Figs. 7 and 8 with reference to Figs. 1-6, a plurality of composite floors are to be assembled. When the releasing member 16 of a first composite floor 1 is removed from the bonding member 15 as shown in Fig. 7, the second side 12 and the third side 13 of the base layer 10 are exposed. Then, each of the inserts 111 of the base layer 10 of a second composite floor 1A is pushed toward and inserted into each of the slots 121 of the base layer 10 of the first composite floor 1 as shown in Fig. 8, while the lug 144 of the base layer 10 of the second composite floor 1 A is pushed toward and inserted into the breach 145 of the base layer 10 of the first composite floor 1 so that the first composite floor 1 and the second composite floor 1A are combined together. At this time, the middle layer 20 of the second composite floor 1A covers the exposed second side 12 of the base layer 10 of the first composite floor 1. In such a manner, the composite floors 1 and 1A are assembled successively to form a transverse connection.

**[0024]** In addition, the recess 141 of the base layer 10 of a third composite floor 1B is pushed toward and locked onto the protrusion 131 of the base layer 10 of the first composite floor 1 (or the second composite floor 1A) as shown in Fig. 8, so that the first composite floor 1 (or the second composite floor 1A) and the third composite floor 1B are combined together. At this time, the middle layer 20 of the third composite floor 1B covers the exposed third side 13 of the base layer 10 of the first composite floor 1. In such a manner, the composite floors 1 and 1B are assembled successively to form a longitudinal connection.

**[0025]** Accordingly, the composite floors are in turn combined together by an engagement between the inserts 111 and the slots 121, an engagement between the lug 144 and the breach 145 and an engagement between the protrusion 131 and the recess 141 so that the composite floors are assembled easily and quickly without needing aid of any hand tool. In addition, after the releasing member 16 is removed from the second side 12 and the third side 13 of the base layer 10 of one of the composite floors, the second side 12 and the third side 13 of the base layer 10 of one of the composite floors are covered and positioned by the middle layer 20 of another one of the composite floors so that the composite floors are combined solidly and stably. Further, the composite floors are directly placed on the ground and are combined together by an insertion connection so that the composite floors will not break the structure of the ground so as to maintain the outer appearance of the ground after removal of the composite floors and to save the costs of maintenance and mending. Further, the composite floors can be reused after removal, thereby enhancing the utility of the composite floors.

**[0026]** Although the invention has been explained in relation to its preferred embodiment(s) as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.

## Claims

**1.** A composite floor, comprising:

a base layer (10);
a middle layer (20) mounted on the base layer;
a surface layer (30) mounted on the middle layer;
a bonding member (15) located between the base layer and the middle layer; and
a releasing member (16) releasably mounted on the bonding member and partially covering the base layer;
wherein the base layer has a first side (11), a second side (12) located opposite to the first side, a third side (13) located between the first side and the second side, and a fourth side (14) located between the first side and the second side located opposite to the third side;
the first side of the base layer is provided with a plurality of inserts (111);
each of the inserts of the base layer has a distal end provided with a first stop portion (112);
each of the inserts of the base layer has a first side provided with a first abutting face (113) and has a second side provided with a first tapered face (114);
the second side of the base layer is provided with a plurality of slots (121) which correspond to the inserts of the first side respectively;
each of the slots of the base layer has a bottom wall provided with a second stop portion (122) corresponding to the first stop portion of the respective insert;
each of the slots of the base layer has a first side provided with a second abutting face (123) corresponding to the first abutting face of the respective insert and has a second side provided with a second tapered face (124) corresponding to the first tapered face of the respective insert;
the third side of the base layer is provided with at least one protrusion (131);
the protrusion of the base layer has a distal end provided with a third stop portion (132);
the protrusion of the base layer has two opposite

sides each provided with a third tapered face (133);
the fourth side of the base layer is provided with at least one recess (141) which corresponds to the protrusion of the third side;
the recess of the base layer has a bottom wall provided with a fourth stop portion (142) corresponding to the third stop portion of the protrusion;
the recess of the base layer has two opposite sides each provided with a fourth tapered face (143) corresponding to the third tapered face of the protrusion.

**2.** The composite floor of claim 1, wherein the fourth side of the base layer has a first corner provided with a lug (144) and a second corner provided with a breach (145) which corresponds to the lug.

**3.** The composite floor of claim 2, wherein
the lug of the base layer is located at a connection of the first side and the fourth side of the base layer;
the breach of the base layer is located at a connection of the second side and the fourth side of the base layer.

**4.** The composite floor of claim 2, wherein the recess of the base layer is located between the lug and the breach.

**5.** The composite floor of claim 1, wherein
the first stop portion of each of the inserts is parallel with the first side of the base layer;
the first abutting face of each of the inserts is perpendicular to the first side of the base layer;
the first tapered face of each of the inserts and the first side of the base layer have an obtuse angle defined therebetween.

**6.** The composite floor of claim 5, wherein
the second stop portion of each of the slots is parallel with the second side of the base layer;
the second abutting face of each of the slots is perpendicular to the second side of the base layer;
the second tapered face of each of the slots and the second side of the base layer have an obtuse angle defined therebetween.

**7.** The composite floor of claim 1, wherein
the third stop portion of the protrusion is parallel with the third side of the base layer;
the third tapered face of the protrusion and the third side of the base layer have an obtuse angle defined therebetween.

**8.** The composite floor of claim 7, wherein
the fourth stop portion of the recess is parallel with the fourth side of the base layer;
the fourth tapered face of the protrusion and the fourth side of the base layer have an obtuse angle defined therebetween.

**9.** The composite floor of claim 1, wherein
the inserts of the base layer are equally spaced from each other; the slots of the base layer are equally spaced from each other.

**10.** The composite floor of claim 1, wherein
the middle layer covers and protrudes outward from the first side and the fourth side of the base layer;
the second side and the third side of the base layer evades and protrudes outward from the middle layer.

**11.** The composite floor of claim 10, wherein
the bonding member is located between the base layer and the releasing member;
the bonding member is bonded onto and distributed on a whole surface of the base layer evenly and completely;
the releasing member surrounds the middle layer;
the releasing member covers the second side and the third side of the base layer.

**12.** The composite floor of claim 11, wherein the releasing member is removed from the bonding member to partially expose the bonding member covering the second side and the third side of the base layer.

**13.** The composite floor of claim 1, wherein
the middle layer is bonded onto the bonding member;
the middle layer is sandwiched between the base layer and the surface layer.

**14.** The composite floor of claim 1, wherein
the middle layer has a size smaller than that of the base layer;
the surface layer has a size flush with that of the middle layer.

**15.** The composite floor of claim 1, wherein the releasing member has a first side (161) having a shape matching that of the second side of the base layer and a second side (162) having a shape matching that of the third side of the base layer.

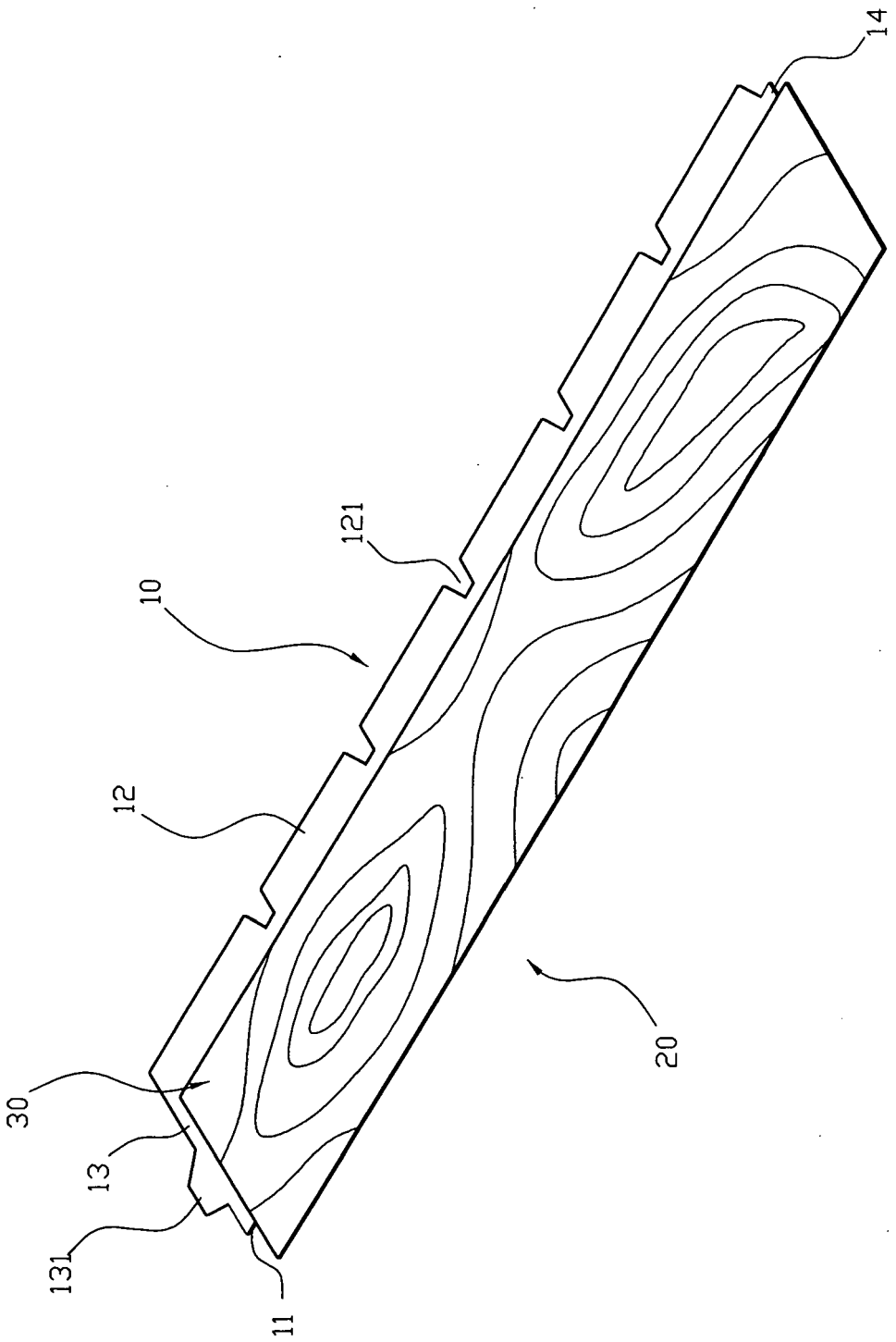


FIG. 1

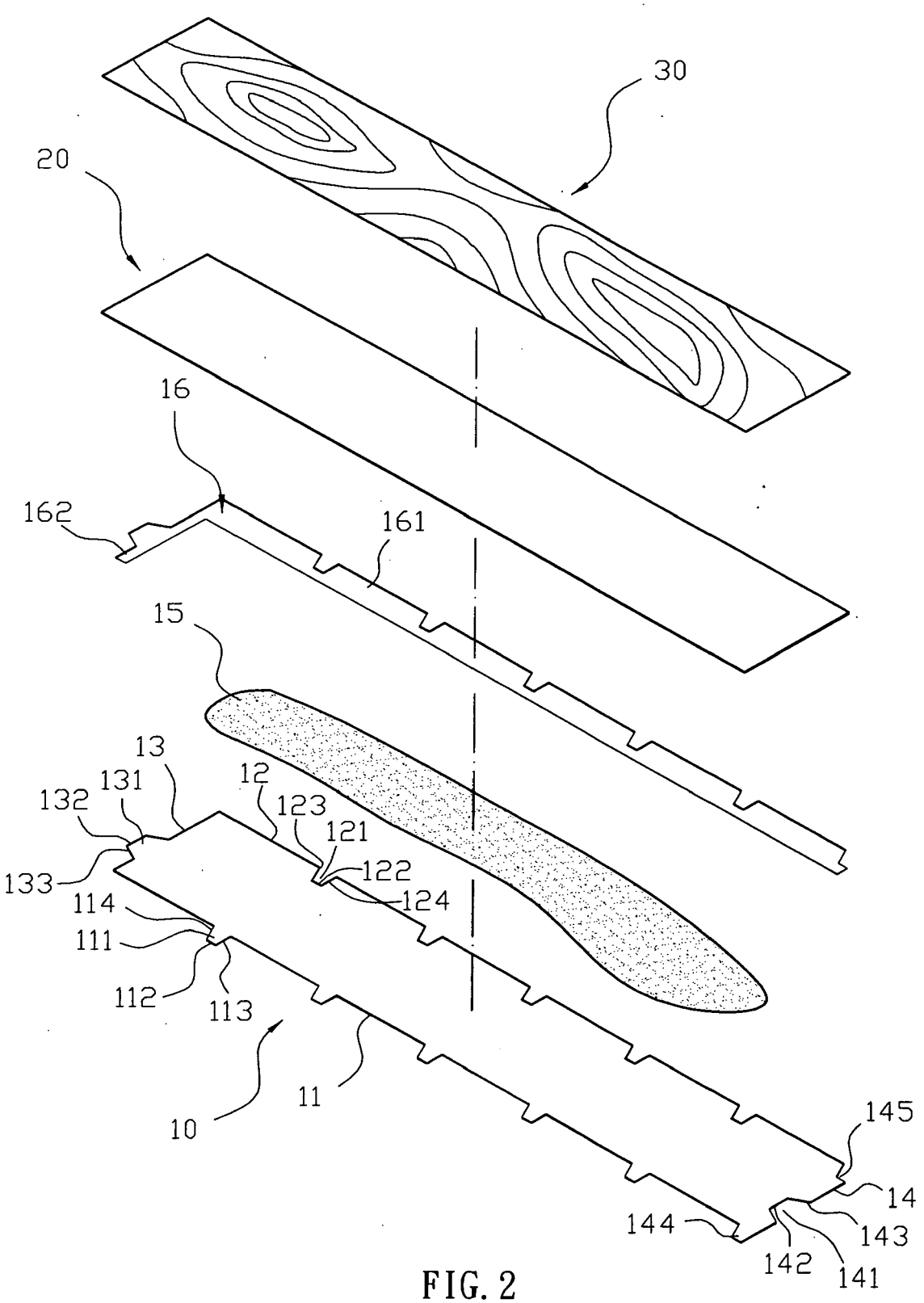
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FIG. 2

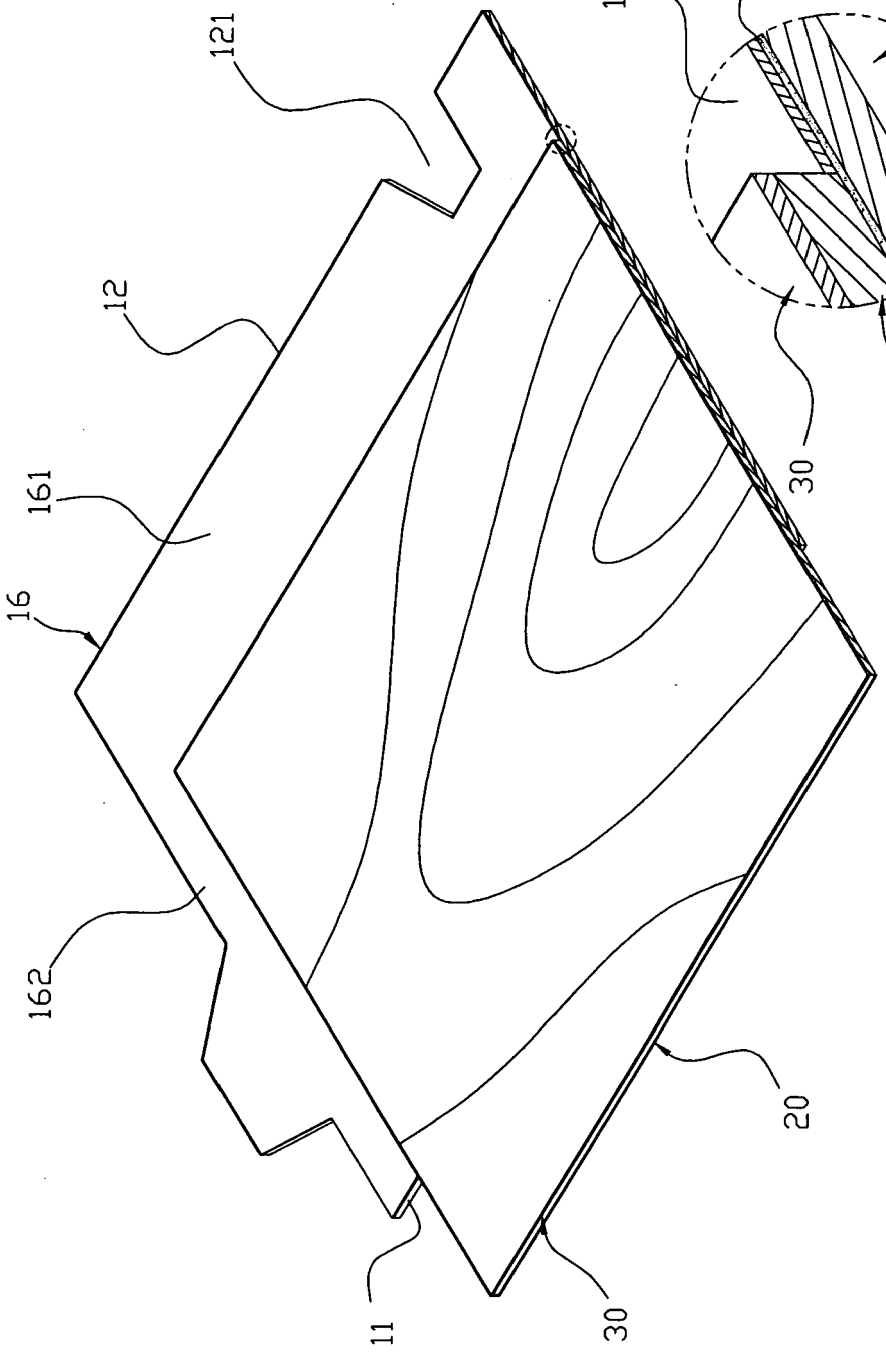


FIG. 3

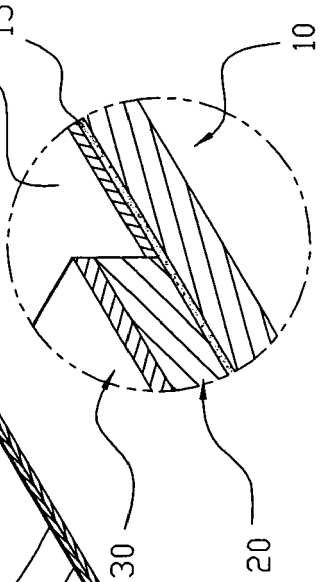


FIG. 4

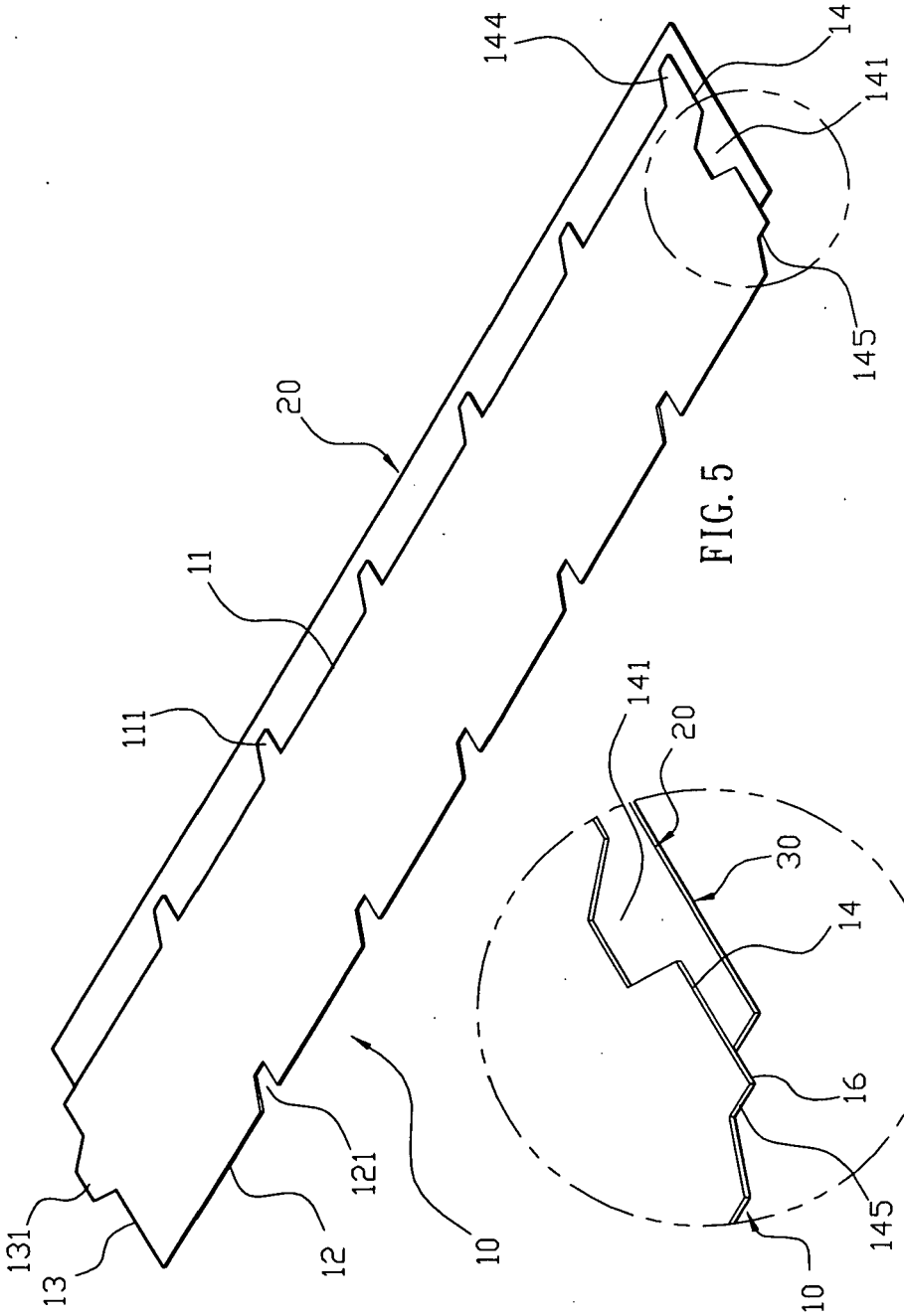


FIG. 5




FIG. 6

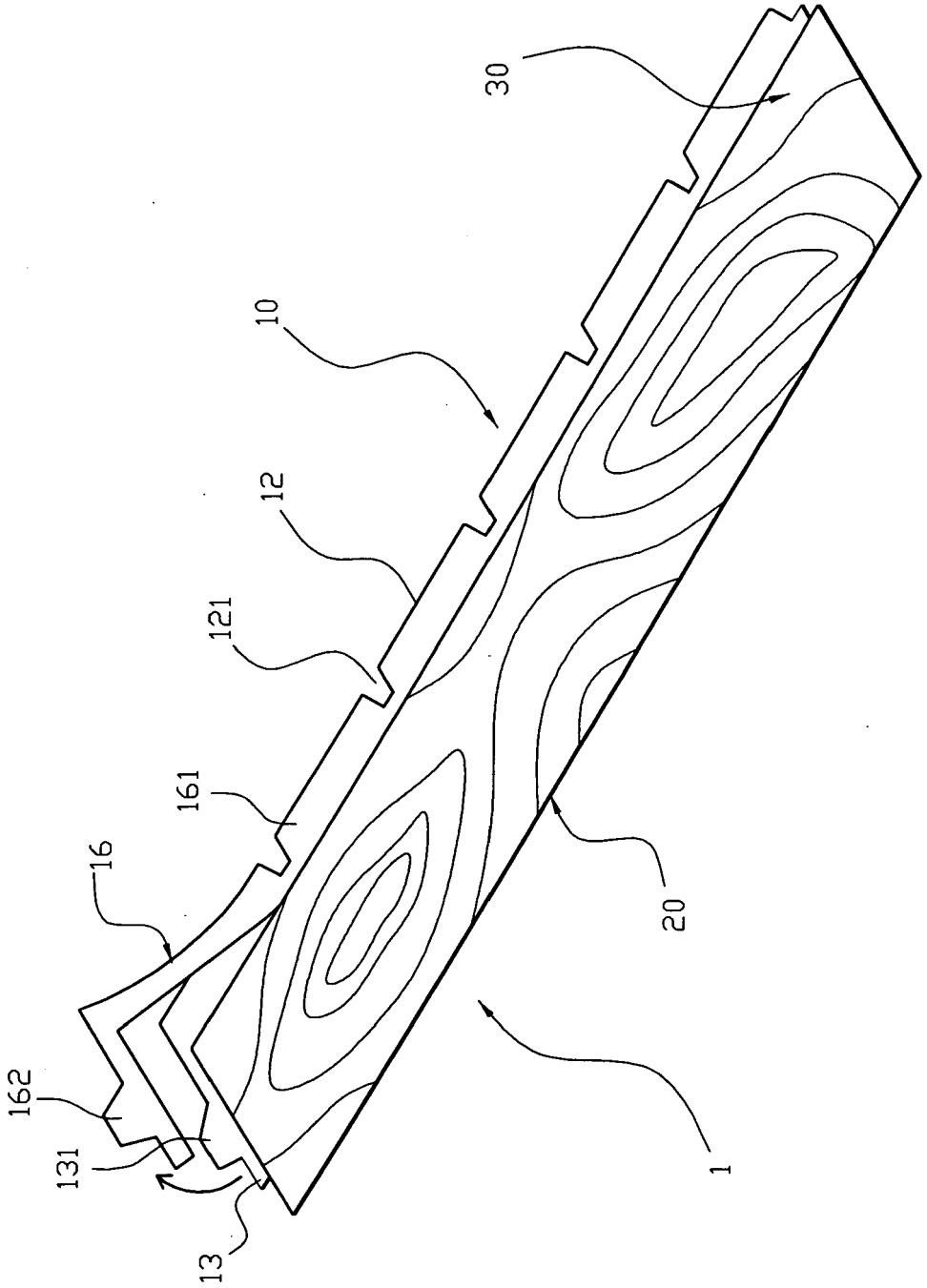


FIG. 7

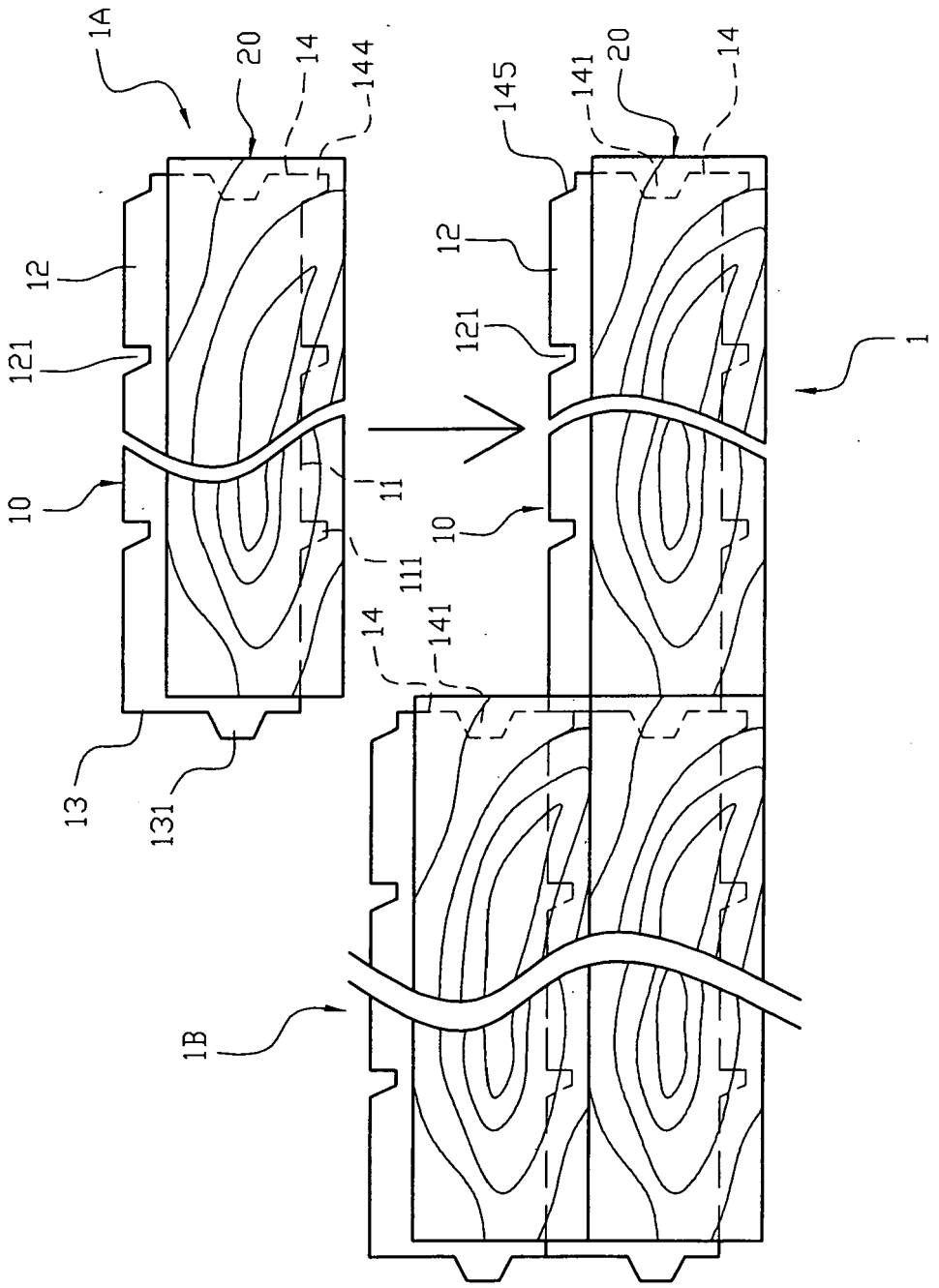


FIG. 8

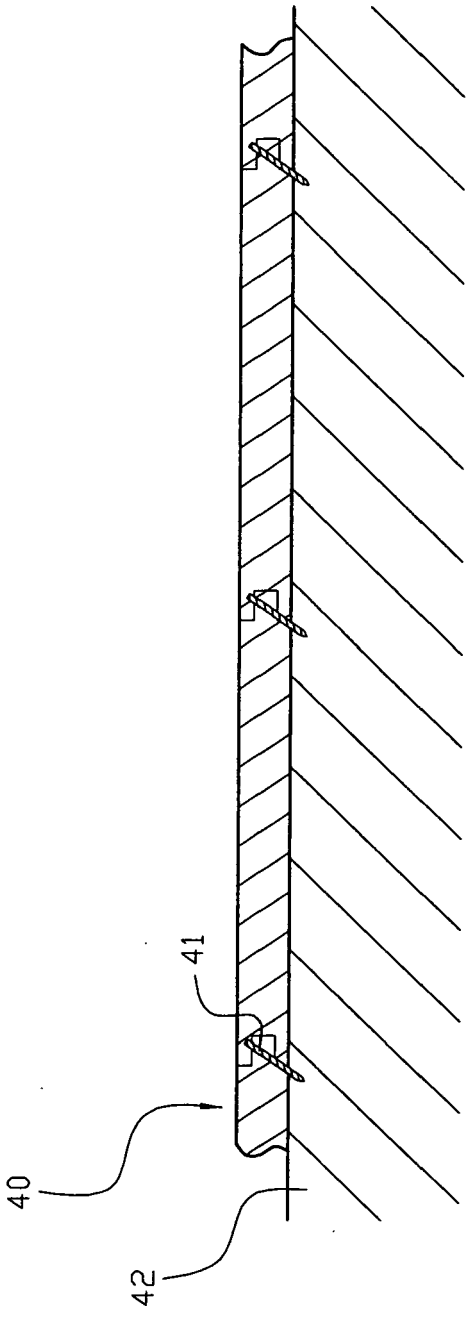


FIG. 9
PRIOR ART

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Application Number
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The present search report has been drawn up for all claims

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CATEGORY OF CITED DOCUMENTS

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 00 3844

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