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(54) **FLOOR ELEMENT**

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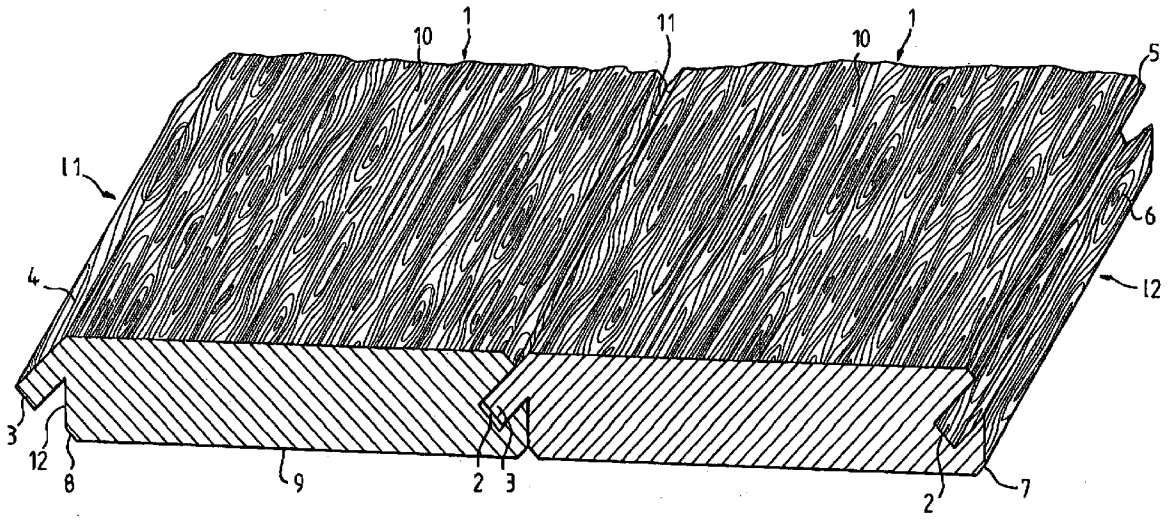
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(57) **ABSTRACT**

A floor element, in particular a wooden floor element, comprising a top and a bottom surface as well as a first and a second lateral side, said first side being provided with a tooth integrally formed with said floor element, said second side being provided with a groove, said tooth and said groove extend substantially over a whole length of lateral sides and are dimensioned in such a manner, that for adjacently placed floor elements the tooth of the one floor element and the groove of the other floor element mutually engage for providing a toothed engagement, and wherein said tooth starts from said top surface and is inclined over an angle situated between 20 and 70°, preferably between 35 and 55° with respect to said top surface, said tooth having a length measured as from said top surface of at least one third of the thickness of said floor element.



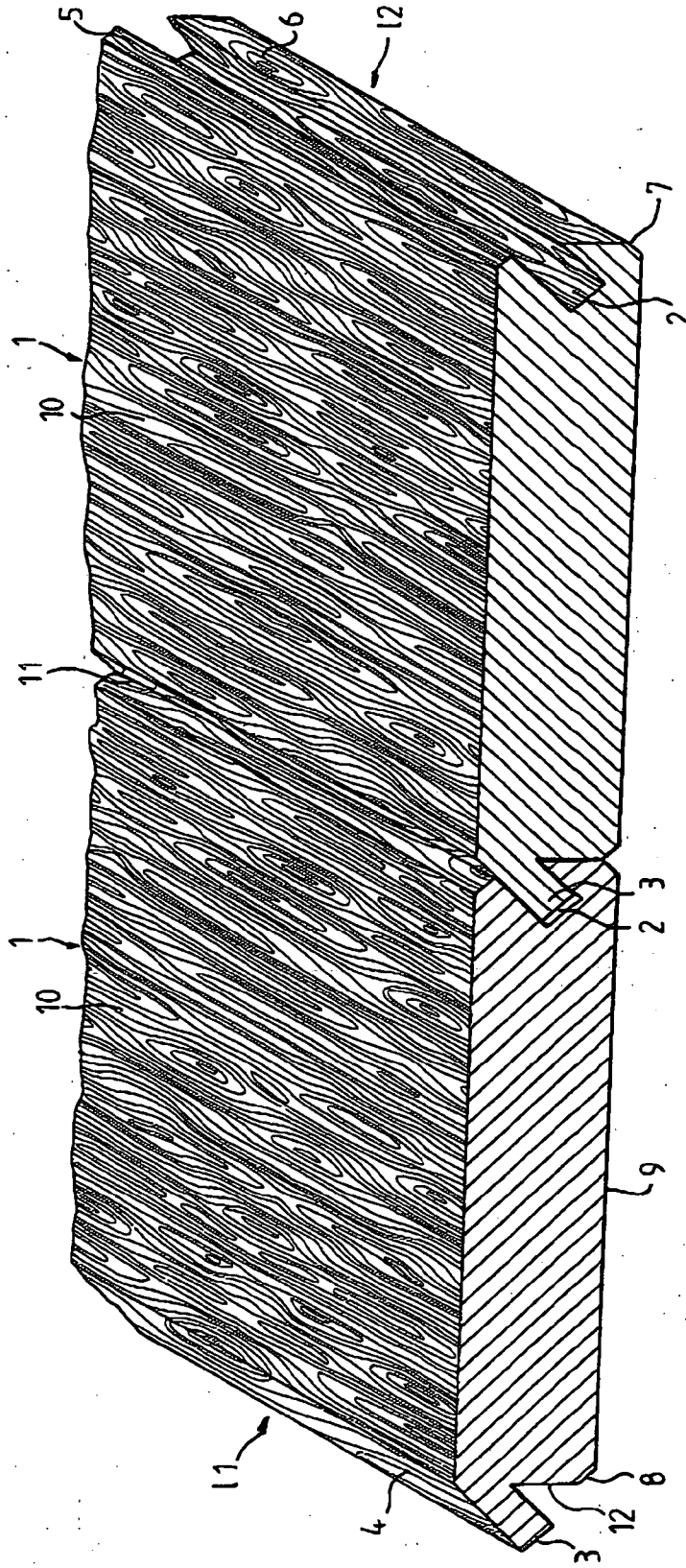


Fig. 1

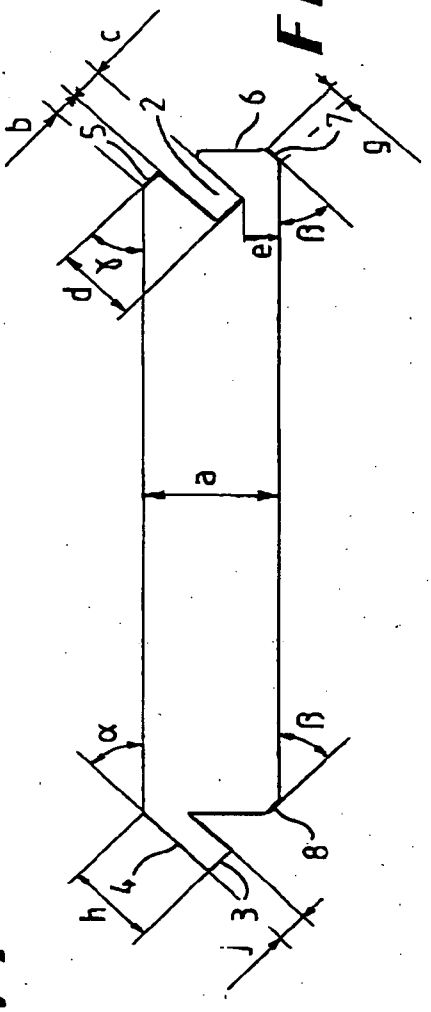


Fig. 2

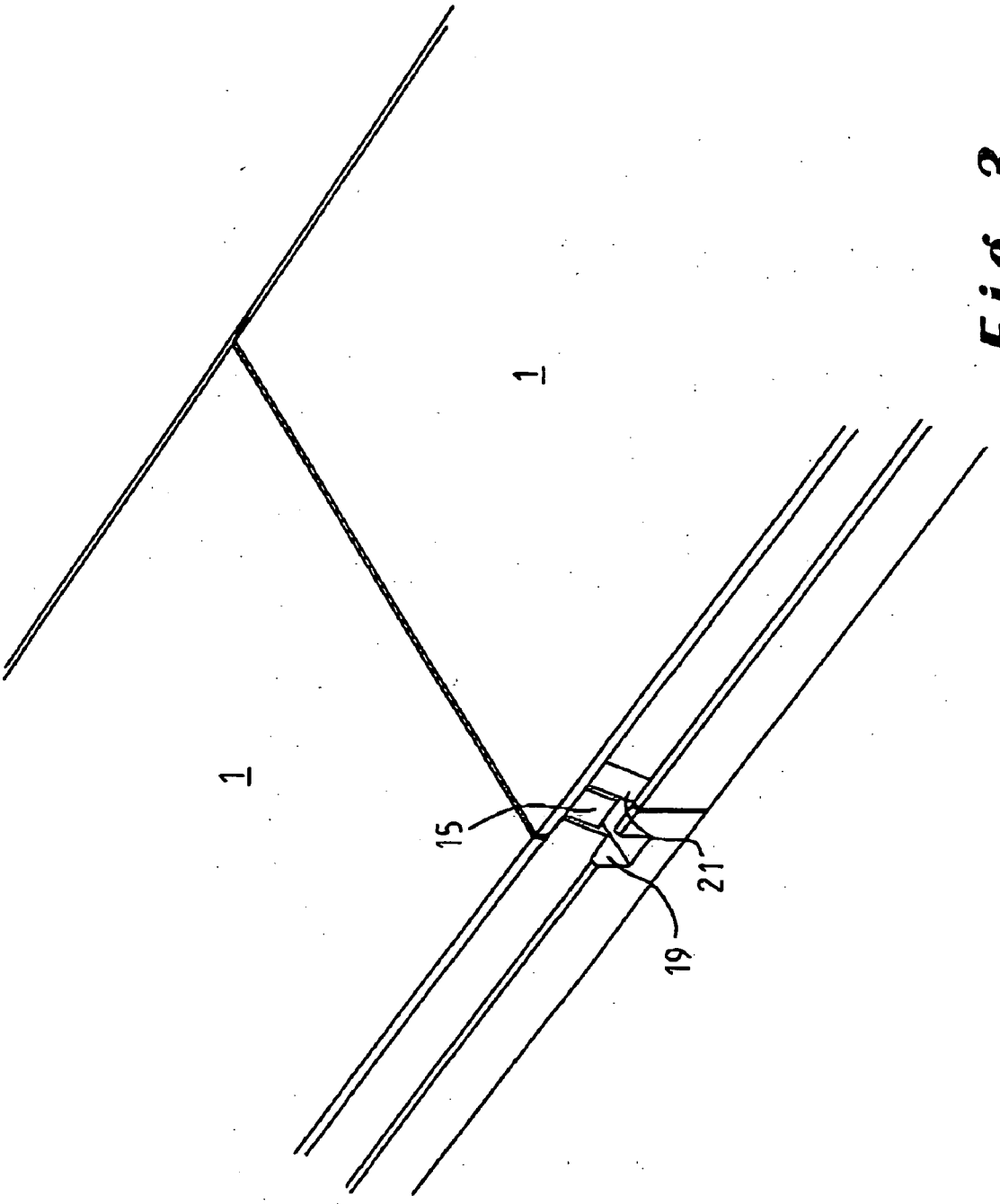


Fig. 3

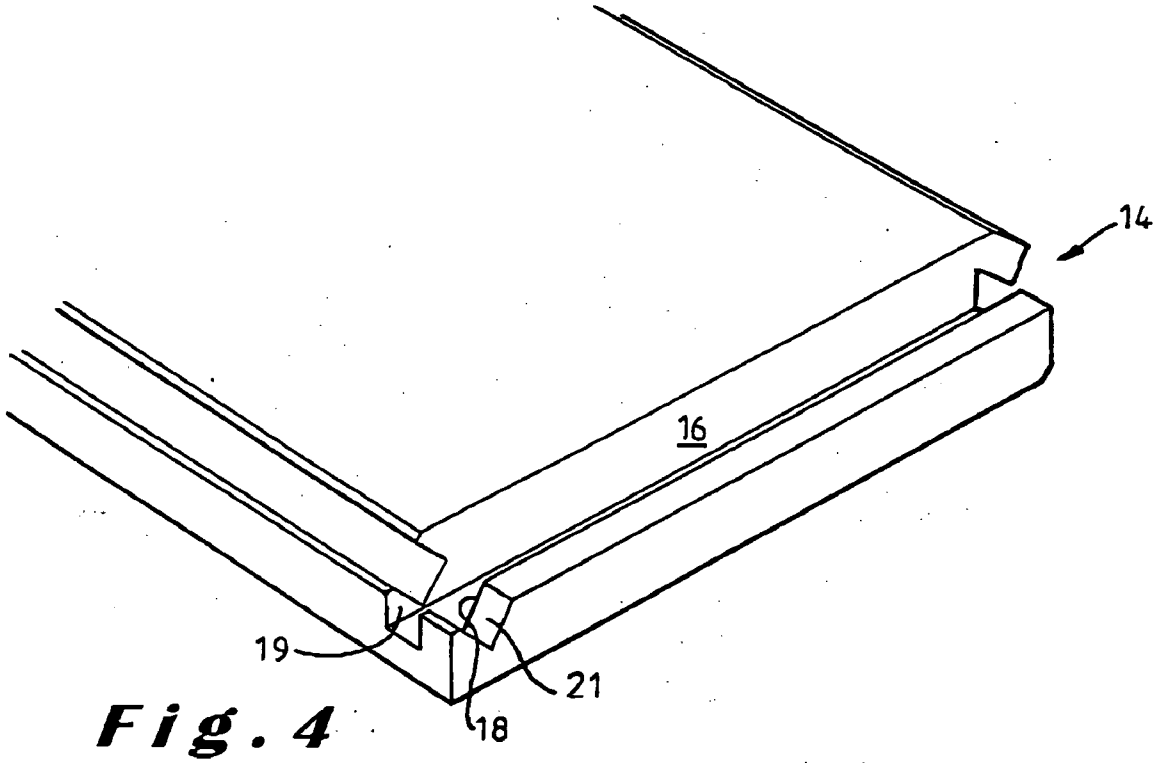


Fig. 4

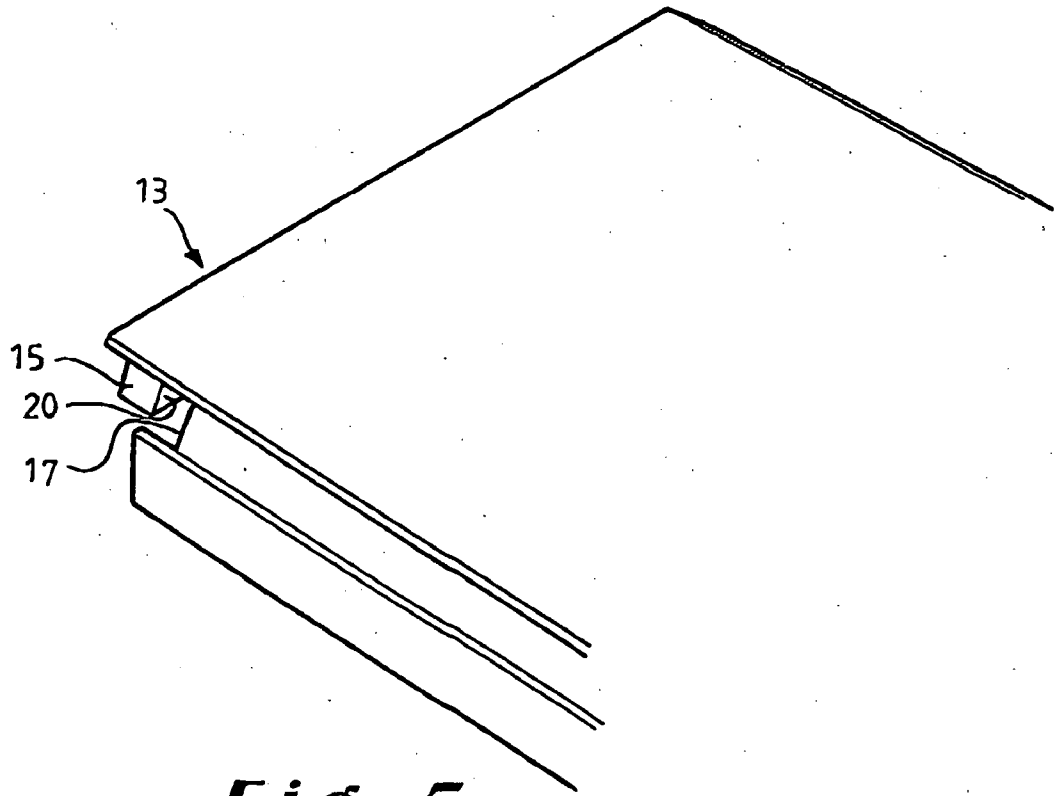


Fig. 5

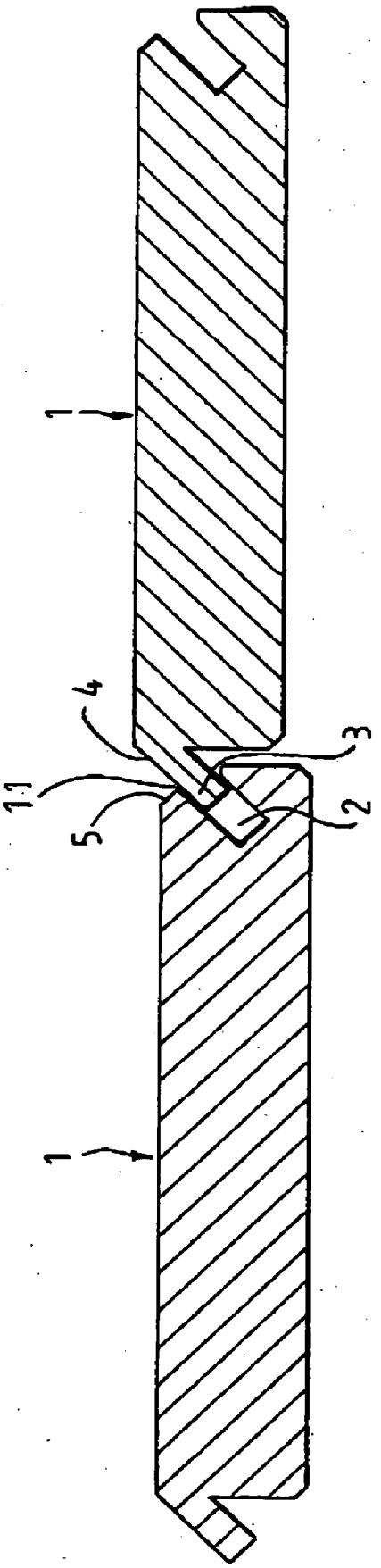


Fig. 6

FLOOR ELEMENT

[0001] The invention relates to a floor element, in particular a wooden floor element, comprising a top and a bottom surface as well as a first and a second side, said first side being provided with a tooth integrally formed with said floor element, said second side being provided with a groove, said tooth and said groove being dimensioned in such a manner that for adjacently placed floor elements the tooth of the one floor element and the groove of the other floor element mutually engage for providing a toothed engagement.

[0002] Such a floor element is known for use as parquet floor from DE-PS-101 01 427. The toothed engagement provided on the transversal side of the floor element enables to connect successive floor elements in order to build up the floor.

[0003] A drawback of the known floor element is that the tooth is applied approximately in the middle of the side. On both sides of the tooth extends a side part of the floor element, in order to provide an alignment of adjacently placed floor elements. Although these provisions enable a suitable alignment of adjacent floor elements, they nevertheless form an obstacle to the natural working of the wood from which the element is made. Moreover, some force is required in order to assemble two adjacent floor elements and obtain a correct alignment of the floor elements.

[0004] It is an object of the present invention to provide a floor element requiring nearly no effort for assembling the elements and having a toothed engagement enabling a natural working of the material of which it is made.

[0005] For this purpose a floor element according to the invention is characterised in that said groove and said tooth extend substantially over a whole length of lateral sides of said floor element, and wherein said tooth starts from said top surface and is inclined over an angle situated between 20 and 70°, preferably between 35 and 55° with respect to said top surface, said tooth having a length measured as from said top surface of at least one third of the thickness of said floor element. The presence of an inclined tooth starting from the top surface of the floor element enables an easy and quick assembling of two adjacent floor elements by a single shift operation without requiring a substantial effort. Since the tooth extends as from the top surface of the floor element, a tooth length of at least one third of the thickness of the floor element can be provided, thus enabling a reliable engagement. Moreover, the fact that the tooth extends as from the top surface enables a natural movement of the tooth in the groove, thus enabling a natural working of the material.

[0006] A first preferred embodiment of a floor element according to the invention is characterised in that said second lateral side is provided with an inclined edge located on said top surface. Since this inclined edge is located on the lateral side where the groove is situated, its inclined profile will fit with the one of the tooth when two elements are adjacently assembled.

[0007] A second preferred embodiment of a floor element according to the invention is characterised in that said first lateral side extends substantially perpendicular with respect to said top surface over that part of this first lateral side situated underneath said tooth. This enables to form an alignment reference for a subsequent floor element.

[0008] Preferably said first lateral side is provided with an inclined edge located on said bottom surface. In such a manner some space is created for collecting dust or excess glue which would otherwise form an obstacle to a correct alignment.

[0009] A third preferred embodiment of a floor element according to the invention is characterised in that said second lateral side has an offset part extending as from said bottom surface. Sufficient strength is thereby given to the groove.

[0010] A fourth preferred embodiment of a floor element according to the invention is characterised in that said floor element further comprises a first and a second transversal side, said first transversal side being with a first hook, made integrally with said element, and extending as from said top surface, said second transversal side being with a second hook, made integrally with said element, and extending as from said bottom surface, said first and second hook being dimensioned in such a manner that for adjacently placed floor elements the first hook of the one floor element and the second hook of the other floor element mutually engage for providing a toothed engagement. The use of hooks makes an engagement on the transversal side possible which is also compatible with the toothed engagement on the lateral sides.

[0011] The invention will now be described in more details by referring to the drawings illustrating an example of floor elements according to the present invention. In the drawings:

[0012] **FIG. 1** shows a cross section, in transversal direction, through two adjacently mounted floor elements;

[0013] **FIG. 2** shows a cross section, in transversal direction through a floor element;

[0014] **FIG. 3** shows a cross section, in longitudinal direction, through two adjacently mounted floor elements;

[0015] **FIG. 4** respectively **5** show a first respectively a second transversal side of a floor element; and

[0016] **FIG. 6** illustrates what would happen if two adjacent floor elements would shift with respect to each other.

[0017] In the drawings a same reference sign has been assigned to a same or analogous element.

[0018] The floor elements according to the invention are preferably made of wood. However the present invention is not limited to wooden floor elements and other materials such as HDF, fibreboard, multiplex and particle board could be used.

[0019] **FIG. 1** illustrates two adjacently placed floor elements **1** engaged by means of a toothed engagement. Each floor element has a top surface **10** and a bottom surface **9** as well as a first I **1** and a second I **2** lateral side. The first lateral side I **1** is provided with a tooth **3** integrally formed with the material of the floor element. The second lateral side I **2** is provided with a groove **2**. The groove and the tooth being dimensioned in such a manner that for adjacently placed floor elements the tooth of the one floor element and the groove of the other floor element mutually engage for providing a toothed engagement.

[0020] The tooth **3** has an inclined face **4** starting from the top surface **10**. As illustrated in **FIG. 2**, the face **4** of tooth

3 is inclined over an angle a situated between 20 and 70°, preferably between 35 and 55 °, and more particular 45°, with respect to the top surface. This inclination enables a reliable toothed engagement and prevents that an upward pressure, which could be caused by the engagement itself, leads to damages. The tooth **4** has a length h, measured as from said top surface of at least one third and preferably at least half of the thickness of said floor element. So for example for a thickness a=16 mm, the length h=10.5 mm and for a=18 respectively 21 mm, h=10.5 respectively 11.5 mm. With such a length a reliable toothed engagement is obtained. Furthermore the tooth and the groove extend over substantially the whole length of the floor element, thus enabling an engagement over this whole length.

[**0021**] Underneath the tooth **3** there is a side face **12** of the floor element which extends substantially perpendicular with respect to the bottom surface **9**, enabling in such a manner an alignment for subsequent floor elements. The side face **12** is also provided with an inclined edge **8** located at the bottom surface. The edge **8** preferably has an angle β with a bottom surface of for example 45°. The edge **8** creates some space under the floor element in order to collect excess of glue, when the floor element would be glued on the floor, or to collect dust. As can be seen in the **FIGS. 1 and 2**, the second lateral side of the floor element is also provided with an edge **7** comparable with edge **8**. The edges **7** and **8** have a length of preferably g=3 mm.

[**0022**] The groove **2** provided on the second lateral side extends over an angle which corresponds with the one of the tooth in order to provide a toothed engagement. The depth of the groove varies in function of the thickness of the floor element and of course of the length of the tooth. So for example d=9.5 respectively 10.5 mm for a thickness a of 16, 18 respectively 21 mm. The thickness j of the tooth is preferably somewhat smaller than the width of the groove in order to enable a smooth engagement and let the wood have its natural working. So for example j=4.7 mm for c=5 mm and j=5.7 mm for c=6 mm. Of course the values of j and c are related to the values of a.

[**0023**] The floor element further comprises in its second lateral side I **2** an inclined edge **5** located at the top surface. The edge preferably has an angle γ situated between 20 and 70°, preferably between 35 and 55°, in particular 45°, with respect to the top surface. The edge **5** makes the transition between the top surface **10** and the entrance of the groove **2**. The angles γ and α preferably have corresponding values in such a manner that when two elements are engaged a symmetrical groove profile **11** is obtained on the top surface. The edge **5** preferably has a width of 2.5 mm.

[**0024**] The presence of the edge **5** not only provides an esthetical aspect to the floor element, but also enables the natural working of the floor element without creating a visual open gap between successive floor elements. Indeed if the tooth would move with respect to the groove, as illustrated in **FIG. 6**, the groove shaped profile **11** will allow this movement by the space created by the groove profile. Since the edges are inclined, the overall view will not be affected by this movement.

[**0025**] The groove does not extend through the whole thickness of the floor element and a distance e is preferably left between the bottom of the groove and the bottom surface **9**. This distance is for example e=4 mm. The second lateral side has furthermore an offset part **6** extending as from the bottom surface. By mounting two floor elements adjacent to each other in longitudinal direction, the offset part **6** will contact the side face **12** of the first lateral side.

[**0026**] When placing the floor elements, the tooth can easily be engaged by a hinge movement into the groove. The engagement is achieved when the side face **12** contacts the offset part **6**. An easy and quick placement of the floor, even by a non-professional, is thus achieved.

[**0027**] In order to enable an engagement of the transversal sides of the floor element, hooks are provided on the first **13** and second **14** transversal sides of the floor element as illustrated in the **FIGS. 3, 4** and **5**. The first transversal side **13** is provided with a first hook **15**, whereas the second transversal side **14** is provided with a second hook **16**. The hooks are integrally made of the material of the floor element. The first hook **15** extends as from the top surface (**FIG. 5**) whereas the second hook **16** extends as from the bottom surface. The hooks being dimensioned in such a manner that for adjacently placed floor elements, they mutually engage for providing a toothed engagement as illustrated in **FIG. 3**.

[**0028**] Both hooks have a substantially U-shaped inner contour having one upstanding **17**, **19** leg, substantially perpendicular to the top or bottom surface respectively, and another upstanding leg **18**, **20** formed by a rib. An opening **21** is provided in the ribs **18** and **20** in order to enable the passage of the tooth.

[**0029**] The rib extends over substantially ⅗ of the thickness of the floor element. The hooks are necessary as the hinge movement of the lateral side could not be combined with another hinge movement on the transversal sides.

1. A floor element, in particular a wooden floor element, comprising a top and a bottom surface as well as a first and a second side, said first side being provided with a tooth integrally formed with said 5 floor element, said second side being provided with a groove, said tooth and said groove being dimensioned in such a manner, that for adjacently placed floor elements the tooth of the one floor element and the groove of the other floor element mutually engage for providing a toothed engagement, characterised in that said groove and said tooth extend substantially over a whole length of lateral sides of said floor element, and wherein said tooth starts from said top surface and is inclined over an angle situated between **20** and 70°, preferably between 35 and 55° with respect to said top surface, said tooth having a length measured as from said top surface of at least one third of the thickness of said floor element.

2. A floor element as claimed in claim 1, characterised in that said second lateral side is provided with an inclined edge located at said top surface.

3. A floor element as claimed in claim 2, characterised in that said edge is inclined over an angle situated between 20 and 70°, preferably between 35 and 55° with respect to said top surface.

4. A floor element as claimed in claim 1, characterised in that said first lateral side extends substantially perpendicular with respect to said bottom surface over that part of this first lateral side situated underneath said tooth.

5. A floor element as claimed in claim 1, characterised in that said first lateral side is provided with an inclined edge located on said bottom surface.

6. A floor element as claimed in claim 1, characterised in that said second lateral side is provided with an inclined edge located on said bottom surface.

7. A floor element as claimed in claim 1, characterised in that said lateral side has an offset part extending as from said bottom surface.

8. A floor element as claimed in claim 7, characterised in that said offset part has a top segment extending substantially parallel with respect to said bottom surface.

9. A floor element as claimed in claim 1, characterised in that said floor element further comprises a first and a second transversal side, said first transversal side being with a first hook, made integrally with said element, and extending as from said top surface, said second transversal side being with a second hook, made integrally with said element, and extending as from said bottom surface, said first and second hook being dimensioned in such a manner that for adjacently placed floor elements the first hook of the one floor element and the second hook of the other floor element mutually engage for providing a toothed engagement.

10. A floor element as claimed in claim 9, characterised in that said first and second hook have a substantially U-shaped inner contour.

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