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(19) **United States**(12) **Patent Application Publication**
Zhang(10) **Pub. No.: US 2007/0113509 A1**(43) **Pub. Date: May 24, 2007**(54) **INTERLOCKING STRUCTURE FOR FLOOR
PANEL****Publication Classification**(51) **Int. Cl.****E04B 2/00** (2006.01)(52) **U.S. Cl.** **52/592.1**(76) Inventor: **Weixiang Zhang**, Beijing (CN)

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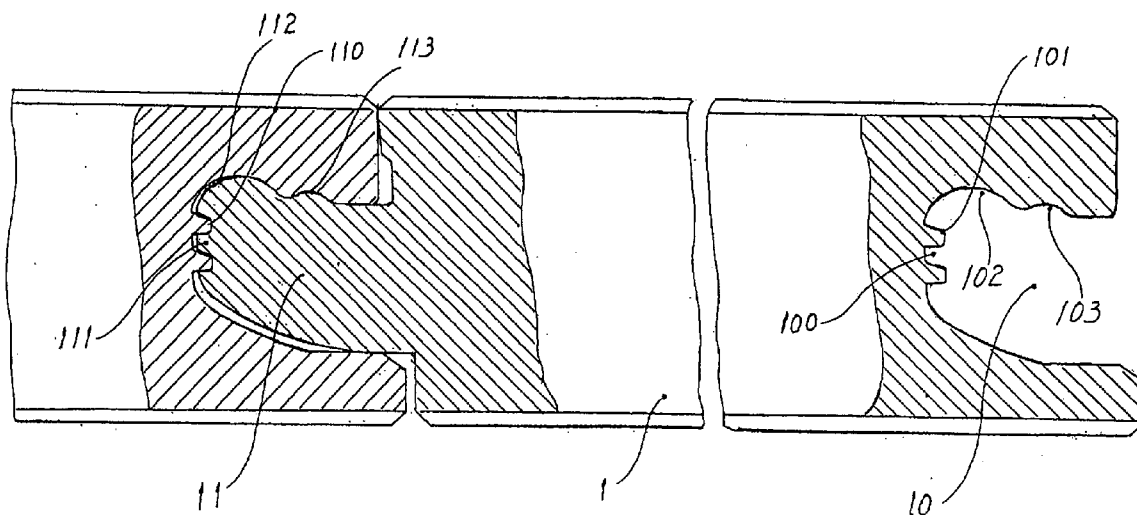
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ABSTRACT

This utility model is a new interlocking structure for floor panel. The new interlocking structure for floor panel in accordance with the invention comprising floor panels; one panel edge having an upwardly curved flange, having at least one tooth, formed at it end and at least one hump and depression along its one top surface; the adjacent panel has a generally correspondingly shaped recess to receive the flange, the sectional configuration of tooth is trapezia. The floor panel made in this way, just because there is the interlocked gear shaped tongue on the vertical section of the tongue and groove connection. This interlocking increased the bearing capacity of floor panel from vertical acting force. And the abutting joint of panels is also improved obviously. It is useful and helpful to processing panel in vertical direction and laying precision of panel, as well as preventing the breakage of joint and distortion of floor panel.

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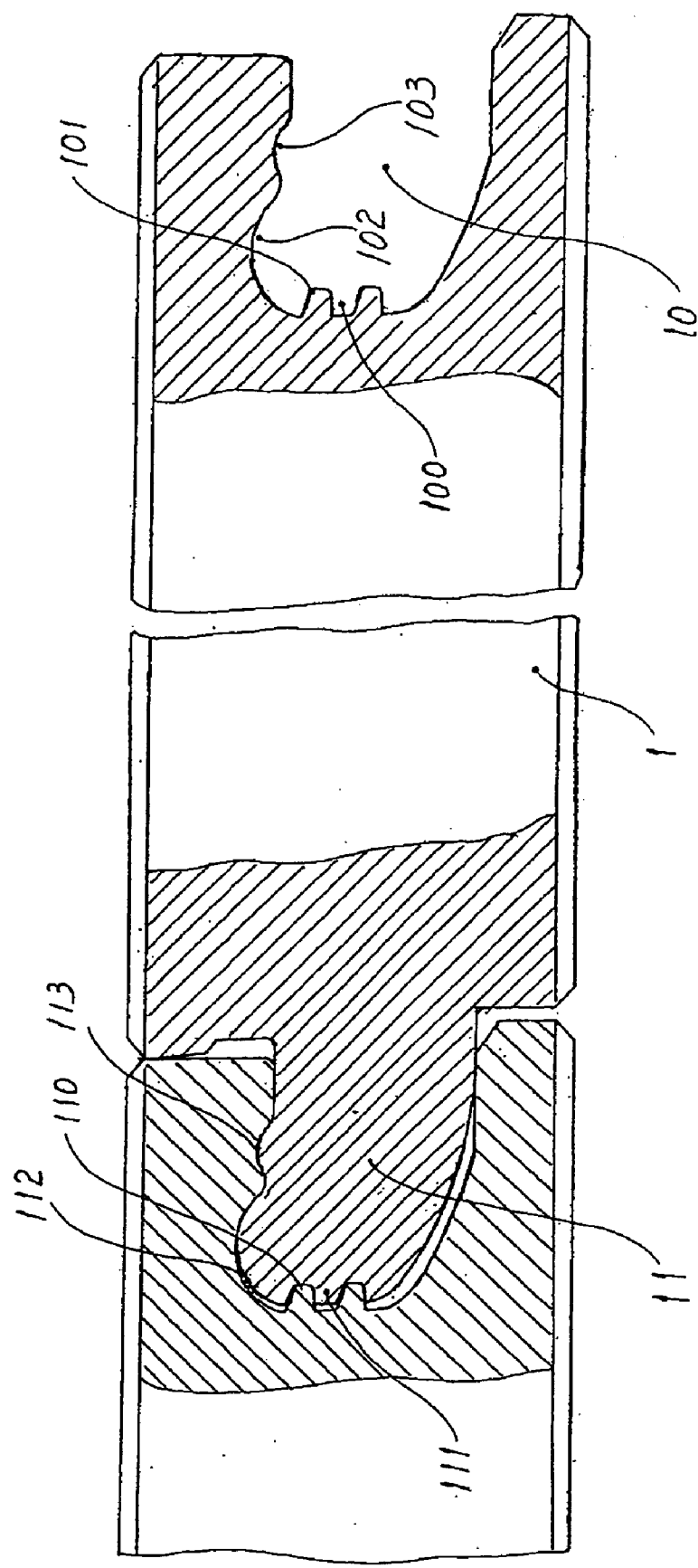


Fig 1

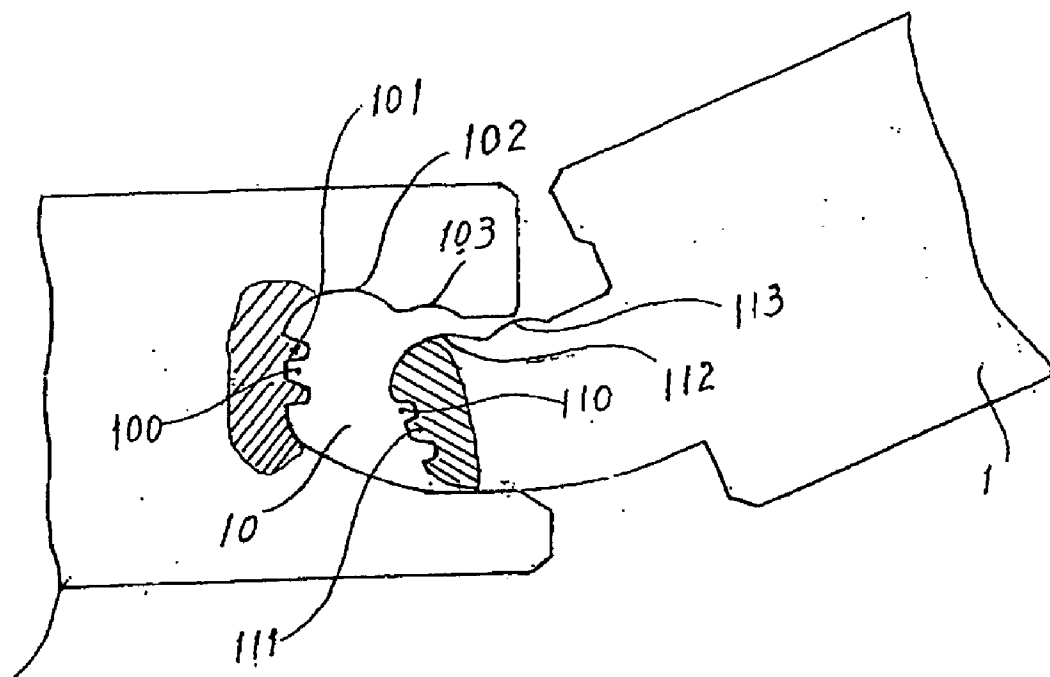


Fig. 2

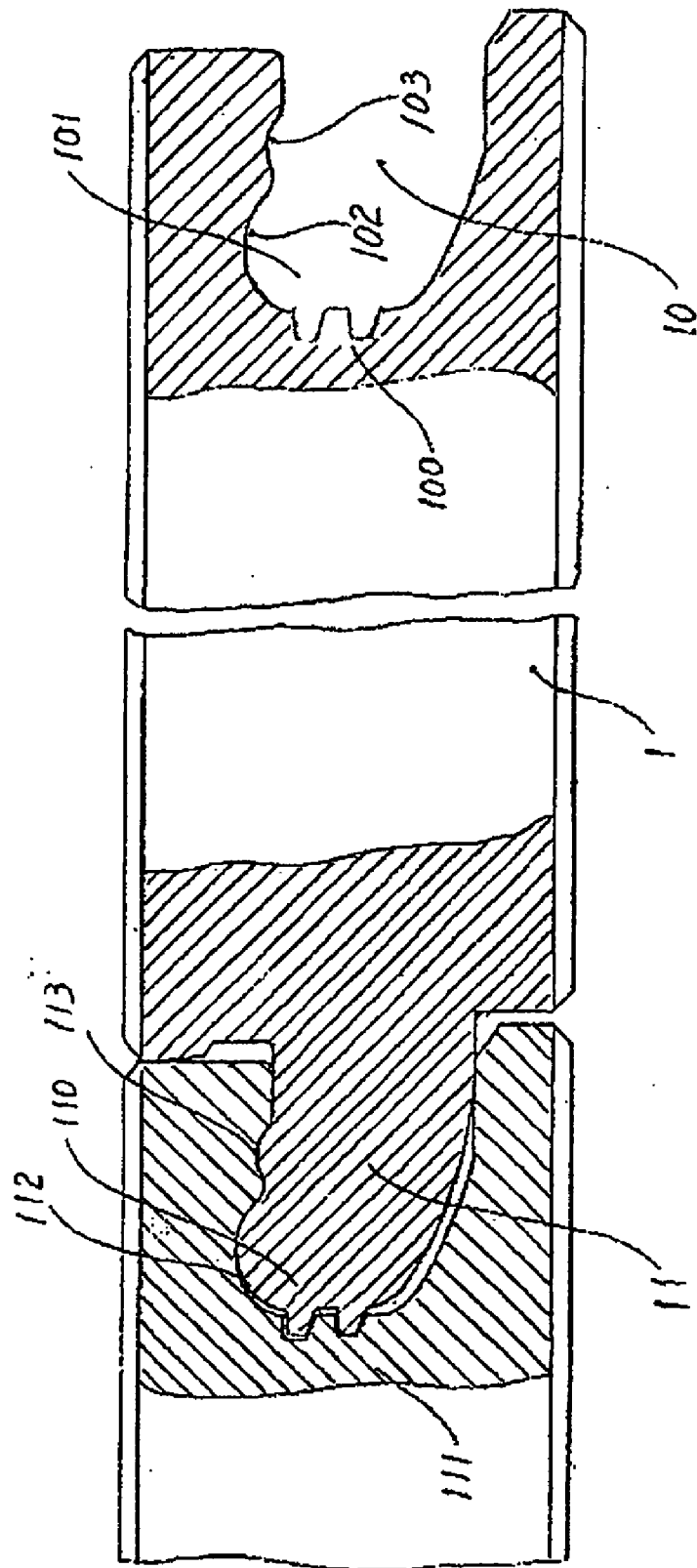


Fig 3

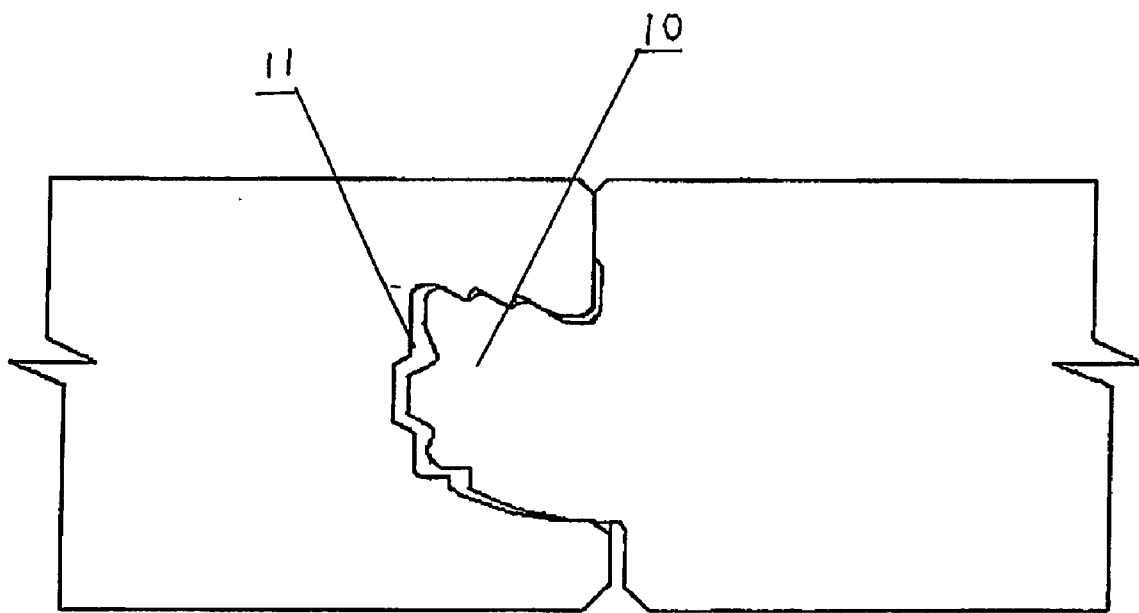


Fig. 4

INTERLOCKING STRUCTURE FOR FLOOR PANEL

FIELD OF THE INVENTION

[0001] This utility model relates to a interlocking structure for floor panel, especially it relates to a new tongue and groove structure for floor panel.

BACKGROUND OF THE INVENTION

[0002] The fortified wooden floor is the new developed building materials in recent years. Compare with the solid wood floor, it is concerned with and shows broad useful prospect just because it has the characters of high quality and inexpensive, steady and durable, simple process of laying, low cost of construction and dismountable. The fortified floor depends on connected panel pieces with the tongue and groove on all edges. Moreover, it is laid on the floor directly, not set the keel. So, the shape and structure of the interlocking structure is very important to the floorboard connection and the quality of the laying. The interlocking structure consists of the tongue and grove. Furthermore, the section configuration of the tongue and grove should be corresponding and occlusive. That means one panel with his tongue can successfully inserted into the groove of the adjoining panel to realize the connection. Now there are several known interlocking structures are in use. For example, the flat rabbet which is inserted to groove directly, characterized in that the structure is simple, and the joint easily to break away or open. There is another type of rabbet made of curve and broken lines. Although there are interlocked tongue and groove on the both connection edges of adjoining panels to prevent the floor panel from breaking away. But it was found in service use that the joint still would be sink or open when there is stronger acting force on the floorboard.

DESCRIPTION OF THE INVENTION

[0003] The object of this utility model is to overcome the shortcomings of the interlocking structure mentioned above, and provide with a new interlocking structure for floor panel. The new interlocking structure for floor panel in accordance with the invention comprising floor panels; one panel edge having an upwardly curved flange, having at least one tooth, formed at it end and at least one hump and depression along its one top surface; the adjacent panel has a generally correspondingly shaped recess to receive the flange. The sectional configuration of tooth is trapezia. The sectional configuration of hump is arc or cone form.

[0004] A new interlocking structure for floor panel according to one embodiment of the invention, characterized in that said flange having two tooth, formed at it end and two hump and depression along its one top surface., the adjacent panel has a generally correspondingly shaped recess to receive the flange.

[0005] A new interlocking structure for floor panel according to another embodiment of the invention, characterized in that said flange having two tooth and three hump and depression along its one top surface., the adjacent panel has a generally correspondingly shaped recess to receive the flange.

[0006] The floor panel made in this way, just because there is the interlocked gear shaped tooth (tongue) on the vertical

section of the tongue and groove connection. This interlocking increased the bearing capacity of floor panel from vertical acting force. And the abutting joint of panels is also improved obviously. Secondly, the new construction of tongue and groove in accordance with the invention benefits the surface area of panel without loss when cutting panel, so compare with the prior art having surface with loss cutting, it enhanced the utilization factor of wood or floor material. Furthermore, the design of the interlocking structure benefits the hand worked laying of floor panel directly without tools when two adjoining panels are jointed together. It made the laying of floor panel simple and saves the man-hour relatively. Besides, this utility model is useful and helpful to processing panel in vertical direction and laying precision of panel, as well as preventing the breakage of joint and distortion of floor panel.

BRIEF DESCRIPTION OF THE DRAWING

[0007] The process of the invention is described in more detail below with reference to the accompanying drawings, in which:

[0008] FIG. 1 is a schematic drawing of the cross-section of first embodiment of the present application.

[0009] FIG. 2 is the schematic drawing of the cross-section of assembly of present application used in first embodiment of FIG. 1.

[0010] FIG. 3. is a schematic drawing of the cross-section of the second embodiment of the present application.

[0011] FIG. 4. is a schematic drawing of third embodiment of the present application.

DETAILED DESCRIPTION OF THE REFERENCED EMBODIMENTS

[0012] This is the further explanation combine with the accompanying drawings for embodiments. As shown in the accompanying drawings, FIG. 1 and FIG. 2, the flange 11 and recess 10 are made in the both edges of floor panel 1. On the vertical side of flange 11 of floor panel, the tooth (tongue) 111 and the groove 110 positioned both sides of the tooth 111, whose section configuration is trapezia, are made on the suitable place. On the other edge of the floor panel, the groove 100 in trapezia form was made in recess 10 of floor panel to corresponding with tooth (tongue) 111, and the two trapezia shaped tooth 101 to interlock with the trapzia shaped groove (tooth space) 110. To ensure the adjoining of the floor panel are stronger and tighter, the arc shaped hump 112, 113 and the depression 102, 103 are made on the connecting aspect of the flange 11 and recess 10 of floor panel 1 respectively. The hump 112 and depression 102, hump 113 and depression 103 are interlocked each other. When two adjoining panels or floorboards are jointed together, the sectional view as shown in FIG. 2. When the flange 11 of floor board 1 insert the recess 10 of adjoining floorboard, the tooth 111 and the groove 110 positioned on two sides of tooth 111 on the vertical side of flange 11 are interlocking with the groove 100 and the tooth 101 positioned on two sides of groove 100 on the vertical side of recess 10. It is similar to the engagement of the gear and rack.

[0013] The second embodiment as shown in FIG. 3 indicates that said flange 11 having two tooth, formed at it end

and two hump **112**, **113** and depression along its one top surface, the adjacent panel has a generally correspondingly shaped recess **10** to receive the flange **11**.

[0014] The third embodiment as shown in FIG. 4 indicates that said flange **11** having two tooth, formed at it end and three hump **112**, **113**, **114** and depression along its one top surface, the adjacent panel has a generally correspondingly shaped recess **10** to receive the flange **11**.

[0015] This tooth shaped tongue and groove which interlocked each other, it enhances not only the connection area of the tongue and groove, but also the connection area on the horizontal direction. So the bearing capacity of floor panel from the vertical force is increased obviously. At the same time, just because the connection area is increased, the adjoining joints of the floor panel are stronger and tighter. This new interlocking structure is of great benefit to prevent the floor panel from cracking.

What is claimed is:

1. A new interlocking structure for floor panel comprising floor panels; one panel edge having an upwardly curved flange (**11**), having at least one tooth (**111**), formed at it end

and at least one hump (**112**, **113**) and depression along its one top surface; the adjacent panel has a generally correspondingly shaped recess (**10**) to receive the flange (**11**).

2. A new interlocking structure for floor panel according to claim 1, characterized in that the sectional configuration of tooth (**111**) is trapezia.

3. A new interlocking structure for floor panel according to claim 1, characterized in that the sectional configuration of hump is arc or cone form.

4. A new interlocking structure for floor panel according to claim 1, characterized in that said flange (**11**) having two tooth, formed at it end and two humps (**112**, **113**) and depression along its one top surface, the adjacent panel has a generally correspondingly shaped recess (**10**) to receive the flange (**11**).

5. A new interlocking structure for floor panel according to claim 1, characterized in that said flange (**11**) having two tooth and three humps and depression along its one top surface, the adjacent panel has a generally correspondingly shaped recess (**10**) to receive the flange (**11**)

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