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(54) Joining system and method for floor boards and boards therefor

(57) The invention relates to a joining system and method for floorboards, panels and sheaves, but foremost for parquetry. The system comprises boards intended to be joined together, wherein a first board has a groove fitting with a tenon in a second board. According to the invention, the first board (A)has has a groove (2) provided with a rib on the top side of a lower edge, and the second board (B) has a tenon (1) provided with a ridge on the underside. A cut (3) is provided in the lower corner of the groove. The cut (3) makes the lower edge of the groove more flexible and can also take up excessive glue. Through this, the joining will be very simple to perform, whilst at the same time providing a strong joint.

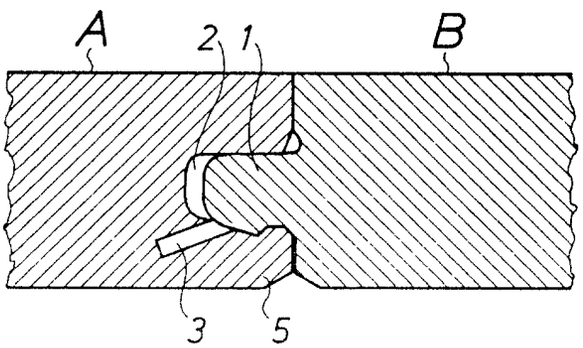

FIG. 6

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a joining system and method for floorboards, panels and sheaves, but foremost for parquetry. The invention is an improvement of the traditional groove and tenon technique. Through this, the joining will be very simple to perform, whilst at the same time providing a strong joint.

STATE OF THE ART

[0002] The traditional groove and tenon technique for floorboards has been known in the art for a long time. Furthermore, there are a number of alternative technical solutions available with various shapes of protrusions and recesses.

[0003] The invention allows for simple floor-laying that can easily be performed by one person. At the same time, the board manufacturing process is not made notably more complicated.

SUMMARY OF THE INVENTION

[0004] The invention thus relates to a joining system for floorboards, comprising boards intended to be joined together. The first board has a groove fitting with a tenon in the second board.

[0005] According to the invention, a first board has has a groove provided with a rib on the top side of a lower edge, and a second board has a tenon provided with a ridge on the underside. A cut is provided in the lower corner of the groove.

[0006] The invention also relates to a corresponding board and a joining method for such a joining system.

[0007] The invention is defined in the appended claims 1, 9 and 17, whereas preferred embodiments are described in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The invention will be described in further detail below, with reference to the enclosed drawings, of which:

- Fig. 1 is a side view of a long side of a board according to one embodiment of the present invention,
- Fig. 2 is a top view of the board in Fig. 1,
- Fig. 3 is a side view of a short side of the board in Fig. 1,
- Fig. 4 is a partial cross-sectional view of the board along the line IV-IV in Fig. 2,
- Fig. 5 is a partial cross-sectional view of the board along the line V-V in Fig. 2,
- Fig. 6 a partial cross section view of two boards, taken from the short side thereof, joined together, according to one embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0009] The invention will be illustrated by means of embodiments where the floorboards are made of wood. It should be understood that other materials, such as laminates, plastic, etc. could be used just as well.

[0010] The terms horizontal and vertical are used for describing directions in relation to a board that is lying on a horizontal surface as in a typical floor. However, as a matter of course, the invention is equally applicable to boards for wall and ceiling panels in any direction.

[0011] In Figs 1 to 5, a board is shown in various views. The board may have an upper wear layer of hardwood and a carrier layer of simpler wood, as is conventional.

[0012] Instead of a traditional tenon, the board exhibits a tenon 1 provided with a ridge 6 on the underside. The remainder of the shape is not critical and can for instance be more rounded than shown. The board has a groove 2 provided with a rib 4. The groove and the tenon are dimensioned to fit together as shown in figure 6. In the lower corner of the groove, a cut 3 (Figs 3, 5, 6) is provided. The cut 3 is preferably angled so that the inner end is lower than the opening. The angle from the horizontal is in the range of 0-45°, preferably 5-25°, more preferred 5-15°, and most preferred about 10°. The length of the cut is in the range of 1-15 mm, preferably 2-10 mm, more preferred 2-7 mm, and most preferred about 7 mm. The cut is formed by sawing or milling. The cut 3 enables the lower edge 5 of the groove 2 to spring down a small distance when joning two boards together.

[0013] With reference to figure 6, the joining is performed as follows:

[0014] It should be understood that the boards A and B are identical, but Fig 6 shows only the joint between a right hand long side of board A and a left hand long side of board B.

Board A is laid in place and is to be joined with the next board B.

Board B is laid on the existing ground next to board A in such a way that the tenon 1 is located straight in front of the groove 2 of board A. It is now easy to push or knock the boards together e.g. by means of a mallet and a block, similar to the case with the traditional groove and tenon. Thereby the ridge 6 on the tenon 1 will pass over the rib 4 pressing the lower edge 5 of the groove downward. When the tenon has passed into the groove 2 the lower edge 5 will spring back locking the ridge 6 behind the rib 4.

[0015] A joint having sufficient strength may be obtained without glue but an even stronger joint is

achieved by applying glue before the boards are knocked together. The glue may be applied e.g. on top of the tenon 1 or on the underside of the the top edge of the groove 2, or both, or even in the cut 3 in a liberal amount. The glue will then be located between the top side of the tenon 1 and the underside of the the top edge of the groove 2.

[0016] Thanks to the cut 3 (and cut 8, see below), the amount of glue is not critical. In the prior art, if too much glue was applied, the excess amount would be pressed out from the joint and spread on top of the floor which could leave stains even if wiped off immediately. More importantly, there is a risk of a hydraulic action from the excess glue, resulting in a force in the bottom of the groove that prevents the boards from being knocked together properly. On the other hand, if too little glue was applied, the joint would be weaker.

[0017] In the present invention, a liberal amount of glue can be applied without risk. A fairly large excessive amount of glue (up to 100% more than the effective amount) will collect in the cut 3. Thus, the hydraulic action is avoided and the glue does not exit the joint. In fact, when the glue is cured, the excess glue located in the cut will make the cut less resilient resulting in a joint having greater strength.

[0018] As is shown in the figures, the short sides of the boards may be provided with a similar profile as defined above. However, the cut 8 in the short sides (Figs 1, 4) is preferably not angled. The length of the cut is in the range of 0-3 mm, and most preferred about 2 mm. Alternatively, the short sides of the boards may be provided with conventional groove-and-tenon joints (or another well known system).

[0019] The illustrated embodiments may be varied e. g. through modification of the thickness of the wear and carrier layers, the angles and configuration of the groove and tenon, the width and the length of the boards, etc., all of which should be obvious to a person skilled in the art. The scope of the invention will only be limited by the appended claims.

Claims

1. A joining system for floor boards, comprising boards (A, B) intended to be joined with each other, wherein a first board (A) has a groove (2) provided with a rib (4) on the top side of a lower edge, and a second board (B) has a tenon (1) provided with a ridge (6) on the underside, and wherein a cut (3) is provided in the lower corner of the groove (2).

2. A joining system according to claim 1, wherein the cut (3) is angled so that the inner end is lower than the opening.

3. A joining system according to claim 2, wherein the cut (3) is angled about 5-15°.

4. A joining system according to claim 2, wherein the cut (3) is angled about 10°.

5. A joining system according to any one of claims 1 to 4, wherein the length of the cut is in the range of 2-7 mm.

6. A joining system according to any one of claims 1 to 4, wherein the length of the cut is about 7 mm.

7. A joining system according to any one of claims 1 to 6, wherein the short sides of the boards are provided with grooves and tenons fitting into each other.

8. A joining system according to claim 7, wherein the grooves on the shorts sides are provided with ribs (4) on the top side of a lower edge and the tenons on the shorts sides are provided with ridges (6) on the underside, and cuts (8) are provided in the lower corner of the grooves (2).

9. A board for a joining system, having a groove (2) on a first long side of the board, and a tenon (1) on a second long side of the board, wherein the groove (2) is provided with a rib (4) on the top side of a lower edge and the tenon (1) is provided with a ridge (6) on the underside, thus allowing identical such boards to be joined with each other, and wherein a cut (3) is provided in the lower corner of the groove (2).

10. A board according to claim 9, wherein the cut (3) is angled so that the inner end is lower than the opening.

11. A board according to claim 10, wherein the cut (3) is angled about 5-15°.

12. A board according to claim 10, wherein the cut (3) is angled about 10°.

13. A board according to any one of claims 9 to 12, wherein the length of the cut is in the range of 2-7 mm.

14. A board according to any one of claims 9 to 12, wherein the length of the cut is about 7 mm.

15. A board according to any one of claims 9 to 14, wherein the short sides of the boards are provided with grooves and tenons fitting into each other.

16. A board according to claim 15, wherein the grooves on the shorts sides are provided with ribs (4) on the top side of a lower edge and the tenons on the shorts sides are provided with ridges (6) on the underside, and cuts (8) are provided in the lower cor-

ner of the grooves (2).

17. A method of joining floor boards, using boards (A, B) intended to be joined with each other, wherein a first board (A) has a groove (2) provided with a rib (4) on the top side of a lower edge, and a second board (B) has a tenon (1) provided with a ridge (6) on the underside, and wherein a cut (3) is provided in the lower corner of the groove (2), comprising the steps of:

laying a first board (A) in place;
laying a second board (B) next to board (A) in such a way that the tenon (1) is located straight in front of the groove (2) of board (A);
forcing the boards together, thereby letting the ridge (6) on the tenon (1) pass over the rib (4) pressing the lower edge (5) of the groove downward;
and, when the tenon has passed into the groove (2), letting the lower edge (5) spring back locking the ridge (6) behind the rib (4).

18. A method of joining floor boards according to claim 17, comprising the further step of applying glue before the boards (A, B) are forced together.

19. A method of joining floor boards according to claim 18, wherein the glue is applied on on top of the tenon (1) or on the underside of the the top edge of the groove (2), or both.

20. A method of joining floor boards according to claim 18, wherein the glue is applied in the cut (3).

21. A method of joining floor boards according to claim 18, 19 or 20, wherein the amount of glue is in excess of the amount necessary for the joint, letting the excess amount be collected in the cut (3) when the boards (A, B) are forced together.

22. A method of joining floor boards according to claim 21, comprising the further step of letting the excess amount collected in the cut (3) be cured in place.

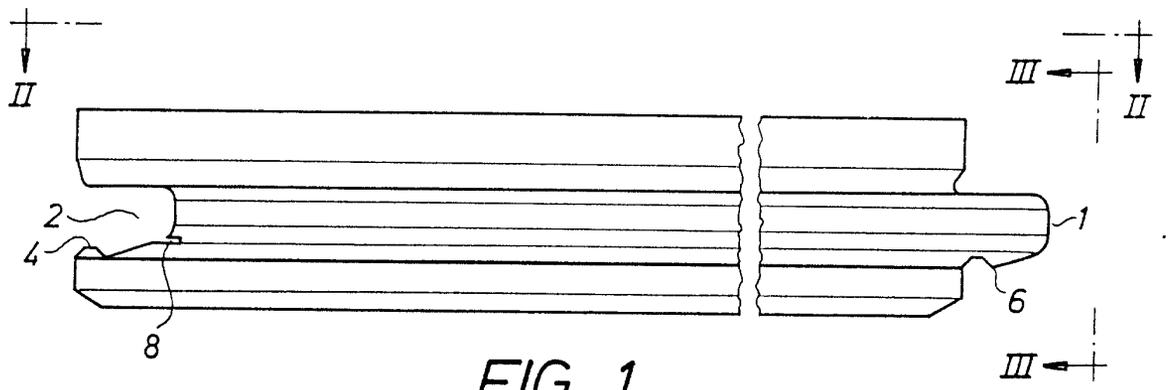

FIG. 1

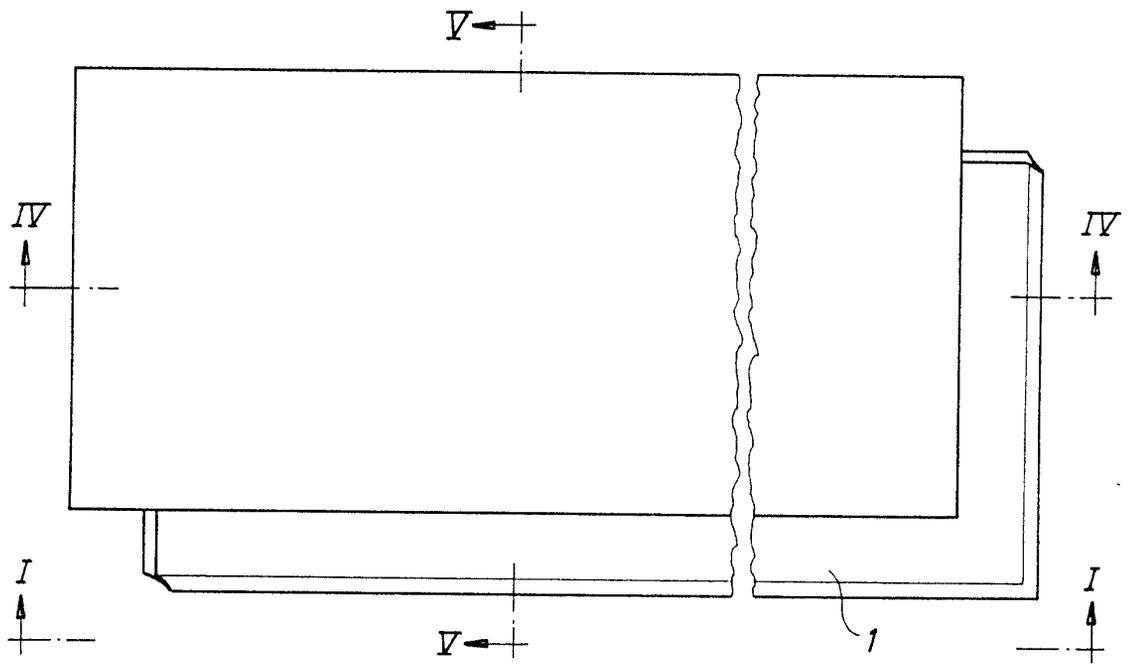

FIG. 2

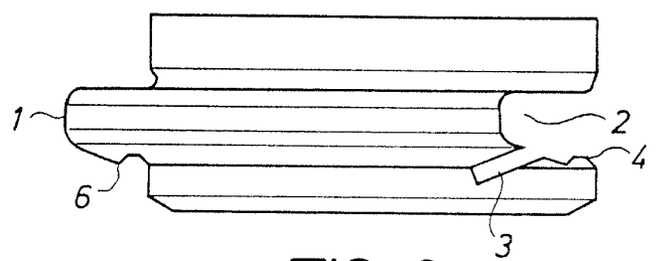

FIG. 3

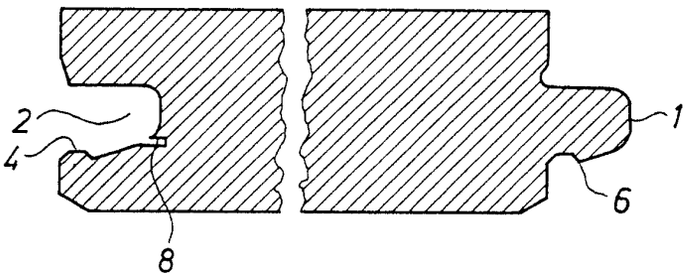

FIG. 4

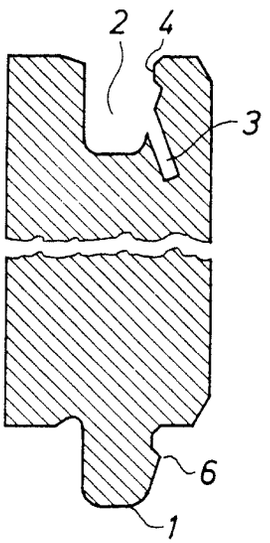

FIG. 5

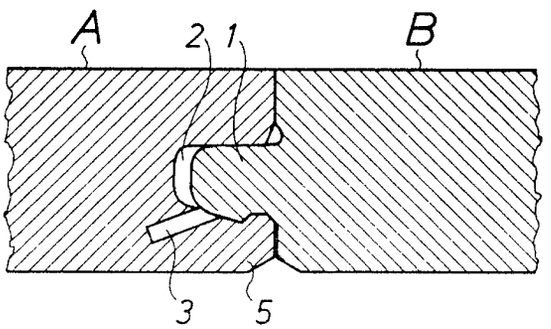

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 02 44 5122

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E04F
F16B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	3 June 2003	Ayiter, J

CATEGORY OF CITED DOCUMENTS

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