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(54) **METHOD FOR FIXING DEFECTS IN WOOD VENEERS**

(57) The present invention relates to a method for fixing defects in wood veneers, and to boards obtained with said wood veneers.

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Description

[0001] The present invention relates to a method for fixing defects in wood veneers and to boards obtained with said wood veneers.

State of the Art

[0002] Turning and peeling a tree trunk allows obtaining wood veneers intended for the quality furniture sector, among other uses. However, not all the timber that is produced can be intended for obtaining wood veneers since only the part of the trunk that is free of branches and knots can be turned and peeled.

[0003] The rest of the timber is used for obtaining lower quality timber that is processed to manufacture cases for fruit, toothpicks or for grinding up and manufacturing particle boards. The value of the wood that is obtained for veneers is much higher than that of wood intended for other uses, so it is of great interest for the operation to be managed such that the largest possible volume of high quality wood is obtained. Non-round (oval-shaped) trunks also lower the final price of wood since it is a necessary condition in order to take complete advantage of the turning and peeling process.

[0004] The wood itself in its place of origin can have unique physiological features, and these particularities can lead to defects from the user's point of view. These defects are used to classify woods according to their qualities.

[0005] These unique features are what determine the physical and mechanical properties of the wood; they are fundamental elements when classifying wood according to its quality.

[0006] These unique features can be knots that can lessen the mechanical strength of the veneers, splits, local breaking of the wood, damages due to external causes such as blows produced by machinery or breaking due to environmental causes.

[0007] The unique features mentioned above will be relevant when obtaining wood veneers, with veneers of different qualities in one and the same log being obtained.

[0008] To repair damages in wood veneers today, once operators check the damages to be repaired, operators insert a wood splinter for filling in said gap, and then when the veneers are stacked with the different layers of the board, during said pressing and due to the diverse geometry of the defect and of the splinter, an overlap between both can be produced, giving way to geometric irregularities.

[0009] This repair with splinters produces geometric deformations giving way to irregularities visible in the finished product. Figure 1 shows deformations of this type.

[0010] Although different ways of fixing flaws in wood veneers have been described, there is still a need for new methods that can improve wood veneer quality and help correct minor defects in the wood without being able to see the faults or defects.

Description of the Invention

[0011] Wood boards can be made with fine wood veneers glued on top of one another with adhesive compositions and by means of high pressure and temperature. The veneers can have different defects.

[0012] Top quality veneers are used for the exposed faces of the board, such that said board has a better finish and offers a better appearance.

[0013] First quality veneers are veneers that do not have these defects, so it would be very beneficial to develop a method that allows repairing minor defects in wood veneers that cannot be used as first quality veneers.

[0014] With the method of the invention it is possible, once the wood veneer is repaired, for it to increase in value since qualities of veneers are directly related to the price the final board will have on the market.

[0015] In the present invention, defects in veneer is understood as voids in the material such as for example checks, splits, micro-checking, knots or teardrop markings that must be corrected.

[0016] Checks are cracks occurring in the direction of the medullary rays, generally due to excessive drying with very quick loss of moisture. Unlike checks, splits occur from the outside towards the center of the tree. They are caused by shrinkage or excessively rapid drying of the tree, which can be caused by drought, excessive exposure to the sun or intense frosts. Micro-checking is similar to checks, but they have larger proportions, stemming from the heart out towards the bark.

[0017] The development of branches causes the fibers surrounding the formation of branches growing in a different direction than the trunk to shift. When these fibers break, dry out or are cut, they are trapped between the new layers of sapwood, and new tissues are formed on these layers, covering them, giving rise to what is referred to as knots; if the knots are dead, they come off easily due to the shrinkage of the fibers during drying, entailing a loss of product and leaving a hole.

[0018] Teardrop markings are caused by rain water seepage when a branch is torn off, rots off or breaks off, interrupting the normal passage of sap and enters the surrounding woody areas, causing a loss of product.

[0019] A method for the simple application of a composition that allows repairing these defects that may be present in wood veneers and allows leveling out the numerical balance of first quality veneers and second quality veneers has been developed in the present invention.

[0020] Therefore, a first aspect of the invention relates to a method of repairing wood veneers comprising the steps of applying to defects in veneers a polyurethane-based putty with a viscosity comprised between 200,000 cPs and 400,000 cPs measured at a temperature of 25°C.

[0021] The object of the veneers of the invention is to be part of a board; therefore a second aspect of the invention is a method of obtaining the board comprising the steps of:

- a) superimposing two veneers to form a pair, with the fiber of the second oriented perpendicular (at 90°) to the first;
- b) verifying if there is a defect in the top veneer;
- c) applying in the defects of the top veneer a putty (polyurethane-based) with a viscosity comprised between 200,000 cPs and 400,000 cPs measured at 25°C;
- d) stacking the desired number of sets consisting of two veneers that will form the board;
- e) arranging a final wood facing and pressing the board.

[0022] The final wood facing is a wood veneer that can later be treated, for example varnished, re-veneered or laminated.

Description of the Drawings

[0023]

Figure 1 shows a board in which the defects have been fixed with a wood splinter and is part of the state of the art.

Figure 2 shows a board in which the defects have been fixed with the putty of the invention.

Detailed Description of the Invention

[0024] As discussed, the first aspect of the invention relates to a method of repairing wood veneers comprising the steps of applying to defects in veneers a polyurethane-based putty with a viscosity comprised between 200,000 cPs and 400,000 cPs measured at a temperature of 25°C.

[0025] A second aspect of the invention relates to a method of obtaining the board comprising the steps of:

- a) superimposing two veneers to form a pair with the fiber of the second oriented perpendicular (at 90°) to the first;
- b) verifying if there is a defect in the top veneer;
- c) applying in the defects of the top veneer a putty (polyurethane-based) with a viscosity comprised between 200,000 cPs and 400,000 cPs measured at 25°C;
- d) stacking the desired number of sets consisting of two veneers that will form the board;
- e) arranging a final wood facing and pressing the board.

[0026] Preferably the polyurethane-based putty comprises from 50% to 70% of a 1,6-hexamethylene diisocyanate polymer, from 1% to 10% of diethyl fumarate and from 10% to 30% of tetraethyl N,N'-(methylenecyclohexane-4,1-diyl) bis-DL-aspartate.

[0027] The putty of the invention has sufficient viscosity to remain firm from the time it is applied on the board

being formed until it enters the press, and at the same time sufficient flow so that the excess product applied spreads between the veneers when the board is subjected to the required pressure.

[0028] On the other hand, the putty exhibits sufficient hardness and tack so that no detachments, checks, or unpeeling occurs when cutting the board. Finally, it is important for as little putty as possible is transferred through the face during the pressing process, and for the lowering of the volume once the board is stabilized is undetectable.

[0029] In a preferred embodiment the application is performed by means of a gun.

Examples

[0030] The different components were mixed to produce the putty.

[0031] The application was done with a semiautomatic application system that performed the mixing and metered out the product by means of a bag provided with an end nozzle.

[0032] Once the board in which the defects in veneers were fixed is obtained, the points that were analyzed are the filling, loss, hardness, flow, moisture resistance, temperature resistance, and how easy it is to apply.

[0033] It was seen in a visual inspection that the filling was correct, that the flow of the putty was correct because the excess product that was applied is distributed without generating clumps.

[0034] The possible loss was measured by means of measuring with a micrometer the thickness of the board. A loss of thickness in the filled area was not detected.

[0035] Hardness was measured by means of the Janka resistance test in the repaired area and it was found that resistance was greater than in the rest of the board.

[0036] Moisture resistance was also measured, and it was correct because it withstands 72 hours in water at 100°C.

[0037] Temperature resistance was correct; it withstands 24 hours in a chamber at 105°C.

[0038] Applicability of the putty is good since it achieves a good repair speed that is higher than the conventional method.

[0039] After varnished boards were repaired with the new method, they did not show any visible mark in the repaired area.

[0040] Nail withdrawal resistance in the repaired area is equal to or better than that of a base board.

[0041] The difference in finish between the veneer repaired by a method of the state of the art and the veneer repaired with the method of the present invention can be seen by comparing Figure 1 and Figure 2.

Claims

1. Method of repairing wood veneers comprising the

steps of applying to defects in veneers a polyurethane-based putty with a viscosity comprised between 200,000 cPs and 400,000 cPs measured at a temperature of 25°C.

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2. Method of repairing veneers according to claim 1, wherein the application is performed by means of a gun.
3. Method of repairing veneers according to claims 1-2, wherein the wood of the veneer is selected from: black poplar, eucalyptus, red oak and walnut.
4. Method of obtaining boards comprising the steps of:
 - a) superimposing two veneers to form a pair with the fiber of the second oriented perpendicular (at 90°) to the first;
 - b) verifying if there is a defect in the top veneer;
 - c) applying in the defects of the top veneer a putty (polyurethane-based) with a viscosity comprised between 200,000 cPs and 400,000 cPs measured at 25°C;
 - d) stacking the desired number of sets consisting of two veneers that will form the board;
 - e) arranging a final wood facing and pressing the board.
5. Method of repairing veneers according to claim 4, wherein the application is performed by means of a gun.
6. Method of repairing veneers according to claims 4-5, wherein the wood of the veneer is selected from: black poplar, eucalyptus, red oak and walnut.

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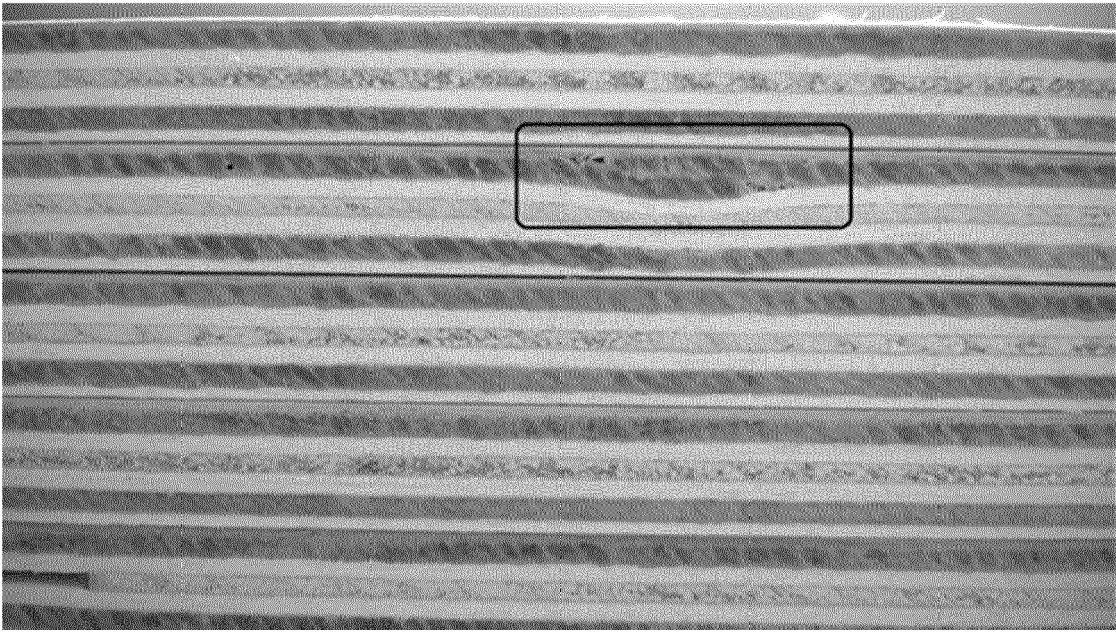


FIG. 1



FIG. 2



EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			B27G B05C C08K
Place of search		Date of completion of the search	Examiner
The Hague		23 May 2017	Hamel, Pascal
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82