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Stone-wood composite base engineered flooring

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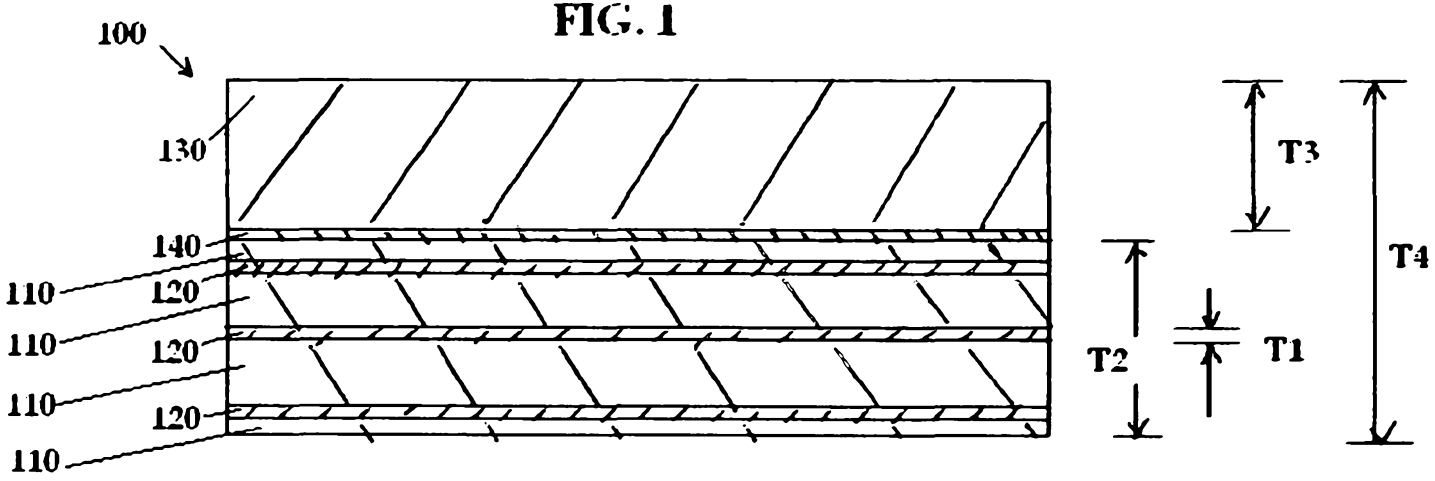
Abstract

A stone-wood composite base engineered wood flooring having a stone-wood composite base layer in which at least three mesh layers are embedded therein. Adhered to the base layer is a wood veneer layer. Interlocking design such as tongue-and-groove is provided on at least two sides of the engineered flooring. The wood veneer layer of the engineered wood flooring has improved fireproof performance, waterproof performance and moisture-proof performance. When the pieces of flooring are bonded to either each other or the floor, undesired warping of joints is consequently minimized.

FIG. 1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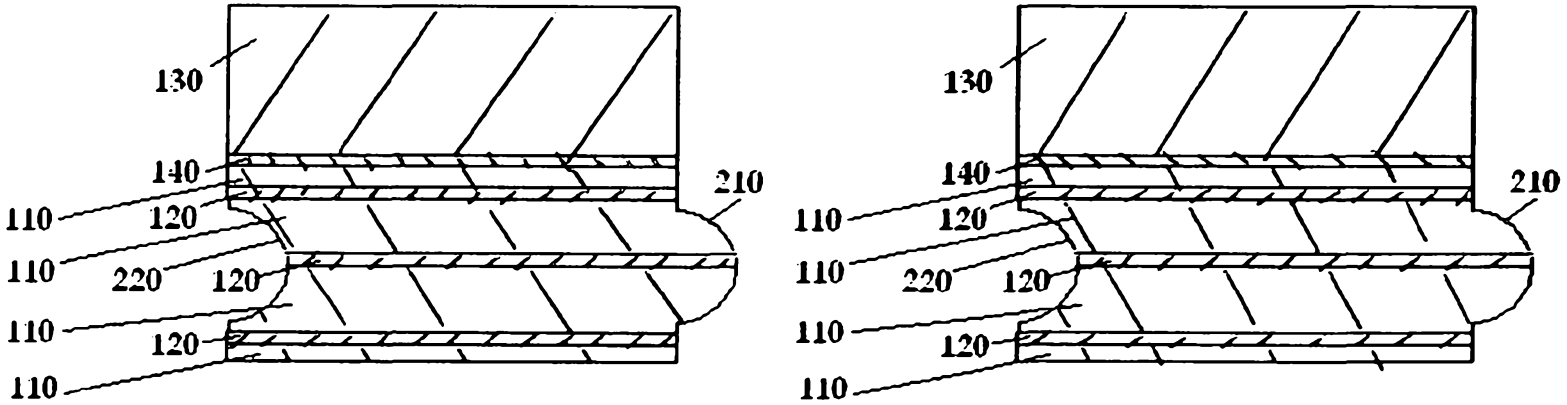
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FIG. 2

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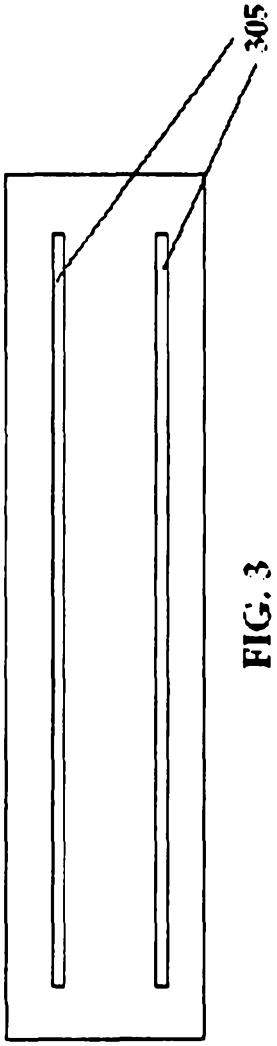

FIG. 3

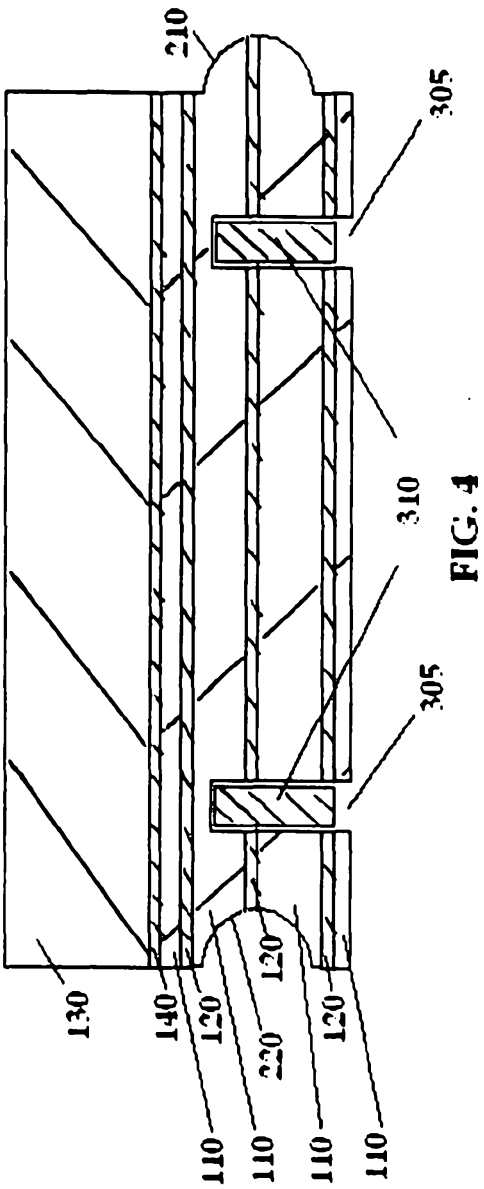

FIG. 4

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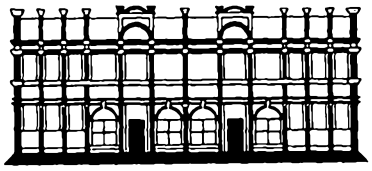

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Patents Act 1990

FINISH SYSTEMS INTERNATIONAL, LLC

COMPLETE SPECIFICATION
STANDARD PATENT

Invention Title:

Stone-wood composite base engineered flooring

The following statement is a full description of this invention including the best method of performing it known to us:-

Stone -Wood Composite Base Engineered Flooring

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to engineered flooring for residential or commercial use, and in particular to a stone – wood composite based engineered flooring wherein the wood veneer layer is resistant to moisture, water and fire.

Description of Related Art

[0002] Improved living standards results in increasing consumer demands on interior decoration. At one time the only flooring was simply paving the ground with a layer or slab of cement. Now a wide variety of decorative floor coverings, wood flooring being the most popular, are available. Some flooring despite its wide decorative aesthetics, possess certain undesirable physical properties or characteristics. For instance, natural wood otherwise referred to as "hardwood flooring" is a flammable material susceptible to damage when exposed to moisture and water. Consequently, natural wood flooring provides minimal, if any, waterproof performance, fireproof performance and moisture-proof performance. Yet another disadvantage associated with convention hardwood flooring is that it is typically manufactured with a plywood base construction. Such conventional construction requires preliminary steps to insure a strong bond with the plywood base.

[0003] Natural hardwood floorings during installation are adhered directly to the floor (typically a concrete slab) by one of a variety of conventional processes. Generally, a concrete slab, which itself is made from water, takes approximately 18 months for the moisture to evaporate prior to laying the flooring. A concrete slab with soil below always tends to absorb moisture from higher concentration (e.g., higher moisture content in the soil), to lower concentration (e.g., lower moister content in the wood floor or atmosphere in the space where the flooring is being installed). In general, liquid and dampness defuse into natural wood floorings easily, which may result in a change in the internal structure of the natural wood flooring. For example, moisture

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from the ground or soil when absorbed by the natural wood flooring typically produces a warping such as swelling or "cupping." Consequently, warping of the natural wood flooring damages the flooring structure and overall appearance.

[0004] Moreover, conventional hardwood flooring requires a thickness of a 3/4 inch or greater. Eco-conscious consumers today are seeking out products that have minimal effect on the environment without having to sacrifice on aesthetic appearance. It would be desirable to design an engineered wood flooring wherein the thickness of the wood required could be reduced thereby minimizing the impact on the environment.

[0005] It is therefore desirable to develop an engineered wood flooring that solves the aforementioned problems associated with conventional hardwood flooring.

Summary of the Invention

[0006] The present invention is directed to an engineered wood flooring that reduces or minimizes or eliminates the aforementioned disadvantageous associated with conventional hardwood floorings.

[0007] One aspect of the present invention is directed to an engineered wood flooring that may be installed on any floor level, including ground floor and subground floor (basement).

[0008] Yet another aspect of the present invention is directed to an engineered wood flooring that is environmentally friendly by minimizing the amount of natural resources utilized when compared to hardwood flooring.

[0009] The present invention provides a stone-wood composite base that substantially retains the moisture, wetness and heat within the stone-wood composite base layer away from the wood veneer layer. As a result any undesirable effects on the wood veneer layer due to moisture, wetness and/or heat are minimized. Due to the moisture, wetness and heat retaining properties of the stone-wood composite

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base layer, the present inventive engineered wood flooring is particularly well suited for rooms exposed to relatively high heat, wetness, humidity and/or moisture such as bathrooms, kitchens, laundry rooms, mud rooms, greenhouses, sunrooms, etc.

[0010] Another aspect of the present inventive stone-wood composite base layer of the engineered wood flooring is its enhanced sound barrier characteristics in comparison to conventional hardwood flooring.

[0011] Unlike conventional natural wood floorings, the present inventive engineered wood flooring does not require any acclimation time, thereby expediting the installation process.

[0012] Yet another desirable aspect of the present engineered wood flooring during concrete application, is elimination of the need, cost and time for installation of a subflooring such as a plywood subfloor. Doing away with the subflooring not only saves time while reducing the overall cost, but also eliminates such complications as elevation differentials between adjacent rooms and areas such as hallways.

[0013] Still another desirable aspect of the present inventive engineered wood flooring is that it may be installed using conventional wood cutting tools.

[0014] One more aspect of the present inventive engineered wood flooring is the ability to manufacture each piece or plank with a tongue-and-groove configuration on preferably at least its two opposite longitudinal sides, most preferably on all exterior edges or sides.

[0015] Another aspect of the present inventive engineered wood flooring is the reduced thickness requirements of the natural wood veneer layer without impacting on its aesthetic appearance. The preferred minimum thickness of the veneer wood layer in accordance with the present invention ranges between approximately 2 mm to approximately 6 mm, whereas the minimum thickness of conventional hardwood

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flooring is ¾ inch or greater. Thus, less trees are required for the same square footage.

[0016] An embodiment of the present invention is directed to an engineered wood flooring having a stone-wood composite base layer in which at least one mesh layer is embedded therein. Adhered to the base layer is a wood veneer layer. Interlocking design such as tongue-and-groove is provided on at least two sides of the engineered flooring. The stone-wood composite base layer has moisture, wetness and heat retaining properties that along with an adhesive layer at the interface between the base and wood veneer layer substantially isolate the wood veneer layer from moisture, wetness and heat. Accordingly, when the pieces of flooring are bonded to either one another or to the floor, undesired warping of joints due to exposure to moisture, wetness and/or heat is consequently minimized.

[0017] Another particular embodiment of the present invention is directed to an engineered wood flooring including a base layer comprising a stone-wood composite including MgO, $MgCl_2$, wood powder, Fe_2O_3, H_3PO_4, $FeSO_4$. Embedded within the base layer is three fiberglass mesh layers. A wood veneer layer is adhered to the base layer.

[0018] Still another particular embodiment of the present invention relates to an engineered wood flooring including a stone-wood composite base layer. Embedded within the base layer is at least three mesh layers. A wood veneer layer is adhered to the base layer.

[0019] Yet another embodiment of the present invention is directed to a method for manufacturing an engineered wood flooring in accordance with preceding paragraph. In a mold, water and a stone-wood composite are mixed until substantially uniform. At least three layers of mesh are embedded into the mixture, wherein each of the at least three layers of mesh is separated from the other. Then the water is drained from the mixture which is then allowed to set for a first predetermined period of time (e.g., approximately 24 hours), while remaining in the mold, to form a board. The set

board is then removed from the mold and allowed to dry in air for a second predetermined period of time (e.g., approximately 30 days). The dried board is cut to a desired size. Top and bottom surface of the cut board are sanded to achieve a substantially uniform thickness. The wood veneer is subjected to a dry steam process to reduce its moisture content to an appropriate reduced moisture content range; if the wood veneer has a Janka rating over 1000. The appropriate reduced moisture content range is between approximately 3% to approximately 5%. If the wood veneer has a Janka rating below 1000, the appropriate reduced moisture content range is between approximately 6% to approximately 8% using traditional dry room method without steam drying. The wood veneer is adhered to the base layer using an adhesive. At room temperature, the adhered wood veneer and base layer are pressed together for a third predetermined period of time (e.g., approximately 24 hours). The pressed boards are again subjected to the dry room process for a fourth predetermined period of time (e.g., approximately 4 days) to allow moisture to substantially equalize from base to veneer and/or until the board becomes substantially flat. Surfaces of the board are sanded until substantially uniform. Complementary tongue-and-grooves are cut in the boards. The cut boards are stored in a dehumidification room for a fifth predetermined period of time (e.g., approximately 24 hours). Any final sanding and finishing of the top surface is then performed.

Brief Description of the Drawing

[0020] The foregoing and other features of the present invention will be more readily apparent from the following detailed description and drawings of illustrative embodiments of the invention wherein like reference numbers refer to similar elements throughout the several views and in which:

[0021] Figure 1 is a partial cross-sectional view of the various layers of the engineered wood flooring in accordance with the present invention;

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[0022] Figure 2 is a cross-sectional view of multiple pieces of the engineered wood flooring in accordance with the present invention illustrating an example complementary tongue-and-groove configuration.

[0023] Figure 3 is a bottom view of the engineered wood flooring with a pair of grooves defined therein; and

[0024] Figure 4 is a partial cross-sectional view of the engineered wood flooring of Figure 3.

Detailed Description of the Preferred Embodiments of the Invention

[0025] A partial cross-sectional view of the engineered wood flooring 100 in accordance with the present invention is depicted in Figure 1. Flooring 100 has a base layer 110 that is a stone-wood composite. Preferably, the stone-wood composite comprises: MgO; wood particles (e.g., shavings, pulp or powder); $MgCl_2$; Fe_2O_3; H_3PO_4; $FeSO_4$. Base layer 110 absorbs moisture, wetness and/or heat from its environment which is then retained in air pockets formed throughout the base layer. Despite the moisture and wetness retention properties of the base layer its stone crystal composition will never become moldy or acquire a mildew odor. As the temperature and/or environment changes, the base layer releases/absorbs the moisture, wetness and/or heat into/from the surrounding environment. A top wood veneer layer 130 remains substantially unaffected by the moisture, wetness and/or heat since an adhesive layer 140 applied at the interface of the base layer and wood veneer layer acts as an isolator. Therefore, in contrast to conventional hardwood flooring that is made of wood fiber and thus absorbs moisture that can disadvantageously cause the wood to crack or shrink, the stone-wood composite base layer of the present inventive engineered wood flooring absorbs moisture, wetness and/or heat while remaining substantially isolated from the top wood veneer layer 130 by the adhesive interface 140.

[0026] In keeping with the eco-friendly slant of the present invention recycled wood particles are preferred in the base layer 110. The wood particles make the flooring

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lighter, softer and more flexible. Plastic particles may be used instead of or in addition to wood particles. Embedded in the stone-wood composite base layer 110 is at least one mesh layer 120, preferably made of fiberglass, that during manufacture is immersed in the stone-wood composite base layer while it is still wet. Other mesh materials that would be unaffected when exposed to moisture or wetness may be utilized. Preferably the mesh layer 120 extends all the way to the edges of the flooring. In the embodiments depicted in Figures 1 and 2 three mesh layers are depicted: a first mesh layer proximate to, but not flush with, the bottom surface of the base layer; a second mesh layer substantially centered in the middle of the base layer; and a third mesh layer proximate to, but not flush with, the top surface of the base layer. The number of mesh layers and their placement within the base layer may be modified, as desired. Varying the number and depth of the mesh layers appropriately will alter the strength and support provided.

[0027] Mesh layer 120 has holes defined or formed therein through which the stone-wood composite flows though creating a semi-solid core through and through. Preferably, for ease of manufacture mesh 120 is a simple weave forming holes that are substantially square in shape. Other shape or geometrically configured holes are contemplated and within the intended scope of the present invention. In the case of substantially square shape holes, the dimensions are preferably approximately 3/16 inch X approximately 3/16 inch. Other dimensions may be used, as desired, keeping in mind two competing factors. On the one hand, the size of the holes must be sufficiently large enough to allow the stone-wood composite to pass therethrough. On the other hand, the size of the holes must be small enough to provide sufficient strength and support to the base layer. By way of illustrative example the engineered wood flooring has three mesh layers 120 such as that depicted in Figure 1 with the following preferred dimensions: overall thickness T4 of the flooring is approximately 20 mm; thickness T3 of the top wood veneer layer 110 is approximately 2 mm; thickness T2 of the base layer is approximately 18 mm; and thickness T1 of each of the mesh layers is preferably approximately 0.9 mm.

[0028] As previously mentioned, wood veneer layer 130 is mounted, bonded or adhered to an upper surface of the base layer 110 by an adhesive layer 140. In a preferred embodiment, the adhesive layer 140 is a neoprene base adhesive and the adhered veneers are pressed at room temperature for a predetermined period of time (e.g., approximately 24 hours). In keeping with the eco-friendly characteristics of the product, an adhesive with minimal, if any, VOCs is preferred. In addition, the adhesive selected preferably does not contain either water or solvents that could possibly damage the top wood veneer layer. An example adhesive is Magneglue™ manufactured by Stauf Co. Wood veneer layer 130 has a thickness in a range between approximately 2mm to approximately 6mm. This range of thickness is considerably less than the ¾ inch thick required of conventional hardwood flooring having a plywood base thereby minimizing the number of trees needed.

[0029] For ease in installation, a complementary interlocking edge is provided in abutting pieces of flooring. By way of illustrative example, a tongue or bump 210 projects from one side of the base layer 110 of the engineered flooring. As depicted in Figure 2 the tongue and groove do not extend into the wood veneer layer 130. A complementary shaped groove 220 is defined in the opposite side of the base layer 110 of the engineered flooring so that the bump 210 of one piece of engineered wood flooring in accordance with the present invention may be received in the complementary shaped groove 220 of another piece of similar flooring. Preferably, the bump 210 and complementary groove 220 are arranged on at least two parallel sides of the piece of engineered wood flooring, most preferably on all sides to ensure that the flooring remains substantially flat when installed.

[0030] Due to the improved stability of the engineered wood flooring in accordance with the present invention no subflooring is necessary. Thus, the engineered wood flooring may be "floated" over the floor to be covered by bonding the pieces to one another. In such a floating application, complementary tongue-and-grooves of abutting pieces of flooring are preferably bonded together with an adhesive at the tongue and groove interfaces. Conventional tongue-and-groove adhesives may be used. If desired, the engineered wood flooring may be floated over existing flooring

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(e.g., laminate sheets, vinyl tile, ceramic tile, low pile carpeting). Alternatively, the engineered wood flooring may be adhered directly to the floor to be covered using an adhesive such as urethane or polymer based adhesive.

[0031] Due to the wetness, moisture and heat retaining properties of the stone-wood composite base layer along with the adhesive layer 140 interface, the wood veneer layer 130 of the present inventive engineered wood flooring has enhanced moisture resistant, water resistant and fire resistant properties compared to conventional hardwood flooring. Moisture and fire resistant testing was conducted on the present inventive flooring with the following results.

[0032] Moisture Testing Results

The test method conducted on the present inventive engineered wood flooring was the ASTM D3459 Cycled Environments on Wood. The submitted sample was examined stereoscopically with the appearance digitally recorded. The specimen was then allowed to acclimate in laboratory conditions at 70°F and 50% relative humidity for 48 hours and subsequently measured. The original length and width measurements were recorded. The specimen was placed in 95% humidity at 100°F for 48 hours, the sample was removed and immediately re-gauged. The specimen was then exposed to 0% humidity and 120°F for 48 hours, the sample was removed and immediately re-gauged. This cycle was conducted on one sample with measurements made at each condition. The appearance of the wood layer and wear layer was examined and compared against the original condition. All stages are reported below.

	Original	1 Cycle Humid	1 Cycle Dry	2 Cycles Humid	2 Cycles Dry	3 Cycles Humid	3 Cycles Dry
Length (inches)	11.977	12.038	12.002	12.029	12.006	12.015	12.004
Width (inches)	4.933	4.939	4.917	4.936	4.921	4.948	4.931
Thickness (inches)	0.600	0.621	0.612	0.624	0.615	0.623	0.608
Weight (grams)	735.91	743.65	721.93	739.12	728.05	761.58	736.91

[0033] Fire Resistant Testing Results

The test method conducted on the present inventive engineered wood flooring was

Test Requirements: GB 8624-1997 <<Classification on burning behavior for building materials>>

Test Items: Critical Radiant Flux Test

Test Summary: In accordance with GB 8624-1997 Standards (surfaces combustion performance B1 grade) requirements

[0034] A brief description of the preferred process followed during manufacture of the respective layers comprising the engineered wood flooring in accordance with the present invention is provided below.

[0035] The base layer is manufactured in a mold by adding water to the stone-wood composite powder and then mixed completely until substantially uniform. The preferred percentage of each component in the stone-wood composite is as follows:

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MgO	approximately 45%
$MgCl_2$	approximately 42%
Wood Powder	approximately 9%
Fiberglass mesh	approximately 2.5%
Fe_2O_3	approximately 0.5%
H_3PO_4	approximately 0.5%
$FeSO_4$	approximately 0.5%

Preferably, three layers of fiberglass mesh are then embedded into the mixture. The location and positioning of each mesh layer may be modified, as desired, but preferably a first mesh layer is embedded proximate to, but not flush with, the bottom surface; a second layer is embedded substantially centered in the middle of the base layer; and a third layer is embedded proximate to, but not flush with, the top surface of the base layer. The water is then drained and the mixture is allowed to set up for a predetermined period of time, preferably approximately 24 hours, while remaining in the mold. The board is then removed from the mold and again allowed to dry for at least approximately 30 days in air. The dried boards may then be cut to size. Top and bottom surfaces of the cut board are then sanded flat until achieving a substantially uniform thickness of approximately 13mm.

[0036] A description of the preparation of the wood veneer layer will now be described. Veneers are measured or rated by the Janka hardness scale and a preferred key hardness number is approximately 1000. Those woods with a Janka hardness rating above 1000 use a dry steam process to remove nearly all the moisture form the wood. Too much moisture in the veneer prior to pressing or gluing to the board may result in cracking or wood veneer failure. Extensive veneer moisture control is preferred with the base layer for proper production of the engineered wood flooring.

[0037] The steps taken in preparing the wood veneer layer depends on the Janka rating. Veneers with a Janka rating over 1000 will be discussed first. With those veneers having a standard dry kiln moisture content of approximately 10% to approximately 13%, the moisture is removed by a dry steam process. Each wood differs as far as time in this steam oven but the purpose of this dry steam process is to reduce the moisture content to a range between approximately 3% to approximately 5%. Usually, the wood is subjected to the dry steam for approximately 10 days to approximately 14 days. The dried veneers are then wrapped in plastic and remain stored in a dehumidification dry room.

[0038] For those veneers with a Janka rating below 1000. Those veneer with the kiln dry standard dryness of approximately 10% to approximately 13% are placed in a dehumidification room until the moisture in the veneers is reduced to approximately 6% to approximately 8%.

[0039] Regardless of the Janka rating, once the appropriate moisture content range is achieved, the veneer is adhered to the base layer (preferably using a neoprene adhesive) and pressed at room temperature for preferably 24 hours. Once the veneers are pressed the process is exactly the same

[0040] Pressed boards warp or bend in the long direction due to such factors as dryness in veneer and the board pulling on the base layer. To minimize or eliminate such warping the pressed boards are returned to the drying room for approximately 4 days to allow the moisture to substantially equalize from base to veneer and/or until the boards become substantially flat naturally when using steam dry first. Once removed from the drying room, the surfaces of the board are substantially uniformly sanded. Thereafter, the boards are cut to form the complementary tongue-and-groove. Then, the boards are once again returned to the dehumidification room for approximately 24 hours and then removed for final sanding and finish. At this point in time the finished boards may be packaged and shipped ready to be installed.

[0041] To install the flooring, the floor to which the flooring is to cover should be clean, dry, substantially smooth and substantially flat. As previous noted, the engineered wood flooring in accordance with the present invention does not need to

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be acclimated to the environment. Adhesive is applied with a tool or instrument that has been recommended by its manufacturer to an exposed surface of the floor to be covered with the engineered wood flooring. Typically, the adhesive is applied using a conventional notch trowel. Each piece of engineered wood flooring is lay out over the applied adhesive while firmly pushing the interlocked tongue-and-grooves together in a preferably random pattern, most preferably the short joints are disposed no closer than approximately 6 inches apart from one another. The pieces of engineered wood flooring are cut to size using conventional cutting tools (e.g., chop saw, table saw) and conventional cutting blades. In the case of a floating floor, the adhesive is applied on the exposed surface of the groove, rather than the floor to be covered.

[0042] When the present inventive engineered wood flooring is used to make relatively wide planks (having a width in the range between approximately 7 inches and approximately 12 inches) and relatively long boards (having a length in the range between approximately 60 inches and approximately 96 inches) it is desirable to provide an additional structural supporting or strengthening element. In a preferred embodiment, at least one longitudinal groove 305 is defined in or channeled out from a bottom surface of the base layer 110. Most preferably, a pair of substantially parallel grooves 305 are defined in or channeled out from the bottom surface of the base layer 110, as depicted in Figures 3 and 4. Each groove 305 starts proximate to, but not flush with, one end of the board and extends proximate to, but not flush with, the opposite end of the board, i.e., the groove extends substantially but not entirely across the length of the board from one end to the other. For example, the groove may start and stop approximately 2 inches short of either side of the board. By way of example, groove 305 is approximately 11 mm in height into the base layer and approximately 4 mm in width. Epoxy or other adhesive is used to secure complementary sized supporting strips 310, preferably made of aluminum, within each groove 305. For example, each supporting strip may be approximately 9 mm in height and approximately 2mm in width.

[0043] Thus, while there have been shown, described, and pointed out fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be

understood that various omissions, substitutions, and changes in the form and details of the devices illustrated, and in their operation, may be made by those skilled in the art without departing from the spirit and scope of the invention. For example, it is expressly intended that all combinations of those elements and/or steps that perform substantially the same function, in substantially the same way, to achieve the same results be within the scope of the invention. Substitutions of elements from one described embodiment to another are also fully intended and contemplated. It is also to be understood that the drawings are not necessarily drawn to scale, but that they are merely conceptual in nature. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

[0044] Every issued patent, pending patent application, publication, journal article, book or any other reference cited herein is each incorporated by reference in their entirety.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. An engineered wood flooring comprising:

a base layer comprising a stone-wood composite including MgO, $MgCl_2$, wood powder, Fe_2O_3, H_3PO_4, $FeSO_4$; embedded within the base layer is three fiberglass mesh layers; and

a wood veneer layer adhered to the base layer.

2. An engineered wood flooring comprising:

a stone-wood composite base layer; embedded within the base layer is at least three mesh layers; and

a wood veneer layer adhered to the base layer.

3. The flooring in accordance with claim 2, wherein the wood veneer layer has a thickness between approximately 2 mm and approximately 6 mm.

4. The flooring in accordance with claim 2, wherein the three mesh layers are separated from one another and made of fiberglass

5. The flooring in accordance with claim 4, wherein each of the mesh layers has holes defined therein substantially square in shape and approximately 3/16 inch X approximately 3/16 inch in dimension.

6. The flooring in accordance with claim 2, wherein the stone-wood composite base layer includes wood particles comprising wood shavings and/or wood powder.

7. The flooring in accordance with claim 2, wherein the flooring has an overall thickness of approximately 20 mm; the wood veneer layer has a thickness of approximately 2mm; the base layer has a thickness of approximately 18 mm; each of the three mesh layers has a thickness of approximately 0.9 mm.

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8. The flooring in accordance with claim 2, wherein abutting pieces of the flooring have complementary tongue-and-groove defined therein, the tongue-and-groove are defined only in the base layer and do not extend into the wood veneer layer.

9. The flooring in accordance with claim 2, wherein the base layer comprises: approximately 45% MgO; approximately 42% $MgCl_2$; approximately 9% wood powder; approximately 2.5% fiberglass mesh; approximately 0.5% Fe_2O_3; approximately 0.5% H_3PO_4; approximately 0.5% $FeSO_4$.

10. Method for manufacturing an engineered wood flooring in accordance with claim 2, the method comprising the steps of:

in a mold, mixing water and a stone-wood composite until substantially uniform;

embedding at least three layers of mesh into the mixture, wherein each of the at least three layers of mesh is separated from the other;

draining water from the mixture;

setting the mixture for a first predetermined period of time, while remaining in the mold, to form a board;

removing the set board from the mold;

allowing the board to dry in air for a second predetermined period of time;

cutting the dried board to size; and

sanding top and bottom surfaces of the cut board to achieve a substantially uniform thickness.

11. The method in accordance with claim 10, wherein the stone-wood composite and embedded mesh therein comprises: approximately 45% MgO; approximately 42% $MgCl_2$; approximately 9% wood powder; approximately 2.5% fiberglass mesh; approximately 0.5% Fe_2O_3; approximately 0.5% H_3PO_4; approximately 0.5% $FeSO_4$.

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12. The method in accordance with claim 10, wherein the first predetermined period of time is approximately 24 hours while the second predetermined time is at least approximately 30 days.

13. The method in accordance with claim 10, further comprising the step of subjecting the wood veneer to a dry steam process reducing its moisture content to an appropriate reduced moisture content range; if the wood veneer has a Janka rating over 1000, the appropriate reduced moisture content range is between approximately 3% to approximately 5% first then standard drying to 6% to 8%; whereas if the wood veneer has a Janka rating below 1000, the appropriate reduced moisture content range is between approximately 6% to approximately 8% only.

14. The method in accordance with claim 13, further comprising the steps of:
wrapping the dried wood veneer in plastic; and
storing the wrapped wood veneer in a dehumidification dry room.

15. The method in accordance with claim 13, further comprising the steps of:
adhering the wood veneer to the base layer using an adhesive; and
at room temperature, pressing the adhered wood veneer and base layer for a third predetermined period of time.

16. The method in accordance with claim 15, wherein the third predetermined period of time is approximately 24 hours.

17. The method in accordance with claim 15, further comprising the step of subjecting the pressed boards to a standard dehumidification dry room process for a fourth predetermined period of time to allow moisture to substantially equalize from base to veneer and/or until the board becomes substantially flat.

18. The method in accordance with claim 17, wherein the fourth predetermined period of time is approximately 4 days.

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19. The method in accordance with claim 17, further comprising the steps of:

sanding surfaces of the board until substantially uniform;

cutting complementary tongue-and-grooves in the boards;

storing the boards in a dehumidification room for a fifth predetermined period of time; and

final sanding and finishing of the top surface of the board.

20. The method in accordance with claim 19, wherein the fifth predetermined period of time is approximately 24 hours.

21. The flooring in accordance with claim 2, wherein a bottom surface of the base layer has at least one channel defined therein.

22. The flooring in accordance with claim 21, wherein the bottom surface of the base layer has a pair of substantially parallel channels defined therein.

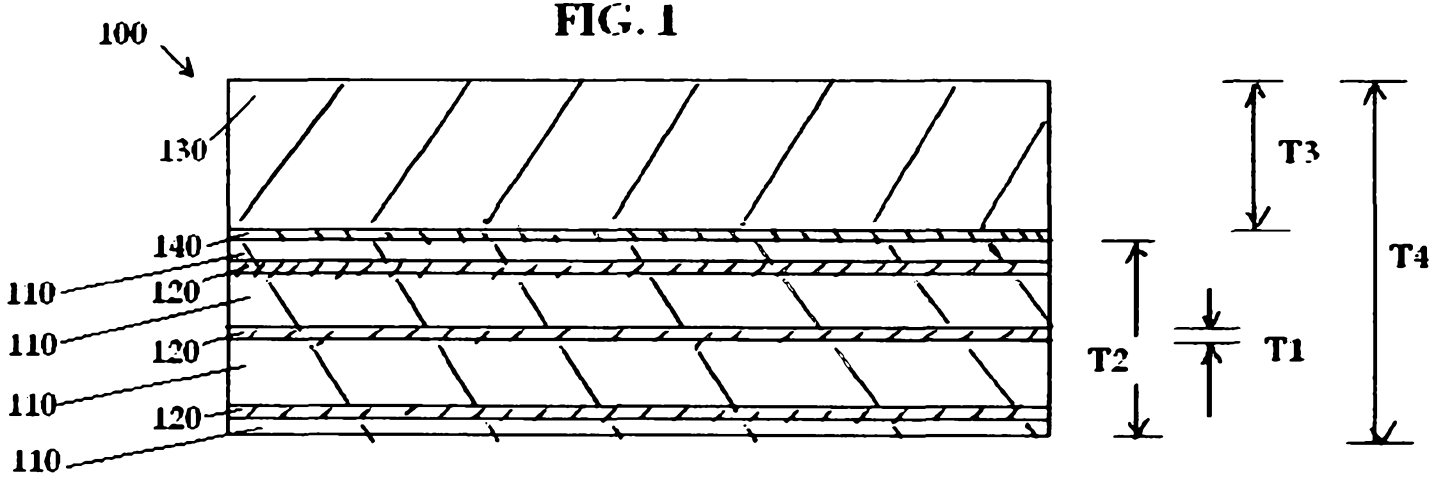
23. The flooring in accordance with claim 22, further comprising a supporting element adhered within each of the parallel channels.

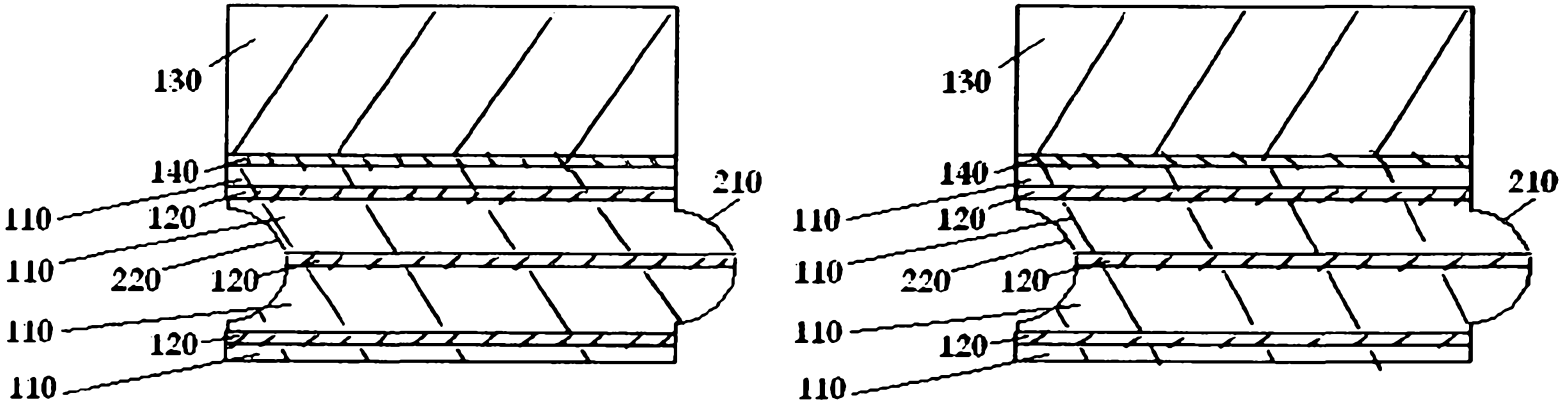
24. The flooring in accordance with claim 23, wherein the supporting element is an aluminum strip.

25. The flooring in accordance with claim 2, wherein the pair of substantially parallel channels extend substantially, but not a full, length across a board of the flooring from one edge to an opposite edge.

26. The flooring in accordance with claim 23, wherein a height of the supporting element is less than a height of the channel so that the supporting element adhered within the channel is not flush with the bottom surface of the base layer.

FIG. 1


100
130
140
110
120
110
120
110
120
110
T3
T4
T2
T1


130
140
110
120
110
220
120
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210
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140
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220
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110
210

FIG. 2

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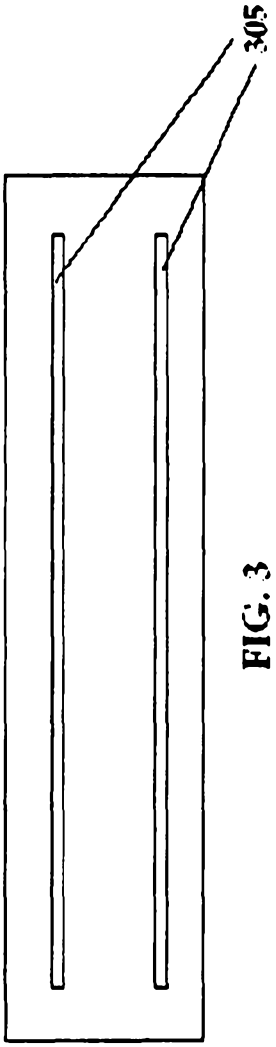

FIG. 3

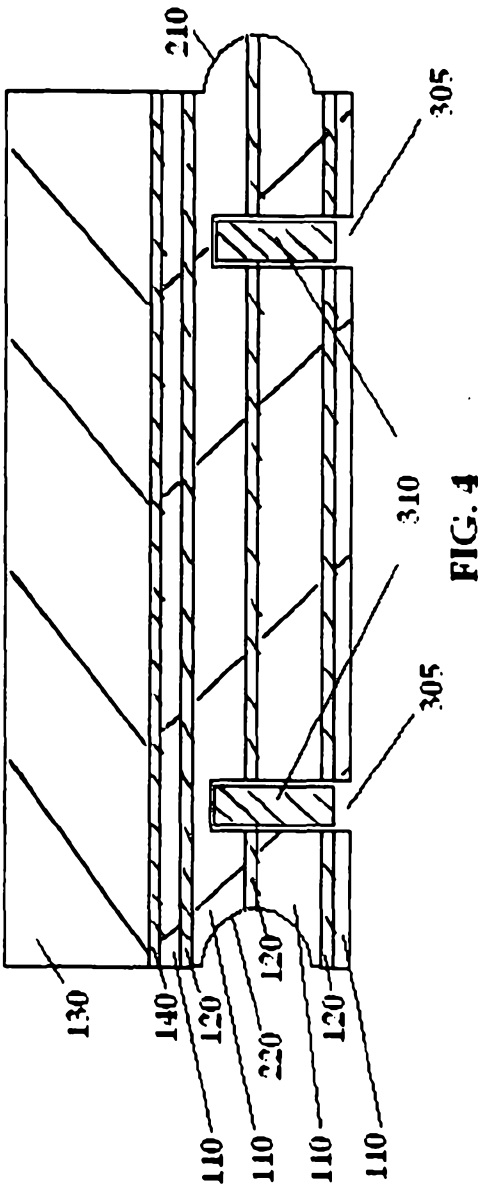

FIG. 4