(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 074 821**
B1

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **27.04.88**

(51) Int. Cl.[4]: **B 27 M 3/04**

(21) Application number: **82304781.6**

(22) Date of filing: **10.09.82**

(54) **Method of making a wooden tile.**

(30) Priority: **15.09.81 GB 8127823**

(43) Date of publication of application:
23.03.83 Bulletin 83/12

(45) Publication of the grant of the patent:
27.04.88 Bulletin 88/17

(84) Designated Contracting States:
AT BE CH DE FR IT LI LU NL SE

(56) References cited:
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FR-A- 969 320
FR-A-2 184 626
GB-A- 835 075
US-A-3 377 223
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(73) Proprietor: **Yontrarak, Bunlue**
86, Suksawas Road T. Laemfepha A. Muang
C. Samutprakarn (TH)

(72) Inventor: **Yontrarak, Bunlue**
86, Suksawas Road T. Laemfepha A. Muang
C. Samutprakarn (TH)

(74) Representative: **Baillie, Iain Cameron et al**
c/o Ladas & Parry Isartorplatz 5
D-8000 München 2 (DE)

EP 0 074 821 B1

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Courier Press, Leamington Spa, England.

Description

This invention relates to a method of making wooden tiles.

Wood tiles have long been made and used as a covering material, particularly for floors. In the past, good quality logs were abundant and wastage of wood was considerable. The tiles in those early days were made unnecessarily thick, so thick that the wood in the tiles could have outlasted the floor itself, but unfortunately they delaminated before the end of their service life. Over the years, the natural wood logs have become more scarce and expensive, so the thickness of flooring in general has been reduced. Today, the normal conventional tile is about 6 to 7 mm thick. As a matter of fact, even this thickness is still too much and certainly more than you need for flooring. Up to now, a thinner tile has not been available on the market simply because it has been uneconomical to manufacture by conventional methods. People have tried to use a veneer of 1 to 2 mm thick to laminate onto an inexpensive backing such as Plywood or Chipboard. Whilst this achieves a slightly reduced cost, the tile quality is very substantially decreased and the service life is relatively short. Another tile that has been tried, is a thin veneer of 1 mm or under which is glued onto a substrate with a clear plastic lining on top of it. This method has proved to be fairly expensive and the tile has no natural warmth as is inherent in natural wood.

One known method of overcoming these problems has been disclosed by Hettich in US—A—3 908 053. That is to make a wooden tile which requires a piece of wood to be sawn from a piece of lumber. The sheet of wood is then cut into a plurality of individual rectangular shaped blocks to which glue is applied along their edges so that when butted together side-by-side in any selected pattern, the blocks bond to each other.

The disadvantage with such a method is that it is generally not feasible to manufacture the thickness of the wooden sheet to 6.2 mm. Furthermore, a considerable amount of wood in the form of sawdust is wasted in the saw cutting operation and a low yield results from the geometric differences in the round logs and the straight saw cut line in respect of the sheet thickness.

Furthermore, the cutting of the wood with a saw results in a closed grain surface on both the top and bottom major surfaces of the cut sheet resulting in the finished tile being of a rigid construction having substantially no flexibility and being brittle. Hettich alleviates this problem to some extent by using a flexible glue and by providing grooves in the underside of the blocks.

It is an object of the present invention to provide a method of manufacturing a wooden tile in which these disadvantages are substantially eliminated.

According to the present invention there is provided a method of making a flexible wooden tile comprising the steps of forming a plurality of members of wood of a predetermined thickness from a piece of timber, applying adhesive to edges of the members, forming a plurality of said members into a tile with an edge of one member abutting an edge of another member, and allowing the adhesive to set to bond said members together, characterized in that the members are formed by knife cutting the piece of timber with a rotary lathe or slicing machine to form a sheet-like piece of wood of said predetermined thickness which is then cut into said plurality of members and in that said members are then bonded together to form the flexible wooden tile in which each constituent member is flexible.

It is appreciated that cutting with a lathe is known in the field of the manufacture of veneer. Examples of this are shown in GB—A—835075, and FR—A—969 320. In the case where knife cutting is effected with a slicing machine the cutting knife may lie parallel with the longitudinal axis of a bolt of wood and may be moved horizontally, vertically or in a slanted fashion in the direction transverse to the longitudinal axis of the bolt. In another alternative slicing machine, the cutting knife may be moved lengthwise through the bolt of wood parallel to the longitudinal axis of the bolt.

In a preferred embodiment of the invention the members are formed of a predetermined length and breadth and the length is arranged to be longer than the breadth. Preferably, the members are arranged together to form a square tile.

A self-adhesive can be applied to the undersurface of the tile, which self-adhesive is a double sided self-adhesive tape applied to the undersurface of the tile.

Preferably, the tile is sanded to a thickness of 2.5 mm and is trimmed to have sides of 305 mm. The tile may be formed of wood selected from teak, oak and rarewood species, and is boiled, cooled to ambient temperature, boiled again and knife cut whilst hot.

Preferably the adhesive applied to the individual members to each other is ureaformaldehyde, although any other suitable adhesive may be used.

The curing or setting of the bonding adhesive may be achieved by placing individually assembled tiles side by side on a platen of a hot press and subsequently pressure of some 10 metric tons per square foot is applied to the tiles at high temperature for approximately three minutes.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a wooden tile in accordance with the present invention; and

Figure 2 is an edge view of the wooden tile in the direction of the arrow A in Figure 1.

Referring now more particularly to the wooden tile illustrated in Figures 1 and 2, the tile is shown to be square and is assembled from a plurality of independent solid wood fingers 1 which are bonded together along abutting edges with a suitable adhesive such as urea formaldehyde.

In the present tile, the fingers 1 are formed into blocks of five parallel fingers laid side-by-side and the blocks are laid so that the longitudinal fingers of each block lie at right angles to the next adjacent block. In this way sixteen such blocks can be laid side-by-side and bonded together to form the tile as shown in Figure 1.

Figure 2 illustrates an edge view of the tile of Figure 1 and further illustrates the bonded joints 2 between the blocks of fingers 1. Although not shown in Figure 2, the blocks of individual fingers are similarly butted and bonded together.

The process by which the wooden tile disclosed above is manufactured will now be described in detail with particular reference to making the tile from teak.

Initially, a teak log is boiled or steamed and then allowed to cool to ambient temperature where upon its temperature is quickly raised again for boiling or steaming for a second time. As the teak log begins to cool, after the second boiling, the log is placed in a rotary lathe such as is manufactured by Capital Corporation in the United States of America, and while the log is still hot but cooled sufficiently to allow efficient cutting of the wood the log is rotated and a sheet of wood of a thickness of a little more than 2.5 mm is cut by a knife from the surface of the log. The knife blade is some 4 feet in length and is positioned at an angle which will provide the maximum release of the stresses and strains within the log as the sheet is removed.

In the present embodiment, the sheets peeled from the log are cut by means of a saw into a plurality of elongate rectangular fingers. The fingers are then stacked with their respective edge surfaces in common planes so that adhesive such as urea formaldehyde can be applied to the edge surfaces.

The fingers are then laid in a jig in the pattern shown in Figure 1 with surfaces of the jig supporting the outer peripheral surface 3 of the tile in Figure 1. The jig is then removed and the tile placed on a platen of a hot press with other similarly formed tiles. The hot press is operated to apply a pressure of some 10 metric tons per square foot to the tile for some three minutes and when released the adhesive is cured and the fingers of the tile bonded together.

Applying pressure to the tile in this way substantially prevents warping of the tile while simultaneously curing the adhesive.

When the adhesive has cured, the tile is trimmed around its edges to define a square tile with each of the sides having a length of 305 mm. The main upper and lower surfaces of the tile are finished in a conventional manner by sanding to provide commercially acceptable surfaces which can be polished. After this finishing process, the tile has a thickness of some 2.5 mm and does not have a backing substrate.

The advantages gained by the method of manufacturing a tile in accordance with the present invention is that by cutting the wooden sheet from the log with a knife provides an open grain surface. Accordingly, in the finished tile, the upper and lower surfaces have this open grained feature which permits the tile to have a flexibility which is hitherto unknown in wooden floor tiles. Furthermore, the method provides for a thinner solid wooden tile than that previously manufactured, the thinness also resulting in a tile which is both light in weight and economical to produce.

The invention has been described with reference to one particular embodiment. However, a number of modifications may be made to the method without departing from the scope of the invention.

While the sheet of wood has been described as being cut from a teak log on a rotary lathe, it is to be understood that such sheets may be removed from a bolt of wood by means of horizontal, vertical, slanted or lengthways slicers which are well known in the art, but in which the sheets are essentially removed by cutting with a knife. A typical such slicing machine is produced by the Italian firm of Cremona Angelo. Furthermore, while the knife has been described as being some 4 feet in length, it may be of any convenient length which is smaller or longer, and may, for example, be up to some 16 feet in length. In the lengthways slicer the blade may be only 10 inches long.

Other woods may be used in making such tiles but it is not necessary to subject all of them to the boiling or steaming process described. However, it is essential the sheet of wood taken from the log or bolt is cut with a knife to obtain open grain surfaces on the tiles.

Wooden tiles made by the process of the present invention may be as thin as 0.5 mm when used as a wall covering. However, for practical purposes the tiles are manufactured with thickness in the range 1.5 mm to 10 mm. Thicker tiles may be produced but become more uneconomical as the thickness increases.

In one modified form of the tile made according to the process of the present invention, the finished tile is coated on its backing or undersurface with a self adhesive covered by a removable non adhesive material.

The shape of the tile is not restricted to a square tile but may be of any shape such as an elongate rectangular form or a six sided form for example. Furthermore, the pattern on the tile formed by the positioning of the fingers can be varied as desired and the fingers can be of different lengths to accommodate alternative patterns.

Claims

1. A method of making a flexible wooden tile comprising the steps of forming a plurality of members (1) of wood of a predetermined thickness from a piece of timber, applying adhesive to edges of the members (1), forming a plurality of said members (1) into a tile with an edge of one member abutting an edge of another member, and allowing the adhesive to set to bond said members (1) together, characterized in that the

members (1) are formed by knife cutting the piece of timber with a rotary lathe or slicing machine to form a sheet-like piece of wood of said predetermined thickness which is then cut into said plurality of members (1) and in that said members are then bonded together to form the flexible wooden tile in which each constituent member is flexible.

2. A method as claimed in Claim 1, wherein the rotary lathe is operated with a full round rotary cut.

3. A method as claimed in Claim 1, wherein the slicing machine has a cutting knife that lies parallel with the longitudinal axis of the bolt of wood and is movable horizontally, vertically or in a slanted fashion in a direction transverse to the longitudinal axis of the bolt.

4. A method as claimed in any preceding claim, wherein said members are sawn from the sheet of wood into a rectangular form and wherein the length of each member is longer than the breadth thereof.

5. A method as claimed in Claim 4, wherein the members are combined to define square tile.

6. A method as claimed in Claim 1, wherein the cutting knife is moved lengthwise through the bolt of wood parallel to the longitudinal axis of the bolt.

7. A method as claimed in any one of the preceding claims, including applying a self-adhesive to the undersurface of the tile.

8. A method as claimed in Claim 7, wherein the self-adhesive is a double sided self-adhesive tape applied to the undersurface of the tile.

9. A method as claimed in any one of the preceding claims, wherein the tile is sanded to a thickness of 2.5 mm and is trimmed to have sides of 305 mm.

10. A method as claimed in any one of the preceding claims, wherein the wooden tile is formed of wood selected from teak, oak and rarewood species, and is boiled, cooled to an ambient temperature, boiled again and knife cut whilst hot.

11. A method as claimed in any one of the preceding claims, wherein the adhesive applied to the tiles is ureaformaldehyde.

Patentansprüche

1. Verfahren zum Herstellen einer flexiblen Platte aus Holz mit folgenden Schritten: aus einem Holzstück wird eine Mehrzahl von Elementen (1) aus Holz einer vorherbestimmten Stärke hergestellt; auf Ränder der Elemente (1) wird Klebstoff aufgetragen, eine Mehrzahl der Elemente (1) wird derart zu einer Platte vereinigt, daß ein Rand eines Elements mit einem Rand eines anderen Elements stumpf gestoßen ist, und zum Verbinden der Elemente (1) wird der Klebstoff abbinden gelassen, dadurch gekennzeichnet, daß zum Herstellen der Elemente das Holzstück auf einer rotierenden Drehbank oder Abstechmaschine mit einem Messer geschnitten wird, so daß ein blattartiges Holzstück der vorherbestimmten Stärke erhalten wird, das dann in die Mehrzahl der Elemente (1) zerschnitten wird, und daß dann zur Bildung der flexiblen Platte aus Holz, in der jedes der sie bildenden Elemente flexibel ist, die Elemente miteinander verbunden werden.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die rotierende Drehbank zur Durchführung eines vollständig umlaufenden Drehschnitts betrieben wird.

3. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die Abstechmaschine ein Schneidmesser besitzt, das zu der Längsachse des länglichen Holzstückes parallel angeordnet ist und das quer zu der Längsachse des länglichen Holzstückes horizontal, vertikal oder schräg bewegbar ist.

4. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die genannten Elemente von dem Blatt aus Holz rechteckförmig abgesägt werden und die Länge jedes Elements größer ist als seine Breite.

5. Verfahren nach Anspruch 4, dadurch gekennzeichnet, daß die Elemente zu einer quadratischen Platte vereinigt werden.

6. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Schneidmesser parallel zu der Längsachse des länglichen Holzstückes durch diesen bewegt wird.

7. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß auf die Unterseite der Platte ein selbstklebendes Klebmittel aufgetragen wird.

8. Verfahren nach Anspruch 7, dadurch gekennzeichnet, daß das selbstklebende Mittel ein doppelseitig selbstklebendes Klebeband ist, das auf die Unterseite der Platte aufgetragen wird.

9. Verfahren nach einem der vohergehenden Ansprüche, dadurch gekennzeichnet, daß die Platte mit Sandpapier auf eine Stärke von 2,5 mm geschliffen und daß sie auf eine Seitenlänge von 305 mm zugeschnitten wird.

10. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Platte aus Holz aus einem Holz hergestellt wird, das ausgewählt ist aus Teak, Eiche und Edelholzarten, und das gekocht, dann auf Umgebungstemperatur abgekühlt und erneut gekocht und im heißen Zustand mit dem Messer geschnitten wird.

11. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der auf die Platten aufgetragene Klebstoff Harnstofformaldehyd ist.

Revendications

1. Procédé de fabrication d'un carreau en bois flexible, comprenant les opérations de préparation d'une pluralité d'éléments (1) en bois d'une épaisseur prédéterminée, à partir d'une bille de bois, d'application d'un adhésif aux bords des éléments (1), d'assemblage d'une pluralité desdits éléments (1) en un carreau de sorte qu'un bord d'un élement est en butée contre un bord d'un

autre élément, et de prise de l'adhésif de manière à lier lesdits éléments (1) les uns aux autres, caractérisé en ce que les éléments (1) sont obtenus par coupe à la lame tranchante de la bille de bois au moyen d'un tour rotatif ou d'une machine à trancher, de manière à former une pièce de bois en feuille ayant ladite épaisseur prédéterminée qui est en suite découpée en ladite pluralité d'éléments (1) et en ce que lesdits éléments sont ensuite liés les uns aux autres pour constituer le carreau en bois flexible dans lequel chaque élément constituant est flexible.

2. Procédé suivant la revendication 1, dans lequel le tour rotatif travaille avec une coupe rotative sur une circonférence complète.

3. Procédé suivant la revendication 1, dans lequel la machine à trancher comporte un couteau de coupe qui est parallèle à l'axe longitudinale de la bille de bois et qui est déplaçable horizontalement, verticalement ou obliquement dans une direction transversale à l'axe longitudinal de la bille.

4. Procédé suivant l'une quelconque des revendications précédentes, dans lequel lesdits éléments sont sciés dans le feuille de bois, suivant une forme rectangulaire, et dans lequel la longueur de chaque élément est plus grande que sa largeur.

5. Procédé suivant la revendication 4, dans lequel les éléments sont combinés de manière à définir un carreau carré.

6. Procédé suivant la revendication 1, dans lequel la lame de coupe est déplacée longitudinalement à travers la bille de bois, parallèlement à l'axe longitudinale de la bille.

7. Procédé suivant l'une quelconque des revendications précédentes, comprenant l'application d'un auto-adhésif à la surface inférieure du carreau.

8. Procédé suivant la revendication 7, dans lequel l'auto-adhésif est un ruban auto-adhésif à double face appliqué à la surface inférieure du carreau.

9. Procédé suivant l'une quelconque des revendications précédentes, dans lequel le carreau est sablé à une épaisseur de 2,5 mm et il est rectifié de manière à avoir des côtés de 305 mm.

10. Procédé suivant l'une quelconque des revendications précédentes, dans lequel le carreau en bois est constitué d'une bois choisi parmi le teck, le chêne et les espèces nobles, et il est bouilli, refroidi à température ambiante, bouilli à nouveau et coupé à la lame tranchante pendant qu'il est chaud.

11. Procédé suivant l'une quelconque des revendications précédentes, dans lequel l'adhésif appliqué aux carreaux est l'urée-formaldéhyde.

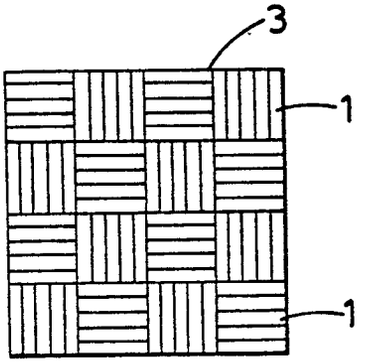


Fig.1

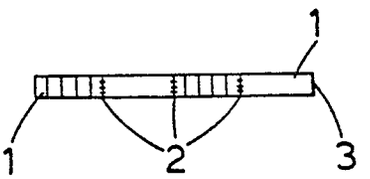


Fig.2