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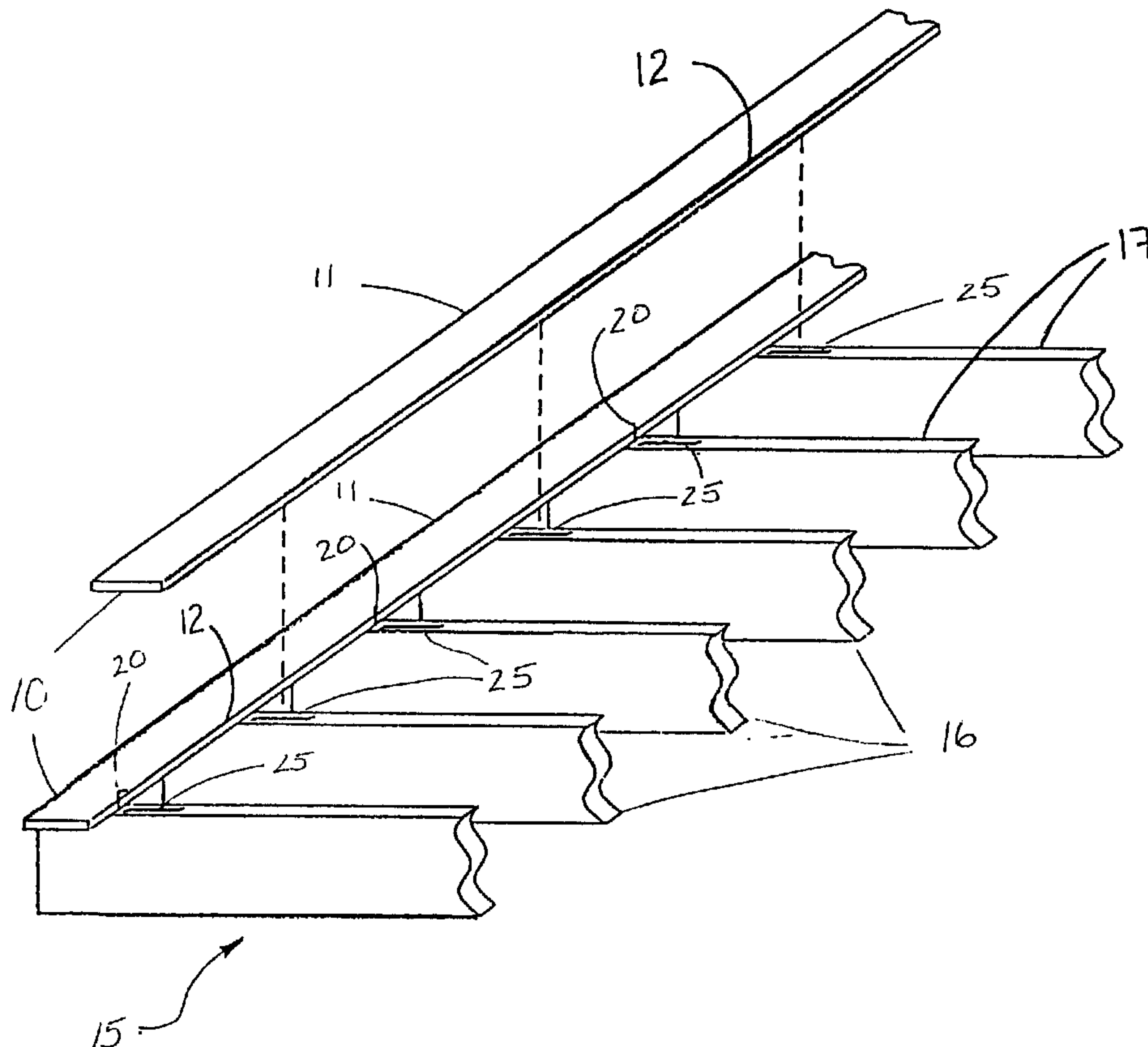
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(54) Titre : METHODE POUR RATTACHER DES PLANCHERS A DES FONDATIONS

(54) Title: METHOD FOR COUPLING DECK FLOORS TO FOUNDATION



(57) **Abrégé/Abstract:**

A method, and product produced by said method, of fastening flooring materials to a foundation structure so as to accommodate dimensional changes in the flooring material is herein described. The method is herein described. The method involves using a substantially resilient adhesive to secure the flooring materials to a foundation structure.

Abstract

A method, and product produced by said method, of fastening flooring materials to a foundation structure so as to accommodate dimensional changes in the flooring material is herein described. The method is herein described. The method involves
5 using a substantially resilient adhesive to secure the flooring materials to a foundation structure.

Patent Application

5 **Method for Coupling Deck Floors to Foundation**Field of the Invention

The present invention relates generally to the field of fastening or coupling flooring materials to a foundation structure. More specifically, the present invention is
10 drawn to a method for fastening decking materials, such as wood or plastic planks, to the joists that typically support such decking materials.

Background of the Invention

15 Using modern construction techniques, it is typical for the materials that make up a floor in a deck, walkway, or dock, to be attached to a foundation or sub-floor using mechanical fasteners such as screws or nails. In addition, it is not uncommon for decking material to be attached to a sub-floor or foundation using industrial adhesives.

20 A major problem in the use of mechanical fasteners such as nails, screws, or common industrial adhesives, is that theses mechanical fasteners are substantially rigid and not able to withstand the forces, which may be applied thereto due to changes in the shape or dimensions of the decking materials. Where decking
25 materials are made of lumber and more specifically uncured wood, the forces applied to the mechanical fasteners would often times be due to the warpage or shrinkage caused by the use of uncured lumber. In this instance, the uncured wood lumber would have the tendency to shrink, bend, twist, or warp, thereby regularly

applying stresses to the mechanical fasteners, which exceed the rated strength of those fasteners. Mechanical fasteners subjected to these forces commonly fail, requiring time consuming and expensive repairs. Even if the mechanical fastener can withstand the stresses and forces applied by the shrinking and warping wood,
5 the fastener openings have a tendency to enlarge or become distorted. In the case of nailed lumber, the nail; hole in either piece is likely to lose its ability to retain the lumber in the proper position. Again, costly and time-consuming repairs will be necessary.

10 Where the decking materials are of plastic lumber, the possibility of the lumber shrinking, warping, or twisting is negligible. However, plastic is very susceptible to changes in dimension due to thermal expansion and contraction. Where plastic lumber is used in an exterior setting, such as on a deck, walkway, or dock, the plastic lumber will be subjected to a wide range of temperatures. Subsequently, the
15 variation in the actual dimensions of each piece of plastic lumber may be sufficient enough to stress the mechanical fasteners used to secure the plastic lumber to a foundation or sub-floor past its rated strength, thereby causing failure.

Plastic lumber is a known material, which is generally fashioned from recycled
20 plastic such as the HDPE plastic used to make milk containers. This type of lumber will not rot as does wood. In addition, it can be produced in numerous colors, sizes, and textures. In many settings, such as for flooring purposes, plastic lumber is becoming increasingly popular.

25 Accordingly, there exists a need for a method for securely fastening decking materials fashioned of wood or plastic to a foundation, sub-floor, or joists, which would be both structurally sound and capable of accommodating for the high

stresses that are due to changes in the dimensions, shape, or volume of the decking materials.

Summary of the Invention

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The present invention may be generally summarized as a method of fastening or coupling flooring materials to a foundation structure comprising the steps of installing the foundation structure, placing a quantity of substantially resilient adhesive to the foundation structure, arranging the flooring materials upon the
10 foundation structure such that the substantially resilient adhesive forms a bond between the flooring materials and the foundation structure, securing temporarily the flooring material to the foundation structure using a plurality of mechanical fasteners; and removing the mechanical fasteners from the foundation material after a predetermined amount of time.

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Additionally, the method of the present invention may generally include on or more of the following steps: using a substantially resilient adhesive having the ability to be deformed up to 400% of its original dimensions and being further capable of resiliently returning to its original dimensions; using a flooring material that is
20 comprised of HDPE plastic; applying the substantially resilient adhesive only to those areas of the foundation structure which will be contacted by the flooring materials; and applying the substantially resilient adhesive to substantially the entire surface of the foundation structure.

25 The present invention may also be summarized as a floor structure formed by the present process. The floor structure including a foundation structure including a predetermined quantity of substantially resilient adhesive material deposited on

the foundation structure and at least one flooring material placed upon the foundation structure such that the substantially resilient adhesive forms a bond between the flooring materials and the foundation structure.

5 Description of the Drawings

Figure 1 is a perspective view depicting the method of the present invention.

Detailed Description

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Although the disclosure hereof is detailed and exact to enable those skilled in the art to practice the invention, the physical embodiments herein disclosed merely exemplify the invention which may be embodied in other specific structure. While the preferred embodiment has been described, the details may be changed without departing from the
15 invention, which is defined by the claims.

A method of the present invention generally comprises the steps of fastening portions of flooring materials 10 to a foundation or sub-floor 15 using a substantially resilient adhesive
25.

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A typical floor structure is depicted in figure 1. The floor structure of figure 1 is comprised of the foundation or sub-floor 15, which is in this case a plurality of joists 16, to which is fastened the decking material 10, in this case a plurality of planks 11 of wood or plastic. The plastic planks may, for example, be manufactured from HDE plastic material. The planks 11
25 are fastened to the joists 16 using a_____

substantially resilient adhesive 25. The adhesive 25 is applied to the areas of contact between the planks 11 and the joists 16 so as to create an adhesive bond therebetween. Though it is not required, it is preferred to temporarily secure the planks 11 to the joists 16 using mechanical fasteners 20. The mechanical fasteners 20 may be screws, lag bolts, or any other suitable fastener that can be quickly driven into or along the joists 16 so as to set the proper spacing between the respective planks 11 and to hold the planks 11 to the joists 16 while the adhesive 25 cures. The mechanical fasteners 20 must also be capable of being quickly removed from the joists 16 with a minimum amount of effort and damage to either the joists 16 or the planks 11.

10

The method of fastening flooring materials 10 to a foundation or sub-floor 15 using a substantially resilient adhesive 25 begins with a step of installing the foundation or sub-floor 15 in a predetermined arrangement. In the preferred embodiment of figure 1, the foundation 15 made up of joists 16 is installed such that upper surfaces 17 of the joists 16 are coplanar. Typically, joists 16 are arranged in a side by side fashion, with the joists 16 being parallel and evenly spaced. However, the spacing and angular orientation of the joists 16 with regard to each other may be altered as the demands of the situation require, provided that the upper surfaces 17 of the joists 16 remain coplanar.

20

Once the foundation or sub-floor 15 has been installed, the adhesive 25 is applied to the joists 16 in those areas which will be contacted by the flooring materials 10. In the preferred embodiment of the present invention, the adhesive 25 is applied to the joists 16 only in those areas, which will be contacted by the planks 11. However, it is to be understood that a continuous strip of the adhesive 25 may be applied to the entire upper surface 17 of each joist 16.

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The next step in the method of the present invention is to apply the flooring materials 10 to the foundation or sub-floor 15. As illustrated in figure 1, this step involves arranging the planks 11 upon the upper surfaces 17 of the joists 16 so that the planks 11 are brought into contact with the adhesive 25 that has been placed on the upper surfaces
5 17 of the joists 16.

After the flooring materials 10 have been arranged upon the foundation or sub-floor 15, mechanical fasteners 20 are used to temporarily secure the flooring material 10 to the foundation or sub-floor 15. These mechanical fasteners 20 aid the installer of the
10 flooring materials 10 in achieving the desired spacing and also in forcing the flooring material 10 into the adhesive 25 so as to create a tighter bond between the flooring materials 10 and the foundation or sub-floor 15. In the embodiment of figure 1, the mechanical fasteners 20, which are typically screws, are driven into the upper surface 17 of the joists 16 such that the fastener 20 is in contact with a longitudinal edge 12 of
15 the plank 11. The next plank 11 is placed upon the upper surface 17 of the joists 16 so that a longitudinal edge 12 of the next plank is in contact with the fasteners 20 that are contacting the previous plank 11. Using fasteners 20 of various diameters or other geometry can alter the spacing between the planks 11. The fasteners 20 are removed after a predetermined amount of time has past. This predetermined amount of time may
20 correspond to a curing time for the adhesive 25.

Where the foundation or sub-floor 15 is a continuous surface, such as with a concrete slab or with a particle board or plywood sub-floor, the adhesive 25 may be applied to the foundation or sub-floor 15 such that the adhesive 25 will create a bond between the
25 flooring materials 10 and the foundation 15 along substantially the entire length of the flooring material 10.

It is presently believed that the invention disclosed herein may be best practiced by using an adhesive 25 which comprises an adhesive tape material such as Manus-Bond™ 64-A Polysul-Grip™ Tape manufactured by Manus Products, Inc. 315 Lake Hazeltine Drive Chaska, MN 55318.

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The general characteristics of the adhesive 25 should include, but not be limited to, the ability to adhere to a wide spectrum of materials like aluminum, glass, galvanized steel, high-density plastic materials, wood, and other porous or non-porous materials. Further, it is desirable but not necessary that the adhesive be able to withstand prolonged exposure to sunlight without surface cracking, bond loss, and/or staining. Additionally, it may be desirable that the adhesive 25 used be substantially resilient and be capable of being deformed up to 400% of its original dimensions. Also, it may be desirable that the adhesive 25 be capable of resiliently returning to its original dimensions after compression.

15 The foregoing is considered as illustrative only of the principles of the invention. Furthermore, since numerous equivalents, modifications, and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described. While the preferred embodiment has been described, the details may be changed without departing from the invention, which is defined by the claims.

What is claimed is:

1. A method of coupling flooring materials to a foundation structure, comprising the steps of:

- 5 installing the foundation structure;
- placing a quantity of resilient adhesive on the foundation structure;
- arranging the flooring materials upon the foundation structure, the resilient adhesive forming a bond between the flooring materials and the foundation structure;
- securing temporarily the flooring materials to the foundation structure using a
- 10 plurality of mechanical fasteners; and
- removing the mechanical fasteners from the flooring materials after an amount of time corresponding to the set time of the adhesive.

2. The method of coupling flooring materials to a foundation structure of

15 claim 1, further comprising the step of using a resilient adhesive having the ability to be deformed up to 400% of its original dimensions and being further capable of resiliently returning to its original dimensions.

3. The method of coupling flooring materials to a foundation structure of

20 claim 1, further comprising the step of using flooring materials that is comprised of HDPE plastic.

4. The method of coupling flooring materials to a foundation structure of claim 1, further comprising the step of applying the resilient adhesive only to areas of the foundation structure which will be contacted by the flooring materials.

5 5. The method of coupling flooring materials to a foundation structure of claim 2, further comprising the step of applying the resilient adhesive to most of the surface of the foundation structure.

