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2,018,711

FLOOR COVERING AND METHOD OF MAKING THE SAME

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Fig. 1.

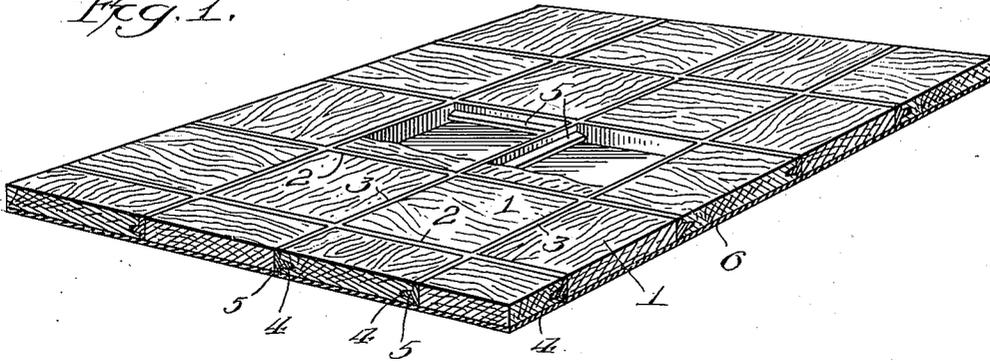


Fig. 2.

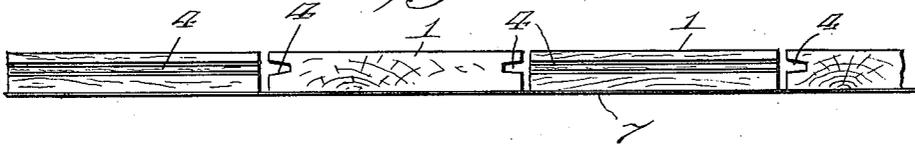


Fig. 3.

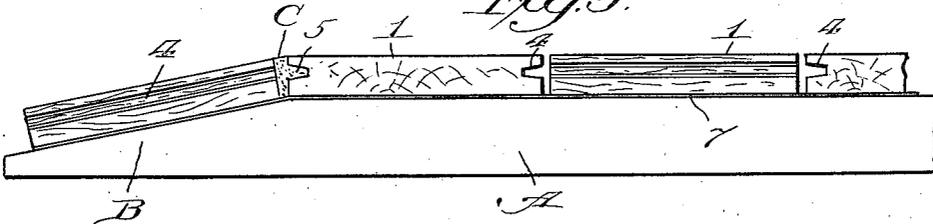


Fig. 4.

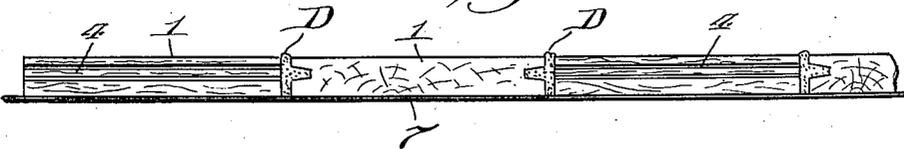


Fig. 5.

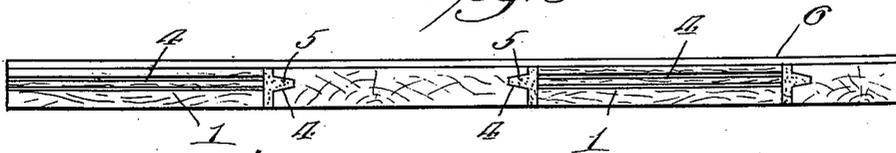
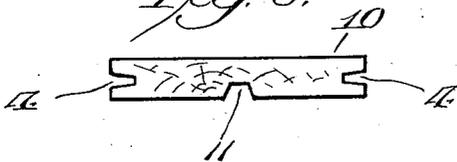


Fig. 6.



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UNITED STATES PATENT OFFICE

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FLOOR COVERING AND METHOD OF MAKING THE SAME

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4 Claims. (Cl. 20-75)

The present invention has for its object to produce a simple and novel pre-formed wooden flooring which may be quickly laid, which will accommodate itself to an uneven under floor or supporting surface without leaving open cracks, and in which the individual wood elements may expand and contract without producing a buckling effect of the flooring as a whole or causing any appreciable expansion or contraction of the flooring as a whole.

Viewed in one of its aspects, the present invention may be said to have for its object to create a simple and novel pre-formed wood flooring which may be laid solidly upon an uneven foundation and in which normal expansion and contraction may take place without creating any objectionable stresses.

Viewed in another of its aspects, the present invention may be said to have for its object to produce a pre-formed wood flooring which may be given its final surface finish before being laid and which, when laid, will adapt itself to an uneven supporting surface without producing open joints.

Viewed in another of its aspects, the present invention may be said to have for its object to produce a simple and novel pre-formed flooring composed of wood tiles united by an elastic or rubber-like binding or cementing material which will produce waterproof joints and permit the structure as a whole to adapt itself to an uneven underlying support without developing cracks in the joints and which will permit the tiles to expand and contract without setting up objectionable stresses in the flooring as a whole.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a perspective view of a fragment of my improved flooring, portions of two of the tiles being broken away to expose some of the adjacent bar-like grid elements; Fig. 2 is a view illustrating the first step in the manufacture of the flooring, showing the wooden tiles adhered to a temporary backing; Fig. 3 is a view illustrating a method of introducing the plastic material which is to form the elastic grill; Fig. 4 is an edge view of the fragment of flooring shown in Figs. 2 and 3, flattened after the spaces between the tiles have been filled with the cementing and binding

material; Fig. 5 is an edge view similar to Figs. 2 and 4, showing a permanent backing attached or adhered to the opposite face of the structure from that to which the temporary backing was initially attached; and Fig. 6 is an end view of a modified form of wood tile.

Referring to Figure 1 of the drawing, 1, 1 represent small wooden tiles of any desired size and shape; those illustrated being small square blocks perhaps a quarter of an inch thick. Each tile is therefore held in a small elastic frame which forms an integral part of a large multicellular frame of the size of the panel or sheet in which the flooring happens to be manufactured. These bar-like elements are not mere crack fillers but must be of considerable thickness. When the tiles are bonded to the elastic grill the elements of the grill must be thick enough not to rupture under the stresses to which they are subjected when the tiles contract as much as they are ever apt to in service. Ordinarily the tiles will not be spaced apart farther than necessary and it may therefore be said that the spacing of the tiles will usually be that which will enable the tiles to expand and contract without rupturing the elements of the elastic grill. In the arrangement shown, the tiles are spaced perhaps a sixteenth to an eighth of an inch apart, so that the grill is composed of flat bar-like elements 2 and 3 set on edge and extending at right angles to each other. Such elements are thick enough to withstand the rupturing stresses to which I have just referred. The grill is composed of a material which will act as a cement or binder to hold the blocks together and yet will be elastic to permit the tiles to yield in accommodating themselves to an underlying supporting surface, and to expand and contract, in use, without setting up any objectionable stresses in the flooring. The material of the grill is therefore preferably of a rubber-like consistency after it has set, so as to permit the bar-like elements of the grill to expand transversely and become thicker as the edges of the tiles between which they lie move away from each other, without becoming loose from either adjacent tile, or rupturing, and permitting them to contract and become thinner as the edges of the tiles between which they lie move toward each other. Bitumastic products, such as asphalts and tars, that are poured hot, are not suitable for the purpose for, instead of being elastic, they tend to flow and a body or mass thereof will not retain the form that may initially be given to it.

In actual practice I have found that commercial rubber latex to which has been added a suit-

able filler serves admirably as the material for the grill. I have successfully employed commercial rubber latex having a rubber content of from forty to sixty per cent., the whole being of liquid consistency. To this latex I add sufficient filling material to create a paste. Various neutral fillers may be employed, good results having been obtained with ground mica. Talc also makes a good filler. Instead of rubber latex there may be employed rubber substitutes such as drying oils and resins which dry elastic.

The tiles may have flat edge faces or, if desired, they may be provided with pockets or recesses in at least some of their edges, the cementing or binding material extending into these recesses or pockets in the process of manufacture, and effectively interlocking the grill and the tiles. In the arrangement shown, each block is provided with more or less V-shaped grooves 4 extending lengthwise thereof in the edges running lengthwise of the grain. Therefore, the bar-like elements of the grid will have on the sides that face the edge grooves in the tiles ribs, such as indicated at 5, 5, that fit into the grooves. The grill may be preformed and the tiles be afterwards set into the openings thereof; being held in place either by the grip of the elements of the grill or by a cementitious material interposed between the grill elements and the tiles. On the other hand, the material for the grill may be introduced into the spaces between the tiles, properly positioned relatively to each other, in a plastic state.

In some forms of my invention the sheet or panel consisting of the tiles set into the elastic grill may be cemented to a permanent backing 6 of any suitable flexible material. When the flooring is to be laid over concrete, it may be advisable that the backing be of felt saturated with asphalt or the like, or be otherwise made waterproof.

In manufacturing the flooring those faces of the tiles, which are the upper or wearing faces when the flooring is in use, may be given the desired surface finish before assembling them in the flooring. When the material for the grill is to be applied in a plastic condition into the spaces between the tiles, the tiles are conveniently secured, face down, on a temporary backing 7, in proper spaced relation to each other, as indicated in Fig. 2. The backing may be thin paper which afterwards may be washed off, or be of any other suitable material which can be used more than once. The rudimentary flooring, consisting of the tiles adhered to the temporary backing, then receives the cementitious material which fills the spaces between the tiles, adheres to the tiles, and forms a single unitary elastic grill that ties all of the tiles together. A simple way of handling the rudimentary flooring to insure complete filling of the spaces between the tiles is to flex the flooring upwardly in order to widen the mouths of the gaps or troughs between the tiles. This can conveniently be accomplished, as illustrated in Fig. 3, by placing the rudimentary flooring on a flat table A having at one end a downwardly sloping section B. By shifting the rudimentary flooring along the table until one of the transverse or longitudinal spaces across the rudimentary sheet or panel is at the angle between the flat and the inclined sections of the table, the desired widening of the gap or passage is effected. The cementitious or binding material C is then poured in and pressed or trowelled, so as to cause the material to flow into intimate

contact with the temporary backing and all of the adjacent edge faces of the tiles. One channel after another is filled in this way and then the entire rudimentary flooring is again flattened, as indicated in Fig. 4, causing some of the cementitious material to be extruded in the upward direction, as indicated at D in Fig. 4. This surplus cementitious material is then scraped off and, where there is to be a permanent backing, the backing is applied as indicated in Fig. 5. In any event, after the cementitious material has set, the temporary backing is removed.

It will be seen that by introducing the cementitious material from that side which is the under side of the flooring after it has been laid for use, the temporary backing serves as the wall of a mold which causes the cementitious material to be leveled off in the plane of the face of the flooring which at the time is at the bottom. Consequently, when the temporary backing is removed, after the cementitious material has set, the joints in the face of the flooring are even and smooth.

When the rudimentary floor is provided with a flexible permanent backing, such as heretofore described, the backing permits slight movement of the wood elements due to contraction and expansion. Where there is no flexible backing, but the tiles are laid directly upon the subfloor of concrete, means must be provided to permit the necessary relative movements of the different parts of each tile to allow for contraction and expansion. This can conveniently be accomplished by providing each tile with one or more grooves extending across the central part of the same on the under side, lengthwise of the grain. When the floor is laid upon the sub-floor, covered with a layer of plastic cementitious material to bond the floor to the sub-floor, the grooves in the tiles become filled with the bonding cement. Upon the setting of the bonding cement, the ridges thereof fill the grooves in the under sides of the wood tiles and act as anchors which hold the central portion of each tile stationary while permitting the edge portions of the tile to move slightly relatively to the center as contraction and expansion take place. Thus, in Fig. 6, I have shown a tile 10 having in the under face a central longitudinal groove 11 parallel with the edge grooves 4, 4. The bonding cement enters the grooves 11 and, as explained above, anchors the tile at the middle.

While my improved floor lends itself admirably to the production of preformed floor sections or units of any desired size, in which the individual tiles are given their final finish before being assembled therein, it is, of course, possible, and it may sometimes be desirable, to manufacture the units or sections in such a form that they may be scraped and sanded and be then given the desired surface coatings after the assembly of the wood tiles and grill has been completed. When certain of the inert fillers, such as mica or talc, are used the grill that holds the tiles together not only possesses the desired elasticity, but its character is such that the surface of the rudimentary floor may successfully be sanded with the grill in place between the tiles. In other words, the wearing face of the rudimentary unit or panel, when sanded, will be smooth and continuous, just as though there were no comparatively wide joints between the tiles; there being no roughing-up of the rubber or rubber-like compound due to the braiding action of the sanding appliances. Then, after the sand-

ing has been completed, the desired surface coatings may be applied in the usual way.

My improved flooring may be made in sheets or panels of any desired length and width, as long as the sheets or panels are not made too large to be easily handled in shipping and laying. The flooring may be quickly and easily laid, being secured to the supporting surface therefor by any suitable adhesive, such as any of the adhesives commonly employed in laying linoleum or the like, if desired. Where a waterproof adhesive is used, it will serve also effectively to secure together the meeting edges of adjacent sheets or panels. When the flooring is laid it will adapt itself to the configuration of the supporting surface; some of the elements of the grill stretching and others being compressed, according as they are in zones of convexity or of concavity, without becoming loose from the tiles or opening cracks. Since the tiles have received their final surface finish before the floor is laid, the cost of laying a floor is very small. Furthermore, after the flooring has been laid, it will contain no cracks or crevices in which water or dirt may collect or through which water may seep and thus cause rotting underneath, and will not develop cracks through rupturing of the elastic material of the grills.

While I have illustrated and described with particularity only a single preferred form of my invention, with a slight modification, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of my invention constituting the appended claims.

I claim:

1. The method of making a pre-formed floor covering in the form of continuous flexible sheets or panels, which consists in adhering wooden tiles, face down and in spaced relation to each

other, to a flexible temporary backing, flexing the backing to cause the spaces between the tiles to widen at the top, introducing into the spaces between the tiles an elastic cement in a plastic condition, flattening the structure to cause some of the cement to be extruded upwardly, scraping off the surplus cement above the tiles, and, after the cement has set, removing the temporary backing.

2. A pre-formed floor covering material comprising a unitary grill of elastic material composed of bars integral with each other and forming an elastic flexible flat sheet filled with openings therethrough, and wooden tiles set in said openings, each tile filling one of the openings and adhering at its edges to the bars contacting with the same whereby, upon contraction of the tiles, the bars are stretched transversely as the distances between adjacent tiles increase.

3. A floor covering comprising a sheet of flexible elastic material filled with holes distributed across the length and breadth of the same and separated from each other by comparatively narrow bar-like elements, and wooden tiles each set into one of said openings and adhering to the bar-like elements surrounding and engaged with the same.

4. The method of making a pre-formed floor covering in the form of a self-supporting unitary sheet or panel, which consists in adhering wooden tiles, face down and in spaced relation to each other, to a temporary backing, filling the spaces between the tiles with a plastic cementitious material which is elastic and flexible upon setting, removing any excess of said cementitious material that may project beyond the plane of the rear faces of the tiles and, after the cementitious material has set, removing the temporary backing.

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