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WOOD TILE FLOORING

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1 Claim. (C1. 20—8)

The object of the present invention is to make it possible to lay a flooring of wood tiles upon a wood or concrete subfloor, without the necessity of employing tongue and groove joints between meeting tiles and, with the assurance that the upper faces of meeting tiles lie in the same plane and thus provide a smooth floor surface free from any upward projections.

Another object of the present invention is to make it possible to lay the aforesaid flooring smoothly and, at the same time, insure that it is firmly held to the underlying subfloor if the latter be of wood, or any other underlying support that permits the driving of nails into the same.

Economy requires that wood floor tiling be fairly thin, namely, not more than three-eighths of an inch thick. The lip elements of tiles adapted to make tongue and groove joints are quite thin and weak and are easily broken off under service traffic. Square edges are therefore more durable. Furthermore, provision must be made to insure that the thin tiles remain flat and do not warp. Warping may be prevented by making the tiles of plywood. However, if as many as three plies are present, it means that the thickness of the wearing portion is too small to insure the necessary length of useful life of the flooring. Therefore, I prefer to construct the tiles in such a manner that while each contains wood grain extending in two directions transverse to each other, the wearing layer is thicker than in three ply tiles. Thus, the tiles may be made in two plies each of which is wholly or partially slit into narrow strips, or the body portion of each tile may be of a single thickness, likewise composed of narrow strips arranged edge to edge and either forming part of an integral little panel or being pieces separate from each other. When only a single thickness is desired, the cross grain may be provided by cutting narrow slots lengthwise of the edges containing the end grain and gluing into the same strips of wood veneer or other suitable material; or by providing border members of the same thickness as the body of the tile and uniting the border members and the body and the ends of the strips forming the body of the tile with glue tongue and groove joints. For single thickness tiles the widths of the strips should not be substantially greater than twice their thicknesses.

The necessary interlock between meeting tiles to hold them against displacement relatively to each other at angles to their planes is accomplished by keys of metal, hard fiber board, or other strong, tough material in the form of little plates or disks that may be fitted into edge slots in the tiles. These key members need not be fastened to the tiles but are simply inserted in the slots as the tiles are laid. By providing each key with a hole or making it of material that permits a nail to be driven through the same, a nail may be driven through each key into the subfloor without going through the tiles themselves, and thus secure the flooring firmly to the subfloor. If the keys are accurately positioned, an entire flooring may be laid before any nails are driven, since the workman knows where every nail must go. For example, when laying square or rectangular tiles, in checkerboard fashion, so that four corners meet in a point, each key may unit four of such corners and have its center at the meeting point of the latter. In such a case, if the corners are sanded or otherwise blunted a little, a small hole, large enough to permit the entrance of a finishing nail, will be left at each corner of each tile, so that the only nailing that is required is the driving of a nail at each corner of each tile. Since each, nail, in this particular construction, holds down four corners, it follows that only as many nails as there are tiles are needed to fasten the flooring down. This is also true with respect to the number of keys required. The slots for the keys are short and the combined length of the slots in any tile is only a small fraction of the combined lengths of the tile edges. Therefore, by far the greater part of the edge portions of each tile remains unmutasulated, so that the advantages resulting from relatively thin, weak lips incident to the use of tongue and groove joints between thin wood tiles may be said, for all practical purposes, to be entirely lacking. In other words, the need for using keys does not to any appreciable extent detract from the advantages that square edges for the tiles possess.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claim; 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 drawings, wherein:

Figure 1 is a plan view, on a small scale, of a preferred form of tile; Fig. 2 is a plan view of a fragment of a tile flooring, showing an assembly of a number of tiles of Fig. 1; Fig. 3 is a top plan view, on a much larger scale than Fig. 1, containing the meeting corners of four tiles adjacent to each other; Fig. 4 is a section on line 4-4 of Fig. 3; Fig. 5 is a section on line 5-5.
of Fig. 4; Fig. 6 is a section on line 6—9 of Fig. 3; Fig. 7 is a top plan view, on a larger scale than Fig. 1, showing a group of four two-ply meeting tiles; Fig. 8 is a section, on a larger scale, on line 8—9 of Fig. 7; Fig. 9 is a view similar to Fig. 7, showing a complete tile and fragments of three others, each of these tiles being single-ply; Fig. 10 is an edge view, on a larger scale than Fig. 9, of one of the tiles appearing in the latter figure; Fig. 11 is a top plan view showing the meeting corners of four tiles of a still further modified form; Fig. 12 is a section on line 12—15 of Fig. 11; Fig. 13 is a plan view, on a small scale, of one of the tiles indicated in Fig. 11; Fig. 14 is a plan view of a fragment of flooring composed of rectangular tiles; Fig. 15 is a plan view of a corner of one of the tiles of Fig. 14, partly broken away; Fig. 16 is a view similar to Fig. 14, showing a herringbone arrangement of the tiles; Fig. 17 is a view partly in plan and partly in section of a corner and edge fragment of one of the tiles in Fig. 16; and Fig. 18 is an edge view of so much of the tile as appears in Fig. 17, this figure, as does Fig. 17, showing two keys in the positions which they occupy relatively to this particular tile in the completed flooring. Referring to Figs. 1 to 6 of the drawings, I represents the body portion of a single ply hardwood tile. This may be either a single piece of wood of the desired thickness partially split into narrow strips, as disclosed in my Patent No. 2,018,715, of October 29, 1935, or it may consist of individual strips arranged side by side. Engaged with each edge of the member 1 containing the end grain is a border strip 2 of the same thickness as the member 1. Each of the members 2 contains a narrow longitudinal groove 3 into which extends a tongue 4 formed on the adjacent edge of the member 1. These tongues are glued into the grooves so that the overlying lips on the border members have a backing just as solid as though the grooves were not there, and the objections incident to the use of tongue and groove joints between meeting tiles are not inherent in this construction. The border pieces 2 have projecting portions or noses 5 of isosceles triangles in which the angle at the apex is forty-five degrees. Therefore, when four similar tiles are arranged with corners meeting, as shown in Fig. 2, the four noses produce a complete square. By sanding or cutting away a little from the tip of each nose, as indicated at 6 in Fig. 3, a little square hole is left at the center of the square formed by the assembled nose portions. A slot 7 is cut into each nose portion so as to extend entirely through the same from side to side and lie in a plane parallel to the faces of the tile. These slots are for the purpose of receiving keys to hold adjacent tiles against moving relatively to each other out of their common plane, and the width of each slot depends upon the material of which the keys are made. Thus, in the arrangement shown, the keys 8 are intended to be of thin sheet steel and therefore the slots are quite narrow. Each key is shown as being square, although it may have any other desired shape, as well as having in the center a nail hole 9. If the plate is not thicker than about twenty-four gauge, a nail may be driven through the plate without first forming a hole in the latter. For a thicker plate, it is desirable that the hole be drilled of such a size that the body of the nail will pass freely through the same, while the head of the nail, which should be an ordinary finishing nail, as shown at 10 in

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Fig. 4, may engage with the material surrounding the hole and serve to draw the plate down toward the sub-floor when the nail is finally driven below the surface of the tile by means of a nail set.

It will be seen that the tiles may be quickly laid in place on the sub-floor, the little key plates being inserted as the laying progresses. After the entire flooring is down, or before, if desired, nails are inserted in the holes 5 and driven down into the sub-floor, indicated at A in Fig. 4. Since there is no driving of nails through the tiles or any other work required to be done that might mar the finish, in the laying of the tiles, the tiles may be given their final finish in the factory where they are made. Thus, the flooring requires no subsequent finishing treatment after it has been laid. It will further be seen that because of the absence of the usual tongue and groove joints between tiles, there are no weak lips that crack or break off, but each tile is solid all along of its edges except through the small distances where the key plates are located. If the key plates are a reasonably good fit in the slots and are comparatively thin, there is no danger that the lips at the ends of the border pieces will give way. Although there is a tongue and groove joint between each border strip and the tile to which it belongs, this is a glued joint, and the effect is at least as good as though the wood were sold through the entire thickness of the tile at the joint.

In Figs. 7 and 8 there is illustrated an arrangement in which the tiles 11 comprise two plies each composed of narrow strips 12 corresponding to the body portion of the tile shown in Figs. 1 to 6. The strips in one tile extend transversely of those in the other. These tiles have corner slots 7 to receive keys or plates 5, and the flooring formed thereby may be fastened to the subfloor by nails 10.

In Figs. 9 and 10 there is shown a tile 16 similar to the tile 1 except that instead of having border pieces crosswise of the ends of the strips, there are deep grooves 18 cut into and extending lengthwise of the edge faces that contain end grain; and, fitting into these grooves and held thereby glue, are strips of veneer furlsh 19. The wood grain extending transversely of the grain in the body portion of the tile and necessary to keep the body portion from stretching crosswise of the strips of which it is composed. It will be seen that the slots 17 are shown as being of the same width as and merging into the grooves 15, being therefore somewhat wider than is necessary for the reception of metal plates. With these wider slots, plates of fiber board may be employed. If the fiber board is very hard, the nail holes must be drilled into the same, but if it is desired to use a softer fiber board, the nails can make their own holes as they are driven in.

In Figures 11 to 13 there is disclosed a construction in which the tiles 18 are similar to those in Figs. 1 to 6, except that there are border pieces 19 completely surrounding the divided or slitted body portion 20. Thus, there are no projections at the corners of the tile, but the tile is simply a square or rectangle. The slots 21 are cut into the corners of the border frame and are similar to the slots 17 in Fig. 9.

In Figs. 14 and 15 there is illustrated an arrangement embodying a tile that resembles both the tile of Fig. 1 and that of Fig. 13, although the tile itself is a rectangle instead of a square.
The body portion 23 is similar to that in Figs. 1 and 13, and there are border pieces 24 extending across and united with the ends of the strips forming the body portion. These border pieces are of the same length as the width of the body portion of the tile, so that whenever four tiles are assembled about a common corner point, the border pieces group about that corner and arrange themselves in two pairs of pieces engaging each other along their longitudinal edge, while the two pairs abut against each other at their meeting ends. The border pieces and the strips of the body member are united by a bonded tongue and groove joint as in the first form. Key-receiving slots 25 are cut across the outer corners of the border pieces and are similar to the slots 17 and 21 in Figs. 9 and 11.

In Figs. 16 to 18 there is shown a herringbone arrangement in which the tiles are shown as being similar to the tiles in Fig. 14, except that they are somewhat longer in proportion to their width. In other words, each of these tiles consists of a long body member divided or alized longitudinally and having border pieces 27 interlocked therewith and bonded thereto, as in Figs. 14 and 15. Key-receiving slots 28 similar to the slots 17, 21 and 25, are cut into each corner of each tile. Also, in each long edge of each tile there is cut an additional, short slot 29. The center of the slot in one long edge is spaced apart from one end of the tile a distance equal to the width of the tile, whereas the slot in the opposite long edge is spaced an equal distance apart from the other end of the tile. The result is that when the tiles are set up in herringbone fashion, as illustrated in Fig. 16, corner slots in two tiles register with a slot in one of the long edges of the third tile, so that when the key is in place in such a group of three slots, it holds together three tiles instead of four, as in the arrangements previously described. Keys in the form of circular plates or disks, instead of square plates, are illustrated in connection with this particular form of flooring, but it is of course evident that such disks may be used with the other forms and that plates that are square or of any other desired shapes may be employed in connection with the herringbone type of flooring.

While I have illustrated and described with particularity only the single preferred form of my invention, with a few modifications, 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 claim.

I claim:

A right-angled tile composed of two plies of wood bonded together, the grains in the two plies crossing each other, each ply being at least partially divided into strips about three-eighths of an inch wide extending lengthwise of the wood grain in that ply, and the tile having in the edges, across each corner, a deep slot for the reception of a key plate.

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