

Dec. 1, 1959

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2,914,815

INTERLOCKED FLOORING AND METHOD

Filed Aug. 17, 1955

4 Sheets-Sheet 1

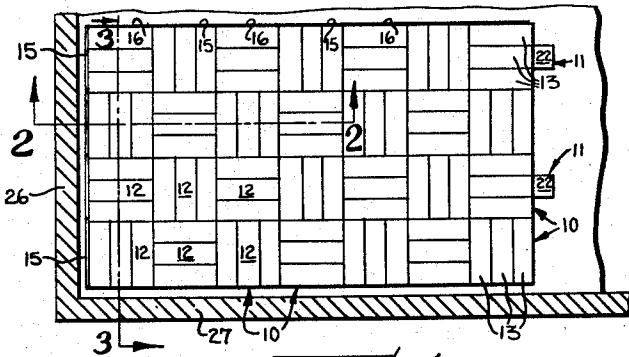


FIG-1

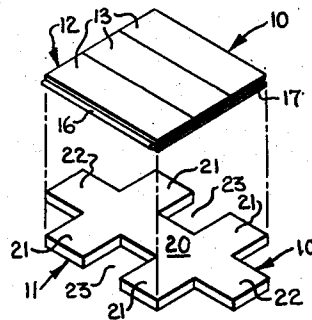


FIG-4

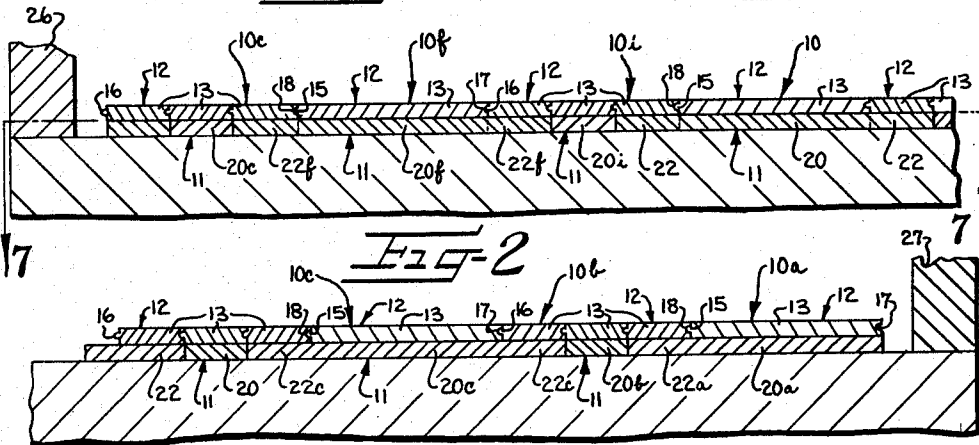


FIG-2

FIG-3

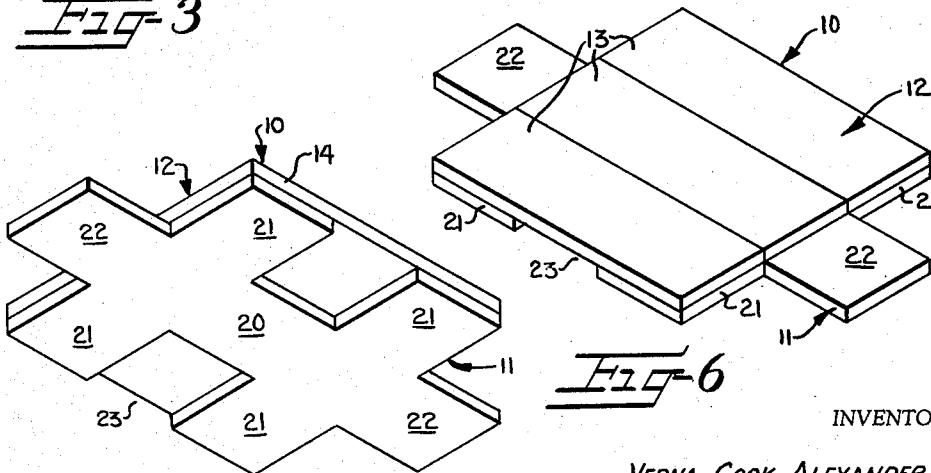


FIG-6

FIG-5

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4 Sheets-Sheet 2

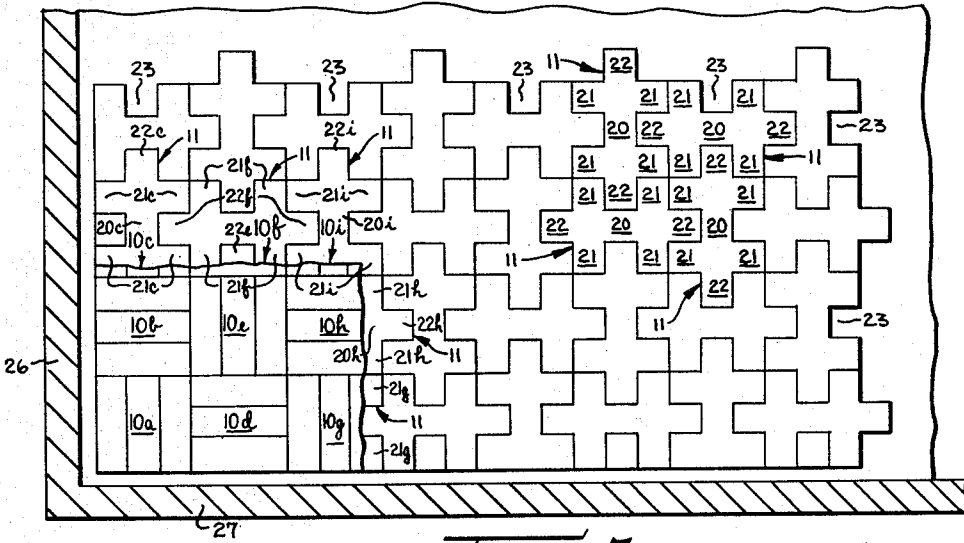


Fig-7

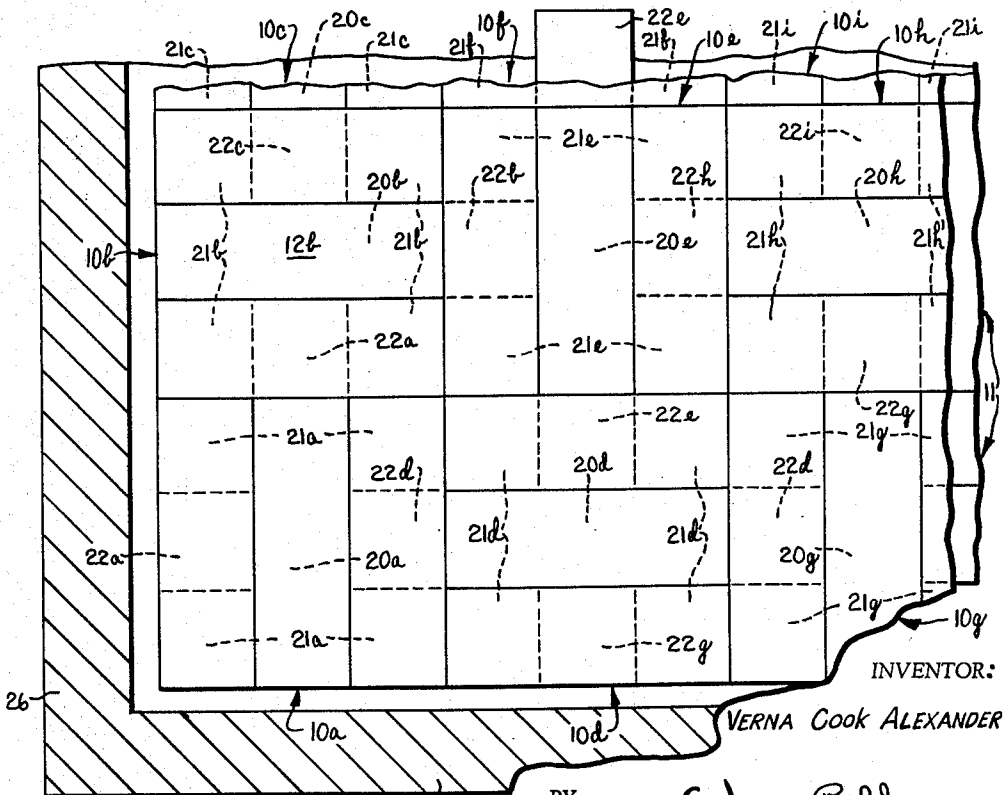


Fig-8

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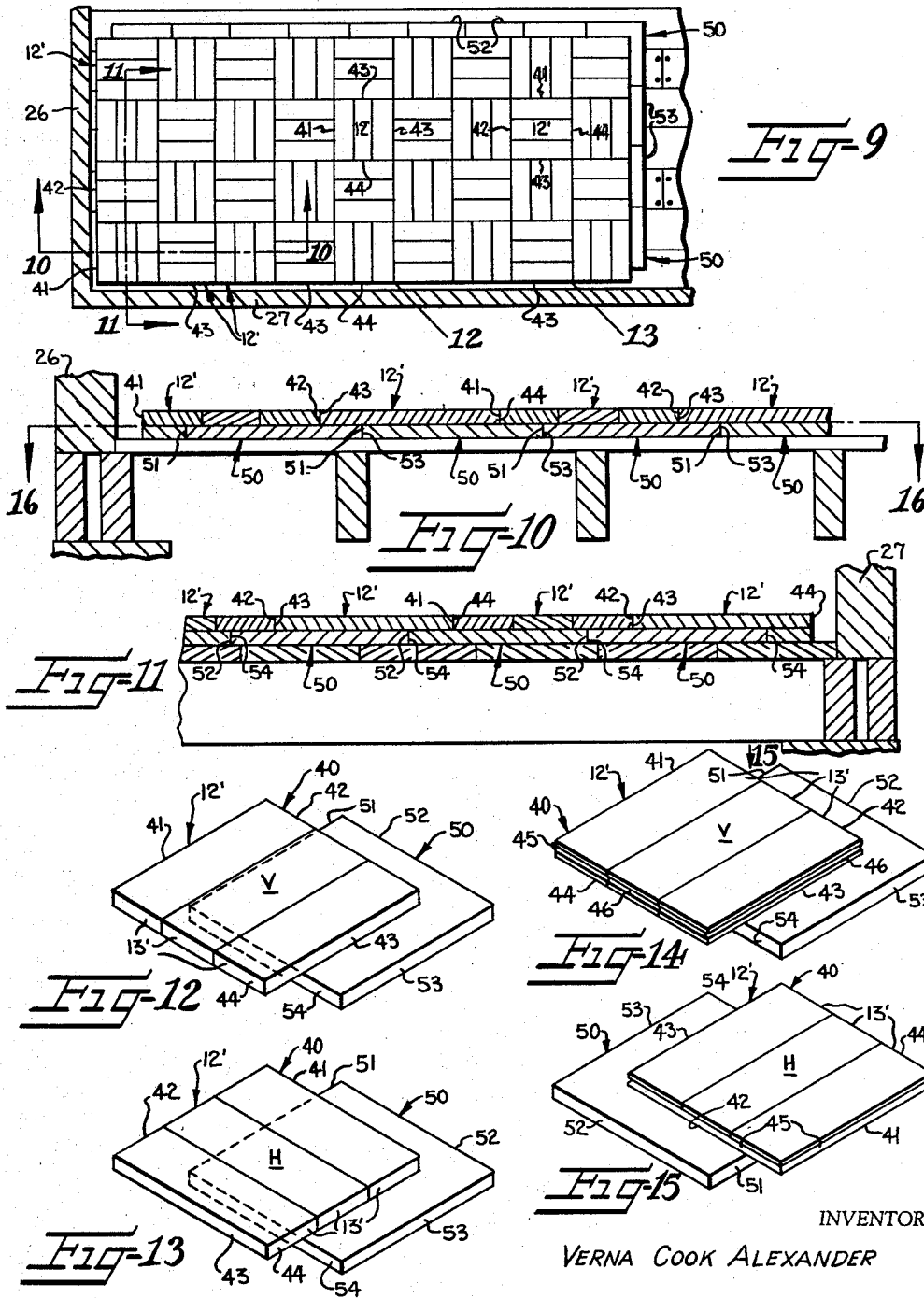
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

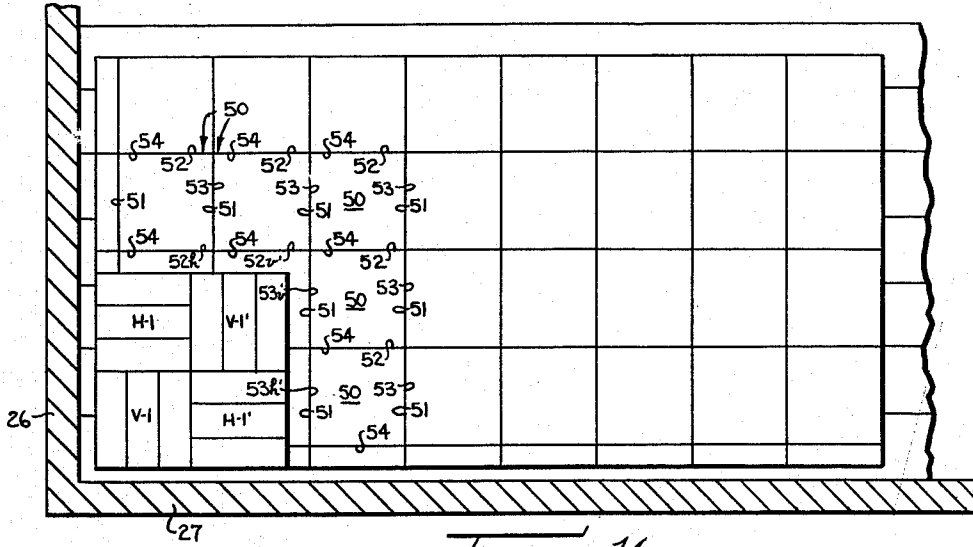


FIG-16

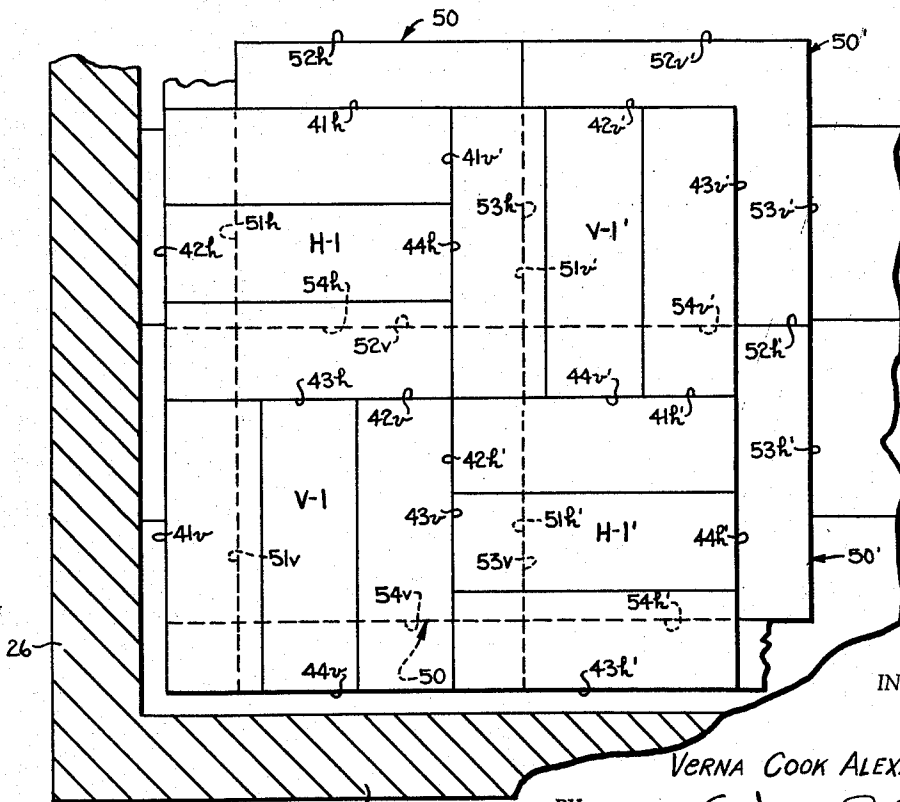


FIG-17

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INTERLOCKED FLOORING AND METHOD

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2 Claims. (Cl. 20—8)

This invention relates to flooring and more particularly to interlocking units capable of being pre-fabricated to facilitate the laying of a floor.

It is an object of this invention to provide units of novel configuration which may be assembled in such a manner that each unit will interlock with adjacent units to provide an integral completed assembly.

It is another object of this invention to provide a flooring made up of individual units, each of which comprises a block made from either a plurality of strips or a single piece of material and a base member secured to the block at the factory, and which units may be subsequently united in a finished flooring in an efficient manner with a minimum of effort.

It is another object of this invention to provide a flooring of the type described which may be prefabricated into panels of any desired size and shape at the factory to facilitate the subsequent laying of the finished floor.

It is another object of this invention to provide a flooring made up of individual units each comprising a block and a base member secured to the block wherein the base member may be of a sufficient thickness to constitute a built in sub-floor, and each of said units being formed in such a configuration that they may interlock with adjoining units to form an integral floor.

It is still another object of this invention to provide a flooring made up of individual units each comprising a block and a base member wherein each of said units are adapted to interlock with adjacent units to form an integral floor, and wherein the base members of said units are formed from a stable material so as to minimize swelling or shrinkage after the floor has been laid. Any tendency of the finished floor to swell or shrink will result in the entire floor moving as a unit rather than opening up in spots as frequently occurs in flooring heretofore in use.

It will be readily recognized by those skilled in the art that it is extremely important that all corners of the blocks of flooring be firmly tied down. Otherwise, sanding of the floor may result in one of the corners of a block popping up with the result that the mastic in which the floor is laid begins to bleed through the floor. There is no satisfactory remedy for this occurrence and when the mastic begins to bleed through the floor the entire floor should be taken up. It is, accordingly, an object of this invention to provide a flooring of the type described wherein the units are interlocked in such a manner that all of the corners of the block of each unit are securely tied down to either the base member of its respective unit or to the base members of adjacent units.

Although the units of the present invention are described herein and throughout the specification as being adapted for a floor, it is to be understood that the invention is also adapted for use in furniture, counters, wall paneling, or any similar product wherein it is desired to integrate a plurality of units in interlocking fashion. Also, in addition to the wood, the units may be formed from any other suitable material such as asphalt tile, vinyl, cork or fiberboard.

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Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which:

5 Figure 1 is a fragmentary top plan view of a room showing a panel of flooring constructed in accordance with one form of the invention and laid on a concrete slab, and showing the walls of the room in section;

10 Figure 2 is an enlarged vertical sectional view taken substantially along the line 2—2 in Figure 1;

Figure 3 is a view similar to Figure 2 taken substantially along the line 3—3 in Figure 1;

15 Figure 4 is an exploded isometric view showing the assembly of a unit of flooring according to one form of the invention and showing the manner in which adjacent sides of the block may be provided with tongue and groove if desired;

20 Figure 5 is an enlarged isometric view looking up at the bottom of a unit assembled as shown in Figure 4 but showing the use of a solid block and omitting the tongue and groove;

Figure 6 is an enlarged isometric view looking at the top of a unit assembled as shown in Figure 4 but omitting the tongue and groove;

25 Figure 7 is a reduced sectional plan view taken substantially along the line 7—7 in Figure 2 and showing a portion of the finished floor in the lower left-hand corner;

30 Figure 8 is an enlarged fragmentary plan view looking at the lower left-hand corner of Figure 7 and showing portions of the base members in dotted lines;

Figure 9 is a view similar to Figure 1 but showing a modified form of the invention laid on a sub-floor;

35 Figure 10 is an enlarged vertical sectional view taken substantially along the line 10—10 in Figure 9;

Figure 11 is a view similar to Figure 10 taken substantially along the line 11—11 in Figure 9;

40 Figure 12 is an enlarged isometric view looking in the direction of the arrow 12 in Figure 9 and showing the assembly of one of the units of Figure 9;

Figure 13 is a view similar to Figure 12 looking in the direction of the arrow 13 in Figure 9 and showing the assembly of another of the modified units of Figure 9;

45 Figures 14 and 15 are enlarged isometric views of the units shown in Figure 9 and showing the manner in which adjacent sides of the block may be provided with tongue and groove if desired;

50 Figure 15 is a view looking in the direction of the arrow 15 in Figure 14;

Figure 16 is a sectional plan view taken substantially along the line 16—16 in Figure 10 and showing a portion of finished flooring in the lower left-hand corner;

55 Figure 17 is an enlarged fragmentary plan view of the lower left-hand corner of Figure 16 showing the base members in dotted lines.

Referring more specifically to the drawings, there will be observed in Figures 1 through 8 one form of the invention wherein the numeral 10 broadly indicates an individual unit of the improved flooring. Each of the units 10 comprises a base member 11 and a block 12, the block 12 being destined to become wearing surface of the floor.

60 The block 12 may be made up of a plurality of individual strips 13 or may comprise a single solid piece of wood or other suitable material such as indicated at 14 in Figure 5. If strips of flooring such as indicated at 13 are used to make up the block 12, the strips may be formed from waste strip flooring or plank flooring suitably secured together in blocks, or may be formed from edge or end grain material which has been laminated

in $\frac{3}{4}$ inch strips and cut into blocks of a desired size and thickness.

Although it is the base 11 of each unit 10 which interlocks with adjacent units to hold the finished flooring together, the block 12 may, if desired, be provided with integral wood tongues 15 and 16 along two adjacent sides of the block for engagement respectively with complementary grooves 17 and 18 in adjacent blocks when assembled to form a panel. However, the tongue and groove is not necessary to the invention and where waste strip flooring is used that already has the tongue and groove on it, the tongues may be cut off the outside edges of each block unit before assembling the blocks, or they may be left on as shown in the drawings.

It will be appreciated from the foregoing and following descriptions that the nature of the wearing surface which may be made up from blocks 12 is not material to the practice of the present invention, and it should be noted that although the invention is particularly adapted for use in laying parquet flooring that it may be satisfactorily employed in the laying of other types of flooring such as strip flooring by merely securing strips of flooring to prefabricated panels of the base members 11 at the factory and subsequently assembling these panels at the site to form a finished floor.

The base members 11 are preferably formed from laminated or any other suitable material such as cork or wood waste which has been ground up and manufactured into a hardboard and cut to a desired uniform thickness to lessen the tendency of the finished floor to become misshapen through swelling, shrinkage or warping. The thickness of the base members depends upon the type of floor to be laid. For example, the base members 11 may be of sufficient thickness to permit the base members 11 to serve as a built in sub-floor. If the improved flooring of the present invention is to be used in connection with a conventional sub-floor such as disclosed in Figures 10 and 11, or if the improved flooring is to be laid directly upon a concrete slab such as shown in Figures 2 and 3, the width of the base members 11 may be approximately equal to the width of the block 12, as shown in the drawings.

As most clearly seen in Figures 4 and 5 each of the base members 11 of the form of the invention shown in Figures 1 through 8 includes a single centrally disposed longitudinal member or rib 20 having a plurality of longitudinally disposed projections 21 extending transversely therefrom in opposite directions. Although the base members 11 are shown in the drawings as having only two transverse projections 21 on either side of the longitudinal rib 20, it is to be understood that the base members 11 may be elongated by lengthening the ribs 20 and providing a larger number of equally spaced transverse projections 21. In any event the endmost projections 21 are spaced inwardly from the ends of the rib 20 to define tongues or projections 22 extending axially from the rib 20. The transverse projections 21 are spaced apart a distance at least equal to the width of the tongues 22 to define notches or grooves 23 therebetween.

The blocks 12 are shown in the configuration of perfect squares so as to coincide with the area encompassed by the transverse projections 21 on the base members 11. However, if the base member 11 is elongated and additional projections 21 are added the size of the block 12 should be increased correspondingly so that all of the central portion of the rib 20, the projections 21, and the notches 23 therebetween may be covered by the block 12, leaving only the tongues 22 protruding from beneath the block 12. The blocks 12 are firmly secured to the base members 11 in the manner shown in Figure 4 by a suitable bonding agent under pressure to form an integral flooring unit 10 as shown in Figures 5 and 6.

A plurality of units 10 may be assembled in interlocking relation to each other to form a panel such as shown in Figure 1. A plurality of such panels may be assembled at the factory and subsequently erected in

interlocking relation to each other at the site to form the finished floor, or the individual units may be assembled at the site to form the finished floor. In either case the units are assembled in an identical manner and for purposes of illustration the manner in which the units are assembled at the site will be explained.

Portions of the slab or sub-floor on which the flooring of the present invention is to be laid are first coated with a suitable mastic or adhesive in which the individual units are laid to tightly bond the units to the slab. It will be observed in Figures 7 and 8 that unit 10a has been positioned in the lower left-hand corner of a room so that its longitudinal rib 20a extends vertically in the drawings and in spaced parallel relation to a wall 26 of the room. The tongue 22a of the units 10a adjacent wall 27 is sawed off flush with the lower edges of the transverse projections 21a so the unit 10a may be placed closely adjacent wall 27. The entire floor is preferably spaced a slight distance from the walls of the room to provide for expansion and prevent buckling. This space between the peripheral edges of the finished flooring and the walls of the room is subsequently covered by a moulding, not shown.

Unit 10b is then positioned immediately above unit 10a so its longitudinal rib 20b extends from left to right in the drawings. The tongue 22b of the unit 10b adjacent the wall 26 is sawed off as was the tongue 22a of unit 10a adjacent the wall 27. The tongue 22a which extends upwardly from the unit 10a is coated with a suitable adhesive immediately prior to the unit 10b being moved into position. The unit 10b is so positioned relative to the unit 10a that the upwardly extending tongue 22a on unit 10a mates with the cavity formed beneath the block 12b by the notch 23 between the lowermost transverse projections 21b on unit 10b. In this manner the lower surface of the block 12b of unit 10b which extends over notch 23 is adhesively secured to the tongue 22a of unit 10a.

Unit 10c is then placed immediately above unit 10b so rib 20c of unit 10c extends vertically in alignment with the rib 20a of unit 10a. The lowermost tongue 22c of unit 10c is coated with suitable adhesive and fitted in the cavity between the uppermost transverse projections 21b and beneath the block 12b of unit 10b. This process is repeated until the left-hand row of units has been laid.

The second and subsequent rows are laid in an identical manner so that the tongues of the units in one row fit within the cavities of adjacent units in the manner described. For example, in Figure 8, the tongues 22d of unit 10d fit within the cavities of adjacent units 10a and 10g, while the cavities of unit 10e are engaged by tongues 22b and 22h of units 10b and 10h respectively.

The tongue 22a which has been sawed off the lower end of unit 10a may be positioned in the notch or cavity between transverse projections 21a adjacent wall 26 and glued in place. In a like manner all of the tongues which have been sawed off adjacent the walls of the room form ready-made plugs for the cavities adjacent the walls. For example, the sawed off tongue or projections 22b has been inserted in the cavity between the projections 21d of unit 10d adjacent wall 27 (Figure 8).

Modified form

Referring now to the form of invention disclosed in Figures 9 through 17 it will be observed in this instance that the floor is made up of individual units designated at 40 and that each unit comprises a block 12' which may be identical to the block 12 heretofore described. Since this form of the invention is also particularly adapted for parquet flooring, the block 12' has been shown in the drawings as made up of individual strips of wood 13', although it is to be understood that the block 12' may likewise be formed from a solid piece such as indicated at 14 in Figure 5 and as described in connection with the

first form of the invention. In any event the block 12' is defined by side edges 41, 42, 43 and 44.

If desired, the block 12' may be provided with tongues 45 along the adjacent side edges 41 and 42 adapted to mate with complementary grooves 46 along the adjacent side edges 43 and 44, although this is not necessary to the invention since the units are interlocked by other means.

The unit 40 also includes a base member 50 which is preferably formed from a single piece of plywood or other suitable material such as mentioned in connection with the form of invention heretofore described. Each base member 50 is of the same configuration and dimensions as the block 12' and is defined by side edges 51, 52, 53 and 54. Base member 50 is adhesively secured under pressure and in off set relation to the under surface of a block 12' to form a unit 40.

Referring to Figures 12 and 13 there will be observed units 40 identified by the letters V and H, respectively. The units V are formed by securing the block 12' and base member 50 together in such a manner that the strips 13' of the block 12', or grain thereof in the event the block 12' comprises a solid piece of wood 14, extend vertically in the drawings when the units 40 are assembled. The unit H is so formed that the strips 13' extend horizontally in the drawings. Thus the base member 50 and block 12' of unit V are secured together in off set relation so that the side edges 52 and 53 of the base member 50 project outwardly beyond the side edges 42 and 43 of the block 12'. Since the block 12' and base member 50 are of the same dimensions, this will result in the side edges 41 and 44 of the block 12' projecting outwardly a like distance beyond the side edges 51 and 54 of the base member 50.

Unit H differs from unit V in that the block 12' of unit H has been rotated a quarter of a turn and secured to its base 50 so that side edges 52 and 53 project from beneath edges 41 and 44. Thus, the grain of the wood in one block runs in right-angular relation to the grain of the wood in the blocks of adjacent units. This arrangement is readily apparent in Figure 9.

The units 40 may be assembled into panels at the factory or may be assembled and laid in a suitable mastic at the site to form the finished flooring. In either event, the units are assembled in interlocking engagement by first positioning the units 40 in such a manner that the side edges 52 of the base members 50 in both of the units V and H extend upwardly in the drawings and so that the side edges 53 extend to the right in the drawings (Figures 16 and 17).

The exposed upper surfaces of the base member 50 defined by the side edges 52 and 53 are then coated with a suitable mastic or glue and, as most clearly seen in Figure 17, the side edge 52v of the base member of unit V-1 is slid within the cavity beneath the side edge 43h of the block of unit H-1 so that the edge 52v abuts the edge 54h on the base of unit H-1. This process may be carried on until the left-hand vertical row of units is laid. The next adjacent row to the right may be laid by starting with the block H-1' in Figure 17. The side edge 42h' of the block of unit H-1' is positioned over the exposed upper edge 53v of the base of unit V-1 to thereby unite the under surface of the block on the unit H-1' to the upper surface of the base of the unit V-1. The unit V-1' is then positioned adjacent the units H-1 and H-1' in Figure 17 so that the edges 41v' and 44v' on the block of unit V-1' extend over edges 53h and 52h' and abut the edges 44h and 41h' of the units H-1 and H-1', respectively. It should be noted that a portion of the block of unit V-1' extends over a corner of the base 50 of unit V-1, which corner is defined by edges 52v and 53v on the base of unit V-1.

This arrangement results in the block of the unit V-1' being firmly united to the bases of the units H-1, V-1 and H-1'. This process may be carried on until the

completed panel as shown in Figure 9 has been erected, or until the complete floor has been laid.

The protruding edges on the base members of the units which define the marginal edges of the floor opposite the walls 26 and 27 may be sawed off so the blocks of said units may be positioned closely adjacent the adjacent walls. These sawed off projections form ready-made inserts to fit within the cavities beneath the marginal edges of the finished flooring blocks adjacent the walls 26 and 27.

It is to be understood that although the units 10 and 40 in both forms of the invention have been described as comprising base members 11 secured to blocks 12 and base members 50 secured to blocks 12', respectively, that each of said units 10 and 40 may be fashioned from a single piece of material in the configuration shown. Such a construction has the advantage of eliminating the step of securing each block to its respective base member.

It is thus seen that there is provided an improved interlocking pre-fabricated floor which may be easily and readily assembled into pre-fabricated panels to facilitate the laying of the floor at the site, or in the alternative, may be laid in units at the site if only a small area is to be laid.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a flooring comprising a plurality of interlocked units, each of said units including a block and a base, said block being laminated to the base and defining the wearing surface of a portion of the flooring, the base in each of said units including a single centrally disposed longitudinal rib and a plurality of projections spaced longitudinally along said rib and extending transversely therefrom in opposite directions, the rib in each of said units extending outwardly beyond opposite edges of the block to define tongues, and the transverse projections on either side of the rib being spaced apart a distance equal to the width of the tongues whereby the tongues on one unit may be positioned between transverse projections on adjacent units to interlock said units.

2. In a flooring comprising a plurality of interlocked units, each of said units including a wearing surface and a base, the base in each of said units including a rib and a plurality of projections spaced longitudinally along said rib and extending transversely therefrom in opposite directions, the rib in each of said units extending outwardly beyond opposite edges of the block to define tongues, and the transverse projections on the rib being spaced apart to define tongue receiving openings whereby the tongues on one unit may be positioned between transverse projections on adjacent units to interlock said units.

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