

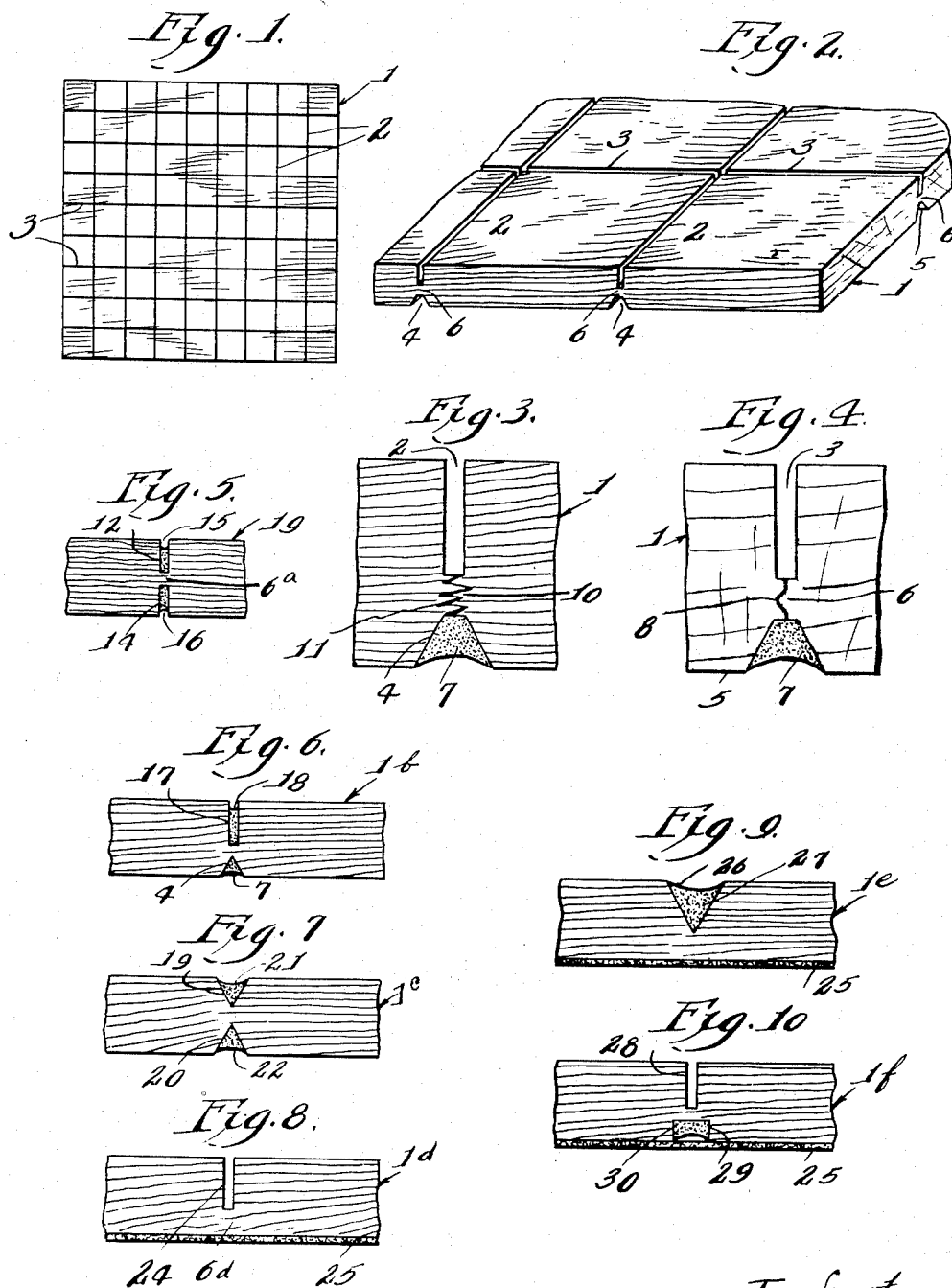
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METHOD OF MAKING A FLEXIBLE WOOD FLOOR COVERING

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METHOD OF MAKING A FLEXIBLE WOOD
FLOOR COVERING

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2 Claims. (Cl. 144—309)

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The present invention relates to floor coverings of the parquet type which are composed mainly of thin wood boards having their grains extending approximately parallel to their broad faces; and it has for its object to produce a material of this kind that is greatly superior to those of which I am aware.

Viewed in various specific aspects, some of the objects of the invention may be said to be the production of a floor covering that shall be so flexible that it can properly adjust itself to irregularities in the contour of a surface on which it is laid; that will not warp or bulge upon taking up moisture and so create an unsightly appearance and loosen the bond with the supporting surface as often happens with prior floor coverings; that may be manufactured in a simple manner and at a reasonable cost; that can be laid quickly and easily; and that will not change in appearance until worn so thin that it must be replaced anyway.

The various features of novelty whereby the present invention is characterized will hereinafter be pointed out with particularity in the claims, but, for a full understanding of the 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 view of the top or wearing face of a floor covering tile embodying the present invention; Fig. 2 is a perspective view, on a much larger scale, of a fragment at one corner of the tile in a partly completed state; Fig. 3 is a view that shows, on a still larger scale, a small fragment of the edge facing the observer in Fig. 2, with the tile in a completed state; Fig. 4 is a view similar to Fig. 3, but showing an edge that is transverse to the wood fibers, instead of parallel thereto as in Fig. 3, namely the edge at the right in Fig. 2; and Figs. 5, 6, 7, 8, 9 and 10 are edge views of five modified forms of tile, only a small fragment being shown in each instance.

In accordance with my invention the board is cut into deeply, from one or both faces, to divide it into little squares or blocks held together by a relatively thin web in the form of a grill. After this has been done there is applied to the board a material that will hold the little squares or blocks together even though the connecting web be broken down or ruptured. The board is then flexed, at least along the cuts that are transverse to the grain, until the web is broken along the line of each cut, leaving the board flexible and with all its parts tied together.

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Referring to Figs. 1-4, 1 represents a wood board that may be from one-tenth to two-tenths inch thick and of any desired size and shape. I prefer to use tile-like square boards, which should neither be too large nor too small—six, nine or twelve inch squares being satisfactory for most purposes; they being adapted to be laid so as to stagger or alternate the directions of the grains of successive boards in the normal manner.

In Figs. 1-4 there are in the wearing face two groups of parallel grooves, the grooves 2 of one group being at right angles to the grain and to the grooves 3 of the other group; grooves 3 thus being parallel to the grain. The grooves need not be more than one-fiftieth inch wide and preferably extend at least half way through the wood on the wearing face side. In the underside of the board are two additional groups of grooves, 4 and 5, each of which lies directly under and parallel to the corresponding groove in the upper side of the board. Grooves 2 and 3 preferably have parallel side walls, but grooves 4 and 5 may be of any desired shape, although they should be fairly wide. In the arrangement shown, the grooves 4 and 5 are of inverted V shape in cross section so that their open sides are quite wide.

All of the grooves are made by sawing or cutting in a manner to remove the wood that originally occupied the spaces constituting the grooves. Consequently there is no compressed wood adjacent to the grooves to swell and cause trouble when the wood takes up moisture; and the little web portion 6 of the board that separates the grooves on one side of the board from those on the other side is not compressed in the process of manufacturing the tile, but remains in a virgin state. For this reason, after a tile has been bonded to a floor, and the wood tends to swell through taking up moisture, the web elements compress readily and compensate for the swelling.

After the board has been cut to shape and grooved as shown in Fig. 2, the grooves 4 and 5 are at least partially filled with an adhesive 7 that remains elastic after setting. This adhesive, which may have as a base rubber or synthetic rubber, forms an elastic grill. Consequently, the board may be divided or partially divided into little square sections by bending it sharply to rupture the connecting webs between the latter; the elastic grill serving to tie the whole into a single flexible unit. Inasmuch as the web elements between grooves 3 and 5 is thin and the grain there is generally parallel to these grooves, the tile is rendered fairly flexible without rupturing these

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web elements. Such is not the case with the web elements between grooves 2 and 4, in which the grain extends crosswise of the grooves, and which, if left unbroken, are stiff and prevent adjustment of these components of the tile to an uneven floor.

When the tile is ruptured parallel with the grain of the wood, namely, along the lines of grooves 3 and 5, the wood simply splits, as indicated by the irregular line 8 in Fig. 4. Usually the wood grain is not straight but lies at a slight angle to the direction of the grooves. Therefore, rupturing in the manner just stated usually does not result in complete separation of the wood on one side of a groove 3 or 5 from that on the other side, some fibers extending continuously across the line of rupture and serving as ties, as in my Patent No. 2,018,712.

When the ruptures are made along lines at right angles to the general direction of the wood grain, namely, in the web portions that separate the bottoms of grooves 2 from the bottoms of grooves 4, complete separation of the wood occurs in the sense that the parts of the wood on opposite sides of a groove are no longer connected together by any substantial wood element integral with both of such parts. On the other hand, the meeting edges at the breaks are left jagged, little spikes fitting into complementary pits; thereby interlocking meeting squares or blocks against relative movements at right angles to the plane of the tile. The elastic grill holds these jagged edges in mesh so that, while the board or tile possesses the requisite flexibility, the individual small squares or blocks cannot be bodily displaced out of the plane of the board or tile. This is important, as it would be highly objectionable if little blocks here and there protruded above the plane of the wearing face of the floor covering as a whole. The meeting and intermeshing jagged edges are shown at 10 and 11 in Fig. 3.

My improved tiles, when bonded to a floor, will retain indefinitely the character of wearing face that it had when first laid down. The little blocks are preferably not more than one inch to one and a half inches to a side, and so cannot expand enough upon absorbing moisture when in use on a floor to close the slots or grooves 3. Therefore the wood can expand freely, meeting only the slight resistance of the thin web; the web being easily compressed by the powerful forces to which the expanding small squares subject it. In order that the wood in the web may yield adequately under expanding forces exerted by the component squares or blocks, it should not be thicker than about one-fourth the thickness of the wood in the uncut areas. Just as the wearing surface is not disturbed by increase in the moisture in the wood so, also, does the said surface remain unchanged in appearance when reduction in thickness of the tile occurs through wear; the uniform width of grooves 2 and 3, from top to bottom ensuring that the width of the gaps between meeting tiles does not vary, for a given moisture content, before the wood has been worn to one half of its original thickness.

As heretofore stated, the style of grooving may be varied. Thus, in Fig. 5, there is shown a fragment of a tile 1^a that has grooves of the same kind in both faces; all of the grooves 12 in the top face and the grooves 14 in the bottom face being alike, having sides that are parallel, and being of the same depth and width. The thin web 6^a is therefore located midway between the

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faces of the tile. All of the grooves are at least partially filled with elastic adhesive of the type heretofore described, so that the blocks are set into two parallel grills; 15 representing an element of the grill in the upper set of grooves, and 16 being an element of the grill in the grooves cut into the under face.

In Fig. 6 the grooves and the grill on the under side are the same as in the first form, but the grooves 17 in the upper face are like the grooves 12 and 14, only a little deeper. Only grooves 17 contain a grill, 18 representing an element of the same; the grill, of course, being elastic.

In Fig. 7, tile 1^c has grooves 19 and 20 in the top and bottom faces, respectively, they being V-shaped and each containing an elastic grill; 21 being an element of the upper grill and 22 being an element of the lower grill.

In Fig. 8 there is illustrated a construction wherein the elastic grill is omitted. The tiles 1^d have in the upper side grooves 24 similar to grooves 2 and 3 in the first form, although somewhat deeper to bring the thin web 6^d adjacent to the under face. A flexible backing 25 is bonded to the under face of the tile to hold the small squares or blocks together after the wood is ruptured as heretofore explained.

In Fig. 9 there is illustrated a tile in which a combination of flexible grill and flexible backing is used. In the top face of tile 1^e are deep, rather narrow V grooves 26 that contain elastic bonding material 27, whereas a flexible backing 25, similar to the backing in Fig. 8, is bonded to the under side.

In Fig. 10 tile 1^f has deep narrow grooves 28 in the upper or wearing face and wider, shallower grooves 29 in the under face: an elastic grill 30 being arranged in the grooves. In this instance there is also a flexible backing 25 as in Figs. 8 and 9. It will be noted that the tile in Fig. 10 is much the same as that in Figs. 2-5, with the addition of a backing.

In Figs. 5-10 the thin webs are shown intact as they are in Fig. 2. Therefore this group of figures shows the tiles at a stage of manufacture that lies between the stages represented by Figs. 2 and 4, respectively.

It will be seen that after a board has been completed by either of the methods described, the little individual tiles are held together by yieldable material bonded to the wood and crossing planes that are at right angles to the faces of the board and extend lengthwise of and intersect the grooves.

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

I claim:

1. The method of producing a floor tile, which comprises removing enough wood fibers by cutting through at least one face of a thin wood board along two groups of parallel lines extending from edge to edge of the board, with the lines of one group extending across the wood grain and crossing the lines of the other group, to form grooves of substantial widths and a reduction in thickness of the board to a web-like form along such lines, applying to the board, transversely of and crossing planes that are at right angles to said face and extend lengthwise of and

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intersect said grooves, a yieldable material to tie together the wood sections on opposite sides of each of the latter grooves, then bending the board to break it along the cuts that extend across the grain of the wood and thereby create jagged intermeshing meeting edges along the bottoms of such cuts.

2. The method as set forth in claim 1, wherein cuts are made in both faces of the board, with each cut in one face being directly opposite a corresponding cut in the other face, and wherein enough of the yieldable material is placed in the grooves in at least one face to cause such grooves to be filled at least partially with a bonding material that is elastic when it sets.

ARMIN ELMENDORF.

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The following references are of record in the file of this patent:

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