

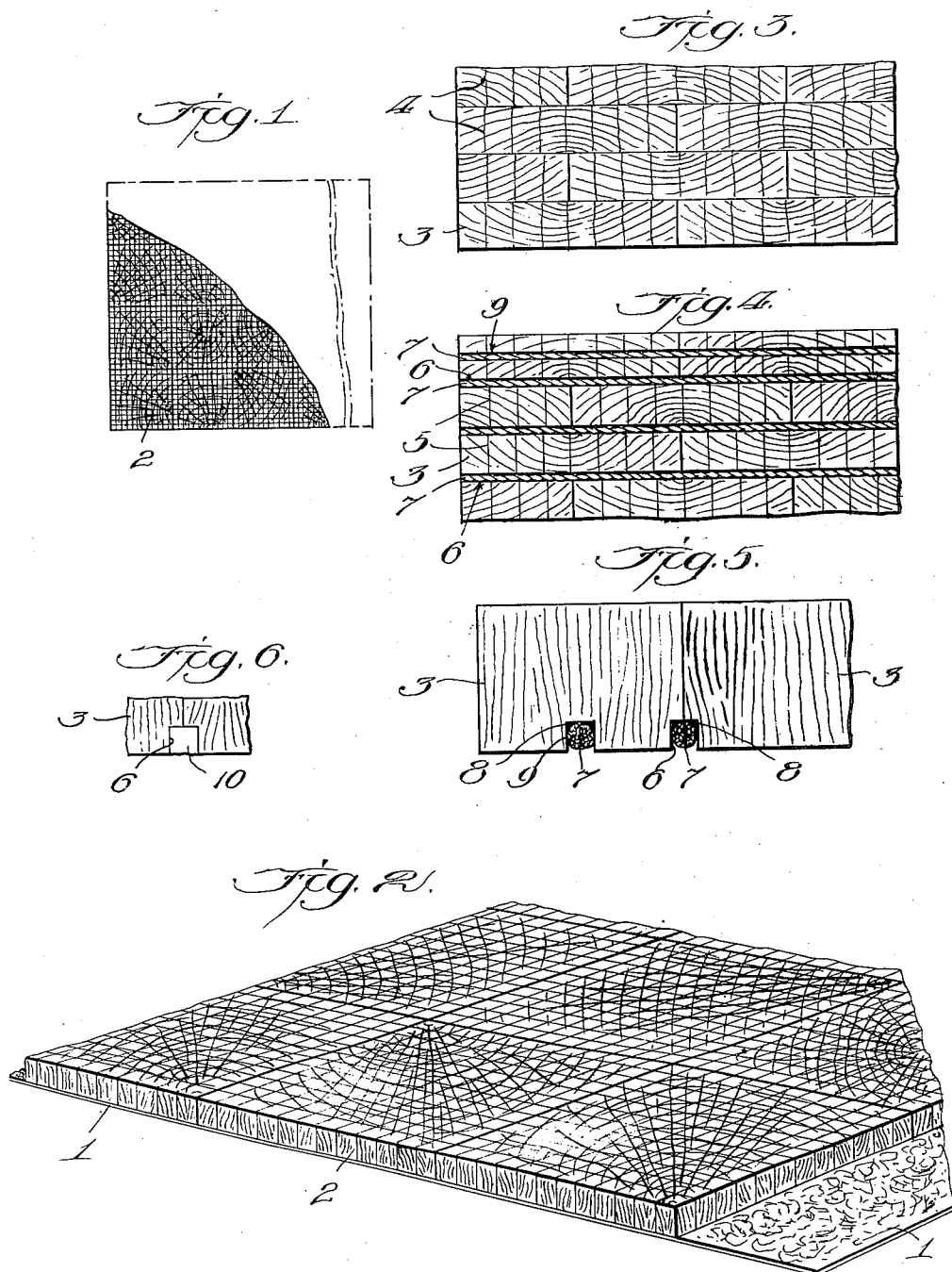
May 31, 1938.

A. ELMENDORF

2,118,841

FLEXIBLE END GRAIN WOOD FLOOR COVERING

Filed Sept. 7, 1935



Inventor:
Armin Elmendorf,
by Wm. F. Freudenreich, *Att'y*

UNITED STATES PATENT OFFICE

2,118,841

FLEXIBLE END GRAIN WOOD FLOOR
COVERING

Armin Elmendorf, Chicago, Ill.

Application September 7, 1935, Serial No. 39,603

6 Claims. (Cl. 20—75)

For some purposes it is advantageous to provide floors or floor coverings of wood, in which the wearing face contains end grain. This necessitates that the wood be in the form of blocks in which the grain runs in the vertical direction or approximately so. All end grain flooring on the market at the present time is very thick, generally from three to four inches. While the purpose of giving to this type of flooring so great a thickness is partly to provide for a great amount of wear, if wear were the only factor to be considered, the blocks could be made much thinner. The main reason for the great height or thickness of the blocks is that if the vertical dimensions of the ordinary blocks are reduced materially below three or four inches, trouble follows by reason of the fact that the flooring bulges or rises when it becomes wet. This objection becomes more accentuated as the blocks become thinner.

If a thick block be simply sliced into thin layers, there immediately arises the difficulty that these large thin pieces of wood are very susceptible to warping, thus rendering their use impracticable.

In many places where end grain flooring would otherwise be very desirable, it cannot be used because of the great thickness of the commercial types. Therefore, if the layer of end grain wood can be made reasonably thin, having a thickness of, say, an inch or less, the field of usefulness thereof will be greatly enlarged.

The object of the present invention is to make it possible to provide end grain in the wearing face of a floor by using a comparatively thin layer of wood.

Where only a comparatively thin layer of wood is required, so that the weight per unit of area is not great, it is feasible to manufacture or preform the material as a floor covering which may be fabricated in sheets or panels of any desired size and be delivered on the job in that condition.

Therefore, viewed in one of its aspects, the present invention may be said to have for its object to produce a simple and novel sheet floor covering that presents wood end grain in its wearing face.

Such a floor covering may be laid quickly and with little cost for labor. Therefore, since, so far as I am aware, no end-grain floor covering adapted to be laid in the manner of linoleum or like floor coverings, has heretofore been available; the present invention may be said to have for its object to produce a material having in its wearing surface wood end-grain, which material may be laid in this simple manner.

I have discovered that my purpose may be accomplished by employing blocks that not only are low or thin, to give to the floor covering the desired thinness, but which are otherwise small. In other words, while the length and breadth of the end faces of a block may to some extent exceed the height of the block, they are preferably less or, at least, no greater. Thus, in the preferred embodiment of my invention, the widths and lengths, across the grain, of the thickest or tallest blocks, for example, as well as their heights, are all less than one inch.

The little blocks may be produced in various ways. Thus, a large thick slice of wood having end grain in its broad faces may be split or sawed into small blocks. The blocks may also be made from boards sawed into lengths of one inch or less, particularly short board ends that at present have little commercial value. Thus, board ends of, say, ordinary one inch board material may be cut into lengths corresponding to the heights of the blocks to be formed. These short pieces are then split into narrow sections. The splitting of the wood into sections, instead of sawing it, avoids waste and, if it be done from the face that is to be on the bottom in the completed floor covering, then the joints between each row of little blocks corresponding to the width of the board from which they were fashioned are practically invisible in the final product.

By keeping together each group of little blocks the design of the grain in the piece of wood which was subdivided to produce them is retained, and very attractive designs may be attained in the faces of the floor coverings. For example, if the blocks are formed out of flat-sawn boards, which in end grain disclose sections of the rings in the wood, the blocks may be arranged so that these ring sections produce an effect of interlocked links as in a chain. With quarter-sawn wood entirely different effects may be created. Also, blocks from both flat-sawn and quarter-sawn boards may be intermingled to create still different types of designs.

In preparing my improved floor covering I secure the little blocks together in the form of a flexible sheet or panel. The blocks are placed close together, preferably in contact with each other, but no adhesive is placed between them. Consequently, a sheet or panel, when it is laid on an uneven floor or subfloor remains sufficiently flexible to cause it to conform to the contour of the surface on which it rests. The covering is preferably glued to the underlying floor or subfloor by means of a suitable adhesive. After the

floor covering has been laid, water may be poured upon the same without causing it to rise or bulge. When the water evaporates and the wood again shrinks, the shrinkage is distributed between many joints that are close together. Consequently, no joint ever opens up appreciably, and as a consequence, the joints are never conspicuous as they are in the case of the usual large blocks.

The little blocks may be held together in different ways. For example, they may be glued to a flexible backing which will usually be felt, preferably felt that has been saturated to render it waterproof. On the other hand, the under face of an assembly of blocks may be provided with properly located grooves containing suitable bonding and tie means. Thus, the grooves may be filled, or partially filled, with an elastic adhesive compound, such as rubber latex; or strong cords or other flexible tie elements may be laid in the grooves and be glued in place.

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 the objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a top plan view showing in full lines a fragment constituting one corner of a rectangular panel made from thin blocks subdivided into many little blocks, the outline of the remainder of the panel being indicated in broken lines; Fig. 2 is a perspective view, on a much larger scale, of a smaller fragment of the same panel; Fig. 3 is a view, similar to Fig. 1, on a much larger scale, showing a material made from subdivided boards or board ends; Fig. 4 is a bottom plan view of the panel fragment shown in Fig. 3; Fig. 5 is an edge view, on a still larger scale, showing the endmost blocks of the first two rows at one margin of the panel of Figs. 3 and 4, and Fig. 6 shows a modification.

Referring to Figs. 1 and 2 of the drawing, 1 is a sheet of felt or other suitable flexible material which constitutes a backing for the wood wearing elements which are little blocks 2 placed close together across the length and breadth of the backing and bonded to the latter by means of any suitable adhesive. These blocks should be not more than one inch high and are preferably of lesser length and width although they may be longer or wider. The grain of the wood in all of the blocks is so disposed that the upper or wearing face of each block contains end grain.

The large squares into which the wearing face of the panel is divided by heavy lines may be said to indicate or represent the size of an ordinary floor block, whereas the small squares formed by the lighter lines represent the tops of the little blocks into which it might be said a slice from one of the large blocks has been divided. It will be seen that if the little blocks into which large thin blocks have been divided are kept in their original positions relative to each other, the end grain design of the original thick blocks or beams will be retained in the floor covering; thus giving to the covering an attractive design.

In order to cover a floor or other foundation, the necessary number of panels are laid thereon, edge to edge, and are preferably bonded to the same. The flexibility of the material causes it to conform to the contour of the supporting surface so that no hollows are left below the covering.

In the arrangement shown in Figs. 3-5, the little blocks 3 are produced by splitting short pieces of boards of any desired width; the length of such pieces being equal to the height of the blocks desired. In Fig. 3 the straight lines that run lengthwise of the sheet represent the planes of the edges of the original boards, whereas the more or less irregular lines 4 running substantially parallel to such straight lines represent the lines on which the individual blocks are separated from each other in the plane of the top of the panel. In Fig. 4 the lines 5 corresponding to the aforesaid irregular lines in Fig. 3 are shown as being straight, representing cuts by chisels or other blades that were caused to penetrate far enough into the wood to split it through. By producing the blocks in this way any marring effect that may be caused by the cutting tools will be on the under side of the panel and will not be visible after the covering has been laid.

In this latter form of flooring the blocks are shown as being held together by means other than a backing sheet. Grooves 6 are cut into the under face of the block assembly and into these grooves are laid strong cords 7 or other suitable flexible ties; the ties being bonded to the wood by suitable adhesive 8. The grooves may conveniently run along the planes of those faces of the blocks which constituted the broad faces of the original boards; being therefore parallel to each other and extending across the length or width of the panel. In the arrangement shown one half of each groove lies in one of two adjacent rows of blocks and the other half in the other row. Consequently, each cord is bonded to two rows of blocks and ties them together as well as tying together the blocks in each of the two rows.

If desired, a groove 9 may be cut across each endmost row of blocks and be provided with a tie member 7, so that the end rows shall each be held by two ties as are the intermediate rows.

In laying this latter type of floor covering it is preferably securely bonded to the underlying surface. Then, as in the case of the other type, even though water be poured on the covering, it will dry out without being in any way damaged.

Instead of placing cords or the like in the grooves in the construction shown in Figs. 3-5, the grooves may simply be filled with a tough elastic adhesive material, 10, such as a plastic material containing rubber latex, as indicated in Fig. 6.

It will thus be seen that I have produced a simple and novel end grain floor covering material which can be economically produced in sheet or panel form and the laying of which on a floor or subfloor can be done easily at little cost; which makes possible attractive floor designs; which automatically adapts itself to the contour of the underlying supporting surface; which will not warp or bulge while in use; and which is thin enough to open many new fields of use for wood end grain floors. For example, my improved material, having a thickness as great as three quarters of an inch, can be laid over old floors in completed buildings, since door and base board clearances are usually provided to accommodate this thickness.

While I have illustrated and described with particularity only a 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 claims.

I claim:

5 1. A preformed floor covering comprising numerous small blocks of wood having end grain in their upper faces grouped in close relation to each other over a large area and arranged in rows placed side by side, there being grooves in the under faces of the blocks along the long edges of the rows, and flexible ties and elastic adhesive material in said grooves bonding the blocks together.

10 2. A preformed floor covering comprising numerous small blocks of wood having end grain in their upper faces grouped in close relation to each other in rows placed side by side, without being fastened together, over a large area, each block having in the under face grooves extending along the long edges of the row in which it is located registering with grooves in adjacent rows, and an elastic bonding material filling said grooves, the blocks being not more than an inch high and having widths approximating their height.

25 3. A preformed floor covering comprising numerous small blocks of wood grouped in close relation to each other and arranged in rows placed side by side, said blocks having in their under faces grooves extending along the joints between adjacent rows, and flexible cords arranged in said grooves and bonded to the wood with elastic adhesive material to tie the blocks together into a flexible sheet or panel.

4. A preformed floor covering comprising numerous small blocks of wood having end grain in their upper faces assembled in close relation to each other over a large area, the assembly containing groups of blocks each composed of blocks from the same log, and the blocks in each of said groups occupying the same positions relatively to each other that existed in the original log, and means securing the assembly together into the form of a flexible sheet or panel.

10 5. A preformed floor covering comprising numerous small blocks of wood having end grain in their upper faces assembled in close relation to each other over a large area, the assembly containing rows of large blocks each composed of a group of small blocks from the same log, and the blocks in each of said groups occupying the same positions relatively to each other that existed in the original log, and means securing the assembly together into the form of a flexible sheet or panel.

20 6. The method of producing a floor covering which comprises the production of integral pieces of wood in the form of slabs having end grain in their upper and lower faces; dividing each of said pieces vertically into a group of small blocks, assembling the blocks side by side with the blocks in each group bearing the same positions relatively to each other as they did before the subdivision occurred, and bonding the blocks together into a flexible sheet or panel.

30 ARMIN ELMENDORF.