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R. C. BUE ETAL

3,310,919

PORTABLE FLOOR

Filed Oct. 2, 1964

2 Sheets-Sheet 1

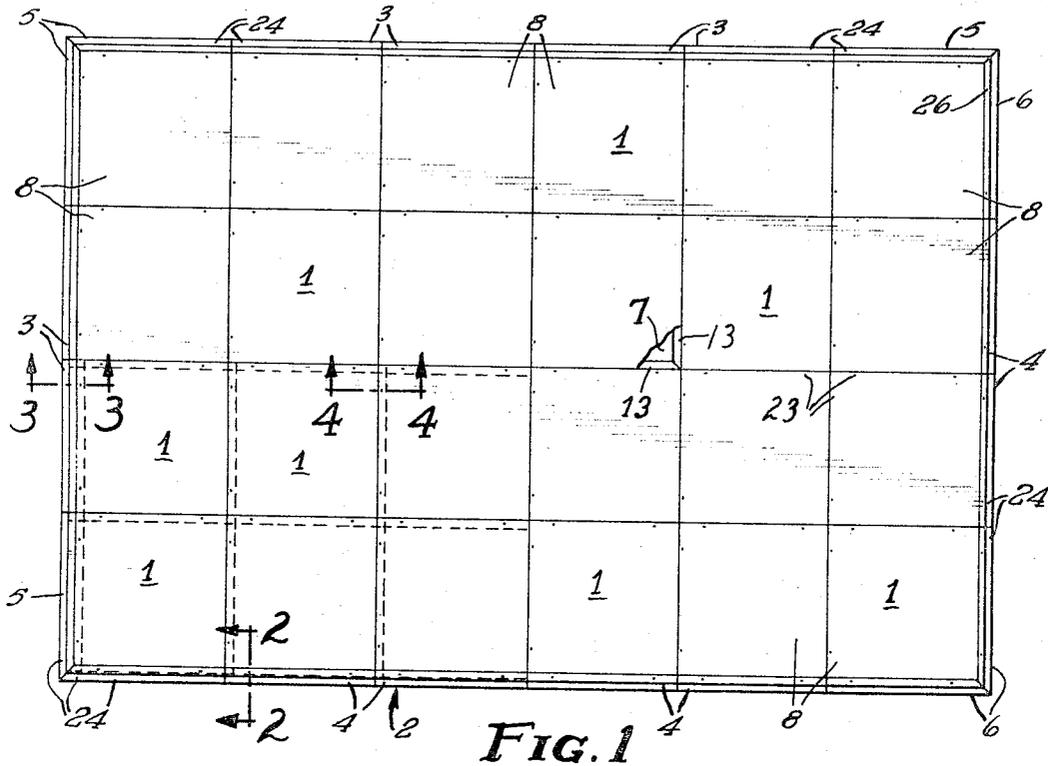


FIG. 1

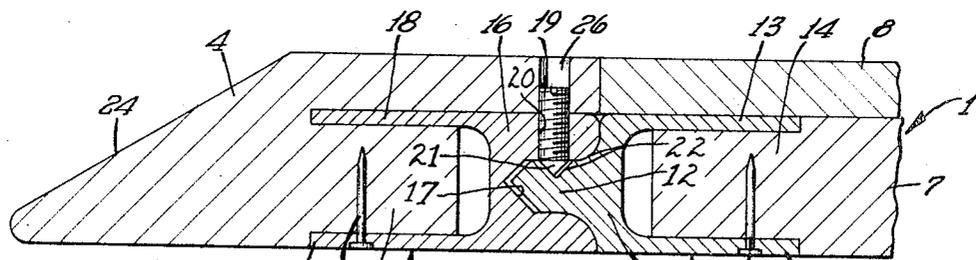


FIG. 2

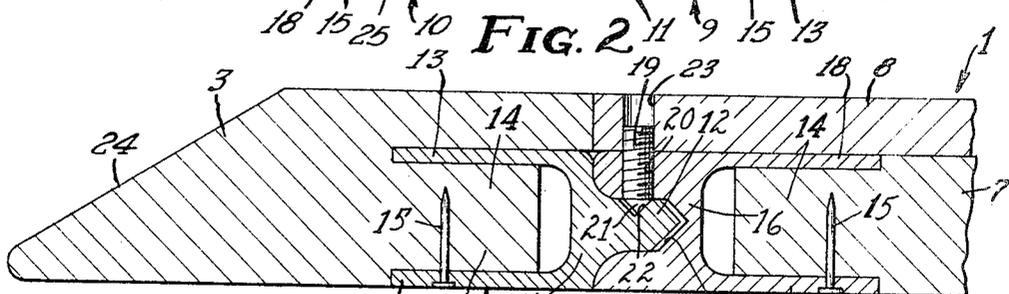


FIG. 3

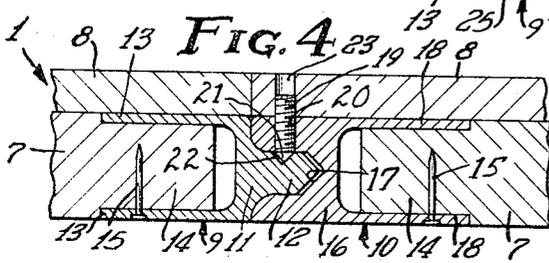


FIG. 4

INVENTORS
 RICHARD C. BUE
 JULIAN GUTIERREZ
 BY Merchant, Merchant & Gould
 ATTORNEYS

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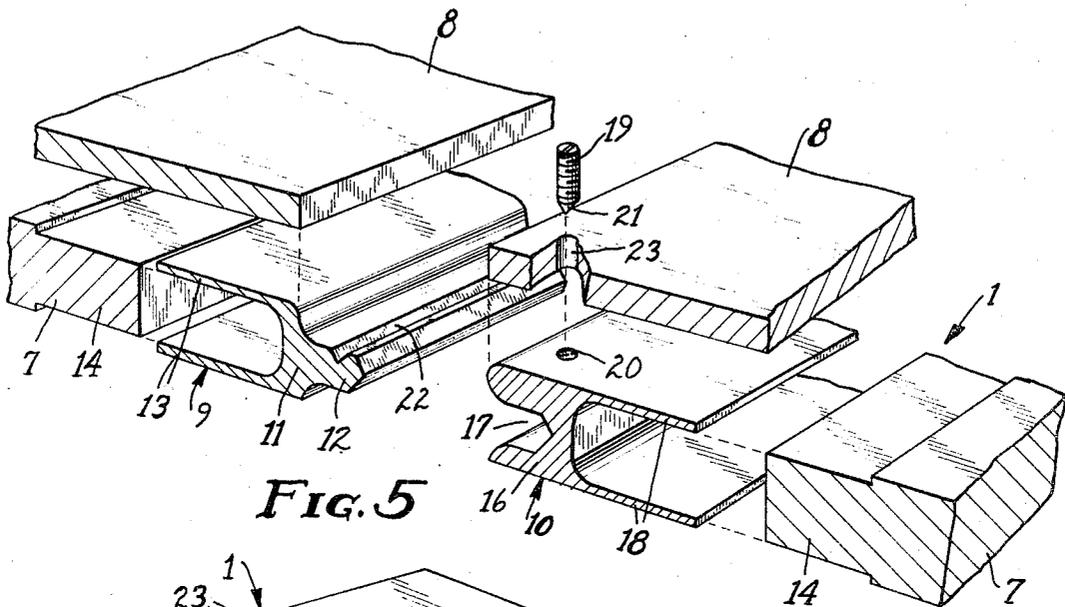


FIG. 5

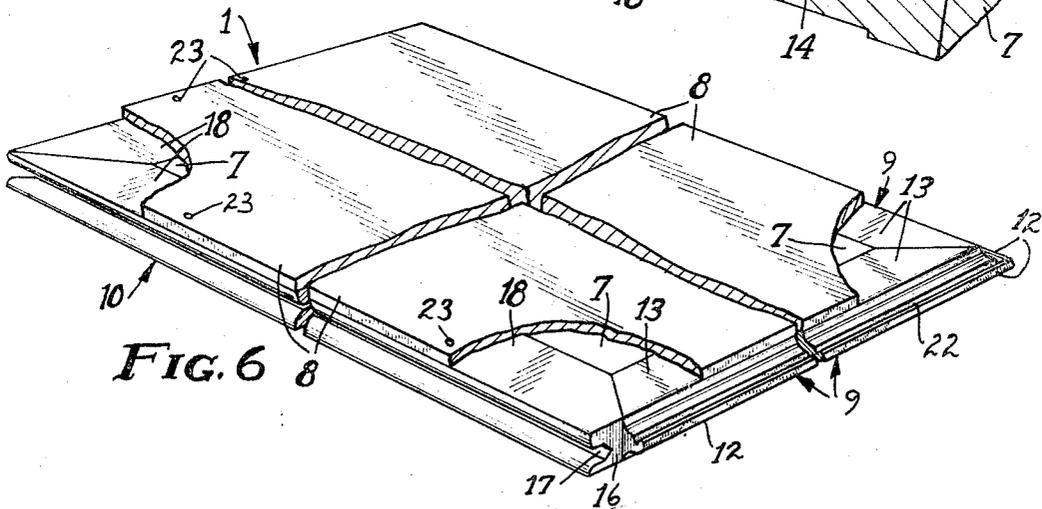


FIG. 6

INVENTORS
RICHARD C. BUE
JULIAN GUTIERREZ
BY *Merchant, Merchant & Gould*
ATTORNEYS

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3,310,919

PORTABLE FLOOR

Richard C. Bue and Julian Gutierrez, both of Minneapolis, Minn., assignors to Sico Incorporated, Minneapolis, Minn., a corporation of Minnesota
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 6 Claims. (Cl. 52-127)

This invention relates generally to floor structure and more particularly to portable floors.

An important object of this invention is the provision of a hard smooth-surfaced floor which can be laid over a carpeted floor or any other substantially flat surface, such as rough concrete, a grass lawn, or even hard earth, to provide a smooth even surface for dancing or other activities where a hard and smooth surface is desired.

Another object of this invention is the provision of a floor which can be quickly and easily installed and as quickly and easily removed for storage or transport, without the use of special tools.

Another object of this invention is the provision of a floor comprising a plurality of floor panels of a size to be easily handled, and of novel means for releasably locking the panels together in side-by-side contiguous relationship to produce a smooth flat floor area.

Another object of this invention is the provision of a sectional floor as set forth, the panels, of which may be stored in highly compact form to utilize a minimum of storage space.

Still another object of this invention is the provision of a floor comprising a plurality of like panels and a border comprising a plurality of edge strips having coupling elements for coupling engagement with cooperating ones of the coupling elements of said panels, whereby to produce a floor having a finished margin that is pleasing in appearance and which protects the user from outwardly projecting coupling elements at the marginal edge of the floor.

Another object of this invention is the provision of a floor as described, which is relatively simple and inexpensive to produce, which can be installed to provide floors of various shapes and sizes without modification of the various parts thereof, and which is rugged in construction and durable in use.

To the above ends, we provide a floor comprising a plurality of like panels having straight sides, coupling elements at said sides for coupling engagement with cooperating coupling elements on adjacent panels, and means operatively associated with said coupling elements for releasably locking adjacent panels in side-by-side contiguous relationship.

The above, and still further highly important objects and advantages of this invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings, which illustrate the invention, and in which like reference characters indicate like parts throughout the several views:

FIG. 1 is a view in top plan of a portable floor produced in accordance with the invention, some parts being broken away;

FIG. 2 is an enlarged fragmentary transverse section taken on the line 2-2 of FIG. 1;

FIG. 3 is an enlarged fragmentary transverse section taken on the line 3-3 of FIG. 1;

FIG. 4 is an enlarged fragmentary transverse section taken on the line 4-4 of FIG. 1;

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FIG. 5 is an enlarged fragmentary exploded view in perspective corresponding generally to FIG. 4;

FIG. 6 is a view in perspective of one of the panels of this invention, some parts being broken away and some parts being shown in section;

In the preferred embodiment of the invention illustrated, a portable floor is shown as comprising a plurality of like panels 1, the panels being arranged in a plurality of rows in side-by-side contiguous arrangement, each row comprising a plurality of said panels in side-by-side contiguous relationship. The floor is encompassed by a border 2 comprising a plurality of edging strips 3 and 4, and other edging strips 5 and 6.

Preferably, the panels 1 are rectangular in outline, those of FIG. 1 being shown as square. Inasmuch as the panels 1 are identical as to structure, but one thereof will be described in detail. The panel 1 comprises a base structure in the nature of a relatively thick base slab or member 7 of non-metallic sheet material, preferably of the type commonly known as fibreboard, chip board or particle board. A relatively thin flat floor layer 8 overlies the base member 7 and is rigidly bonded thereto by suitable adhesive or the like. Preferably, the floor layer 8 is made from hard wood, but may also be of other suitable material, such as linoleum or other synthetic compounds, if desired.

For the purpose of joining or coupling the panel 1 to adjacent panels and to the edging strips of the border 2, we provide a pair of male coupling elements 9 and a pair of female coupling elements 10. The male coupling elements 9 each comprise an elongated body portion 11, a laterally outwardly projecting tongue 12 and vertically spaced laterally inwardly projecting mounting flanges 13, the coupling elements 9 extending substantially the length of one side of a panel 1. The base member or slab 7 is formed to provide a tenon 14 that extends about the entire periphery of the base member 7 for reception between the mounting flanges 13 of the male coupling element 9 at two adjacent sides of the panel 1, see particularly FIG. 6. As shown particularly in FIGS. 2 and 4, the tongues 12 extend laterally outwardly of the vertical plane of the adjacent edge of the floor layer 8 for a purpose which will hereinafter become apparent. The coupling elements 9 are rigidly secured to the base member 7 by nails, staples or the like, as indicated at 15. Also as shown in FIG. 4, the vertical dimension or thickness of the coupling elements 9 are equal to the thickness of the base member 7 whereby to provide a smooth flat bottom for the panel 1 and a smooth flat top surface to which the floor layer 8 is adhered.

Each female coupling element 10 comprises an elongated body 16 that is formed to define a laterally outwardly opening longitudinal channel 17, and a pair of vertically spaced laterally inwardly projecting longitudinal mounting flanges 18 that are adapted to receive the tenon 14 of the base member 7 at the two remaining sides of the base member 7. Like the male coupling elements 9, the female coupling elements 10 are rigidly anchored to their respective side portions of the base member 7 by nails or the like 15. As shown in FIG. 4, the channel 17 of each female mounting element 10 is adapted to snugly receive the tongue 12 of the male mounting element 9 of an adjacent panel 1, each channel 17 being preferably slightly deeper than the laterally outward projection of the cooperating tongue 12. This arrangement, coupled with the fact that the outer edge portions of the body 16

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are disposed in the vertical plane of the adjacent side edge of the top floor layer 8, assures abutting engagement of one panel with another without the tongue 12 bottoming in its cooperating channel 17. Preferably, the coupling elements 9 and 10 are extruded lightweight metal, such as aluminum and, if desired, may be bonded to their respective tenon portions 14 by suitable adhesive in addition to their being nailed or stapled thereto.

Means for releasably locking each panel 1 to adjacent panels to hold the same against separation during use, comprises a plurality of headless locking screws 19 that are screw-threaded in threaded openings 20 in the body portion 16 of the female coupling element 10, for movement transversely into and out of the channels 17 thereof. The locking screws 19 are provided at their inner ends with conical or tapering portions 21 that are adapted to be received in longitudinally extended cross sectionally V-shaped grooves 22 in the upper surface portions of the tongues 12 of cooperating male coupling elements 9. With reference to FIGS. 2-4, it will be seen that the tapered portion 21 of the locking screws 19 engage one side of their cooperating grooves 22, so that when the locking screws 19 are screw-threaded into the grooves 22, the tapered portions 21 thereof will tend to force adjacent panels into abutting engagement. As shown, the locking screws 19 are provided with slots or recesses at their outer end for reception of a conventional screwdriver, the floor layers 8 being provided with access openings 23 axially aligned with the locking screws 19. The access openings 23 are of sufficiently small diameter to prevent reception of even the most slender shoe heels, commonly known as spiked heels, on women's shoes.

The edging strips 3-6 are preferably made from hard wood, such as oak or maple, and are chamfered or beveled at their laterally outer longitudinal edges, as indicated at 24. The edging strips 3-6 are formed adjacent their inner longitudinal sides and bottom portions to provide recessed tenons 25 which, like the tenon portions 14 of the panels 1, are received between mounting flanges 13 and 18 of given ones of the coupling elements 9 and 10 respectively. In the arrangement illustrated, the edging strips 3 and 5 have mounted therein male coupling elements 9, the edging strips 4 and 6 having female coupling elements 10 mounted therein, see FIGS. 2 and 3. Further, the female coupling elements 10 of the edging strips 4 and 6 are provided with locking screws 19 and access openings 26 to the locking screws 19, the openings 26 extending downwardly from the top surface of each edging strip 4 and 6 in the same manner as the openings 23 in the panels 1. The edging strip 3 differ from the edging strips 5 only in the construction of the opposite ends thereof, the edging strips 3 having opposite ends that are normal to the longitudinal dimension of the strips, the edging strips 5 having one end normal to the longitudinal dimension thereof, the opposite end thereof being mitered at an angle of substantially 45°. In like manner, the edging strips 4 have their opposite ends normal to the longitudinal dimension thereof, the edging strips 6 each having one end normal to the longitudinal dimension thereof and the opposite end beveled or mitered at a 45° angle to said longitudinal dimension. It will be further noted, with reference to FIG. 1, that two of each of the edging strips 5 and 6 are mitered in a manner to be right-hand, the others thereof being left-hand. Thus, when the edging strips are coupled to the panels 1 in the manner illustrated in FIG. 1, the assembled floor presents a finished appearance, the beveled surfaces 24 enabling the users to step onto the floor without tripping or stumbling.

Disassembly of the floor is quickly and easily accomplished by merely retracting the locking screws 19 from their respective channels 17, so as to be disengaged from the grooves 22 of cooperating ones of the male coupling elements 9, the panels 1 may be easily disengaged from each other and either piled one on another in a place of storage or stood on edge in face-to-face engagement.

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Thus, when the floor is disassembled it may be very conveniently handled and transported, taking up a minimum of space in storage. It will be further appreciated that, while we have shown and described the panels 1 as being square or rectangular, the same may be produced in any desired polygonal shape for various artistic effects.

This invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the objectives set forth; and, while we have shown and described a commercial embodiment thereof, it will be understood that the same is capable of modification without departure from the spirit and scope of the invention, as defined in the claims.

What is claimed is:

1. A portable floor comprising:

- (a) a plurality of like flat panels each having top and bottom surfaces and an even numbered plurality of straight sides,
- (b) said panels being arranged in contiguous rows, each row including a plurality of said panels in side-by-side engagement,
- (c) each of said panels including male coupling elements projecting laterally outwardly of one-half of the number of sides thereof, and female coupling elements including laterally outwardly opening recesses in the remaining sides thereof for reception of male coupling elements of adjacent ones of said panels,
- (d) said male coupling elements having outer edges disposed in laterally outwardly spaced relationship to the bottoms of their respective recesses when said panels are disposed in side-by-side engagement,
- (e) each of said panels having screw threaded apertures in said female coupling elements, said apertures extending downwardly from the top surface of the panel to said recesses,
- (f) and locking elements screw threaded in said apertures and having conical lower ends movable into and out of said recesses,
- (g) said male coupling elements having surface portions disposed to have camming engagement with said conical ends, when said male coupling elements are disposed in said recesses, to draw adjacent sides of adjacent panels into snug side-by-side engagement responsive to downward movement of said locking elements.

2. The portable floor defined in claim 1 in which said male coupling elements of each panel are disposed on adjacent sides of the panel.

3. The portable floor defined in claim 1 in which said male coupling elements include coupling tongues extending longitudinally of their respective panel sides for the greater part of the length of each side, said female coupling element recesses comprising channels extending longitudinally for the greater part of the length of their respective sides.

4. The portable floor defined in claim 3 in which each of said coupling tongues is formed to provide an upwardly opening cross sectionally V-shaped longitudinal notch one side of which comprises said locking element engaging surface portion.

5. The portable floor defined in claim 3 in which each of said panels comprises a relatively thick flat base member and a relatively thin flat floor layer overlying the base member and secured thereto, said coupling elements including mounting flanges rigidly secured to said base member below said floor layer.

6. The portable floor defined in claim 1 characterized by a plurality of edging strips having laterally inner and outer sides and being of thickness at the inner sides thereof equal to the thickness of said panels, said strips having coupling elements at the inner sides thereof for coupling engagement with cooperating coupling elements of adjacent ones of said panels and each releasably locked

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in side by side abutting engagement to an adjacent one
of said panels.

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FRANK L. ABBOTT, *Primary Examiner.*R. A. STENZEL, C. G. MUELLER, *Assistant Examiners.*