

June 4, 1946.

W. C. SMITH

2,401,587

FLOOR STRUCTURE

Filed March 29, 1943

2 Sheets-Sheet 1

FIG. 1.

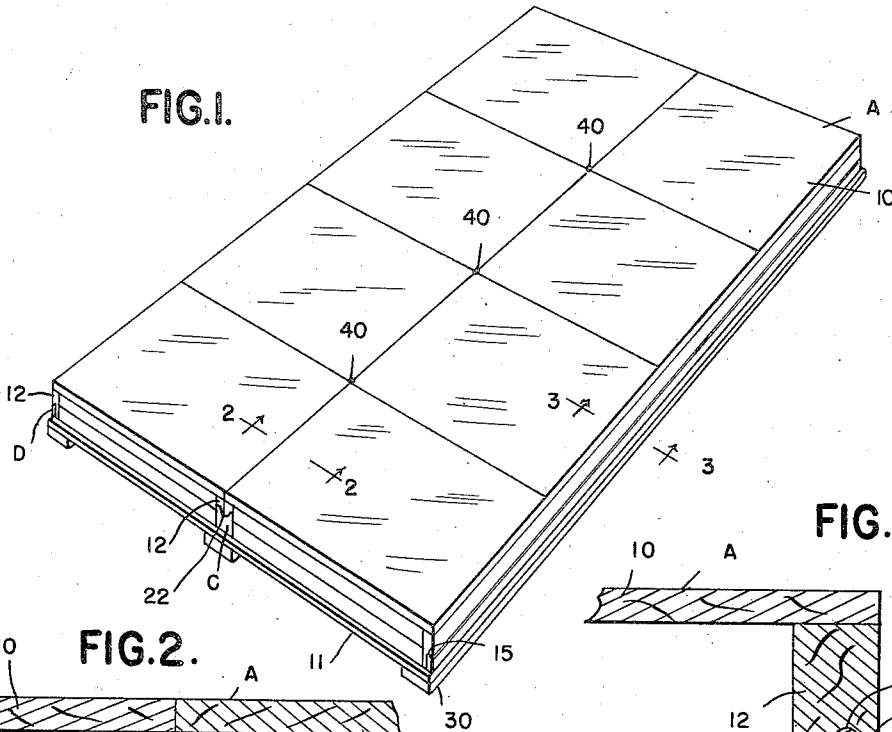


FIG. 2.

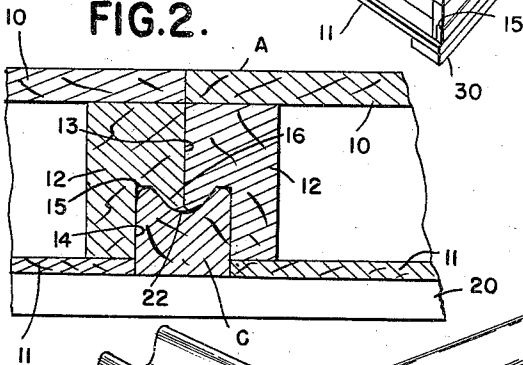


FIG. 3.

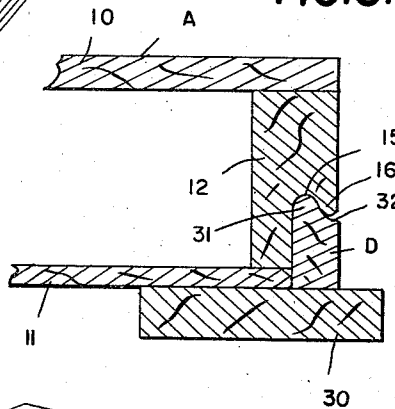
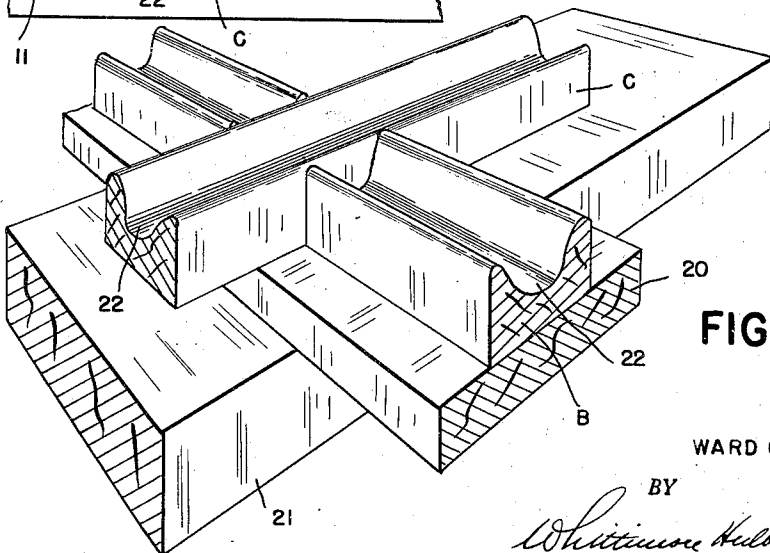


FIG. 4.



INVENTOR.
WARD C. SMITH

BY
Whitman, Hulbert & Belknap
ATTORNEYS

June 4, 1946.

W. C. SMITH

2,401,587

FLOOR STRUCTURE

Filed March 29, 1943

2 Sheets-Sheet 2

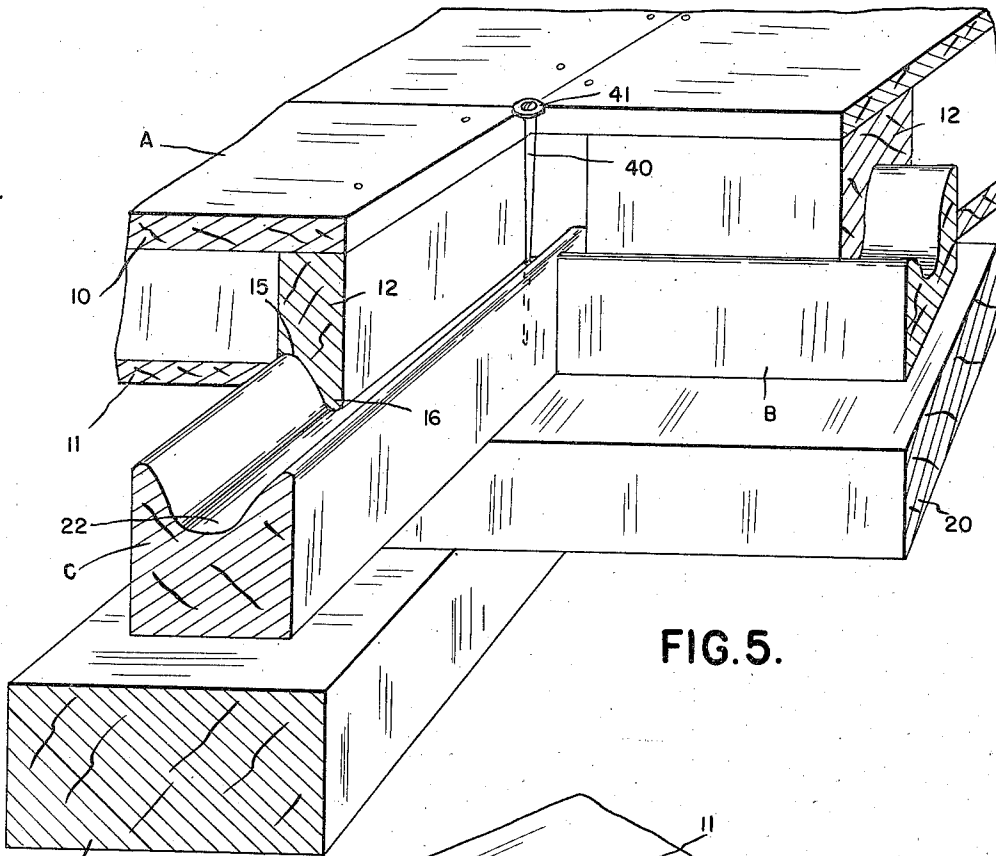


FIG. 5.

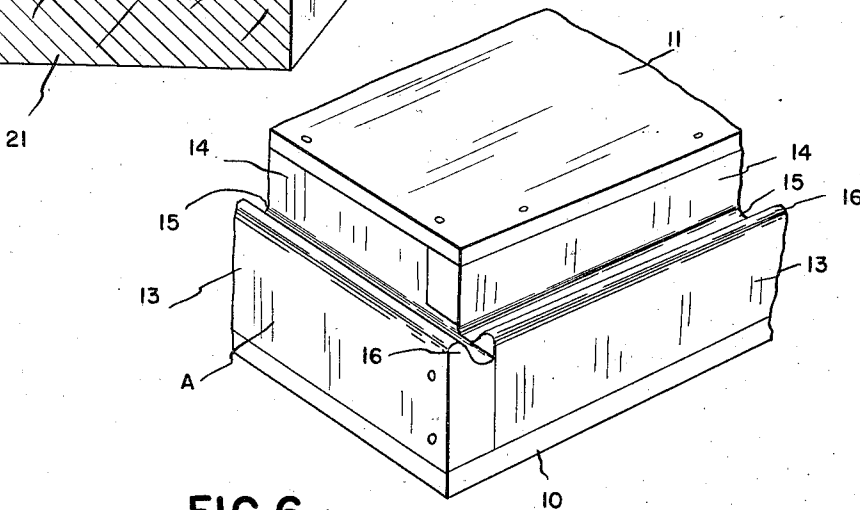


FIG. 6.

INVENTOR.

WARD C. SMITH

BY

BY
Whittmore, Hulbert & Belknap
ATTORNEYS

ATTORNEYS

UNITED STATES PATENT OFFICE

2,401,587

FLOOR STRUCTURE

Ward Clinton Smith, Detroit, Mich., assignor to Stout Houses, Incorporated, Detroit, Mich., a corporation of Michigan

Application March 29, 1943, Serial No. 481,001

4 Claims. (Cl. 20—8)

1

This invention relates generally to floor structures and refers more particularly to sectional flooring adapted for use in fabricated buildings such as those now being used by the government in various housing projects.

One of the essential objects of the invention is to provide a sectional flooring that may be accurately made to given specifications at the factory and shipped in unassembled or knockdown condition to the building in which it is to be laid.

Another object is to provide a flooring wherein the floor sections thereof are preferably in the form of panels which are interlocked with suitable supporting stringers therefor.

Another object is to provide a flooring wherein the floor panels are preferably hollow and are adapted to contain suitable insulating material.

Another object is to provide a flooring wherein the supporting stringers have means for determining the position of the floor panels relative to each other and for urging adjacent panels together to provide tight joints therebetween.

Another object is to provide a flooring wherein the floor panels are mounted in such a way upon the supporting stringers that one set of fastening elements such as a screw and cooperating washer will suffice at each center of four of the floor panels to hold them in assembled relation.

Another object is to provide a flooring that is simple in construction, economical to manufacture, and capable of being easily and quickly assembled by unskilled labor wherever desired.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of a floor structure embodying my invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is a fragmentary perspective view, with parts broken away and in section, of a portion of the supporting means for the floor panels;

Figure 5 is a fragmentary perspective view, with parts broken away and in section, of the floor structure, including the floor panels and supporting means therefor;

Figure 6 is a fragmentary bottom perspective view of one of the floor panels.

Referring now to the drawings, A are the floor panels, and B, C and D respectively are the sup-

2

porting stringers of a floor structure embodying my invention.

As shown, the floor panels A are substantially square-shape in plan and are arranged in edge to edge relation to provide the flooring. Preferably each panel A is hollow so as to receive suitable material for insulating purposes and has a laminated plywood top 10, a laminated plywood bottom 11, and spacers 12 between and rigid with said top 10 and bottom 11 at the edges thereof.

In each instance the top 10 of each panel A is thicker and slightly larger in area than the bottom 11 thereof, and the spacers 12 are in the form of wooden strips disposed on edge between said top and bottom and having upper and lower vertical outer faces 13 and 14 respectively offset relatively to each other and substantially flush with the edges of said top 10 and bottom 11. Preferably each spacer 12 is provided throughout its length at the upper end of the lower vertical face 13 with a downwardly opening groove 15 so that the overhanging portion 16 of the spacer between said groove 15 and the upper vertical face 13 constitutes a depending elongated tenon.

The supporting stringers B and C for the panels A are mounted upon cross sills 20 carried by sleepers 21, and are in the form of wooden strips having longitudinally extending grooves 22 of substantial V cross section in their upper edges for interlocking engagement with the tenons 16 of the panels A. As shown, the stringers B extend crosswise of the flooring, while the stringers C extend lengthwise thereof so that the two sets of stringers will register with the spacers 12 at the longitudinal and transverse edges respectively of the panels. Preferably each groove 22 extends throughout the length of a stringer and is adapted to receive the tenons 16 of adjacent panels, as illustrated in Figure 2. In this connection it will be noted that the groove 22 and tenon 16 arrangement is such that the tenons of adjacent panels will be urged against each other by opposite sides of the groove 22 so that the tops 10 of adjacent panels will abut in edge to edge relation to provide a tight joint.

The supporting stringers D are also mounted upon sills 30 similar to the sills 20 but are adapted to be used at the margins or borders of the flooring. Preferably each stringer D is provided throughout its length with a tongue 31 and groove 32 for interlocking engagement with the grooves 15 and tenons 16 of the spacers 12 at the outer edges of the marginal panels.

Thus, when the panels A are assembled upon the stringers as illustrated in Figure 1, a block-

like flooring is provided, and such assembly may be readily maintained by merely employing a screw 40 and washer 41 at each center of four of the panels. As the stringers B, C and D respectively and floor panels A are preformed when received at the building in which they are to be used, the assembly may be easily accomplished by unskilled labor by first laying the stringers in proper crossed relation upon the sills 20 and 30 in position to register with the spacers 12 at the edges of the panels, then laying the panels A upon the stringers to effect an interlocking engagement between the tenons 16 and grooves 22 and 32 respectively. The screws 40 and washers 41 may then be applied at each center of four of the assembled panels to hold the parts in position.

As the panels are of parallelogram form, they may be assembled in any number and will form aligned rows in transverse directions with the stringers extending between rows. The edge strips of the panels are rabbeted in the lower portions thereof to receive the stringers and the tenons depending from the upper portions of said strips are of wedge shaped cross section engaging correspondingly shaped grooves in the stringers. Thus, when assembled the lower portions of the panels abut against the stringers to reinforce the same while the tenons by their wedge engagement with the stringers will draw the upper edge portions of said panels into close contact with each other.

What I claim as my invention is:

1. A sectional flooring comprising a plurality of parallelogram panels arranged in edge to edge relation to extend the area in transverse directions, and separate supporting stringers between adjacent panels having V-shaped grooves in their upper edges and extending transversely in the same plane to intersect each other, each panel having spaced top and bottom plate-like portions, the bottom portion being of smaller area than the top portion, and spacer strips for said top and bottom portions at the several edges of said panels, each of said strips being rabbeted to form a groove for receiving an edge of the groove in the supporting stringer and being also fashioned to form a depending wedge-shaped tenon for engaging the V-shaped groove in the upper edge of the stringer whereby the engagement of said tenons with said grooves will force the upper edge portions of said panels into contact with each other and the lower edge portions of said panels will abut against said stringers to reinforce and conceal the same.

2. A sectional flooring comprising a plurality of substantially flat floor panels arranged in edge to edge relation to extend the area in the transverse directions, each floor panel having spaced top and bottom plate-like portions and spacer strips at the several edges thereof, the bottom portion of each panel being of smaller area than the top portion thereof, separate supporting stringers for said panels extending transversely in the same plane to intersect each other, being located at the meeting edges of adjacent panels between said bottom portions, each stringer having an upwardly opening substantially V-shaped groove within and extending substantially throughout the length of its upper edge, the spacer strips at the meeting edges of said panels having grooves receiving the adjacent side walls of the V-shaped grooves in said stringers and

having depending wedge-shaped tongues disposed in abutting face to face relation within the V-shaped grooves in said stringers, the cross sectional formation of said V-shaped grooves and engaging tongues being such as to maintain the top portions of the floor panels in edge to edge relation over the adjacent spacer strips and to maintain the adjacent edges of the bottom portions of the panels in abutting relation against opposite sides of the stringers, whereby the tongue and groove connections between the spacer strips and stringers are concealed.

3. A sectional flooring comprising a plurality of substantially flat floor panels arranged in edge to edge relation to extend the area in transverse directions, each floor panel having spaced top and bottom plate-like portions and spacer strips at the several edges thereof, the bottom portion of each panel being of smaller area than the top portion thereof, separate supporting stringers for said panels extending transversely in the same plane to intersect each other, being located at the meeting edges of adjacent panels between said bottom portions, each stringer having an upwardly opening substantially V-shaped groove within and extending substantially throughout the length of its upper edge, the spacer strips at the meeting edges of said panels resting on the upper edges of the adjacent side walls of the V-shaped grooves in said stringers and having depending tongues disposed in abutting face to face relation within the V-shaped grooves in said stringers, the cross sectional formation of said V-shaped grooves and engaging tongues being such as to maintain the top portions of the floor panels in edge to edge relation over the adjacent spacer strips and to maintain the adjacent edges of the bottom portions of said panels in abutting relation against opposite sides of said stringers, whereby the tongue and groove connections between the spacer strips and stringers are reinforced and concealed.

4. A sectional flooring comprising a plurality of substantially flat floor panels arranged in edge to edge relation to extend the area in transverse directions, each floor panel having spaced top and bottom plate-like portions and spacer strips at the several edges thereof, the bottom portion of each panel being of smaller area than the top portion thereof, separate supporting stringers for said panels extending transversely in the same plane to intersect each other, being located at the meeting edges thereof between said bottom portions, each stringer having an upwardly opening groove within and extending substantially throughout the length of its upper edge, the spacer strips at the meeting edges of said panels having grooves receiving the adjacent side walls of the grooves in said stringers and having depending tongues arranged side by side within and substantially filling the grooves in said stringers, the cross sectional formation of the grooves in said stringers and the engaging tongues being such as to maintain the top portions of the floor panels in edge to edge relation over the adjacent spacer strips and to maintain the adjacent edges of the bottom portions of said panels in abutting relation against opposite sides of said stringers, whereby the tongue and groove connections between the spacer strips and stringers are concealed.

WARD CLINTON SMITH.