Floor panels are secured to a sub-floor by elongated elements, one of which is secured to the floor itself and has an inverted T-shape, the other of which elements defines downwardly open socket means for receiving an arrow shaped projection on the stem portion of that T-shaped support element. A precise fit is afforded between these elements 1 and 2 so that the floor panels are locked in place by engagement between the arrow shaped projection in the support element and the socket portion of the upper retaining element.
CONSTRUCTIVE ARRANGEMENT IN FLOOR FINISHING ELEMENT

FIELD OF THE INVENTION

[0001] This invention deals generally with extruded polymeric or metal floor support elements to anchor floor panels to an existing sub-floor or structure.

BACKGROUND OF THE INVENTION

[0002] The use of laminated floors of wood in residential and commercial buildings is well known. Such laminated floors are generally provided in segments or panels that are generally mounted parallel to one another above a sub-floor.

[0003] Present technology provides for the anchoring of these floor panels by nails or by the use of adhesive, which leads to some problems when the floor panels are laminated with a top layer of polymeric materials, such as Formica or its melamine equivalent. The marginal edges of such panels tend to splinter absent the use of an edging or other treatment for the marginal edges of the panel.

SUMMARY OF THE INVENTION

[0004] In accordance with the present invention a support structure comprises a plurality of elongated floor panels, support elements having a cross sectional shape of inverted T-shape, with upwardly facing lands for supporting the marginal edges of adjacent panels. The panels are spaced apart so that the T-shaped central stem portion projects upwardly between the spaced panels. An arrow shaped upper portion of the stem is more particularly defined by depending divergent legs that terminate above these lands.

[0005] A plurality of elongated panel retaining elements, each having a downwardly facing land for abutting a top surface of at least one of the panels is provided for mating with these support elements. Each panel retaining element has a downwardly open elongated socket for receiving, and retaining, the arrow shaped upper stem portion of the support element. The socket is more particularly defined by depending ribs which are resiliently deformable projections that include barbed lower end portions for anchoring the retaining elements to the underlying support elements.

[0006] In another version of the invention the retaining element has one side for engaging one marginal edge of a panel, and the opposite side defines an inclined ramp for use at a doorway or entryway, that leads to an area fitted with floor panels in accordance with the present invention. Thus, a transition is created between the slightly raised new floor afforded by these panels, and the original sub-floor or other existing floor area adjacent to the floor panels and support/retaining elements of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 shows in perspective a support structure in accordance with the present invention.

[0008] FIG. 2 is an exploded view, also in perspective, to show the various elements of the present invention with reference to adjacent panels in a floor such as that of FIG. 1.

[0009] FIG. 3 is an end view of the retaining element shown in FIG. 2.

[0010] FIG. 4 is a sectional view illustrating two floor panels assembled with a support element 1 and retaining element 2, these elements being in assembled relationship in FIG. 4.

[0011] FIG. 5 shows a floor panel such as that depicted in FIGS. 1, 2 and 4 together with an extruded retaining element 3 for transitioning from the existing floor Q to the paneled floor P.

[0012] FIG. 6 is an exploded view of the components illustrated in assembled relationship in FIG. 5.

[0013] FIG. 7 is an end view of the components illustrated in assembled relationship in FIG. 5.

[0014] FIG. 8 shows the retaining element 3 of FIGS. 5, 6 and 7 assembled with a panel support element 1 of the type described with reference to FIGS. 1-4 inclusively.

DETAILED DESCRIPTION

[0015] In accordance with the present invention a preferred form comprises three unique elements of different profiles, or cross sectional shapes.

[0016] A support element 1 as an upwardly projecting stem portion that mates with a downwardly open socket defining means in a retaining element 2. A third element 3 can be used with the support element to transition from the sub floor to a paneled floor.

[0017] Thus, panel support element 1 has an inverted T-shaped cross section featuring a flat bottom surface, marginal edges arranged at an angle and, a central portion provided between opposed land areas that receive the panels. The central stem portion is of inverted V-shape so as to form an arrow. This arrow shaped 6 is adapted to fit into and engage a socket-defining portion provided for this purpose at the underside of the retaining element 2.

[0018] The retaining element 2 also defines lands opposite the lands in the panel support element 1, so that the panels can be clamped or retained between these elements 1 and 2 as a result of engagement between the arrow shaped portion and the inverted socket defining portion at the underside of the retaining element 2.

[0019] It will be apparent that the socket means defined in surface of element 2 has barbed lower ends on ribs 8 and 9 for engaging the outer sides of the depending legs on the arrow shaped portions 6 of the inverted T-shaped support element 1. These barbed lower ends of the legs of the arrow 6 define a height corresponding to the height of the panel P in FIG. 4. It is a further feature of the present invention that the retaining element of FIG. 3 has a slightly conical under surface, which allows some flexing in element 2 during the assembly process itself, whereby to anchor the panels in the position shown for them in FIG. 4 where the marginal edges are spaced apart a distance such that a generous overlap is provided between the downwardly facing lands of the top element 2 and the panels P, P. The spacing between the panels P, P is preferably on the order of the width of each of these lands in the retaining element 2.

[0020] One of the steps in installing the floor structure of the present invention is to first provide blankets M between the support elements 1, 1 for properly spacing these elements 1, 1 on the sub-floor, and to provide additional support for the panels between the lands defined in these support elements 1, 1.

[0021] As a result of the overlapping relationship between the retaining element 2 and the edges of the panels P, P it is apparent that the panel edges will be protected, and not
susceptible to cracking as a result of these edges being effectively protected by the retaining element 2.

[0022] In order to assemble the above described components screws are provided in locating grooves formed in the underlying support element 1 (see the guide grooves 7) which grooves are so located as to facilitate aligning of the panel edges during the assembly process.

[0023] Where the laminated floor panel P is to transition with a sub-floor, such as that shown at Q, and a different height is provided for the new floor panels P and the old floor Q, a different profile shape or cross section for the retaining element is provided for (see element 3 in FIGS. 7, 8 and 9).

[0024] The element 3 is anchored to the support element 1 in the same fashion as described previously with reference to retaining element 2.

What is claimed is:

1. A support structure for floor panels (P, P), said support structure comprising;
   a plurality of elongated panel support elements 1, 1 having a cross section of inverted T-shape with upwardly facing lands for supporting a bottom surface of the panels, said T-shape including a central stem having an arrow shaped upper portion defined by depending divergent lands that terminate above said retaining element lands,
   a plurality of elongated panel retaining elements 2, 2 having downwardly facing lands for abutting a top surface of the panels, said panel retaining elements further including downwardly open elongated socket means for receiving and retaining said arrow shaped upper portion of said support elements, said socket means more particularly defined by barbed ends 9, 9 provided on resiliently deformable projections 8, 8 in said panel retaining elements.

2. The support structure according to claim 1 wherein said retaining element is symmetrical about a vertical plane centered between said downwardly facing lands, and said socket means cooperating with said arrow shaped portion for clamping side-by-side floor panels in laterally spaced relation to one another, said lateral spacing of the panels being at least approximately equal to the lateral width of each of said retaining element lands.

3. The support structure according to claim 1 wherein said retaining element is not symmetrical about a vertical plane centered in said downwardly open socket, and said retaining element land defined on one side only of said socket means, the opposite side thereof defining an inclined ramp having a height of approximately the thickness of the panels.

4. The support structure according to claim 1 wherein support element lands have anchor screw guiding grooves 7, 7 that are also used to align the marginal edges of the panels during assembly.

5. The support structure according to claim 1 wherein said support elements and said retaining elements are extruded, and wherein said elements have a constant cross section throughout the lengths thereof.

6. The support structure according to claim 1 wherein said retaining element downwardly facing lands define a slightly concave configuration that tends to flatten out when the floor panels are provided between said assembled panel support and retaining elements.

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