ABSTRACT OF THE DISCLOSURE

A floor panel has a lower metal sheet with its flanges turned up, a solid core that resists compression and an upper flat metal sheet. A tread surface is supported on the top of the upper sheet. A flexible member is wedged between the flanges of the lower sheet, the solid core and the periphery of the upper sheet.

This invention relates to an elevated floor panel to be used in an elevated floor assembly. Such a floor normally includes a plurality of square floor panels supported above a normal floor at their corners by a series of pedestals. The top surface of the floor panels are covered with a tread surface material suitable for industrial traffic. The purpose of elevated floor systems is to provide space for conduits, cables and the like which are connected to various items of equipment supported by the elevated floor. Elevated floor assemblies are widely used with electronic data processing equipment installations where a number of units are positioned in the same room and interconnected by a multitude of conductors.

The panels which make up such floors must be strong enough to support heavy machinery, yet readily removable so that quick and ready access to all parts of the electrical equipment is possible. At the same time, the elevated floor panels define an air plenum with the original floor whereby air at controlled temperatures can be circulated to all parts of the computer equipment.

The panels of the instant invention are designed to be particularly resistant to deformation and deflection under heavy load so that the integrity of the entire floor is preserved even after heavy machinery is installed. Further, the panels disclosed herein can be used with or without stringers bridging the pedestals depending on the intended use of the false floor.

FIG. 1 is an exploded view of the panel showing the three structural elements used to form the panel.

FIG. 2 is a perspective view of a finished panel with tread surface and flexible trim.

FIG. 3 is a section view of the panel's side taken along the lines III—III in FIG. 2.

FIG. 4 is a section view similar to FIG. 3 showing a modified side structure.

In FIG. 1, the panel is shown to have three structural elements that are sandwiched together to lend strength and integrity to the panel. The bottom or lower sheet 2 is formed as a pan with side flanges 8 bent upwardly. A solid core 4 of plywood, composition board, or other compression-resistant material of a thickness designed for the intended load, is glued or otherwise adhered to the inside bottom of sheet 2 and a flat upper sheet 6 is adhered to the top of the core. Upper and lower sheets 2 and 6 are preferably metal, such as steel and usually twenty to forty mils thick, depending on the strength needed.

A tread surface 12 such as a vinyl or asbestos tile is adhered to the top surface of upper sheet 6. As seen in FIG. 5, upper sheet 6 extends slightly beyond core 4 and tread surface 12. Flanges 8 are bent upwardly to form the sides of the panel leaving a space 14 between the core 4 and the flanges. The flanges 8 extend up and are preferably bent outwardly to terminate just short of the upper sheet. Within the opening between the top edges of side flanges 8 and the peripheries of upper sheet 6, a vinyl trim 10 or other flexible member is wedged around the upper sides of the finished panel. In FIG. 3, the edge trim 10 is notched on its inner side at 16 to receive the peripheries of upper sheet 6. On the outer side of the trim, a second member 18 follows the trim about the edges of the flanges 8 with the outer edge of the trim being almost in alignment with the outer side surfaces of the flanges. The top surface of the trim 10 is at the same level as the tread surface. With this arrangement, the edge trim can be snapped in place (i.e., mechanically locked), and the panel rough handled into a floor assembly without danger of trim dislodgement.

In FIG. 4, a modified panel is comprised of an upper sheet 6, a solid compression-resistant core 4 and a lower sheet 20 with bent-over flanges 22. Flanges 22 are bent up towards upper sheet 6 but terminate substantially below sheet 6.

A carpet 15 is placed over upper sheet 6 with its edges bent over to extend downwardly in the opening in the space 24. The edges of the carpet 15 being flexible, are wedged between flanges 22, upper sheet 6 and core 4.

In the manufacture of the FIG. 4 panel, the flanges 22 can be initially bent up to say 45° from the base of lower sheet 20. The carpet tread surface 15 is then bent over the peripheries of upper sheet 6 to extend adjacent the sides of core 4. Flanges 22 are then further bent towards core 4 until the carpet's edges are pinched and securely held in place by the flanges 22. The panel of FIG. 4 can then be fitted in a floor assembly to which, when completed, resembles a single piece wall-to-wall carpeting tread surface.

The panels in FIGS. 3 and FIG. 4 can be handled roughly, if necessary, and forced into a tight, side-by-side relationship with other like panels to complete the floor assembly. The edge trim or carpeting will not be dislodged when the panels are assembled. Upon completion of the floor, the panels are assembled side-by-side about one another at their upper peripheries where the flexible edge trim or carpet material is exposed.

Depending on the load to be placed on the elevated floor assembly, pedestals with or without stringers can be used. The pedestals and stringers disclosed in U.S. Pat. No. 3,420,012 are suitable and the height at which the elevated floor panels are supported above the subfloor is adjustable.

Stringers bridging the pedestals afford support along each side of the panels but need only be used if added lateral stability is required or if increased panel edge deflection is desired in the presence of excessively heavy loads. If normal loads are imposed on the panels, only the pedestals need be used so that only the corners of each panel are supported; and where the formed flanges of the lower pan provides sufficient edge stiffness. An aperture or indentation 25 can be formed at each corner to receive projections such as projections 24 on the pedestal head of Pat. No. 3,420,012.

What is claimed is:

1. A square floor panel for use in elevated floor assemblies mounted on pedestals, said panel comprising oppositely upper and lower metal sheets with a substantially non-compressible solid core sandwiched between said sheets, said upper sheet being planar with its periphery bordered by a flexible member which extends down along the sides of the panel, a tread surface member overlaid and supported by said upper sheet, said lower sheet having flanges along its sides, said flanges being bent up to extend towards
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3. said upper sheet and terminate adjacent the sides of said core below said tread surface member leaving a space between said core and the top edges of said flanges, said flexible members forming at least part of said tread surface and extending in said space whereby said flanges wedge and retain said flexible member against at least the periphery of said upper sheet.

2. The panel of claim 1, wherein said flexible member comprises an extended part of said tread surface member, the edges of which are bent downwardly into said space.

5. The panel of claim 2, wherein said tread surface member is a carpet which is bent over the edge of said upper sheet to extend downwardly in the space between said flanges and the sides of said panel.

4. The panel of claim 1, wherein said flexible member is an edge trim.

5. The panel of claim 4, wherein said trim has a slot for receiving the peripheries of said upper sheet, the top edges of said flanges terminating below and adjacent said upper sheet to wedge and mechanically lock said trim against said periphery.

6. The panel of claim 1, wherein the periphery of said top sheet extend beyond said core.

7. The panel of claim 1, wherein said flanges are bent upwardly and outwardly from the sides of said panel.

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