Fig. 4

Fig. 5

Fig. 6

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This invention relates generally to floor supports, and more particularly it pertains to demountable flooring for equipment and apparatus requiring solid support and subconnections to conduit or which partially depend beneath a floor level.

A typical example of the type of equipment requiring special flooring is computer apparatus which generally requires cooling air in addition to electrical wiring introduced from the underside.

Several objects of this present invention, therefore, are to provide a raised flooring of unitary panel construction which seats tightly in self-alignment; a flooring which has high load carrying ability and low deflection; and a flooring which may be cut out to a major extent of its surface area without sacrificing bearing strength.

Another object of this invention is to provide a raised flooring panel having an integral improved adjustable load distributing and bearing support means.

Still other objects of this invention are to provide an adaptable raised deck or floor which is relatively clear of substructure; and one which is fluidtight, easily demountable, and economical to manufacture.

These and other objects and advantages of this invention will become more readily apparent and understood from the accompanying specification and drawings in which:

FIG. 1 is a perspective view of a portion of an improved raised flooring incorporating features of this invention as installed in an operable position;

FIG. 2 is a cross section of the raised flooring taken along line 2—2 of FIG. 1;

FIG. 3 is a cross section of the raised flooring taken along line 3—3 of FIG. 1;

FIG. 4 is a perspective drawing of the underside of a removable panel unit;

FIG. 5 is a detailed side elevation taken between adjacent panels illustrating a pedestals support therefor;

FIG. 6 is a perspective view of an alternate pedestal cap.

Referring now to FIG. 1, there is shown a plurality of units of removable floor panels 10 having a metallic top 12 which may be covered with a floor tile or other decorative surfacing, as shown.

The top 12 of each floor panel 10 departs downwardly and slightly inwardly at two opposing edges to form load-carrying sides 14 as best illustrated in FIG. 2. The sides 14 of each floor panel 10 are additionally turned inward at the bottom to form flanges 16. The other two opposing edges of panel 10 each consist of an end bar 18 securely welded in position, as shown in FIGS. 1, 3 and 4.

As best illustrated in FIGS. 2 and 4, the top 12 of each floor panel 10 is provided with a plurality of integral underlying spaced bearing bars or ribs 20 of inverted T shape which extend parallel to each other and longitudinally of the panel 10. If desired, the top 12 of each floor panel 10 and its ribs 20 may be sectionalized with welded lap joints 22 or may be extruded complete with its sides 14 and flanges 16 as one continuous structure.

One or more spaced and slideable transverse beams 24 are supported upon their ends upon the flanges 16 of each floor panel 10 to receive the load transmitted by the bearing bars or ribs 20. These beams 24 can be arranged to be quickly and easily adjustable either toward or away from each other so that holes, cutoffs, or apertures can be provided at any surface area of each floor panel 10, as will be discussed more specifically hereinafter.

An adjustable supporting pedestal 26 is provided at each corner serving one to four panels 10, as shown best in FIGS. 1, 2, and 5. Each pedestal 26 consists of a cylindrical tube 28 which receives one end of a threaded adjusting screw 30. The tube 28 is raised or lowered by means of a threaded nut 32 which bears against its lower end and which may be secured by a threaded jam or lock nut 34.

An adjusting screw 30 is secured to a base plate 36 which rests against the main floor 38, as shown best in FIG. 2, and may be secured thereto by fasteners 40, such as lag screws, nails, or power driven studs. The top of the cylindrical tube 28 is provided with a welded-on pedestal cap 42 which is provided with spaced seating recesses 44 on its top side.

In cases such as in FIG. 3 where the pedestal 26 is adjacent to a wall structure, the pedestal cap 42 is used as shown to support the end bar 18. FIG. 2 illustrates how a joint between adjacent floor panels 10 is commonly supported by a single pedestal 26. For this purpose, it may be desirable to use a pedestal cap 42 provided with a cross rib 46, as shown in FIG. 6, which centrally divides the longitudinal recess 44. Rib 46 serves to prevent the shifting of a floor panel 10 when an adjacent floor panel 10 is removed.

In addition to its function as a floor or deck, the improved raised flooring of this invention serves as a pressurized plenum chamber. It can be seen from FIG. 2 that the spreading sides 14 of adjacent floor panels 10 make essentially fluid-tight line contact at the joint, as previously described. The sides of a complete raised flooring assembly may be sealed with a closure molding supported by the wall structure.

From the construction related, it is obvious that great structural strength is provided in the entire raised assembly as well as in the individual floor panels 10. Furthermore, almost the entire top 12 of the floor panel 10, as outlined by the dotted line 50 in FIG. 1, may be cut out or perforated without loss of structural strength or rigidity. The slideable transverse beams 24 may be applied in plurality as are bed slats or may be readily shifted or removed to clear apertures made in the top 12 for ducts or similar arrangement.

An alternate pedestal cap 52 is shown in FIG. 6 and employed as depicted in FIG. 5. This cap 52 has the advantage of being readily fabricated in sheet metal in the form shown with seating recesses 44 optional dividing cross rib 46, and a central aperture 54.

Cap 52 is rotatably secured by means of a pin or screw 56 to a flat pedestal top 58. A pedestal 60 with this alternate cap 52 securely seats the lower ends of end bars 18 in the recesses 44, as shown in FIG. 5, and has the advantage of self-alignment in the horizontal plane.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

An adjustable floor panel, comprising, structure including a top having at least one pair of oppositely positioned downwardly and inwardly extending sloping load carrying sides, with the lower edges of said opposite sides being turned inwardly toward each other to form co-planar flanges arranged parallel to said top, a plurality of substantially identical parallel spaced bearing members having their upper ends formed integrally with and
3 below said top of said structure and extending downwardly therefrom, said bearing members being arranged substantially parallel to said sides and of the same length as said sides, the lower surfaces of said bearing members being coplanar and arranged parallel to said coplanar flanges of said sides of said structure and said top, and a plurality of spaced and slidable beams having parallel upper and lower bearing surfaces, said slidable beams being positioned below said bearing members and substantially transversely thereto, the upper surfaces of said slidable beams being in surface engagement with the lower surfaces of said bearing members, said slidable beams being supported at their ends upon said coplanar flanges to receive the load transmitted directly thereto by said bearing members from said top of said structure.

2. An adjustable floor panel as recited in claim 1, wherein said spaced bearing members are of substantially inverted T shape, with the vertical legs of the T shape members being formed integral to the undersurface of said top of said structure.

3. An adjustable floor panel as recited in claim 1, wherein said panel is provided with a second pair of opposite sides extending downwardly therefrom to slightly below the lower surfaces of said first pair of opposite sides, with the lower surfaces of said second pair of opposite sides forming bases for support of said floor panel.

4. An adjustable floor panel as recited in claim 3, and additionally vertically adjustable pedestals positioned below and in engagement with the respective bases of the said second pair of opposite sides for adjusting said panel vertically.

5. An adjustable floor panel as recited in claim 1, wherein said top is formed of a plurality of removable sections, with a lap joint formed between adjacent sections thereof.

6. A floor paneling arrangement, comprising, a plurality of adjustable floor panels, each said adjustable floor panel consisting of a top having at least one pair of oppositely positioned downwardly and inwardly extending load carrying sides, with the lower edges of said sides being turned inwardly toward each other to form coplanar flanges arranged parallel to said top, a plurality of substantially identical parallel spaced bearing members having their upper ends formed integrally with and below said top of said structure and extending downwardly therefrom, said bearing members being arranged substantially parallel to said sides and of the same length as said sides, the lower surfaces of said bearing members being coplanar and arranged parallel to said coplanar flanges of said sides of said structure and said top, a plurality of spaced and slidable beams having parallel upper and lower surfaces, said slidable beams being positioned below said bearing members and substantially transversely thereto, the upper surfaces of said slidable beams being in surface engagement with the lower surfaces of said bearing members, said slidable beams being supported at their ends upon said coplanar flanges to receive the load transmitted directly thereto by said bearing members from said top of said structure, each said panel being provided with a second pair of opposite sides extending downwardly therefrom to slightly below the lower surfaces of said first pair of sides to form bases, and vertically adjustable pedestals means for mating corners of said floor panels, each said pedestal means having a cap on top thereof with parallel spaced channels for receiving the bases of its respective panels when said panels are arranged in juxtaposition thereon.

7. A floor panel arrangement as recited in claim 6, wherein each said panel top is formed of a plurality of removable panel sections, with a lap joint formed between adjacent sections.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,067,843

Frederick N. Rushton et al.

December 11, 1962

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the grant, line 1, and in the heading to the printed specification, line 3, for "Frederick N. Rushtoh", each occurrence, read -- Frederick N. Rushton --; and in the heading to the three sheets of drawings, for "F. N. RUSHTOH ET AL", each occurrence, read -- F. N. RUSHTON ET AL --.

Signed and sealed this 23rd day of April 1963.

SEAL)
Attest:

ERNEST W. SWIDER
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Commissioner of Patents