May 2, 1967 J. A. CHRASTEK 3,316,680

FLOOR STRUCTURE

Filed Feb. 11, 1964

Fig. 1.

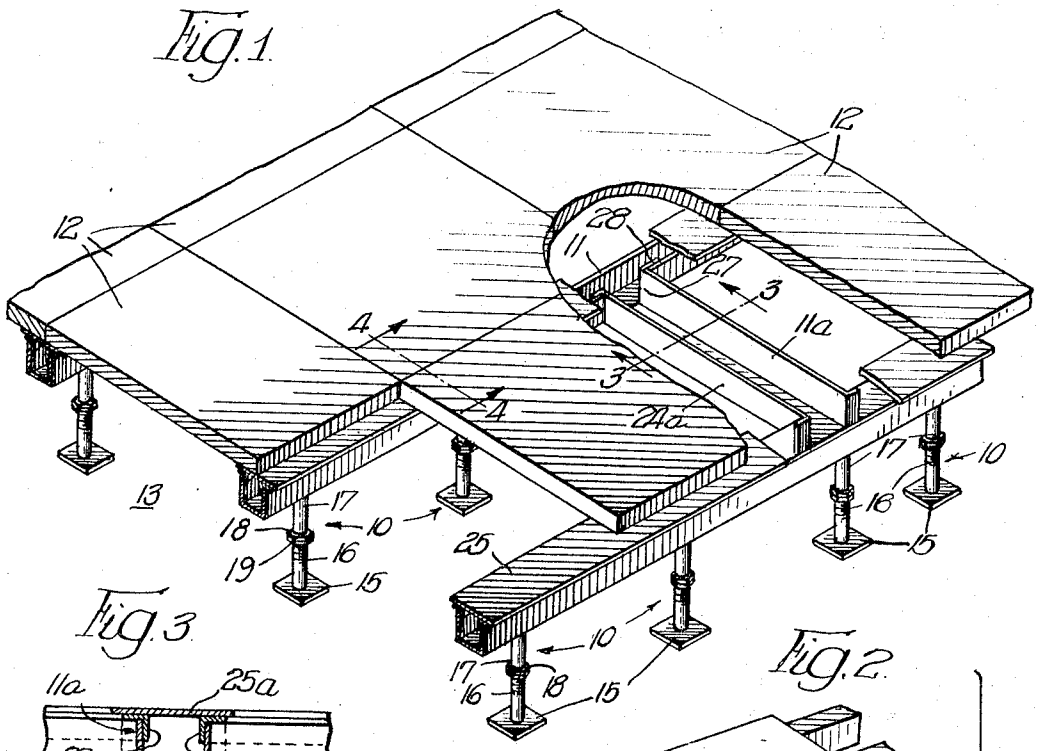


Fig. 3

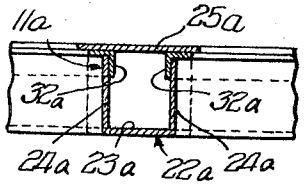
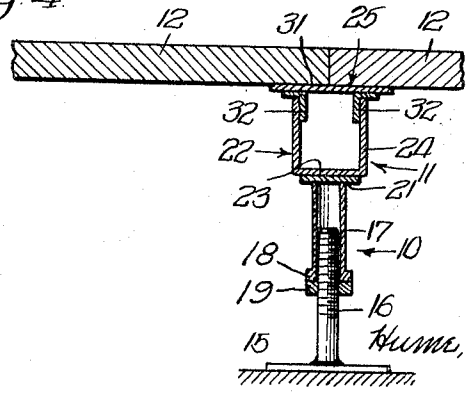


Fig. 2.

Fig. 4



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3,316,680
FLOOR STRUCTURE

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This invention relates to floor structures and more particularly to a structure for fabricating a paneled floor in elevated spaced relation to a suitable supporting surface.

It is the primary object of the present invention to provide an improved floor structure.

Still another object of the invention is to provide a structure for readily fabricating a paneled floor in elevated spaced relation to a supporting surface.

An additional object of the present invention is to provide an elevated panel floor structure which is capable of supporting substantial loads while at the same time being relatively inexpensive and easily assembled.

An additional object of the present invention is to provide an elevated paneled floor structure for supporting portable instrumented installations (e.g. data processing installations), which floor structure provides suitable means for accommodating the cables and other instrumentalities employed with such installations in readily accessible locations.

Other objects and advantages of the present invention will become apparent from the following detailed description when considered in conjunction with the accompanying drawing wherein:

FIGURE 1 is a perspective view of a portion of an elevated paneled floor structure constructed in accordance with the present invention and with portions of the structure broken away to more clearly illustrate the invention;

FIGURE 2 is an enlarged exploded view of a preferred embodiment of the supporting structure employed in the elevated paneled floor depicted in FIGURE 1;

FIGURE 3 is an enlarged cross sectional view taken along the line 3—3 in FIGURE 1; and

FIGURE 4 is an enlarged cross sectional view similar to FIGURE 3 but taken along the line 4—4 in FIGURE 1.

In general, the present invention is directed to an improved elevated floor structure which is capable of supporting portable instrumented installations such as a typical data processing installation. In accordance with the provisions of the present invention, a structurally strong supporting floor is provided for supporting a variety of forms of electronic equipment without obstructing the working area around the equipment by necessitating the distribution of supply cables, control lines, conduits and the like over the surface of the floor. In this connection, means are provided for housing the cables and other instrumentalities employed with the portable equipment so that these instrumentalities are appropriately confined in readily accessible regions. That is, rather than having a confusing and troublesome array of supply cables, control lines, conduits and the like randomly distributed beneath the elevated floor structure, these instrumentalities are uniformly distributed in readily accessible regions provided by the supporting structure for the floor. If desired, these housings when appropriately sealed can be employed as air ducts for either a ventilation or cooling system.

As shown in the accompanyig drawing and particularly in FIGURE 1, a preferred embodiment of the floor structure includes a plurality of vertically adjustable support pedestals **10** that are adapted to be selectively positioned about a suitable supporting surface **13** over which

the elevated floor is to be constructed. These vertically adjustable support pedestals **10** function to support elongated floor panel mounting members **11** and transverse spacer and mounting members **11***a*. As a result, a stable and uniformly arranged base structure is provided whereon a plurality of floor panels **12** are peripherally supported to provide a structurally strong floor situated in elevated spaced relation to the supporting surface **13**.

Referring now in detail to the preferred embodiment of the floor structure illustrated in the drawing, each of the vertically adjustable support pedestals **10** includes a number of cooperative components. These components facilitate the selective placement of the pedestals **10** on and about the supporting surface **13** and the joining of the floor panel mounting members **11** and **11***a* to the pedestals.

More particularly, each of the pedestals **10** is provided with a base plate **15** that is adapted to be secured to the supporting surface **13** by suitable fasteners (not shown) after the pedestal is appropriately positioned thereon. Secured to and extending upwardly from the base plate **15** is an adjusting screw **16** that mates with and is encompassed by at least a portion of a tubular pedestal shaft **17**. The tubular pedestal shaft **17** has a nut **18** secured to the lower extremity thereof so that the nut is rotatable relative to the shaft and threadably engages the adjusting screw **16**. Rotation of the nut **18** (i.e. by the action of a wrench or other suitable tool) results in the nut being selectively advanced upwardly or downwardly. In a conventional manner, a locking nut **19** is provided on the adjusting screw **16** to limit the travel of the nut **18** and the associated shaft **17**.

As is obvious from a consideration of the drawing, the selective upward or downward advance of the nut **18** is transmitted to the shaft **17** and to a supporting plate **21** that is fastened to the upper extremity of the shaft (e.g. by welding or the like). However, the position of the locking nut **19** limits the downward travel of the nut **18** and, accordingly, of the shaft **17** and supporting plate **21** that are secured thereto. During the fabrication of an elevated floor structure, the locking nut **19** is appropriately positioned and the nut **18** is advanced into abutting fixed engagement therewith to yield the desired level of the base structure for the elevated floor.

As shown in FIGS. 1 and 2, the elongated floor panel mounting members **11** are preferably designed to be mounted on at least a pair of the vertically adjustable support pedestals **10**. The transverse spacer and mounting members **11***a* can either be secured to and supported between only the members **11** or can also be supported by one or more pedestals **10**, the construction being dictated by the dimensions of the spanned areas and the load to be supported. In any event, the final configuration provides a structurally stable and uniformly arranged base structure for peripherally supporting the floor panels **12**.

More particularly, each of the illustrated floor panel mounting members **11** is shown as being removably secured to the supporting plates **21** of a plurality of the support pedestals **10**. In this connection, each of the elongated floor panel mounting members **11** is in the form of a trough or channel **22** that is defined by a base plate **23** and a pair of side walls **24** that extend upwardly from the base plate and mate with suitable covers **25**, as hereinafter described in detail. Preferably, the width of the base plate **23** is equal to or greater than the corresponding dimension of the support plate **21** provided by each of the pedestals **10**. With this arrangement, the floor panel mounting members **11** are readily mountable on the support plates **21**. To facilitate this mounting, the mating portions of the base plate **23** and the support plates **21** are apertured to receive suitable fasteners **26**,

although welding of the base plate to the support plates can be effected where desired in lieu of the fasteners **26**.

The supporting structure for a completed elevated floor also generally includes a number of the spacer and mounting members **11***a* that define troughs or channels **22***a*. In this connection, whether the transverse spacer and mounting members **11***a* are or are not independently supported on one or more pedestals **10** in a manner similar to the members **11**, each of these transverse members is coupled to and supported at the ends thereof by adjacent ones of the elongated members **11**. To effect this, corresponding portions of aligned side walls **24** of adjacent pairs of the members **11** are provided with rectangular slots or openings **27** at appropriately spaced intervals (FIG. 1), and the opposite ends of the trough forming side walls **24***a* of the transverse members **11***a* are provided with flanges **28**. The length of the members **11***a* is selected so that the flanged ends of each fits within the slots **27** and so that the flanges **28** engage the slot defining portions of the side walls **24** (FIG. 3). Thereafter, the covers **25** are positioned over the members **11**, and covers **25***a* are fitted over the transverse members **11***a* so that a plurality of enclosed and communicating channels **22** and **22***a* are provided thereby for receiving supply cables, control lines, conduits and the like.

The covers **25** for the members **11** include a top plate **31** and a pair of mounting brackets **32** that are designed to mate with and fit between the side walls **24**. The brackets **32**, which extend downwardly from the top plate **31**, have an inverted L shaped configuration and are spaced apart a distance such that the side walls **24** are urged apart when engaged by the covers, and the covers are thereby effectively snapped into place. The covers **25***a* for the transverse members **11***a* correspond substantially to those for the continuous mounting members **11**. However, these covers do not extend the entire length of the transverse members **11***a* so that their cooperative positioning adjacent the edges of the covers **25** on the elongated members **11** is facilitated. However, both the covers **25** and **25***a* have a width somewhat greater than the width of the members **11** and **11***a* so that a substantial supporting surface is provided for the floor panels **12**.

The construction of an elevated floor in accordance with the present invention is initiated by the suitable placement of a plurality of the adjustable pedestals about the supporting surface **13**. After the pedestals are properly arrayed about the surface **13**, they are removably secured in place and the level for the base structure is achieved by the selective adjustment of the nuts **18** and **19**. Thereafter, the necessary number of elongated panel mounting members **11** are positioned on the base plates of selected ones of the pedestals and are removably secured to these base plates by the fasteners **26** in accordance with conventional techniques. Upon completion of this operation, the necessary number of spacer and mounting members **11***a* are joined to and supported by the transverse members **11** so that a structurally stable base is provided for the floor panels **12**. When the covers **25** and **25***a* are positioned on the members **11** and and **11***a*, the channels **22** and **22***a* formed by these members are fully enclosed and provide a plurality of communicating passageways within the base structure itself. The construction of the floor is completed by the placement and joining of the floor panels which are preferably designed to be peripherally supported by the base structure as shown in FIGURE 1.

The floor panels **12** which may be formed of any suitable material and of any suitable dimensions (i.e. consistent with a high and properly distributed load carrying ability) provide the actual supporting surface for the equipment or installation with which the floor is to be used. In this connection, when the equipment and devices constituting the particular installation are properly located on the floor structure, appropriate ones of the floor

panels **12** are removed to allow access to the covers **25** and **25***a* of appropriate ones of the panel mounting members **11** and **11***a*. These covers are then removed and the supply cables, control lines and conduits associated with the equipment are disposed within the channels **22** and **22***a* defined by these panels mounting members and guided thereby to the appropriate sources or outlets.

When this has been completed, the covers **25** and **25***a* are again placed on the members **11** and **11***a*. The floor panels are then repositioned after suitable apertures are provided both in the covers and in the panels to accommodate the passage of the cables and the like from the equipment into the channels. With this arrangement for conveniently housing the supply cables, control lines and conduits associated with the equipment, these instrumentalities can be readily located and easily identified, and the usual confusing and troublesome array of these members beneath the elevated floor is eliminated.

It should be understood that the foregoing detailed description of one preferred embodiment of the elevated floor structure is simply illustrative of the invention. Various modifications in the structure could be devised by one skilled in the art without departing from the invention. For example, the covers **25** and **25***a* can be constructed, joined to the members **11** and **11***a*, and suitably gasketed so that the channels **22** and **22***a* are essentially airtight. With this type of arrangement it is possible to either ventilate or circulate air through selected ones of the mounting members thereby eliminating the need for certain of the control lines usually employed with various portable instrumented installations. These and other modifications of the structure described above clearly fall within the scope of the following claims.

What is claimed is:

1. A structure for fabricating a paneled floor in elevated spaced relation to a supporting surface, which structure comprises a plurality of floor panels, a plurality of vertically adjustable support pedestals adapted to be positioned in a predetermined spaced array on said supporting surface, and a plurality of panel mounting members secured to said arrayed support pedestals so as to provide a structurally stable and uniformly arranged base structure for peripherally supporting said floor panels, each of said panel mounting members including a generally U-shaped housing that defines an elongated channel and a cover that removably mates with said housing so as to fully enclose said channel.

2. A structure for fabricating a paneled floor in elevated spaced relation to a supporting surface, which structure comprises a plurality of floor panels, a plurality of vertically adjustable support pedestals adapted to be positioned in a predetermined spaced array on said supporting surface, a plurality of elongated panel mounting members secured to selected ones of said arrayed support pedestals, and a plurality of spacer and mounting members secured to and between said elongated members, said elongated members and said spacer members being joined so as to provide a structurally stable and uniformly arranged base structure for peripherally supporting said floor panels, each of said elongated members and said spacer members including a generally U-shaped housing that is secured to said pedestals and that defines an elongated channel and including a cover that mates with said housing and with the covers of adjacent ones of said housings so as to define fully enclosed communicating channels beneath said supported floor panels.

3. An elevated floor structure for supporting instrumented installations in elevated spaced relation to a supporting surface while at the same time providing means for accommodating the cables and other instrumentalities employed with such installations, which structure comprises a plurality of floor panels, a plurality of vertically adjustable support pedestals adapted to be positioned in a predetermined spaced array on said supporting surface, a plurality of elongated panel mounting members secured

to selected ones of said arrayed support pedestals, and a plurality of spacer and mounting members secured to and between said elongated members, said elongated members and said spacer members being joined so as to provide a structurally stable and uniformly arranged base structure for peripherally supporting said floor panels, each of said elongated members and said spacer members including a generally U-shaped housing that is secured to said pedestals and that defines an elongated channel and including a cover that mates with said housing and with the covers of adjacent ones of said housings so as to define fully enclosed communicating channels beneath said supported floor panels for receiving the cables and other instrumentalities.

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