Nov. 21, 1967 E. KRYSINSKI 3,353,313

CELLULAR FLOOR CONSTRUCTION

Filed May 18, 1965

FIG. 1

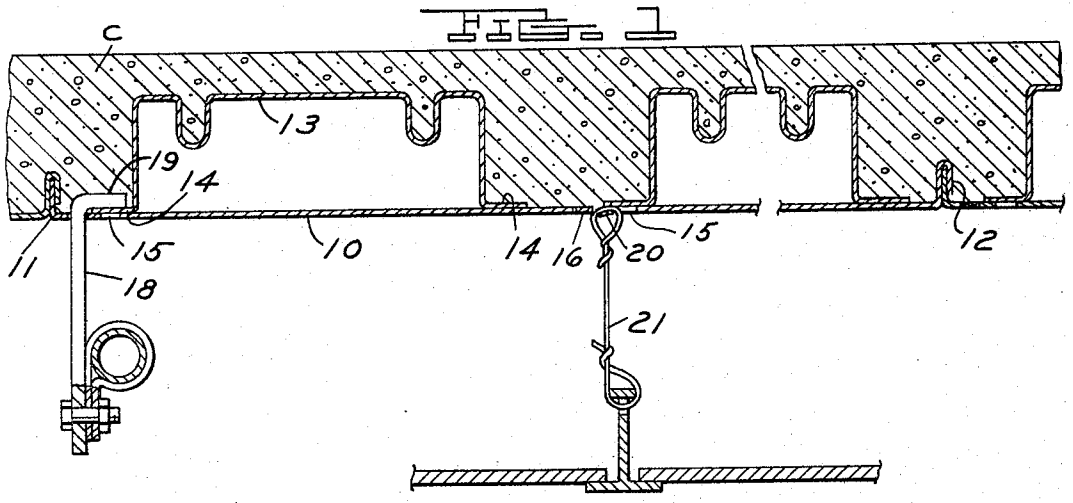


FIG. 2

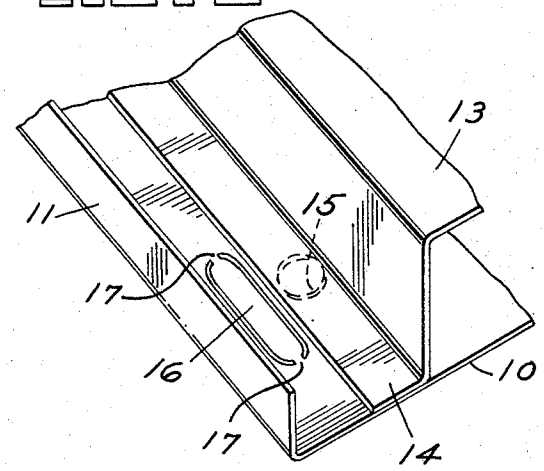


FIG. 3

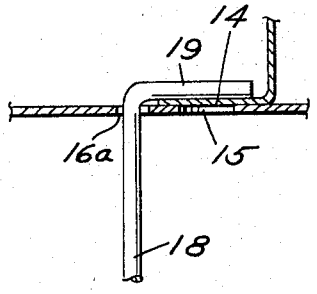


FIG. 4

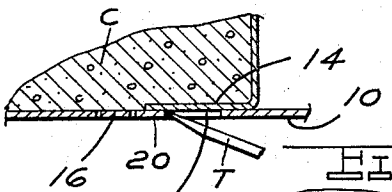


FIG. 5

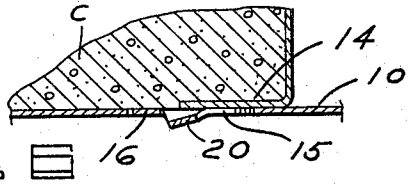


FIG. 7

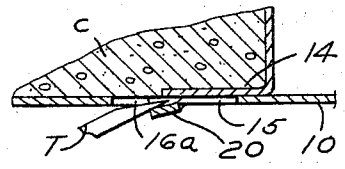
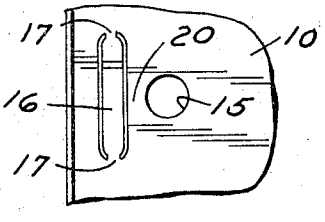


FIG. 6



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CELLULAR FLOOR CONSTRUCTION

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ABSTRACT OF THE DISCLOSURE

The cellular floor construction shown herein comprises complementary cellular upper and lower floor elements wherein the upper element has longitudinally extending flanges contacting the lower element. A plurality of longitudinally spaced circular openings are provided in the lower element underlying one of the flanges and longitudinally spaced tabs are provided adjacent the circular openings and are connected to the lower element by weakened lines. The edge of each flange that overlies the circular openings extends laterally and terminates between the circular openings and the tabs. The tabs can be struck out to permit insertion of a bar stock hanger through the openings thereby formed or the portion of the lower element between the circular openings and the tabs may be bent downwardly to permit insertion of a wire hanger.

This invention relates to cellular floor construction and particularly to a construction for supporting loads beneath the cellular floor.

Cellular floors utilized in building construction generally include a plurality of longitudinally extending transversely spaced cells that are formed by upper and lower sheet metal elements and a poured concrete fill over said cells. In practice, it may be required to support both light and heavy loads beneath said cellular floors. For example, light loads such as ceilings, or heavy loads such as piping, duct systems, package heaters, and coolers may be suspended from the ceilings. In the case of light loads, simple wire supports may be adequate whereas in the case of heavy loads, it is desirable to utilize heavy strapping or flat bars for suspending the load.

It is an object of this invention to provide a cellular floor construction wherein either light weight suspension means such as wires or heavy strapping or rigid bars may be used simultaneously or selectively.

It is a further object of the invention to provide such a cellular floor construction wherein the suspension structure does not interfere with production or handling of the cellular floor elements and is confined within the normal structural and dimensional limits of the cellular floor units until required for use.

It is a further object of the invention to provide such a cellular floor construction wherein the suspension means is such that the tendency for poured concrete to pass through the cellular floor will be minimized.

It is a further object of the invention to provide such a cellular floor construction wherein the suspension means can be utilized at any time even after the concrete has been poured.

It is a further object of the invention to provide such a cellular floor construction wherein the suspension means can be readily utilized by the use of simple tools.

In the drawings:

FIG. 1 is a transverse sectional view through a floor embodying the invention.

FIG. 2 is a fragmentary perspective view of a portion of the cellular unit construction.

FIG. 3 is a fragmentary sectional view on an enlarged scale of a portion of the cellular shown in FIG. 1 prior to pouring of the concrete fill.

FIG. 4 is a fragmentary sectional view showing the manner of utilizing suspension means after the concrete fill has been poured.

FIG. 5 is a view similar to FIG. 4 showing the suspension means ready for use.

FIG. 6 is a fragmentary plan view of a portion of a cellular floor element shown in FIG. 2.

FIG. 7 is a fragmentary sectional view showing another manner of utilizing suspension means after the concrete fill has been poured.

Referring to FIG. 1, the cellular floor construction shown comprises a lower sheet metal element **10** having a straight longitudinally extending lip **11** at one end and a doubled back lip **12** extending longitudinally along the other edge, the lips **11** and **12** of adjacent elements being interlocked by telescoping movement. A plurality of upper elements **13** cooperate with the flat portions of the lower elements **10** to form cells. Each upper element **13** includes longitudinally extending flanges **14** which engage and are welded to the lower element **10**.

In accordance with the invention, a plurality of circular openings **15** are provided at longitudinally spaced points along the lower element **10** beneath at least one of the flanges **14** (FIGS. 2, 3, 6). In addition, tabs **16** elongated longitudinally of the cells are provided adjacent each circular opening **15** and spaced therefrom in the portion of the lower element **10** outside of the area of the flange **14**. Each tab **16** is held in position in the plane of the lower element **10** by short portions **17** at the ends thereof so that it can be readily knocked out to leave an elongated opening. Any substantial movement of the tab **16** out of its plane of the lower element **10** causes rupture at the portions **17** so that the tab **16** can be removed.

In use, when it is desired to suspend heavy loads, the tabs **16** are struck out of the elements **10** before the concrete fill C is poured over the cells. This leaves an elongated opening **16*a*** through which a bar stock hanger **18** having a hooked end **19** can be provided to suspend the heavy load. The cross section of hanger **18** is substantially the same as that of the opening **16*a*** so that the hanger substantially fills the opening **16*a***.

In the event that a lighter suspension is required, the intervening portion **20** of lower element **10** between the edge of the circular opening **15** and the tab **16** can be bent downwardly by insertion of a tool T, as shown in FIG. 4, so that a wire **21** can be looped through the opening **15** and the space between the edge of the tab **16** and the portion **20**. As shown in FIGS. 4 and 5, the portion **20** can be bent downwardly even after the concrete C has been poured so that a hanger construction is provided that can be used even after the floor is in position.

Another manner of use of the invention is shown in FIG. 7 wherein the tab **16** is removed and then a tool T is inserted through the resultant opening **16*a*** to bend the intervening portion **20** downwardly at an angle so that a wire can be looped through the opening **16*a*** and opening **15**.

It can thus be seen that there has been provided a cellular floor construction wherein suspension means are provided for both light and heavy loads simultaneously or selectively; wherein the suspension means lies within the dimensional confines of the cellular construction so it does not interfere with production or handling; which substantially prevents the passage of poured concrete through the floor; which can be utilized at any time even after the concrete has been poured; and which can be readily utilized by the use of simple tools.

I claim:

1. In a cellular floor construction, the combination comprising

complementary cellular upper and lower floor elements

having juxtaposed portions defining longitudinally extending cells and intervening portions,

each said lower element having a tab provided in the plane of a portion thereof between said cells and connected to said lower element along weakened lines,

each said lower element having an opening adjacent and spaced from each said tab,

whereby said tab may be struck out to permit a hanger to be inserted into said opening formed by removal of said tab or the part of said lower element between said opening and said tab can be bent downwardly out of the plane of said lower element to permit looping of a wire hanger thereto.

2. The combination set forth in claim 1 including a bar stock hanger having a hooked end extending upwardly into the opening formed by removal of said tab and engaging above said lower element.

3. The combination set forth in claim 1 including a layer of concrete overlying said cells and the intervening portions.

4. In a cellular floor construction, the combination comprising

a lower element,

an upper element cooperating with said lower element to form longitudinally extending spaced cells and intervening portions,

each of said upper element having longitudinally extending flanges contacting the lower element,

a plurality of longitudinally spaced circular openings in the lower element underlying one of said flanges,

a plurality of longitudinally spaced tabs adjacent said circular openings and connected to the lower element by weakened lines,

the edge of said flange which overlies said circular openings extending laterally and terminating between said circular openings and said tabs,

whereby said tabs can be struck out to permit insertion of a bar stock hanger through the openings thereby formed or said portion of said lower element between said circular opening and said tab may be bent downwardly to permit insertion of a wire hanger.

5. In a cellular floor construction, the combination comprising

complementary cellular floor elements having juxtaposed portions defining longitudinally extending cells and intervening portions,

said lower elements having a tab elongated in the direction of said cells provided in the plane of a portion thereof between said cells and connected to said lower element along weakened lines at the ends thereof,

said lower element having a circular opening adjacent and spaced from said tab,

whereby said tab may be struck out to permit a hanger

to be inserted into said opening formed by removal of said tab or the part of said lower element between said circular opening and said tab can be bent downwardly out of the plane of said lower element to permit looping of a wire hanger thereto.

6. In a cellular floor construction, the combination comprising

a lower element,

an upper element cooperating with said lower element to form longitudinally extending spaced cells and intervening portions,

each said upper element having longitudinally extending flanges contacting the lower element,

a plurality of longitudinally spaced circular openings in the lower element underlying one of said flanges,

a plurality of longitudinally spaced tabs elongated in the direction of said cells adjacent said circular openings and connected to the lower element by weakened lines,

the edge of said flange which overlies said circular openings extending laterally and terminating between said circular openings and said tabs,

whereby said tabs can be struck out to permit insertion of a bar stock hanger through the openings thereby formed or said portion of said lower element between said circular opening and said tab may be bent downwardly to permit insertion of a wire hanger.

7. In a cellular floor construction, the combination comprising

a lower element,

an upper element cooperating with said lower element to form longitudinally extending spaced cells and intervening portions,

each said upper element having longitudinally extending flanges contacting the lower element,

a plurality of longitudinally spaced circular openings in the lower element underlying one of said flanges,

a plurality of longitudinally spaced openings elongated in the direction of said cells adjacent said circular openings and connected to the lower element by weakened lines,

the edge of said flange which overlies said circular openings extending laterally and terminating between said circular openings and said elongated openings.

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