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SUSPENDED CEILING WITH CRUCIFORM RUNNERS HAVING
LUGS ENGAGING PANEL MOUNTING FLANGES
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3,332,191

FIG.1

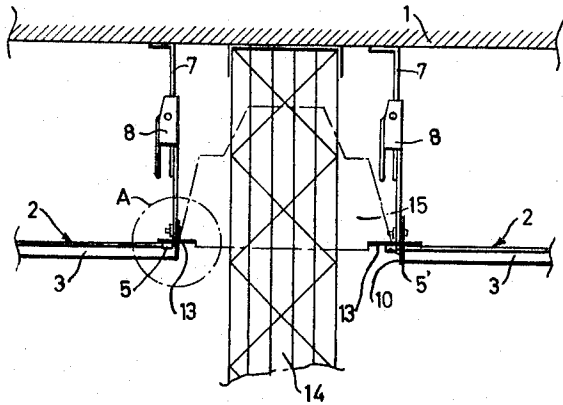


FIG.5

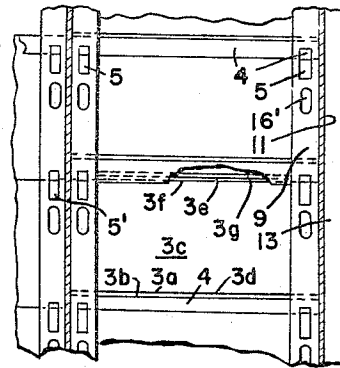


FIG.2

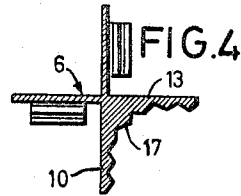
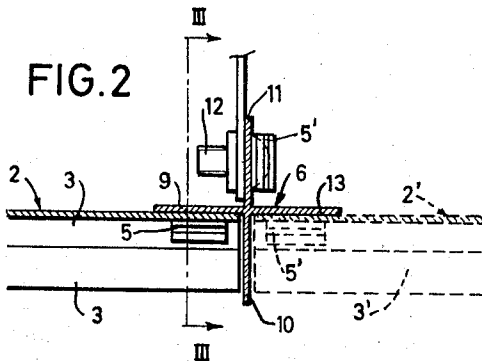
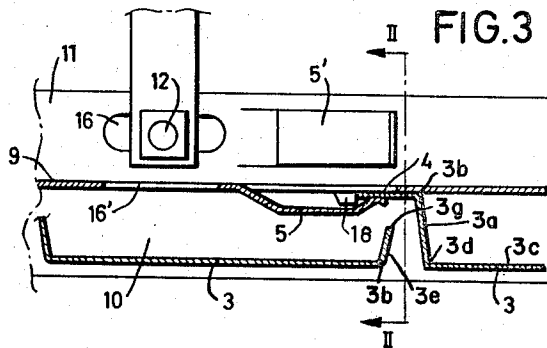


FIG.3



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SUSPENDED CEILING WITH CRUCIFORM RUNNERS HAVING LUGS ENGAGING PANEL MOUNTING FLANGES

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3 Claims. (Cl. 52—495)

This invention relates to a false ceiling panel comprising trough-shaped parallel thin-walled elements which along at least one of their longitudinal edges are provided with a mounting flange for engaging holding lugs in carrying rails suspended from the main ceiling and disposed transversely of the longitudinal direction of the false ceiling elements.

The numbers of carrying rails in such false ceiling panel which is as a rule rectangular, are dependent on the lengths of the elements, the spacing of the carrying rails normally not exceeding 125–150 cm. dependent on the longitudinal rigidity of the false ceiling elements. In a known construction, the carrying rails are channel sections, in the bottom portion of which the holding lugs are punched out, and which are suspended from the main ceiling by means of a suitable number of longitudinally adjustable supporting straps. The two extreme carrying rails associated with each panel lie slightly within the panel side-edges which are formed by the end edges of the false ceiling elements, and normally, particularly with a view to improving the appearance, these end portions are enclosed in a special border rail concealing the end edges of the elements. The manufacture and mounting of these border rails involve a certain rise in costs, which for a given false ceiling depends inter alia on the number of panels of the false ceiling, at least two border rails being required for each panel. Consequently, the rise in costs will be lowest if the entire false ceiling is constituted by a single panel. This has contributed to the circumstance that heretofore endeavours have as a rule gone in the direction of making large panels though for other reasons smaller panels might be desirable. This applies not least to large factory and office premises having shiftable partitions. Even if such premises are based on the module system, it is often seen that no regard has been had to the module system when installing a false ceiling in other way than the lengths of the false ceiling elements conform with a multiple of the module. A consequence thereof is that the shiftable partitions are normally only extended up to the false ceiling instead of being extended quite up to the main ceiling, which is preferable for stability and sound-deadening reason. The false ceiling elements extending, for example, over 3–5 modules may moreover make required changes in the placing of the lighting fixtures difficult when shifting a partition.

This invention has for its object to provide for the possibility, when installing a false ceiling, to take widest possible regard to these practically important circumstances, firstly, by making it economically reasonable to reduce the size of the individual false ceiling panels so that their lengths in the longitudinal direction of the elements will correspond, for example, to the module of a building in which the installation is to be made.

With a view to attaining this purpose, the false ceiling elements according to the invention are mounted in carrying rails having two flanges being approximately at right angles to one another, viz a substantially horizontal flange comprising holding lugs and a substantially downwards-directed flange bordering the end edges of the false ceiling elements. In this case is not only the advantage obtained that it will become superfluous to mount separate border rails on the end portions of the elements, the down-

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wards-directed flange of the carrying rails replacing such separate border rails, but the carrying rails may further be utilised for establishing the required connection with the walls of the premises, e.g. shiftable partitions extending quite up to the main ceiling. Still further, the carrying rails may also be directly used as support for lighting fixtures or other installations in the premises.

According to the invention it is preferable that the carrying rails at the ends of the elements are of cross-shaped cross-section, the rails, besides the holding lug flange and the border flange, comprising an upwards-directed suspension flange lying substantially in the same plane with the border flange, and a fourth flange lying substantially in plane with, and facing away from, said holding lug flange. When two neighbouring panels of this type are located with a suitable interspacing, for example, of 20–60 cm., this interspacing will laterally be defined by said fourth flange of each of the two adjacent carrying rails, and these flanges will constitute a well-defined supporting surface for, for example, a lighting fixture to be installed in the space between the panels. Laterally, the supporting surface will be defined by the upwards-directed suspension flanges, which prevent the lighting fixture from being laterally displaced. These suspension flanges also strengthen the carrying rails.

The invention also relates to a false ceiling having at least two juxtaposed false ceiling panels of the type specified above. The characteristic of this false ceiling is that also the fourth flange of the carrying rail disposed at the dividing line between the panels comprises holding lugs. In this case, one and the same carrying rail can thus serve for supporting the ends facing one another of the elements of the two neighbouring panels.

Lastly, the invention relates to a carrying rail intended for use in false ceilings of the kind stated which rail consists of a preferably rolled or extruded cross profile. According to the invention two neighbouring flanges or neighbouring arms of the cross are both provided with holding lugs disposed at the sides of the arms facing away from the angular space between said arms, and are both adapted for serving as suspension flanges according to need. As the cross section of this carrying rail is symmetrical with respect to the line halving the angle between the two neighbouring flanges, this carrying rail may optionally be used at one or the other side edge of a ceiling panel so that the disadvantage of having to use two different profiles at the two side edges is overcome.

With a view to appearance, it may be preferable that the lug-free flanges or arms of the cross profile at their sides facing the angular space between said flanges are provided with a longitudinally extending fluting. Such fluting will by way of example conceal rolling marks, if any, which may be of some importance because said flange sides will be more or less visible in the finished false ceiling.

In the following the invention will be more fully explained with reference to the accompanying drawing, where

FIG. 1 is a vertical section through parts of two false ceiling panels suspended from a main ceiling, and between which a movable partition is disposed,

FIG. 2 a section on a larger scale, taken along line II—II of FIG. 3, of the portion indicated by a dot-and-dash circle A in FIG. 1,

FIG. 3 a section taken along line III—III of FIG. 2, and

FIG. 4 a cross-section of a carrying rail of a slightly modified construction.

FIG. 5 is a top plan view of a series of panels in side-by-side relation.

In FIG. 1, 1 is part of a main ceiling from which a false ceiling is suspended, this false ceiling comprising

a number of false ceiling panels 2, of which two are shown in FIG. 1. Each false ceiling panel 2 consists of a plurality of trough-shaped parallel thin-walled elements 3 of, for example, perforated aluminum sheet, and in the cavity of these elements provision may be made for a sound-deadening material of some appropriate kind. In the embodiment shown, each element 3 is along one side edge provided with a mounting flange 4 for engaging holding lugs 5 or 5' in carrying rails 6 extending transversely of the longitudinal direction of the elements 3, and being suspended from the main ceiling by means of carrying straps 7. These straps are longitudinally adjustable by means of clamps 8 of a suitable kind, so that the various carrying rails 6 can be adjusted so as to lie in coplanar relation with each other irrespective of irregularities, if any, in the ceiling surface 1. Similar holding means may be provided at the other end of each panel.

In the embodiment shown in the drawing, the carrying rails 6 are of cross-shaped cross section with a horizontal arm or flange 9 extending inwardly above the false ceiling elements 3 and being provided with the holding lugs 5, a downwards-directed flange 10 covering or bordering the end edges of the false ceiling elements 3, an upwards-directed flange 11 which by means of a screw connection 12 is connected with a suitable number of supporting straps 7, and a fourth flange 13 disposed in the same plane with, and facing away from, the holding lug flange 9.

Each strip or panel 3 is composed of the flange portion 4, a downwardly bent portion 3a joining part 4 along line 3b; a horizontal portion 3c joining portion 3a along line 3d; and an upwardly bent portion 3e joining horizontal portion 3c along line 3f and having a free edge 3g. The panel is held up, in the form shown, only by the engagement of clips 5 with portion 4.

The flanges 13 of the two carrying rails of both false ceiling panels shown in FIG. 1 extend forwardly towards a shiftable partition wall 14 located between the two panels. If desired said flanges may be more or less tightly connected with said wall. If the partition wall 14 is taken down, the spacing between the two false ceiling panels may afford room for the installation of a lighting fixture 15 as indicated in dot-and-dash line, and this fixture may with its edges rest on the two flanges 13 while, at the same time, it is retained in place by the upwards-directed flanges of the two carrying rails.

In the interest of completeness, it should be added that the spacing between the two panels may also be used for accommodating an air injection or suction gap of an air-conditioning plant or a sprinkler plant, the nozzles of which may be mounted in fire-proof plates resting on the two flanges 13. It should also be noticed that the flange 13 may have holding lugs 5' as indicated by dotted lines in FIG. 2, to engage and hold the elements 3' of an adjacent ceiling panel 2'.

The two suspension rails in FIG. 1 may be identical in that they both may be designed as shown in FIGS. 2 and 3 and may be turned through an angle of 90° in relation to one another. As shown in FIGS. 2 and 3, not only the horizontal flange 9 but also the vertical suspension flange 11 is provided with holding lugs 5 and 5', respectively, and both of said flanges are also provided with elongated holes 16 and 16' for screw connection 12. The carrying rail to the left of the partition wall 14 in FIG. 1 is so located that the flange 11 serves as a suspension flange so that, consequently, the false ceiling elements 3 are mounted in holding lugs 5 in the flange 9. In relation thereto, the carrying rail to the right of the partition wall 14 in FIG. 1 is turned clockwise through an angle of 90° so that the flange 9

of this cross profile serves as a suspension flange whilst the elements 3 are mounted in the holding lugs 5' of the flange 11.

Irrespective of whether the carrying rail 6 is suspended in one or the other of the two above-explained positions, one and the same angular space, viz the space between the flanges 10 and 13, will be the only one visible, and shown in FIG. 4 the sides of said angular space may be designed with a longitudinally extending flutting 17. The purpose thereof will appear from the foregoing explanation.

In FIG. 3, 18 shows a cam or projection disposed near the holding lug 5 and serving as a stop for the flange 4 on the false ceiling element 3 engaging this lug 5.

What I claim is:

1. A false ceiling section comprising, in combination, a plurality of elongated parallel false ceiling elements of channel formation each presenting at least one mounting flange extending along a longitudinal edge of the element from one end thereof to the other, at least two carrying rails extending transversely of the longitudinal direction of said false ceiling elements at the respective ends thereof, each of said carrying rails having at least one substantially horizontal flange provided with a series of downwardly projecting holding lugs engaging with the mounting flange of each of said false ceiling elements, and at least one substantially vertical flange depending from said substantially horizontal flange and covering the adjoining end edges of said false ceiling elements, and mounting means associated with each of said carrying rails.

2. A false ceiling section comprising, in combination, a plurality of elongated parallel false ceiling elements of channel formation each presenting at least one mounting flange extending along a longitudinal edge of the element from one end thereof to the other, at least two carrying rails extending transversely of the longitudinal direction of said false ceiling elements at the respective ends thereof, each of said carrying rails having a first substantially horizontal flange provided with a series of downwardly projecting holding lugs engaging with the mounting flange of each of said false ceiling elements, a first substantially vertical flange depending from said first substantially horizontal flange and covering the adjoining end edges of said false ceiling elements, a second substantially horizontal flange and a second substantially vertical flange joined to said first flanges substantially along their joining line, and mounting means associated with said second substantially vertical flange of each of said carrying rails.

3. A false ceiling section as claimed in claim 2, wherein said second substantially horizontal flange carries a downwardly projecting holding lug.

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