

PATENT SPECIFICATION

1,029,022

DRAWINGS ATTACHED.

1,029,022



Date of Application and filing Complete Specification:
Aug. 21, 1963. No. 33063/63.

Application made in Denmark (No. 3846) on Sept. 3, 1962.

Complete Specification Published: May 11, 1966.

© Crown Copyright 1966.

Index at Acceptance:—E1 V130.

Int. Cl.:—E 04 b 5/56.

COMPLETE SPECIFICATION.

Improvements in and relating to a False Ceiling.

I, JEAN FISCHER, of Danish nationality, of Sankt Klemens, Denmark, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a false ceiling panel comprising a plurality of trough-shaped parallel thin-walled elements, each of which along at least one of its longitudinal edges is 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 ways 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 right up to the main ceiling, which is preferable for stability and sound-deadening reasons. 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 approximately at right angles to one another, one being disposed substantially horizontally and comprising the holding lugs and the other being substantially downwards-directed and bordering the end edges of the

[Price 4s. 6d.]



premises

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 downwards-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 right 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.

It is preferred that the carrying rails at the ends of the elements are of cross-shaped cross-section, the rails comprising, in addition to the holding lug flange and the border flange, an upwards-directed suspension flange lying substantially in the same plane as the border flange, and a fourth flange lying substantially in the same plane as, 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.

The carrying rail may consist of a preferably rolled or extruded cross profile in which 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. This carrying rail is described and claimed *per se* in my copending Application No. 8045/65 (Serial No. 1,029,023). 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 by turning the rail through 90° about its longitudinal axis so that the disadvantage

of having to rotate a carrying rail through 180° about a vertical transverse axis 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 is a section on a larger scale, taken along line II—II of Fig. 3, of the portion corresponding to the dot-and-dash circle A in Fig. 1 and showing a modified carrying rail,

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

Fig. 4 is a cross-section of a carrying rail of a further slightly modified construction.

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 aluminium 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 in carrying rails 6 extending transversely of the longitudinal direction of the elements 3, and which are 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 plane with each other irrespective of irregularities, if any, in the ceiling surface 1.

In the embodiment shown in Fig. 1 of 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 plane

with, and facing away from, the holding lug flange 9.

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 5¹ as indicated by dotted lines in Fig. 2, to engage and hold the elements 3¹ on an adjacent ceiling panel 2¹.

As shown in full lines in Fig. 2 and in Fig. 3, not only the horizontal flange 9 but also the vertical suspension flange 11 may be provided with holding lugs 5 and 5¹, respectively, and both of said flanges may also be provided with elongated holes 16 and 16¹ 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 as shown in Fig. 1 is turned through 180° about a vertical transverse axis so that the flange 11 remains as the suspension flange. In contrast thereto, the modified carrying rail shown in full lines in Fig. 2 and in Fig. 3 having the lugs 5 and 5¹ requires to be turned clockwise through only 90° about its longitudinal axis to serve as the carrying rail at the right of a partition wall, so that the flange 9 of this cross profile serves as a suspension flange whilst the elements 3 are mounted in the holding lugs 5¹ 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 fluting 17. The purpose

thereof will appear from the foregoing explanation.

In Fig. 3, 18 shows a 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 panel comprising a plurality of trough-shaped parallel thin-walled elements, each of which along at least one of its longitudinal edges is provided with a mounting flange for engagement with holding lugs in carrying rails, which are suspended from the main ceiling and disposed transversely of the longitudinal direction of the false ceiling elements, characterised in that the carrying rails have two flanges approximately at right angles to one another, one being disposed substantially horizontally and comprising the holding lugs, and the other being substantially downwards-directed and bordering the end faces of the false ceiling elements.

2. A false ceiling panel as claimed in claim 1, characterised in that the carrying rails are of cross-shaped cross-section, said rails comprising, in addition to the holding lug flange and the border flange, an upwards-directed suspension flange lying substantially in the same plane as said border flange, and a fourth flange lying substantially in the same plane as and facing away from the holding lug flange.

3. A false ceiling comprising at least two juxtaposed false ceiling panels as claimed in claim 2, characterised in that also the said fourth flange of the carrying rail lying at the dividing line between the panels is provided with holding lugs.

4. A false ceiling panel as claimed in claim 2 in which each rail consists of a preferably rolled or extruded cross profile, characterised in that the suspension flange is also provided with holding lugs disposed at the side of the flange facing away from the angular space between that flange and the holding lug flange.

5. A false ceiling panel as claimed in claim 4, characterised in that the lug-free flanges or arms of the cross are provided with a longitudinally extending fluting at their sides facing the angular space between said flanges or arms.

6. A false ceiling panel substantially as described and shown in the accompanying drawing.

7. A false ceiling substantially as described and shown in the accompanying drawing.

STEVENS, LANGNER, PARRY
& ROLLINSON,
Chartered Patent Agents,
Agents for the Applicant.

with, and facing away from, the holding lug flange 9.

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 5¹¹ as indicated by dotted lines in Fig. 2, to engage and hold the elements 3¹ on an adjacent ceiling panel 2¹.

As shown in full lines in Fig. 2 and in Fig. 3, not only the horizontal flange 9 but also the vertical suspension flange 11 may be provided with holding lugs 5 and 5¹, respectively, and both of said flanges may also be provided with elongated holes 16 and 16¹ 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 as shown in Fig. 1 is turned through 180° about a vertical transverse axis so that the flange 11 remains as the suspension flange. In contrast thereto, the modified carrying rail shown in full lines in Fig. 2 and in Fig. 3 having the lugs 5 and 5¹ requires to be turned clockwise through only 90° about its longitudinal axis to serve as the carrying rail at the right of a partition wall, so that the flange 9 of this cross profile serves as a suspension flange whilst the elements 3 are mounted in the holding lugs 5¹ 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 fluting 17. The purpose

thereof will appear from the foregoing explanation.

In Fig. 3, 18 shows a 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 panel comprising a plurality of trough-shaped parallel thin-walled elements, each of which along at least one of its longitudinal edges is provided with a mounting flange for engagement with holding lugs in carrying rails, which are suspended from the main ceiling and disposed transversely of the longitudinal direction of the false ceiling elements, characterised in that the carrying rails have two flanges approximately at right angles to one another, one being disposed substantially horizontally and comprising the holding lugs, and the other being substantially downwards-directed and bordering the end faces of the false ceiling elements.

2. A false ceiling panel as claimed in claim 1, characterised in that the carrying rails are of cross-shaped cross-section, said rails comprising, in addition to the holding lug flange and the border flange, an upwards-directed suspension flange lying substantially in the same plane as said border flange, and a fourth flange lying substantially in the same plane as and facing away from the holding lug flange.

3. A false ceiling comprising at least two juxtaposed false ceiling panels as claimed in claim 2, characterised in that also the said fourth flange of the carrying rail lying at the dividing line between the panels is provided with holding lugs.

4. A false ceiling panel as claimed in claim 2 in which each rail consists of a preferably rolled or extruded cross profile, characterised in that the suspension flange is also provided with holding lugs disposed at the side of the flange facing away from the angular space between that flange and the holding lug flange.

5. A false ceiling panel as claimed in claim 4, characterised in that the lug-free flanges or arms of the cross are provided with a longitudinally extending fluting at their sides facing the angular space between said flanges or arms.

6. A false ceiling panel substantially as described and shown in the accompanying drawing.

7. A false ceiling substantially as described and shown in the accompanying drawing.

STEVENS, LANGNER, PARRY
& ROLLINSON,
Chartered Patent Agents,
Agents for the Applicant.

