

PATENT SPECIFICATION

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(54) CEILING PANELS

(71) We, INTALITE INTERNATIONAL N.V., of Columbusstraat 19C, Willemstaad, Curacao, Netherlands Antilles, a Company registered under the laws of The Netherlands, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to ceiling panels, that is to say it relates to false ceilings made up of grid members and runners which support the grid members and are attached to the normal ceiling so as to be suspended therebelow, the grid members being in the form of intersecting slats forming open cells therebetween, through which cells light may pass from light sources above the panel.

Such ceilings are becoming increasingly popular but with bigger cell sizes, necessitating thicker slats, the cost becomes prohibitive. Moreover, the use of high-temper material such as high-temper aluminium alloy for the runners to give them the necessary strength to support the grid members prevents them from being pre-painted at the same time, since the temperatures employed in baking the paint on to the grid members would reduce the high temper of the runners. Separate painting of the runners, of course, renders it difficult to match the finish on the runners exactly to the finish of the grid members and this is obviously undesirable.

It is an object of the present invention to obviate or, at least, mitigate the above disadvantages.

According to the invention, a ceiling panel is in the form of a grid comprising intersecting metal grid members defining open cells therebetween, each of the grid members having two spaced-apart up-standing longitudinally extending walls

joined at their lower edges either directly or by a longitudinally extending base section, each grid member presenting a solid appearance when viewed from below.

By making the runners of channel or like section, they need not be high-tempered and hence may be subjected to a pre-painting treatment at the same time as the grid members, ensuring a perfect match.

By providing downwardly extending slots in the upper edges of the opposing limbs of the runner and providing the projecting parts of opposite edges of the grid members with hook-like extensions or the equivalent, a very simple yet rugged assembly of the ceiling is possible. Moreover, the channel or like section construction of such projecting parts gives them increased resistance to lateral bending which could result in an unpleasing distortion of the cells at the edges of the grid members, causing light leaks, and render difficult the aligning of the projecting parts with the appropriate locations on the runners.

The grid members can be produced in regular square or rectangular shape, and hence an over-lay sheet of plastics or the like may be made in the same simple shape. Such over-lay sheets may be desirable for diffusing light or for sound treatment.

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view from below of a part of a panelled ceiling.

Figure 2 shows a detail of an alternative embodiment, and

Figure 3 shows one method of attaching the grid members together.

Figure 1 shows two adjacent panels of grid members 1 and 2 and a runner 3 which serves to support the adjacent edges 90

of the grid members. The runner, of course, will be provided with means for suspending it from a normal ceiling. Such means, which may take the form of spaced wires or the like, are not shown in the drawing since they are well known and form no part of the present invention.

Each of the panels 1 and 2 is made up of intersecting grid members 4 and 5, which are perpendicular to each other and form open cells 6 therebetween. As shown in the drawing, each member 4 and 5 and the runner 3 are of channel section, the runner having opposed walls 3a and 3b and a base 3c, each member 4 having opposed walls 4a, 4b and base 4c and each member 5 having opposed walls 5a, 5b and base 5c. It will be realized, of course, that alternative shapes could be used instead of the channel shape, e.g. a U-shape or a V-shape.

The projecting parts 4' of members 4, which are adapted to engage the runner, are of a length equal to a cell width and the projecting parts 5' of members 5, which are at one end only of the panel and are adapted to abut an adjacent panel, are equal in length to a cell width, so that an assembled ceiling will give the appearance of one large panel rather than a plurality of panels and runners. Of course, instead of having projecting parts 5' at one end only of the panel, there may be projecting parts at both ends, each member 5 having a half cell width projecting part, so that the projecting parts on one panel abut the projecting parts of adjacent panels, or, in another arrangement, each member 5 having a full cell width projecting part at one end only, adjacent members having their projecting parts at opposite ends of the panel so that the projecting parts of one panel abut the end member 4 of an adjacent panel between the projecting parts of that adjacent panel, the projecting parts of adjacent panels thus being interleaved.

Each projecting part 4' is provided at the end of one of its walls 4a, 4b with a hook-like extension 7 and the walls 3a, 3b of runner 3 are provided with downwardly extending slots 8, so positioned and spaced as to coincide with the extensions 7 and having a length such as to ensure that in the assembled ceiling the bases of the runners and panels will be co-planar.

Referring to Figure 2, it will be seen that the runner 9 may be in the form of an aluminium alloy or steel extrusion having a central, longitudinally extending divider 11 and having slots 12 which are of sufficient width to receive extensions 13 of the walls of modified grid members 10, the extensions 13 terminating at the inner edges of laterally and outwardly extending parts 14 which will engage behind the walls of

runners 9 adjacent slots 12.

Referring to Figure 3, it will be seen that the intersecting grid members need not be permanently attached to each other, it may be shipped out by the manufacturer in a separated state, for economy of volume, and the panels may then be assembled on site. Thus, each member 4 may have a slot arrangement 15 in each wall thereof at each location where it is adapted to be crossed by a member 5 and each member 5 will have a cooperating slot arrangement 16 at each location where it is adapted to be crossed by a member 4. The slot arrangement 15 includes a downwardly extending slot portion 17, defined by inwardly extending tabs 18, an inverted V-shaped slot portion 19, below slot portion 17, and two vertically elongated slot portions 20 and 21 below slot portion 19. The slot arrangement 16 includes a slot portion 22, extending across the base 5c, and two upwardly extending elongated slot portions 23 and 24 on either side of a wall portion 25 which has a V-shaped lower edge spaced above base 5c. The upper edge of each wall of member 5 has short, downwardly extending slots 26 which are aligned with slot portions 23, 24 and it will be manifest that when the two members 4 and 5 are inter-engaged the ends of slot portions 23, 24 will abut the ends of slot portions 20, 21 and the tabs 18 will be located in slots 26 to secure the members together.

The runners, being of channel section, need not be of high temper material, but may be of the same type of material as is used for the panels, and may be subjected, therefore, to the same pre-painting treatment as the panels and simultaneously therewith. This ensures a perfect match of the panels and runners and augments the impression that the assembled ceiling is in the form of one large panel. The dimensions of the members 4 and 5 and the runners 3 will be the same, of course, apart from length.

The use of channel section members and runners enables the use of larger cells with light gauge material, such larger cells otherwise requiring heavy gauge slats, which are, of course, more expensive and heavier.

The greater strength afforded by the channel section will allow the suspension from the panelled ceiling of heavier than normal mobiles, signs or the like.

It will be appreciated that changes may be made in the embodiments described, without departing from the scope of the invention. For example, the upper edges of the opposing walls of the runners and/or the grid members could be turned in toward each other to provide a box section

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as opposed to a channel section. This could prove useful for housing electrical wiring, or the like. Moreover, the grid members extending in one direction may project below the members running at right angles thereto to give a different visual effect. If desired, the runners could be unslotted and the panels provided with hooks which engage over the top edge of a runner wall. Also, the walls of the runners and grid members could be perforated and sound absorbing material could be inserted in the runners and members.

The panels disclosed herein may be used with continuous hanger runners, as described, or may be used as part of a ceiling which has some panels fixed and some removable. In the latter case, the invention gives an improved, i.e. less visible, joint between the panels.

WHAT WE CLAIM IS:—

1. A ceiling panel comprising intersecting metal grid members defining open cells therebetween, each of the grid members having two spaced-apart upstanding longitudinally extending walls joined at their lower edges either directly or by a longitudinally extending base section, each grid member presenting a solid appearance when viewed from below.

2. A ceiling panel as claimed in Claim 1 wherein each grid member is of upwardly open channel section.

3. A ceiling panel as claimed in Claim 1 or Claim 2 wherein first projections at two opposite edges of the panel have a length equal to the width of one of the said cells.

4. A ceiling panel as claimed in Claim 3 wherein second projections at one of the two other opposite edges of the panel have a length equal to the width of one of said

cells, the other of said two other opposite edges having no projections.

5. A ceiling panel as claimed in Claim 3 or Claim 4 wherein said first projections have extensions for engagement with supporting runners to support the panel.

6. A ceiling comprising a plurality of panels as claimed in any of the preceding Claims and a plurality of supporting runners, each runner having the same section as the grid members of each panel.

7. A ceiling as claimed in Claim 6 wherein each of the runners has downwardly extending slots in its longitudinally extending walls to receive extensions at the edges of the panels adjacent the runner.

8. A ceiling as claimed in Claim 7 wherein the said slots are narrow and each of the said extensions lies in the same plane as a wall of a grid member and is substantially hook-shaped.

9. A ceiling as claimed in Claim 7 wherein each of said slots has a width substantially equal to the width of a grid member and the said extensions have parts extending outwardly at right angles from each wall of the said grid member at the end thereof.

10. A ceiling as claimed in any of Claims 6 to 9, wherein the runners are aluminium alloy or steel extrusions.

11. A ceiling panel as claimed in any of Claims 1 to 5, wherein the grid members have cooperating slot arrangements, whereby the panel may be assembled on site by snapping grid members together.

12. A ceiling panel substantially as described herein with reference to the accompanying drawings.

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4. A ceiling panel as claimed in Claim 3 wherein second projections at one of the two other opposite edges of the panel have a length equal to the width of one of said

cells, the other of said two other opposite edges having no projections.

5. A ceiling panel as claimed in Claim 3 or Claim 4 wherein said first projections have extensions for engagement with supporting runners to support the panel.

6. A ceiling comprising a plurality of panels as claimed in any of the preceding Claims and a plurality of supporting runners, each runner having the same section as the grid members of each panel.

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14. A ceiling as claimed in any of Claims 6 to 9, wherein the runners are aluminium alloy or steel extrusions.

11. A ceiling panel as claimed in any of Claims 1 to 5, wherein the grid members have cooperating slot arrangements, whereby the panel may be assembled on site by snapping grid members together.

12. A ceiling panel substantially as described herein with reference to the accompanying drawings.

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