

CEILING FIXATION CLIPDESCRIPTION

The present invention relates to a grid ceiling.

It has been proposed in EP-A-198141 to provide a grid ceiling comprising sets of first and of second parallel elongate carriers, the first and second carriers being
5 arranged transverse to one another to form a supporting grid with rectangular openings therein, grid panels mounted within said openings, said grid panels having a hollow interior, a plurality of securing clips, each clip being slidable at least in part within the hollow interior of a
10 grid panel, adjacent the end thereof, each clip being formed with at least one tongue thereon, each clip being manually slidable longitudinally of the panel in which it is located, to an advanced position with the tongue then extending beyond the end of the associated panel, so as to engage a
15 carrier, in part forming the relevant grid opening, the number of clips and their position on each grid panel being such as to enable the grid panel then to be held in place in its opening, the clips being slidable by acting manually on a portion thereof, to a retracted position in which said at
20 least one tongue cannot engage the carrier, thereby to enable the grid panel to be removed.

Neither this nor other known structures are capable of withstanding heavy shocks such as can be produced by earth tremors or earthquakes.

25 It is now proposed, according to the present invention to provide a grid ceiling comprising sets of first

and of second parallel elongate hollow members the first and second members being arranged transverse to one another with the ends of the second members abutting the sides of the first members, said first members including apertures or
5 recesses in at least one side thereof, the end of a second member being provided with at least one holding element projecting longitudinally beyond the end of the second member, so as to engage in an aperture or recess a relevant side of a first member, such as to enable said second
10 member to be supported on the first member, and slidable latching clips on said first member said latching clips each being slidable to and from a position in which they engage said holding element, to retain said second members in place, with respect to said first member.

15 In this way the holding elements will be prevented from jumping out of their associated recesses or apertures in the event of any shock or shocks as mentioned above. Advantageously said elongate members are of channel cross-section, including a lower web, upstanding side
20 flanges and internal rims at the free ends of the side flanges.

It is contemplated that the first and/or second members may comprise first and second carriers arranged transverse to one another to define polygonal grid openings,
25 for example rectangular grid openings.

It is also contemplated that the second member should comprise the primary and secondary panels of grid

units which are each arranged to form several cells of polygonal cross-section, the grid units being shaped and sized to fit within the grid openings, the ends of at least some of the panels abutting the sides of the carrier, said
5 ends including said holding elements to engage in an aperture or recess in a carrier. Preferably, the holding elements whether they be on the carriers or on the grid units, comprise slidable securing clips, which are slidable within the hollow interior of the associated elongate
10 member. For each grid unit there are preferably at least three securing clips, these securing clips being positioned on the grid unit to give adequate support for the unit.

Where both securing clips and latching clips are provided, they are advantageously formed as similar parts
15 and indeed they may be initially substantially identical, each comprising, above said at least one tongue thereon a cantilevered projection, and each latching clip includes a tail portion which can be slid back to engage under said cantilevered projection to retain said securing clip in
20 place. In constructions of securing clip to include an upstanding stop member, the latching clips can be produced by cutting off these stop members to leave the tail portion. In order that the invention may more readily be understood, the following description is given, merely by
25 way of example, reference being made to the accompanying drawings, in which:-

Figure 1 is an exploded perspective view of a

portion of one embodiment of grid ceiling according to the invention;

Figure 2 is an enlarged fragmentary section showing the connection between a grid unit and carrier, the clip in the advanced position;

Figure 3 is a top plan view of the portion shown in Figure 2; and

Figures 4a and 4b are side elevations of the securing clip and the latching clip respectively.

Referring first to Figure 1, a grid ceiling is shown as including a first set of parallel carriers 10 and a second set of parallel carriers 20 at right angles thereto, the drawing only showing one of each of these carriers. Each of the carriers includes a channel cross-section hollow member having a web portion 12 and two spaced side flange portions 14, the upper free ends of which are provided with inturned rims 16. At the ends of the second carrier members are formed downwardly turned hooks 18, having an upper surface 19, which are engageable in inverted U-shaped apertures 22 in the carriers 10. The upper surfaces have a rounded projection 23 extending forwardly. When the hooks 18 are engaged in the apertures 22, the projections slightly deform a side flange portion of the carriers 10 and when the hooks have been forced down the side flange-portion of the carriers 10 above the apertures 22 springs back over the upper surface 19 to hold the hook in place. Each of the carriers 10, 20 are provided with notches 24, the notches 24

of the carrier 10 being immediately above the apertures 22. Immediately below the notches 24 of the carrier 20 are further apertures 26, which are so shaped that when the carrier 20 is cut along one of the lines 27, there will be
5 produced the hooks 18, when further portions have also been cut away.

Mounted in each opening defined by the carriers 10,20 are fitted grid panels in the form of grid units 30. These consist of primary grid unit panels 40 and secondary
10 grid unit panels 50. These panels are suitably notched so that they can be interfitted with one another to form several cells of square cross-section.

The panels 40,50 are of similar construction to the carriers 10,20 and include lower webs 42, side flanges 44
15 and inturned rims, the rims being provided with notches 48.

Engageable in the interior of the panels 40,50, are securing clips 60,61 of bent sheet metal, these including an upper saddle portion 62 having downturned end sections 64, the saddle portions 62 overlying the rims 46 and
20 extending downwardly adjacent the side flanges 44. The saddle portion 62 is connected to a body part 66 which is a sliding fit within the interior of the side flanges 44 and has, at its forward end, downwardly angled tongues 68. At the rear end of each clip is a stop member 70 which has a
25 forwardly extending portion 72.

Extending outwardly from each tongue is a dimple 69 which bears against the inside of the channel section member

and produces a light frictional contact therewith. A forwardly projecting cantilevered portion 71 extends above each tongue 68 in spaced relation thereto, as can be seen in Figures 4a and 4b.

5 As shown in phantom in Figure 1, securing clips 25 of similar construction to clips 60, 61 may be provided adjacent the end of a modified second elongate member 21 which has a plane end instead of being provided with integral holding tongues 18. Securing clips 25 may thus be
10 used as holding elements to hold the first and second elongate members together.

Figure 2 shows the securing clip 60 advanced with the tongue 68 engaged in notch 24. Securing clips 61, 25 will operate in a similar way. In the position illustrated
15 in Figure 2 with respect to clip 60 the stop 70 engages the left end of the notch 48 with the portion 62 overlying the flanges 46. In the retracted position with the tongue 68 wholly within the panel 40 and the stop 70 will engage
20 against the right end of the notch 48. In fact while it is preferred to retract the tongue 68, so that it is within the panel, it need only be retracted sufficiently to disengage from notch 24.

Figure 1 shows how not only the panels 40 may be provided with the clips 60, but alternatively or in addition
25 the panels 50 could be provided with clips 61 to give greater rigidity. It is of course necessary to have at least three securing clips, which are located on the grid

unit at spaced positions to give adequate support of the grid unit.

It will be appreciated that the securing clips can readily be located and retracted with the finger to remove
5 the grid unit 30.

A latching clip 80 which is formed by cutting at 73 the tail portion 74 to remove the stop member 70, is mounted on the carrier 20 for sliding movement, the mounting being similar to that of the clip 60 in panel 40. After the
10 securing clip 60 has been moved forward to engage in recess 24, latching clip 80 is slid back so that the tail portion 74 engages under the cantilevered portion 71 and at the same time over the tongue 68 of clip 60, thereby latching the clip 60 in place. Further latching clips 81 may be provided
15 to latch securing clips 61, where provided.

A locking clip 82 which may be similar to either clip 60 or clip 80 is similarly slidable in carrier 10 and can be moved to a position in which its body part 66 can engage upper surface 19 of hook 18 to lock the hook in
20 place. If a second elongate member 21 is used, which has a securing clip 25, then the locking clip 82 will be identical with the latching clips 80 and the tail portion 74 will be used to latch under the cantilevered portion of securing clip 25.

25 In order to mount the supporting grid formed by the carriers 10, 20, hangers 5 themselves supported on a rod 6 by a bracket 7 and include arms 8 and 9 resiliently urged

towards one another and having inwardly extending hook portions 9. In order to mount the carrier, one forces them upwardly to cause these arms to spring out and they then spring back in again so that the hook portions 9 engage in 5 the upper limb of the inverted U-shaped apertures 22 and in this way the whole assembly can be hung from the ceiling.

It will be appreciated that the structure of the present invention is very easy to mount and is of simple and inexpensive construction, and prevents the securing clips 60 10 and/or the hooks 18 from jumping out in the event of an earth tremor.



C L A I M S

1. A grid ceiling comprising sets of first and of second parallel elongate hollow members, the first and second members being arranged transverse to one another with the ends of the second members abutting the sides of the first members, said first members including apertures or recesses in at least one side thereof, the end of a second member being provided with at least one holding element projecting longitudinally beyond the end of the second member, so as to engage in an aperture or recess in a relevant side of a first member, such as to enable said second member to be supported on the first member, and slidable latching clips on said first member, said latching clips each being slidable to and from a position in which they engage said holding element, to retain said second members in place, with respect to said first member.

2. A grid ceiling according to claim 1, wherein said elongate members are of channel cross-section, including a lower web, upstanding side flanges and inturned rims at the free ends of the side flanges thereby defining a hollow interior.

3. A grid ceiling according to claim 1 or 2, wherein the first and/or second members comprise first and second carriers arranged transverse to one another to define polygonal grid openings.

4. A grid ceiling according to claim 3, wherein said second members comprise grid panels each arranged to fit



within the grid openings, the ends of each abutting the relevant side of an adjacent first or second carrier, said ends including said holding elements to engage in an aperture or recess in a carrier.

5 5. A grid ceiling according to any preceding claim, wherein said holding elements comprise at least one tongue adapted to be engaged by a tail portion of a latching clip to prevent upward movement thereof.

6. A grid ceiling according to claim 5, wherein said
10 holding elements comprise slideable securing clips slideable within the hollow interior of the associated elongate member.

7. A grid ceiling according to claim 6, wherein said grid panels are formed by primary and secondary members
15 arranged transverse to one another to form a grid unit with several cells and wherein there are at least three securing clips for each grid unit, said securing clips being positioned on said grid unit to give adequate support for and to hold said unit in its grid opening.

20 8. A grid ceiling according to claim 6 or 7, wherein said holding elements and said latching clips are formed as similar parts.

9. A grid ceiling according to claim 5, 6, 7 or 8, wherein the holding elements are initially substantially
25 identical to the latching clips each comprising, above said at least one tongue thereon, a cantilevered projection and wherein each latching clip includes a tail portion which can



be slid to engage under said cantilevered projection to retain said at least one tongue of said latching clip in place.

10. A grid ceiling according to any preceding claim,
5 wherein said slideable latching clip is provided with means retaining said slideable clip in its latched position.

11. A grid ceiling according to claim 10, wherein said retaining means are friction means acting on the inside of the associated hollow member.

10. 12. A grid ceiling according to claim 11, wherein said friction means are formed by a dimple on the or each tongue, said dimple engaging the inside of the associated inner side flange surface.

13. A grid ceiling substantially as hereinbefore
15 described with reference to and as illustrated in the accompanying drawings.
