

- [54] CONCEALED GRID SYSTEM
[75] Inventor: Reinhardt H. Jahn, Riverside, Ill.
[73] Assignee: Chicago Metallic Corporation,
Chicago, Ill.
[22] Filed: Jan. 29, 1973
[21] Appl. No.: 327,700

3,352,071 11/1967 Sutter 52/484
3,426,496 2/1969 Jones 52/732 X
3,708,941 1/1973 Cuckson 52/484

Primary Examiner—Price C. Faw, Jr.
Attorney, Agent, or Firm—Hill, Gross, Simpson, Van
Santen, Steadman, Chiara & Simpson

Related U.S. Application Data

- [62] Division of Ser. No. 139,377, May 3, 1971, Pat. No.
3,714,753.
[52] U.S. Cl. 52/732, 52/484
[51] Int. Cl. E04b 5/55
[58] Field of Search 52/484, 489, 493, 720,
52/732, 730

References Cited

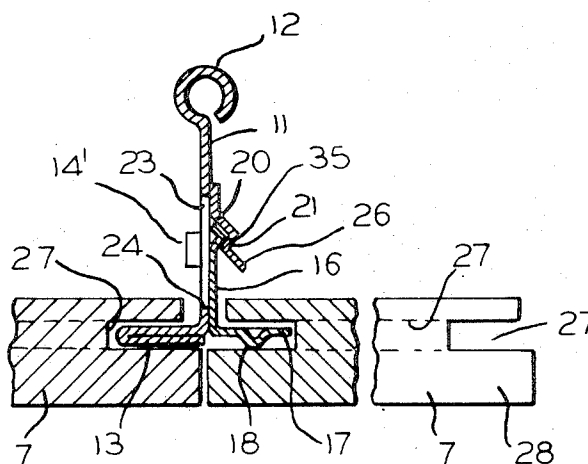
UNITED STATES PATENTS

- 2,066,205 12/1936 Keating 52/732 X
2,389,171 11/1945 Urbain 52/489 X
2,478,060 8/1949 Spiess 52/493

[57] ABSTRACT

A suspended ceiling grid structure for use in a concealed type of grid system, in which the grid structure may include a pair of main runners between which a plurality of ceiling tiles are to be supported, two spaced runner means extending between the main runners for supporting such ceiling tiles therefrom, with at least one of said runner means including downwardly movable means for supporting the associated ceiling tile, with such tile being removable from the grid structure following downward movement of said movable means.

12 Claims, 9 Drawing Figures



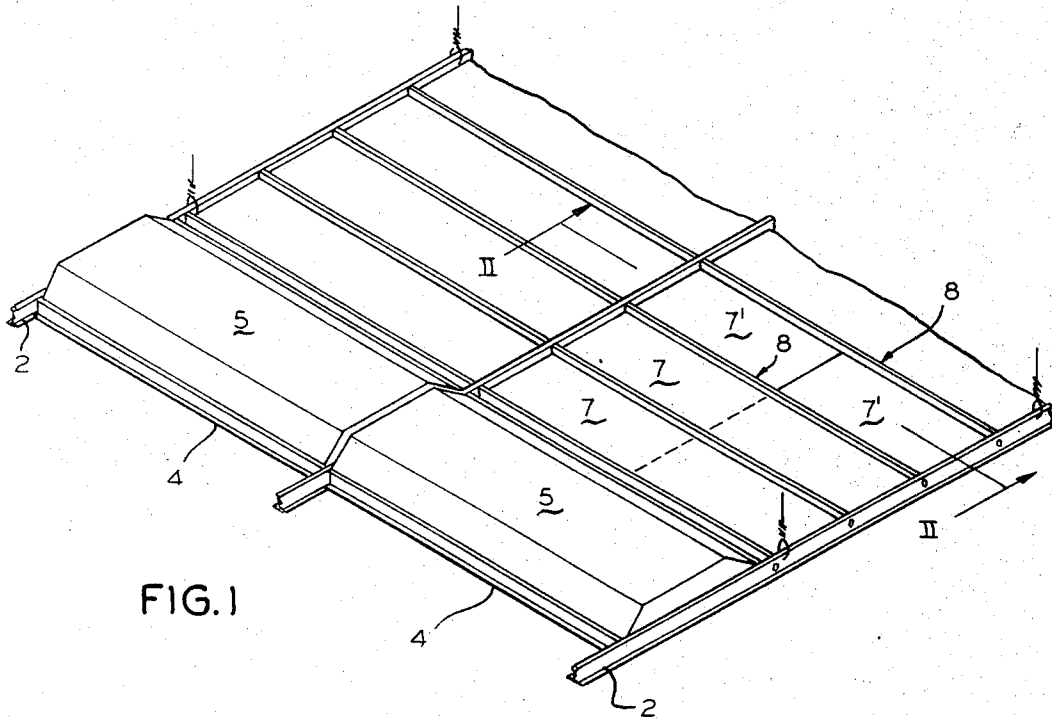


FIG. 1

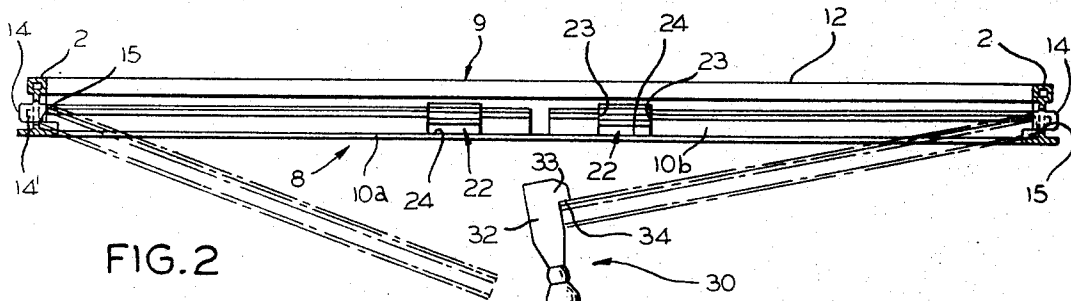


FIG. 2

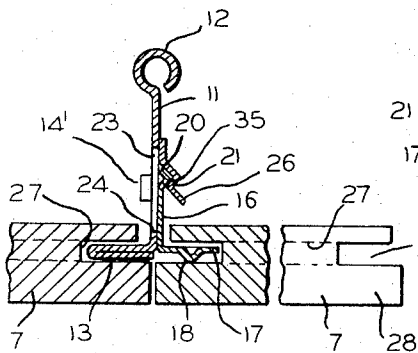


FIG. 3

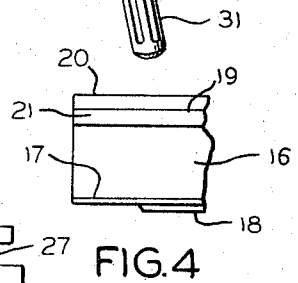


FIG. 4

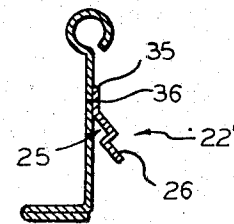


FIG. 5

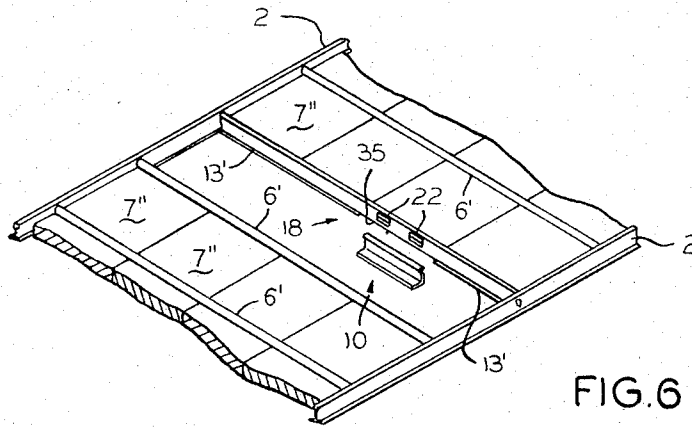


FIG. 6

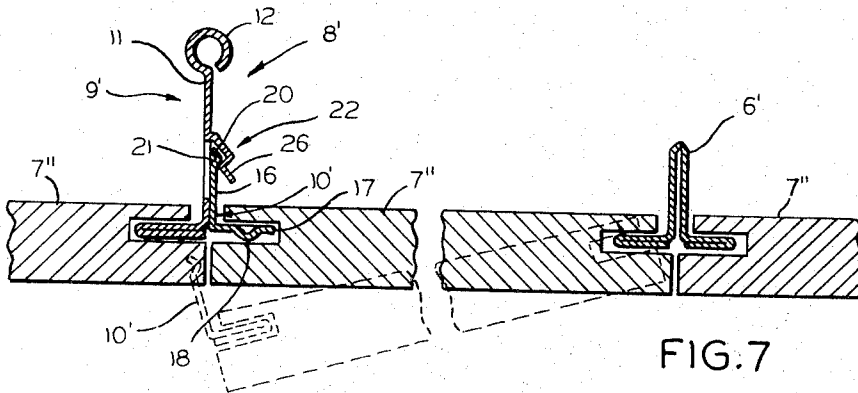


FIG. 7

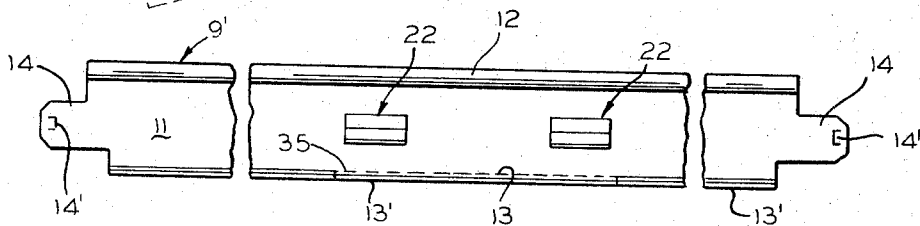


FIG. 8

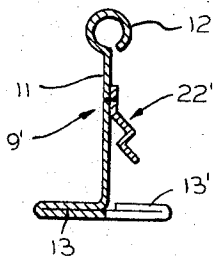


FIG. 9

CONCEALED GRID SYSTEM

This is a division of application Ser. No. 139,377, filed May 3, 1971, now U.S. Pat. No. 3,714,753.

BACKGROUND OF THE INVENTION

The invention is directed to a suspended ceiling grid structure for use in a concealed type of grid system in which the ceiling panels conceal the grid structure, i.e., the visible edges of the respective panels abut one another. Systems of this type usually employ panels which are provided with grooves or kerfs in their peripheral edges, in which are received flange portions of the grid structure upon which portions the panels are supported.

While it might be possible to interlock all the panels with the grid structure, for example, by a simultaneous installation of grid structure and panels, it is usually desirable to provide access above the suspended ceiling structure, i.e., to provide for the removability of at least selected panels without requiring at least a partial dismantling of the grid structure. Obviously, the provision of accessibility above a suspended ceiling involves greater problems in the case of a concealed grid system as compared with an exposed grid system, in which the panels are merely resting upon flanges of the grid system and thus may be readily raised out of engagement with the supporting grid structure and laterally moved out of the way to provide the desired access.

Development of concealed grid systems providing accessibility thereabove have generally fallen into one of two types, the first utilizing a substantially standard grid structure of the concealed type with the peripheral edges of the panels being so designed that at least some of the panels may be moved or pivoted upwardly and disengaged from the ceiling structure to permit access thereabove, while in the other type the runner structures are so modified that the portions of the runners supporting a selected panel are movable upwardly with the panel whereby the latter may be moved laterally above the remaining panels to provide the desired access. It will be noted that in either of these general solutions to the problem it is necessary that the ceiling panels be pivoted or moved upwardly above the general plane of the ceiling and shifted laterally to provide the desired access. It will be apparent that this necessitates the provision of adequate space above the panels to enable the same to be pivoted or moved to the desired positions necessary to provide adequate access. Oftentimes the requisite space therefor is not available either throughout the ceiling structure, or at certain locations, at which accessibility thus would be foreclosed.

The present invention is therefore directed to a novel runner structure and assembly as well as a novel grid structure utilizing the same, in which these disadvantages are completely eliminated.

BRIEF SUMMARY OF THE INVENTION

The desired results are achieved in the present invention by the utilization of a novel structure in which accessibility is achieved by moving the selected ceiling panel and portions of the supporting structure therefor downwardly, whereby the panel involved may be readily removed from the supporting structure, providing free access to the space thereabove. As a result no additional space above the ceiling grid structure is required to provide the desired accessibility, only sufficient space being required above the ceiling to accom-

modate the respective grid and panel components thereof.

More particularly, the present invention, in one of its preferred forms, utilizes a pair of support members or runners which are adapted to extend in spaced parallel relation between two spaced parallel main runners, with the ends of the support runners suitably carried by the respective main runners. The two pairs of runners thus define an access space which is adapted to be closed by one, or preferably, by a pair of ceiling panels, the juncture between the two panels being disposed centrally between the two main runners whereby one edge of each panel may be engaged with the adjacent portion of a main runner. Cooperable with each support member is a supportable member for each panel employed, a pair of portable members being employed with a pair of ceiling panels, with each member being adapted to be associated with one of the ceiling panels along the edges thereof adjacent the support members, one end of each supportable member being carried by the adjacent main runner, with the associated support member and adjacent supportable member having co-operable means thereon for interlocking the respective opposite ends of the supportable members to the adjacent portion of the associated support member.

The construction of the interlocking means is such that the interlocking action may be achieved by upward movement of the associated portion of the supportable members relative to the cooperable support member and when so interlocked will support the associated ceiling panel in the plane of the ceiling. However, when it is desired to obtain access above such a ceiling panel, the interlocking portions of the support and supportable members for such panel may be disengaged to permit the adjacent portion of the ceiling panel to be moved downwardly along with the corresponding portions of the supportable members, following which the ceiling panel may be removed to provide the desired access. Such disengagement may be readily effected by means of a suitable thin bladed tool which may be inserted between the support and supportable members and suitably actuated to engage the top edge of such a supportable member following which downwardly directed force may be applied thereto through the tool.

In another preferred form, utilizing only a single pair of cooperable support and supportable members, the support member is provided with tile supporting flanges at each side thereof, one side having a portion which is flangeless and adapted to receive and support the cooperable supportable member thereat.

In both of the preferred embodiments of the invention the supportable members are provided with outwardly extending flanges thereon and the associated ceiling panel is provided with a kerf on the corresponding edges as well as the end edge adjacent the main runner. Consequently when the supportable member or members are moved downwardly the associated edge of the ceiling panel will move downwardly and as soon as such edge of the ceiling panel has cleared the remainder of the ceiling structure, it may be laterally slipped out of engagement with the main runner and removed. Replacement would follow in reverse order.

In the embodiment of the invention illustrated, the interlocking means between a supportable member and the associated support member comprises means on

the support member forming a receiving space for a projection such as a longitudinally extending bead on the upper edge of the supportable member whereby, upon upward movement of the supportable member relative to the support member such bead may be disposed in such receiving space, the element defining such space and/or such bead having sufficient resiliency to permit sufficient springing thereof to effect an interlocking of the parts.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings wherein like reference characters indicate like or corresponding parts,

FIG. 1 is a perspective view looking down on a portion of a ceiling structure illustrating one embodiment of the present invention;

FIG. 2 is a side elevational view of one of the grid assemblies illustrated in FIG. 1, with the main runners illustrated in section;

FIG. 3 is a transverse sectional view through the assembly illustrated in FIG. 2;

FIG. 4 is a side elevational view of the end portion of interlocking structure on the support member;

FIG. 5 is a sectional view similar to that of FIG. 3, of a support member of slightly modified construction;

FIG. 6 is a perspective view, similar to FIG. 1, looking down on a portion of a ceiling structure illustrating another embodiment of the present invention;

FIG. 7 is a sectional view similar to FIG. 3 illustrating details of the embodiment illustrated in FIG. 6;

FIG. 8 is a side elevational view of the support runner illustrated in FIGS. 6 and 7; and

FIG. 9 is a sectional view similar to FIG. 5 illustrating a modified construction of the support runner illustrated in FIG. 8.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and more particularly to FIG. 1, the reference numeral 1 indicates generally a portion of a suspended ceiling grid structure of the concealed type, employing a plurality of main runners 2, which may be of a type commonly employed in prior grid structures. The main runners may be suitably spaced, in parallel relation across the area to be enclosed and suitably supported by means disposed thereabove through the usual connections, for example tie wires 3. Suitable transversely extending runners 4, generally designated in the trade as "cross tees" extend in spaced parallel relation between adjacent main runners, with the cross tees disposed in aligned relation from one pair of main runners to the next.

Usually the ends of the cross tees are interlocked with the adjacent main runner, one form of connection employing tongues formed out of a portion of the cross tees and adapted to extend through a vertically extending slot in the main runner. While details of the various runners and cross tees may vary, the substantially all have in common the utilization of an elongated runner structure having a substantially inverted T-shaped transverse cross section to form a vertically directed, longitudinally extending central portion or web provided at its lower longitudinal edge with oppositely directed horizontally extending flanges adapted to suitably engage and support respective ceiling panels. To provide reinforcement, the upper edge of the vertically extending portion usually terminates in a longitudinally extending bead suitably rolled or otherwise formed

thereon. Most cross tees commonly employed are of similar inverted T construction and where secured at each end to the main runners by respective tongues formed on each end of the cross tees, such tongues are normally formed out of the vertically directed web portion and adapted to be inserted in a vertically extending slot in the vertically directed portion of the main runner. Various constructions have also been marketed incorporating means on the tongue and/or on the main runner for effecting a mechanical interlock operative to restrict undesired withdrawing or disengaging movement of the cross tee with respect to the main runner.

As will be apparent from a reference to FIG. 1, the general construction of such a grid structure usually employs modular techniques whereby light fixtures, etc., indicated generally by the numeral 5, may be supported between respective pairs of main runners and cross tees, the cross tees associated therewith, if necessary or desirable being suitably shaped to accommodate such a light fixture.

Extending between the main runners may be a plurality of similar cross tees 6 which are specifically designed to be disposed between and provide support to adjacent panels 7.

Also extending between the main runners 2 are a pair of runner or cross tee assemblies indicated generally by the numeral 8, one such assembly being illustrated in elevation in FIG. 2 with details thereof being illustrated in FIGS. 1 and 4. Each grid assembly 8 comprises a support member or runner 9 and a pair of supportable members or runners 10a and 10b, which are of like general construction but with a reversal of mounting and supporting elements.

The support runner 9, in the embodiment of the invention illustrated, may be formed from a single piece of strip stock suitably bent by a rolling or other operation to form a vertically directed longitudinally extending portion or web 11 terminating at its upper edge in a longitudinally extending hollow bead 12 and having along its lower edge a horizontally directed longitudinally extending flange 13, illustrated as being of double thickness, formed by bending the stock at the outer end of the flange and folding the same back upon itself as clearly illustrated in FIG. 3. The opposite ends of the support member 9 may be suitably interlocked with the main runners 2, as, for example, by means of longitudinally extending tongues 14 formed from the stock of the portion 11, which tongues extend through respective vertically extending slots 15 in the respective main runners. If desired, the tongues 14 may be provided with suitable means, as, for example, a struck-out dent 14', adapted to engage the adjacent face of the runner 2 to interlock the tongue 14 to the main runner.

The respective supportable members 10a and 10b are each of generally L-shaped configuration in transverse cross section, each having a vertically directed longitudinally extending portion 16 terminating at its lower edge in a horizontally directed longitudinally extending flange 17. The members 10a and 10b may be readily fabricated from the same type of sheet metal stock utilized in the fabrication of the support member 9, and as illustrated in FIG. 4, which illustrates the construction of the left end of the member 10a as viewed in FIG. 2, the flange 17 is provided along its lower face with a longitudinally extending downwardly directed bead 18

which terminates at a point spaced from the extreme end of the member by a distance somewhat greater than the transverse width of one of the flanges of the associated main runner 2 whereby the extreme end of the flange 17 may rest directly and firmly upon the upper surface of the cooperable flange on the main runner. The bead 18 thus provides an effective maximum thickness of the flange 17 which corresponds to the double thickness of the flange 13 of the support runner 9, and a reinforcement for the flange. The top edge of the vertically directed portion 16 of the support members 10a and 10b are respectively provided with like longitudinally extending beads 19 which are disposed at the same side of the portion 16 as the flange 17, and as clearly shown in FIG. 3 in the embodiment illustrated the beads 19 have an angular transverse cross section formed by the respective angular disposed faces 20 and 21 which may extend, for example, at an angle of 90° with respect to one another. It will be appreciated from a reference to FIG. 2 that the only difference in the runners 10a and 10b in the embodiment illustrated is the fact that the bead 18 on the runner 10a terminates adjacent the left-hand of the runner while that on the runner 10b terminates at the right end thereof whereby such end portions may be engaged, as previously described with the associated main runner 2. If desired, both ends of the respective beads 18 may terminate at spaced points from the adjacent ends of the member, eliminating two different constructions.

The supportable runners 10a and 10b are each adapted to be supported at one end by the adjacent cooperable main runner 2 and suitable means is therefore provided adjacent the opposite ends of each of the members 10a and 10b for suitably supporting the same from the support runner 9. In the embodiment of the invention illustrated, the means on the support runner 9 is adapted to operatively engage the bead 19 on the associated supportable member, such means, in each case, comprising a rectangularly shaped member 22 which, as illustrated in FIG. 3, is adapted to be fabricated from a part of the vertically directed portion 11 of the support runner, such portion being cut along a pair of spaced parallel vertical lines 23 which are connected at their lower edges by a horizontally extending cut 24 connecting the two vertical cuts. The flap thus formed may be bent upwardly at the junction of its upper edge with the portion 11 and provided with a series of longitudinally extending bends therein to provide a receiving space 25, disposed in the opposite side of the portion 11 to that carrying the flange 13, with the inner surface of the space 25 being complementary to the respective portions of the bead 19 of the respective supportable members 10a and 10b.

As illustrated in FIG. 3, the lower free edge of the portion of the strip 22 is provided with an outwardly and downwardly directed edge portion 26, which forms a guiding lip for the bead 19 when the respective members 9 and 10 are to be assembled. The construction is such that upon positioning of the bead 19 of a supportable member 10 adjacent the lip 26 and the application of upwardly directed force on the member 10, relative to the member 9, the member 22 may be sprung outwardly sufficiently to permit reception of the bead 19 in the receiving space 25, and at the same time some compression of the bead 19 may take place to facilitate the reception thereof into such a receiving space.

The stock employed in the fabrication of the respective support and supportable members preferably is such that while having adequate strength to efficiently support cooperable ceiling panels, and provide an effective interlock between the engaged members, the stock preferably should be as thin as practical for its supporting purposes, to enable the interlocking of the respective members without requiring undue force. However, it will be appreciated that as the runner 2 will initially support the adjacent end of the cooperable supportable member 10, with the interlocking action taking place by a pivotal movement of the supportable member about its connection with the main runner, maximum springing of the member 22 will take place progressively in a longitudinal direction therealong due to the initially angular relationship between the supportable runner and the support runner, enabling a relatively easy engagement between the respective parts.

The embodiment of the invention illustrated, in FIGS. 1 through 5, employing two supportable members 10a and 10b is adapted to be utilized with two panels 7' which are each half the length of a single panel 7 extending from one main runner 2 to the next, the juncture of the panels 7' thus falling substantially midway between the adjacent main runners with each panel 7' being adapted to be supported by one main runner and the adjacent pair of supportable runners 10. As illustrated in FIG. 3 each panel 7' may be provided with the usual type of kerf 27 in one end edge and the two longitudinal edges, with the adjoining panel edges at the juncture therebetween being suitably formed to mate, as, for example, having a plain vertical edge 28, illustrated in FIG. 3.

In assembling the panels 7 with the supporting structure thereof, a corresponding supportable member 10 is disposed adjacent the longitudinal peripheral edges of the associated panel 7' with the flange 17 of such member disposed in the corresponding kerf 27. The kerfed end of the panel and ends of the assembled supportable members 10 are then engaged with the cooperable main runner by initially positioning the panel in an angular relation, similar to that illustrated in FIG. 2, which, however, represents an exaggerated position, the panel preferably being retained as nearly horizontal as reasonably possible, following which the opposite free end edge of the panel and associated members 10 are moved upwardly, pivoting the assembly about its support with the associated main runner 2, moving the assembly upward until it assumes the position illustrated in FIG. 2 in which the parts assume the positions illustrated in FIG. 3. The operation is then repeated with the other panel 7', completing the assembly. It will be appreciated that while I have illustrated the meeting edge 28 of each of the panels as being a plain vertical edge, another edge configuration could be employed as, for example, a lap joint such as is commonly employed in some forms of panelling, in which case assembly would have to be effected in a definite sequence, initially installing the panel having the upper overlap at each juncture followed by the installation of the panel having the lower overlap thereat. However, it is believed that in most instances a butt-type joint will be adequate, enabling the use of identical panels. It will be appreciated that to impart a uniform appearance to the ceiling structure it may be desired to construct the panels 7 in two sections whereby such sections will have a

juncture line that matches that of the panel 7' and likewise the panels 7, in such case, could employ either a butt, lap or other suitable edge configuration, or its panels 7 could be provided with a score line or the like simulating a juncture.

Access above the panels 7' may be readily achieved by reversing the installation procedures, employing a suitable tool in connection therewith. FIG. 2 illustrates the use of a novel tool, indicated generally by the numeral 30 having a handle 31 at one end and a flat planar blade 32 at the opposite end, which may be formed from stock similar to that used in the blades of putty knives and the like, the blade 32, however, having a laterally extending projection 33 which provides an edge 34 adapted to engage the top edge of a supportable member 10 adjacent the end thereof supported by the member 9. Thus, the blade 32 is sufficiently thin that it may be readily inserted upwardly between the parallel vertically directed portions 11 and 16 of the members 9 and 10 respectively, until the entire portion 33 of the blade is disposed above the top edge of the associated member 10. By then giving the tool a slight axial twist in a direction to bring the edge 34 in an overlying relation with respect to the top edge of the member 10, the resulting interlocking action between the tool and the end of the member 10 may be utilized to transmit downward force on the tool to the adjacent of the member, such force being increased until interlocking engagement between the two members is broken. As soon as the one side has been disengaged the supportable member at the opposite edge of the associated panel is likewise disengaged whereby such panel and the assembled supportable members may be removed. It will be appreciated that in each case it is merely necessary that the panel edge at the juncture of the panels and associated supportable members be pivoted downwardly sufficient to permit clearance of such end with the remaining panel, and that such downward movement is sufficient to effect the desired disengagement of the associated supportable members 10 from their cooperable support members 9, and enable the panel to be disengaged from the associated main runner 2.

While FIGS. 2 and 3 illustrate a construction in which the interlocking members 22 are integrally formed from respective areas of the vertically directed portion 11 of the support member, which it is believed is the simplest and cheapest, as well as the most efficient construction, in some cases it may be desirable to form such interlocking means as a separate element, particularly if, for example, it is desired to employ stock therefor of greater resiliency than that of the members. Such a construction is illustrated in FIG. 5 wherein the support member 9' is provided with a vertically directed portion 11 extending unbroken through out its length, insofar as the interlocking means is concerned, and the member 22' is formed as a separate strip, the transverse cross sectional configuration of the member 22' being identical to that of the member 22 with the exception that the member 22' is provided with an upwardly directed extension 35 which forms a mounting strip adapted to be secured to the portion 11, for example, by a series of spot welding 36 or other suitable means of securement. It will be apparent that the general operation of the construction of FIG. 5 is identical with that of FIG. 3.

While I have illustrated the bead 19 and the receiving space 25 as having an angular cross sectional configu-

ration, such configuration may be varied depending upon the application and details of construction, et.

Likewise, the number of accessible panels utilized in a ceiling installation may vary as desired, merely selected areas being provided with accessible panels, or such accessible panels may be alternated by employing a grid assembly consisting of a support member 9 and a pair of supportable members 10 for each panel-supporting cross tee in which case alternate panels would be permanently mounted on the flanges 13 of oppositely disposed support runners 9 while the other intermediate panels will be supported by respective pairs of supportable members 10.

It will also be noted that while I have illustrated the use of a pair of supportable members 10a and 10b with a single support member 9, in some applications it may be desirable to utilize only a single panel to close a space between two support members in which case the supportable members 10 would each be of approximately the same length as a support member 9 with the interlocking member 22 being disposed adjacent one main runner 2 and adapted to support the adjacent end of the supportable member thereat. In this case the ceiling panels preferably would be so designed that the main runner 2 not providing the direct support of the ceiling panel would be suitably concealed by a flange or underlap formed either on the accessible panel or on an adjacent panel.

FIGS. 6 through 9 illustrate another preferred form of the invention in which only a single support member and a single supportable member is employed, the remainder of the ceiling structure being of generally standard construction and employing known types of runner members. This construction is particularly suitable where a concealed structure employing relatively small ceiling panels or tiles, for example 12 or 16 inches square, disposed in a ceiling structure employing four foot base modules. In such a construction the main runners would be disposed on four foot centers with cross runners or cross tees extending therebetween and interlocked therewith at four foot intervals. Where 12 square panel tiles are to be employed, three additional cross tees may be disposed parallel to the interlocked cross tees in a non-interlocked relation with respect to the main runners. Thus, employing 12 square tiles, four rows of tiles would be utilized, each having a kerf in its respective peripheral edges adapted to receive the adjacent flange on a main runner, or on the respective interlocked and noninterlocked cross runners or tees, and with the remaining inner edges of the tiles of a row disposed in abutting relation.

Referring to FIG. 6, the pair of main runners 2 are adapted to be connected at four foot intervals by respective cross runners 8', generally constructed similar to the usual cross runner or tee, for example the cross runners 4 illustrated in FIG. 1. Referring to FIGS. 7 and 8, the usual cross runner or cross tee is replaced by a runner or cross tee assembly, indicated generally by the numeral 8' comprising a support member or runner 9' and a cooperable supportable member or runner 10'.

The support runner 9', in the embodiment of the invention illustrated, may be constructed generally in the same manner as the usual cross tee, and in like manner having a vertically directed longitudinally extending portion or web 11 terminating at its upper edge in a longitudinally extending hollow bead 12 and having

along its lower edge oppositely directed longitudinally extending flanges 13 and 13', illustrated as being of double thickness, formed by bending the stock at the outer end of the flange 13 and again folding the material back upon itself to form the oppositely disposed flange 13' at the other side of the web 11. As illustrated in FIG. 8 the ends of the member 9' may be provided with tongues 14 and detents 14' as previously described in connection with the member 9. The construction thus far described is comparable to a known form of cross tee. However, as will be apparent from a reference to FIG. 6, the flange 13'' is not continuous from one end of the member 9' to the opposite end thereof, the member having a section 35 which has a transverse cross section similar to that of the support member 9, i.e., provided with only the flange 13.

Cooperable with the support member 9' is a supportable member 10' having a cross section corresponding to that of the support members 10a or 10b and of a length to readily be insertable in the section 35 to provide an extension thereof of the flange 13'. In like manner the web 11 of the support member 9' is provided with means engageable with the supportable member 10' for supporting the same in operable relation from the support runner 9' and, in the embodiment of the invention illustrated, such means is constructed in the same manner as the comparable means illustrated in FIGS. 2 and 3, a pair of rectangular shaped members 22 being formed from the stock of the web portion 11 to form flaps which are adapted to receive the longitudinally extending bead 19 on the supportable member 10'. Likewise, as illustrated in FIG. 9, the flaps may be constructed as individual elements 22', corresponding to the construction illustrated in FIG. 5. It will be appreciated that in their embodiments the supportable member 10' may be moved upwardly and interlocked with the support member 9' to form a cross tee assembly generally corresponding to the usual cross tee.

In assembling a supporting grid structure employing the construction illustrated in FIG. 6, the main runners can be installed in the usual manner and connected at spaced intervals, for example, four feet, by respective support members 9', i.e., in the usual manner, merely substituting the support members 9' for the usual cross runners or cross tees. By similarly orienting each support member 9' each four foot space is defined by a pair of main runners and a pair of transversely extending support members one of which may be provided with a cooperable removable supportable member 10'.

The panel tiles 7' may then be arranged in rows, beginning adjacent the flange 13 of a support member and proceeding towards the flanges 13' of the opposite support member, disposing cross tees 6' between adjacent rows of panel tile. Upon the completion of three such rows of tiles the remaining row may be assembled by engaging a tile with the exposed flange of the adjacent cross tee, as indicated in dotted lines in FIG. 7, rotating the tile upwardly until it is in proper alignment with the adjacent flange 13' and then laterally sliding the tile to its position. After three such tiles have been assembled, the last tile may be positioned as illustrated in dotted lines in FIG. 7, the supportable member 10' engaged therewith and the panel rotated upwardly to the position illustrated in solid lines in FIG. 7, snapping the supportable member 10' into locking engagement with the support member 9'. In so rotating the final tile

upwardly, the supportable member 10' may be sprung slightly, if necessary, to clear the adjacent tile.

If access above the ceiling is desired, a suitable tool, such as the tool 30, illustrated in FIG. 2 may be employed to effect a disconnection of the supportable member 10' from the support member 9', thereby reversing the installation process.

It will be appreciated that in this construction the section 35, carrying only the flange 13, and of a width somewhat greater than that of a single tile, may be correspondingly disposed anywhere along the support member 9', and could therefore, if desired, be disposed adjacent one end of the support member. However, for most applications, it is deemed preferable to dispose such section intermediate the ends of the runner whereby the end portions of the support member at the cross members 2 are identical in construction to assure a firm interlocked connection.

While I have illustrated in FIG. 6, a construction using tiles for example, which are one foot square, if it were desired to employ three rows of 16 inch tile, the section 35 would be increased to accommodate the larger tile or panel.

It will be appreciated that where the supportable member 10' is disposed intermediate the ends of the support member and thus between flange portions 13' the bead 18 along the flange 17 of the supportable member may be continuous from end to end.

As previously mentioned, if the support members 9' are similarly oriented access above the ceiling may be provided for each four foot module. However, if desired, the assemblies 8' may be substituted for selected cross-runners to provide access merely at selected portions of the ceiling structure.

It will be particularly noted that in either of the embodiments illustrated the general assembly of the supporting grid structure is comparable to existing techniques, with the changes in assembly of the ceiling panels being readily apparent and thus substantially self-explanatory. Reeducation of installing personnel is therefore reduced to a minimum.

Having thus described my invention it will be obvious that various and material modifications may be made in the same without departing from the spirit of my invention.

What I claim is:

1. A runner structure for use in a grid assembly forming a part of a concealed type of grid system with accessibility above the panels to be supported thereby, comprising a support member, and a supportable member adapted to be supported from said support member, said support member being constructed at its ends for engagement with respective main runners for support thereby, said support and supportable members each having a vertically directed longitudinally extending portion terminating at its lower edge in a longitudinal flange extending horizontally outward from a face of the associated vertically directed portion, said support member having means thereon extending laterally outwardly from the opposite face of said vertically directed portion forming means for interlocking engagement with cooperable means on said supportable member, said means on said support member being constructed for engagement with such cooperable means by upward movement of the latter means relative to said support member, with said vertically directed longitudinally extending portions in side-by-side relation

and said flanges extending laterally outwardly in opposite directions therefrom and disposed in a common plane, such cooperable means being disengageable upon application of downwardly directed force upon such adjacent portion of such an engaged supportable member.

2. A runner member according to claim 1, wherein said support member is of generally L-shape in transverse cross-section.

3. A runner member for use in a grid assembly forming a part of a concealed type of grid system with accessibility above the panels to be supported thereby, comprising a support member constructed at its end for engagement with respective main runners for support thereby, said support member having a vertically directed longitudinally extending portion terminating at its lower edge in a longitudinal flange extending horizontally outward from a face of said vertically directed portion, said support member having means thereon extending laterally outwardly from the opposite face of said vertically directed portion forming means for interlocking engagement with cooperable means on a supportable member adapted to be supported from said support member, said means on said support member being constructed for engagement with such cooperable means by upward movement of the latter means relative to said support member, whereby such cooperable means may be disengaged upon the application of downwardly directed force upon such adjacent portion of such an engaged supportable member, said support member also having a longitudinal flange means extending horizontally outward from the other face of said vertically directed portion, the section of said member adjacent said first mentioned means being generally L-shape in transverse cross-section.

4. A runner member according to claim 3, wherein said flange means comprises a pair of spaced aligned flanges, the adjacent ends of which define the length of said L-shaped section.

5. A runner member according to claim 1, wherein said means on said support member forms a receiving space for means interlocable therewith on such a supportable member.

6. A grid runner member according to claim 5, wherein said means forming said receiving space includes at least a relatively resilient portion, whereby the interlockable means on such other member may enter said receiving space by temporarily springing said resilient portion out of its normal position.

7. A runner member for use in a grid assembly forming a part of a concealed type of grid system with accessibility above the panels to be supported thereby, comprising a support member constructed at its ends for engagement with respective main runners for support thereby, said support member having a vertically directed longitudinally extending portion terminating at its lower edge in a longitudinal flange extending horizontally outward from a face of said vertically directed portion, said support member having means thereon extending laterally outwardly from the opposite face of said vertically directed portion forming means for interlocking engagement with cooperable means on a supportable member adapted to be supported from said support member, said means on said support member being constructed for engagement with such cooperable means by upward movement of the latter means relative to said support member, whereby such cooper-

able means may be disengaged upon the application of downwardly directed force upon such adjacent portion of such an engaged supportable member, said means on said support member forming a receiving space for means interlockable therewith on such a supportable member, and includes at least a relatively resilient portion, whereby the interlockable means on such other member may enter said receiving space by temporarily springing said resilient portion out of its normal position, said means forming a receiving space comprising a generally rectangularly-shaped relatively resilient strip of material cut from the material of the vertically directed portion of said support member, said strip being joined along its upper edge to said portion and extending outwardly and downwardly therefrom, the lower portion of such strip being formed to provide said receiving space at the inner side thereof.

8. A runner member for use in a grid assembly forming a part of a concealed type of grid system with accessibility above the panels to be supported thereby, comprising a support member constructed at its ends for engagement with respective main runners for support thereby, said support member having a vertically directed longitudinally extending portion terminating at its lower edge in a longitudinal flange extending horizontally outward from a face of said vertically directed portion, said support member having means thereon extending laterally outwardly from the opposite face of said vertically directed portion forming means for interlocking engagement with cooperable means on a supportable member adapted to be supported from said support member, said means on said support member being constructed for engagement with such cooperable means by upward movement of the latter means relative to said support member, whereby such cooperable means may be disengaged upon the application of downwardly directed force upon such adjacent portion of such an engaged supportable member, said means on said support member forming a receiving space for means interlockable therewith on such a supportable member, and includes at least a relatively resilient portion, whereby the interlockable means on such other member may enter said receiving space by temporarily springing said resilient portion out of its normal position, said means forming a receiving space comprises a generally rectangularly-shaped relatively resilient strip of material, said strip having its upper edge portion seated upon and joined to said vertically directed portion and extending outwardly and downwardly therefrom, the lower portion of such strip being formed to provide said receiving space at the inner side thereof.

9. A runner member according to claim 1, wherein said cooperable means comprises a projection constructed to enter a receiving space on such a support member for effecting an interlock between the two members.

10. A runner member according to claim 9, wherein said projection is in the form of a laterally offset bead extending longitudinally along the top edge portion of the vertically directed portion of said other member.

11. A grid structure according to claim 10, wherein said bead is of angular transverse cross-section.

12. A runner member according to claim 1, wherein said supportable member is constructed at one end for engagement with and support by the flange of a transversely extending runner.

* * * * *