This invention relates to ceilings formed of acoustic or other tile, and in particular to a new and improved tile assembly.

Acoustic tile used in forming a ceiling may, in many instances, need to be removed at one particular point to obtain access to the supporting member, elements of the ventilating system, and the like. In the past, it has been necessary to either destroy elements of the tile to obtain access or to have the tile supported in such a manner that the supporting units are visible to the observer. In my invention, the supporting elements are completely hidden. Other systems may be so put together that any tampering with the ceiling results in expensive damage to the appearance.

The present invention has the advantage that it provides for a tile ceiling which may be readily and inexpensively assembled without the utilization of special tools. The resulting ceiling is durable and strong, and the tile supporting elements are not visible.

The assembly has the further advantage that any one or more tiles in the entire assembly may be readily removed without use of special tools for access to the area above, and may, therefore, just as readily be replaced.

The assembly of this invention may be made with but slight modifications of existing structures and at a decided cost advantage.

In the practice of my invention, tile is used having longitudinal slits or kerfs in two opposing edges of the tile. These kerfs are of the type that have in the past been used on edges of the tile to fit over the horizontal flange or web extending along the bottom edge portion of a C-bar or Z-bar or a standard concealed spline. An example of such a structure is found in Lydard Patent No. 2,293,231. The assembly of my invention also includes a series of parallel, horizontal C-bars, spaced apart a distance approximating the face dimension of the tile. Below and contiguous with the lower flange portions of the C-bars are fitted slip splines made of resilient metal and having a base portion from the longitudinal edges of which extend gripping jaws. One of the jaws overlies the flange and the other presses against the vertical web of the C-bar to hold the spline in place. The jaws are of about the same width and overlie substantially the entire base portion. The splines are of length less than the length of the tile, along the C-beam, and preferably of a length substantially less than half the length of the tiles.

The splines fit within kerfs of tiles on each side of the C-bar to hold the tiles in place. A spline may be removed, however, by sliding it horizontally along the C-bar until it is no longer positioned within the kerf of the tile to be removed.

The above and other advantages and details of the invention will be seen from the appended drawings, in which:

FIG. 1 is a view from below of a portion of a tile assembly supported in the manner of the present invention; FIG. 2 is a section taken along lines 2—2 of FIG. 1, showing a cross section of a C-bar with the slip spline thereon, and edge portions of two adjacent tiles supported by the spline; FIG. 3 is an exploded partial perspective view showing a typical portion of a joint such as the joint of FIG. 2; and FIG. 4 is a perspective of a slip spline of the type used in my invention.

There have been, in the past, numerous acoustical tile ceiling structures utilizing horizontal C-bars or Z-bars. Examples of these are found in Urban Patent No. 2,340,911, Jacobson Patent No. 2,648,102, and Carlson Patent No. 3,100,319. In FIG. 1 of the appended drawings there is shown utilization of the same basic C-bar construction together with the improvement of my invention.

Thus, in FIG. 1 there are present C-bars 10 and 11. These support a group of acoustical tiles indicated generally by the numeral 5 and include, for example, tiles 6 and 7. The C-bars are spaced apart a distance substantially equal to the width of the tiles in question. It will be seen that C-bars 1 and 2 are spaced apart approximately the width of tile 7, and C-bars 2 and 3 are spaced apart approximately the width of tile 6.

Shown in dotted outline in FIG. 1 are the various slip splines used in my invention, as, for example, spline 10. In the preferred form of my invention there will be four splines in their respective kerfs to support each tile, but each spline will be used to support a corner of two different tiles. Thus, tile 6 is supported by splines 10, 11, 12, and 13; and splines 10 and 11 also support tile 7, and splines 12 and 13 also support the tile 15 to the right of tile 6, as viewed in FIG. 1. Comparable splines 11 and 12 also support corners of tile 5; and splines 10 and 13 support corners of tile 8.

It is preferable that the total length of all the splines along one edge of a tile be of less than approximately two-thirds the width of that tile.

FIG. 2 shows a section along lines 2—2 of FIG. 1. There will be seen the C-bar 2. C-bar 2 is formed of vertical arm or web 20, the upper supporting portion 21, and the base flange 22. Supporting portion 21 is secured to the upper ceiling of other cross members in the usual manner (not shown in the drawings), and supports C-bar 2 is a position in which its axis runs horizontally.

Base flange 22 is normally at right angles to vertical support 20 and is a thin metallic section of the type often adapted to fit within the kerf of an acoustical tile. As is shown in FIG. 2, each of the tiles, here represented by tiles 6 and 7, has along its edges a slit or kerf. Thus, along the edge of tile 7 adjacent to C-bar 2 there is kerf 25, and along the edge of tile 6 that is adjacent to C-bar 2 is kerf 26. Since these kerfs are formed within the edges, they are not visible when the tile is installed.

Spline 10 includes a longitudinal base 30 folded about at opposing longitudinal edges to form gripping jaws. One jaw is the locking member 31, and the other is the supporting open member 32. Supporting member 32 overlies flange 22 when in use, and the locking member has a locking edge 42 and presses against the vertical web 20 to secure the spline in position. There is a gap 38 between the edges of supporting member 32 and longitudinal member 30. This gap preferably is of a width at least approximating the thickness of the flange 22 of C-bar 2. Thus, in cross-section, spline 10 has an appearance somewhat resembling an almost closed staple of the type normally used for stapling papers together.

As shown in FIG. 3, locking member 31 may, if desired, have beveled edge portions 35 and 36 for ease of installation.

In the completed assembly, spline 10 is positioned about flange 22 with the supporting member, or gripping jaw, 31 located above flange 22. The base 30 below flange 22 and the remainder of base 30 extends in a horizontal direction toward the opposite side of vertical support 20. The width of the spline on each side of supporting arm 20 is slightly less than the depth of the kerfs 25 and 26, but, of course, is sufficient to surround base portion 22 of C-bar 2. Thus, when the kerfs 25 and 26 of tiles 7 and 6, respectively, are fitted over the spline 10, the spline will serve to hold the tile in position, and keep the face of the tile level.
The spline 10 is preferably made of galvanized sheet steel, though other metals or plastics may be used. The material from which the spline is made should have sufficient structural strength to support the tiles in their installed position, and at least some flexibility for installation and locking as will be described below. The spline is preferably dimensioned with all of the supporting member lying to one side of its longitudinal mid-point axis and all of the locking member lying on the other side. Locking edge 42 is positioned to hold the unit with the axis below web 20. The pocket formed by base portion 38 and supporting member 32 should be of width equal to the gap in place, being retained by the edge locking member 31 pressing against the lower portion of vertical support 20.

As referred to previously, there will be C-bars along each opposing edge of given tile. Thus, in installing the tile, the spline slings will be snapped on C-bar and slipped into place as needed. For example, kerf 25, of tile 6 is inserted about flange 22 of the C-bar. Then tile 6 is lifted into position on C-bar 2, slip spline 10 is snapped on C-bar 2 and slipped longitudinally half the length of the splined tile into kerf 26, thus supporting tile 6, then slip spline 11, is snapped onto C-bar 2 and slipped totally into kerf 26, tile 6. Kerf 25 of tile 5 is then inserted on flange 22 of C-bar 1. Tile 5 is then lifted into position on C-bar 2. Slip spline 11 is slipped longitudinally along C-bar 2 to overlay tile 6 and 5, thus supporting the tiles.

It will be seen that in their supported position, the tiles block or shroud the flange 22 of the C-bar and the splines themselves.

As the installation of tile proceeds and the splines become covered, it may be necessary to move some of the splines that are already covered and cannot be reached with one or two supports, or to move supports in positions where they cannot be reached. This is readily accomplished by the insertion of a knife blade between the tiles, and by pressing the knife blade against the end of the spline to slide it axially along the C-bar. Thus, as the ceiling is completed the tiles may be slid into place and retain the tiles in position.

When at a later date it is necessary to obtain access to the area above the acoustic tile, this can readily be done by inserting a knife blade in the space between the tiles, and using the edge of the blade to slide the supporting splines to one side. The tile is then released and may be removed. It can, of course, later be replaced by fitting it into position and again sliding the splines into a supporting position. As can be seen, no damage has been done by obtaining temporary access to the area above the tiles, and access has been had readily without the use of special tools. The structure in question is strong and secure and supports the tile without the supporting structures showing.

The present invention is not limited strictly to the embodiment disclosed, but encompasses modifications thereof falling within the appended claims.

1. An acoustic ceiling assembly including a series of horizontally spaced, parallel, horizontal supporting bars,
when said slip spline is snapped onto the flange and said members being of substantially the same width with said locking member in opposing relation to said supporting member for pressing against the lower portion of the C-bar on the opposite side thereof from said flange for retaining said slip spline on said flange; and said supporting member and locking member being continuous along the length of said slip spline, whereby said slip spline can be snapped onto the lower peripheral flange of a horizontally disposed C-bar in any desired position thereof and is free to be slid longitudinally along the flange for releasing the tiles for removal.

6. The spline as set forth in claim 5, in which the corners of said locking member are beveled.

7. A tile supporting slip spline adapted to be fitted to a horizontal supporting bar and to fit within the kerfs of removable ceiling tiles, said bar having a continuous lower horizontal flange secured along its edge to the bottom edge of a vertical web, said slip spline including a base portion having a mid-point axis therein, a supporting member overlying said base portion and lying to one side of said axis, said member being secured to said base portion along one edge thereof to form a pocket and adapted to be pressed over said flange at any position along the length of said flange to receive said flange in said pocket, and a locking member overlying said base portion on the other side of said axis in opposed relationship to said supporting member, said locking member having a locking edge adapted to press against said web on the opposite side from said flange for locking the flange in said pocket, said spline having a length less than that of said flange and less than that of said kerfs whereby said spline may be held in locking engagement with said flange and said web, but may be moved longitudinally relative to said flange and said kerfs to permit the removal of said spline from said kerfs.

8. The spline set forth in claim 7, in which said base portion, said supporting member, and said locking member are made from a single piece of sheet metal.

References Cited
UNITED STATES PATENTS
2,340,911 2/1944 Urbain 52—250
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