

[54] **UTILITY FRAME FOR SUSPENDED
CEILING CONSTRUCTION**

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52/27, 28, 144, 145; 240/9 R, 9 A

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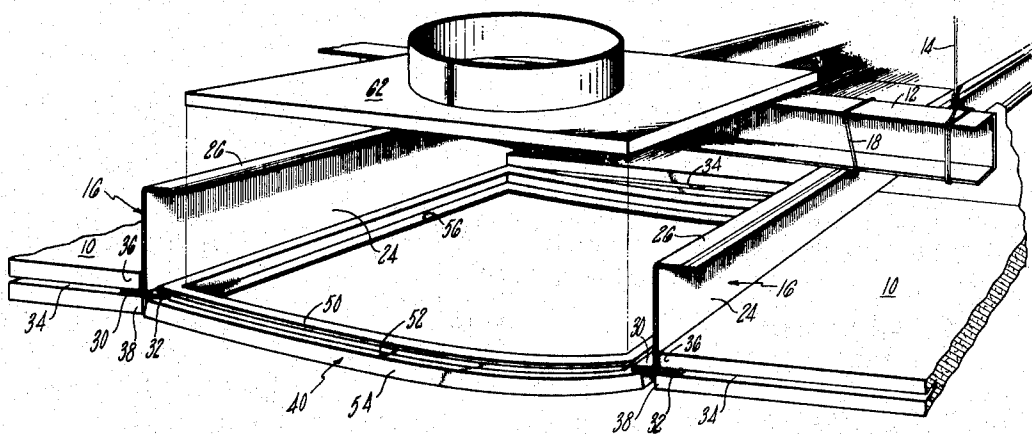
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[57] **ABSTRACT**

A one-piece utility frame for access tiles and the like is provided for use in a suspended ceiling tile construction of the flush mounted type. The frame consists of a generally rectangular frame body portion substantially equal in size to a ceiling tile and having a flat exposed bottom surface, an integral lip projecting inwardly from the body portion and defining a central access opening bounded by the frame, said lip forming a continuation of said exposed bottom surface and forming a ledge for supporting an access tile in said opening, and a frame-mounting flange secured to said body portion in spaced overlying relationship therewith and forming an outwardly facing notch mountable on a Z-bar flange for supporting the frame and positioning the exposed bottom surface in flush-mounted relationship with adjacent tiles of the ceiling construction.

4 Claims, 4 Drawing Figures



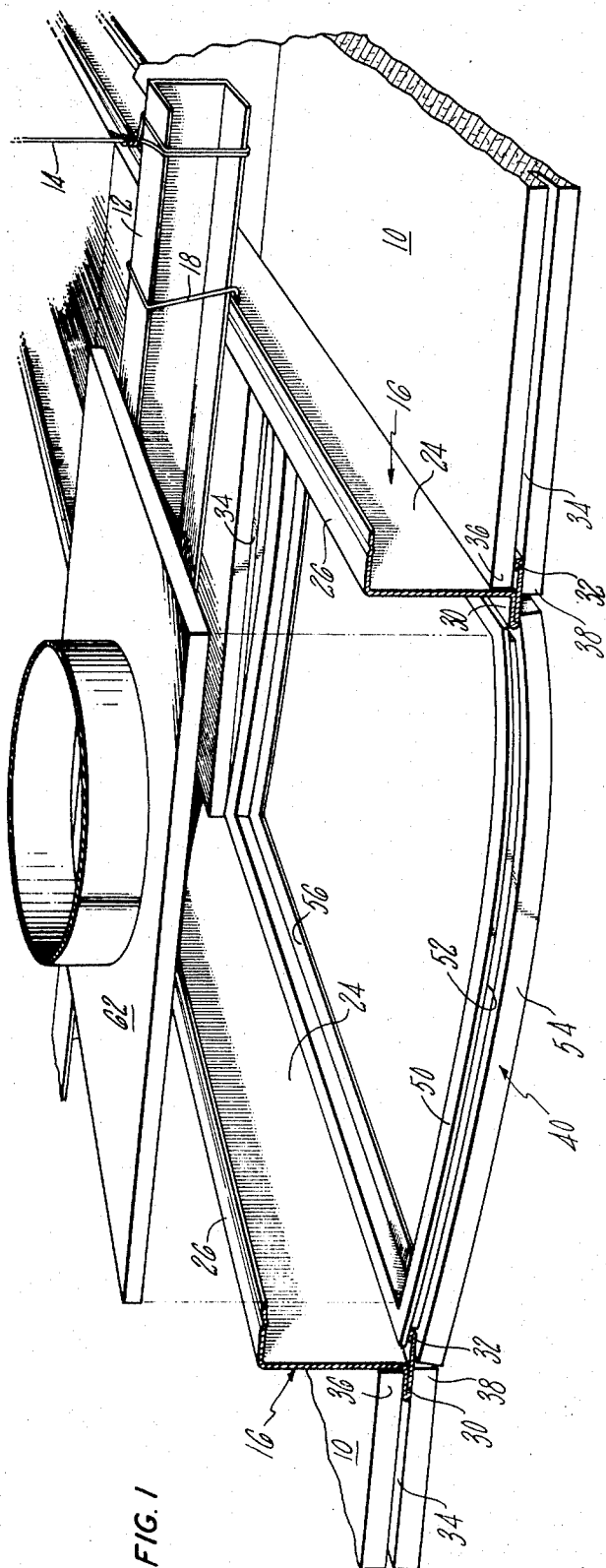


FIG. 1

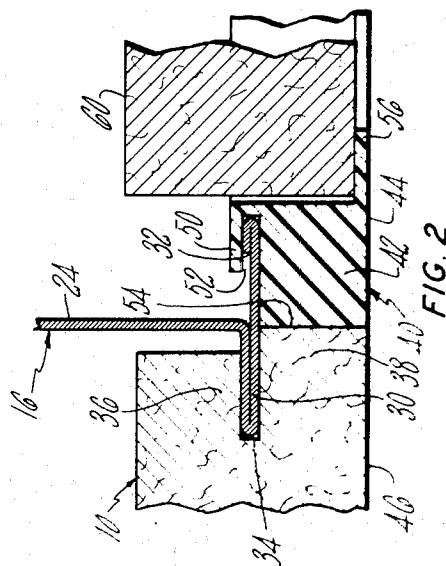


FIG. 2

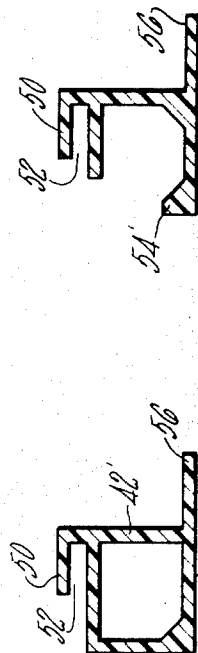


FIG. 3

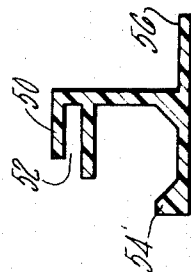


FIG. 4

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UTILITY FRAME FOR SUSPENDED CEILING CONSTRUCTION

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates generally to auxiliary or suspended ceiling construction of the flush surface type and is more particularly directed to a new and improved utility frame for access tiles and the like.

Suspended ceiling systems have obtained rather widespread acceptance for use in new construction as well as in renovation of older buildings. Regardless of the type of use, they advantageously provide concealment of utility appurtenances such as heating, ventilating or air conditioning ducts, electrical conduits, wiring, valves, plumbing and the like which are attached in spaced relation to the overhead structural framing of the building. It is, of course, desirable that the ceiling not only enclose these appurtenances but at the same time provide means whereby ready access may be had thereto for suitable maintenance and repair. Additionally, it is necessary that certain devices such as light fixtures, air vents and the like, readily blend into the ceiling construction without substantially altering the aesthetic or decorative effect of the exposed ceiling surface.

Heretofore in order to obtain this flush surface effect yet provide the desired accessibility, it has been necessary to either provide complex mechanical supporting arrangements within the concealed space or, where the load is light, support the utility frame on adjacent ceiling tiles. Unfortunately, the former required expensive and time consuming installation while the inherent weakness of the tiles frequently caused breakage and impairment of the decorative appearance.

Accordingly, it is a primary object of the present invention to provide a new and improved utility frame for flush type acoustical ceilings which is free of protruding brackets, yet is adapted for quick and easy snap-on installation on the existing ceiling gridwork.

Another object of the present invention is to provide a sturdy and durable utility frame of the type described designed for labor saving installation and flush surface type ceiling decor. Included in this object is the provision for a new and improved utility frame for access tiles and the like which can be easily and simply snapped into place on the supporting grid of a suspended ceiling to fully conceal the area above the tiles yet permit repeated access thereto without the necessity of releasing fastening members or manipulating special brackets.

Other objects will be in part obvious and in part pointed out in more detail hereinafter.

These and related objects are accomplished in accordance with the present invention by providing a one piece utility frame for access tiles and the like comprising a generally rectangular frame body portion having a flat bottom surface and at least one planar dimension equal to the width of a ceiling tile; an integral lip projecting inwardly of the body portion and defining a central access opening bounded by the frame, said lip forming a continuation of said bottom surface and forming a ledge for supporting an access tile or the like; and a frame mounting flange secured to said body portion in spaced overlying relationship therewith to form an outwardly facing notch for supportably mounting

the frame on a support grid member of the ceiling structure.

A better understanding of the objects, advantages, features, properties and relationships of the invention will be obtained from the following detailed description and accompanying drawing which set forth illustrative embodiments and are indicative of the ways in which the principles of the invention are employed.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a perspective view of a portion of a suspended ceiling construction depicting one embodiment of a utility frame of the present invention as it is being installed therein;

FIG. 2 is a sectional view of one side of the utility frame of FIG. 1 secured to a supporting grid and mounting an access tile;

FIG. 3 is a sectional view of one side of another embodiment of the utility frame of the present invention; and

FIG. 4 is a sectional view similar to FIG. 3 illustrating still another embodiment of the frame.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing in greater detail wherein like reference numerals indicate like parts throughout the several figures, there is shown a suspended ceiling construction of a conventional type utilizing a plurality of generally square ceiling tiles 10 arranged in parallel abutting rows to form an uninterrupted exposed ceiling surface. The rows of tile may be suspendably supported in any conventional manner so that the edges of the tile are positioned beneath the supporting grid and the tiles are in a common horizontal plane. In the embodiment depicted in FIG. 1, the support includes a plurality of elongated channels or beams 12 suspended from the frame of the building (not shown) by means of spaced wire hangers 14. A plurality of tile-supporting grid members 16, generally referred to as "Z-bars", are securely affixed to the channels 12 at substantially a right angle thereto by the U-shaped brackets 18. The grid members 16 are arranged in parallel relationship within a plane immediately below the channels 12 and are spaced from each other by a distance approximately equal to the width of the ceiling tiles to be installed thereon.

The Z-bars 16 are long rail-like sheet metal members having a vertically disposed central body portion 24 with a top flange 26 extending outwardly from one side thereof at substantially a right angle thereto. As shown, the flange 26 is held in flat abutting relationship with the support channels 12 and facilitates secure positioning of the Z-bar as well as firm attachment thereof to the channels 12 by the brackets 18. The bottom edge of the Z-bar's main body portion is provided with an integral crossbar in the form of a pair of flanges 30, 32 extending outwardly an equal distance from opposite sides of the body portion 24 at a right angle thereto.

As best shown in FIG. 2, the sides of each tile 10 are provided with a central notch or kerf 34 defining upper and lower peripheral side portions 36, 38 respectively. As is well known to those skilled in the art the upper peripheral portion 36 is recessed or set back relative to

the lower portion 38 to permit insertion of the Z-bar flanges 30 and 32 into the kerfs 34 of the tile as the tile is mounted thereon. It also will be appreciated that the greater peripheral extent of the tile's lower portion 38 facilitates a flush abutting relationship between adjacent tiles and fully conceals the supporting grid members to provide the desired decorative effect.

In accordance with the present invention an access tile frame member 40 can be installed in place of a conventional tile to provide access to the utility appurtenances concealed by the ceiling or to mount an air vent, high hat or other lighting fixture within the ceiling. The frame 40 is identical in width to the width of a tile and also may be equal in length thereto or may have a length which is a multiple of the normal length of the ceiling tile so as to accommodate elongated lighting units such as those of the fluorescent type. Accordingly, the frame is a generally rectangular member consisting essentially of a main body portion 42, shown in FIG. 2 as having a solid, essentially square cross-sectional configuration equal in thickness or height to the lower peripheral side portion 38 of an adjacent ceiling tile and therefore having a bottom or exposed surface 44 flush with the exposed surface 46 of the tile 10. An overlying flange 50 of shorter cross-sectional length than the body portion 42 is integrally connected thereto and together therewith define an outwardly facing notch 52 along each edge thereof similar to the kerf 34 of the ceiling tile. The outer peripheral edge 54 of the frame member 40 is of substantially the same size as a conventional tile and will mate with immediately adjacent tiles supported on the Z-bars so that upon installation it is in confronting abutting relationship with tile portion 38 and imparts the desired smooth and flush appearance to the ceiling. Integral with the main body portion 42 is an inwardly projecting lip 56 having an outer or exposed surface forming a continuation of surface 46. The lip 56 defines a central access opening within which an access tile 60 or other utility unit such as the high hat 62 of FIG. 1 may be positioned and also provides a firm and sturdy ledge on which such a unit may rest.

The frame member 40 is preferably made of a sturdy yet slightly flexible material such as plastic, aluminum or the like, capable of bending slightly during installation in the manner illustrated in FIG. 1. Thus, it will be appreciated that one edge of the frame member may be initially secured to the Z-bar by inserting the crossbar flange 32 within the notch 52 defined by the supporting flange 50 and central body portion 42 of the frame, bending the frame to impart a slight curvature thereto and mounting the opposite edge of the frame member on the adjacent Z-bar flange 30. The frame will readily

slide over the edge of the Z-bar's flange and its inherent resiliency will immediately draw the frame into its flat fully mounted position ready for receiving an access panel or other member which can be easily passed through the opening in the frame and supported on the inwardly projecting lip 56 in the manner shown in FIG. 2.

It will be appreciated that variations of the frame structure of the present invention can be utilized, such as the structures illustrated in FIGS. 3 and 4 of the drawing. In FIG. 3 the central core of the frame's main body portion 42' has been eliminated to lighten the frame while retaining all external features unchanged. In the embodiment depicted in FIG. 4, a portion of the nonexposed side wall 54' of the central body portion has also been deleted from the design without substantially altering the structural or aesthetic features of the frame member.

As will be apparent to persons skilled in the art, various modifications, adaptations and variations of the foregoing specific disclosure can be made without departing from the teachings of the present invention.

I claim:

1. A one-piece utility frame for access tiles and the like in a ceiling construction comprised of concealed suspended Z-bars and a plurality of flush mounted bar-concealing ceiling tile, the frame comprising a generally rectangular band-like frame body portion having a flat exposed bottom surface, an integral lip projecting inwardly from the band-like body portion and defining a central access opening bounded by the one-piece frame, said lip forming a planar continuation of said exposed bottom surface and forming a ledge for supporting an access tile and the like in said opening, and a frame-mounting flange integral with said body portion and fixedly positioned in spaced overlying relationship therewith, said fixed flange and said body portion forming an outwardly facing notch, said one-piece frame having sufficient flexure to permit snap-on mounting of said notch on the Z-bars for supporting said one-piece frame thereon.

2. The utility frame of claim 1 wherein the fixed mounting flange is substantially parallel to the exposed bottom surface of the body portion and is of shorter cross-sectional length to facilitate mounting on the Z-bar while preserving the flush configuration of the ceiling construction.

3. The utility frame of claim 1 wherein the frame is constructed of sturdy, slightly flexible plastic material.

4. The utility frame of claim 1 wherein the body portion has a height sufficient for positioning said flat exposed bottom surface in a common horizontal plane with the exposed surface of the ceiling tile.

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