

[54] **DEVICE FOR SUPPORTING A LOWERED FALSE CEILING CONSISTING OF PLATES AND PROVIDED WITH A CURRENT SUPPLY RAIL**

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[58] Field of Search174/48, 49, 99 B; 248/343; 52/28, 39, 220, 221, 484, 731

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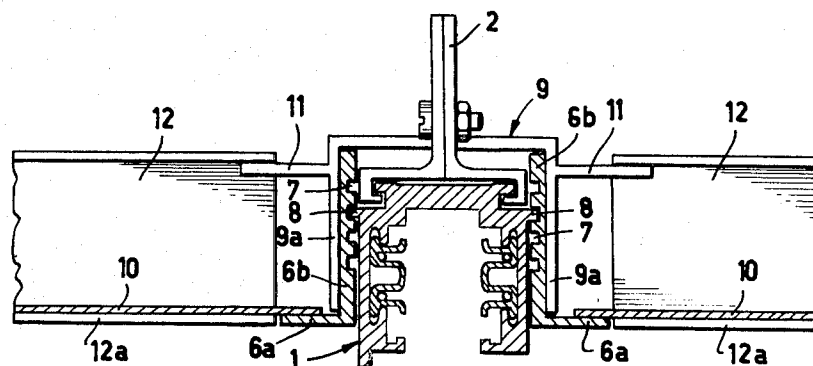
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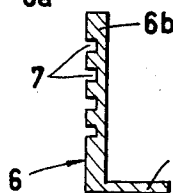
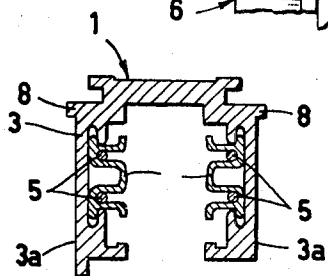
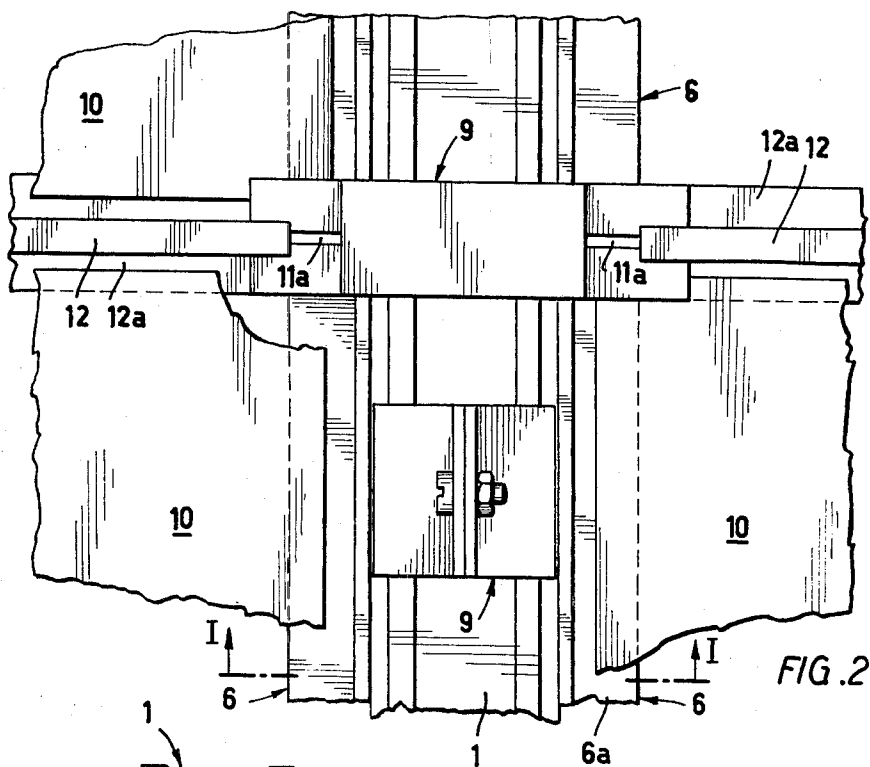
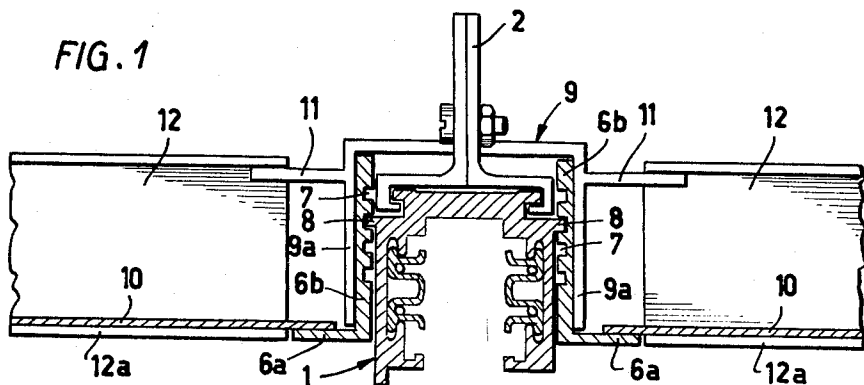
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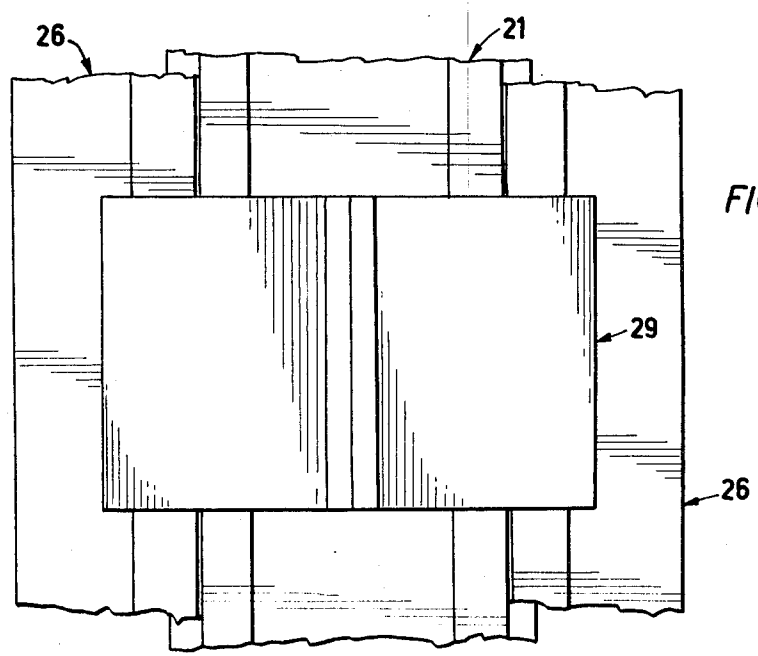
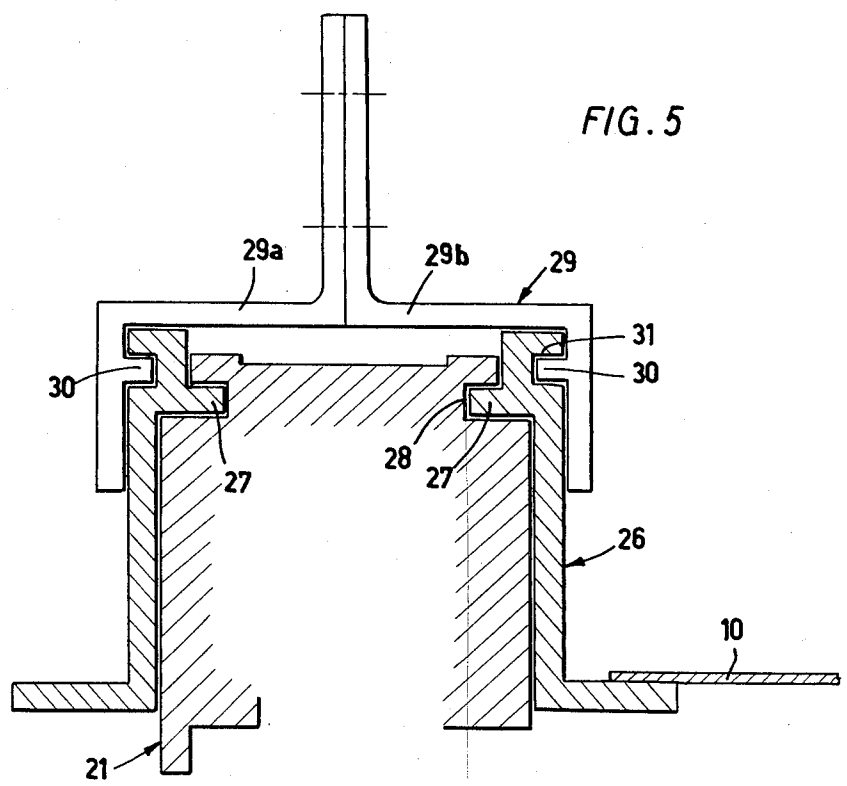
[57] **ABSTRACT**

A device for supporting the plates of a lowered ceiling comprising spaced current supply rails. The device comprises two separate L-shaped bars locked detachably on opposite sides of the supply rail and U-shaped locking brackets arranged in saddle like manner upon said support bars at spaced positions along said supply rail.

8 Claims, 6 Drawing Figures







DEVICE FOR SUPPORTING A LOWERED FALSE CEILING CONSISTING OF PLATES AND PROVIDED WITH A CURRENT SUPPLY RAIL

The present invention relates to a device for supporting a lowered false ceiling consisting of plates, which false ceiling is provided with at least one elongated current supply rail that is fitted with laterally protruding flanges for supporting said plates. The current supply rail is of the type that comprises a rigid support rail that has an open longitudinal channel wherein electric conductors are fitted in parallel so that by means of a current collecting device positioned into the channel it is possible to obtain contact with the conductors at any desired point along the rail.

Recently current supply rails have been used in connection with lowered false ceilings, whereby lighting of various objects in exhibition halls etc. can be easily arranged. In connection with lowered false ceilings consisting of plates, for example false ceilings according to U.S. Pat. No. 3 246 074 and Swiss Pat. No. 481 504, it is known to insert the current supply rails in separate elongated protective supporting boxes made in one piece, which boxes enclose the rail from above as well as from both sides. The boxes are fastened to the upper ceiling and used for supporting the lowered false ceiling. It is also known to provide the side faces of current supply rails with integral flanges that support the ceiling plates. Such a current supply rail is shown, for example, in the British Pat. No. 1 164 998. The former system has the disadvantage that a separate protective supporting box has to be used although the current supply rails are in themselves robust enough to support the false ceiling. The latter system has the disadvantage that the same current supply rail cannot be used both for surface installation and inserted in the lowered false ceiling, because the integral flanges of the current supply rail are unesthetic in the case of surface installation.

A purpose of the present invention is to eliminate the above disadvantages.

The device according to the invention is mainly characterized by what is presented in the characteristic section of claim 1.

An advantage of the invention is the fact that when lowered false ceilings are built by means of the device according to the invention, no continuous heavy supporting box constructions are required. The current supply rails can unchanged also be used for surface installation, because they have no disturbing side flanges, for which reason the supplier of the current supply rails need not have different types of current supply rails on stock for surface installation. Freely installed current supply rails may be afterwards utilized for building a lowered false ceiling of plates by just simply complementing the current supply rails by the devices according to the invention.

In the following the invention is described more closely under reference to the attached drawings, wherein

FIG. 1 shows the first embodiment of the device according to the invention as a cross section along line I—I in FIG. 2,

FIG. 2 shows the device of FIG. 2 viewed from the top,

FIG. 3 shows a cross section of the current supply rail,

FIG. 4 shows a cross section of the support rib,

FIG. 5 shows, in the same way as FIG. 1, another embodiment of the invention, and

FIG. 6 shows the device of FIG. 5 viewed from the top.

The lowered false ceiling presented in FIGS. 1 to 4 of the drawing comprises spaced parallel current supply rails 1 hanging from an upper fixed ceiling by means of supports 2. The current supply rail 1 comprises a rigid support rail 3 which is preferably made of a bar of aluminum. The open longitudinal channel of the support rail is fitted with electrical conductors 5 supported on insulation strips 4 of plastics. Such a current supply rail is presented, for example, in the Austrian Patent No. 278 131.

Against the opposite sides of the current supply rail there are positioned L-shaped support bars 6, whose one flange 6a protrudes perpendicularly from the side surface 3a of the current supply rail and other flange 6b extends in parallel with the said side surface 3a. The support bar is advantageously equally long as the current supply rail. The other flange 6b of the support bar has on its inner surface spaced longitudinal grooves 7 on each side surface 3a of the current supply rail a longitudinal rib 8 has been formed, whose size and shape correspond to the grooves 7 so that the rib 8 fits loosely into the desired groove. In this way the support bars 6 can be locked vertically at the desired level in respect of the current supply rail.

Both support bars are outwardly surrounded by a U-shaped locking bracket 9, which is of one piece and whose branches 9a are pressed against the outer surfaces of the support bars. Hereby the locking bracket prevents the support bars from being displaced perpendicularly outwards from the side surfaces 3a of the current supply rail.

The horizontal flange of the support bars 6 supports the plates 10 of the false ceiling, which plates extend between adjacent current supply rails. From the flanges 9a of the locking bracket 9 flanges 11 project and support I-shaped support beams 12, which extend crosswise with respect to the current supply rails and whose lower flanges 12a support the ceiling plates 10. The flanges 11 are formed with a recess 11a, into which the web of the support beam 12 fits. The depth of the recess has been chosen so that by raising the support beam 12 so much that its lower flange 12a comes above the horizontal flange 6a of the support bar 6 it is possible to push the support beam 12 longitudinally so that one of its ends comes loose from the corresponding recess of the locking bracket at the same end. In this way the support beam 12 can be removed from or installed to the ceiling.

When the false ceiling is installed, the current supply rails 1 are first fastened to the ceiling by means of supports 2. Hereafter both support bars 6 of each current supply rail are positioned against the side surfaces 3a of the current rail so that the ribs 8 engage the corresponding grooves 7. Since the support bars comprise several grooves 7, the bars can alternatively be positioned at different levels depending on how much of the current supply rail may remain visible. Hereafter the locking brackets 9 are pressed in position at distances corresponding to the distances between the support beams 12. Finally the support beams are placed onto the locking brackets 9 and the ceiling plates are placed onto the flanges 6a and 12a.

Although a L-shaped support bar having four grooves 7 has been presented, it is evident that it can equally well be fitted with one groove only. Similarly, the side surfaces of the current supply rail may be fitted with more than one rib 8.

FIGS. 5 and 6 show an alternative embodiment of the invention which differs from the one shown in FIGS. 1 to 4 in the respect that a groove 28 already existing in the current supply rail 21 is utilized for locking the support bars 26. For this purpose the support bar is formed with a corresponding longitudinal rib 27.

In this embodiment the locking bracket 29 consists of two separate halves 29a, 29b, which are fastened to each other detachably by some suitable means, for example by means of bolts. Each of the halves has a rib 30 on its inner face, which rib engages with a corresponding longitudinal groove 31 at the outer surface of the support bar. In this embodiment the locking bracket at the same time operates as the support by means of which the current supply rail is hung to the ceiling.

Instead of a two-part construction the locking bracket 29 may also be made of one part, in which case it is pushed longitudinally with the current supply rail over the support bars 26.

The drawings and the corresponding specification are only intended to illustrate the idea of the invention. In details the device according to the invention may vary considerably within the scope of the claims.

What I claim is:

1. A device for supporting a lowered false ceiling consisting of plates, which false ceiling comprises at least one elongated current supply rail (1;21) which is provided with laterally protruding flanges for supporting said plates (10), characterized in that it comprises two separate L-shaped support bars (6;26) positioned on opposite sides of the current supply rail, whereby one flange (6b) of each bar is arranged to be pressed against the side surface (3a) of the current supply rail and is fitted with fastening devices (7;27) engaging the current supply rail to prevent the support bar from being displaced in the direction of said side surface

(3a), and at least one U-shaped locking bracket (9;29) which by means of its branches (9a, 9b) surrounds said flanges (6b) of the support bars to prevent the support bars to be displaced in a direction perpendicular to said side surfaces of the current supply rail.

2. A device according to claim 1, characterized in that the side surfaces (3a) of the current supply rail (1) have longitudinal projecting ribs (8) and that the support bars (6) each have at least one groove (7) corresponding to said ribs, into which groove the rib penetrates when the support bar is pressed against the side surface of the current supply rail.

3. A device according to claim 1, characterized in that the side surfaces of the current supply rail (21) have longitudinal grooves (28) and that the support bars (26) each have a rib (27) corresponding to said grooves and penetrating into one groove when the support bar is pressed against the side surface of the current supply rail.

4. A device according to claim 2, characterized in that the locking bracket (9) consists of an U-shaped integral part having parallel branches (9a) with smooth inner surfaces.

5. A device according to claim 2, characterized in that the locking bracket (29) consists of two halves detachably fastened to each other (29a, 29b).

6. A device according to claim 5, characterized in that the inner surface of each half (29a, 29b) of the locking bracket (29) has a projecting rib (30) and that the support bars (26) each have a groove (31) corresponding to the rib, into which groove the rib penetrates when the locking bracket is pressed against the support bars.

7. A device according to claim 3, characterized in that the locking bracket (9) consists of an U-shaped integral part having parallel branches (9a) with smooth inner surfaces.

8. A device according to claim 3, characterized in that the locking bracket (29) consists of two halves detachably fastened to each other (292, 296).

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