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(54) **A suspended ceiling, a ceiling tile and an associated installation method**

Abgehängte Decke, Deckenelement und zugehöriges Montageverfahren

Plafond suspendu, dalle de plafond et procédé d'installation associé

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Description

Field of the invention

[0001] The present invention relates to a suspended ceiling. More specifically, the present invention relates to an improved suspended ceiling comprising a ceiling tile and supporting structure and a method for installing the ceiling tile in the supporting structure. The present invention also relates to an improved ceiling tile for a suspended ceiling.

Background art

[0002] A suspended ceiling in a room or in another accommodation may serve a variety of purposes. One purpose of having a suspended ceiling may be to conceal an underside of a space, such as another room, which is located above the room. Another purpose may be to provide an improved noise absorption and/or noise attenuation in and outside of the room. The resulting plenum space located between the suspended ceiling and a main ceiling of the room may further be utilized to accommodate e.g. wiring, piping, as well as devices related to heating, ventilation and air condition.

[0003] Typically, the suspended ceiling consists of a plurality of ceiling panels which are fitted into a supporting grid, comprising inverted T-profiles, which is mounted in the main ceiling. In the disclosure EP0979908 or US 2,318,092 A, there is provided ceiling panels which may conceal the supporting grid when viewed from below. More specifically, according to EP0979908, each ceiling panel is provided with horizontal kerfs along two opposing edges which thereby allow two adjacent ceiling panels to come closer to each other while concealing the supporting grid.

[0004] However, known ceiling panels are easily displaced from their fittings in the supporting grid. In one example, a displacement of a ceiling panel may be induced by a sudden change of air pressure in the room, for instance when a door connected to the room is abruptly opened or closed. In another example, the displacement may occur when a force is applied to the ceiling panel from below, which may happen, for example, during a cleaning process of the ceiling panel. The displacement problem has been addressed in the disclosure EP0979908, wherein certain spring arrangements have been used. Alternatively, so-called hold-down clips mounted on the back sides of the ceiling panels may be utilized to spring arrangements or hold-down clips, are concealed in an assembled state. However, it is typically cumbersome and time consuming to install these external locking devices into each, often large number, of the ceiling tiles to be mounted. Moreover, the external locking devices may destroy parts keep the ceiling panels in place. Preferably, these external locking devices, such as spring arrangements or hold-down clips, are concealed in an assembled state. However, it is typically

cumbersome and time consuming to install these external locking devices into each, often large number, of the ceiling tiles to be mounted. Moreover, the external locking devices may destroy parts of the ceiling tile, due to the ceiling tile being porous and consequently fragile. Also, it is difficult to implement an efficient automated manufacturing process in which the external locking device is mounted into a proper position of the ceiling tile.

Summary of the invention

[0005] It is therefore an object of the present invention to provide an improved suspended ceiling comprising a ceiling tile which in a mounted state is more efficiently prevented from involuntary displacements. Moreover, it is an object to provide a method for mounting the improved suspended ceiling.

[0006] A further object of the present invention is to provide an improved ceiling tile which is adapted to be mounted in the inventive suspended ceiling according to the above.

[0007] According to a first aspect of the invention, there is provided a suspended ceiling according to appended claim 1.

[0008] An advantage of the present inventive concept is that the ceiling tile is prevented from getting displaced in a vertical direction. By means of the engagement from above as well as from below, a vertical displacement of the ceiling tile is prevented. A portion of the grid of profiles may engage from below with the first pair of side-edge portions of the ceiling tile while another portion of the grid of profiles may engage from above with the second side-edge portions of the ceiling tile. A side-edge portion of the ceiling tile may be a part of an underside of the ceiling tile, a part of an upper side of the ceiling tile, a groove or cavity provided in a side portion of the ceiling tile, a protrusion provided in a side portion of the ceiling tile, etc. Moreover, there is no need for any external locking devices, such as spring arrangements or hold-down clips, in order to further secure the ceiling tile.

[0009] A further advantage of the present inventive concept is that the ceiling tile is easy to mount. More specifically, the ceiling tile may be mounted by performing a series of acts which are described below in relation to the second aspect of the invention.

[0010] A further advantage of the present inventive concept is that it is unnecessary to lift the ceiling tile above the grid of profiles during mounting, thereby making the mounting process easier. Thereby, a smaller vertical extension of the plenum space may be needed in order to mount the ceiling tile which, for instance, may result in more available headroom in the room.

[0011] Another advantage of the present invention is that the ceiling tile also is easily demountable. For example, this property may make it easier to access the plenum space when needed. In particular, there is no need for a separate entrance chamber in the ceiling for accessing the plenum space, since any part of the suspended ceil-

ing comprising the inventive ceiling tiles is equally accessible.

[0012] Thus, in a mounted state the ceiling tiles comprised in the inventive suspended ceiling are more efficiently prevented from involuntary displacements which may be induced by a wind uplift, impacts from objects, forces applied to the ceiling panel from below, e.g. during a cleaning process, a sudden change of air pressure in the room when a door connected to the room is abruptly opened, etc.

[0013] The grid of profiles engages with the first and second pair of side-edge portions such that a clamping action that counteracts lateral displacement of the ceiling tile is provided. By means of the clamping action, or frictional fit, the ceiling tile is kept fixed in a lateral position, being restrained by friction. Preferably, the clamping action is such that the ceiling tile is kept fixed at least in a first lateral direction. More preferably, the clamping action is such that the ceiling tile is kept fixed in two perpendicular lateral directions.

[0014] According to one embodiment, the grid of profiles engages with the first and second pair of side-edge portions under elastical deformation of the latter. By an elastical deformation of an object with a given original shape, which is not deformed, is meant a moderate deformation or bending of the object such that it essentially assumes its original undeformed shape when the deformation action or bending is ceased. An advantage of this embodiment is that the ceiling tile may be more easily mounted, since it may be bent, to a larger or lesser extent, into position. Another advantage of this embodiment is that a mounted ceiling tile may be demounted and then mounted again without appreciably destroying the ceiling tile.

[0015] According to an alternative embodiment, the grid of profiles engages with the first and second pair of side-edge portions under inelastical deformation of the latter. After the inelastical deformation, the ceiling tile does not assume its original undeformed shape. After a demounting of this ceiling tile, it may be replaced by another ceiling tile. Optionally, parts of the ceiling tile may be reused.

[0016] Optionally, the grid of profiles may engage with the first and second pair of side-edge portions under elastical deformation of the grid of profiles, or more specifically, elastical deformation of flanges provided in the profiles. As a further option, the grid of profiles may engage with the first and second pair of side-edge portions under elastical deformation of the grid of profiles as well as under elastic deformation of the first and second pair of side-edge portions the ceiling tile.

[0017] According to one embodiment, the first pair of side-edge portions comprises a first side edge and a second side edge, wherein a first groove is provided in and extending along the first side edge, and wherein a second groove is provided in and extending along the second side edge. A depth of the first groove is larger than a depth of the second groove and, moreover, the grid of

profiles comprises a first and a second flange which are received by the first and second grooves, respectively. Thus, the grid of profiles may engage from below with at least a portion of the first and second grooves. An advantage of providing the ceiling tile with grooves is that the positioning of the ceiling tile is further improved, at least in one lateral direction. Optionally, a portion of the grid of profiles may also engage from above with at least a portion of the first or second groove.

[0018] By means of the first groove having a larger depth than the second groove, the flanges may more easily be inserted into the respective groove allowing for a simpler mounting. In particular, an installation of the ceiling tile from below the suspended ceiling is admitted. As a consequence, a smaller plenum space may be needed for installing the ceiling tile which may result in, for instance, more headroom in the room. Another advantage of providing the ceiling tile with grooves is that the ceiling tile may be inserted into a part of the grid of profiles and may thereby conceal at least part of the grid of profiles.

[0019] According to one embodiment, the engagement between the grid of profiles and the first pair of side-edge portions occurs between the first and second flange and an upper engagement surface associated with the first and second groove, respectively. The engagement may occur at a respective upper portion of the first and second flanges. The upper engagement surface of each groove may be a portion of an area formed by the groove. For example, the first groove may give rise to two oppositely arranged walls; the upper engagement surface of the first groove may be one of these walls. Analogous remarks holds for the second groove.

[0020] The surface profile of the upper engagement surface may be flat, stepwise flat, stepwise curved, etc.

[0021] According to one embodiment, the upper engagement surface of the first groove is stepped. The step may be such that a width of the groove is smaller at a large depth of the groove than a width at a small depth of the same. Moreover, the step may be such that a lateral displacement may be prevented.

[0022] By means of the step in the groove, there is provided a first and a second depth in the first groove: the first depth may substantially correspond to the depth of the second groove while the second depth may be larger than the depth of the second groove. The grid of profiles may engage with the second depth of the groove when installing the ceiling tile and with the second depth of the groove when the ceiling tile is mounted and aligned in a proper position. Thus, an advantage of having the step is that, when displacing the ceiling tile engaging with the grid of profiles by means of a first upper engagement surface towards the second flange, the ceiling tile may after a given distance clicks down so that it engages with the grid of profiles by means of a second upper engagement surface of the step. As a result of the ceiling tile clicking down, whereby e.g. the ceiling tile clicks into a proper position, a worker mounting the ceiling tile may

obtain a confirmation that the ceiling tile is located in or close to a proper position.

[0023] A further advantage is that a lateral displacement of the ceiling tile may be prevented, in spite of there being a deeper portion of the first groove. In order to displace the ceiling tile from its mounting position, a very specific combination of vertical and horizontal forces at various suitable locations at a front surface of the ceiling tile needs to be applied.

[0024] According to an alternative embodiment, also an upper engagement surface of the second groove is stepped. The depth of the second groove may be equal to a depth of the first groove.

[0025] Optionally, there may be several steps provided in the upper engagement surface of the first groove. The width of the groove may be stepwise constant.

[0026] Optionally, a portion of the stepped profiles which is arranged to engage with the grid of profiles may comprise a material having larger friction against the grid of profiles than other portions of the ceiling tile.

[0027] According to one embodiment, the second pair of side-edge portions comprises a third side edge and a fourth side edge, wherein a first stepped profile is provided in and extending along the third side edge for forming a step in a back surface of the ceiling tile, and wherein a second stepped profile is provided in and extending along the fourth side edge for forming a step in the back surface. Moreover, the grid of profiles comprises a third and a fourth flange received by the first and second stepped profiles, respectively. By means of this embodiment, a first pair of profiles comprised in the grid of profiles may engage from below with the first and second grooves, while a second pair of profiles may engage from above with the stepped profiles provided in the ceiling tile, the first and second pair of profiles being situated at the same height. A further advantage of providing the ceiling tile with stepped profiles is that the positioning of the ceiling tile is further improved, at least in one lateral direction. Together with the grooves according to the embodiment above, the positioning of the ceiling tile is improved in two lateral directions.

[0028] According to one embodiment, the engagement between the grid of profiles and the second pair of side-edge portions occurs between the third and fourth flange and a lower engagement surface associated with the first and second stepped profile, respectively. Preferably, each lower engagement surface has a surface profile with substantially corresponds to a surface profile of an associated area of the flange in which the engagement occurs. For example, the surface profile of the lower engagement surface may be flat, stepwise flat, stepwise curved, etc.

[0029] According to one embodiment, the grid of profiles comprises a plurality of inverted T-profiles. The first and second flange may be provided on two separate inverted T-profiles. The grid of profiles may comprise a metallic material, such as steel or a sheet metal. Alternatively, the grid of profiles may comprise a light-weight

material, for example a light metal such as aluminum.

[0030] According to an alternative embodiment, the grid of profiles may comprise at least one of an L-profile, an H-profile, an I-profile and a Z-profile.

[0031] According to one embodiment, the ceiling tile is rectangular. In one example, the ceiling tile is quadratic, each side edge having equal extensions. With regard to the rectangular ceiling tile, the first pair of non-adjacent side-edge portions comprises two opposing side edges having a first extension and the second pair of non-adjacent side-edge portions comprises the other two opposing side edges of the rectangle having a second extension. According to one embodiment, the ceiling tile comprises an elastically deformable material. According to another embodiment, the ceiling tile comprises compressed fibre material. The compressed fibre material may be mineral wool such as rock wool or, especially, glass wool.

[0032] According to one embodiment, the suspended ceiling further comprises a plurality of ceiling tiles of the type according to any of the embodiments described in the above. The plurality of ceiling tiles may have varying dimensions. For example, a ceiling tile adjacent to a corner or a wall may be smaller than a ceiling tile which is not.

[0033] According to a second aspect of the invention there is provided a method for mounting a suspended ceiling according to appended claim 11.

[0034] According to one embodiment, the act of providing a ceiling tile further comprises providing a ceiling tile in which said upper engagement surface of said first groove is stepped.

[0035] According to one embodiment, a first stepped profile is provided in and extending along the third side edge for forming a step in a back surface of the ceiling tile, and a second stepped profile is provided in and extending along the fourth side edge for forming a step in the back surface. Moreover, the third and fourth flanges comprised in the grid of profiles engage with the first and second stepped profiles, respectively.

[0036] According to one embodiment, the grid of profiles engages with the first and second pair of side-edge portions under elastical deformation of the latter.

[0037] The details and advantages of the second aspect of the invention are largely analogous to those of the first aspect of the invention, wherein reference is made to the above. In addition, it is noted that the ceiling tile may be mounted in a preassembled grid of profiles.

[0038] According to a third aspect of the invention there is provided a ceiling tile for a suspended ceiling. The ceiling tile is arranged to be supported by flanges of a grid of profiles, where the flanges have a thickness T. The ceiling tile has a front surface, a back surface and a first and a second pair of non-adjacent side-edge portions, wherein each side-edge portion of the first pair comprises an upper engagement surface and each side-edge portion of the second pair comprises a lower engagement surface. Moreover, the upper engagement surfaces are arranged at a distance (X) from the front surface, and the

lower engagement surfaces are arranged at a distance (Y) from the front surface, wherein the difference between the distance X and the distance Y is less than the thickness T.

[0039] The ceiling tile may be mounted in a suspended ceiling comprising a supporting structure in the form of a grid of profiles. The upper and lower engagement surfaces may engage with the flanges. This engagement may occur by means of a clamping action that counteracts lateral displacement of the ceiling tile. The engagement may also occur under elastical deformation of the first and second pair of side-edge portions.

[0040] As is clear from the above, in an unmounted state of the ceiling tile, the difference between the distance X and the distance Y is less than the thickness T. In equations, this relation may be written as $X-Y < T$. By means of the relation between X, Y and T, a clamping action is obtained, thereby keeping the ceiling tile in place. In a non-limiting example, $X=15$ mm, $Y=14$ mm and $T=1.1$ mm, so that the difference becomes $X-Y=1$ mm, which is smaller than 1.1 mm. In a mounted state, however, when the ceiling tile is mounted in a grid of profiles, at least one of the lower engagement surfaces may be compressed and the relation above between X and Y may be modified. Moreover, at least one of the upper engagement surfaces may be compressed. For instance, in a mounted state, the relation $X'-Y'=T$ may hold, where X' and Y' are the distances corresponding to X and Y when the ceiling tile is mounted.

[0041] According to one embodiment, the first pair of side-edge portions comprises a first side edge and a second side edge, wherein a first groove is provided in and extending along the first side edge and wherein a second groove is provided in and extending along the second side edge. The first and the second groove may be provided between the front surface and the back surface. A depth of the first groove may be larger than a depth of the second groove. Moreover, the upper engagement surfaces comprised in the first pair of side-edge portions may be arranged in the first and second groove. According to one embodiment, the upper engagement surface of the first groove is stepped. The step may be such that a width of the groove is smaller at a large depth of the groove than a width at a small depth of the same. Moreover, the step may be such that a lateral displacement may be prevented.

[0042] According to one embodiment, the second pair of side-edge portions comprises a third side edge and a fourth side edge, wherein a first stepped profile is provided in and extending along the third side edge for forming a step in a back surface of the ceiling tile, and wherein a second stepped profile is provided in and extending along the fourth side edge for forming a step in the back surface. The lower engagement surfaces may be arranged in the third and fourth stepped profiles.

[0043] According to one embodiment, the ceiling tile is rectangular. In one example, the ceiling tile is quadratic, each side edge having equal extensions. According to

one embodiment, the ceiling tile comprises an elastically deformable material. According to another embodiment, the ceiling tile comprises compressed fibre material. The compressed fibre material may be mineral wool such as rock wool or, especially, glass wool.

[0044] According to one embodiment, at least one of the lower or upper engagement surfaces has an undulating or irregular shape, the engagement surfaces thereby being arranged at a varying distance from the front surface. For instance, the undulating or irregular shape may be wave shaped, sawtooth shaped, etc. An advantage of having an undulating or irregularly shaped engagement surface is that the ceiling tile may be more easily compressed in these areas and may thereby engage with the grid of profiles more easily. Simultaneously, however, the magnitude of the engagement between the engagement surfaces and the grid of profiles may be reduced.

[0045] When the distance between an engagement surface and the front surface is varying, the distance may have a maximal magnitude and a minimal magnitude. The distance may be measured normal to the front surface. Thus, the concept of distance may be defined as follows. In one example, the distance between the engagement surface and the front surface is defined to be the maximal magnitude of the distance. In another example, the distance between the engagement surface and the front surface is defined to be the minimal magnitude of the distance. In yet another example, the distance between the engagement surface and the front surface is defined to be an average distance between the front surface and the engagement surface which is arranged at a varying distance from the front surface.

[0046] The profiles comprised in the grid of profiles may have any shape and cross sections. In one example, the profiles comprise inverted T-profiles. Moreover, the grid of profiles may comprise flanges which are situated at different heights.

[0047] Other details and advantages of the third aspect of the invention are largely analogous to those of the first aspect of the invention, wherein reference is made to the above.

[0048] Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc]" are to be interpreted openly as referring to at least one instance of said element, device, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated.

Brief Description of the Drawings

[0049] The above, as well as additional objects, features and advantages of the present invention, will be better understood through the following illustrative and

non-limiting detailed description of preferred embodiments of the present invention, with reference to the appended drawings, where the same reference numerals will be used for similar elements, wherein:

Fig. 1 is a perspective view schematically illustrating an embodiment of the inventive suspended ceiling comprising a plurality of ceiling tiles and a grid of T-profiles.

Fig. 2 is a perspective view illustrating a two side edges and a back surface of one of the ceiling tiles shown in Fig. 1.

Fig. 3a is a cross-sectional side view of two ceiling tiles of the type shown in Fig. 2 along the lines A-A and C-C as mounted into an inverted T-profile.

Fig. 3b is a cross-sectional side view of two ceiling tiles of the type shown in Fig. 2 along the lines B-B and D-D as mounted into an inverted T-profile.

Fig. 4a and Fig. 4b illustrate cross-sectional side views of an alternative embodiment of one of the ceiling tiles shown in Fig. 1 as mounted into a pair of inverted T-profiles.

Fig. 5 is a perspective view illustrating yet an alternative embodiment of one of the ceiling tiles shown in Fig. 1.

Figs. 6a-c are cross-sectional side views of the ceiling tile of the type shown in Fig. 5 along the lines A1-A2, B1-B1 and C1-C1, respectively, as mounted into a pair of inverted T-profiles.

Fig. 7a-c schematically illustrates an embodiment of a method for mounting a suspended ceiling according to the present inventive concept.

Detailed Description of Preferred Embodiments

[0050] Fig. 1 is a schematic perspective view illustrating an embodiment of the inventive suspended ceiling 100 comprising a plurality of ceiling tiles 120, 122 and a grid of profiles 110, 112, as seen obliquely from above. The suspended ceiling 100 is adapted to be mounted underneath a main ceiling of a room or another accommodation, thereby forming a two-dimensional visible ceiling surface as seen from below. When mounted, the grid of profiles 110, 112 comprised in the suspended ceiling 100 is preferably at least partly concealed. In one example, the grid of profiles 110, 112 is concealed in one direction of the suspended ceiling 100 and exposed in the other direction. In another example, the grid of profiles 110, 112 is concealed in both directions of the suspended ceiling 100.

[0051] The grid of profiles 110, 112 is a supporting structure for the ceiling tiles 120, 122 and comprises profiles 110, 112 in the form of main runners 110 as well as cross runners 112. A first set of main runners 110 may be suspended in the main ceiling, thereby supporting the grid of profiles 110, 112, while a second set of main runners 110 may be nonsupported in the same. Moreover, the first set may extend across several ceiling tiles 120,

122 while the second set may comprise several segments, whereby each segment extends along the adjacent side edges of one pair of neighbouring ceiling tiles 120, 122. The cross runners 112 are provided at right angles to the main runners 110 and are connected to the same at a discrete set of locations. Thereby, the main runners 110 and the cross runners 112 form a grid-like structure which is adapted to support ceiling tiles 120, 122 of a rectangular shape. Optionally, the grid of profiles 110, 112 may also comprise wall runners as is well-known to a person skilled in the art. It is also understood that the overall geometry of the profiles may vary. For instance, the profiles may be curved, horizontally and/or vertically, and may consequently be adapted to support ceiling tiles of other shapes. For example, a ceiling tile may be in the shape of a polygon, such as a triangle, a quadrilateral or a pentagon, etc.

[0052] According to the present embodiment, the grid of profiles forms frames in the shape of inner rectangular frames and outer rectangular frame portions into which the ceiling tiles 120 and 122 are to be inserted, respectively. Thus, each ceiling tile 120, 122 is at least partly enclosed by profiles. The inner rectangular frames are adapted to support ceiling tiles with lateral dimensions 600 mm x 1200 mm, while the outer rectangular portions are adapted to support ceiling tiles having smaller lateral dimensions, such as 600 mm x 300 mm and 200 mm x 300 mm. Naturally, also other lateral dimensions are conceivable. For example, a quadratic ceiling tile may have the dimensions 600 mm x 600 mm.

[0053] The grid of profiles 110, 112 is suspended by hangers 130 such as hanger wires, rods, etc. In Fig. 1, each hanger 130 comprises a first and a second hanger element which are arranged in parallel. An end portion of each of the first hanger elements is provided with a hook and is inserted into a corresponding hole in a hanger clip which is provided in a main runner 110. Moreover, the length of each hanger 130 is adjustable by means of an arrangement which allows for a relative lengthwise displacement of the first and second hanger element. The second hanger elements are fastened to a permanent structure of the room, such as the main ceiling of the room (not shown), thereby upholding the suspended ceiling.

[0054] According to the present embodiment, each of the profiles 110, 112 is an inverted T-profile, or a tee, thereby having a cross-section in the form of an inverted T. Thus, each of the profiles has a central web and two flanges which protrude to an equal extent from a lower part of the web in two opposite horizontal directions. The flanges are adapted to support the ceiling tiles 120, 122. Optionally, the central web may comprise a bulb, e.g. for reinforcing the T-profile. The profiles are comprised of a light-weight material. For example, the material may be a metal such as steel or a sheet metal. Alternatively, the material may be a rigid plastic, a light metal, such as aluminium, or similarly. The profiles 110, 112 according to the present embodiment are rigid. However, it is equal-

ly conceivable to utilize resilient profiles 110, 112 which may simplify the installation of the ceiling tiles 120, 122.

[0055] According to an alternative embodiment, the profiles 110, 112 may comprise at least one of an L-profile, an H-profile, an I-profile and a Z-profile.

[0056] According to the present embodiment, the ceiling tiles 120, 122 are rectangular comprising four sides, wherein each side is adapted to engage with a profile 110, 112. Alternatively, the ceiling tiles 120, 122 may have other shapes. As mentioned above, the ceiling tile may for example be in the shape of a polygon, such as a triangle, a quadrilateral or a pentagon, etc.

[0057] The ceiling tiles 120, 122 comprises inner ceiling tiles 120 and outer ceiling tiles 122 which are inserted into the inner rectangular frames and outer rectangular frame portions, respectively. The outer ceiling tiles 122 may have smaller dimensions than the inner ceiling tiles 120. Each inner ceiling tile 120 is surrounded by other ceiling tiles 120, 122 and is supported by main runners 110 along one opposing pair of sides. Moreover, each outer ceiling tile 122 is supported by main runners 110 along one side and by cross runners 112 along at least one of the remaining sides. Optional, at least one side of an outer ceiling tile 122 may be supported by a wall runner. In one example, an outer ceiling tile 122 is produced by cutting an inner ceiling tile 120 to smaller dimensions so that it fits along a given wall or corner of a room.

[0058] In order to improve the acoustical environment of the room, each of the ceiling tiles 120, 122 may comprise a material which is sufficiently acoustically absorbing and/or acoustically insulating for the room under consideration. In addition, the materials are preferably chosen to be relatively lightweight, thereby giving rise to a lightweight ceiling. Moreover, the material of the ceiling tiles 120, 122 is preferably an elastically deformable material. For example, the ceiling tiles may be made of a compressed fibre material comprising mineral wool such as rock wool, or especially glass wool.

[0059] The lateral dimensions of each ceiling tile 120, 122 substantially correspond to the lateral dimensions of the inner or outer frame into which it is to be inserted. More specifically, the lateral dimensions of each ceiling tile 120, 122 substantially correspond to the dimensions a frame formed by the upwardly directed web portions of the T-profiles surrounding the ceiling tile under consideration. Furthermore, the thickness of each ceiling tile 120, 122 is preferably smaller than a height of the upwardly directed web portions of the surrounding T-profiles, although a different thickness is equally conceivable. For instance, the thickness may be 20 mm.

[0060] Next, the design of an inner ceiling tile 120 will be described with reference to Fig. 2 and Figs. 3a-b.

[0061] The ceiling tile 120 comprises a first 200, 202 and a second 204, 206 pair of side-edge portions, wherein each pair of side-edge portions are non-adjacent, viz., in the case of a rectangular ceiling tile 120, oppositely arranged. The first pair of side-edge portions comprises the first side edge 200 and the second side edge 202,

and the second pair of side-edge portions comprises the third side edge 204 and the fourth side edge 206.

[0062] Furthermore, the ceiling tile 120 has a front surface 210 and a back surface 212 which are oppositely arranged to each other. The front surface 210 is arranged to be visible from below when the suspended ceiling is mounted.

[0063] The first side edge 200 is provided with a first groove 220 which extends along the entire first side edge 200, extending from a surface of the third side edge 204 to a surface of the fourth side edge 206. The first groove 220 is stepped in that it comprises a shallow part 222 and a deep part 224 which are defined by an upper engagement surface 226, a boundary surface 228 and an auxiliary surface 227 which are provided essentially in parallel with respect to either the front surface 210 or the back surface 212 of the ceiling tile 120. A depth of the deep part 224 is larger than a depth of the shallow part 222. Moreover, a width of the first groove 220 at the very bottom of the deep part 224 is smaller than a width at the shallow part 222 close to the surface of the side edge 200. The width at the very bottom of the deep part 224 is defined by the auxiliary surface 227 and the boundary surface 228, while the width at the shallow part 222 close to the surface of the side edge 200 is defined by the upper engagement surface 226 and the boundary surface 228. As will be described below, the deep part 224 is adapted to be used when installing the ceiling tile 120 in the grid of profiles 110, 112, whereas the shallow part 222 is adapted to align and lock the ceiling tile 120.

[0064] According to the present embodiment, the lower lip 229 is extending farther out than upper lip 223 in order to be able to better conceal the T-profile 260 from below. According to an alternative embodiment, however, the upper 229 and lower lip 223 may have an equal extension.

[0065] The second side edge 202 is provided with a second groove 230 which extends along the entire second side edge 202, extending from the surface of the third side edge 204 to the surface of the fourth side edge 206. The second groove 230 is also depicted in an adjacent ceiling tile 120a in Fig. 3a at 230a. As opposed to the first groove 220, the second groove 230 is not stepped. The second groove 230 is defined by the upper engagement surface 236 and the boundary surface 238 such that a width of the second groove 230 is substantially constant. In other words, the engagement surface 236 and the boundary surface 238 are provided essentially in parallel with respect to either the front surface 210 or the back surface 212 of the ceiling tile 120. According to the present embodiment, the lower lip 234, 234a is extending farther out than the upper lip 232, 232a in order to be able to better conceal the T-profile 260 from below. According to an alternative embodiment, however, the upper 232, 232a and lower lip 234, 234a may have an equal extension.

[0066] The upper engagement surfaces 226 and 236, 236a are arranged at a distance X from the front surface

210, 210a, see Fig. 2 and Fig. 3a. Here, the distance from the front surface is measured normal to the front surface. Indeed, if a horizontal arrangement of the ceiling tile 120 is desired, and the flanges of the T-profiles 110, 112 are situated at the same height, the upper engagement surfaces 226 and 236 of the first and the second groove are preferably arranged at the same height.

[0067] Moreover, the auxiliary surface 227 is arranged at a distance Z from the front surface 210, 210a. The distance Z is preferably less than X.

[0068] The width of the first 220 and second 230 groove is preferably equal or larger than a width of a portion of the T-profile, such as a flange, which is adapted to be inserted into the grooves. According to an alternative embodiment, at least one of the second groove and the deep part of the first groove is tapering, such that the width of the groove in question is smallest at its deepest part. A tapering groove of this kind may, for instance, allow for a wedging of the ceiling tile, temporarily or permanently.

[0069] According to an alternative embodiment, the first groove 220 may be tilted with respect to either the front surface 210 or the back surface 212 of the ceiling tile 120. More specifically, the upper 226 engagement surface, the boundary surface 228 as well as the auxiliary surface 227 of the first groove may be provided obliquely with respect to either the front surface 210 or the back surface 212. Preferably, the first groove 220 is arranged at an angle which allows for a simple installation of the ceiling tile 120 from below.

[0070] The third 204 and fourth 206 side edges are provided with a first 240 and a second 250 stepped profile, respectively, which extend along the entire third 204 and fourth 206 side edge. Furthermore, each stepped profile 240, 250 extends from a surface of the first side edge 200 to a surface of the second side edge 202. A cross section of the second stepped profile 250 is also depicted to the right in Fig. 3b, and furthermore a cross section of the first stepped profile 240 provided in an adjacent ceiling tile 120b is depicted in Fig. 3b at 240b. Each stepped profile 240, 250 forms a step in the back surface 212 of the ceiling tile 120. The first stepped profile 240, 240b comprises an upper wall portion 242, 242b a lower engagement surface 244, 244b and a lower wall portion 246, 246b which is parallel to the upper wall portion 242, 242b. The second stepped profile 250 comprises an upper wall portion 252, a lower engagement surface 254, and a lower wall portion 256 which is parallel to the upper wall portion 252. A lower part of the upper wall portion 242, 242b, 252 is connected to an upper part of the lower wall portion 246, 246b, 256 via the lower, essentially horizontal, engagement surface 244, 244b, 254.

[0071] The lower engagement surfaces 244, 244b and 254 are arranged at a distance Y from the front surface 210, 210b, see Fig. 2 and Fig. 3b. Here, the distance from the front surface is measured normal to the front surface. The distance Y is at least equal to the distance X defined above. Note, however, that in a mounted state,

the relation between X and Y may be different, since the ceiling tile may be compressed. Thus, in a mounted state, X' may be less than Y', where the primes indicate that the distances are valid when the ceiling tile is mounted, see Fig. 3a and Fig. 3b.

[0072] It is noted that the auxiliary surface 227, which is arranged at a distance Z from the front surface 210, 210b as mentioned above, may be less than Y, larger than Y, or equal to Y.

[0073] With reference to Fig. 4a and Fig. 4b, which illustrate cross-sectional side views of an alternative embodiment 300 of one of the ceiling tiles shown in Fig. 1, the first 320 as well as the second 330 groove may comprise a stepped profile. Each of these grooves 320, 330 comprises a shallow part and a deep part in exact analogy with the discussion above (cf. the first groove 220). The dimensions of the two stepped profiles are preferably the same, but alternatively they may differ. For example, the depth of the deep part of the first groove 320 may be larger than the depth of the deep part of the second groove. The first 340 and the second 350 stepped profiles provided in the second pair of side-edge portions are similar to those of the embodiment discussed in the above (cf. the stepped profiles 240 and 250), see Fig. 4b. The ceiling tile 300 is mounted into the inverted T-profiles 400, 410 and 420, 430 as illustrated in Fig. 4a and Fig. 4b, respectively.

[0074] In analogy with the discussion above, X' and Y' in Fig. 4a-b are the distances from the front surface to the upper and the lower engagement surfaces of the ceiling tile, respectively, in a mounted state.

[0075] As is clear from the above, the rightmost parts of Fig. 3a and 3b illustrate cross sections of the ceiling tile 120 in Fig. 2 taken along the lines A-A and B-B, respectively. Furthermore, the leftmost parts of Fig. 3a and 3b, illustrate cross sections of ceiling tiles 120a and 120b adjacent to the ceiling tile 120, corresponding to cross sections of the ceiling tile 120 in Fig. 2 taken along the lines C-C and D-D, respectively. In other words, adjacent ceiling tiles 120, 122 comprised in the suspended ceiling 100 are arranged in the grid of profiles 110, 112 as in Fig. 3a in one direction and as in Fig. 3b in a perpendicular direction.

[0076] More specifically, the T-profiles consist of main runners 110 with cross section 260 and cross runners 120 with a cross section 270. Needless to say, the roles of these two types of T-profiles may be interchanged. From the cross-sectional views in Fig. 3a and Fig. 3b, it is clear that the T-profile comprises two flanges 262 and 264, in the case of a main runner 110, and 272 and 274, in the case of a cross runner 120, which flanges extend in opposite horizontal directions. When mounted, the upper engagement surface 226 of the ceiling tile 120 engages with an upper side 266 of the flange 264 of the T-profile 260 while the upper engagement surface 236a of the adjacent ceiling tile 120a engages with an upper side 268 of the flange 262 of the T-profile 260. Thus, in a mounted state, the upper engagement surfaces 226 and

236a provided in the first 220 and second groove 230a, respectively, are substantially aligned, i.e. the surfaces are essentially parallel to each other and situated at essentially the same vertical spatial height as measured from a reference plane in the room, such as a floor or a main ceiling. Note, however, that the boundary surfaces 228 and 238a provided in the first 220 and second groove 230a, respectively, do not need to be aligned or situated at the same vertical spatial height.

[0077] Furthermore, when mounted, the engagement surface 254 of the ceiling tile 120 engages with an underside 276 of the flange 274 of the T-profile 270 while the engagement surface 244b of the adjacent ceiling tile 120b engages with an underside 276 of the flange 272 of the T-profile 270. Thus, in a mounted state, the engagement surface 244b is substantially in parallel with the engagement surface 254, see Fig. 3b.

[0078] Consequently, only the front surfaces 210, 210a, 210b of the ceiling tiles 120, 120a, 120b are visible from below in a mounted state while the back surfaces 212, 212a, 212b are concealed. The protrusion 247b of the first stepped profile 240b and the protrusion 257 of the second stepped profile 250 may have a gap between them, as in the present embodiment, thereby exposing parts of the underside 276 of the T-profile 270. The gap may have a width of 8 mm, but other widths are equally conceivable. According to an alternative equally conceivable embodiment, there is no gap between the protrusion 247b and the protrusion 257, whereby a concealment of the T-profile 270 in the direction along, say, the cross runners 112 is attained.

[0079] Notice that in the other direction, along the main runners 110, there is preferably a distance between the ceiling tiles 120, thereby making the grid of profiles exposed. More particularly, there is preferably a gap between the lower lip 234a and the lower lip 229 in order to be able to mount the ceiling tile 120 according to the method describe below. The gap may have a width of 8 mm, but other widths are equally conceivable. Optionally, there may be a concealing element provided in the gap between the lower lip 234a and the lower lip 229, extending in a direction along the main runners 110, arranged to conceal at least a part of the exposed underside of the T-profile 260. For instance, the concealing element may be a cap. According to another option, there may be a spacer mounted in the gap which is arranged to interlock the ceiling tiles 120, 120a, thereby preventing them from being displaced. Alternatively, the spacer may be arranged to prevent demounting of the ceiling tiles 120, 120a.

[0080] According to an alternative embodiment, there is substantially no distance, or gap, between the ceiling tiles 120, so that the lower lip 234a and the lower lip 229 are close to or engage with each other. Thus, the extension of at least one of the lower lip 234a and the lower lip 229 are adapted accordingly to accomplish this engagement.

[0081] In fact, the gap between the ceiling tiles may be

avoided by designing the inventive ceiling tile according to the alternative embodiment as illustrated Fig. 5 and Fig. 6a-c. Fig. 5 is a perspective view of a ceiling tile 500 which may be utilized in order to create a gapless suspended ceiling, i.e. a suspended ceiling wherein there are no gaps between the ceiling tiles. Moreover, Figs. 6a-c illustrate cross-sectional side views of the ceiling tile 500 in Fig. 5 along the lines A1-A2, B1-B1 and C1-C1, respectively, as mounted into a pair of inverted T-profiles.

[0082] The ceiling tile 500 is provided with a first 520 and a second 530 groove. The first groove 520 is provided with a stepped profile similarly to the first groove 220 in Fig. 3a. However, width of the deep part of the first groove 520 is larger than that of the first groove 220. Moreover, the second groove 530 is similar to the second groove 230a in Fig. 3a, except that the width of the second groove 530 is larger than the corresponding width of the second groove 230a. According to the present embodiment, the width of the first groove 520 is larger than the width of the lower lip 534 so that the lower lip 534 is arranged to be inserted into the first groove 520 of an adjacent ceiling tile of the same type as the ceiling tile 500 in a mounting process. According to yet another embodiment, however, the widths may be substantially equal so that the lower lip has to be forced into the first groove.

[0083] Furthermore, the ceiling tile 500 is provided with first 540a, 540b and second 550a, 550b stepped profiles. The first stepped profile comprises a thick part 540a and a thin part 540b, wherein the thin part 540b has a smaller width Z than the width Y of the thick part 540a as indicated in Fig. 5. According to the present embodiment, the first stepped profile 540a, 540b is thereby stepped also in a lengthwise direction. In an unmounted state, the distances from the front surface to the upper and the lower engagement surfaces of the ceiling tile 500, both labelled by X in Fig. 5, are substantially the same. The distances X', Y', Z' corresponding to the distances X, Y, Z in a mounted state are indicated in Figs. 6a-c.

[0084] The second stepped profile 550a, 550b is completely analogous to the first stepped profile 540a, 540b, whereby the remarks presented above in relation to the first stepped profile 540a, 540b are equally valid for the second stepped profile 550a, 550b.

[0085] Optionally, the ceiling tile 120 may comprise one or several marks, e.g. in the form of small kerfs or chamferings provided in the front surface 210 for indicating areas in which forces are to be applied when demounting the ceiling tile 120. The marks may be substantially invisible from a large distance.

[0086] According to an alternative embodiment, the ceiling tile 120 further comprises external units. An external unit may be a lighting fixture, a device related to heating, ventilation or air condition, etc. For example, the external unit may be located at a center point of the front surface 210 of the ceiling tile 120. Thus, according to this embodiment, there is provided an external unit integrated

with the ceiling tile 120 which is easily mountable in the suspended ceiling 100. Additionally, the external unit may be easily accessible from the back surface 212 since the inventive ceiling tile 120 in which the external unit is provided is easily demountable.

[0087] Next, an embodiment of a method for mounting a suspended ceiling 100 will be described with reference to the cross-sectional views in Fig. 7a-c. According to the method, a ceiling tile 120 is mounted in a grid of profiles which comprises the inverted T-profiles 260 and 280. The installation of other ceiling tiles 120, 122 in the suspended ceiling 100, comprising the grid of profiles 110, 112, proceeds analogously.

[0088] The inverted T-profiles 260 and 280 comprise a central web 261 and 281, and two opposing flanges 262, 264 and 282, 284, respectively. The T-profiles 260 and 280 are separated by a horizontal distance and are situated at the same height from a floor of the room in which the suspended ceiling 100 is to be mounted. In the present embodiment, a distance between the rightmost end of the flange 264 of the T-profile 260 and the leftmost end of the flange 282 of the T-profile 280 is smaller than the width of the ceiling tile 120, extending from the first 200 and second 202 side edges, so that the ceiling tile 120 needs to be inclined in order to be able to mount it between the T-profiles 260, 280.

[0089] Indeed, in Fig. 7a the rightmost part of the ceiling tile 120 is inclined downwards while the leftmost part is directed towards the flange 264. It is understood that the entire side edge 202 is inclined. The ceiling tile 120 is inclined with respect to a plane substantially in parallel with a plane defined by the grid of profiles. Thereafter, while the ceiling tile continues to be inclined, the flange 264 is inserted into the deep part 224 of the groove 220 so that the auxiliary surface 227 engages with the upper side 266 of the flange 264. Optionally, the boundary surface 228 may engage with the lower side 267 of the flange 264. The insertion of the flange 264 into the groove 220 continues until the side edge 202 at the rightmost part of the ceiling tile 120 in Fig. 7a clears the flange 282. By clearing is here meant that the side edge 202 may be freely pivoted without touching the flange 282, while the flange 264 is inserted into the groove 220. In some circumstances, the flange 264 may have to be forced into the groove 220 for clearing the flange 282.

[0090] Next, the side edge 202 is tilted upwards into a horizontal position, while the flange 264 is continuing to be inserted into the groove 220, so that the second groove 230 is aligned with the flange 282, see Fig. 7b. At this point, the first 240 and second 250 stepped profiles (not shown in Figs. 4a-c) arranged along the third and fourth side edges, respectively, engage with a respective flange as described in the above, cf. the stepped profiles 240b and 250 in Fig. 3b. More specifically, the lower engagement surfaces 244 and 254 of the stepped profiles 240 and 250 engage with a third and a fourth flange which are arranged on T-profiles which extend perpendicularly to the T-profiles 260, 280, such as the T-profile 270 in

Fig. 3b.

[0091] In the following, reference is made to the quantities X and Y defined above for the ceiling tile 120. Namely, if the distance Y is larger than the distance X, the lower engagement surfaces 244, 254 have to be compressed against the underside 276 of the third and fourth flanges in order to be able to align the second groove 230 with the flange 282. On the other hand, if the distance Y is essentially equal to the distance X, no substantial compression of the lower engagement surfaces 244 is needed, since then the lower 244 and upper 226 engagement surfaces will be situated at the same level. After compression, the distances X and Y may have been modified into the distances X' and Y' which may have a different relation than X and Y.

[0092] Optionally, the upper lip 232 of the ceiling tile 120 may have to be forced past the flange 282 into the horizontal position in order to align the second groove 230 with the flange 282.

[0093] Finally, while continuing engagement between the first 240 and second 250 stepped profiles and the third and fourth flanges, the ceiling tile 120 is displaced towards the flange 282 so that the flange 282 is inserted into the groove 230, whereby the upper engagement surface 236 engages with the upper side 286 of the flange 282. Optionally, the boundary surface 238 may engage with a lower side 287 of the flange 282. The insertion of the flange 282 into the groove 230 continues until the flange 264 at the leftmost part of the ceiling tile 120 in Fig. 7c is released from the engagement with the auxiliary surface 227 and instead engages with the upper engagement surface 226. Put differently, as a result of the horizontal displacement, the ceiling tile 120 clicks down a step from the deep part 224 to the shallow part 222 of the groove 220 into a position in which the front surface 210 is substantially parallel with the main ceiling or floor of the room. In this position, lateral displacements of the ceiling tile 120 are prevented due to the presence of the grooves 220, 230 as well as the clamping action between the profiles and the four side edges 200, 202, 204, 206, as described in the above.

[0094] The ceiling tile 300 in Fig. 4a-b may be mounted in a similar manner as the ceiling tile 120, whereby reference is made to the above. However, by means of the stepped profiles provided in the first 320 as well as the second 330 groove, either the first side edge or the second side edge may be directed towards a first flange into which the ceiling tile 300 is to be inserted.

[0095] Moreover, in the mounting process of the ceiling tile 300, it has to click down a step from the deep part to the shallow part in the first groove 320 as well as in the second groove 330 in order to enter a position in which the front surface of the ceiling tile is substantially parallel with the main ceiling or floor of the room.

[0096] The ceiling tile 500 displayed in Fig. 5 and Figs. 6a-c may be mounted in a similar manner as the ceiling tile 120 described above. In particular, a plurality of ceiling tiles of the type 500 shown in Fig. 5 and Figs. 6a-c may

be mounted one after another, starting with the side comprising the lower lip 529 and the first groove 520. However, by means of the widths of the first 520 and the second 530 groove being larger than the corresponding widths of the ceiling tile 120, as well as the stepped profiles 540a-b, 550a-b being stepped also in a lengthwise direction, a gapless mounting of the ceiling tile 500 is admitted while simultaneously allowing for an improved demounting process of the ceiling tile 500.

[0097] Indeed, in a suspended ceiling comprising a lattice of ceiling tiles 500 of the type shown in Fig. 5 and Figs. 6a-c, any of these ceiling tiles 500 may be demounted without the need of demounting any of the adjacent ceiling tiles. More specifically, a ceiling tile 500 mounted into inverted T-profiles 600, 610, 620, 630 as in Fig. 6a-c may be demounted as follows. First, the lower lip 529 is moved vertically in an upward direction, which is possible due to the thin part 540b, 550b of the second stepped profile. Then, the ceiling tile 500 is moved horizontally to the right by inserting the its lower lip 529 into the second groove (cf. 530) of the adjacent ceiling tile which is of the same type as the ceiling tile 500. The horizontal displacement proceeds until the upper lip 532 clears the rightmost flange of the T-profile 600. In this position, the leftmost part of the ceiling tile 500 may be displaced downwards, thereby disengaging the thick parts 540a, 550a of the first stepped profiles, and may consequently be completely removed from the grid of profiles 600, 610, 620, 630. A mounting of the ceiling tile 500 proceeds analogously to the demounting just described, albeit in a reverse order.

[0098] The invention has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible within the scope of the invention, as defined by the appended patent claims. For example, it is noted that even though the present inventive concept has been described in relation to a flat suspended ceiling which is substantially in parallel with either a main ceiling or a floor of a room, it is equally applicable to inclined suspended ceilings which form an angle with the main ceiling or the floor.

Claims

1. A suspended ceiling (100) comprising a ceiling tile (120; 122; 120a; 120b; 300; 500) and a grid of profiles (110; 112) forming a frame which supports said ceiling tile (120; 122; 120a; 120b; 300; 500), said ceiling tile (120; 122; 120a; 120b; 300; 500) having a first (200; 202) and a second (204; 206) pair of non-adjacent side-edge portions, whereby said grid of profiles (110; 112) engages from below with the first pair of side-edge portions (200; 202), and said grid of profiles (110; 112) engages from above

with the second pair of side-edge portions (204; 206), characterised in that said grid of profiles (110; 112) engages with said first (200; 202) and second (204; 206) pair of side-edge portions such that a clamping action that counteracts lateral displacement of the ceiling tile (120; 122; 120a; 120b; 300; 500) is provided.

2. The suspended ceiling (100) according to claim 1, in which said grid of profiles (110; 112) engages with said first (200; 202) and second (204; 206) pair of side-edge portions under elastical deformation of the latter.
3. The suspended ceiling (100) according to claim 1 or 2, in which said first pair of side-edge portions (200; 202) comprises a first side edge (200) and a second (202) side edge, wherein a first groove (220; 320; 520) is provided in and extending along the first side edge (200), and wherein a second groove (230; 330; 530) is provided in and extending along the second side edge (202), a depth of said first groove (220; 320; 520) being larger than a depth of said second groove (230; 330; 530), said grid of profiles (110; 112) comprising a first and a second flange (262; 264; 272; 274; 282) received by said first (220; 320; 520) and second (230; 330; 530) grooves, respectively.
4. The suspended ceiling (100) according to claim 3, wherein the engagement between said grid of profiles (110; 112) and the first pair of side-edge portions (200; 202) occurs between said first and second flange (262; 264; 272; 274; 282) and an upper engagement surface (226; 236; 236a) associated with said first (220; 320; 520) and second (230; 330; 530) groove, respectively.
5. The suspended ceiling (100) according to claim 4, wherein said upper engagement surface (226) of said first groove (220; 320; 520) is stepped.
6. The suspended ceiling (100) according to any of the preceding claims, in which said second pair of side-edge portions (204; 206) comprises a third side edge (204) and a fourth side edge (206), wherein a first stepped profile (240; 240b; 340; 540a-b) is provided in and extending along the third side edge (204) for forming a step in a back surface (212; 212b) of said ceiling tile (120; 122; 120a; 120b; 300; 500), and wherein a second stepped profile (250; 350; 550a-b) is provided in and extending along the fourth side edge (206) for forming a step in said back surface (212; 212b), said grid of profiles (110; 112) comprising a third and a fourth flange engaging with said first (240; 240b; 340; 540a-b) and second (250; 350; 550a-b) stepped profiles, respectively.

7. The suspended ceiling (100) according to claim 6, wherein the engagement between said grid of profiles (110; 112) and the second pair of side-edge portions (204; 206) occurs between said third and fourth flange and a lower engagement surface (244; 244b; 254) associated with said first (240; 240b; 340; 540a-b) and second (250; 350; 550a-b) stepped profile, respectively. 5
8. The suspended ceiling (100) according to any of the preceding claims, wherein said ceiling tile (120; 122; 120a; 120b; 300; 500) is rectangular. 10
9. The suspended ceiling (100) according to any of the preceding claims, wherein said ceiling tile (120; 122; 120a; 120b; 300; 500) comprises compressed fibre material. 15
10. A suspended ceiling (100) according to any of the preceding claims, further comprising a plurality of ceiling tiles (120; 122; 120a; 120b; 300; 500). 20
11. A method for mounting a suspended ceiling (100), comprising 25
- providing a grid of profiles (110; 112) and a ceiling tile (120; 122; 120a; 120b; 300; 500),
 - installing the ceiling tile (120; 122; 120a; 120b; 300; 500) in a frame of said grid of profiles (110; 112), said ceiling tile having a first (200; 202) and a second (204; 206) pair of non-adjacent side-edge portions, 30
- the method being **characterized in that** said installing said ceiling tile (120; 122; 120a; 120b; 300; 500) comprises: 35
- arranging the ceiling tile (120; 122; 120a; 120b; 300; 500) in an inclined position and directing a first side edge (200) of the first pair of side-edge portions (200; 202) towards a first flange of the frame; 40
 - inserting, by relative displacement of the ceiling tile (120; 122; 120a; 120b; 300; 500) and the grid of profiles (110; 112), said first flange into a first groove (220; 320; 520) of said ceiling tile (120; 122; 120a; 120b; 300; 500) provided along said first side edge (200) to such an extent that a second side edge (202) of the first pair of side-edge portions (200; 202) clears a second flange of the frame, whereby said first flange engages from below with an upper engagement surface (226) associated with the first groove (220; 320; 520); 45
 - arranging the ceiling tile (120; 122; 120a; 120b; 300; 500) in a horizontal position and aligning a second groove (230; 330; 530) of said ceiling tile (120; 122; 120a; 120b; 300; 500) provided 50
- along said second side edge (202) with said second flange, such that a third and a fourth flange of said frame engage from above with a third (204) and a fourth (206) side edge, respectively, of the second pair of side-edge portions (204; 206), the first flange continuing to engage from below with said upper engagement surface (226) associated with the first groove (220; 320; 520); and 55
- displacing the ceiling tile (120; 122; 120a; 120b; 300; 500) towards the second flange, the first, third and fourth flange continuing to engage with the first (200), third (204) and fourth (206) side edge, respectively, such that said second flange engages from below with an upper engagement surface (236; 236a) associated with the second groove (230; 330; 530), whereby said flanges engages with said side-edge portions (200; 202; 204; 206) such that a clamping action that counteracts lateral displacement of the ceiling tile (120; 122; 120a; 120b; 300; 500) is provided.
12. The method according to claim 11, wherein the act of providing a ceiling tile further comprises providing a ceiling tile (120; 122; 120a; 120b; 300; 500) in which said upper engagement surface (226) of said first groove (220; 320; 520) is stepped.
13. The method according to claim 11 or 12, wherein a first stepped profile (240; 240b; 340; 540a-b) is provided in and extending along the third side edge (204) for forming a step in a back surface (212; 212b) of said ceiling tile (120; 122; 120a; 120b; 300; 500), and wherein a second stepped profile (250; 350; 550a-b) is provided in and extending along the fourth side edge (206) for forming a step in said back surface (212; 212b), said third and fourth flanges comprised in the grid of profiles (110; 112) engaging with said first (240; 240b; 340; 540a-b) and second (250; 350; 550a-b) stepped profiles, respectively.
14. The method according to claim 11, 12 or 13, wherein said grid of profiles (110; 112) engages with said first (200; 202) and second pair of side-edge portions (204; 206) under elastical deformation of the latter.
15. A ceiling tile for a suspended ceiling (100), the ceiling tile (120; 122; 120a; 120b; 300; 500) being arranged to be supported by flanges (262; 264; 272; 274; 282) of a grid of profiles (110; 112), said flanges (262; 264; 272; 274; 282) having a thickness T , wherein said ceiling tile (120; 122; 120a; 120b; 300; 500) has a front surface (210; 210b), a back surface (212; 212b) and a first (200; 202) and a second (204; 206) pair of non-adjacent side-edge portions, each side-edge portion of said first pair (200; 202) comprising an upper engagement surface (226; 236; 236a) faced in the same direction as the front surface (210;

210b) and each side-edge portion of said second pair (204; 206) comprising a lower engagement surface (244; 244b; 254) faced in the same direction as the back surface (212; 212b), wherein said upper engagement surfaces (226; 236; 236a) are arranged at a distance (X) from said front surface (210; 210b) and, said lower engagement surfaces (244; 244b; 254) are arranged at a distance (Y) from said front surface (210; 210b), **characterized in that** the difference between said distance X and said distance Y is less than said thickness T.

Patentansprüche

1. Abgehängte Decke (100), umfassend eine Deckenplatte (120; 122; 120a; 120b; 300; 500) und ein Gitter von Profilen (110; 112), das einen Rahmen bildet, der die Deckenplatte (120; 122; 120a; 120b; 300; 500) trägt, wobei die Deckenplatte (120; 122; 120a; 120b; 300; 500) ein erstes (200; 202) und ein zweites (204; 206) Paar von nicht benachbarten Seitenrandabschnitten aufweist, wobei das Gitter von Profilen (110; 112) von unten her mit dem ersten Paar von Seitenrandabschnitten (200; 202) eingreift, und das Gitter von Profilen (110; 112) von oben her mit dem zweiten Paar von Seitenrandabschnitten (204; 206) eingreift, **dadurch gekennzeichnet, dass** das Gitter von Profilen (110; 112) so mit dem ersten (200; 202) und zweiten (204; 206) Paar von Seitenrandabschnitten eingreift, dass eine Dämpfungswirkung, die einer seitlichen Verschiebung der Deckenplatte (120; 122; 120a; 120b; 300; 500) entgegenwirkt, bereitgestellt wird.
2. Abgehängte Decke (100) nach Anspruch 1, wobei das Gitter von Profilen (110; 112) unter elastischer Verformung des ersten (200; 202) und des zweiten (204; 206) Paares von Seitenrandabschnitten mit letzteren eingreift.
3. Abgehängte Decke (100) nach Anspruch 1 oder 2, wobei das erste Paar von Seitenrandabschnitten (200; 202) einen ersten Seitenrand (200) und einen zweiten Seitenrand (202) umfasst, wobei eine erste Nut (220; 320; 520) in dem ersten Seitenrand (200) bereitgestellt ist und sich diesen entlang erstreckt, und wobei eine zweite Nut (230; 330; 530) in dem zweiten Seitenrand (202) bereitgestellt ist und sich diesen entlang erstreckt, wobei eine Tiefe der ersten Nut (220; 320; 520) größer als eine Tiefe der zweiten Nut (230; 330; 530) ist, wobei das Gitter von Profilen (110; 112) einen ersten und einen zweiten Flansch (262; 264; 272; 274; 282) umfasst, die jeweils durch die erste (220; 320; 520) und die zweite (230; 330; 530) Nut aufgenommen werden.

4. Abgehängte Decke (100) nach Anspruch 3, wobei der Eingriff zwischen dem Gitter von Profilen (110; 112) und dem ersten Paar von Seitenrandabschnitten (200; 202) zwischen dem ersten und zweiten Flansch (262; 264; 272; 274; 282) und einer oberen Eingreiffläche (226; 236; 236a), die der ersten (220; 320; 520) bzw. zweiten (230; 330; 530) Nut zugehörig ist, erfolgt.
5. Abgehängte Decke (100) nach Anspruch 4, wobei die obere Eingreiffläche (226) der ersten Nut (220; 320; 520) stufenförmig ist.
6. Abgehängte Decke (100) nach einem der vorhergehenden Ansprüche, wobei das zweite Paar von Seitenrandabschnitten (204; 206) einen dritten Seitenrand (204) und einen vierten Seitenrand (206) umfasst, wobei ein erstes stufenförmiges Profil (240; 240b; 340; 540a-b) in dem dritten Seitenrand (204) bereitgestellt ist und sich diesen entlang erstreckt, um in einer Rückfläche (212; 212b) der Deckenplatte (120; 122; 120a; 120b; 300; 500) eine Stufe zu bilden, und wobei ein zweites stufenförmiges Profil (250; 350; 550a-b) in dem vierten Seitenrand (206) bereitgestellt ist und sich diesen entlang erstreckt, um in der Rückfläche (212; 212b) eine Stufe zu bilden, wobei das Gitter von Profilen (110; 112) einen dritten und einen vierten Flansch umfasst, die mit dem ersten (240; 240b; 340; 540a-b) bzw. zweiten (250; 350; 550a-b) stufenförmigen Profil eingreifen.
7. Abgehängte Decke (100) nach Anspruch 6, wobei der Eingriff zwischen dem Gitter von Profilen (110; 112) und dem zweiten Paar von Seitenrandabschnitten (204; 206) zwischen dem dritten und vierten Flansch und einer unteren Eingreiffläche (244; 244b; 254), die dem ersten (240; 240b; 340; 540 a-b) bzw. zweiten (250; 350; 550a-b) stufenförmigen Profil zugehörig ist, erfolgt.
8. Abgehängte Decke (100) nach einem der vorhergehenden Ansprüche, wobei die Deckenplatte (120; 122; 120a; 120b; 300; 500) rechteckig ist.
9. Abgehängte Decke (100) nach einem der vorhergehenden Ansprüche, wobei die Deckenplatte (120; 122; 120a; 120b; 300; 500) ein gepresstes Fasermaterial umfasst.
10. Abgehängte Decke (100) nach einem der vorhergehenden Ansprüche, ferner umfassend mehrere Deckenplatten (120; 122; 120a; 120b; 300; 500).
11. Verfahren zur Anbringung einer abgehängten Decke (100), umfassend
 - Bereitstellen eines Gitters von Profilen (110; 112) und einer Deckenplatte (120; 122; 120a;

120b; 300; 500),

- Montieren der Deckenplatte (120; 122; 120a; 120b; 300; 500) in einem Rahmen des Gitters von Profilen (110; 120), wobei die Deckenplatte ein erstes (200; 202) und ein zweites (204; 206) Paar von nicht benachbarten Seitenrandabschnitten aufweist,

wobei das Verfahren **dadurch gekennzeichnet ist, dass** das Montieren der Deckenplatte (120; 122; 120a; 120b; 300; 500) Folgendes umfasst:

- Anordnen der Deckenplatte (120; 122; 120a; 120b; 300; 500) in einer Schräglage und Richten eines ersten Seitenrands (200) des ersten Paares von Seitenrandabschnitten (200; 202) zu einem ersten Flansch des Rahmens;

- Einsetzen des ersten Flanschs, durch relatives Verschieben der Deckenplatte (120; 122; 120a; 120b; 300; 500) und des Gitters von Profilen (110; 112), bis zu einem solchen Ausmaß in eine erste Nut (220; 320; 520) der Deckenplatte (120; 122; 120a; 120b; 300; 500), die entlang des ersten Seitenrands (200) bereitgestellt ist, dass ein zweiter Seitenrand (202) des ersten Paares von Seitenrandabschnitten (200; 202) einen zweiten Flansch des Rahmens passiert, wodurch der erste Flansch von unten her mit einer oberen Eingreiffäche (226), die der ersten Nut (220; 320; 520) zugehörig ist, eingreift;

- Anordnen der Deckenplatte (120; 122; 120a; 120b; 300; 500) in einer waagerechten Stellung, und derartiges Ausrichten einer zweiten Nut (230; 330; 530) der Deckenplatte (120; 122; 120a; 120b; 300; 500), die entlang des zweiten Seitenrands (202) bereitgestellt ist, mit dem zweiten Flansch, dass ein dritter und ein vierter Flansch des Rahmens von oben her mit einem dritten (204) bzw. einem vierten (206) Seitenrand des zweiten Paares von Seitenrandabschnitten (204; 206) eingreifen, wobei der erste Flansch weiterhin von unten her mit der oberen Eingreiffäche (226), die der ersten Nut (220; 320; 520) zugehörig ist, eingreift; und
- derartiges Verschieben der Deckenplatte (120; 122; 120a; 120b; 300; 500) zu dem zweiten Flansch, wobei der erste, dritte und vierte Flansch weiterhin mit dem ersten (200), dritten (204) bzw. vierten (206) Seitenrand eingreifen, dass der zweite Flansch von unten her mit einer oberen Eingreiffäche (236; 236a), die der zweiten Nut (230; 330; 530) zugehörig ist, eingreift, wodurch die Flansche so mit Seitenrandabschnitten (200; 202; 204; 206) eingreifen, dass eine Klemmwirkung, die einer seitlichen Verschiebung der Deckenplatte (120; 122; 120a; 120b; 300; 500) entgegenwirkt, bereitgestellt wird.

12. Verfahren nach Anspruch 11, wobei die Tätigkeit des Bereitstellens einer Deckenplatte ferner das Bereitstellen einer Deckenplatte (120; 122; 120a; 120b; 300; 500), bei der die obere Eingreiffäche (226) der ersten Nut (220; 320; 520) stufenförmig ist, umfasst.

13. Verfahren nach Anspruch 11 oder 12, wobei ein erstes stufenförmiges Profil (240; 240b; 340; 540a-b) in dem dritten Seitenrand (204) bereitgestellt ist und sich diesen entlang erstreckt, um in einer Rückfläche (212; 212b) der Deckenplatte (120; 122; 120a; 120b; 300; 500) eine Stufe zu bilden, und wobei ein zweites stufenförmiges Profil (250; 350; 550a-b) in dem vierten Seitenrand (206) bereitgestellt ist und sich diesen entlang erstreckt, um in der Rückfläche (212; 212b) eine Stufe zu bilden, wobei der dritte und der vierte Flansch, die in dem Gitter von Profilen (110; 112) enthalten sind, mit dem ersten (240; 240b; 340; 540a-b) bzw. zweiten (250; 350; 550a-b) stufenförmigen Profil eingreifen.

14. Verfahren nach Anspruch 11, 12 oder 13, wobei das Gitter von Profilen (110; 112) unter elastischer Verformung des ersten (200; 202) und des zweiten (204; 206) Paares von Seitenrandabschnitten mit letzteren eingreift.

15. Deckenplatte für eine abgehängte Decke (110), wobei die Deckenplatte (120; 122; 120a; 120b; 300; 500) so angeordnet ist, dass sie durch Flansche (262; 264; 272; 274; 282) eines Gitters von Profilen (110; 112) gehalten wird, wobei die Flansche (262; 264; 272; 274; 282) eine Dicke T aufweisen, wobei die Deckenplatte (120; 122; 120a; 120b; 300; 500) eine Vorderfläche (210; 210b), eine Rückfläche (212; 212b) und ein erstes (200; 202) und ein zweites (204; 206) Paar von nichtbenachbarten Seitenrandabschnitten aufweist, wobei jeder Seitenrandabschnitt des ersten Paares (200; 202) eine obere Eingreiffäche (226; 236; 236a), die in die gleiche Richtung wie die Vorderfläche (210; 210b) gewandt ist, umfasst, und jeder Seitenrandabschnitt des zweiten Paares (204; 206) eine untere Eingreiffäche (244; 244b; 254), die in die gleiche Richtung wie die Rückfläche (212; 212b) gewandt ist, umfasst, wobei die oberen Eingreiffächen (226; 236; 236a) in einem Abstand (X) von der Vorderfläche (210; 210b) angeordnet sind, und die unteren Eingreiffächen (244; 244b; 254) in einem Abstand (Y) von der Vorderfläche (210; 210b) angeordnet sind, **dadurch gekennzeichnet, dass** der Unterschied zwischen dem Abstand X und dem Abstand Y geringer als die Dicke T ist.

Revendications

1. Plafond suspendu (100) comprenant une dalle de

- plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) et une grille de profilés (110 ; 112) formant un cadre supportant ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500), ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) présentant une première (200 ; 202) et une deuxième paire (204 ; 206) de parties de bord latéral non adjacentes, moyennant quoi ladite grille de profilés (110 ; 112) s'engage par en dessous avec la première paire de parties de bord latéral (200 ; 202), et ladite grille de profilés (110 ; 112) s'engage par au-dessus avec la deuxième paire de parties de bord latéral (204 ; 206), **caractérisé en ce que** ladite grille de profilés (110 ; 112) s'engage avec lesdites première (200 ; 202) et deuxième (204 ; 206) paires de parties de bord latéral, de manière à fournir une action de serrage pour contrecarrer le déplacement latéral de la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500).
2. Plafond suspendu (100) selon la revendication 1, dans lequel ladite grille de profilés (110 ; 112) s'engage avec lesdites première (200 ; 202) et deuxième (204 ; 206) paires de parties de bord latéral sous déformation élastique de celles-ci.
 3. Plafond suspendu (100) selon la revendication 1 ou 2, dans lequel ladite première paire de parties de bord latéral (200 ; 202) comprend un premier bord latéral (200) et un deuxième bord latéral (202), une première rainure (220 ; 320 ; 520) étant prévue dans le premier bord latéral (200), et s'étendant le long de celui-ci, et une deuxième rainure (230 ; 330 ; 530) étant prévue dans le deuxième bord latéral (202) et s'étendant le long de celui-ci, une profondeur de ladite première rainure (220 ; 320 ; 520) étant supérieure à une profondeur de ladite deuxième rainure (230 ; 330 ; 530), ladite grille de profilés (110 ; 112) comprenant un premier et un deuxième rebord (262 ; 264 ; 272 ; 274 ; 282) reçus par lesdites première (220 ; 320 ; 520) et deuxième (230 ; 330 ; 530) rainures, respectivement.
 4. Plafond suspendu (100) selon la revendication 3, dans lequel l'engagement entre ladite grille de profilés (110 ; 112) et la première paire de parties de bord latéral (200 ; 202) est réalisé entre lesdits premier et deuxième rebords (262 ; 264 ; 272 ; 274 ; 282) et une surface d'engagement supérieure (226 ; 236 ; 236a) associée auxdites première (220 ; 320 ; 520) et deuxième (230 ; 330 ; 530) rainures, respectivement.
 5. Plafond suspendu (100) selon la revendication 4, dans lequel ladite surface d'engagement supérieure (226) de ladite première rainure (220 ; 320 ; 520) est étagée.
 6. Plafond suspendu (100) selon l'une quelconque des revendications précédentes, dans lequel ladite deuxième paire de parties de bord latéral (204 ; 206) comprend un troisième bord latéral (204) et un quatrième bord latéral (206), dans lequel un premier profilé étagé (240 ; 240b ; 340 ; 540a-b) est prévu dans le troisième bord latéral (204) tout en s'étendant le long de celui-ci, pour former un gradin dans une surface arrière (212 ; 212b) de ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500), et dans lequel un deuxième profilé étagé (250 ; 350 ; 550a-b) est prévu dans le quatrième bord latéral (206) tout en s'étendant le long de celui-ci pour former un gradin dans ladite surface arrière (212 ; 212b), ladite grille de profilés (110 ; 112) comprenant un troisième et un quatrième rebords destinés à s'engager avec lesdits premier (240 ; 240b ; 340 ; 540a-b) et deuxième (250 ; 350 ; 550a-b) profilés étagés, respectivement.
 7. Plafond suspendu (100) selon la revendication 6, dans lequel l'engagement entre ladite grille de profilés (110 ; 112) et la deuxième paire de parties de bord latéral (204 ; 206) est réalisé entre lesdits troisième et quatrième rebords et une surface d'engagement inférieure (244 ; 244b ; 254) associée auxdits premier (240 ; 240b ; 340 ; 540a-b) et deuxième (250 ; 350 ; 550a-b) profilés étagés, respectivement.
 8. Plafond suspendu (100) selon l'une quelconque des revendications précédentes, dans lequel ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) est rectangulaire.
 9. Plafond suspendu (100) selon l'une quelconque des revendications précédentes, dans lequel ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) comprend un matériau à base de fibres comprimées.
 10. Plafond suspendu (100) selon l'une quelconque des revendications précédentes, comprenant en outre une pluralité de dalles de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500).
 11. Procédé pour l'installation d'un plafond suspendu (100), comprenant :
 - la mise à disposition d'une grille de profilés (110 ; 112) et d'une dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500),
 - l'installation de la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) dans un cadre de ladite grille de profilés (110 ; 112), ladite dalle de plafond présentant une première (200 ; 202) et une deuxième (204 ; 206) paire de parties de bord latéral non adjacentes,
 le procédé étant **caractérisé en ce que** ladite ins-

tallation de ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) comprend :

- l'arrangement de la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) dans une position inclinée et l'orientation d'un premier bord latéral (200) de la première paire de parties de bord latéral (200 ; 202) vers un premier rebord du cadre ;
- l'insertion, par déplacement relatif de la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) et de la grille de profilés (110 ; 112), dudit premier rebord dans une première rainure (220 ; 320 ; 520) de ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) prévue le long dudit premier bord latéral (200), de manière à ce qu'un deuxième bord latéral (202) de la première paire de parties de bord latéral (200 ; 202) dégage un deuxième rebord du cadre, moyennant quoi ledit premier rebord s'engage par en dessous avec une surface d'engagement supérieure (226) associée à la première rainure (220 ; 320 ; 520) ;
- l'arrangement de la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) dans une position horizontale et l'alignement de la deuxième rainure (230 ; 330 ; 530) de ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) prévue le long dudit deuxième bord latéral (202) avec ledit deuxième rebord, de manière à ce qu'un troisième et un quatrième rebord dudit cadre s'engagent par au-dessus avec un troisième (204) et un quatrième (206) bord latéral, respectivement, de la deuxième paire de parties de bord latéral (204 ; 206), le premier rebord continuant de s'engager par en dessous avec ladite surface d'engagement supérieure (226) associée à la première rainure (220 ; 320 ; 520) ; et
- le déplacement de la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) vers le deuxième rebord, tandis que les premier, troisième et quatrième rebords continuent de s'engager avec les premier (200), troisième (204) et quatrième (206) bords latéraux, respectivement, de manière à ce que ledit deuxième rebord s'engage par en dessous avec une surface d'engagement supérieure (236 ; 236a) associée à la deuxième rainure (230 ; 330 ; 530), moyennant quoi lesdits rebords s'engagent avec lesdits parties de bord latéral (200 ; 202 ; 204 ; 206) de manière à fournir une action de serrage destinée à contrecarrer un déplacement latéral de la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500).

12. Procédé selon la revendication 11, dans lequel la mise à disposition d'une dalle de plafond comprend en outre la mise à disposition d'une dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) dans laquelle ladite surface d'engagement supérieure (226) de la-

dite première rainure (220 ; 320 ; 520) est étagée.

13. Procédé selon la revendication 11 ou 12, dans lequel un premier profilé étagé (240 ; 240b ; 340 ; 540a-b) est prévu dans le troisième bord latéral (204) et s'étendant le long de celui-ci pour former un gradin dans une surface arrière (212 ; 212b) de ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500), et dans lequel un deuxième profilé étagé (250 ; 350 ; 550a-b) est prévu dans le quatrième bord latéral (206) et s'étendant le long de celui-ci pour former un gradin dans ladite surface arrière (212 ; 212b), lesdits troisième et un quatrième rebords compris dans la grille de profilés (110 ; 112) étant destinés à s'engager avec lesdits premier (240 ; 240b ; 340 ; 540a-b) et deuxième (250 ; 350 ; 550a-b) profilés étagés, respectivement.
14. Procédé selon la revendication 11, 12 ou 13, dans lequel ladite grille de profilés (110 ; 112) s'engage avec lesdites première (200 ; 202) et deuxième (204 ; 206) paires de parties de bord latéral sous déformation élastique de celles-ci.
15. Dalle de plafond pour un plafond suspendu (100), la dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) étant arrangée de manière à être supportée par des rebords (262 ; 264 ; 272 ; 274 ; 282) d'une grille de profilés (110 ; 112), lesdits rebords (262 ; 264 ; 272 ; 274 ; 282) présentant une épaisseur T, ladite dalle de plafond (120 ; 122 ; 120a ; 120b ; 300 ; 500) présentant une surface frontale (210 ; 210b), une surface arrière (212 ; 212b) et une première (200 ; 202) et une deuxième (204 ; 206) paires de parties de bord latéral non adjacentes, chaque partie de bord latéral de ladite première paire (200 ; 202) comprenant une surface d'engagement supérieure (226 ; 236 ; 236a) tournée dans la même direction que la surface frontale (210 ; 210b) et chaque partie de bord latéral de ladite deuxième paire (204 ; 206) comprenant une surface d'engagement inférieure (244 ; 244b ; 254) tournée dans la même direction que la surface arrière (212 ; 212b), dans laquelle lesdites surfaces d'engagement supérieures (226 ; 236 ; 236a) sont arrangées à une distance (X) de ladite surface frontale (210 ; 210b) et lesdites surfaces d'engagement inférieures (244 ; 244b ; 254) sont arrangées à une distance (Y) de ladite surface frontale (210 ; 210b), **caractérisée en ce que** la différence entre ladite distance X et ladite distance Y est inférieure à ladite épaisseur T.

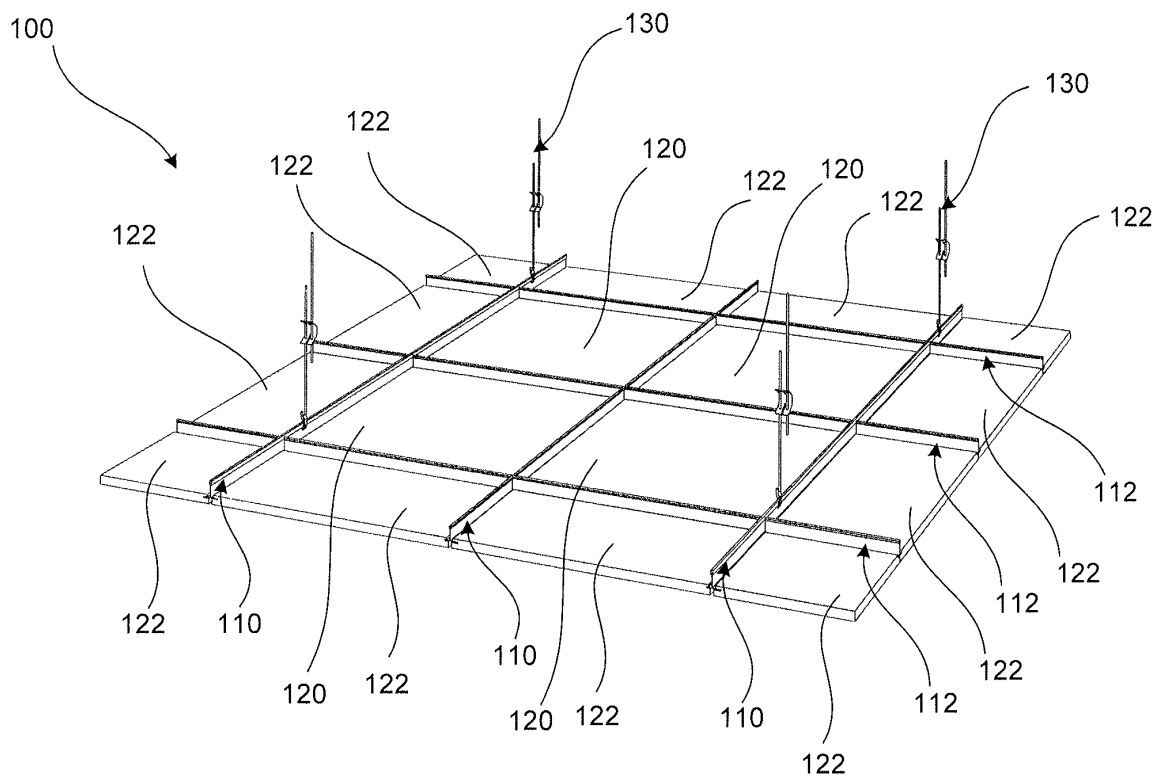
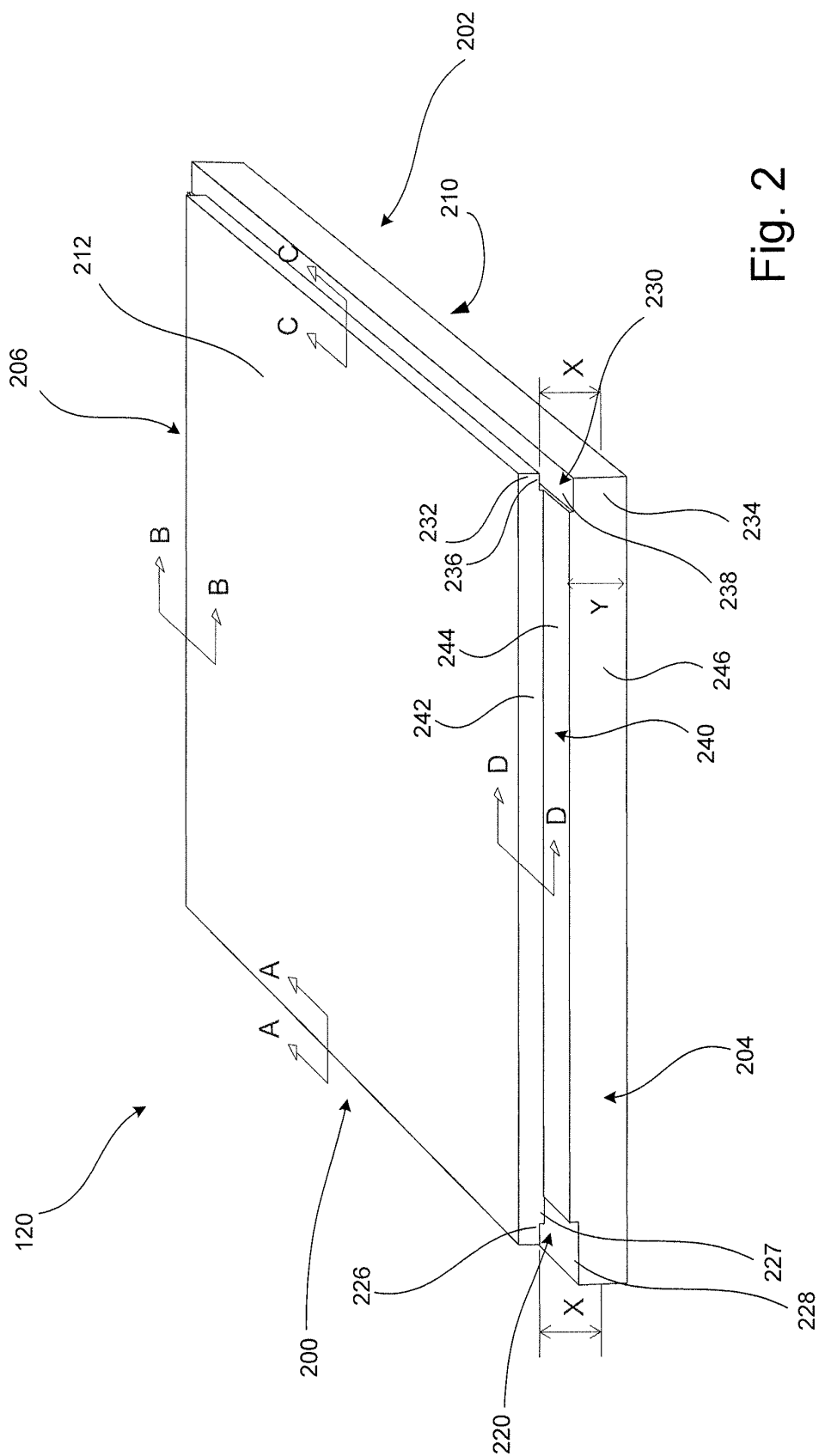


Fig. 1



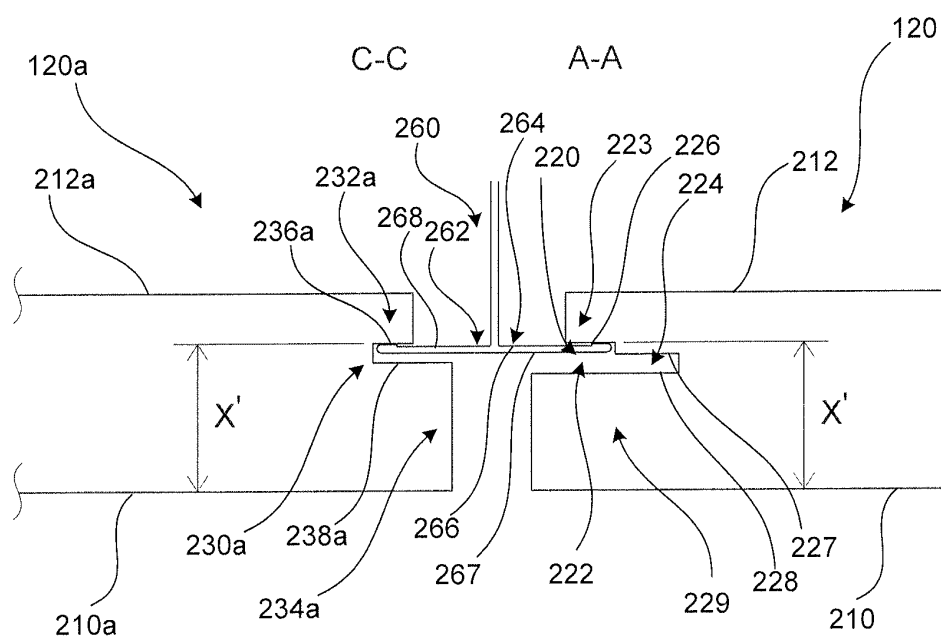


Fig. 3a

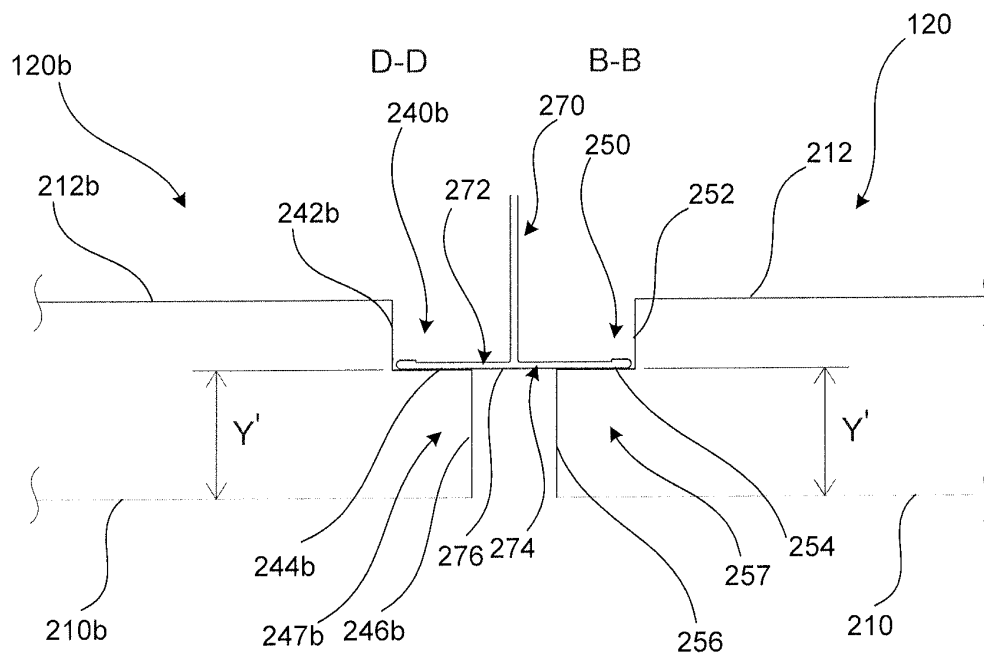


Fig. 3b

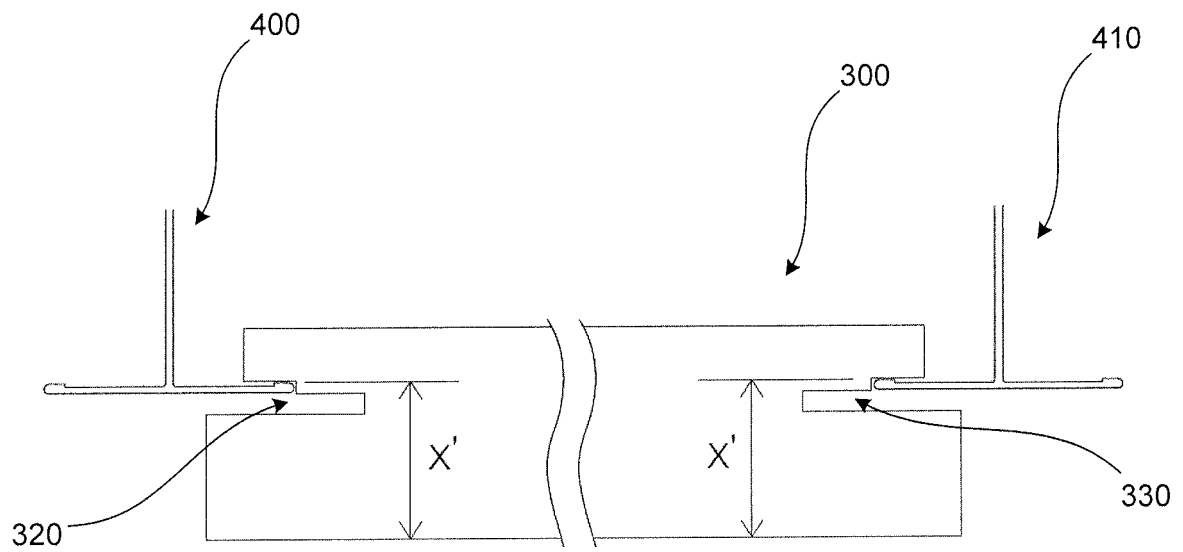


Fig. 4a

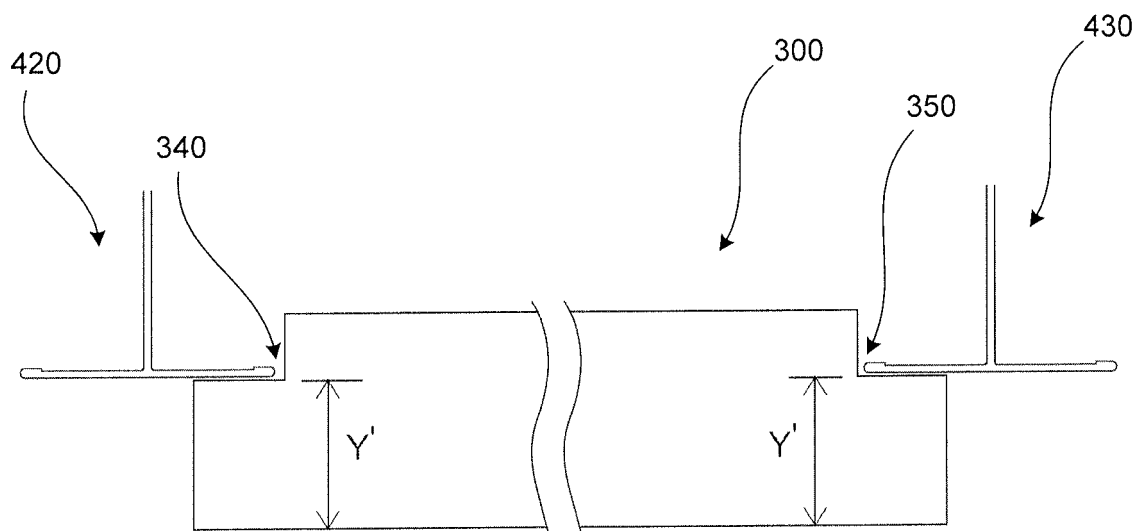


Fig. 4b

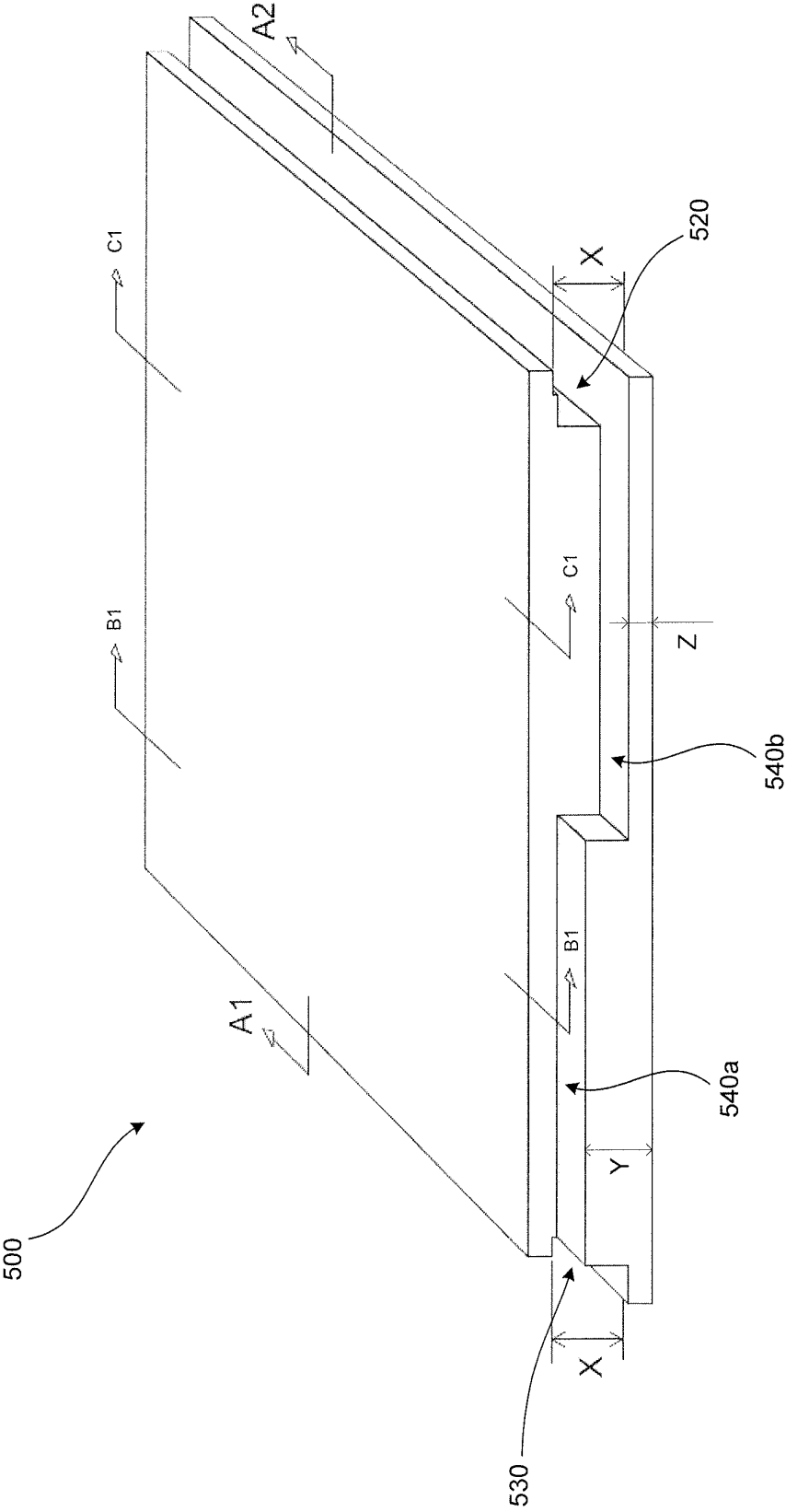


Fig. 5

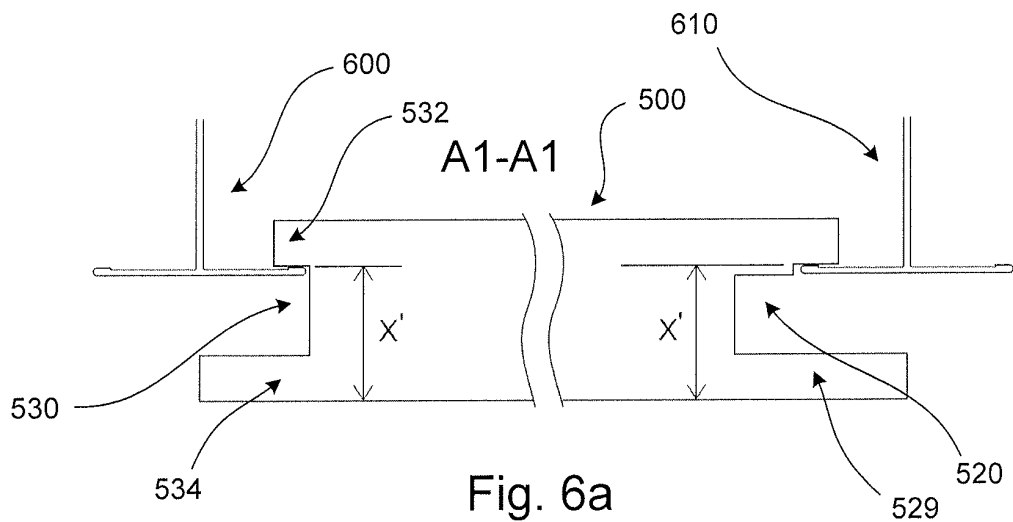


Fig. 6a

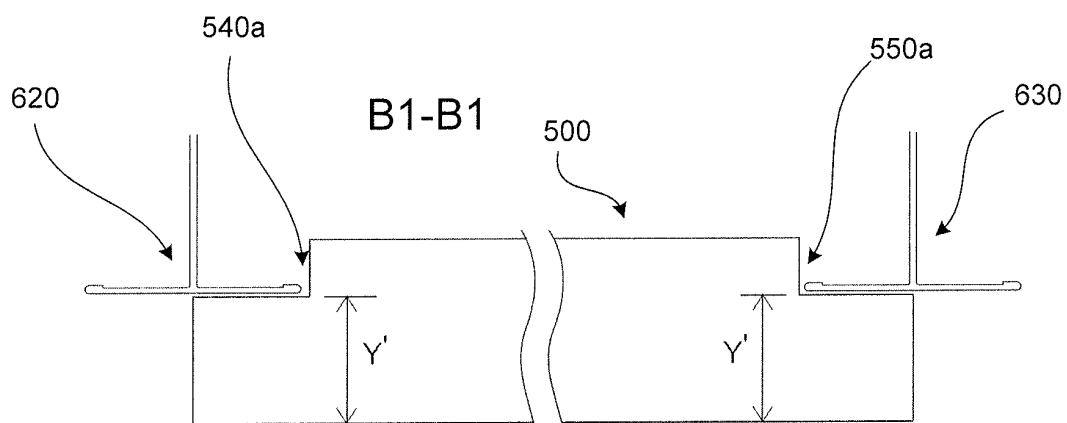


Fig. 6b

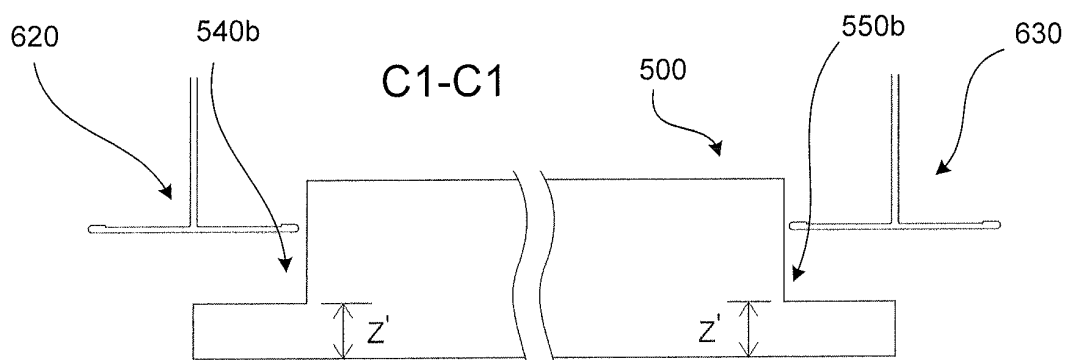
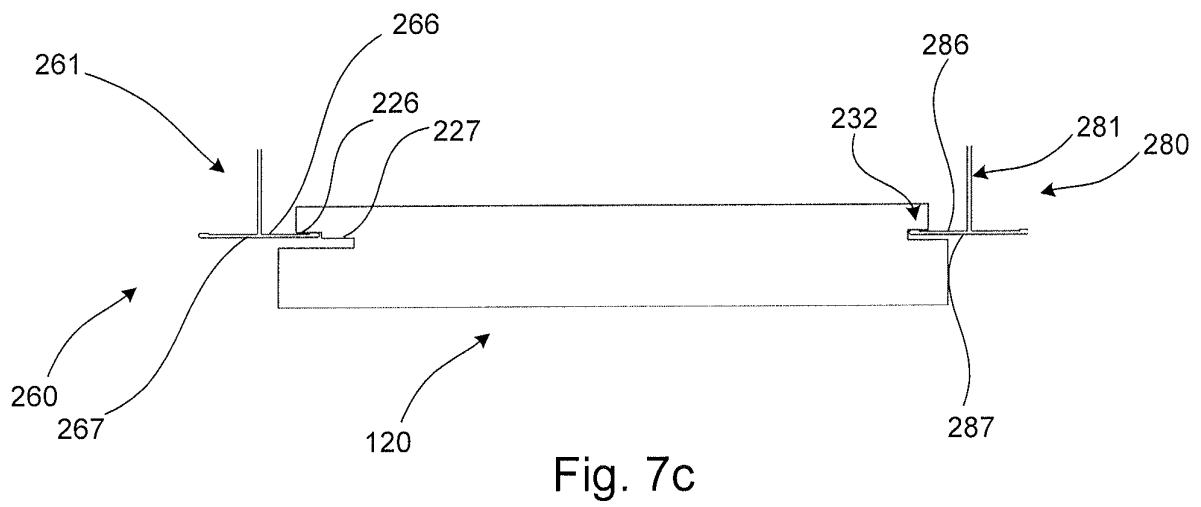
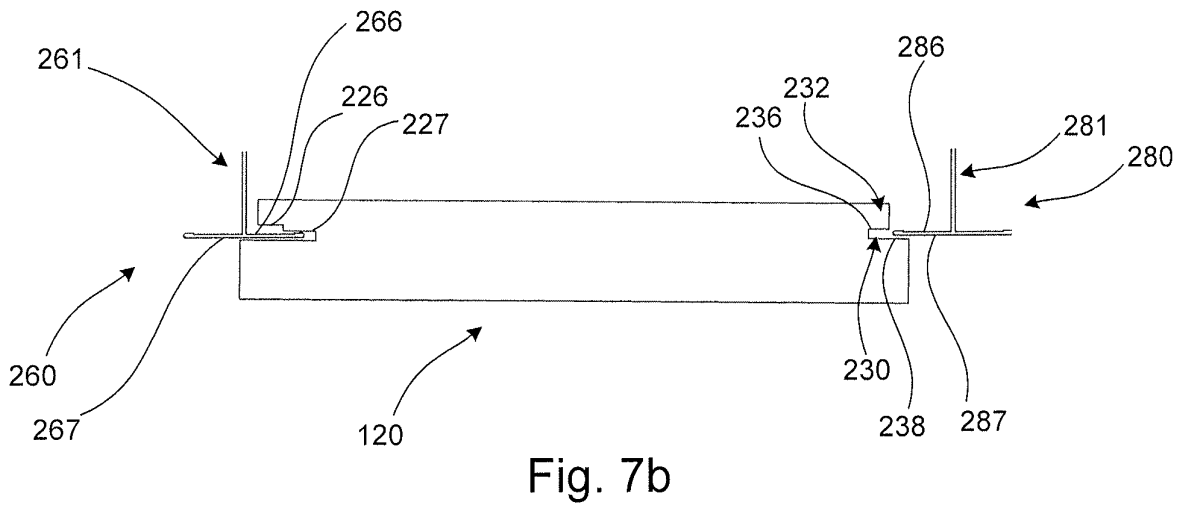
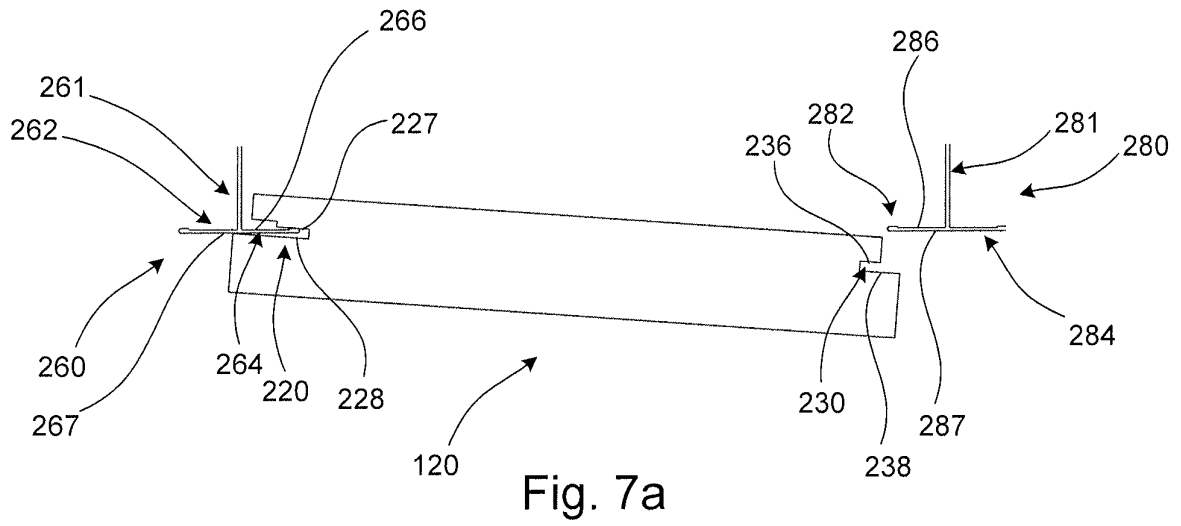


Fig. 6c



REFERENCES CITED IN THE DESCRIPTION

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