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(54) A method of installing a set of ceiling panels

(57) The invention relates to a method of installing a set of ceiling panels to a basic ceiling by use of a supporting grid, said set of ceiling panels includes at least three substantially rectangular panels. The method includes establishing and attaching a supporting grid to the basic ceiling, said supporting grid being established by mounting two or more carrier profiles and two or more support profiles to each to provide a grid of at least one rectangle; installing the set of ceiling panels in the carrying grid by applying said ceiling panels in side by side relationship with each other in the rectangle of the grid, so that each panel is supported by support flanges on the supporting profiles, and a first and a second panel are supported by one or more support flanges of one of the carrier profiles constituting the edges of the rectangle. The invention also includes a set of ceiling panels and methods for installing a suspended ceiling.

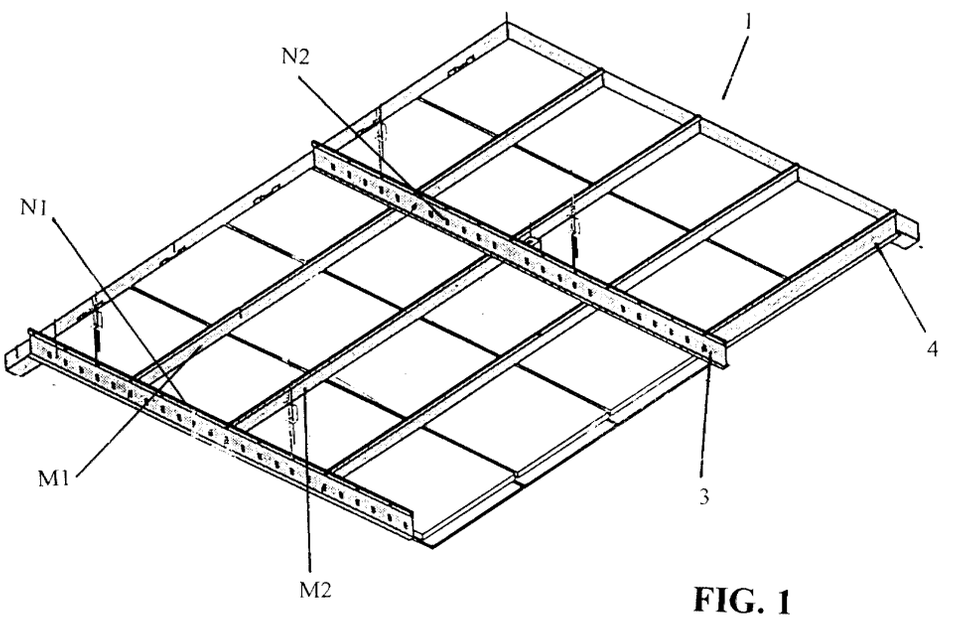

FIG. 1

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Description

[0001] The present invention relates to a method of installing a set of ceiling panels to a basic ceiling to obtain a suspended ceiling.

[0002] Suspended ceilings are generally known in the art. In most cases suspended ceilings are installed by use of a grid of metal beams in the form of inverted T-sections to support the ceiling panels.

[0003] The panels used in known suspended ceilings are of various materials, such as mineral fibres, fibreglass, wood, metal, gypsum, plastic or other compositions. They are positioned within the grid opening, and are supported by the grid. The panels are either of the type that expose the grid when the ceilings are viewed from below, or conceal the grid either fully or partially, when viewed from below.

[0004] A panel for a suspended ceiling with exposed grids normally has the form of an upper lip extending over the top of the grid with no lip on the panel below the grid. The panel hangs from the grid, by resting on this upper lip. Such panels are relatively simple to install, position and remove. These panels are not intended to be locked by themselves to the grid. Therefore there is a certain risk of "teething" of panels during the installation, because the panels are easily pushed out of position.

[0005] Panels that conceal the grid from below, on the other hand, pose special problems, since the portion of the edge underlying the grid interferes with the positioning, and removal of the panels and make the installation complicated and difficult. Panels that conceal the grid, however, are in general desirable for among other benefits their appearance due to stable positioning, as well as their ability to lock the grid. The grid can be partially or totally concealed. Additionally, since the panels of this type conceal the metal grid, they can have a beneficial effect during fire, as they serve to insulate the metal from transferring heat, particularly where panels are of a fire retardant material.

[0006] Panels locked to the grid, which give no visual clue to their removal procedure, also provide a degree of security against unauthorized access to the space above the ceiling.

[0007] In EP 0979908 A1 a ceiling panel for use in a suspended ceiling is disclosed. The panel is for use in a grid formed of inverted T-section beams. The panel has opposing active parallel edges each of which has a profile different from the other, having at least two opposing passive edges. All the edges of the panel have lower lips to conceal the grid when seen from below. The active parallel edges are formed with special designed kerfs which define an upper and lower lip in the edges and makes it possible to install and remove the panel from the grid without the use of tools. Although the panel installed in a grid gives a good aesthetic impression in the ceiling and is easy to mount, the panel also represents some disadvantages with regard to strength and durability.

[0008] It is an object of the present invention to provide an alternative method to achieve the same qualities of the panel disclosed above with regard to easy mounting, in particular a method which is improved with respect to strength and durability, and which method preferably is easy to use and wherein the panels are easily exchangeable.

[0009] It is also an object of the present invention to provide a method for installing a set of panels in a grid, so the panels are locked and remain stable in the grid, wherein the grid may be visible, but preferably wherein the grid is partly or totally concealed. It is also a purpose of the present invention to provide ceiling panels suitable for use in the method according to the invention, and which panels preferably have a high strength relative to their densities. The densities of the ceiling panels are preferably within the range from 50 - 400 kg/m^3 and more preferably within the range 80 - 300 kg/m^3.

[0010] It has surprisingly been found that the above-mentioned objectives can be achieved by the method and the panel according to the invention. The method according to the invention makes it very easy and fast to install ceiling panels in a grid, and the panels are locked and stable in the grid. The set of ceiling panels according to the invention are easy to install and have excellent strength.

[0011] The method according to the invention and a set of ceiling panels according to the invention, are defined in the claims.

[0012] By the method according to the invention a method to install a suspended ceiling very fast and in a cost effective manner is provided. Furthermore, by the set of ceiling panels according to the invention a suspended ceiling with a good aesthetic look and excellent strength and durability is achieved. By use of the method and set of ceiling panels according to the invention a suspended ceiling can be installed at lower cost than already known suspended ceilings and with superior results with regard to look and durability.

[0013] The method of installing a set of ceiling panels to a basic ceiling makes use of a supporting grid, and the set of ceiling panels includes at least three substantially rectangular panels which have a width similar to each other. The sum of the length of each panel of the set of ceiling panels is defined as the total length of the set of ceiling panels. The method comprises the following steps:

i) to establish and attach a supporting grid to the basic ceiling, which supporting grid is established by mounting two or more carrier profiles and two or more support profiles to each other. The two or more carrier profiles are substantially parallel to each other and the two or more support profiles are substantially parallel to each other and substantially perpendicular to the two or more carrier profile. Hereby is provided a grid of at least one rectangle

where the profiles constitute the edges of the rectangle, which comprise support flanges protruding into said rectangle in a plane defined by said rectangle toward the opposite parallel profile. The number and size of the flanges are sufficient to support the set of ceiling panels. The length of the rectangle is defined as the distance between the two carrier profiles constituting opposite edges of the rectangle inclusive the protruding length of the flanges protruding into the rectangle in a plane defined by said rectangle, which is substantially equal to the total length of the set of ceiling panels. The width of the rectangle is defined as the distance between the two support profiles constituting opposite edges of said rectangle including the protruding length of the flanges protruding into said rectangle in a plane defined by said rectangle being substantially equal to the width of said ceiling panels,

ii) to install the set of ceiling panels in the carrying grid by applying the ceiling panels in side by side relationship with each other in the rectangle of the grid, so that each panel engages with, and is supported by support flanges on the two supporting profiles constituting opposite edges of the rectangle. One of the panels designated as the first end panel engages with and is supported by one or more support flanges of one of the carrier profiles constituting the edges of the rectangle. A second of the panels designated as the second end panel engages with and is supported by one or more support flanges of the other of the carrier profiles constituting the edges of the rectangle.

[0014] In a preferred embodiment of the method the panels have four edges, and each of the four edges has an upper portion defined as the part the of edge being closest to the surface facing the basic ceiling and a lower portion defined as the part of the edge being closest to the surface facing away from the basic ceiling. The edges are in pairs two and two parallel to each other. The first and the third of the edges may preferably be parallel and substantially identically shaped with a groove substantially in the middle of the edges in the longitudinal direction. The grooves are brought to surround one or more of the support flanges protruding from the profiles and each of the grooves may preferably have a depth substantially equal to the width of a support flange.

[0015] Also the second and the fourth edge of the panel are parallel. The second edge may preferably be formed with a groove substantially in the middle of the edge in the longitudinal direction and the groove has a depth substantially equal to the width of a support flange of the support profile. Below the groove an extended protruding lip is formed in the longitudinal direction on the lower half portion of the edge. The lip preferably has a width sufficiently large to conceal the support profile when viewed from below, preferably substantially equal to twice the width of the support flange as said groove is brought to surround the one or more parts of the support flange.

[0016] In a preferred embodiment of the method according to the invention the first edge of the first end panel and the third edge of the second end panel are formed with a groove substantially in the middle of the edges in the longitudinal direction. The groove preferably has a depth substantially equal to the width of a support flange on the carrier profile. Below the groove a protruding lip may preferably be formed in the longitudinal direction on the lower half portion of the edge. The lip preferably has a width substantially equal to the width of the support flange and when the groove is brought to surround the one or more parts of the support flange it preferably conceals half of the carrier profile when viewed from below.

[0017] In a preferred embodiment of the method the fourth edge is formed with a protruding lip in the longitudinal direction on the upper half portion of the edge. The protrusion has a width substantially equal to the width of the support flange.

[0018] Preferably the set of ceiling panels are installed in the rectangle of the supporting grid so that the support flanges are concealed by the grooves or by the protruding lips on the edges of the set of ceiling panels.

[0019] In one preferred embodiment of the invention the ceiling panels are substantially shaped as quadrangles

[0020] The carrier grid may of course be placed in any desired position with regard to the basic ceiling and have a inclination compared to horizontal direction up to 60 degrees and even up to 70 degrees, but usually it is preferred to place it in a horizontal position substantially parallel with the basic ceiling. The distance between the upper surface of the suspended ceiling and the basic ceiling may preferably vary from 3,5 cm to 350 cm and more preferably from 10 cm to 150 cm By using these distances between upper surface of the suspended ceiling and the basic ceiling an excellent sound absorbance can be established with ceiling panels made from sound reduction materials. But of course the distance between upper surface of the suspended ceiling and the basic ceiling can be adjusted to any desired distance.

[0021] In order to facilitate the installation of the ceiling panels in the grid, and also to make the production of the ceiling panels cost effective, uniform panels can be used. In a preferred embodiment of the set of ceiling panels for use in the method according to the invention the set includes at least three uniform panels. Each ceiling panel of the set has two identical opposing edges and two non-identical opposing edges. The two identical opposing edges are formed with a groove in the longitudinal direction. The two opposing non-identical edges are formed so that one of the edges has a protruding lip from an upper portion of the edge and the other edge has a protruding lip from the lower portion of the edge which is placed below a groove in the longitudinal direc-

tion of the edge.

[0022] In some cases it is not possible to adapt the suspended ceiling to fit with walls, pillars or the like, therefore the invention also comprises a method of installing a suspended ceiling comprising the steps of installing one or more sets of ceiling panels to a basic ceiling. The method further comprise the step of install one or more secondary sets of ceiling panels, wherein each secondary set of panels includes two substantially rectangular panels having a width similar to each other, and where the sum of the length of the two panels of the secondary set of ceiling panels is defined as the total length of the set of ceiling panels, and the method comprises the following steps:

i) to establish and attach a supporting grid to the basic ceiling, wherein one secondary rectangle which has an open side is provided by the profiles for each secondary set of panels to be installed, each secondary open rectangle being provided by a first profile and two second profiles. The first profile is a carrier profile or a support profile and the second profiles are the opposite profile types to the first profile. The profiles constitute the edges of each of the secondary open rectangles and comprise support flanges protruding in into the rectangle in a plane defined by said rectangle. The number and size of the flanges are sufficient to support the secondary set of ceiling panels. The length of the secondary rectangle is defined as the length of one of the second profiles determined from its contact point with the first profile to its termination at the open end of the secondary rectangle, including the protruding length of the flanges protruding into the secondary rectangle in a plane defined by said secondary rectangle from said second profile. The length is substantially equal to the total length of the secondary set of ceiling panels. The width of the secondary rectangle is defined as the distance between the two second profiles constituting opposite edges of the secondary rectangle, including the protruding length of the flanges protruding from the second profiles into the secondary rectangle in a plane defined by said second rectangle which is substantially equal to the width of said secondary ceiling panels,

ii) to install each secondary set of ceiling panels in the carrying grid by applying the secondary ceiling panels in side by side relationship with each other in the secondary rectangle of the grid, so that each panel engages with and is supported by support flanges on the two second profiles constituting opposite edges of the rectangle, and one of the panels designated as the first end panel engages with and is supported by one or more support flanges of the first profile constituting the edges of the rectangle,

iii) to close the one or more open secondary rectangles by attaching a further profile to the terminating ends of the second profiles.

[0023] In a preferred embodiment of the above-mentioned method the two secondary panels of a secondary set of profiles each has four edges with an upper portion defined as the part of the edge being closest to the surface facing the basic ceiling and a lower portion defined as the part of the edge being closest to the surface facing away from the basic ceiling, each of the secondary panels preferably comprising at least two edges each having a protruding lip in its lower portion extending substantially along the whole length of the edge, the protruding length of the respective lips in combination with the similar lips of other panels installed in the grid being adapted to the grid system so that the lips cover the grid and thereby make the grid concealed when viewed from below when the suspended ceiling is installed.

[0024] Also to adapt the suspended ceiling to walls, etc., the invention further comprises a method of installing a suspended ceiling, which method comprises the steps of installing one or more sets of ceiling panels to a basic ceiling as described above. The method further comprises the step of installing one or more tertiary ceiling panels wherein each tertiary panel has a width and a length, which method comprises the following steps:

i) establishing and attaching a supporting grid to the basic ceiling as defined above, wherein one tertiary rectangle having an open side is provided by the profiles for each tertiary panel to be installed, each tertiary open rectangle being provided by a first profile and two second profiles, the profiles constituting the edges of each of said tertiary open rectangles comprising support flanges protruding in into said rectangle in a plane defined by said rectangle, the number and size of said flanges being sufficient to support the tertiary set of ceiling panels, the length of said tertiary rectangle defined as the length of one the second profiles determined from its contact point with the first profile to its termination at the open end of the tertiary rectangle including the protruding length of the flanges protruding into said tertiary rectangle in a plane defined by said tertiary rectangle from the second profile, being substantially equal to the total length of the tertiary panel, and the width of said tertiary rectangle defined as the distance between the two second profiles constituting opposite edges of said tertiary rectangle inclusive the protruding length of the flanges protruding from the second profiles into the tertiary rectangle in a plane defined by said tertiary rectangle being substantially equal to the width of the tertiary panel,

ii) installing each tertiary panel in the carrying grid by applying the tertiary ceiling panels in the tertiary rectangle of the grid, so that the panel engages with

and is supported by support flanges on the three profiles constituting the edges of the rectangle, and

iii) closing said one or more open tertiary rectangles by attaching a further profile to the terminating ends of the second profiles.

[0025] In a preferred embodiment of the method, each of the tertiary panels has an upper portion defined as the part of the edge being closest to the surface facing the basic ceiling and a lower portion defined as the part of the edge being closest to the surface facing away from the basic ceiling, each of the tertiary panels comprising at least two edges each having a protruding lip in its lower portion extending substantially along the whole length of the edge, the protruding length of the respective lips in combination with the similar lips of other panels installed in the grid being adapted to the grid system so that the lips cover the grid and thereby make the grid concealed when viewed from below when the suspended ceiling is installed.

[0026] As the skilled craftsman would know ceiling panels can be manufactured from a wide range of materials e.g. wood, gypsum, plastic, metal, composites, fibres etc. In a preferred embodiment according to the invention the ceiling panels are manufactured of mineral fibres especially stone fibres, by the known methods. The panels may be covered with vlies and/or acoustic paints preferably on the side facing away from the basic ceiling. The use of acoustic paints is especially of advance when the panels serve as sound absorbing panels.

[0027] Furthermore, it is possible, as with known suspended ceilings, to finish the suspended ceiling according to the invention with a frieze in e.g. gypsum. One or more of the ceiling panels may also be replaced by light armatures, ventilation means or others means which is common knowledge to the skilled person.

[0028] In the following an example according to the invention will be described in details. The example only serves to illustrate the invention and shall not in any way be considered a limitation of the scope of the invention.

Example

[0029] In the example the invention will be described with reference to a drawing. The drawing comprises the following figures:

Fig. 1 shows the supporting grid with sets of ceiling panels installed.

Fig. 2 shows a panel in the set of panels according to the invention

Fig. 3 - 5 illustrate the method according to the invention.

Fig. 6 - 7 show how a ceiling panel is installed according to the invention.

[0030] A suspended ceiling was established according to the invention with ceiling panels installed in a supporting grid as seen in figure 1. With reference to figure 2 a ceiling panel of the set of ceiling panels is described. Each ceiling panel had a first side S1 adapted to face the basic ceiling and a second side S2 adapted to face away from the basic ceiling and four edges denoted D1, D2, C and C in figure 2. D1 and D2 and C and C, respectively, are parallel to each other and D1 or D2 substantially defines the length of the ceiling panel and the two edges C substantially define the width of the ceiling panel. The ceiling panels were adapted to be mounted in the supporting grid attached to the carrying parts of the basic ceiling.

[0031] First the supporting grid 1 was established. The supporting grid was attached to the carrying parts of the basic ceiling. The supporting grid was formed from cross sections and carrier sections in such a way that the cross sections and carrier sections were attached substantially perpendicular to each other. The cross sections were placed substantially parallel to each other and with a certain mutual distance substantially equal to the length of three ceiling panels. The carrier sections were fastened to the cross sections substantially parallel to each other and with a certain mutual distance substantially equal to the width of one ceiling plate. The cross sections and the carrier sections then created a pattern of rectangles where each rectangle had two edges M1 and M2 substantially parallel to each other and constituted by carrier sections, and the two edges M1 and M2 had a length substantially equal to the length of three ceiling panels. Each rectangle also had two edges N1 and N2 substantially parallel to each other and constituted by cross sections, and the two edges N1 and N2 had a length substantially equal to the width of one ceiling panel. The edges M1, M2, N1 and N2 were equipped with flanges that served to support the panels.

[0032] After the supporting grid was established the ceiling panels were installed in sets of three in the rectangles created by the cross sections and the carrier sections.

[0033] At first one ceiling panel was placed in rectangle so the edges D1 and D2 of the ceiling panel were in contact with and supported by the flanges on the edges M1 and M2 in the supporting grid. Then the ceiling panel was pushed in a direction parallel to the edges M1 and M2, and thereby one of the edges C of the ceiling panel was brought into contact with the edge N1 of the cross sections, figure 3.

[0034] Then the second ceiling panel of the set was placed in the rectangle so the edges D1 and D2 of the second ceiling panel was in contact with and supported by the flanges on the edges Ml and M2 of the supporting grid.

[0035] The second ceiling panel was then pushed in

a direction parallel to the edges M1 and M2, where one edge C of the second ceiling panel was brought into contact with the edge N2 of the cross section, figure 4.

[0036] Finally the third ceiling panel of the set was placed in the rectangle so the edges D1 and D2 of the third ceiling panel was in contact with and supported by the flanges on the edges M1 and M2 of the carrier sections and the two edges C of the third ceiling panel were in contact with the edges C of the first and the second ceiling panel, figure 5.

[0037] With reference to figure 2 the ceiling panel will now be described in details. The panel had two opposing edges C, both with a groove in the longitudinal direction of the edge, which grooves interferred with the flanges on the edges N1 or N2 of the rectangle, thereby supporting the panel. The edge D2 of the panel was also shaped with a groove in the longitudinal direction of the edge, and below the groove a protruding lip was shaped with such proportions that the lip was able to cover the flanges on the edge M2 of the grid. The edge D1 was shaped with a protruding lip on the upper portion of the edge, which lip was placed on a flange on the edge M1 to support the panel. When all the sets of ceiling panels were installed in the supporting grid, the grid was concealed when seen from below.

[0038] In figures 6 and 7 it is illustrated how the edges D1 and D2 are used to install and dismount the panels in the grid.

Claims

1. A method of installing a set of ceiling panels to a basic ceiling by use of a supporting grid, said set of ceiling panels includes at least three substantially rectangular panels having a width similar to each other, the sum of the length of each panel of the set of ceiling panels being defined as the total length of the set of ceiling panels, said method comprising the following steps:

   i) establishing and attaching a supporting grid to the basic ceiling, said supporting grid being established by mounting two or more carrier profiles and two or more support profiles to each other, said two or more carrier profiles being substantially parallel to each other and said two or more support profiles being substantially parallel to each other and being substantially perpendicular to said two or more carrier profiles, to thereby provide a grid of at least one rectangle, said profiles constituting the edges of said rectangle comprise support flanges protruding into said rectangle in a plane defined by said rectangle toward the opposite parallel profile, the number and size of said flanges being sufficient to support the set of ceiling panels, the length of said rectangle defined as the distance between the two carrier profiles constituting opposite edges of said rectangle inclusive the protruding length of the flanges protruding into said rectangle in a plane defined by said rectangle being substantially equal to the total length of the set of ceiling panels, and the width of said rectangle defined as the distance between the two support profiles constituting opposite edges of said rectangle including the protruding length of the flanges protruding into said rectangle in a plane defined by said rectangle being substantially equal to the width of said ceiling panels,

   ii) installing the set of ceiling panels in the carrying grid by applying said ceiling panels in side by side relationship with each other in the rectangle of the grid, so that each panel engages with and is supported by support flanges on the two supporting profiles constituting opposite edges of said rectangle, and one of said panels designated as the first end panel engages with and is supported by one or more support flanges of one of the carrier profiles constituting the edges of the rectangle, and a second of said panels designated as the second end panel engages with and is supported by one or more support flanges of the other of the carrier profiles constituting the edges of the rectangle.

2. A method according to claim 1, **CHARACTERIZED in that** said panels have four edges, each of the four edges having an upper portion defined as the part of the edge being closest to the surface facing the basic ceiling and a lower portion defined as the part of the edge being closest to the surface facing away from the basic ceiling, said edges being in pairs two and two parallel to each other and the first and the third of said edges being parallel and substantially identically shaped with a groove substantially in the middle of the edges in the longitudinal direction, said grooves being brought to surround one or more of the support flanges protruding from the profiles and said grooves having a depth substantially equal to the width of a support flange.

3. A method according to claims 1 and 2, **CHARACTERIZED in that** a second and a fourth edge of said panel being parallel, said second edge being formed with a groove substantially in the middle of the edge in the longitudinal direction and said groove having a depth substantially equal to the width of a support flange of the support profile and below said groove an extended protruding lip is formed in the longitudinal direction on the lower half portion of the edge, said lip having a width sufficiently large to conceal the support profile when viewed from below, preferably substantially equal to twice

the width of the support flange, as said groove is brought to surround the one or more parts of the support flange.

4. A method according to claims 1 to 3, **CHARACTERIZED in that** a first edge of the first end panel and a third edge of the second end panel are formed with a groove substantially in the middle of the edge in the longitudinal direction, and said groove having a depth substantially equal to the width of a support flange on the carrier profile, and below said groove a protruding lip is formed in the longitudinal direction on the lower half portion of the edge, said lip having a width substantially equal to the width of the support flange and said grooves being brought to surround the one or more parts of the support flange and optionally conceal half of the carrier profile when viewed from below.

5. A method according to claims 2, 3 or 4, **CHARACTERIZED in that** said forth edge is formed with a protruding lip in the longitudinal direction on the upper half portion of the edge, said protrusion having a width substantially equal to the width of the support flange.

6. A method according to claims 1 to 5, **CHARACTERIZED in that** said set of ceiling panels is installed in said rectangle of the supporting grid so that the support flanges are concealed in the grooves or by the protruding lips on the edges of said set of ceiling panels.

7. A method according to any of the preceding claims, **CHARACTERIZED in that** the ceiling panels are substantially shaped as quadrangles

8. A method according to any of the preceding claims, **CHARACTERIZED in that** said supporting grid is fixed in a substantially horizontal position with a distance from 3,5 to 350 cm from the ceiling, preferably from 10 to 150 cm.

9. A set of ceiling panels for use in the method according to claims 1 to 8 including at least three panels, in which each ceiling panel of said set of panels has two identical opposing edges and two non-identical opposing edges, said two identical opposing edges being formed with a groove in the longitudinal direction and said two opposing non-identical edges being formed so the one edge poses a protrusion from an upper portion of the edge and the other edge poses an protrusion from the lower portion of the edge below a groove in the longitudinal direction of the edge.

10. A method of installing a suspended ceiling comprising the steps of installing one or more sets of ceiling panels to a basic ceiling according to any one of claims 1-8, said method further comprises the step of installing one or more secondary sets of ceiling panels, wherein each secondary set of panels includes two substantially rectangular panels having a width similar to each other, the sum of the length of the two panels of the secondary set of ceiling panels being defined as the total length of the set of ceiling panels, said method comprising the following steps:

i) establishing, and attaching a supporting grid to the basic ceiling as defined in claim 1, wherein one secondary rectangle having an open side is provided by said profiles for each secondary set of panels to be installed, each secondary open rectangle being provided by a first profile and two second profiles, the first profile being a carrier profile or a support profile, the second profiles being the opposite profile types to the first profile, the profiles constituting the edges of each of said secondary open rectangles comprising support flanges protruding into said rectangle in a plane defined by said rectangle, the number and size of said flanges being sufficient to support the secondary set of ceiling panels, the length of said secondary rectangle defined as the length of one of the second profiles determined from its contact point with the first profile to its termination at the open end of the secondary rectangle including the protruding length of the flanges protruding into said secondary rectangle in a plane defined by said secondary rectangle from said second profile being substantially equal to the total length of the secondary set of ceiling panels, and the width of said secondary rectangle defined as the distance between the two second profiles constituting opposite edges of said secondary rectangle including the protruding length of the flanges protruding from said second profiles into said secondary rectangle in a plane defined by said secondary rectangle being substantially equal to the width of said secondary ceiling panels,

ii) installing each secondary set of ceiling panels in the carrying grid by applying said secondary ceiling panels in side by side relationship with each other in the secondary rectangle of the grid, so that each panel engages with and is supported by support flanges on the two second profiles constituting opposite edges of said rectangle, and one of said panels designated as the first end panel engages with and is supported by one or more support flanges of the first profile constituting the edges of the rectangle,

iii) closing said one or more open secondary rectangles by attaching a further profile to the terminating ends of the second profiles.

11. A method according to claim 10 wherein said two secondary panels of a secondary set of profiles each has four edges having an upper portion defined as the part of the edge being closest to the surface facing the basic ceiling and a lower portion defined as the part of the edge being closest to the surface facing away from the basic ceiling, each of the secondary panels comprises at least two edges each having a protruding lip in its lower portion extending substantially along the whole length of the edge, the protruding length of the respective lips in combination with the similar lips of other panels installed in the grid being adapted to the grid system so that the lips cover the grid and thereby make the grid concealed when viewed from below, when the suspended ceiling is installed.

12. A method of installing a suspended ceiling comprising the steps of installing one or more sets of ceiling panels to a basic ceiling according to any one of claims 1-8 and 10-11, said method further comprises the step of installing one or more tertiary ceiling panels, wherein each tertiary panel having a width and a length, said method comprises the following steps:

i) establishing and attaching a supporting grid to the basic ceiling as defined in claims 1 or 10, wherein one tertiary rectangle having an open side is provided by said profiles for each tertiary panel to be installed, each tertiary open rectangle being provided by a first profile and two second profiles, the profiles constituting the edges of each of said tertiary open rectangles comprise support flanges protruding into said rectangle in a plane defined by said rectangle, the number and size of said flanges being sufficient to support the tertiary set of ceiling panels, the length of said tertiary rectangle being defined as the length of one the second profiles determined from its contact point with the first profile to its termination at the open end of the tertiary rectangle including the protruding length of the flanges protruding into said tertiary rectangle in a plane defined by said tertiary rectangle from said second profile, being substantially equal to the total length of the tertiary panel, and the width of said tertiary rectangle being defined as the distance between the two second profiles constituting opposite edges of said tertiary rectangle including the protruding length of the flanges protruding from said second profiles into said tertiary rectangle in a plane defined by said secondary rectangle being substantially equal to the width of said tertiary panel,

ii) installing each tertiary panel in the carrying grid by applying said tertiary ceiling panels in the tertiary rectangle of the grid, so that the panel engages with and is supported by support flanges on the three profiles constituting the edges of said rectangle, and

iii) closing said one or more open tertiary rectangles by attaching a further profile to the terminating ends of the second profiles.

13. A method according to claim 12, wherein each of said tertiary panel has an upper portion defined as the part of the edge being closest to the surface facing the basic ceiling and a lower portion defined as the part of the edge being closest to the surface facing away from the basic ceiling, each of the tertiary panels comprising at least two edges each having a protruding lip in its lower portion extending substantially along the whole length of the edge, the protruding length of the respective lips in combination with the similar lips of other panels installed in the grid being adapted to the grid system so that the lips cover the grid and thereby make the grid concealed when viewed from below when the suspended ceiling is installed.

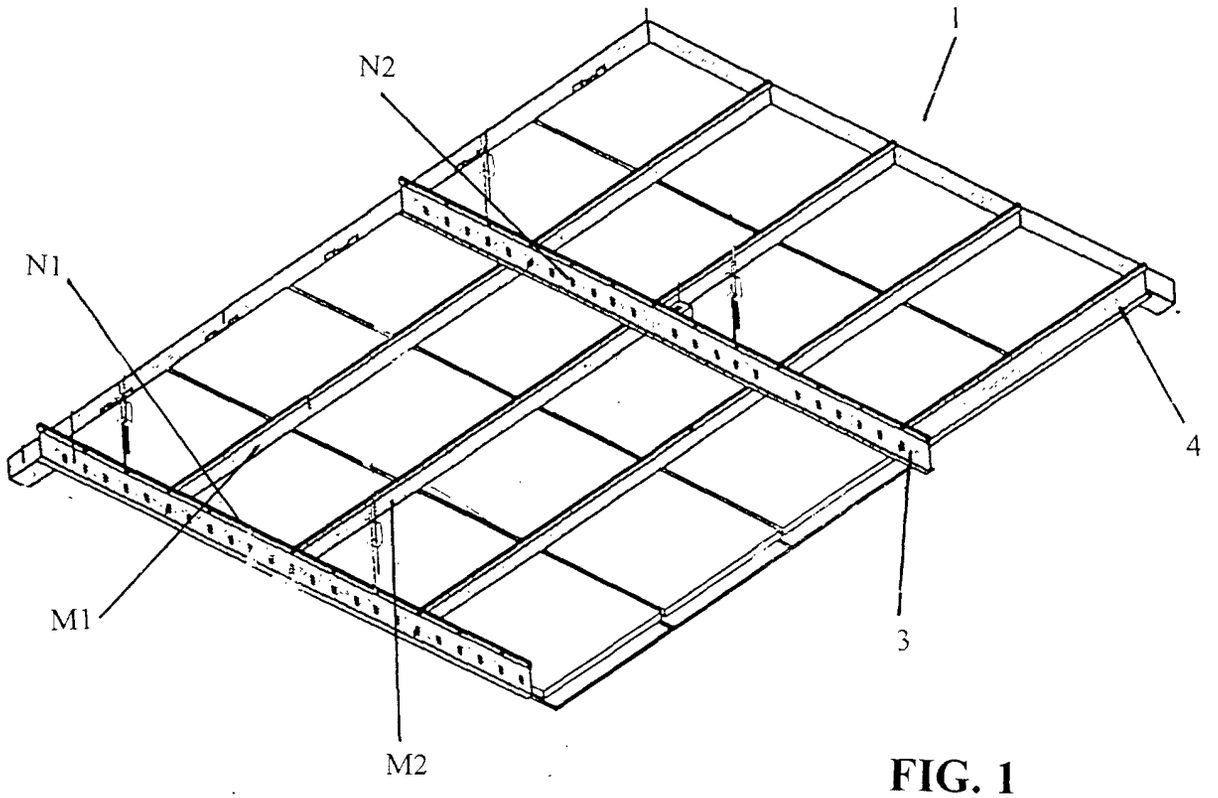


FIG. 1

FIG. 2

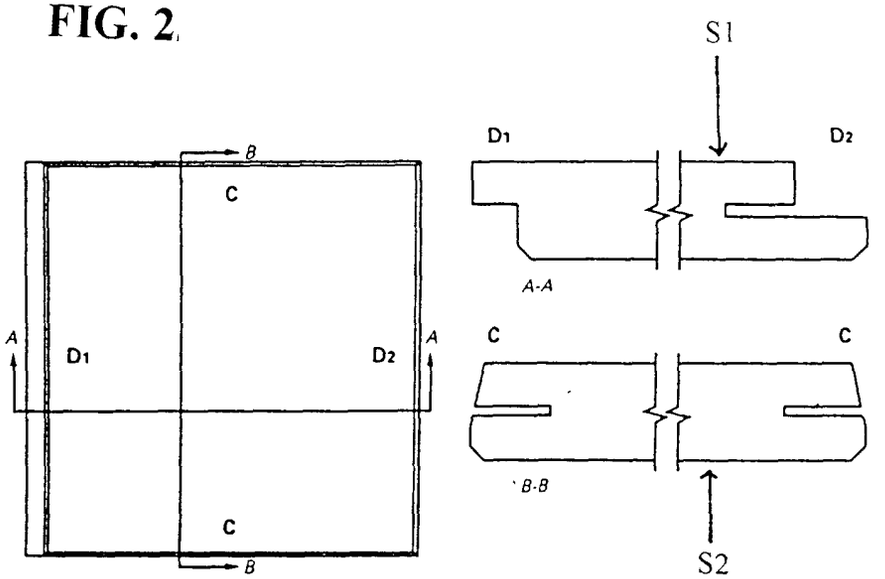


FIG. 3

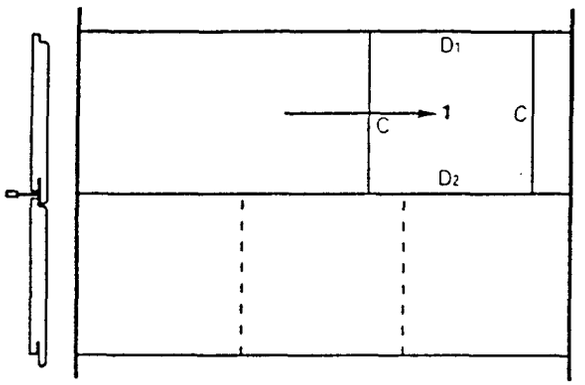


FIG. 4

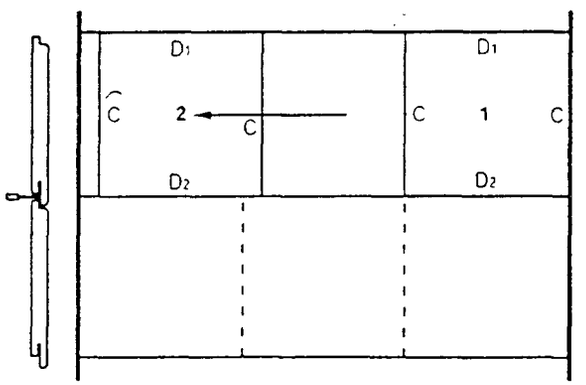


FIG. 5

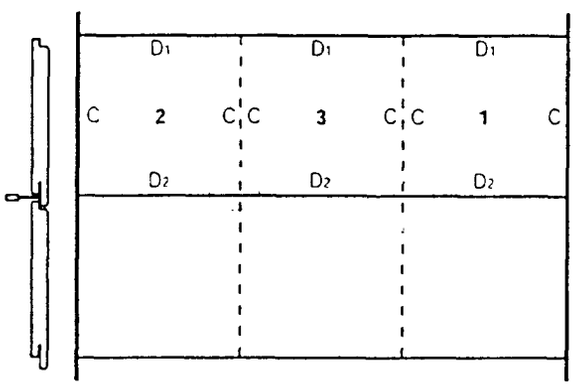
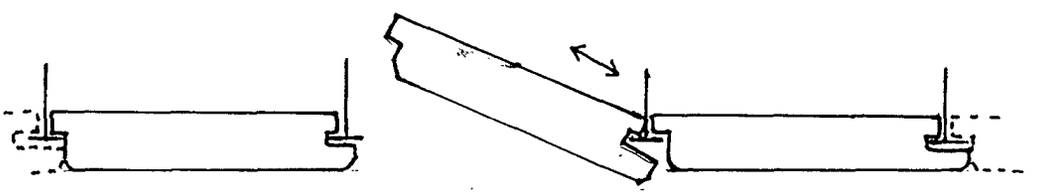


FIG. 6

FIG. 7



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EUROPEAN SEARCH REPORT

Application Number
EP 00 61 0029

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	25 July 2000	Mysliwetz, W

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