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(54) **DEVICE FOR MOUNTING A SUPPORT STRUCTURE IN A SUSPENDED CEILING SYSTEM AND SUSPENDED CEILING SYSTEM**

(57) The present invention relates to a device (200, 300) for mounting a support structure (106, 106a-c, 220, 220a-c, 320) in a suspended ceiling system (100) comprising a grid of profiles (102). The device (200, 300) comprises a first section (202, 302) connectable to a profile (103) of the grid of profiles (102). The first section (202, 302) is configured to be mounted over an upper bulb (103b) of the profile (103). The device (200, 300) comprises a second section (204, 304) configured to extend at an oblique angle relative to a mounting plane of the suspended ceiling system (100). The second section (204, 302) being provided with a hole configuration (206, 306) adapted to receive an end portion of the support structure (106, 106a-c, 220, 220a-c, 320). A suspended ceiling system (100) comprising the device (200, 300) is also disclosed.

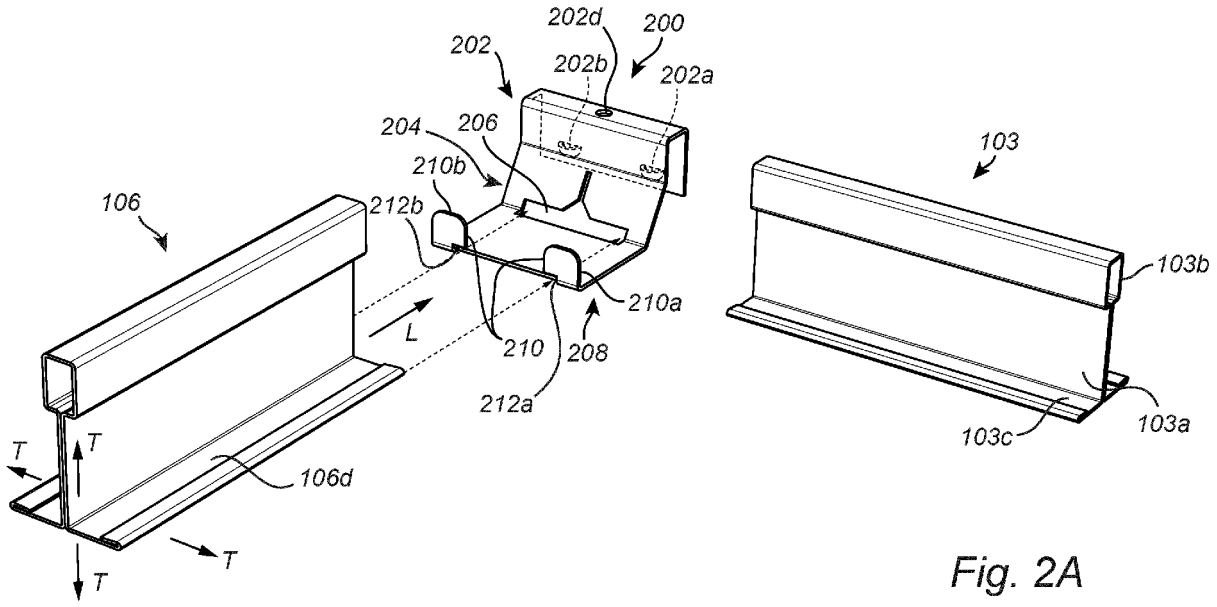

Fig. 2A

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Description

Filed of the Invention

[0001] The present invention generally relates to device for mounting a support structure in a suspended ceiling system and a suspended ceiling system.

Background of the Invention

[0002] A suspended ceiling system in a room or in another accommodation may serve a variety of purposes. One purpose of having a suspended ceiling system may be to conceal a structural ceiling. Another purpose may be to provide improved sound absorption and/or sound attenuation in and outside of the room. Another purpose may be to support various equipment installed in the ceiling of a room.

[0003] In case of a suspended ceiling system, such equipment may then be installed through the suspended ceiling leaving only desired parts of the equipment visible from the room. Moreover, the resulting plenum space located between the suspended ceiling and a structural 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.

[0004] A conventional suspended ceiling system normally comprise a grid of profiles supporting ceiling tiles arranged in frames formed by the grid of profiles. The tiles are typically adapted for sound absorption.

[0005] The grid of profiles typically includes main runners and often also cross runners. The main runners are normally attached to the structural ceiling of a room via hangers. The hangers are typically made of bars or wires which are attached to the main ceiling and to the main runners such that the main runners become suspended below the main ceiling. The cross runners typically connect perpendicular to the main runners and extend in parallel in order to form frames in which the ceiling tiles typically are arranged.

[0006] Some suspended ceilings have ceiling tiles made of rigid materials, such as wood, gypsum or metal. These materials are generally rigid enough to support equipment installed in the suspended ceiling. However, other suspended ceilings have ceiling tiles made of materials such as stone wool or glass wool not having the same load carrying capacity. When utilizing ceiling tiles of stone wool or glass wool it has proven troublesome to install equipment at the suspended ceiling in question.

[0007] It has therefore been suggested to install load carrying structures above the suspended ceiling and to attach the equipment to these load carrying structures. It has however proven time consuming and troublesome to install these structures. Moreover, it is often troublesome to install equipment connected to these load carrying structures. This work is time consuming. The time-consuming work implies high costs due to e.g. personnel expenses. Further, there is a risk of positioning these load carrying structures the wrong position as installation is often conducted under tight time constraints.

Summary of the invention

[0008] In view of the above, it is an object of the present invention is to provide an improved device for mounting a support structure in a suspended ceiling system and an improved suspended ceiling system.

[0009] Another object is to provide such a device for mounting a support structure in a suspended ceiling system and a suspended ceiling system which are less time consuming to install.

[0010] Another object is to provide such a device for mounting a support structure in a suspended ceiling system and a suspended ceiling system which ensures a reliable connection of a support structure.

[0011] Another object is to provide such a device for mounting a support structure in a suspended ceiling system and a suspended ceiling system which ensure correct positioning of equipment in relation to the suspended ceiling system, which in turn ensure a correct positioning in relation to a tile element of suspended ceiling system.

[0012] It is also an object to provide a cost-effective device for mounting a support structure in a suspended ceiling system and a cost-effective suspended ceiling system.

[0013] To achieve at least one of the above objects and also other objects that will be evident from the following description, a device for mounting a support structure in a suspended ceiling system having the features defined in claim 1 and a suspended ceiling system according to claim 12 are provided according to the present inventive concept. Preferred variations to the inventive concept will be evident from the dependent claims.

[0014] More specifically, according to a first aspect, there is provided a device for mounting a support structure in a suspended ceiling system, the suspended ceiling system comprising a grid of profiles, the device comprising: a first section connectable to a profile of the grid of profiles, said profile comprising an upstanding web provided with an upper bulb and a lateral support flange, wherein the first section is configured to be mounted over the upper bulb, a second section configured to extend at an oblique angle relative to a mounting plane of the suspended ceiling system when the first section of the device is connected to the profile of the grid of profiles, the second section being provided with a hole configuration adapted to receive an end portion of the support structure.

[0015] Hereby an improved device for mounting a support structure in a suspended ceiling system is provided. The support structure is typically mounted above the ceiling tiles of the suspended ceiling system in case the suspended ceiling system comprises ceiling tiles. The support structure may also be used in a suspended ceiling system void of ceiling tiles, i.e. a suspended ceiling system including a grid of profiles without ceiling tiles.

[0016] The suspended ceiling system comprises a grid of profiles. The grid of profiles may include main runners and cross runners. The cross runners may extend perpendicular in relation to the main runners. The main runners and the cross runners typically extend in a mounting plane of the suspended ceiling system, i.e. in a plane parallel to or defined by the suspended ceiling of the suspended ceiling system.

[0017] The device comprises a first section connectable to a profile of the grid of profiles. More specifically, the first section is configured to be mounted over an upper bulb of said profile. The profile comprises an upstanding web provided with an upper bulb and a lateral support flange. The profile is generally made of metal or comprises metal. The profile may however be made of or comprise other materials such plastic. The upper bulb is typically a portion which is made thicker compared to the upstanding web. The upper bulb may be folded from a metal sheet. The upstanding web may be formed of a metal sheet. The lateral support flange is typically configured to support a ceiling tile. A plurality of lateral support flanges may be provided on the profile. A plurality of lateral support flanges may be provided on opposite sides of the profile to support two or more ceiling tiles at different sides of the profile. The lateral support flange or flanges may be made of a metal sheet. The profile, including the upper bulb, the upstanding web and the lateral support flange may be made of a metal sheet. The upper bulb, the upstanding web and the lateral support flange may be integrally formed.

[0018] A second section of the device is configured to extend at an oblique angle relative to a mounting plane of the suspended ceiling system when the first section of the device is connected to the profile of the grid of profiles. The oblique angle may be any angle which is not parallel to the mounting plane of the suspended ceiling system.

[0019] The second section is provided with a hole configuration adapted to receive an end portion of the support structure. The hole configuration may include a single hole or a plurality of holes. The hole configuration may resemble an outer shape of the end portion of the support structure, thereby providing a tight fit to the end portion of the support structure. The hole configuration may be tailored to fit the outer shape of the end portion of the support structure. The hole configuration may be a simple hole or a complex pattern including a plurality of different cuts and/or shapes. The hole configuration may resemble an I, a plurality of I:s, a H, a X, an U, a T, an inverted U, or an inverted T to give a few non-limiting examples.

[0020] It should be noted that within the context of this application the term "hole configuration" may be any type of hole or holes. Hence, the wording "hole configuration" includes any number of holes having any shape.

[0021] By the above arrangement of the first section and the second section including the hole configuration, significant advantages are achieved. The device may easily be mounted to the profile in a secure and reliable manner. The end portion of the support structure may easily be mounted in a secure and reliable manner to the device, hence the support structure may easily be mounted in a secure and reliable manner. The support structure may be used to carry the weight of any entities, such as devices, mounted thereon. The support structure may be used to stabilize the grid of profiles.

[0022] The device may further comprise a third section extending in the mounting plane of the suspended ceiling system, wherein the third section adjoins the second section, which is advantageous in that the third section may support the support structure. The third section may consequently carry the weight or part of the weight of the support structure and any entities, such as devices, mounted thereon. Hence, an even more reliable connection between the device and the support structure may be achieved.

[0023] The third section may be provided with a guide member for guiding the support structure during reception of the end portion of the support structure by the hole configuration, which is advantageous in that insertion of the end portion of the support structure in the hole configuration may be facilitated. The guide member may additionally provide an increased stability and reliability to the connection between the device and the end portion of the support structure.

[0024] The guide member may be configured to restrict movement in transversal directions of the support structure while allowing movement in a longitudinal direction thereof, which is advantageous in that insertion of the end portion of the support structure in the hole configuration may be facilitated while an increased stability and reliability to the connection between the device and the end portion of the support structure may be achieved.

[0025] It should be noted that within the context of this application the term "transversal directions" may be any directions transversal to the support structure. Transversal directions consequently include lateral and vertical directions of the support structure, or combined directions including lateral and vertical direction components.

[0026] The first section may be joined to the third section via the second section, which is advantageous in that a simple, yet reliable device may be realized.

[0027] The first section may be joined to the second section via the third section, which is advantageous in that a simple, yet reliable device may be realized.

[0028] The hole configuration may be adapted such that the end portion of the support structure has a height which is smaller than a total height of the support structure.

[0029] The first section may be adapted for snap fit mounting over the bulb, which is advantageous in that a reliable and quick mounting may be achieved. Moreover, the need for any tools during mounting may be significantly reduced or eliminated.

[0030] The hole configuration may be adapted to receive the end portion of the support structure having an inverted T cross sectional shape, which is advantageous

in that a commonly used shape of the support structure, providing a rigid support structure, may be used. The end portion of the support structure may thus be counteracted from moving in a transversal direction thereof while still being easily insertable in a longitudinal direction thereof.

[0031] The first section and the second section may be integrally formed, which is advantageous in that an easily manufacturable reliable device may be achieved.

[0032] The first section, the second section and the third section may be integrally formed, which is advantageous in that an easily manufacturable reliable device may be achieved.

[0033] According to second aspect of the invention, there is provided a suspended ceiling system comprising: a grid of profiles, comprising a profile having an upstanding web provided with an upper bulb and a lateral support flange, a support structure, a device according to the first aspect, wherein the first section of the device is mounted over the upper bulb of the profile, and wherein the hole configuration of the second section receives an end portion of the support structure. In general, features of this aspect of the invention provide similar advantages as discussed above in relation to the previous aspect of the invention. Consequently, said advantages will not be repeated in order to avoid undue repetition.

[0034] The system may further comprise a ceiling tile supported by the grid of profiles, wherein the support structure is arranged above the ceiling tile. The support structure may consequently be used to support other entities, such as devices, lights or electric equipment, while being concealed by the ceiling tile when viewed from inside of a room.

[0035] The support structure may be arranged at a distance from the ceiling tile in a vertical direction of the suspended ceiling system, which is advantageous in that the arrangement of the support structure may be adapted to suit other entities, such as devices, lights or electric equipment, of different sizes and heights.

[0036] The support structure may have an inverted T cross sectional shape, which is advantageous in that a rigid support structure may be achieved.

[0037] The details and advantages of this aspect of the invention are largely analogous to those of the first aspect of the invention, wherein reference is made to the above.

[0038] 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.

Brief Description of the Drawings

[0039] 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 variants of the present inventive concept, with reference to the appended drawings, where the same reference numerals will be used for similar elements, wherein:

Fig. 1 conceptually illustrates a suspended ceiling system including a grid of profiles and a plurality of support structures.

Fig. 2a conceptually illustrates a device for mounting a support structure in a suspended ceiling system, an end portion of a support structure and a profile.

Fig. 2b conceptually illustrates the device for mounting a support structure in a suspended ceiling system of Fig. 2a in which the end portion of the support structure is inserted in the device and wherein the device is mounted to the profile.

Fig. 3 conceptually illustrates a differently shaped device for mounting a support structure in a suspended ceiling system and an end portion of a differently shaped support structure.

Fig. 4 conceptually illustrates how the location of the support structure in relation to the suspended ceiling may be altered by slightly changing the design of the device of Fig. 2.

Detailed Description

[0040] The present inventive concept will now be described more fully hereinafter with reference to the accompanying drawings, in which preferred variants of the inventive concept are shown. This inventive concept may, however, be embodied in many different forms and should not be construed as limited to the variants set forth herein; rather, these variants are provided for thoroughness and completeness, and fully convey the scope of the inventive concept to the skilled person. Like reference numerals refer to like elements throughout the description.

[0041] Initially a suspended ceiling system 100 will be described with reference to Fig. 1. Fig. 1 is a schematic perspective view conceptually depicting a ceiling system 100. The ceiling system 100 comprises a grid of profiles 102. The grid of profiles 102 comprises a plurality of profiles 103, some in form of main runners 104a-c extending side by side. For reasons of simplicity there are three main runners 104a-c illustrated in Fig. 1. In addition, two main runners 104d-e are shown in phantom to indicate that the ceiling system 100 may include any number of profiles in form of main runners 104a-e extending side by side. The ceiling system 100 may thus be used to form a suspended ceiling of an arbitrary size.

[0042] In the depicted ceiling system 100, the grid of profiles 102 further includes profiles 103 in form of cross runners 105. The cross runners 105 are optional and may or may not be present in the grid of profiles 102. The depicted cross runners 105 are interconnecting the plurality of main runners 104a-e extending side by side, i.e. the cross runners 105 are attached to the respective main

runners 104a-e. The length of the cross runners 105 is typically about the distance between two adjacent main runners. However, the cross runners may be arranged an oblique angle with respect to the main runners 104a-e. In this case the length of the cross runners 105 are typically adapted so as to interconnect adjacent main runners irrespective of the oblique angle. Some cross runners 105 are shown in phantom.

[0043] The depicted ceiling system 100 also includes a plurality of ceiling tiles 120 arranged in the grid of profiles 102. Six ceiling tiles 120 are depicted for reasons of simplicity although any number of ceiling tiles 120 may be used with the ceiling system 100.

[0044] Further, the depicted ceiling system 100 also includes four support structures 106a-c. The support structures are mounted to the respective profiles 103 of the grid of profiles 102.

[0045] Support structures 106a are mounted between main runners 104b and 104c in a parallel fashion. The support structures 106a carries a device 108 in form of a Wi-Fi repeater. The device 108 is mounted between the two support structures 106a. Hence, the weight of the device 108 is distributed between the two support structures 106a. The device 108 and the support structures 106a are visible from a room located underneath the suspended ceiling system 100 since no ceiling tile is present in the location where device 108 and the support structures 106a are located.

[0046] More than two support structures may be used to support a device or similar. In fact, any number of support structures, such as three, five or ten may be used to support a device or similar.

[0047] Support structure 106b is mounted between main runners 104a and 104a and carries a device 110 in form of a lighting device. The support structure 106b is not visible from a room located underneath the suspended ceiling system 100 since a ceiling tile 120 is present below the support structure 106b in the location where device 110 and the support structure 106b are located. The device 110 is however visible from a room located underneath the suspended ceiling system 100 through an opening in the ceiling tile 120 at hand. The device 110 is hence mounted through the ceiling tile 120 at hand.

[0048] Support structure 106c is mounted between two cross runners 105. Support structure 106c carries no device or similar but serves the purpose of stabilizing the cross runners 105 and thereby the grid of profiles 102. The support structure 106c is not visible from a room located underneath the suspended ceiling system 100 since a ceiling tile 120 is present below the support structure 106c in the location where the support structure 106c is located.

[0049] Each support structure 106a-c is connected to the respective profiles 103 of the grid of profiles 102 by means of a device 200. The device 200 is designed for mounting a support structure in a suspended ceiling system 100 and will be described in more detail with reference to Figs. 2a and 2b below. However, the connection of the support structure 106b to the main runner 104b by means of a device 200 is shown as a partial enlarged view in Fig. 1. Similarly, the connection of the support structure 106c to a cross runner 105 by means of a device 200 is shown as a partial enlarged view in Fig. 1.

[0050] Now also referring to Fig. 2a and 2b. In Fig 2a and 2b it is conceptually depicted a device 200 for mounting a support structure 106 in a suspended ceiling system 100. As described above in conjunction to Fig. 1, the suspended ceiling system 100 comprises a grid of profiles 102 including profiles 103. A portion of a profile 103 is shown in Figs. 2a and 2b. The profile 103 of Figs. 2a and 2b may be a main runner 104a-e or a cross runner 105. Figs. 2a and 2b also shows an end portion of a support structure 106. The support structure 106 may be any one of the support structures 106a-c of Fig. 1.

[0051] The depicted profile 103 comprises an upstanding web 103a provided with an upper bulb 103b and a lateral support flange 103c. The lateral support flange 103c may carry load and may consequently support the device 200 and/or ceiling tiles 120.

[0052] The device 200 comprises a first section 202. The first section 202 is connectable to the profile 103 of the grid of profiles 102. The first section 202 is configured to be mounted over the upper bulb 103b of the profile 103. In the depicted device 200, the first section 202 is configured to grip around the upper bulb 103b of the profile 103.

[0053] The device 200 comprises a second section 204. The second section 204 is configured to extend at an oblique angle relative to a mounting plane of the suspended ceiling system 100 when the first section 202 of the device 200 is connected to the profile 103 of the grid of profiles 102. The second section 204 is provided with a hole configuration 206 adapted to receive an end portion of the support structure 106.

[0054] In the depicted device 200, the hole configuration 206 roughly resembles an inverted T. The hole configuration 206 is thus adapted to receive the end portion of the depicted support structure 106 which has an inverted T-shape with a flat bottom portion 106d. In Fig. 2b it is shown how the configuration 206 has received the end portion of the support structure 106.

[0055] The depicted hole configuration 206 is adapted such that the end portion of the support structure 106 has a height h which is smaller than a total height H of the support structure 106.

[0056] The device 200 further comprises a third section 208. The first section 202 is joined to the third 208 section via the second section 204.

[0057] The third section 208 extends in the mounting plane of the suspended ceiling system. The mounting plane of the suspended ceiling system is typically defined by the grid of profiles 102. The mounting plane of the suspended ceiling system may be parallel to a structural ceiling. The mounting plane of the suspended ceiling system may not be parallel to a structural ceiling. The third

section 208 adjoins the second section 204.

[0058] The third section 208 is provided with a guide member 210. The depicted guide member 210 is formed of two protrusions 210a, 210b formed on respective sides of the third section 208 and protruding upwards from the same. The guide member 210 is provided for guiding the support structure 106 during reception of the end portion of the support structure 106 by the hole configuration 206. The respective depicted protrusions 210a, 210b include a respective cut 212a, 212b. The cuts 212a, 212b thus forms a path through which the bottom portion 106d of the support structure 106 may be slid into along a longitudinal direction L thereof. The cuts 212a, 212b thus guides the support structure 106 into the hole configuration 206 when being received therein. Moreover, the cuts 212a, 212b counteracts that the support structure is lifted and/or twisted, hence making the connection between the device 200 and the support structure more reliable and rigid.

[0059] Hence, the guide member 210 is configured to restrict movement in transversal directions T of the support structure 106 while allowing movement in a longitudinal direction L thereof.

[0060] The guide member 210 may be formed of a single protrusion 210a. The guide member 210 may be formed of a pin, a screw, a rivet or similar. The guide member 210 may or may not be provided with cuts 212a, 212b.

[0061] The first section 202 of the depicted device 200 is adapted for snap fit mounting over the upper bulb 103b of the profile 103. To achieve this, the first section 202 is provided with two resilient protrusions 202a, 202b. The resilient protrusions 202a, 202b are thus bent back when the first section 202 of the device 200 is pushed over the upper bulb 103b of the profile 103. Once the resilient protrusions 202a, 202b has passed the upper bulb 103b of the profile 103, the protrusions springs back below the upper bulb 103b of the profile 103, thus locking the device 200 to the upper bulb 103b of the profile 103. Hence, the device 200 is counteracted from being lifted once the protrusions 202a, 202b has passed the upper bulb 103b of the profile 103. A single protrusion 202a may be used.

[0062] The first section 202 of the depicted device 200 is further provided with a through hole 202d. The through hole 202d may be used to secure the device 200 to the upper bulb 103b of the profile 103 by inserting a screw, a rivet or similar through the through hole 202d and into the upper bulb 103b of the profile 103. Such a screw or rivet will thus additionally lock the device 200 to the upper bulb 103b of the profile 103 in a longitudinal direction thereof.

[0063] The first section 202 and the second section 204 of the depicted device 200 are integrally formed. The first section 202 and the second section 204 of the depicted device 200 are formed by a metal sheet which is cut and bent to form the device 200.

[0064] The first section 202 and the second section 204 of the device 200 may be formed by any suitable material, such as plastic.

[0065] The first section 202, the second section 204 and the third section 208 of the depicted device 200 are integrally formed. The first section 202, the second section 204 and the third section 208 of the depicted device 200 are formed by a metal sheet which is cut and bent to form the device 200.

[0066] The first section 202, the second section 204 and the third section 208 of the device 200 may be formed by any suitable material, such as plastic.

[0067] Now also referring to Fig.3. In Fig. 3 it is conceptually depicted a different variant of a device 300 for mounting a support structure 106 in a suspended ceiling system 100.

[0068] As described above in conjunction to Fig. 1, the suspended ceiling system 100 comprises a grid of profiles 102 including profiles 103. However, for reasons of simplicity, no profile 103 is shown in Fig. 3, although the device 300 may be mounted correspondingly to the device 200 to a profile 103. Like in Figs. 2a and 2b the device 300 of Fig. 3 may be mounted to a main runner 104a-e or a cross runner 105.

[0069] Fig. 3 also shows an end portion of a differently shaped support structure 320. The support structure 320 may correspond to any one of the support structures 106a-c of Fig. 1.

[0070] The device 300 comprises a first section 302. The first section 302 is connectable to the profile 103 of the grid of profiles 102. The first section 302 is configured to be mounted over the upper bulb 103b of a profile 103. In the depicted device 300, the first section 302 is configured to grip around the upper bulb 103b of a profile 103.

[0071] The device 300 comprises a second section 304. The second section 304 is configured to extend at an oblique angle relative to a mounting plane of the suspended ceiling system 100 when the first section 302 of the device 300 is connected to a profile 103 of the grid of profiles 102. The second section 304 is provided with a hole configuration 306 adapted to receive an end portion of the support structure 306.

[0072] In the depicted device 300, the hole configuration 306 resembles two parallel vertically extending slits 306a, 306b. The slits 306a, 306b are equally shaped. The hole configuration 306 is thus adapted to receive the end portion of the depicted support structure 320 which has an inverted U-shape. The support structure 320 thus have bottom portion resembling two parallelly vertically extending webs 306c, 306d. The bottom portion of the support structure 320 including the two parallelly vertically extending webs 306c, 306d may consequently be received by the hole configuration 306 including the two parallel vertically extending slits 306a, 306b.

[0073] The depicted device 300 further comprises a third section 308. The first section 302 is joined to the second section 304 via the third section 308.

[0074] The third section 308 extends in the mounting plane of the suspended ceiling system. The third section 308 adjoins the second section 304.

[0075] The third section 308 of device 300 may be provided with a guide member correspondingly to what has been described in conjunction to the device 200 of Figs. 2a and 2b.

[0076] The first section 302 of the depicted device 300 may further be provided with a through hole correspondingly to what has been described in conjunction to the device 200 of Figs. 2a and 2b.

[0077] The first section 302 and the second section 304 of the depicted device 300 are integrally formed. The first section 302 and the second section 304 of the depicted device 300 are formed by a metal sheet which is cut and bent to form the device 300.

[0078] The first section 302 and the second section 304 of the device 300 may be formed by any suitable material, such as plastic.

[0079] The first section 302, the second section 304 and the third section 308 of the depicted device 300 are integrally formed. The first section 302, the second section 304 and the third section 308 of the depicted device 300 are formed by a metal sheet which is cut and bent to form the device 300.

[0080] The first section 302, the second section 304 and the third section 308 of the device 300 may be formed by any suitable material, such as plastic.

[0081] Now also referring to Fig. 4. In Fig. 4 it is conceptually depicted how the height location of the support structure 106, 220, 320 in relation to the profile 103 may be adapted by slightly varying the design of the device 200, 300. In practice, the design of the first section 202, 302 may be varied so as to change the height location of the support structure 106, 220, 320 in relation to the profile 103.

[0082] In Fig. 4 a profile 103 of the above described kind is shown in cross section. A device 200 is shown in three variants. A first variant 200a is shown by being depicted with solid lines. The first variant 200a of the device 200 is configured such that a lower edge the support structure 220a end up just above the ceiling tile 120. The lower edge of the support structure 220a thus touches the upper major surface of the ceiling tile 120.

[0083] A second variant 200b is shown by being depicted with dashed lines. The second variant 200b of the device 200 is configured such that a lower edge of the support structure 220b end up above the ceiling tile 120, thus leaving a space between the support structure 220b and the ceiling tile 120. In other words, the support structure 220b is arranged at a distance d from the ceiling tile 120 in a vertical direction of the suspended ceiling system 100.

[0084] A third variant 200c is shown by being depicted with dashed lines. The third variant 200c of the device 200 is configured such that a lower edge of the support structure r 220c end up in a location where the ceiling tile 120 is located. The third variant is thus suitable to be used when no ceiling tile 120 is at hand.

[0085] It will be appreciated that the present inventive concept is not limited to the variants shown. Several modifications and variations are thus conceivable within the scope of the invention which thus is exclusively defined by the appended claims.

[0086] For instance, the hole configuration 206, 306 may be adapted so fit any kind of support structure 106, 220, 320 having an arbitrary shape or cross section.

[0087] Also, the height and width of the device 200, 300 may be tailored to suit specific installations, profiles and support structures.

Claims

1. A device (200, 300) for mounting a support structure (106, 106a-c, 220, 220a-c, 320) in a suspended ceiling system (100), the suspended ceiling system (100) comprising a grid of profiles (102), the device (200, 300) comprising:

   a first section (202, 302) connectable to a profile (103) of the grid of profiles (102), said profile (103) comprising an upstanding web (103a) provided with an upper bulb (103b) and a lateral support flange (103c), wherein the first section (202, 302) is configured to be mounted over the upper bulb (103b),
   a second section (204, 304) configured to extend at an oblique angle relative to a mounting plane of the suspended ceiling system (100) when the first section (202, 302) of the device (200, 300) is connected to the profile (103) of the grid of profiles (102), the second section (204, 302) being provided with a hole configuration (206, 306) adapted to receive an end portion of the support structure (106, 106a-c, 220, 220a-c, 320).

2. The device (200, 300) according to claim 1, the device further comprising a third section (208, 308) extending in the mounting plane of the suspended ceiling system, wherein the third section (208, 308) adjoins the second section (204, 304).

3. The device (200, 300) according to claim 2, wherein the third section (208, 308) is provided with a guide member (210) for guiding the support structure (106, 106a-c) during reception of the end portion of the support structure (106, 106a-c) by the hole configuration (206, 306).

4. The device (200, 300) according to claim 3, wherein the guide member (210) is configured to restrict movement in transversal directions (T) of the support structure (106, 106a-c, 220, 220a-c, 320) while allowing movement in a longitudinal direction (L) thereof.

5. The device (200, 300) according to any one of claims

2 - 4, wherein the first section (202, 302) is joined to the third (208, 308) section via the second section (204, 304).

6. The device (200, 300) according to any one of claims 2 - 4, wherein the first section (202, 302) is joined to the second section (204, 304) via the third section (208, 308).

7. The device (200, 300) according to any one of the preceding claims, wherein the hole configuration (206, 306) is adapted such that the end portion of the support structure (106, 106a-c, 220, 220a-c, 320) has a height (h) which is smaller than a total height (H) of the support structure (106, 106a-c, 220, 220a-c, 320).

8. The device (200, 300) according to any one of the preceding claims, wherein the first section (202, 302) is adapted for snap fit mounting over the upper bulb (103b).

9. The device (200, 300) according to any one of the preceding claims, wherein the hole configuration (206, 306) is adapted to receive the end portion of the support structure (106, 106a-c, 220, 220a-c) having an inverted T cross sectional shape.

10. The device (200, 300) according to any one of the preceding claims, wherein the first section (202, 302) and the second section (204, 304) are integrally formed.

11. The device (200, 300) according to any one of claims 2-10, wherein the first section (202, 302), the second section (204, 304) and the third section (208, 308) are integrally formed.

12. A suspended ceiling system (100) comprising:

a grid of profiles (102), comprising a profile (103) having an upstanding web (103a) provided with an upper bulb (103b) and a lateral support flange (103c),
a support structure (106, 106a-c, 220, 220a-c, 320),
a device (200, 300) according to any one of the preceding claims, wherein the first section (202, 302) of the device (200, 300) is mounted over the upper bulb (103b) of the profile (103), and wherein the hole configuration (206, 306) of the second section (204, 304) receives an end portion of the support structure (106, 106a-c, 220, 220a-c, 320).

13. The suspended ceiling system (100) according to claim 12, the system (100) further comprising a ceiling tile (120) supported by the grid of profiles (102), wherein the support structure (106, 106a-c, 220, 220a-b, 320) is arranged above the ceiling tile (120).

14. The suspended ceiling system (100) according to claim 13, wherein the support structure (106, 106a-c, 220, 220b, 320) is arranged at a distance (d) from the ceiling tile (120) in a vertical direction of the suspended ceiling system (100).

15. The suspended ceiling system (100) according to any one of claims 12 - 14, wherein the support structure (106, 106a-c, 220, 220a-c) having an inverted T cross sectional shape.

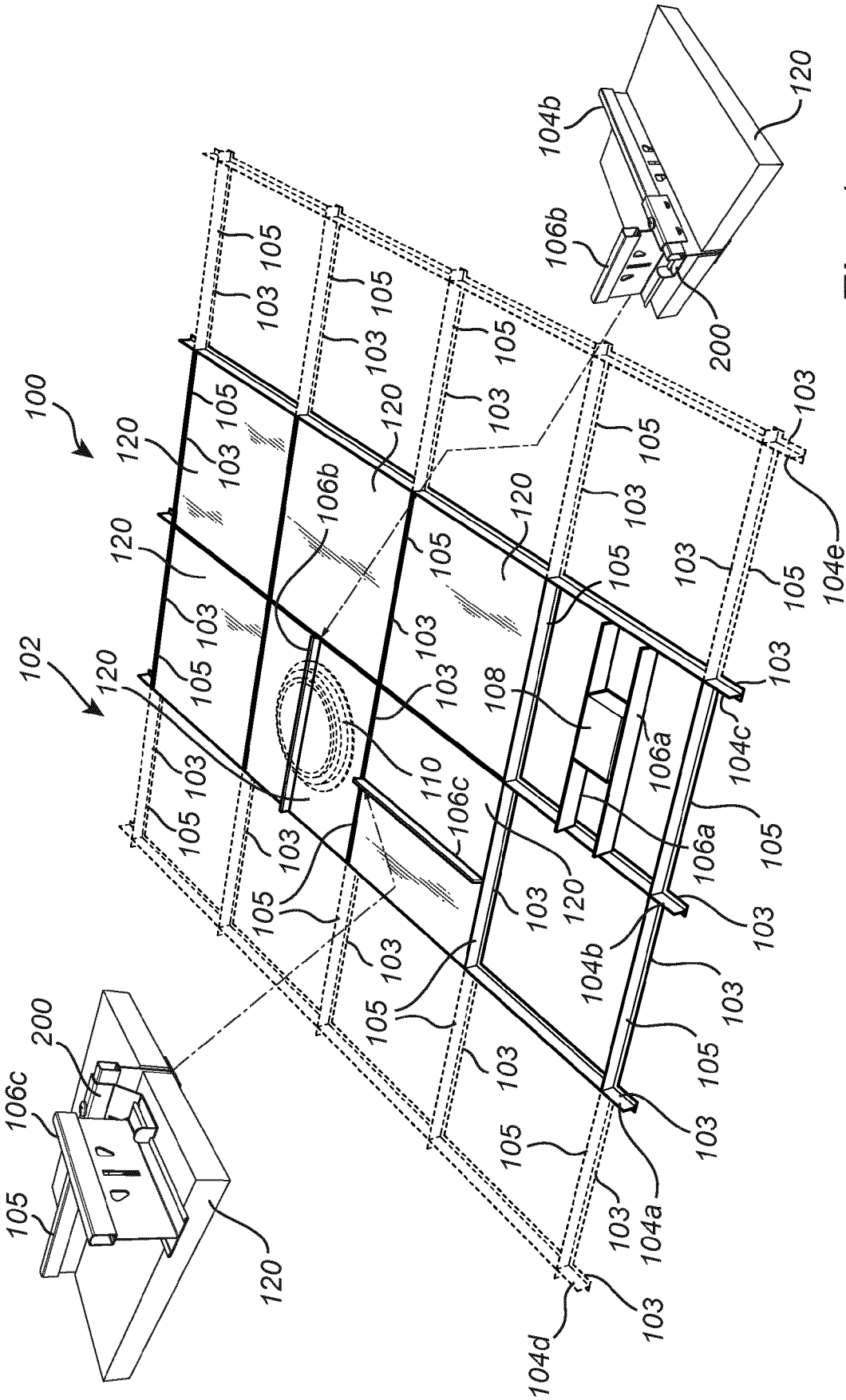
100
102
120
103
105
104a
104b
104c
104d
104e
106a
106b
106c
108
110
200

Fig. 1

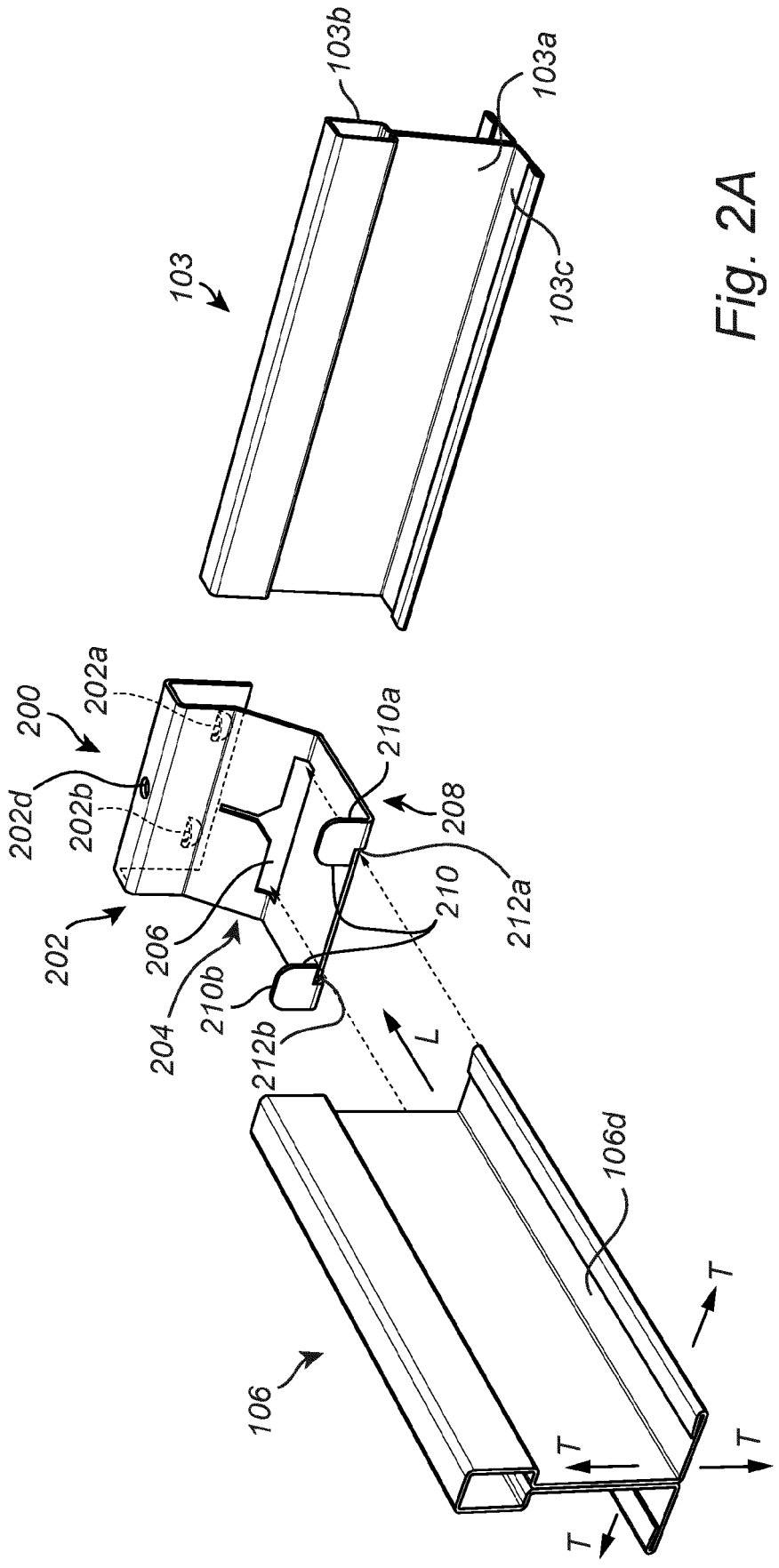
103b
103a
103
103c
200
202a
202d
202b
202
206
204
210b
212b
210a
208
210
212a
L
106
106d
T
T
T
T

Fig. 2A

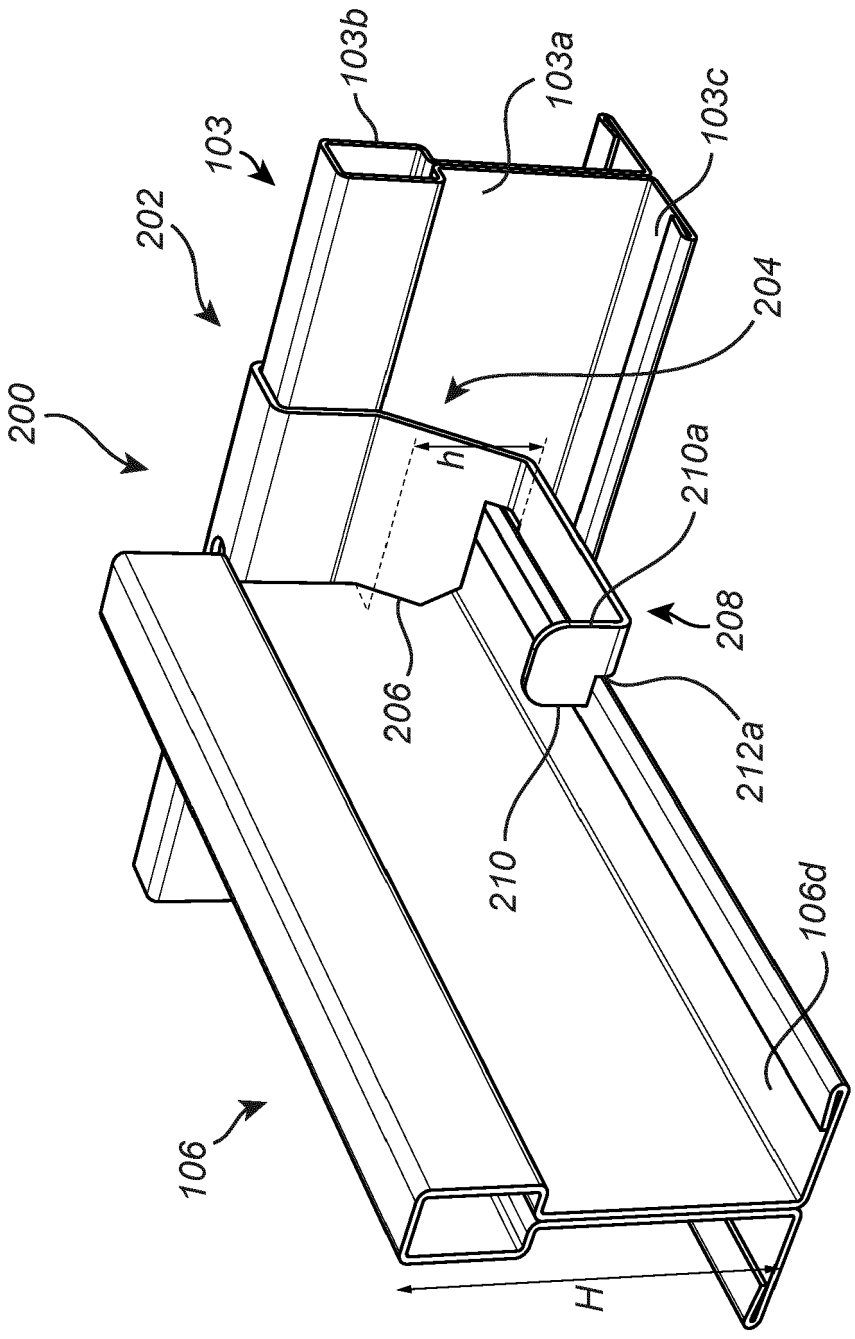
103b
103a
103c
103
202
204
200
h
210a
208
206
212a
210
106d
106
H

Fig. 2B

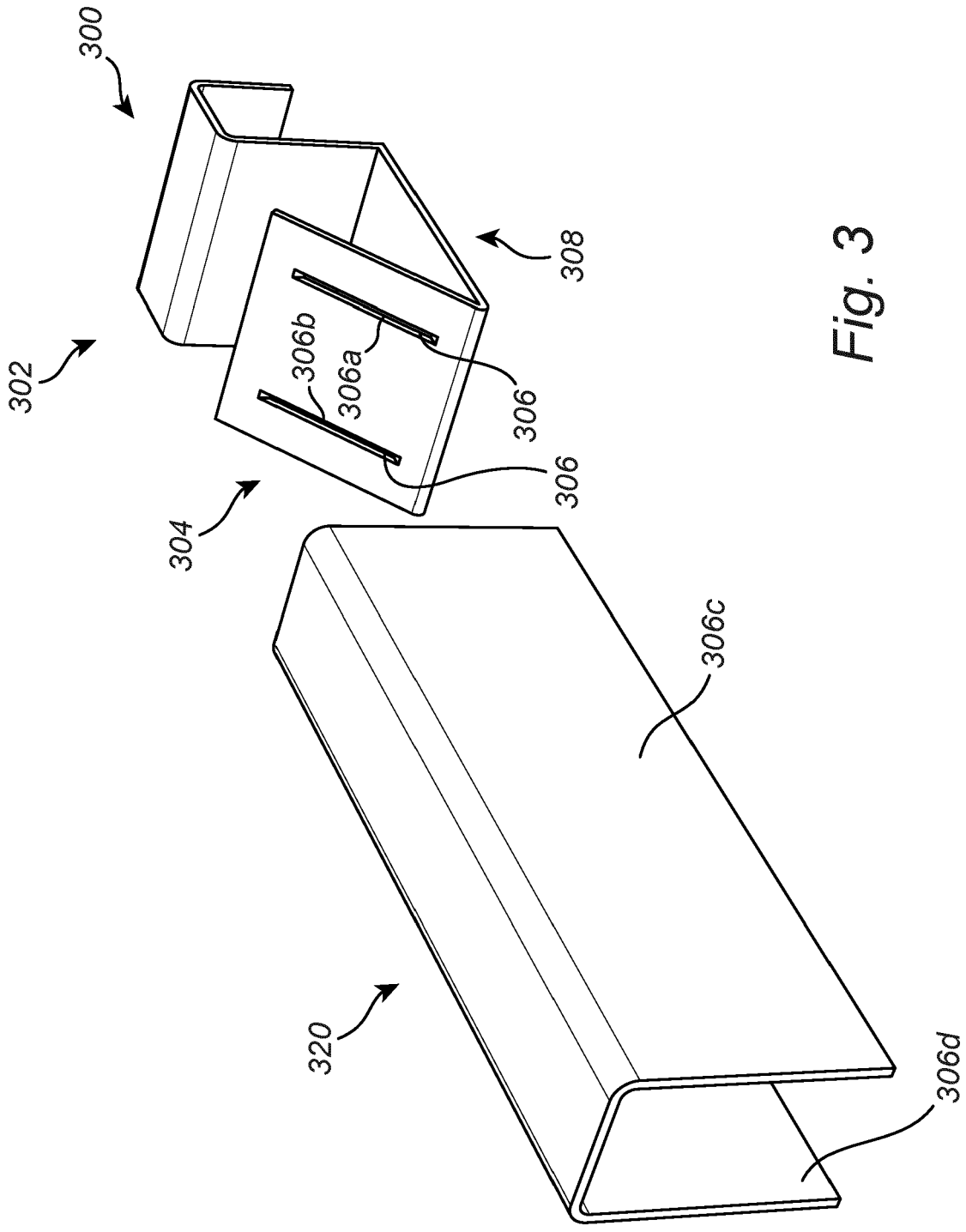

Fig. 3

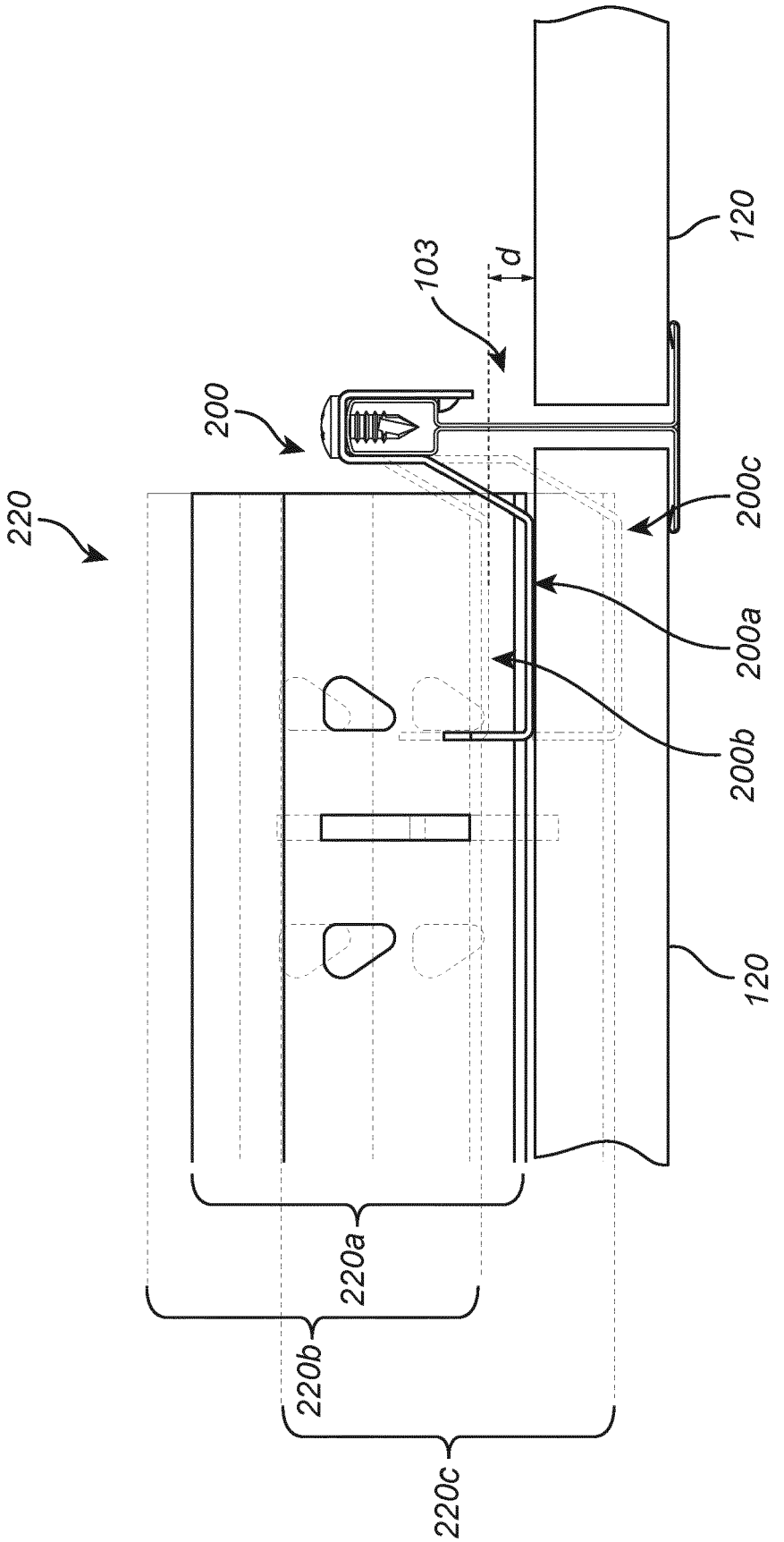

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 20 21 4208

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E04B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	30 April 2021	Petrinja, Etiel

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