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(71) Applicant: **Purso Oy**
37200 Siuro (FI)

(72) Inventor: **MANNILA, Hannu**
37100 Nokia (FI)

(74) Representative: **Berggren Oy**
P.O. Box 16
Eteläinen Rautatiekatu 10A
00101 Helsinki (FI)

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Claims 16 to 21 are deemed to be abandoned due to non-payment of the claims fees (Rule 45(3) EPC).

(54) **MOUNTING DEVICE FOR A FASTENING GROOVE OF AN INSULATING GLASS UNIT**

(57) The invention relates to a mounting device for a fastening groove configured to be mounted between glass plates of an insulating glass unit. The mounting device is configured to be fastened to an end of the fastening groove. The mounting device is a plate-like element and comprises at least an inner guide wall or an

outer guide wall on its planar side surface for guiding fastening of the mounting device to the end of the fastening groove. The invention further relates to a mounting unit, an insulation glass unit, a structural glazing system, and a method for assembling a mounting unit in an insulation glass unit.

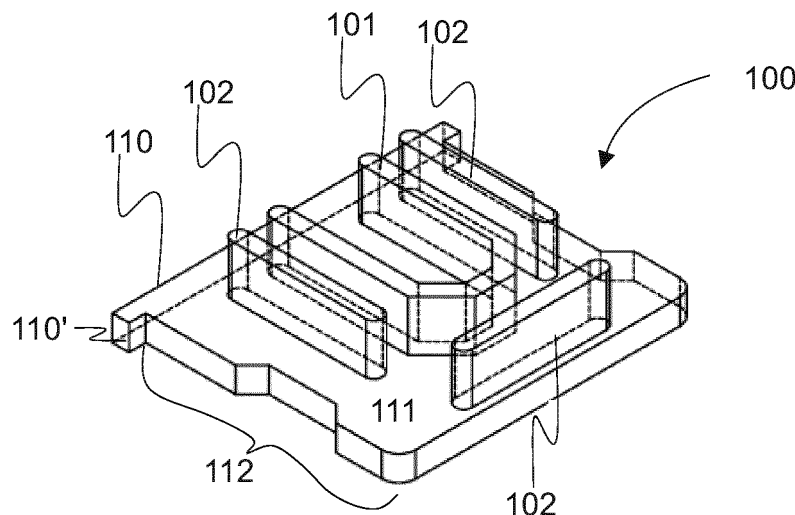


Fig. 1a

Description

Technical Field

[0001] The present invention relates to a mounting device for a fastening groove configured to be mounted to an insulating glass unit, and a mounting unit, an insulation glass unit, and a structural glazing system comprising at least one fastening groove and at least one mounting device. The invention further relates to a method for method for assembling a mounting unit between two adjacent glass plates of an insulation glass unit.

Background

[0002] Structural glazing systems are types of curtain wall systems consisting of glass units that are fixed, for example, bonded or anchored back to a supporting structure without the use of continuously gasketed aluminium pressure plates or caps. The glass units can be comprised of monolithic, laminated, for example, dual-glazed or triple-glazed insulating glass units (IGUs) that are connected to the supporting structure fixed to the walls. The supporting structure may be, for example, horizontal and/or vertical aluminium profile.

[0003] Different kinds of fixing means, for example a fastener with two holding arms can be used for attaching/fixing insulation glass units to a supporting structure. A fastener is configured to be inserted into a screw groove of the frame profile through a space between two adjacent insulation glass units and when the holding arms are aligned with fastening grooves of the insulation glass units, the holding arms are arranged into fastening grooves of the insulation glass unit elements, for example by rotating them. But problems can be caused by installation accuracy tolerances of fastening grooves of insulation glass units, which tolerances can vary significantly. This means that fixing means configured to fix IGUs of certain height to the supporting structure are not capable of providing a good building practice. When a construction worker is attaching IGUs, she/he may not be able to rotate the holding arms to the fastening grooves of the insulation glass units, because the fastening grooves of the two adjacent insulation glass units are not aligned. This makes the building of structural glazing systems slow or impossible and may increase costs or cause rejection of a IGU as unfit for installation.

Summary

[0004] Now there has been invented an improved method and technical equipment implementing the method, by which the above problems are alleviated. Various aspects of the invention are disclosed in the independent claims including a mounting device for mounting a fastening groove to an insulating glass unit, a mounting unit comprising fastening groove and mounting devices, an insulation glass unit, a structural glazing system, and a

method for method for assembling a mounting unit between two adjacent glass plates of an insulation glass unit. Various embodiments are disclosed in the dependent claims.

[0005] According to a first aspect, there is provided a mounting device for a fastening groove configured to be mounted between glass plates of an insulating glass unit, which mounting device is configured to be fastened to an end of the fastening groove, the mounting device is a plate-like element and comprises at least an inner guide wall or at least an outer guide wall on its planar side surface for guiding fastening of the mounting device to the end of the fastening groove.

[0006] According to an example, the mounting device comprises an inner guide wall and outer guide wall on its planar side surface, which the space between the inner and outer guide walls corresponds the cross-section of the fastening groove. According to an example, the mounting device is configured to be fastened to an end of the fastening groove as a push-in cap. According to an example, wherein the outer guide wall is formed from two or more separate wall parts configured to be positioned against the outer surface of the fastening groove or the inner guide wall is formed from two or more separate wall parts configured to be positioned against the inner surface of the fastening groove. According to an example, the outer guide wall is formed from three According to an example, the material of the mounting device is elastic. According to an example, the material of the mounting device is rigid. According to an example, the material of the mounting device is rubber, plastic, composite or metal. According to an example, an upper edge part of the mounting device comprises protrusions on its both sides, which upper edge part with the protrusions is configured to remain above the level of the glass plates of the insulating glass unit when mounted between the glass plates. According to an example, an upper edge part of the mounting device is configured to remain at the level of the glass plates of the insulating glass unit when mounted between the glass plates. According to an example, an upper edge part of the mounting device is embedded between the glass plates of the insulating glass unit when mounted between the glass plates.

[0007] According to a second aspect, there is provided a mounting unit for an insulation glass unit. The mounting unit comprises a fastening groove and two mounting devices according to the first aspect and its examples, fastened to both ends of the fastening groove.

[0008] According to an example, the mounting devices are glued or pushed as push-in caps to the ends of the fastening groove.

[0009] According to a third aspect, there is provided an insulation glass unit comprising at least one mounting unit according to the second aspect and its example fastened between two glass plates of the at least two glass plates of the insulation glass unit.

[0010] According to an example, the insulation glass unit comprises three to five glass plates.

[0011] According to a fourth aspect, there is provided a structural glazing system comprising at least one insulation glass unit according to the third aspect and its example. The insulation glass unit is configured to be fastened to a frame of the structural glazing system by a fastener. The at least one holding arm is arranged into a fastening groove of at least one mounting unit according to the second aspect and its example.

[0012] According to an example, the structural glazing system comprises at least two adjacent insulation glass units and at least two mounting units, which are fastened to the frame by a fastener comprising two holding arms, which fastener is inserted between the insulation glass units and which holding arms are arranged into fastening grooves of the at least two mounting units. According to a fifth aspect, there is provided a method for assembling a mounting unit according to according to the second aspect and its example between two adjacent glass plates of the at least two glass plates of an insulation glass unit. The method comprises: arranging edge mass to a space between edges of said two adjacent glass plates, which edge mass is configured to fix said at least one mounting unit between the said two adjacent glass plates, mounting said at least one mounting unit to the space between the said two adjacent glass plates, and removing the edge mass protruded from the space.

[0013] According to an example, the mounting unit is mounted to the space between the said two adjacent glass plates so that the upper edges of the mounting devices of the mounting unit are at the same level as the edges of the glass plates. According to an example, the mounting unit is mounted to the space between the said two adjacent glass plates so that the upper edge parts of the mounting devices with the protrusions are configured to remain above the level of the glass plates of the insulating glass unit when mounted between the glass plates. According to an example, the mounting unit is mounted to the space between said two adjacent glass plates so that the mounting devices are embedded between the glass plates of the insulating glass unit.

Brief description of the drawings

[0014] In the following, various embodiments of the invention will be described in more detail with reference to the appended drawings, in which

Fig. 1a shows a perspective view of a mounting device for a fastening groove according to an example embodiment;

Fig. 1b shows the mounting device of Fig. 1a from above;

Fig. 1c shows the mounting device of Fig. 1a from a side;

Fig. 1d shows the mounting device of Fig. 1a from

behind;

Figs 1e-j show from above mounting devices for a fastening groove according to an example embodiment;

Fig. 2a shows a perspective view of mounting devices and a fastening groove according to an example embodiment;

Fig. 2b shows a perspective view of the mounting devices and the fastening groove of Fig. 2a;

Fig. 3a shows a perspective view of a fastening groove comprising fastened mounting devices before the fastening groove is mounted to an insulating glass unit according to an example embodiment;

Fig. 3b shows a perspective view of the fastening groove of Fig. 3a in a mounting phase to the insulating glass unit according to an example embodiment;

Fig. 3c shows a perspective view of the fastening groove of Fig. 3a and 3b after the fastening groove is mounted to the insulating glass unit;

Fig. 3d shows a cross-sectional view of the part of the structural glazing system of Fig. 3a-3c along the line A-A of Fig. 3c according to an example embodiment;

Fig. 3e shows an example of an alternative structure for the structure shown in fig. 3d;

Fig. 4 shows a method for assembling a mounting unit between two adjacent glass plates of an insulation glass unit according to an example embodiment;

Fig. 5 shows a cross-sectional view of a part of a structural glazing system, wherein an insulation glass unit comprising a fastening groove with mounting devices is fixed to a frame profile according to an example embodiment;

Fig. 6a-b show a mounting unit between two adjacent glass plates of an insulation glass unit according to an example embodiment from the direction in which the mounting unit is installed between the glass plates; and

Fig. 7a-b show perspective views of an alternative mounting unit.

Detailed description

[0015] Structural glazing systems i.e. facades are types of curtain wall systems consisting of a plurality of insulation glass units fixed i.e. attached next to each other in horizontal and/or vertical directions. Insulation glass units may be fixed, for example, bonded or anchored back to a supporting structure that may be called a frame profile by fixing means without the use of frames, for example continuously gasketed aluminium pressure plates or caps or some other structures, like glazing beads, arranged on the surface of the glass i.e. on the exterior. However, in some structural glazing systems exterior may be partially framed and some structural glazing systems may comprise insulation glass units with structural sealant punctually anchored.

[0016] Insulation glass units (IGUs) may be comprised of monolithic, laminated, dual-glazed (two overlapping glass plates) or triple-glazed (three overlapping glass plates) insulating glass units or facade glazing systems. It is however possible that an insulation glass unit comprises more than two or three glass plates, for example, four or five overlapping glass plates. The back side of an insulation glass unit is configured to be connected to a frame profile that is fixed, for example, to a wall of a building. The frame profile may be formed of, for example, horizontal and/or vertical aluminium profiles, beams or frames. An insulation glass unit may be attached to the frame by mechanically attaching the inner glass or second inner glass of the insulation glass unit that is towards the frame profile, for example, by fixing means. The glass plates are bonded on top of each other by glue. There is a fastening groove for fixing means between two overlapping glass plates of an insulation glass unit. The fixing means may be a fastener comprising one or two holding arms. The fastener is configured to be inserted between two adjacent insulation glass units both comprising a fastening groove between overlapping glass plates, and when holding arms are aligned with fastening grooves the holding arms are rotated into the fastening grooves and the fastener is tightened for supporting the insulation glass units in place.

[0017] As explained above, insulation glass units may be attached to a frame profile(s), which is/are already attached to a wall(s) of a building, by mechanical fixing means, for example, fasteners. The insulation glass units are fixed against the seal or seals arranged on the surface of the frame profile. It is important that fastening grooves are at the same level in both adjacent insulation glass units, otherwise it is possible that another insulation glass unit is tightened too loose or tightly. If an insulation glass unit is attached to the frame profile too loose, it is possible that, for example moisture, air and/or water flows/comes in the structural glazing system in an undesirable manner and causes problems for the building and/or the structure of the structural glazing system. Whereas, if an insulating glass unit is attached to the frame profile too tightly, it can cause stress on the glass and as a result the glass

may break.

[0018] So, as stated above, tolerances in positions of fastening grooves of insulation glass units may cause challenges to fix the insulation glass units to the correct tightness to the frames. Position tolerances of fastening grooves can be caused by manufacturing, because arranging a fastening groove between two overlapping glass plates of an insulation glass unit is not always easy and manufacturing tolerance of placement of fastening grooves may even be, for example, 1mm, which position tolerance is so big that it may cause difficulties. Thus, for example, for the above mentioned reasons it is preferable that fastening grooves are arranged in the same distance from glass plates of two overlapping glass plates of an insulation glass unit so that fasteners can be tightened with correct tightening torque. Further, non-aligned fastening grooves of adjacent insulation glass units may make the building of structural glazing systems slow or impossible and may increase costs or cause rejection of a glass unit or IGU as unfit for installation, as already explained in the background part above.

[0019] However, by a mounting device according to the present invention used for controlling assembling i.e. mounting of a fastening groove to an insulating glass unit it is possible to mount and attach the fastening groove to an insulation glass unit so that position tolerances of fastening grooves between insulation glass units remain very low. Therefore, when a mounting device or devices according to the present invention is used for assembling a fastening groove, it is possible to use correct i.e. appropriate and adequate tightening torque for fixing insulation glass units in order to form a structural glazing system having correctly attached insulation glass units so that, for example, moisture, air and/or water cannot move in the structural glazing system in an undesirable manner and cause problems for the building and/or the structural glazing system.

[0020] A mounting device of the present invention configured to control mounting of a fastening groove into an insulating glass unit is a plate-like element i.e. thin sheet of material and comprises at least an inner guide wall, at least an outer guide wall or an inner guide wall and outer guide wall on one of its flat planar surfaces.

[0021] The form of the inner guide wall and outer guide wall are such that they correspond at least partially a cross section of the fastening groove in the transverse direction. This means that the inner wall is configured to rest i.e. settle against the inner surface of a fastening groove and the outer wall is configured to rest i.e. settle against the outer surface of the fastening groove, when the mounting device is attached to an end of the fastening groove.

[0022] The space, which in a case where there are an inner wall and outer wall remains between the inner and outer guide walls, a fastening space, is arranged to correspond a cross section of an end of a fastening groove into which the mounting device is configured to be attached for controlling mounting of the fastening groove

into an insulation glass element. Also in this case the inner wall is configured to rest i.e. settle against the inner surface of the fastening groove and the outer wall is configured to rest i.e. settle against the outer surface of the fastening groove, when the mounting device is attached to an end of the fastening groove. The fastening groove comprises usually a mounting device in both of its ends.

[0023] Each insulation glass unit comprises at least one fastening groove provided on a section of the edge of the insulation glass unit, two or more fastening grooves provided on at least sections of the edge of the insulation glass unit, or the fastening groove may have a size of the whole length of the edge. The number of fastening grooves or length of a fastening groove or grooves may depend on, for example, expected wind load or size of insulation glass units. The fastening groove with mounting devices is configured to be mounted into an insulating glass element, between two of its glass plates, so that the upper edges of the fastening groove and mounting devices are at the same level with edges of glass plates. However, it is also possible that the upper edges of the fastening groove and mounting devices are not at the same level with edges of glass plates, they may be above or under the level of edges of glass plates.

[0024] A mounting device may be made, for example, of plastic, rubber, elastomer, composite, or metal, for example, stainless steel, or any other material suitable for the purpose. If a mounting device is made of elastic material, it may cause less point load to a glass plate or plates and/or it does not widen the space between the glass plates. However, it is also possible that a mounting device is made of non-elastic material i.e. rigid material, and it does not still either cause point load or widen the space between glass plates.

[0025] Figure 1a shows a perspective view of a mounting device 100 for a fastening groove (not shown) configured to be mounted between glass plates of an insulation glass unit (not shown) according to an example embodiment. For the sake of understanding of the structure of the mounting device 100, the mounting device 100 is shown as a transparent structure. The mounting device 100 is a plate-like element i.e. thin material sheet having a form and size suitable to be fitted between the glass plates so that the planar surface 111 of the mounting device 100 is perpendicular to the surfaces of the glass plates, but it is also possible, that the mounting device 100 is slanted in relation to the surfaces of the glass plates. The mounting device 100 is substantially as wide as the space between two overlapping glass plates of an insulation glass unit between which a fastening groove with mounting devices is configured to be mounted, or a little less wide. The mounting device 100 comprises at least an inner guide wall 101 and an outer guide wall 102 on its first planar surface, and the space remaining between the inner and outer guide walls i.e. a fastening space 103 corresponds a cross section of a fastening groove into the end of which the mounting device 100 is configured to be fastened. It is however pos-

sible that the mounting device comprises only an inner guide wall or an outer guide wall on its first planar surface. The other planar surface of the mounting device 100, the second planar surface on the opposite side of the disc the mounting device 100, does not comprise guide walls 101, 102, but it is flat. As can be seen from figure 1a, the inner guide wall 101 is in one-piece, but the outer guide wall 102 is formed of three separate outer guide walls. The upper edge of the mounting device 100 is indicated by a reference number 110.

[0026] As can be seen from figure 1a, the remaining part of the mounting device 100 i.e. guide wall part 112 is, in this example, narrower than the upper edge part 110 of the mounting device 100. This is because the upper edge part 110 comprises protrusions 110' on its both sides. The idea of the wider front part 110 with its protrusions 110' is that the mounting devices 100 remain above the edge of the glass plates, i.e. they prevent mounting devices 100 from being pushed too deep between glass plates of an insulation glass unit. It is, however, possible that the front part 110 does not comprise protrusions 110' and is not thus wider than the guide wall part 112, see for example figures 2a-b, and 3a-d.

[0027] Before a fastening groove with mounting devices 100 i.e. a mounting unit is mounted i.e. assembled into a space between glass plates of an insulation glass unit, the space is filled with edge mass, which may be, for example glue, silicon or some other adhesive. After the mounting unit is arranged between the glass plates, it will be fastened between the glass plates by the edge mass. A part of the edge mass may protrude from the space between glass plates during/after mounting of the mounting unit. As above mentioned, a mounting unit comprises at least two mounting devices and a fastening groove arranged between two mounting devices.

[0028] Figure 1b shows the mounting device of figure 1a from above. In this figure, the installation space 103 between the guide walls 101, 102 is more clearly shown than in figure 1a.

[0029] Figure 1c shows the mounting device of figure 1a from a side and the figure 1d shows the mounting device of the figure 1a from behind.

[0030] Figure 1e shows from above a second example embodiment of a mounting device 120 for a fastening groove having an alternative guide wall structure. Figure 1f shows from above a third example embodiment of a mounting device 121 for a fastening groove. The mounting device 121 has another alternative guide wall structure, both the inner and outer guide walls are formed from separate guide wall parts. Figure 1g shows from above a fourth example embodiment of mounting device 122 for a fastening groove according to an example embodiment. The mounting device 122 has also an alternative guide wall structure. Figure 1h shows from above a fifth example embodiment of a mounting device 123 for a fastening groove. The mounting device 123 has yet a further alternative guide wall structure. It should, however, be understood, that the shape of the guide walls or a number

of pieces of guide walls is not restricted to shown embodiments, but they can vary. In any case, they form a fastening space for a fastening groove. Figure 1i shows from above a sixth example embodiment of a mounting device 124 for a fastening groove having an alternative guide wall structure. The mounting device 124 comprises only an outer guide wall. Figure 1j shows from above a seventh example embodiment of a mounting device 125 for a fastening groove having an alternative guide wall structure. The mounting device 125 comprises three inner guide walls, but no outer guide wall or walls.

[0031] Figure 2a shows a perspective view of two mounting devices 201 and a fastening groove 200 before mounting devices 201 are fastened to the fastening groove 200 according to an example embodiment. The mounting devices 201 are configured to be attached to both ends of the fastening groove 200, one mounting device 201 into each end. It is however possible, that the fastening groove 200 comprises only one mounting device 201 i.e. a mounting device 201 is attached only to one of its ends. The mounting devices 201 may be fastened to the ends of the fastening groove 200 with or without glue or other suitable adhesive. The upper edge part 202 of the mounting device 201 does not comprise protrusions as the mounting devices shown in figures 1a-j. Thus, the upper edge part 202 of the mounting device 201 may be aligned with glass plates of an insulating glass unit when mounted between the glass plates i.e. it may remain at the level of the glass plates, or the upper edge part of the mounting device may be embedded between the glass plates.

[0032] Figure 2b shows a perspective view of mounting devices 201 and the fastening groove 200 after mounting devices 201 are fastened to both ends of the fastening groove 200 according to an example embodiment.

[0033] Figure 3a shows a perspective view of a mounting unit comprising a fastening groove 300 with fastened mounting devices 301 before the mounting unit is mounted i.e. assembled between two glass plates 302 of an insulating glass unit 303 according to an example embodiment. The edge mass 304 is also shown between the glass plates 302. The edge mass 304 is arranged to a space between edges i.e. edge areas of the glass plates 302. The thickness of the layer of edge mass 304 may be, for example, from a few millimetres to, for example, 15-20 millimetres. The edge mass 304 is configured to fix i.e. attach the mounting unit between the two adjacent glass plates.

[0034] Figure 3b shows a perspective view of the fastening groove 300 with fastened mounting devices 301 of figure 3a in a mounting phase of the fastening groove 300 into the space between two glass plates 302 of the insulating glass unit 300 according to an example embodiment. The edge mass 304 is also shown between the adjacent glass plates 302 and around the fastening groove 300. Also a part of the edge mass, the extra mass 310, protruded from the space between glass plates 302 due to mounting of the fastening groove 300 with mount-

ing devices 301 to the space is shown.

[0035] Figure 3c shows a perspective view of the fastening groove 300 with fastened mounting devices 301 of figs. 3a and 3b after they are mounted to the insulating glass unit 303. The extra edge mass 310 is already removed in this point.

[0036] Figure 3d shows a cross-sectional view of the fastening groove 300 with fastened mounting devices 301 of fig. 3a, 3b, 3c when the fastening groove is fully mounted between the two glass plates 302 of the insulating glass unit 303 along the line A-A of fig. 3c according to an example embodiment.

[0037] Figure 3e shows an example of an alternative structure of a mounting device 301' for the mounting device 301 shown in figure 3a-d. In this example the upper edge part of the mounting device 301' comprises protrusions on its both sides, which remains above the level of the glass plates 302 of the insulating glass unit 300.

[0038] Fig. 4 shows a method 40 for assembling a mounting unit between two adjacent glass plates of an insulation glass unit according to an example embodiment. In step 41, edge mass is arranged to a space between edges of the two adjacent glass plates. Edge mass is configured to fix i.e. attach the mounting unit between the said two adjacent glass plates. In step 42, the mounting unit is mounted to the space between the glass plates. The method may further comprise that the edge mass protruded from the space i.e. extra edge mass is removed from the surfaces of glass plates.

[0039] The mounting unit may be inserted to the space so that the upper edges of mounting devices of the mounting unit are at the same level as the edges of the glass plates or so that the upper edge part of mounting devices with the protrusions is configured to remain above the level of the glass plates of the insulating glass unit when mounted between the glass plates.

[0040] Figure 5 shows a cross-sectional view of a part of a structural glazing system 500, wherein two adjacent insulation glass units 540 are fixed to a frame profile 570, according to an example embodiment. The frame profile 570 is fixed to a wall 580. The insulation glass units 540 comprising an inner glass 540a, a middle glass 540b, and outer glass 540c are attached/fixed by using a fastener 520 against seals 560 fixed to the opposite surface of the frame profile 570 than the wall 580, and holding arms 510 of the fastener 520 are rotated and engaged to the fastening grooves 590 of the insulation glass units 540. In this example embodiment of figure 5, the insulation glass unit 540 is attached to the frame profile 570 by attaching the inner glass 540a of the insulation glass units 540 to the frame profile 570 by the fastener 520 i.e. by arranging the holding arms 510 of the fastener 520 into the fastening grooves 590 between the inner glasses 540a and the middle glasses 540b. The outer glasses 540c and middle glasses 540b are bonded on top of the inner glasses 540a, for example, by glue.

[0041] Figure 6a shows a mounting unit 60 between two adjacent glass plates 61 of an insulation glass unit

according to an example embodiment from the direction in which the unit 60 is installed between the glass plates 61. The mounting unit 60 comprises a fastening groove 62 and fastened mounting devices 63. In this example mounting devices 63 are perpendicular to the surfaces of the glass plates 61.

[0042] Figure 6b shows a mounting unit 65 between two adjacent glass plates 66 of an insulation glass unit according to an example embodiment from the direction in which the unit 65 is installed between the glass plates 66. The mounting unit 65 comprises a fastening groove 67 and fastened mounting devices 68. In this example mounting devices 68 are slanted in relation to the surfaces of the glass plates 66. If the ends of the fastening groove 67 are sloping i.e. oblique. When the gutter is loaded, the perpendicular mounting devices 63 may press the glass plates 61, but the slanted mounting devices 68 fold to the side and do not therefore press the glass plates 66.

[0043] Figure 7a-b show perspective views of an alternative mounting unit 70 comprising mounting elements 71 and a fastening groove 72. The mounting elements 71 comprises guiding openings instead of an inner or outer guide walls. The fastening groove 72 comprises protrusions configured to be inserted through the guiding openings. This kind of structure works similarly as the other examples of the present invention comprising a mounting element with one or more guide walls. In figure 7a, the mounting unit 70 is shown before mounting elements 71 are fastened to the fastening groove 72, and figure 7b after mounting elements 71 are fastened to the fastening groove 72.

[0044] However, it is also possible that there is only one insulation glass unit that is fixed to a frame profile by a fastener comprising only one holding arm which is arranged into a fastening grooves between an inner glass and the middle glass of the insulation glass unit.

[0045] It is obvious that the present invention is not limited solely to the above-presented embodiments, but it can be modified within the scope of the appended claims.

Claims

1. A mounting device for a fastening groove configured to be mounted between glass plates of an insulating glass unit, which mounting device is configured to be fastened to an end of the fastening groove, the mounting device is a plate-like element and comprises at least an inner guide wall or at least an outer guide wall on its planar side surface for guiding fastening of the mounting device to the end of the fastening groove.
2. A mounting device according to claim 1, wherein the mounting device comprises an inner guide wall and outer guide wall on its planar side surface, which the

space between the inner and outer guide walls corresponds the cross-section of the fastening groove.

3. A mounting device according to claim 1 or 2, wherein the mounting device is configured to be fastened to an end of the fastening groove as a push-in cap.
4. A mounting device according to claim 1, 2 or 3, wherein the outer guide wall is formed from two or more separate wall parts configured to be positioned against the outer surface of the fastening groove or the inner guide wall is formed from two or more separate wall parts configured to be positioned against the inner surface of the fastening groove.
5. A mounting device according to any of claims 1 to 4, wherein the material of the mounting device is elastic.
6. A mounting device according to any of claims 1 to 4, wherein the material of the mounting device is rigid.
7. A mounting device according to any of claims 1 to 4, wherein the material of the mounting device is rubber, plastic, composite or metal.
8. A mounting device according to any of claims 1 to 7, wherein an upper edge part of the mounting device comprises protrusions on its both sides, which upper edge part with the protrusions is configured to remain above the level of the glass plates of the insulating glass unit when mounted between the glass plates.
9. A mounting device according to any of claims 1 to 7, wherein an upper edge part of the mounting device is configured to remain at the level of the glass plates of the insulating glass unit when mounted between the glass plates.
10. A mounting device according to any of claims 1 to 7, wherein an upper edge part of the mounting device is embedded between the glass plates of the insulating glass unit when mounted between the glass plates.
11. A mounting unit for an insulation glass unit, wherein the mounting unit comprises a fastening groove and two mounting devices according to any of claims 1 to 10 fastened to both ends of the fastening groove.
12. A mounting unit according to claim 11, wherein the mounting devices are glued or pushed as push-in caps to the ends of the fastening groove.
13. An insulation glass unit comprising at least one mounting unit according to claim 11 or 12 fastened between two glass plates of the at least two glass

plates of the insulation glass unit.

tween the glass plates.

14. An insulation glass unit according to claim 13, which insulation glass unit comprises three to five glass plates. 5
15. A structural glazing system comprising at least one insulation glass unit according to claim 13 or 14, which insulation glass unit is configured to be fastened to a frame of the structural glazing system by a fastener, which at least one holding arm is arranged into a fastening groove of at least one mounting unit according to claim 11 or 12. 10
16. A structural glazing system according to claim 15, which structural glazing system comprises at least two adjacent insulation glass units and at least two mounting units, which are fastened to the frame by a fastener comprising two holding arms, which fastener is inserted between the insulation glass units and which holding arms are arranged into fastening grooves of the at least two mounting units. 15 20
17. A method for assembling a mounting unit according to claim 11 or 12 between two adjacent glass plates of the at least two glass plates of an insulation glass unit, the method comprises: 25
 - arranging edge mass to a space between edges of said two adjacent glass plates, which edge mass is configured to fix said at least one mounting unit between said two adjacent glass plates, and 30
 - mounting said at least one mounting unit to the space between said two adjacent glass plates. 35
18. A method according to claim 17, wherein the method further comprises removing the edge mass protruded from the space. 40
19. A method according to claim 17 or 18, wherein the mounting unit is mounted to the space between said two adjacent glass plates so that upper edges of the mounting devices of the mounting unit remain at the same level as the edges of the glass plates. 45
20. A method according to claim 17 or 18, wherein the mounting unit is mounted to the space between said two adjacent glass plates so that the mounting devices are embedded between the glass plates of the insulating glass unit. 50
21. A method according to claim 17 or 18, wherein the mounting unit is inserted to the space between said two adjacent glass plates so that the upper edge parts of the mounting devices with the protrusions are configured to remain above the level of the glass plates of the insulating glass unit when mounted be- 55

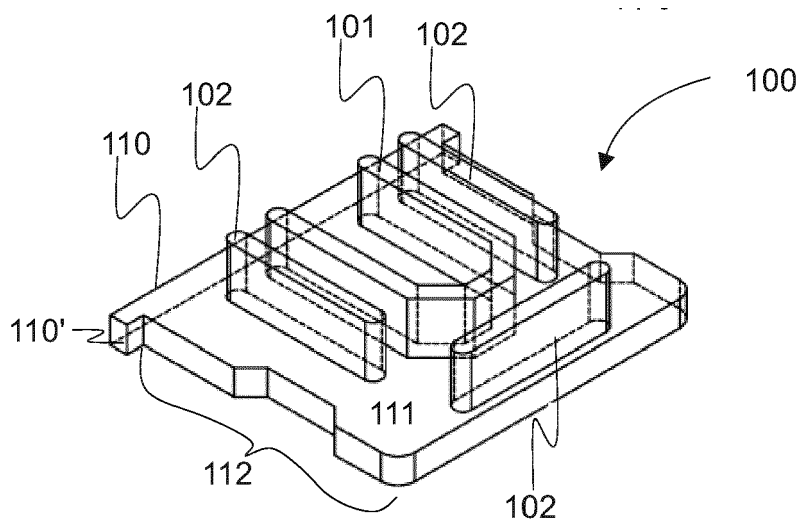


Fig. 1a

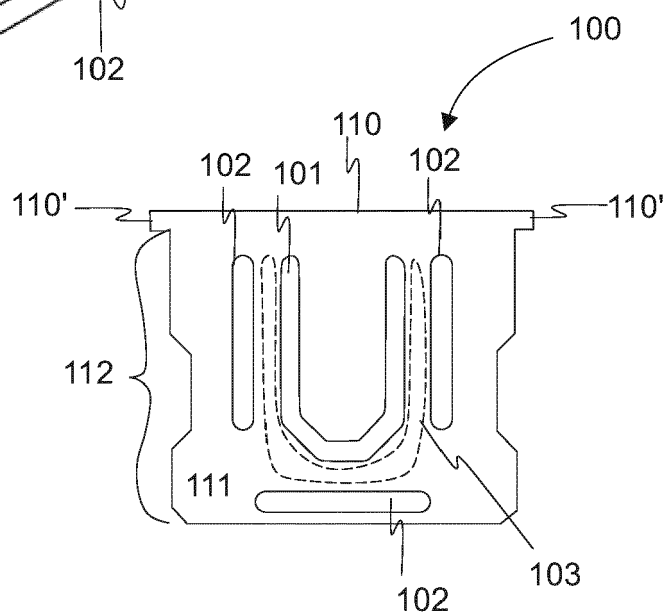


Fig. 1b

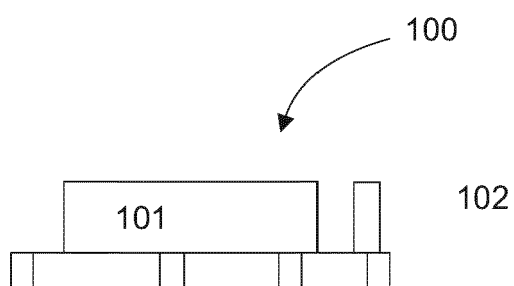


Fig. 1c

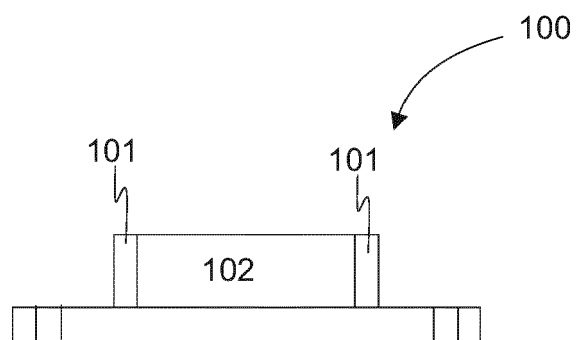


Fig. 1d

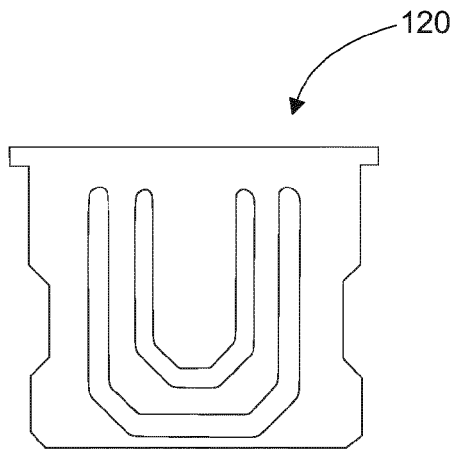


Fig. 1e

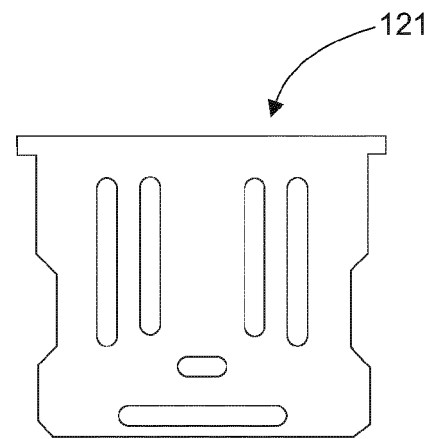


Fig. 1f

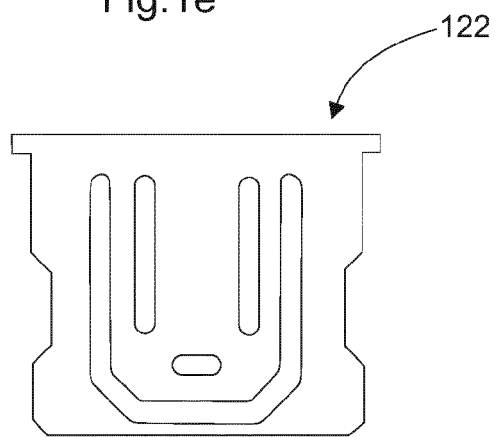


Fig. 1g

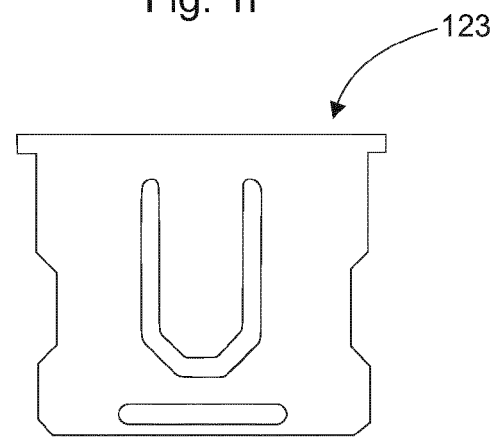


Fig. 1h

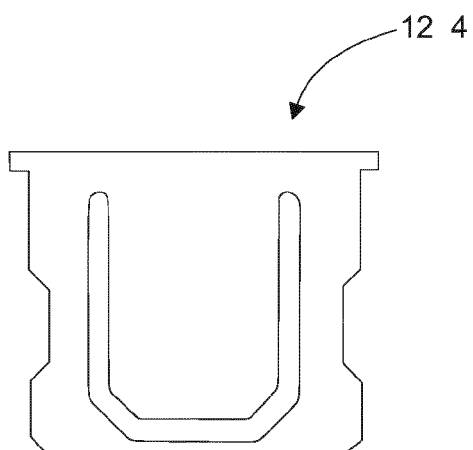


Fig. 1i

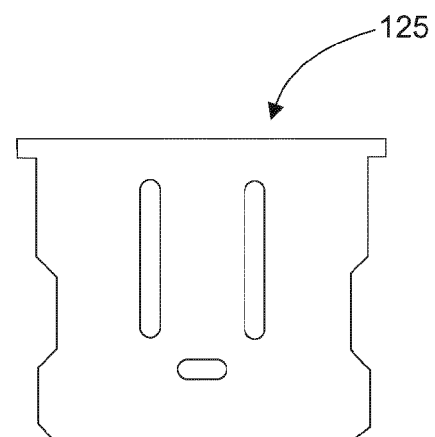


Fig. 1j

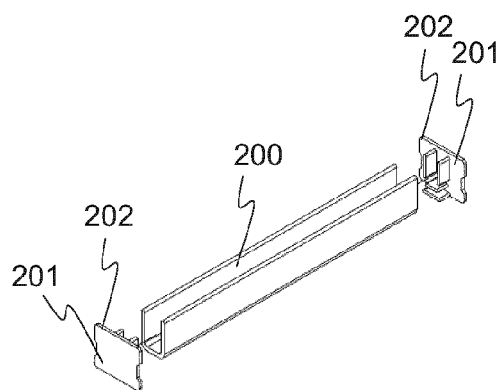


Fig. 2a

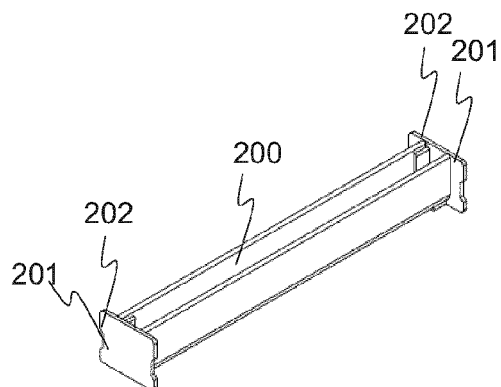


Fig. 2b

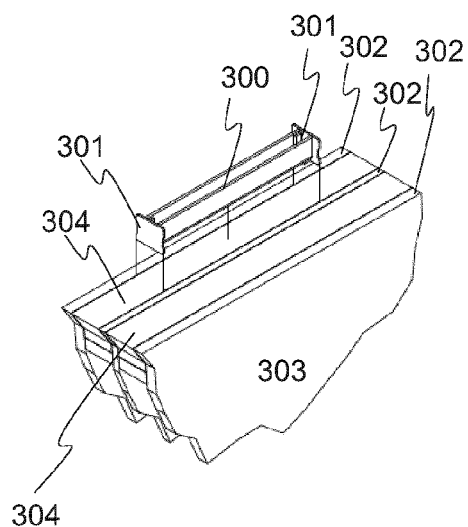


Fig. 3a

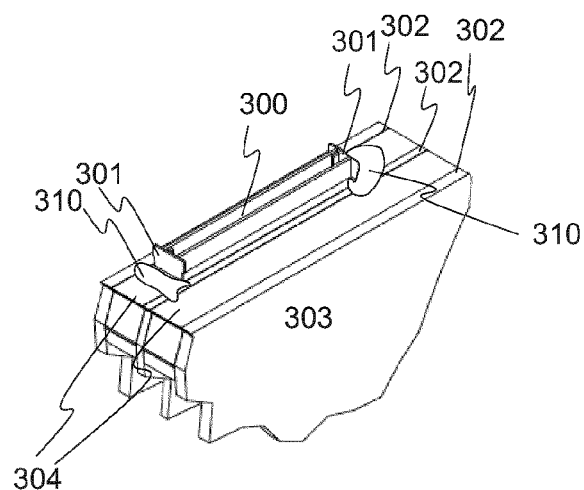


Fig. 3b

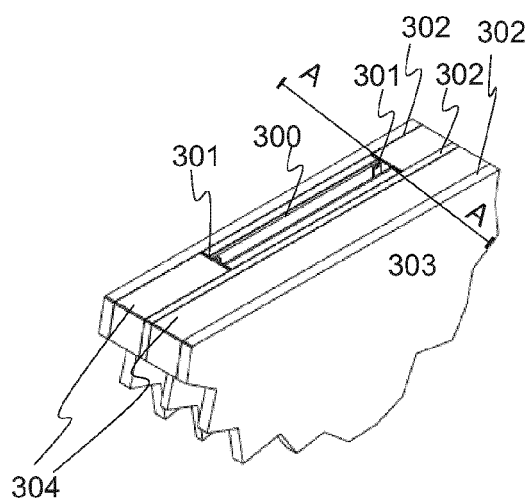


Fig. 3c

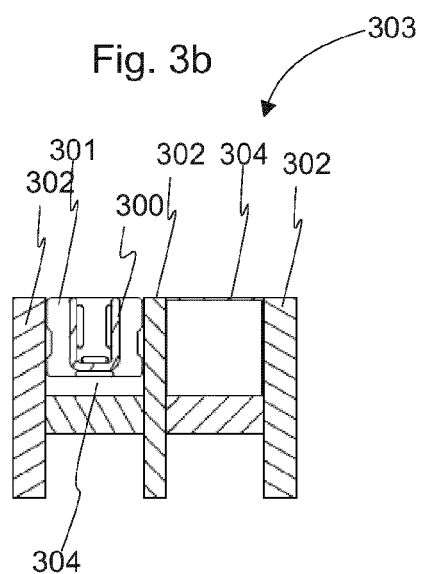


Fig. 3d

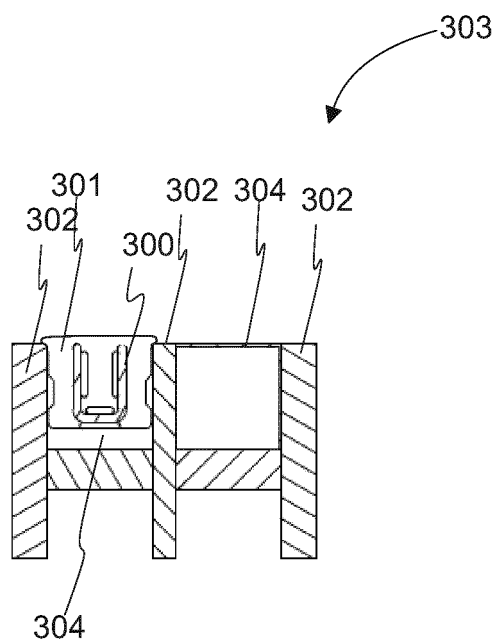


Fig. 3e

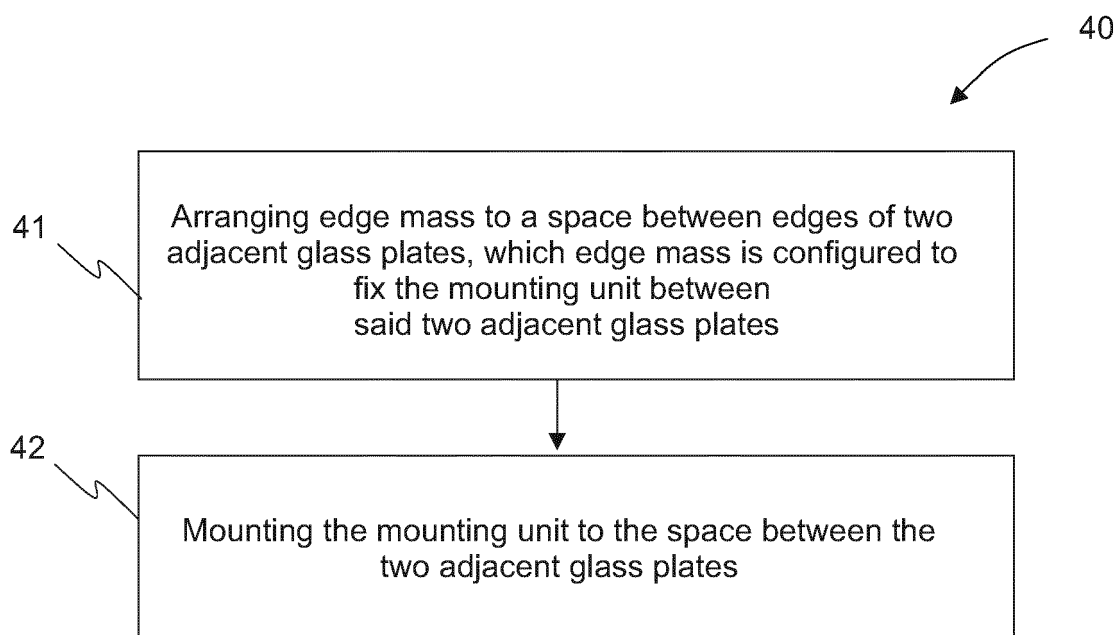


Fig. 4

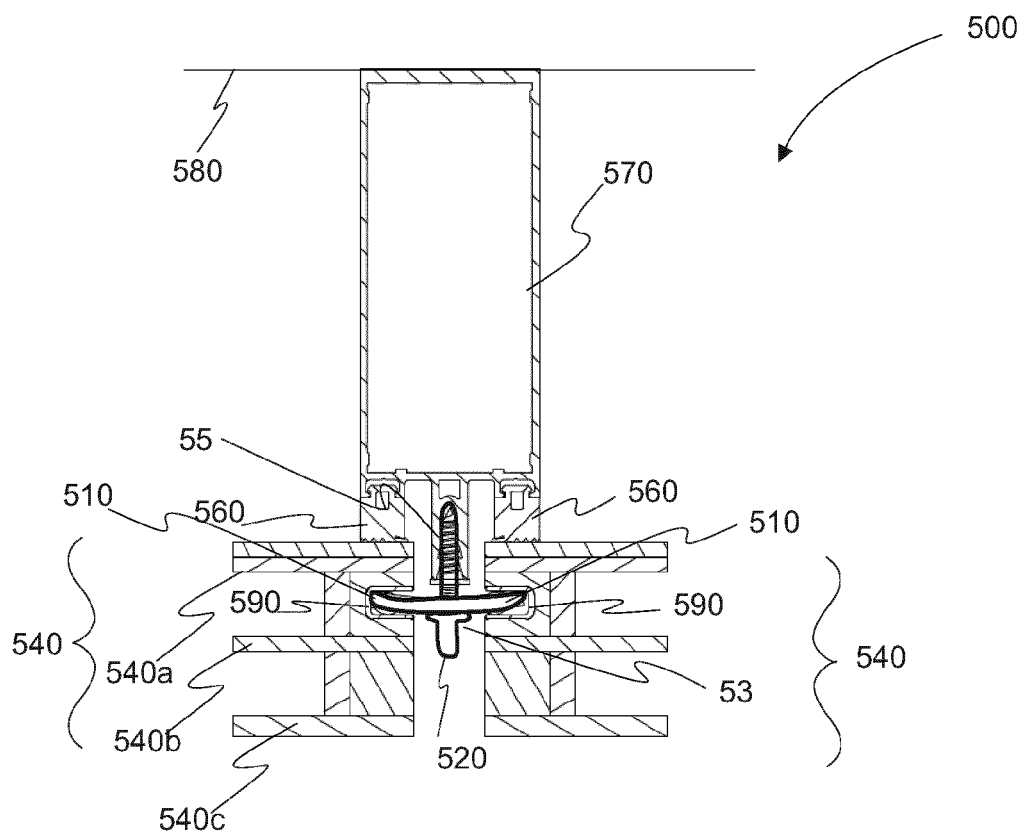


Fig. 5

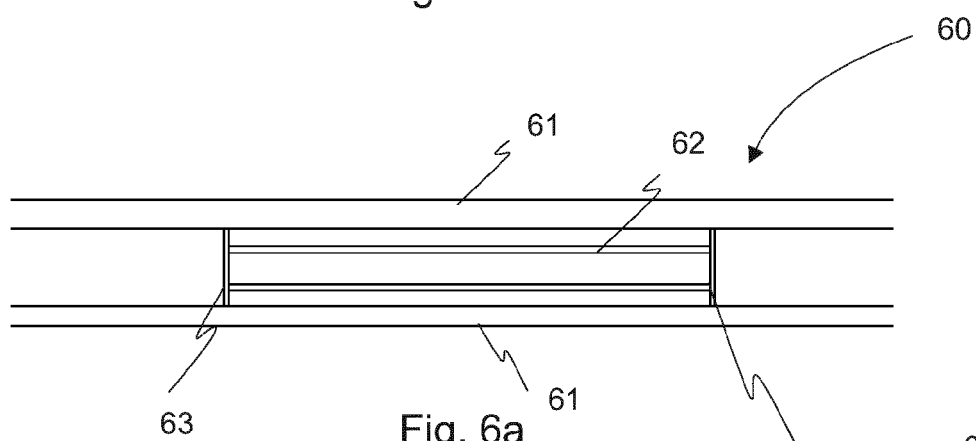


Fig. 6a

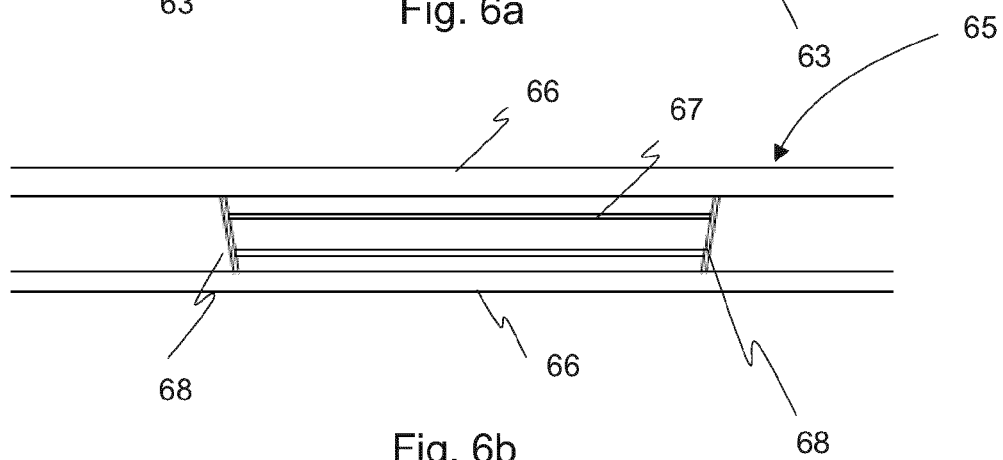
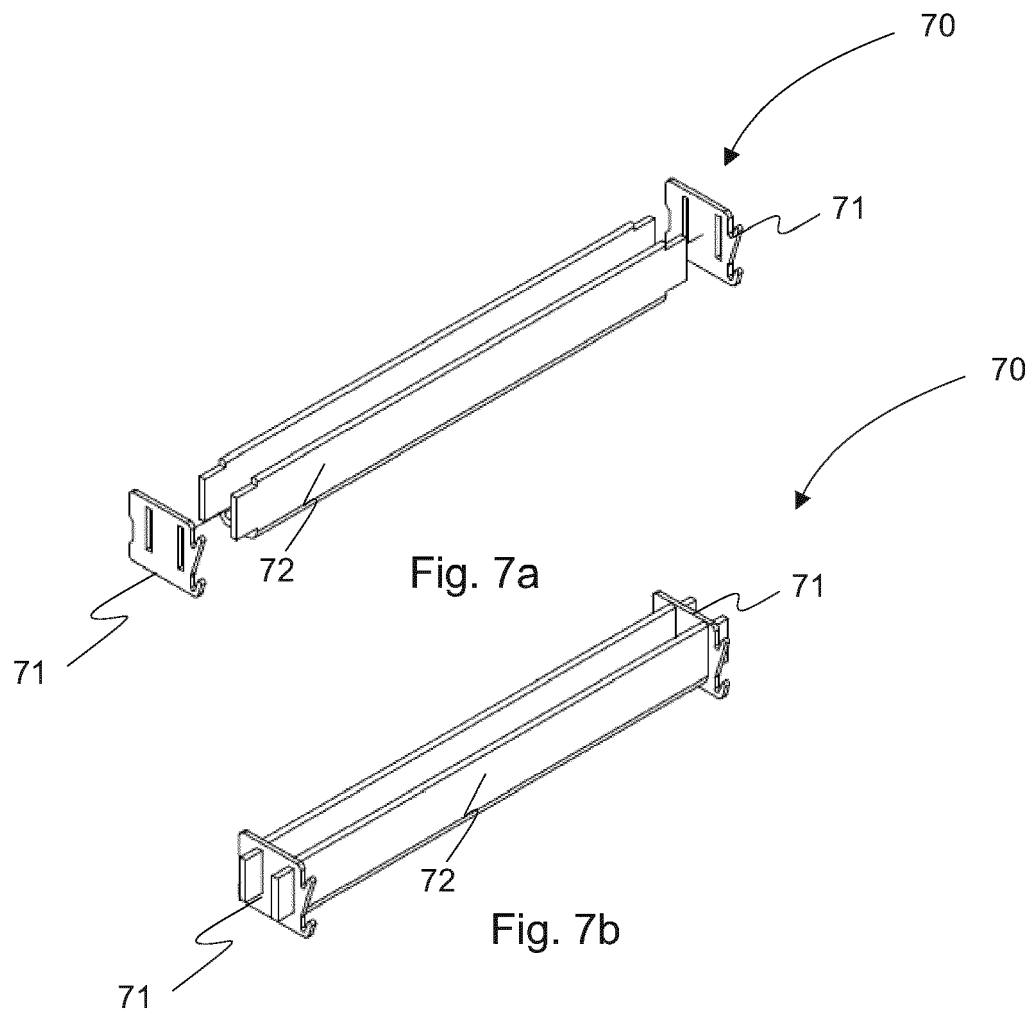


Fig. 6b





EUROPEAN SEARCH REPORT

Application Number

EP 21 21 6015

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	Anonymous: "Black U04 10x23mm U-Shape Internal Width 20mm LED Aluminum Channel Sys - LightingWill", , 5 August 2021 (2021-08-05), XP055959319, Retrieved from the Internet: URL:https://web.archive.org/web/20210805074704/https://lightingwill.com/products/black-u04-10x23mm-u-shape-internal-width-20mm-led-aluminum-channel-system-with-cover-end-caps-and-mounting-clips-aluminum-extrusion-for-led-strip-light-installations [retrieved on 2022-09-09] * the whole document * -----	1, 11, 12	INV. E06B3/673 E06B3/66 E06B3/663 E06B3/54 E04B2/88
X	Inter Ikea Systems B.V.: "KOMPLEMENT", , 9 March 2015 (2015-03-09), XP055955513, Retrieved from the Internet: URL:https://www.ikea.com/nl/en/assembly_instructions/komplement-clothes-rail-white_AA-938836-2-2.pdf [retrieved on 2022-08-28] * the whole document * -----	1, 3-10	TECHNICAL FIELDS SEARCHED (IPC) E06B
A	WO 2008/114146 A1 (GLASMAGASINET AS [NO]; KJEBEKK LARS AAS [NO]) 25 September 2008 (2008-09-25) * claims 1, 8; figures 1, 2 * -----	11	
A	IT VR20 120 054 A1 (ALUK GROUP S P A) 23 September 2013 (2013-09-23) * figures 1-5 * -----	11	
A	CN 105 839 820 B (TIANJIN CSG ENERGY-SAVING GLASS CO LTD) 23 February 2018 (2018-02-23) * figure 8 * ----- -/--	11	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		9 September 2022	Crespo Vallejo, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



EUROPEAN SEARCH REPORT

Application Number

EP 21 21 6015

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 3 670 810 A1 (HYDRO EXTRUDED SOLUTIONS AS [NO]) 24 June 2020 (2020-06-24) * figures 1-4 *	11	
A	EP 1 936 096 A1 (STEINDL GLAS GMBH [AT]) 25 June 2008 (2008-06-25) * figures 2-4 *	13-15	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search The Hague			Examiner Crespo Vallejo, D
Date of completion of the search 9 September 2022			
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☒ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 21 21 6015

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-09-2022

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