Curtain wall system wherein a special connection system is used for plate materials such as glass, aluminium sheet, etc.

The present invention is a curtain wall system wherein aluminium profiles (1) with special geometric shapes are assembled all around plates, such as glass, aluminium, stone, etc., by using materials such as silicone, acrylic tape or equivalent material, between or onto plates; the connecting parts (2), which are produced from aluminium profiles with special geometric section, can be installed heat insulated glass units or etc. mechanically, without screw and in non-skid way; the connection parts can remain fixed in the relevant position by itself without sliding and it can be adjusted in the desired position by applying force manually if required; the connection parts (2) can be fixed without rotation movement and screwed directly in the installation process of the heat-insulated glass units (11) or etc. to the main load bearing structure (8) of the curtain wall; there is no need to screw the connection parts (2) to the main load bearing structure (8) of the curtain wall before installing of the heat-insulated glass units (11) or etc.; positive and negative loads which have an impact on the building are transferred the main load bearing structure over infilling element such as glass, etc., structural silicone, spacer profile and connecting part, respectively; the dead loads of the glass are transferred to the main load bearing structure via additional mechanical support members.

FIGURE 1

(a)

(b)
Description

Field of the Invention

[0001] The present invention relates to aluminum profiles, which are assembled all around plates, such as glass, aluminium, stone, etc, by using materials, such as silicone, acrylic tape or equivalent material, between or onto plates; and connection parts which are composed of aluminum profiles with special geometry, that can be combined to these profiles mechanically, without screw and non-skid way; and curtain wall system in which the insulated glass or other units are produced with this method.

Background of the Invention

[0002] In the state of the art, the profiles are used in order to obtain a completely glass appearance on the building envelope, by using U-shaped channel integrated with a spacer*1 (For example: US 4552790, W02004063517) or spacer and U-shaped profile behind the spacer (For example: US4961975) between the glass plates of the curtain wall system.

[0003] In both cases, the heat-insulated glass units produced are placed on the curtain wall profiles which are installed to the building. Connection parts, which are installed before or after the glass assembly at the gap between the units such as glass, etc., are fitted into the U channel in the glass by turning and then fixation of the glass units are completed by tightening the fixing screw.

[0004] The disadvantages of both assembly methods are that; the connection parts must be installed at the field; thicknesses of the connection members must be less than the distance between the units such as heat-insulated glass, etc.; rotation movement of the connection parts performed at the field, within the gap between the glasses, before or after the glass assembly is not easy.

*1: They are profiles which are located between two glass plates, act as distance marker and connector in order to form a heat-insulated glass unit and used along the perimeter of glass plates.

Summary of the Invention

[0005] The objective of the invention is to transfer the positive and negative loads which have an impact on the building to the main load bearing structure over infilling element such as glass, etc., structural silicone, spacer profile and connecting part, respectively; transfer the dead loads of the glass to the main load bearing structure via additional mechanical support members; unlike traditional applications, not to use aluminum frame along the perimeter of glass plates, while the dead load of the glass and loads subjected by the glass are transferred to the main load bearing structure, and ensure fast and practical installation to the main load bearing structure of the curtain wall system by using the connection parts, mechanically, without screw and non-skid way.

[0006] Another objective of the invention is to mechanically assemble the connection parts on the heat-insulated glass units without screw, and enable the connecting parts to remain fixed, not to slide by itself in the relevant position and to be slid by applying forces manually if required and thus ensure the right positioning.

[0007] A further objective of the invention is to eliminate the necessity to screw the connection parts to the main load bearing structure of the curtain wall before installing the heat-insulated glass units.

[0008] A still further objective of the invention is to fix and directly screw the connection parts without rotating them in the installing process of the heat-insulated glass units to the main load bearing structure of the curtain wall.

[0009] A yet further objective of the invention is to use the connection parts for assembling of the heat-insulated units, at a height in accordance with the positive or negative wind load, and independently from the gap between heat-insulated glass units.

Figures Illustrating the Invention

[0010] Curtain wall system wherein a special connection system is used for materials such as glass, aluminum sheet, etc. realized to fulfill the objectives of the present invention is illustrated in the accompanying figures, in which:

Figure 1 is the general cross-section detail of the unframed silicone curtain wall system.

Figure 2 is the general cross-section detail belonging to the 90° corner of the unframed silicone curtain wall system.

Figure 3 is the special spacer profile and the connecting parts.

Figure 4 is the installation steps of the heat-insulated glass unit.
Detailed Description of the Invention

[0012] The profiles (1) with a special geometric section in the curtain wall system using a special connection system for materials such as glass, aluminum sheet, etc. are produced in extrusion presses such that they have all required grooves for accessories such as gasket etc. and connecting part (2). Production of heat insulated glass unit (11) includes the process of the pre-assembling the clean glass panels (10) with frame-shaped spacer profile (1) filled with desiccant (1.5) by using butyl (13) and then assembling the glass panels (10) in a weather-tight way by using structural silicone (6).

[0013] Process of production of the frame-shaped spacer profile (1) is carried out respectively as follows: cutting the spacer profile with special geometric section (1) in accordance with the dimensions of the heat-insulated glass unit (11), milling at a certain distance from both ends (Figure 3.a), placing desiccant (1.5) into the spacer profiles (1), placing corner cleat (7) to its groove (1.4), clamping by means of clamping jaws by hammering.

[0014] The connecting part (2), which are cut at heights depending on wind loads, are assembled to the heat-insulated glass units (11) production of which is completed, by positioning as shown in Figure 5. No screw or other mechanical connecting part is used during this assembly process. After assembly, the connecting part (2) is slid at the desired
position and released; it remains without sliding at the position whereon it is left by means of the locking (2.2) function of the connecting part (2).

[0015] The heat-insulated glass units (11) are installed to the main load bearing profile (8) using fixing screws (5) over the installation holes (2.5) on the connecting part (2).

[0016] The gap between the heat-insulated glass units (11) assembly of which is completed is closed by using joint silicone (15) and/or the insulation plastic (4) and the joint gasket (3), which are installed to the main load bearing profile (8).

Claims

1. Curtain wall system which transfers the positive and negative loads having an impact on the building to the main load bearing structure (8) over infilling material such as glass etc., structural silicone or acrylic tape, spacer profile (1) and connecting part (2), respectively; wherein no aluminum frame is used along the perimeter of material in the form of plate such as glass (11) etc. unlike conventional applications, while the dead load of the glass and loads subjected by the glass are transferred to the main load bearing structure (8); and mechanical connection are provided without rotation movement of the connection parts (2) and/or without screw between unit (11) and connection parts; and thus the units integrated with these connection parts (2) such as heat insulated glass, etc. are installed to the main load bearing structure.

2. Curtain wall system according to Claim 1, characterized by the connecting parts (2) on the heat-insulated glass units (11), which are screwless, mechanical and are self-nonskid, however the position thereof can be changed by sliding if required.

3. Curtain wall system according to Claim 1, characterized by the screwing directly of the connection part to the main load bearing structure (8) without rotation movement for installation process of the heat insulated glass (11) or etc.

4. Curtain wall system according to Claim 1, characterized in that the height of the connecting piece (2) can be increased independently of the gap between the heat-insulated glass units (11) or etc., and it can be used in accordance with the required loads.
FIGURE 5
<table>
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<th>Category</th>
<th>Citation of document with indication, where appropriate, of relevant passages</th>
<th>Relevant to claim</th>
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<td>E</td>
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The present search report has been drawn up for all claims.

Examiner: Bauer, Josef

Place of search: The Hague

Date of completion of the search: 28 March 2011

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For more details about this annex: see Official Journal of the European Patent Office, No. 12/82
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 4552790 A [0002]
- WO 2004063517 A [0002]
- US 4961975 A [0002]