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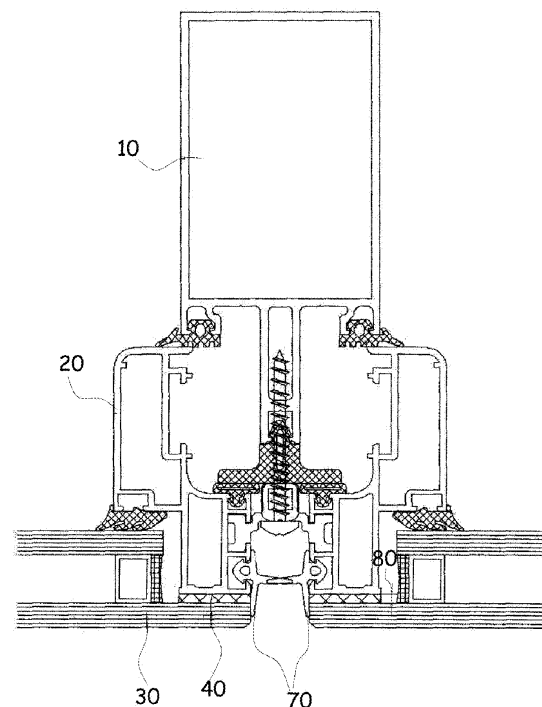
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(54) **A curtain wall system in which the joining distance between the load bearing profile and the plate is reduced**

(57) The invention relates to the dry and/or wet joining method of panels or plates, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, onto the secondary load bearing profile (20) made from materials such as aluminum, steel, wood, and pvc, to provide load bearing and sealing properties, **characterized in that**, the plate (30) is joined to the said secondary load bearing profile (20) via the joining element (40) in a manner to have a maximum thickness of 3 mm.



**FIGURE 1**

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## Description

### Technical Field

[0001] This invention relates to a joining element; by which, flat or panels, plates or sheets, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, are joined to the load bearing profile made from materials such as aluminum, steel, wood, and PVC and the main supporting structure with less than 3 mm spacing and at variable widths by using dry and/or wet materials.

### Background of the Invention

[0002] With the state of the art, two different joining applications are used, which are, dry glazing and wet glazing.

[0003] Dry glazing comprises applications whereby, panels or plates, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, are joined to the load bearing profile made from materials such as aluminum, steel, wood, and PVC from the inside building, where the joining is made by dry sealing and fixing materials of different sizes.

[0004] The disadvantages of this application can be listed as; the requirement for parts such as glazing bead, cover cap, pressure plates for the assembling, that it requires installation on the site, that the said cover, pressure plates and installation screws are visible from the outside of the building and thus increases in labor.

[0005] Wet glazing comprises applications whereby, panels or plates, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, are fitted to the load bearing profile made from materials such as aluminum, steel, wood, and PVC, and thus, to the structural main support construction, at 6, 8, or 10 mm or greater spacing, with silicone etc. wet materials of different widths for the purpose of sealing, load bearing and fixing.

[0006] The disadvantages of this application are listed as; the great amount of labor service, a long curing time, a waiting time of at least 1 week between the application and delivery to the site, the cleaning problem of the application, the excess of loss and wastes during the process and the difficulty of transportation of the application machinery to the site.

### Description of the Invention

[0007] The object of the invention is to; join panels, plates or sheets, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, to the load bearing profile made from materials such as aluminum, steel, wood, and PVC and to the main supporting structure with less than 3 mm spacing and at variable widths using dry and/or wet materials.

[0008] An object of the invention is to; perform the join-

ing process is at ambient temperature in places which are free of dust, dirt or airborne particles. The continuity of the joining material is ensured including the corners directly by hand or by using a special application apparatus.

[0009] Another object of the invention is to; be able to use chemical fluids prior to the joining operation to strengthen the joining on the joint surface.

[0010] Another object of the invention is to; enable the application of all manner of geometrical details that are not possible to produce by traditional joining methods, and at the same time eliminate the disadvantages of other methods such as wastage, labor, time and thus, the cost.

### Figures to Aid the Conception of the Invention

[0011] In order to best comprehend the embodiment of the present invention and its advantages jointly with its supplementary elements it needs to be appraised together with the figures described below.

Figure-1; is the top view of the curtain wall with diminished joining element thickness.

Figure-2; is the left view of the curtain wall with diminished joining element thickness.

Figure-3; is the assembling steps of the curtain wall with diminished joining element thickness.

Figure-3a; is the top view of the joining element, the plate (glass, etc.) and the load bearing profile.

Figure-3b; is the view of the plate (glass etc.) applied with joining element.

Figure-3c; is the mounting of the plate and the load bearing profile.

### Part Numbers

#### [0012]

- 10 Main supporting structure
- 20 Secondary load bearing profile
- 21 Profile mounting surface
- 30 Plate
- 31 Plate mounting surface
- 40 Joining element
- 50 Setting block
- 60 Dead load bearing element
- 70 Weather seal element
- 80 Application distance

### Detailed Description of the Invention

[0013] In this detailed description, the preferred applications of the curtain wall system, which is the subject

matter of the invention, are described only for a better comprehension of the invention, and not to form any limiting effects.

**[0014]** Prior to the joining operation, the joining element (40) is fitted and affixed to the profile mounting surface (21) of the secondary load bearing profile (20), made from materials such as aluminum, steel, wood, and pvc, or to the plate mounting surfaces (31) of the panels or plates (30), which are flat such as glass, stone and aluminum, or which have specially shaped geometries, by hand or using an apparatus.

**[0015]** The joining operation is performed by positioning the panels or plates (30), which are flat such as glass, stone and aluminum, or which have specially shaped geometries, over the secondary load bearing profile (20) made from materials such as aluminum, steel, wood, and pvc, and ensuring both uniformity at the corners and fitting the corners on top of each other in a manner to coincide accurately with their projections.

**[0016]** The said joined profile and the plate (20, 30), are subjected to pressure in a manner to apply an equal and opposite force on the wet and/or the dry joining element (40). Subsequent to the joining and pressing operation the parts (20, 30) which are joined within a short period of time as 12 hours at most, are ready to use. In the continuation of the process, the joined pieces (20,30) are screwed on and fixed onto the main supporting structure (10), made from materials such as aluminum, steel, wood, and pvc.

**[0017]** By virtue of the said joining, the dry and/or wet joining of panels or plates (30), which are flat such as glass, stone and aluminum, or which have specially shaped geometries, on the load bearing profile (20) made from materials such as aluminum, steel, wood, and pvc, and therefore, to the main supporting structure (10), with spacing smaller than 3 mm, using a joining element (40) with variable width, and thus, it is possible to apply all kinds of geometrical details which are not possible to produce by traditional joining methods. Also eliminates the disadvantages of other methods, such as wastage, workmanship, time and therefore, the cost. While, with the joining process it is ensured that the panels or plates (30), which are flat such as glass, stone and aluminum, or which have specially shaped geometries, are supported against wind loads, the loads caused by the weights of the related panels or plates (30) are supported via the setting block (50) and the dead load bearing element (60).

**[0018]** The invention relates to the joining method of panels or plates, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, onto the secondary load bearing profile (20) made from materials such as aluminum, steel, wood, and pvc, by using load bearing and weather seal element, **characterized in that**; it provides a joining with a maximum thickness of 3 mm between the plate (30) and the said secondary load bearing profile (20).

**[0019]** The said joining element (40) is an acrylic based material which has application choices as foam, band,

etc.

**[0020]** The invention relates to; a joining element (40) having a maximum thickness of 3 mm obtained by the method of dry and/or wet joining of the panels or plates, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, onto the intermediate load bearing profile (20) made from materials such as aluminum, steel, wood, and pvc, to provide load bearing and sealing properties.

**[0021]** The invention relates to; a application distance (80) having a maximum thickness of 3mm obtained by the method of dry and/or wet joining of the panels or plates, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, onto the intermediate load bearing profile (20) made from materials such as aluminum, steel, wood, and pvc, to provide load bearing and sealing properties, and the said application distance (80), is the spacing between the profile mounting surface (21) of the intermediate load bearing profile (20), which is in contact with the joining element (40), and the plate mounting surface (31) of the plate (30) which is in contact with the joining element (40).

## Claims

1. The invention relates to the dry and/or wet joining method of panels or plates, which are flat such as glass, stone and aluminum, or which have specially shaped geometries, onto the secondary load bearing profile (20) made from materials such as aluminum, steel, wood, and pvc, to provide load bearing and sealing properties, **characterized in that**; the plate (30) is joined to the said secondary load bearing profile (20) by the joining element (40) in a manner to have a maximum thickness of 3 mm.
2. A method according to Claim 1, **characterized in that**; the said joining element (40) is an acrylic based foam, band, etc. material.

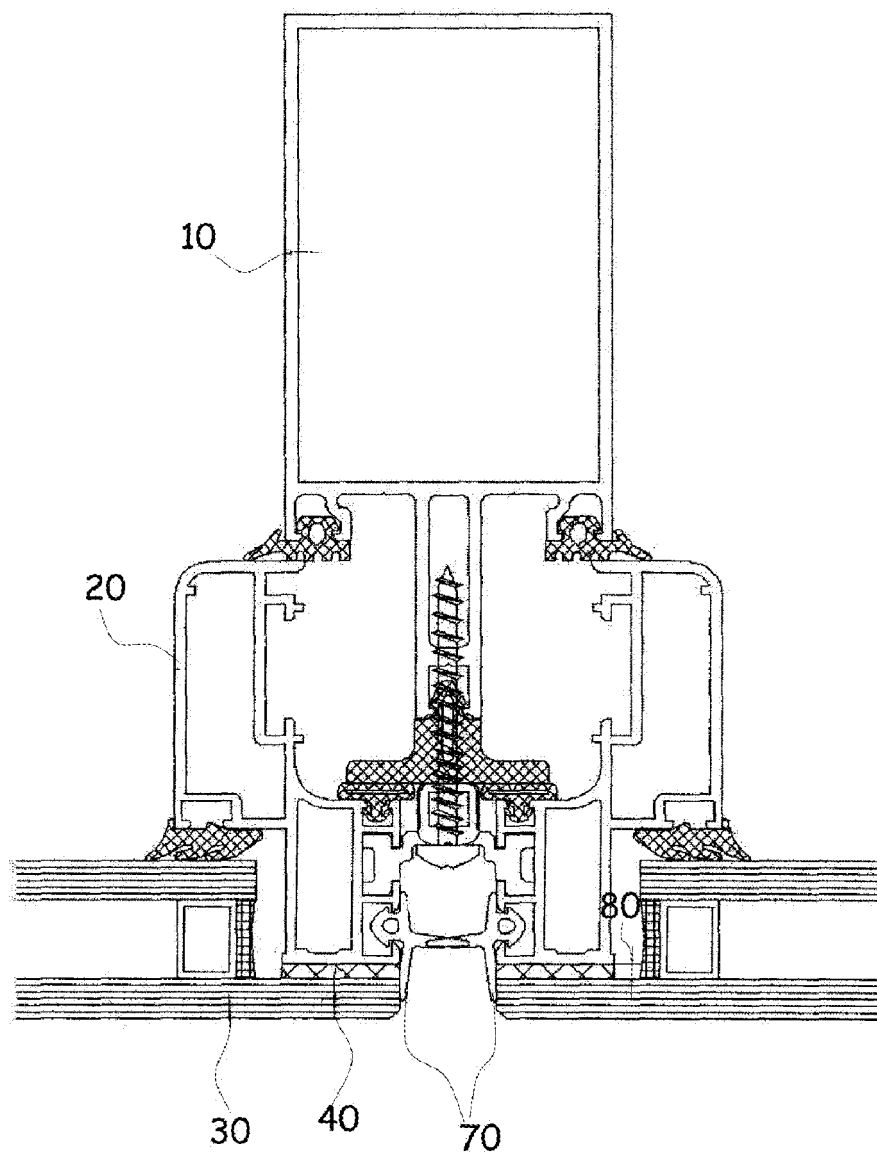


FIGURE 1

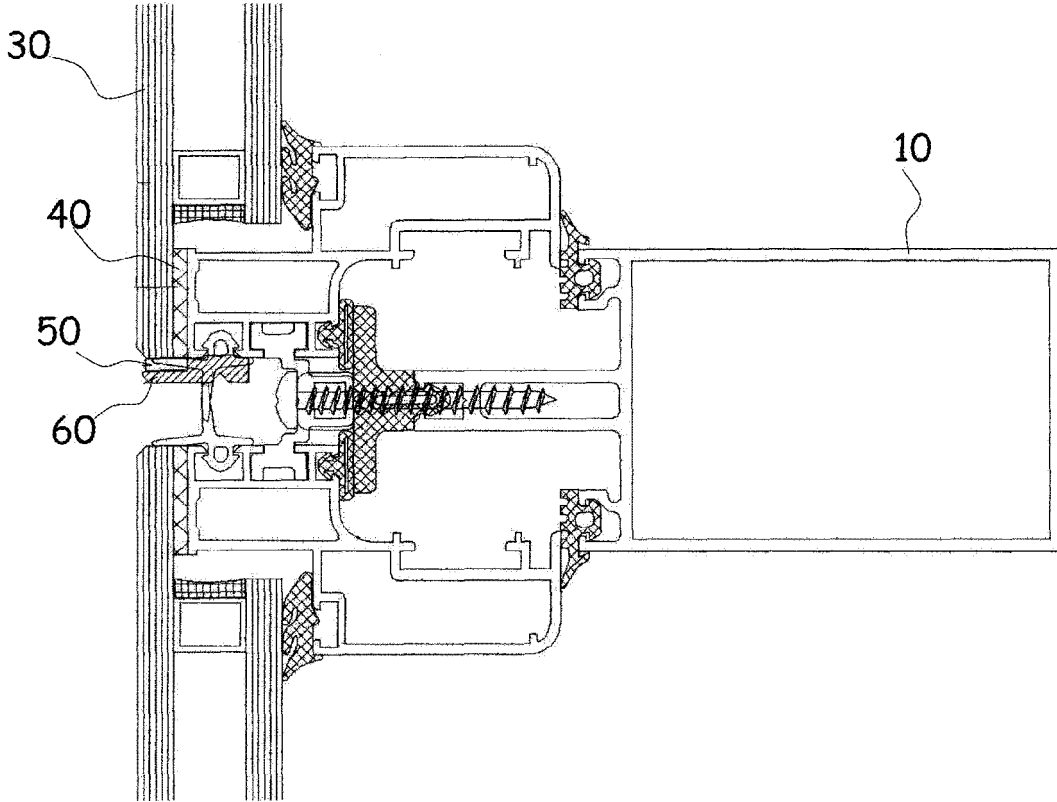


FIGURE 2

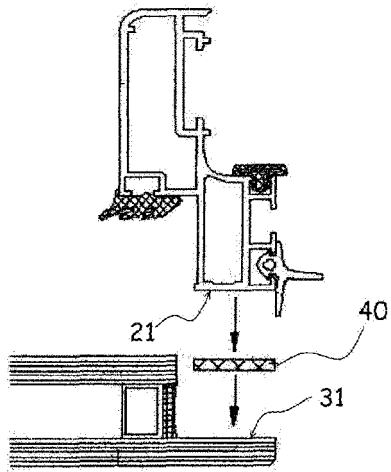


FIGURE 3a

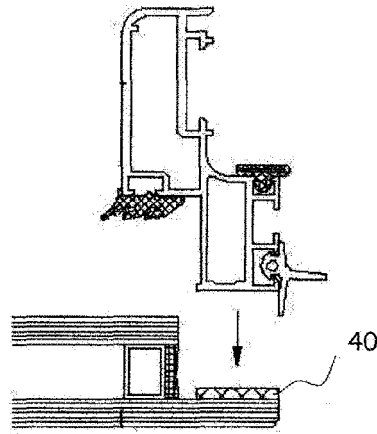


FIGURE 3b

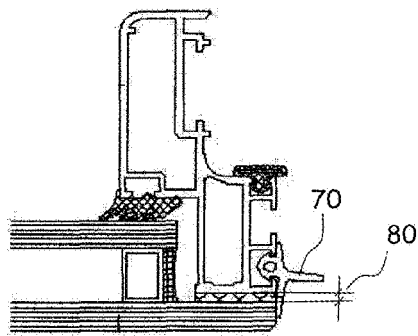


FIGURE 3c

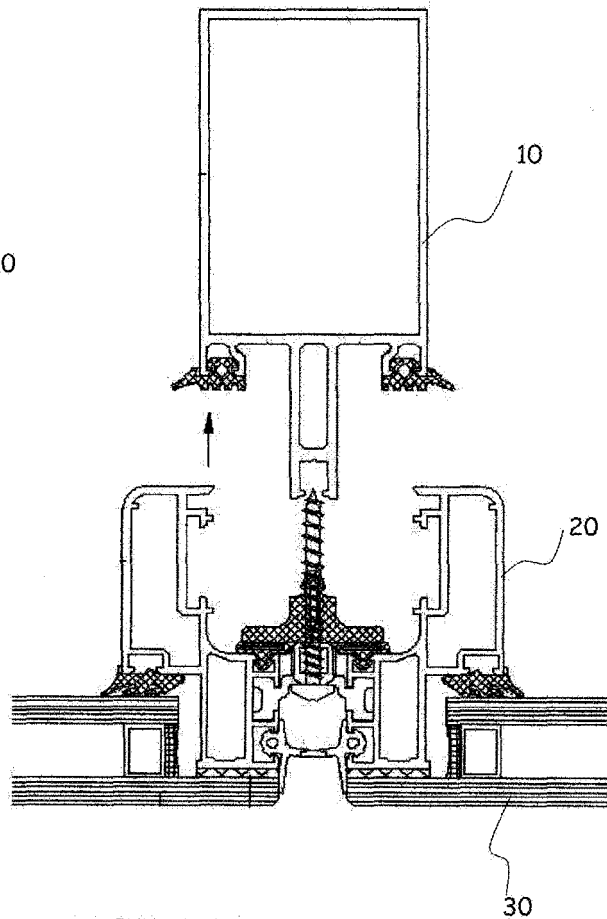


FIGURE 3



## EUROPEAN SEARCH REPORT

Application Number  
EP 09 15 2234

| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | EP 1 873 344 A (SIKA TECHNOLOGY AG [CH])<br>2 January 2008 (2008-01-02)<br>* paragraph [0017] - paragraph [0018] *<br>-----                         | 1,2                                              | INV.<br>E06B3/54<br>E06B3/56            |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DE 200 11 111 U1 (RAICO BAUTECHNIK GMBH [DE]) 15 November 2001 (2001-11-15)<br>* page 5, line 18 - line 27 *<br>* page 8, last paragraph *<br>----- | 1                                                |                                         |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                     |                                                  | E06B                                    |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                     |                                                  |                                         |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                     | Date of completion of the search<br>30 June 2009 | Examiner<br>Verdonck, Benoit            |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>.....<br/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                                                                     |                                                  |                                         |

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 09 15 2234

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  
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