

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

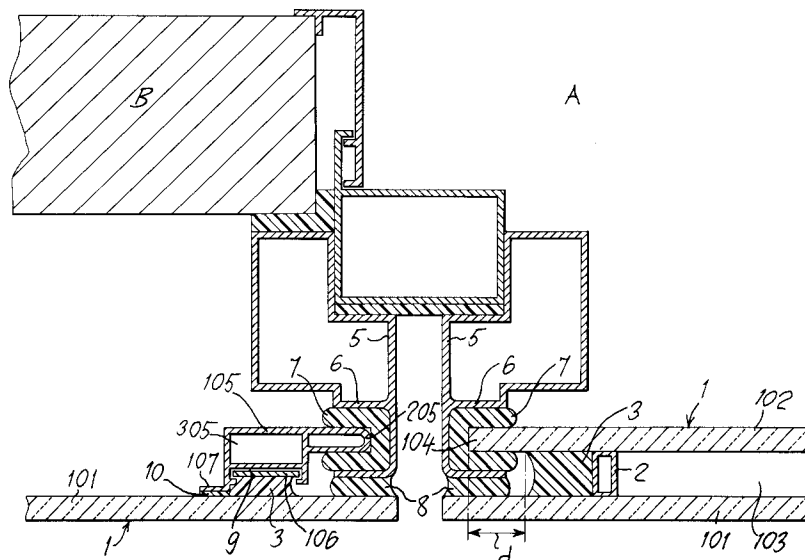
0 623 727 A1

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **93107187.2**(51) Int. Cl.⁵: **E06B 3/54, E04B 2/96**(22) Date of filing: **04.05.93**(43) Date of publication of application:
09.11.94 Bulletin 94/45(84) Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IE LI LU MC
NL PT SE**(71) Applicant: **C.C. DI COSTA & C. S.R.L.**
5/3 Piazza Manin
I-16122 Genova (IT)(72) Inventor: **Costa, Giovanni**
Corso Mentana 3/13
I-16100 Genova (IT)
Inventor: **Ravella, Federico**
Via Talamone 31/9
I-16127 Genova (IT)(74) Representative: **Porsia, Attilio, Dr. et al**
c/o Succ. Ing. Fischetti & Weber
Via Caffaro 3/2
I-16124 Genova (IT)(54) **Method for covering the facades of building with glass panels.**

(57) Method for covering the facades of building with glass panels. Said panels (1) consist of a pane of glass (101) and a frame of metal sections (105), which frame possesses, on the side nearest the glass pane (101), a ceramic-coated or glazed metal insert, the glass pane (101) being joined to said

insert by means of a strip of suitable mastic (3), for example structural silicone. The resulting composite panel (1) is secured to the supporting structure (5) of the building facade by the mechanical fixing of the edges (205) of the frame to a section (6) belonging to said supporting structure (5).

**EP 0 623 727 A1**

The present invention relates to the covering of the facades of buildings with glass panels and a method of fixing these panels to the supporting structures of the facade of the building.

In European Patent no. (European Patent Application no. 90123292.6) by the present proprietor, a method is described for fixing double glazing panels to the supporting structures of a building. According to this method two panes of glass are first joined together by means of silicon-based mastic applied to their opposing sides at a certain distance from their peripheral edge with a distance piece being inserted between said two glass panes, the resulting composite panel being secured to the supporting structure of the building facade by the mechanical fixing of the peripheral edges of the inner-most pane of each panel to a generally C-shaped section with a suitable rubber or similar seal in between.

This application has undoubted advantages. In its practical embodiment, however, it has also thrown up some drawbacks and disadvantages which it is part of the object of the present invention to eliminate.

Thus it is known that in buildings of modern design with glass-covered facades, only around 50 % of the external surface of the building is actually windows, the remainder of the surface being formed by "blind" surfaces, that is load-bearing walls, partitions, parapets and so on. The system according to the patent cited above is perfectly effective in the case of windows, but the same cannot be said for the second case. This is because double glazing installed a short distance back from a wall or other structure tends to accumulate large amounts of heat in the hollow space between the two. This heat can cause damage to the structure of the panel in the form of deterioration in the mastic or in the innermost pane itself. To solve this problem use is often made of toughened and therefore more heat-resistant glass which in extreme cases shatters into small pieces rather than large splinters. In this particular case, the breakage is not a major problem in itself but rather in that the innermost pane represents the load-bearing structure of the panel and if its support is lost the danger is that the outermost pane can come loose and fall out.

The chief object of the present invention is therefore to provide a system that will solve the aforementioned problems without significantly affecting the structure of the panel and its fixing system as described in the previous European patent by the same proprietor.

According to the invention this is achieved, in the case in which the panel is to cover a walled or similarly closed area, in that the panel consists of a single outer pane of glass and a frame of alumin-

ium or other light metal or alloy sections which is inserted in and mechanically fixed to the C section belonging to the supporting structure of the facade, this frame being joined to the outer pane of glass by means of a strip of suitable structural silicon-based mastic. Advantageously, along the area of bonding between the metal section frame and the glass pane, there is attached to the metal section a strip of glazed material, for example ceramic-coated steel, so as to provide a glassy surface, exactly equivalent to the surface of a pane of glass, for the mastic to bond to.

In this way the double-glazed type of panel, which would be unnecessary if not harmful, is eliminated in front of walls and the like, and at the same time a system is provided which integrates with that forming the subject of the previous European patent by the same applicant.

Other advantages and characteristics of the present invention will be explained in greater detail in the following description of a preferred embodiment thereof. This description refers to the accompanying drawing, in which the single figure is a diagrammatic cross section showing two adjacent glazed covering panel elements, the right-hand element being a double-glazed element of the type described in European patent no. (European Patent Application no. 90123292.6) which is designed to be installed in a window of the building and the element in the left-hand side of the figure represents the single-glazed solution according to a preferred embodiment of the present invention, designed to be applied in front of "closed" parts of the building (a wall or suchlike).

With reference to the drawing, the right-hand side of Figure 1 shows a panel according to the prior art claimed in European patent no. (European Patent Application no. 90123292.6) by the applicant. As illustrated, this panel 1 is formed by two glass panes 101, 102 separated by an air chamber 103, the dimensions of one of the two glass panes 101 being greater than those of the other pane 102. These panes 101, 102 are first joined by a strip of mastic 3 applied to the opposing sides of the two glass panes 101, 102 at a certain distance d from the peripheral edge of the smaller-dimensioned pane 102, while a distance piece 2 is placed between said two glass panes. The resulting panel 1 is secured to the supporting structure 5 of the building facade by the mechanical fixing of the peripheral edges 104 of the smaller-dimensioned pane 102 of each panel 1 to a C-shaped section 6, which is provided with a suitable rubber or similar seal 7 and belongs to said supporting structure 5. The device illustrated in the right-hand part of the figure and described above relates to the case in which the inside of the panel faces a room A or corridor or gallery or the like, that is faces an

empty volume.

The left-hand part of Fig. 1 shows the solution according to the present invention for the case in which the covering panel is in front of a wall B or partition or the like, i.e. in front of a closed volume. In this case, according to the present invention the innermost pane of glass 102 is eliminated and replaced by a frame of preferably light alloy sections 105, this frame having the same external dimensions as the glass pane 102 and being inserted into the mechanical fixing system formed by the C section 6 joined to the structural element of the facade 5 in the same way as the glass pane 102, with a seal 7 between the two to permit mechanical fixing. As illustrated, the section 105 comprises a hollow peripheral flange 205 of the same thickness as the glass pane 102, and of such a height that it can be inserted into the recess in the section 6, inside the seal 7, in exactly the same way as for the peripheral edge 104 of the glass pane 102. Joined to the flange 205 is a hollow part 305, thicker than the flange 205, which ends on the side parallel with the glass pane 101 in a slot 9 of open C cross section, in which is inserted a ceramic-coated steel strip 106 bonded to the glass pane 101 by means of the silicon-based mastic strip 3. The purpose of inserting this ceramic-coated or glazed metal strip is as follows: since the section 105 is made of aluminium or light alloy, its adhesion to the mastic 3 is closely related to the compatibility of the mastic 3 with the surface in question, especially in the case of metals, as here. This problem has been solved by covering such of the section 105 as is intended to be bonded to the glass pane 101 with a steel strip 106 which has been glazed or ceramic-coated and therefore behaves towards the adhesive mastic in exactly the same way as glass. From the arm of the C nearest the centre of the frame there projects a flange 107. Between this flange 107 and the glass pane 101 a bi-adhesive sealing strip 10 is placed whose purpose, in cooperation with the mastic strip 8, is to seal the hollow space between the outermost glass pane 101 and the sections 6 and 105.

In conclusion, the fixing method described in the present invention has the unquestionable advantage of eliminating a double-glazed type of panel structure where it may be not just unnecessary but harmful, and of replacing it with a system that integrates perfectly with the fixing structures provided by the prior art.

Claims

1. Method for covering the facades of buildings with glass panels in which said panels (1) consist of a pane of glass (101) and a supporting element (105) which anchors said pane to

the supporting structure forming part of the framework of the building, the method being characterised in that said supporting and anchoring element (105) is a frame of metal sections whose peripheral dimensions are smaller than those of the glass pane (101) and in that said glass pane (101) is joined to it by means of a strip of mastic (3) applied to the two opposing sides of the glass pane (101) and of the section (105) at a certain distance (d) from the peripheral edge (205) of the section (105), the resulting composite panel (1) being secured to the supporting structure (5) of the building facade by the mechanical fixing of the peripheral edges (205) of the frame of each panel (1) to a section (6) belonging to said supporting structure (5).

2. Method according to Claim 1, characterised in that said frame of metal sections (105) is generally L-shaped in cross section, comprising a hollow peripheral flange (205) of the same thickness as the glass pane (102), which is inserted into the section (6) belonging to the supporting structure (5) of the building facade and a thicker hollow part (305) whose face nearest the glass pane (101) is ceramic-coated or glazed.
3. Method according to Claims 1 and 2, characterised in that said ceramic coating or glazing of said face of the hollow part (305) of said frame of metal sections (105) is achieved by attaching a ceramic-coated or glazed metal strip (106) to said face.
4. Method according to Claims 1 to 3, characterised in that said ceramic-coated or glazed metal strip (106) is attached by inserting it in a slot (9) of open C cross section on said hollow part (305).
5. Method according to Claims 1 to 4, characterized in that from the arm of the C of said slot (9) there projects towards the centre of the frame a flange (107) and between this flange (107) and the glass pane (101) is a bi-adhesive seal (10) or a layer of mastic.
6. Method according to any one of the preceding claims, characterized in that said frame of metal sections (105) is of aluminium or some other light metal or alloy.
7. Method according to any one of the preceding claims, characterised in that said mastic (3) is structural silicone.

8. Method according to any one of the preceding claims, characterized in that said ceramic-coated or glazed metal strip (106) is a steel strip glazed on both faces.
- 5
9. Method according to any one of the preceding claims, characterised in that said section (6) belonging to the supporting structure is a generally C-shaped section and in that said edges (205) of said panels are accommodated in said section (6).
- 10
10. Method according to Claim 9, characterised in that said edges (205) of said panels (1) are inserted into said C sections (6) with a suitable seal (7) of rubber or rubber-like material between the two.
- 15
11. Method according to any one of Claims 1 to 9, comprising a further step of forming a seal between the peripheral edge of said outermost glass pane (101) of said panels (1) and the nearest side of said C section (6) by means of a suitable mastic (8).
- 20
- 25
12. Glass panel for the covering of the facades of buildings, produced by the method described in Claims 1 to 11.

30

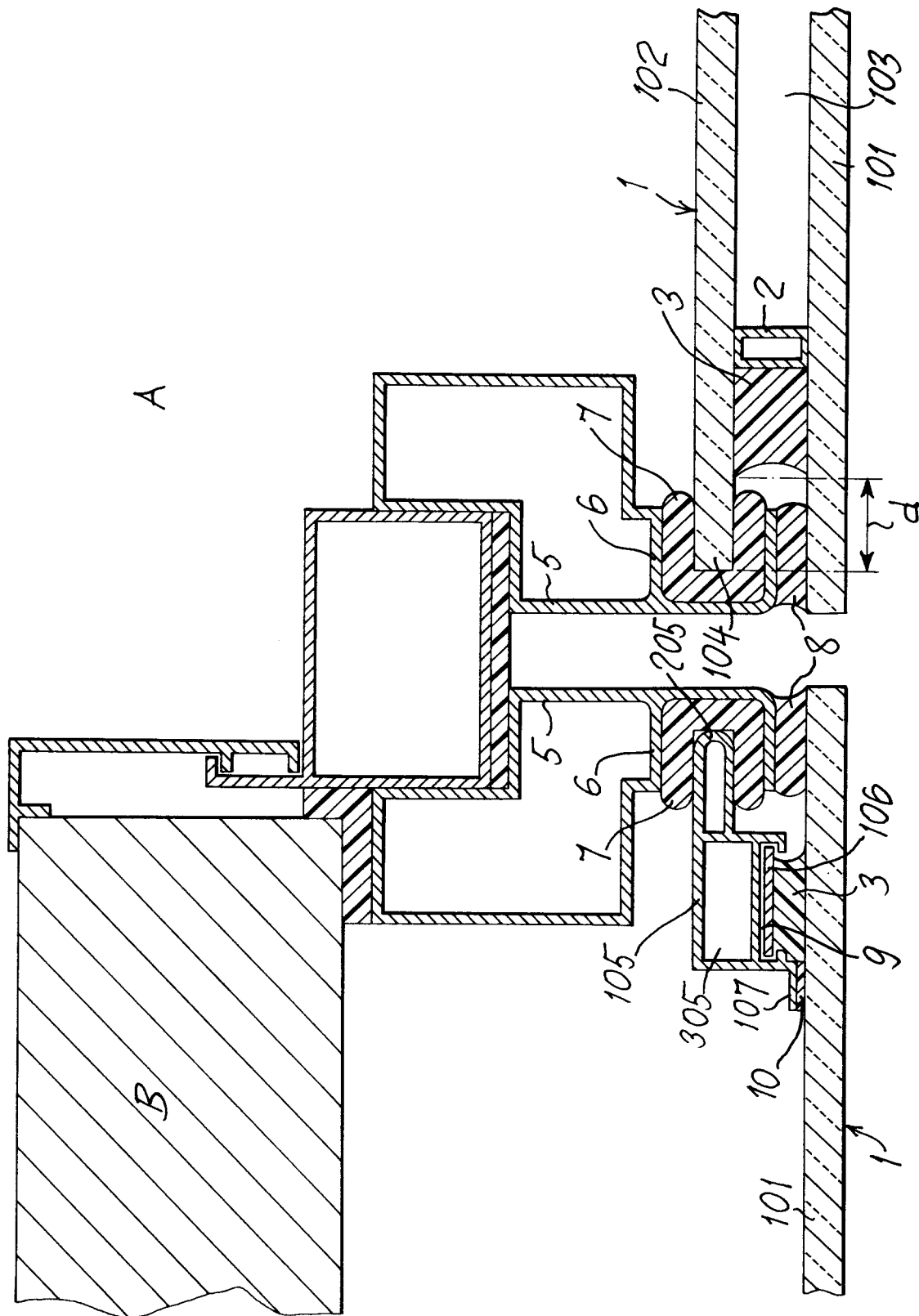
35

40

45

50

55





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 10 7187

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 813 203 (NEWMAN ET AL) * column 3, line 26 - column 5, line 38; figures *	1,6,7,9	E06B3/54 E04B2/96
X	EP-A-0 443 900 (AUBIN) * column 5, line 36 - column 9, line 19; figures *	1,6,7 2-4,9-11	
D,Y	EP-A-0 489 189 (DI COSTA) * column 2, line 13 - column 4, line 21; figures *	2,9-11	
Y	EP-A-0 301 462 (POLYU'ITALIANA) * column 9, line 9 - line 55 * * column 15, line 55 - column 19, line 27 * * claims 11-16 * * figures 9-15 *	3,4 5,8	
A	FR-A-2 624 159 (EMAILLERIE ALSACIENNE COMMERCIALE ET INDUSTRIELLE) * page 2, line 33 - page 4, line 14 * * page 6, line 3 - line 10 * * figures *	1,2,12	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	DE-A-3 633 618 (GARTNER) * column 4, line 36 - column 5, line 29 * * claims 1,2,5,6 * * figures 4,5 *	2-4,8	E06B
A	EP-A-0 404 103 (BACCARELLI) * column 1, line 1 - column 10, line 14; figures *	3-5	
A	EP-A-0 524 323 (GENERAL ELECTRIC COMPANY) * column 2, line 3 - column 3, line 13; figures 1,2 *	8	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 SEPTEMBER 1993	Examiner DEPOORTER F.
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 I : document cited for other reasons & : member of the same patent family, corresponding document			