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54 **Section adapted to form a support element for glass slabs and/or plates of various kind, particularly fittable for making continuous façades and the like.**

57 Section able to provide an element for supporting glass slabs and/or plates of various kind, comprising a first portion (21) adapted to form the frame for the scarf-joining of said plate (L) and a second portion (22) adapted to form a frame for removably fitting said panel (P) to said applicative structure (3), said first portion being substantially constituted by a flat longitudinal band (211), from a first side edge of which and namely that which when the frame is assembled is situated outside the panel (P) a short inclined flange (212) extends and said second portion (22) being extended from a second side edge thereof, opposite to the preceding one, which second portion is adequately shaped to form a male part penetrating in a correspondent female part, constituted by an applicative frame structure also made of suitable sections (3).

Finally, connecting means (41-42) of per se known kind, are disposed between said second portion (22) and the corresponding applicative structure (3), which means are adapted to permit a removable fitting of the panel (P) to said applicative structure.

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SECTION ADAPTED TO FORM A SUPPORT ELEMENT FOR GLASS SLABS AND/OR PLATES OF VARIOUS KIND, PARTICULARLY FITTABLE FOR MAKING CONTINUOUS FACADES AND THE LIKE

The present invention relates to a section adapted to form a support element for plates of various kind, such slabs of different materials and particularly glass slabs or glass-chambers, such support element being constituted by a frame obtained by said section, which permits to fix mechanically by a scarf-joint therein, without any use of mastics or the like, an associated plate as well as to fix removably the so obtained panel to a suitable fitting structure of the building to form a relevant continuous facade.

At the present time, it is known that for making the so-called "continuous facades", i.e. those outer surfaces of buildings which are obtained by providing a single and continuous surface made of panelings of various kind removably connected to a suitable support structure, the panelings and specially the panelings formed by simple glass slabs or of the "glass-chamber" kind are irremovably connected to corresponding firm frameworks.

Particularly, at the present the panelings made of glass slabs (simple or "glass-chamber" glass slabs) are fitted by connecting them to the corresponding support frameworks by means of sizing with particular silicone mastics.

Such embodiments, clearly, present considerable restrictions in use as well as various drawbacks.

Clearly, the connection effected by a simple sizing is not much reliable and also may constitute a real serious danger.

In fact, if for any reason the sizing hasn't been effected perfectly or, if due to the ageing of materials (bonding agent) and due to the thermal and/or mechanical strains there are generated deteriorations of the sizing zone, then the glass slab or the glass-chamber or anyway the so connected panel may break off from the associated framework to which it is fitted and fall on the ground, thus giving rise to the well comprehensible results.

Moreover, such kind of connection permits to make facades in which the covering panelings are irremovable, which fact prevent the openable parts (windows) from being obtained and replaced in a simple and quick manner.

In fact, it is well known that in the case in which one must provide for replacing a so fitted paneling, particularly if it is formed by a glass slab or a glass-chamber, there is to resort to high qualified personnel which, after having provided for detaching carefully the paneling to be replaced, must provide for cleaning in a very accurate way the sizing surface of the support structure and thereafter he effects, always carefully, the sizing of the

new paneling.

Besides, such operation must be accomplished at well definite temperature and relative humidity, which fact makes it evidently problematic and as much as ever difficult.

Also, it is required a considerable period of time for its fulfilment, which fact combined with the need of skilled labor makes very expensive the intervention cost.

The present invention has the purpose to obviate the above mentioned restrictions and drawbacks and this is obtained by the particular section referred to, which is characterized in that it is so shaped as to permit to effect, by utilizing parts with adequate length reciprocally interconnected at their ends in a per se known manner, a frame adapted to fix therein solely by a mechanical scarf joint, so avoiding each and any kind of sizing, a plate made of suitable material and particularly a glass slab or a glass-chamber thus forming a panel, which can be removably fitted to a corresponding applicative structure of a building to form an associated "continuous facade", such section being also characterized in that it comprises a first portion able to form the frame to scarf said plate and a second portion able to form a frame to removably fix said panel on an applicative structure, said first portion being substantially constituted by a flat longitudinal band, from a first side edge of which and namely that which when the frame is assembled is situated at the panel outside, a short inclined flange extends, and said second portion being extended from a second side edge opposite to the preceding one, which second portion is adequately shaped to form a male part penetrating in a correspondent female part constituted by an applicative frame structure, also formed by suitable sections; also, a second flange adequately spaced from said short inclined flange being extended orthogonally to and at the same side of said short inclined flange, and parallelly to said first side edge, said short inclined flange and said second flange being arranged inside the frame during assembling thereof, so as to provide a slot in which the peripheral edge of said plate is inserted, whose outer corners which are adjacent to the edge formed by said short flange are beveled with an inclined bevel complementary to said edge, said plate being so dimensioned as its peripheral edge is rather spaced from the cavity formed by said slot, so that to provide a clearance therebetween which is sufficient to permit to compensate eventual reciprocal dimensional changes, caused by different thermal expansions; between

the peripheral edge of said plate and the correspondent slot a suitable gasket made of adequate resilient material being additionally interposed; finally, connecting means of per se known kind being disposed between said second portion and the correspondent applicative structure, which means are able to permit the panel to be removably connected to said applicative structure.

According to another feature of the invention, said first portion and said second portion of said section may be formed preferably by two distinct sections, reciprocally interconnected by a suitable connecting element formed by an adequate rigid material having a high thermal resistivity, so as to avoid thermal bridges between the separated ambients of said panel.

A further feature consists in that said short inclined flange of said section may present a rectilinear extension or also an adequately curvilinear extension, and its free end is preferably coplanar to the outer surface of said plate and, moreover, its outer surface in view may be painted or appropriately treated so as to obtain a suitable coloring thereof, which may result also identical to that of the correspondent surface in view of said plate.

In order to better understand these and other features as well as the advantages attainable with the invention referred to, the whole will be hereinafter described more in detail, in a preferred embodiment thereof, given solely by way of a not limitative example, with reference to the accompanying drawings showing, in a trasverse cross section, a panel obtained by utilizing the section referred to in the present invention and its arrangement on a suitable firm applicative structure of a building, to form an associated "continuous facade".

It is to point out that the cross section shown in such drawing may indifferently be referred to a transverse cross section taken along either a horizontal plane or a vertical plane with respect to the panel, or, more completely, with respect to the "continuous facade".

In such drawing, for clearness the part only providing a panel obtained by the section referred to is indicated by a continuous marked line, while the connecting means and part of the adjacent panels pf the portion constituting the applicative structure, to which said panel is removably connected, are indicated by a thin continuous line.

Furthermore, it is to point out that in the above drawing is illustrated a possible embodiment in which a plate L formed a well known glass-chamber 1 is fitted to the so resulting panel P.

In addition, the section 2 providing the frame C of said panel P is illustrated in an embodiment in which it is divided in two parts 21-22, interconnected each other by a rigid connecting element 5

made however of an adequate material with high thermal resistivity in order to avoid, as it is known, the thermal bridge between the separate ambients of the structure of the panel itself.

It is well understood that, depending on the various utilization needs, the above plate L may be constituted by a simple slab made of glass or of other suitable materials such slabs made of plastic material, metallic materials, compound materials etc.

The plates L made of transparent material such the simple glass slabs or glass-chambers, additionally, may be made preferably of a kind treated with a deposit of a very thin layer of reflecting material, for obtaining as it is known particular operative and aesthetic effects.

Therefore, with reference to the above mentioned drawing, it is noted: the global structure of the panel P which, as already stated, for clearness is indicated by a marked continuous line.

Such panel P is formed by a plate L constituted by a "glass-chamber" element 1, which is fitted to a peripheral frame C as hereinafter described.

Said "glass-chamber" element 1 is formed in a per se known manner by two glass slabs, namely an outer 11 and an inner slab 12, which are reciprocally spaced and sealingly fitted together by a proper peripheral element 13.

In turn, the peripheral frame C is formed by parts of a section 2 providing a first portion 21 adapted to fix with a scarf-joint said glass-chamber element 1 and a second portion 22 adapted to form an extended part 221 insertable into the hole whose outline is defined by a frame formed by the part 31 of the section 3 providing the applicative structure, which in turn is adequately fitted, in a per se known way and with per se known means (not shown) to the building structure of the edifice facade.

As clearly pointed out from the drawing, said first portion 21 is constituted by a first section 210 formed by a flat longitudinal band 211, from the side edge of which that is situated on the side providing the outer face of the panel P when the frame is assembled, a short inclined flange 212 extends, while a second flange 213 extends from the other side edge thereof, orthogonally to and at the same side of said short inclined flange 212 as well as adequately spaced therefrom.

Finally, a further flange 214 extends from the second flange 213 parallelly to said flat longitudinal band 211, which further flange 214 is so shaped as to provide an adequately shaped slot 216 at the inside part of the panel 1, that is at the same part toward which said short inclined flange 212 and said second flange 213 extend, wherein the slot 216 engages a side end of a rigid connecting

element 5 made of a suitable insulating material, the other side end of which engages a corresponding slot 222 provided on the section 220 constituting said second portion 22 of said section 2.

Said section 220 is constituted by a flat longitudinal band, at one side thereof are provided said slot 222 and a second slot 223 engaging elements 41 sliding therein, which elements engage with their cylindrical extended part 411 the inclined surfaces of the projected parts 422 of corresponding elements 42 fitted to the slot 311 of the extended part 31 of the section 3, thus causing the removable connection of the panel P to the applicative structure formed by said sections 3.

Such sections 3 may constitute the side stanchions or the transversal stanchions (upper and lower) which define the hole on which said panel P is fitted.

The translation drive of said elements 41 will be obtained by a cable 6, which in turn will be operated in a per se known manner and with per se known means.

The removable connecting device constituted by said elements 41 and 42, clearly, is of per se known kind.

It is to point out that other similar devices could be employed for the same purpose, furthermore on the same slots 223 and 311 and anyhow on said portions 31 there may be applied further means able to permit a guided shifting outwards of said panel P and also constituted by per se known devices.

Beside to that described, said section 2 could be made also in a single piece, wherein said first portion 21 and section portion 22 form a sole element.

It is to point out that, obviously, the sections 2 or the sections 210 and 220 forming such section 2 in the embodiment referred to the section 3 are obtained by extrusion of adequate metal such preferably the aluminum. Still examining the drawing, it is to point out that the outer corner of the peripheral edge of the outer slab 11 of said glass-chamber element 1 is beveled with an inclined bevel 111, which is convergent toward the outer surface of the same glass-chamber element 1 and the surface of such bevel is substantially parallel to the inner surface of the corresponding short inclined flange 212 as well as adequately spaced therefrom, so as to obtain between the two parts a sufficient clearance able to permit to compensate the dimensional changes due to the different thermal expansions thereof.

An appropriate front gasket 71 made of suitable elastomer is interposed between said inclined bevel 111 and the associated inner surface of the corresponding short inclined flange 212.

Moreover, a second peripheral gasket 72 is

arranged along the perimeter of said glass-chamber element 1 and is inserted into said slot 216 and finally a third back gasket 73, made of adequate elastomer material as the second gasket, is arranged on the back side of this element 1, between its back surface and the opposite surface defined by said second flange 213.

Clearly, the function of said gaskets 71,72,73 is that to permit the glass-chamber element 1 to be locked with a scarf joint to the associated frame formed by said first portion 21 of the section 2 as well as to ensure a seal therebetween.

Beside, further gaskets 81 and 82 are provided for the seal between the panel P and the applicative structure formed by the sections 3.

The assembling of the panels P may be easily made in an assembly shop independent from the place where they will be installed.

The assembling of such panels will be effected as follows. At first, adequate parts of section 2 are prepared by cutting them in a conventional manner and with commonly utilized machines and such parts are obtained, obviously, with adequate lengths adapted to form the frame of the same panel P.

Then, after that the gaskets 71-72-73 have been fitted on the sides of the glass-chamber element 1 or, in the case where it is desired to obtain panels with different curtain elements, such parts are applied to the corresponding plates which may be constituted, as already stated, by simple glass slabs or by slabs made of other suitable materials.

Thereafter, such parts are connected together, by joining them at their ends in a per se known manner and with per se known means.

Finally, the assembly may be completed by applying the above mentioned further gaskets 81-82 on the associated seats.

Thus, the panels are ready for their use.

On the building structure of the facade of the edifice on which it is desired to form the "continuous facade" there are independently fitted the sections 3, thus forming a suitable applicative structure wherein said sections 3 constitute the side and transversal stanchions (upper and lower) provided with holes exactly complementary to the panels P, which are prepared separately as above stated.

Finally, the "continuous facade" may be completed by inserting correspondent panels P in the above holes of the applicative structure, which panels will be connected thereto by means of adequate connecting means constituted by devices (41-42) permitting their removable fixing or by devices permitting besides a removable fixing also guided shiftings outwards thereof, such devices being all of per se known kind and normally found in commerce, so that there aren't described.

From what explained there appear evident the very considerable advantages attainable by making "continuous facades" with the described assembly which is object of the present invention.

Firstly, it is obtained a safe connection of the plates forming the surface of the continuous facade.

In fact, the plates which, as stated, may be constituted by simple glass slabs, by glass-chambers or by other suitable materials, are certainly fixed to the associated frame by a mechanical scarf-joint connection obtained through the tooth formed by said short inclined flange 212, ensuring an absolutely reliable connection thereof so avoiding the very serious inconvenience of possible breakaways thereof.

In addition, the panels P may be of modular construction and their shape together with their removable fitting system permits to effect always and anyway their replacement in a very simple, rapid and cheap manner, which replacement may result from the need to replace panels which for various reasons undergo breakings or deteriorations or also for the opportuneness to change the kind and/or colour of the panelings.

For example, it is possible to replace transparent panels with opaque panels and vice versa, or to change the colour for aesthetic reasons etc.

Moreover, clearly, the assemblings of both the panels and the associated applicative structure thereof are as much as ever simple and cheap.

Finally, the edge formed by said short inclined flange 212 is too limited and may be also, when adequately shaped, very thin and practically almost not noticeable with respect to the entire facade structure.

Also, such edge may be adequately coloured to make it practically with the same colour of the curtain wall plates and to obtain special aesthetic effects.

It is well understood that the shape of the section which is object of the present invention may be widely changed, however without departing from the sphere of what described and hereinafter claimed with reference to the accompanied drawing and thence from the protection field of the present industrial invention.

Claims

1) Section adapted to form an element for supporting glass slabs and/or plates of various kind, particularly usable for making continuous facades and the like, characterized in that it is so shaped as to permit to effect, by utilizing parts with adequate length reciprocally interconnected at their ends in a per se known manner, a peripheral frame

(C) adapted to fix therein solely by a mechanical scarf joint, so avoiding each and any kind of sizing, a plate (L) made of suitable material and particularly a glass slab or a glass-chamber (1) thus forming a panel (P), which can be removably fitted to a corresponding applicative structure of a building to form an associated "continuous facade", such section being also characterized in that it comprises a first portion (21) able to form the frame for the scarf joining of said plate (L) and a second portion (22) able to form a frame to removably fix said panel on said applicative structure, said first portion being substantially constituted by a flat longitudinal band (211), from a first side edge of which and namely that which when the frame is assembled is situated outside the panel (P), a short inclined flange (212) extends, and said second portion (22) being extended from a second side edge thereof opposite to the preceding one, which second portion is adequately shaped to form a male part penetrating in a correspondent female part constituted by an applicative frame structure, also formed by suitable sections (3); also, a second flange (213) adequately spaced from said short inclined flange (212) being extended orthogonally to and at the same side of said short inclined flange, and parallelly to said first side edge, said short inclined flange (212) and said second flange (213) being arranged inside the frame during assembling thereof, so as to provide a slot (216) in which the peripheral edge of said plate (L) is inserted, whose outer corners which are adjacent to the edge formed by said short flange (212) are beveled with an inclined bevel (111) complementary to said edge, said plate (L) being so dimensioned as its peripheral edge is rather spaced from the cavity formed by said slot (216), so that to provide a clearance therebetween which is sufficient to permit to compensate eventual reciprocal dimensional changes, caused by different thermal expansions; between the peripheral edge of said plate (L) and the correspondent slot (216) a suitable gasket (71) made of adequate resilient material being additionally interposed; finally, connecting means (41-42) of per se known kind being disposed between said second portion (22) and the correspondent applicative structure, which means are able to permit the panel (P) to be removably connected to said applicative structure.

2) Section according to claim 1, characterized in that said first portion (21) and said second portion (22) of said section (2) may be preferably constituted by two distinct section (210-220), reciprocally interconnected by an adequate connecting element (5) made of suitable rigid material with a high thermal resistivity, so as to avoid thermal bridges between the separate ambients of said panel.

3) Section according to claim 1, characterized in that said short inclined flange (212) of said section (1) may have a rectilinear extension or also an adequately curvilinear extension and its free end is preferably coplaner to the outer surface of said plate (L), and, additionally, its outer surface in view may be painted or adequately treated so as to obtain a suitable colouring thereof, which could be also identical to that of the corresponding surface in view of said plate (1).

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4) Section according to claim 1, characterized in that said short inclined flange (212) includes together with said flat longitudinal flange (211) an angle, preferably of 135° .

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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	DE-U-8 803 328 (THERMOPANE AG) * Page 8, paragraph 4 - page 9, line 5; page 9, paragraph 4 - page 10, line 1; page 11, paragraph 2 - page 13, paragraph 1; figures 1,2 *	1,3,4	E 06 B 3/54
Y	---	2	
X	EP-A-0 282 686 (J. ECKELT) * Column 1, lines 35-52; column 2, line 36 - column 3, line 8; column 3, lines 32-37; figures 1,2 *	1,4	
Y	---	2	
Y	NL-A-8 500 516 (COMPRI-ALUMINIUM) * Page 2, lines 14-25; page 3, lines 29-33; figure u *	2	
A	---	1	
A	US-A-3 672 107 (G.J. SANTRY) * Column 1, line 64 - column 2, line 2; column 3, lines 15-33; figure 2 *	1,4	
A	---	3	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	DE-A-3 624 491 (FA. EDUARD HUECK) * Column 3, line 67 - column 4, line 3; column 5, line 66 - column 6, line 1; figure 7 *		E 06 B
A	---		
A	GB-A-2 155 981 (A.A. TIDY) -----		
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	05-01-1990	VERVEER D.	
CATEGORY OF CITED DOCUMENTS		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	
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			