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(11) **EP 1 205 608 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**15.05.2002 Bulletin 2002/20**

(51) Int Cl.7: **E04B 2/74, E06B 3/68**

(21) Application number: **01105949.0**

(22) Date of filing: **09.03.2001**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR**  
Designated Extension States:  
**AL LT LV MK RO SI**

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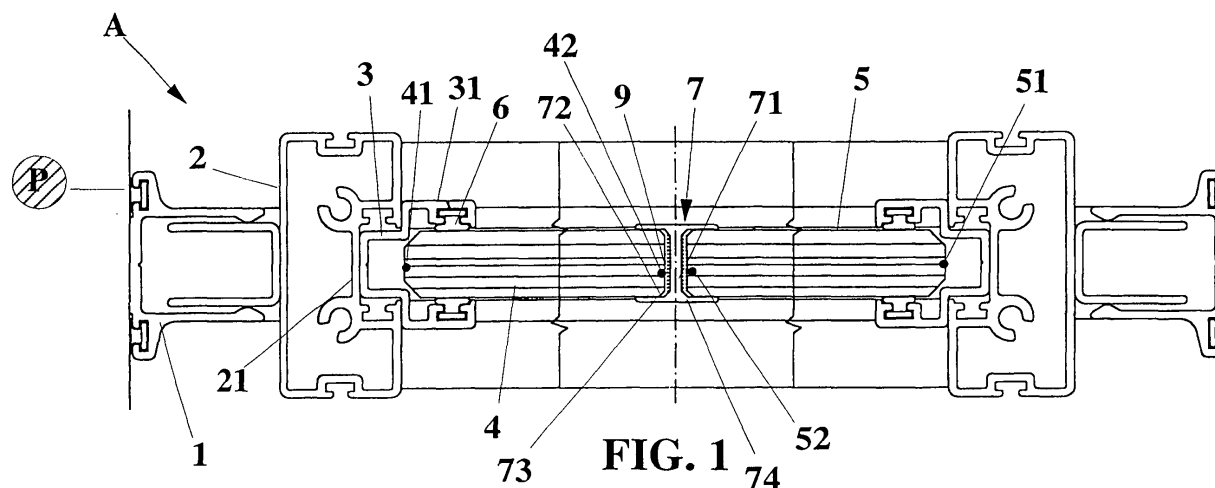
(30) Priority: **10.11.2000 IT TV000048**

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(54) **Joint section positioned between two flat, transparent filler elements, used particularly for internal partition wall structures**

(57) Joint section (7) positioned between transparent filler elements (4,5), used particularly for internal partition wall structures, made up of a transparent polycarbonate joint element (7) with lateral leading edges

(73,74) which mirror the ground edges of the transparent filler elements (4,5), said profile (7) having a continuous adhesive seal (9) along at least a part of each leading edge, positioned between the section (7) and the edge of the glass placed in this position.



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## Description

**[0001]** The object of this model is a joint section positioned between two flat, transparent panels, used particularly for internal partition wall structures.

**[0002]** The invention has particular, but not exclusive, application as a structural element in order to divide multi-purpose environments, with modular transparent wall.

## BACKGROUND OF THE INVENTION

**[0003]** Modular walls for internal use are widely used. Some of these walls, because of their particular structure, are defined as fitted while others, such as dividing walls, are used mainly in industrial environments, for example in pre-fabricated units used for dividing environments.

**[0004]** Partition walls are made up of a series of various shaped panels fitted together and to the floor and the ceiling by means of a series of fittings and accessories.

**[0005]** Some panelled solutions foresee localised spot-connection systems, such as by using brackets or plates, which can also render one panel movable with respect to another, such as with the use of hinges, or rigid connecting systems that fit together by insertion or by fixing with screws.

**[0006]** One solution, for example, has been proposed in the Italian patent N° 1 210 108. This system uses header sections along the jointing sides, made up of strike plates fixed to the panel and a mobile means for fixing it against the strike plate, which form two equal and contrasting longitudinal grooves that can be opened and closed, with a transversal, preferably shaped, section that sticks out longitudinally along, or close to, their respective corners.

**[0007]** Other systems, which most connecting techniques currently used are based on, require either a support backbone or structure and a time consuming operation to apply the panels to both sides. An example of this application foresees the use of both a primary and a secondary structure; the first one is made up of a series of uprights, while the second one is made up of cross bars. To allow this type of structure to be carried out, it is necessary to fix a "U" shaped channel to the floor and to the ceiling into which the uprights are fixed. The cross bars are then fixed directly to the uprights. The application of the panels to the structure is by using a hooking means, with one side of the panels having a series of hooks that fit into the fixing means attached to the structure.

**[0008]** Another example is made up of a system whereby a rotating hook that is turned by means of a transversal screw is inserted in the panels. The use of this type of panel requires an adequate upright which means that there will also be a series of crossbars from one side to the other onto which the hooking means is fixed.

**[0009]** An improvement of the aforementioned techniques foresees the use of a support structure for the panels, especially for constructing partition walls, made up of:

- a primary support structure with hooking means for the panels which can be used simultaneously;
- a secondary orthogonal support structure which intersects the primary structure, with its elements that are connected to each other at their headers, clamping the said primary support structure;
- filling means made up of panels with corresponding hooking means for attaching them to the primary structure;
- pusher ends for the primary support structure by means of holding sections with spacers positioned between them.

**[0010]** An important step ahead regarding the panels for this type of wall has also been carried out. Apart from traditional covering panels made from treated material such as melamine, the use of transparent panels has been introduced. This requirement is necessary because the use of traditional panels leads to a lack of light in the internal areas of the divided environments, a problem that is not present in the outer areas where it is possible to benefit from the presence of windows or other light sources around the perimeter areas. In order to overcome the aforementioned drawback, the companies involved in this sector tend to use transparent or glass panels, alternated with the traditional melamine panels, which tend to let sufficient light enter even in the internal areas.

**[0011]** On the other hand, the use of walls with transparent areas leads to another kind of problem. Sometimes, too much light may enter and they do not allow any privacy or discretion, since it is possible to see the things and the people that use or work in an area with this type of panel. To overcome both of these problems, intermediate elements are installed between two transparent panels, that may be used to regulate the amount of light that passes through them from the outside.

**[0012]** This kind of panel however, initially made out of glass, cannot be too long. This is because, from a safety point of view, in order to meet safety requirements, the thickness of the glass would have to be increased to avoid their accidental breakage. As a result, each module made with this type of panel would be very heavy and would be expensive due to the cost of manufacturing special flat, glass panels. To overcome this problem, in order to install continuous transparent sides, a series of short modules were installed with metallic support sections between each module. These support sections between each module were obviously visible, leading to structures that were not particularly pleasing to look at.

**[0013]** The use of a series of short modules is a technique which can also be used to construct other types

of transparent panels, such as with polycarbonate. The limiting factor in this case is given by the fact that it is difficult to manufacture a large panel, because the wider it is the more likely it is to suffer from deformation, be it intrinsic or extrinsic, or mechanical due to external **pressure**.

**[0014]** A further problem with large transparent panels, which may certainly not be overlooked, is given by transport and movement problems when constructing this type of modular type of wall.

#### STATE OF THE ART

**[0015]** Some of the problems described beforehand have been resolved by the proposal disclosed in the patent application IT- TV98A000031 (Faram). This application describes a partition wall, particularly for dividing internal environments, made up of one or more modules. Each module has panels facing each other in order to leave a gap between them, fixed at the lower end to the floor with a heel-block and at the upper end by means of a metallic section to the ceiling. At least one of the said modules is made up on one side by a series of flat, transparent panels with a series of mirror-image panels on the other side. The said panels are joined to each other on each side by means of a transversal section on the perpendicular sides of the panels, while the vertical ends of the panels are held in position by a corresponding symmetrical upright with a central "C"-shaped portion with, on its side, longitudinal "U"-shaped seats used to fix the other ends of the said transparent panels.

#### DRAWBACKS

**[0016]** The proposal indicated previously may only be used for window-wall structures filled with transparent panels. It is typically used, for example, for walls where the panels, being at a certain distance from each other, lead to glass surfaces that are more or less level with the surrounding surfaces that make up the main dressing of both sides of the wall.

**[0017]** There is a difference, however, if single glass panels are proposed. Each of these panels, which cannot be applied in the case previously described, is positioned along the longitudinal central axis of the wall structure, in a predefined space leaving an uneven surface due to the different thickness. The main drawback is that it is not possible to attach a second panel along the vertical side in order to give an even, continuous surface. In that case, as mentioned above, there would be a series of visible interruptions corresponding to the joints, giving a feeling of structural instability and an unpleasant esthetical appearance.

**[0018]** The aim of this invention is to overcome the aforementioned drawbacks.

#### SUMMARY OF THE INVENTION

**[0019]** This and other aims are achieved with the invention according to the characteristics of attached claims by means of a joint vertical section to be placed between border-bevelled transparent panels, to be coplanarly joined in a wall structure for partitioning internal environments, characterised by the fact that it is made up of a transparent plastic material with an "H-shaped" section having opposed retaining fins to oppositely engage at least the bevels of said transparent panels; said "H-shaped" vertical section having an opposer internal seal (9, 10) positioned between opposed retaining fins in order to abut with the edge of said transparent panels.

**[0020]** Advantageously said transparent joint vertical section is made of a monolithic transparent "H-shaped" polycarbonate material section, wherein each fin of said "H-shaped" section joins the "H" intermediate basis with a bevelling, said intermediate basis of said transparent vertical joint "H-shaped" section being transversal with respect to said panel to head-join.

**[0021]** Advantageously said intermediate basis of said transparent vertical joint "H-shaped" section continues with counter-facing fins, which originate with a bevelled right-angle wherein said fins overlaps said joined panels.

**[0022]** Advantageously said fins of the said "H-shaped" section are fully bevelled with the respective intermediate basis, the bevels of said panels having the same extension and the width of said "H-shape" being the same of said panels.

**[0023]** Advantageously said internal seal is an adhesive seal that is previously fixed to said intermediate basis of said "H-shaped" section.

#### ADVANTAGES

**[0024]** In this way, through the creative contribution that has the effect of constituting an immediate technical progress, various advantages are achieved.

**[0025]** First of all, it is possible to construct walls for the partitioning of interiors, or even single, large modules where the windows are characterised by at least two transparent panels that join each other, leading to an unparalleled aspect regarding continuity, without noticing the joint between them. This advantage is found both in the case where panes of glass are used or in the case where another type of material, such as polycarbonate, is used. With the second case, this solution is particularly efficient because various standard size panels may be positioned next to each other, but without being able to particularly notice the joints between them.

**[0026]** Secondly, the time required for assembling this type of wall is extremely low, making the installation and removal of the transparent sheets much easier. Finally, regarding the cost for this type of solution, there are further savings because the amount of fittings and sections required are less and the amount of time required is low-

er.

[0027] These and other advantages, with the aid of the included drawings, will be outlined in the following detailed description of typical uses.

[0028] Fig. 1 is a horizontal sectional view of a wall for internal partitioning, of the type with transparent panels, showing a first type of joint section; while Fig. 2 is another sectional view of the same wall used for internal partitioning of the type with transparent panels, showing a second type of joint section.

#### DESCRIPTION OF VARIOUS WAYS OF USING THE SYSTEM

[0029] With reference to the above figures, a partition (A, B), especially for internal furnishing, has two metallic mirror-image sections (1), each one being anchored vertically to its corresponding portion of orthogonal wall (P). Each section (1) is fixed longitudinally to a metallic upright (2), which has a vertical channel (21) along the side facing the inside of the window.

[0030] Inside the vertical channel (21) of each upright (2), there is a continuous metallic element (3) which acts as a lateral support for a corresponding transparent plastic material or glass panel (4, 5). Each panel (4, 5) is a flat-surface rectangle: The panels are contained and encased into a perimeter section structure that is shaped in order to form two horizontal and two vertical sections. The latter ones are symmetrical and have the lateral support sections (3) fixed to the opposed walls by intermediate wall-support profiled (1-P). The wall structure fastened on one side (2,3,41/51), while internally, the internal edges of said panels to be head-joined one to each other (42, 52) is joined by an intermediate vertical "H-shaped" joint section (7, 8) that joins coplanarly the opposed two panels (4, 5) along their joining edge.

[0031] Going further into detail, the conformation of the side-wall support section (3) for each panel (4, 5), that sticks out with respect to the surface of the upright (2), realizes a "U" shape that mounts over the first vertical end (41, 51) of the respective panel (4, 5). In this way, the facing walls (31) of the said side-wall support section (3) are endowed with a seal (6) inserted on each side along both faces of each "C" profile to side-wall seal with opposed end faces (41, 51) of said panels (4,5).

[0032] This invention regards the internal joining of panels together by means of a vertical "H-shaped" joint section (7, 8) placed between them.

[0033] In particular, the said "H-shaped" joint section (7, 8) is made up of a monolithic element in transparent polycarbonate, with a conformation that is similar to a double "C" joined at its back part.

[0034] In this particular case, a first solution of a joint section (7) used in the structure for wall (A) has an intermediate basis (71) which is transversal with respect to the panel (4, 5). The said intermediate basis (71) confines with two inclined, facing planes or bevels (72) that

converge on the same (71) on each side, and in correspondence with the opposed fins realizing the "C2" shape for one side namely the "H" shape for the whole. The counter-facing fins (73, 74) are part of the joint section (7), which originate at right-angles from the ends of the intermediate basis (71) and which are overlapped along the edge of both faces of each panel (4, 5) in correspondence with the ends (42, 52). Finally, on both sides of the joint profile (7), along the surface that has the intermediate basis (71) and respective inclined planes or bevels (72) attached, an adhesive seal (9) is attached. In the solution described here, the ends (42, 52) of the transparent panels (4, 5) are ground, in order to form a shape that may be inserted inside the counter-facing "C"-shaped leading edges formed by the "H-shape" conformation of the section (7).

[0035] In a second solution, the one shown in wall structure (B), the conformation of the "H-shaped" joint section (8) has the shape of an inverse dove-tail. Going further into detail, the transversal sector (81) that separates the two ends (42, 52) of the transparent panels (4, 5) includes a portion which connects the counter-facing inclined planes (82) of the ends, which are less pronounced than in the previous solution, the bevelling being fully extended to the fin-extension. With further reference to the inclined planes (82) at the ends, it may be noticed that a sharp angle is formed in order to converge on the central part of the intermediate "H" basis (81). There is also an adhesive seal (10) in this case which, on one side, sticks to the portion of the sector (81) that connects the two inclined planes (82). The solution described differs from the first solution, in that it does not have the fins that overlap along the edge of both of the transparent panels (4, 5). As a result, in order to guarantee their stability, a different ground edge along the vertical side of the transparent filler sheet (4, 5) is required, which in this case appears very pronounced.

#### Claims

1. Joint vertical section to be placed between border-bevelled transparent panels (4-42, 5-52) to be coplanarly joined in a wall structure for partitioning internal environments, **characterised by** the fact that it is made up of a transparent plastic material (7, 8) with an "H-shaped" section having opposed retaining fins (73-74, 82) to oppositely engage at least the bevels (42, 52) of said transparent panels (4, 5); said vertical "H-shaped" section (7, 8) having an opposed internal seal (9, 10) positioned between said opposed retaining fins (73-74, 82) in order to abut with the edge (42, 52) of said transparent panels (4, 5).
2. Joint section according to claim 1, **characterised in that** said transparent joint vertical section (7, 8) is made of a monolithic transparent "H-shaped"

polycarbonate material section, wherein each fin (73-74, 82) of said "H-shaped" section (7,8) joins an intermediate basis (71,81) with a bevelling (72,82), said intermediate basis of said transparent vertical joint "H-shaped" section (71,81) is transversal with respect to said panel (4, 5). 5

3. Joint section according to claims 1 and 2, **characterised in that** said intermediate basis of said transparent vertical joint "H-shaped" section continues with counter-facing fins (73, 74), which originate with a bevelled right-angle (71) wherein said fins (73, 74) overlaps said joined panels (4,5). 10
4. Joint section according to claims 1 and 2, **characterised in that** said fins of the said "H-shaped" section are fully bevelled (82) with the respective intermediate basis (81), the bevels of said panels having the same extension and the width of said "H-shape" being the same of said panels. 15 20
5. Joint section according to the previous claims, **characterised in that** said internal seal (9, 10) is an adhesive seal that is previously fixed to said intermediate basis (71, 81) of said "H-shaped" section. 25

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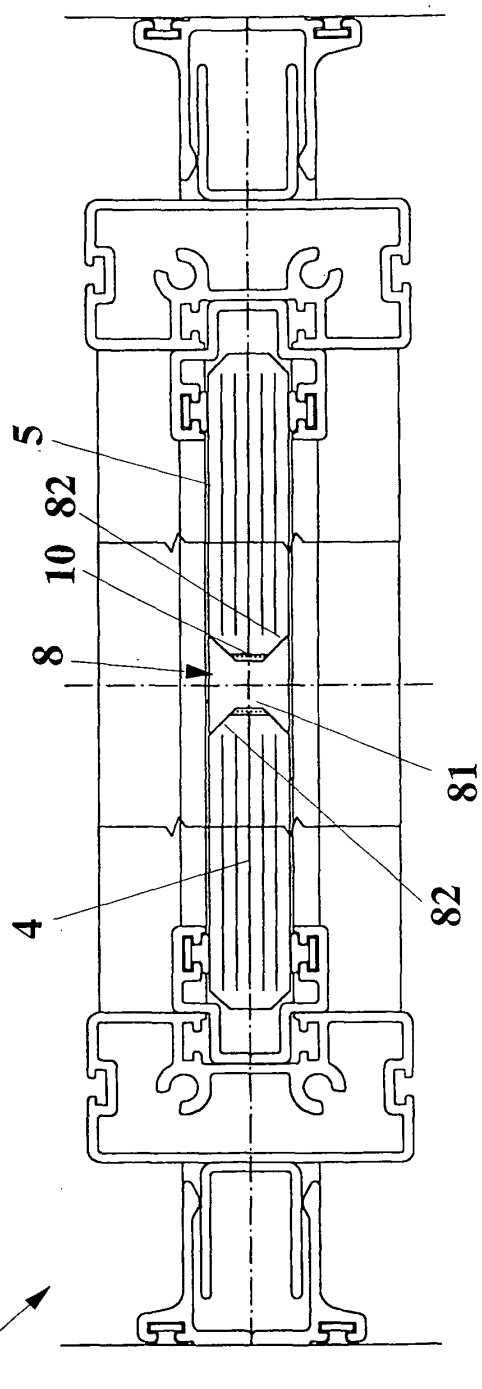
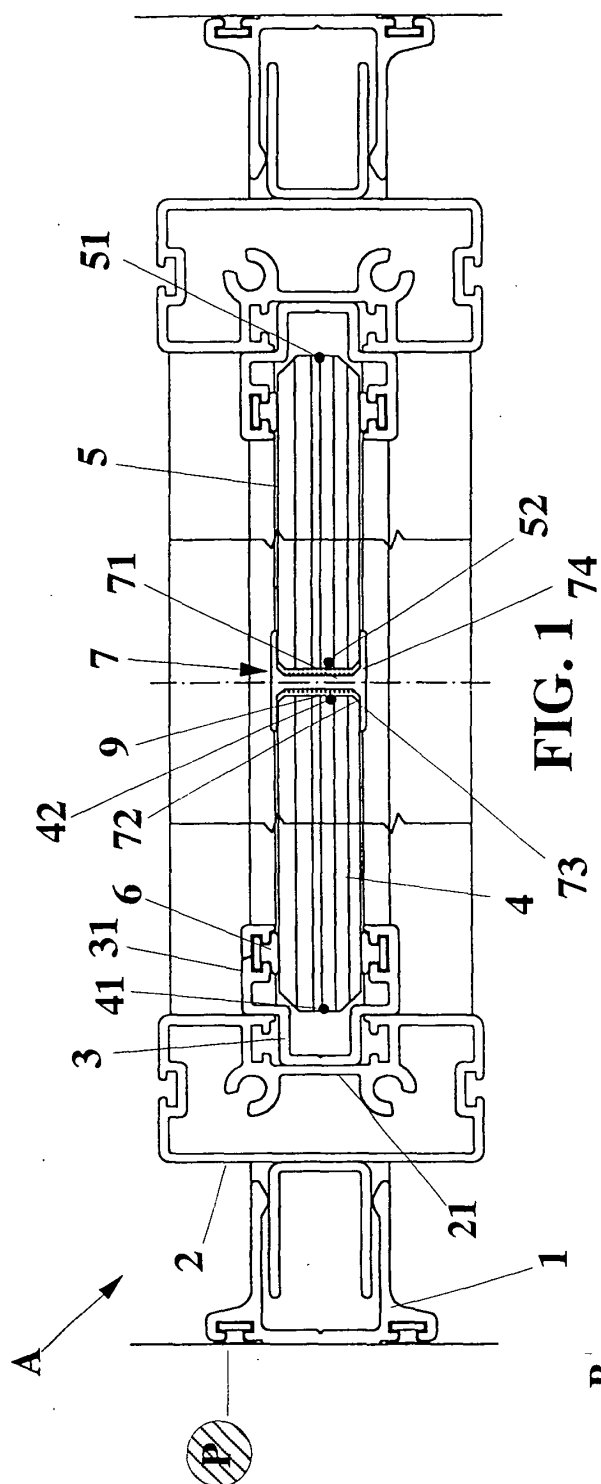
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**FIG. 2**