

**DEVICE FOR ATTACHING A TRANSVERSE VERTICAL PANEL, IN
PARTICULAR A GLASS PANEL, TO A STRUCTURE**

TECHNICAL FIELD OF THE INVENTION

- 5 The invention relates to a device for attaching a transverse vertical panel, in particular a glass panel, to a structure, comprising:
- a support member intended to be attached to the structure;
 - a hook intended to be attached to the panel, the hook being arranged to be slidingly attached to the support member so as to position the panel on the structure;
 - 10 - a flange intended to lock the hook in the hooked position on the support member.

TECHNICAL BACKGROUND

It is known to attach a transverse vertical cladding panel on a structure using an attachment device.

- 15 In a known manner the attachment device comprises a support member which is integral with the structure and a hook which is integral with the panel. The hook is attached to the support member so as to position the panel on the structure.

To ensure the holding of the assembly thus formed, it is known to provide a flange intended to lock the movement of the hook in a direction on the support member. An example of such a
20 device is described in document DE29906465U1.

In known solutions, the flange comprises an elastic rear tab which has a lug intended to be interlocked in a corresponding notch formed behind a face of the support member. The flange also comprises side edges between which the hook is positioned.

- If such a flange makes it possible to lock a transverse movement of the hook with respect to the
25 support member, it is not designed to prevent a movement of the hook in the vertical direction, and due to this, it is not adapted to prevent an unhooking of the panel with respect to the structure.

- Moreover, a flange such as described above is generally mounted once the panel is positioned on the structure. The operator responsible for mounting the flange on the assembly thus formed
30 has a space which is generally reduced,

making the mounting operations difficult. These operations are made all the more difficult, that the flange described above is intended to be mounted behind the support member in a movement from the rear to the front.

To prevent the unhooking of the panels, solutions are known by clamping the hook with respect to the support member, for example by insertion of corners by means of a hammer or by longitudinal clamping of a notched plate against a vertical face of the hook.

These solutions are not satisfactory, as they require a sufficient clamping of the locking element against the hook. Failing a sufficient clamping, the panel risks being unhooked. Furthermore, some of these solutions require the use of tools behind the panel after its installation, often blind, under very constrained accessibility conditions.

Consequently, there is the need to find an attachment solution which makes it possible to prevent the unhooking of a transverse vertical panel with respect to its attachment structure, and which is an easy and rapid mounting.

SUMMARY OF THE INVENTION

The invention proposes a device for attaching a transverse vertical panel, in particular a glass panel, to a structure, comprising:

- a support member intended to be attached to the structure;
- a hook intended to be attached to the panel, the hook being arranged to be slidably attached to the support member so as to position the panel on the structure;
- a flange intended to lock the hook in the hooked position on the support member;

characterised in that the flange has the shape of a U-shaped rider comprising two legs mounted in the support member in an elastically interlocking manner, a force for unhooking the panel being transmitted to the support member by means of the legs of the rider.

According to another aspect of the attachment device achieved according to the teaching of the invention, the legs are connected by a transverse segment, the legs being elastically flexible and each having a lower end provided with a barb.

According to another aspect of the attachment device achieved according to the teaching of the invention, the legs are configured to be engaged respectively in the guide sliders formed on the support member, the sliders projecting over a front face of the support member.

5 According to another aspect of the attachment device achieved according to the teaching of the invention, after insertion of the legs in the sliders, the barbs are opposite one another with lower edges of the sliders, and the transverse segment is positioned above an upper edge of the hook, so as to flatten the hook against the support member in a vertical direction.

According to another aspect of the attachment device achieved according to the teaching of the invention, the flange overhangs the hook and the support member.

10 According to another aspect of the attachment device achieved according to the teaching of the invention, the flange is made of a metal material, such as aluminium.

According to another aspect of the attachment device achieved according to the teaching of the invention, the support member comprises an attachment zone on the structure, called attachment zone, and a zone for receiving the hook, called reception zone, said reception zone
15 being delimited transversally by the guide sliders of the legs.

According to another aspect of the attachment device achieved according to the teaching of the invention, the attachment zone of the support member comprises in a normal direction, at least one orifice configured to receive an attachment member on the structure.

20 According to another aspect of the attachment device achieved according to the teaching of the invention, the sliders of the support member are configured to lock a lateral movement of the hook with respect to the support member.

According to another aspect of the attachment device achieved according to the teaching of the invention, the sliders of the support member are provided with pads forming support zones of the panel against said support member.

25 The invention also relates to an assembly comprising a panel intended to be mounted on a structure, and at least one attachment device achieved according to the teaching of the invention.

According to another aspect of the assembly achieved according to the teaching of the invention, it comprises at least two attachment devices achieved according to the teaching of the invention which are arranged in an upper-right corner and in an upper-left corner of the
30 panel.

According to another aspect of the assembly achieved according to the teaching of the invention, one of the attachment devices comprises a hook which is fixedly attached to its associated support member, the other of said devices comprising a hook which is configured to be attached to the associated support member sliding in a transverse direction with a determined articulation.

According to another aspect of the assembly achieved according to the teaching of the invention, it comprises at least two attachment devices achieved according to the teaching of the invention which are arranged in a lower-right corner and in a lower-left corner of the panel.

According to another aspect of the assembly achieved according to the teaching of the invention, each attachment device comprises a hook configured to be attached to the associated support member sliding in a transverse direction and/or a vertical direction with a determined articulation.

According to another aspect of the assembly achieved according to the teaching of the invention, the attachment device of the lower-right corner and the attachment device of the lower-left corner each comprise a hook which is configured to be attached to the associated support member vertically sliding and transversally sliding according to a defined articulation.

BRIEF DESCRIPTION OF THE FIGURES

Other features and advantages of the invention will appear during reading the detailed description below, for the understanding of which, the accompanying drawings will be referred to, wherein:

Figure 1 is a perspective view which represents a plurality of attachment devices achieved according to the teaching of the invention, the devices being implemented to attach panels on a structure which is presented according to a first configuration.

Figure 2 is a perspective view which represents a plurality of attachment devices achieved according to the teaching of the invention, the devices being implemented to attach panels to a structure which is presented according to a second configuration.

Figure 3 is a perspective view which represents a plurality of attachment devices achieved according to the teaching of the invention, the devices being implemented to attach panels to a structure which is presented according to a third configuration.

Figure 4 is a perspective view which represents a simple support member constituting an embodiment of the attachment device according to the teaching of the invention.

Figure 5 is a perspective view which represents a double support member constituting an embodiment of the attachment device according to the teaching of the invention.

- 5 Figure 6 is a perspective view which represents a variant of the simple support member and a variant of the double support member.

Figure 7 is an exploded perspective view which represents a hook constituting an embodiment of the attachment device according to the teaching of the invention, the hook being positioned with respect to a panel.

- 10 Figure 8 is a side view which represents, at the top, a first hook of figure 7 before mounting on a panel and, at the bottom, a second hook of figure 7 after mounting on the same panel.

Figure 9 is a rear perspective view which represents a panel equipped with hooks of figure 7.

Figure 10 is a side view which represents a first step of mounting the panel of figure 9 on a structure, the structure being equipped with simple support members.

- 15 Figure 11 is a rear perspective view which represents the first mounting step illustrated in figure 10 with details relating to an encircled zone of figure 10.

Figure 12 is a side view which represents a second mounting step subsequent to the step of figure 10.

- 20 Figure 13 is a side view which represents a third mounting step subsequent to the step of figure 12.

Figure 14 is a rear perspective view which represents the third mounting step illustrated in figure 13 with details relating to an encircled zone of figure 13.

Figure 15 is a side view which represents a step of mounting a flange constituting an embodiment of the attachment device according to the teaching of the invention.

- 25 Figure 16 is a perspective view which represents the step illustrated in figure 15 with details relating to an encircled zone of figure 15.

Figure 17 is a side view which represents a position of the flange after the mounting step illustrated in figure 15.

Figure 18 is a perspective view which represents in detail, the position of the flange after the mounting step illustrated in figure 15.

Figure 19 is a view along a cutting plane 19-19 of figure 17 which schematically illustrates an elastic bending of the flange during an interlocking in the support member.

- 5 Figure 20 schematically illustrates a transmission of the forces for unlocking a panel towards the support member by means of the flange.

Figure 21 is a cross-sectional view of an alternative embodiment of the attachment hook.

DETAILED DESCRIPTION OF THE INVENTION

- 10 Below in the description, elements having an identical structure or similar functions will be referred to by one same reference.

Below in the description, the following will be adopted in a non-limiting manner:

- a longitudinal orientation which is directed from the rear to the front in the direction of the arrow "L" in the figures;
- 15 - a vertical orientation which is directed from the bottom to the top in the direction indicated by the arrow "V" in the figures; and
- a transverse orientation which is orthogonal to the vertical orientation and indicated by the arrow "T" in the figures.

- 20 The term "upper" will also be adopted in a non-limiting manner to refer to elements located towards the top in the figures, and the term "lower" will also be adopted in a non-limiting manner to refer to elements located towards the bottom in the figures.

Likewise, the term "inner" will be adopted in a non-limiting manner to refer to an orientation towards a vertical main axis, and the term "outer" will be adopted in a non-limiting manner to refer to an orientation opposite said axis.

- 25 Below in the description, the term "reversible mounting" will be used as meaning that it is possible to detach two parts mounted together reversibly without damaging said parts, nor the attachment means. 4The term "dismountable" will be used in the same meaning.

In figure 1, attachment devices 10 achieved according to the teaching of the invention have been represented, such as implemented to hold the panels 2 in a vertical position on a structure 4, in particular, cladding panels.

5 The panels 2 are made of glass or of any other material. They can, for example, have a vertical dimension greater than a transverse dimension, in which case they are called vertical; or have a transverse dimension greater than a vertical dimension, in which they are called transverse. Each panel 2 has a rear face 21 and a front face 23.

10 The structure 4 comprises at least two uprights 42 which are configured to receive the attachment devices 10. In this case, the structure 4 comprises two end uprights 42a and a central upright 42b. This configuration makes it possible to pool the central upright 42b when it is a question of mounting two columns of panels 2 on the structure 4.

15 Other structural configurations are possible. Thus, as illustrated in figure 2, the structure 4 can comprise one or more intermediate uprights 42c disposed between the central upright 42b and each of the end uprights 42a. The intermediate uprights 42c are also intended to receive attachment devices 10 achieved according to the invention. In this case, these intermediate uprights 42c are of less height and are positioned only on an upper part of the structure 4 for the purpose of receiving transverse panels 2.

20 Likewise, as illustrated in figure 3, the structure 4 can comprise crossmembers 44 which connect the uprights 42. In this case, the attachment devices 10 of the panel 2 are mounted on the crossmembers 44 and not on the uprights 42. Thus, it is possible to freely adjust the axial gap between two attachment devices 10, independently of the gap between the uprights 42.

The structure 4 is generally attached to a stonework element before itself receiving the attachment devices 10 achieved according to the teaching of the invention. The stonework element thus ensures the stability of the structure 4.

25 In a variant not represented of the invention, a stonework element can directly receive attachment devices 10, without needing uprights or crossmembers.

Now, an attachment device 10 is described, achieved according to the teaching of the invention.

30 As illustrated in figure 1, this device 10 comprises a support member 6 which is intended to be attached to the structure 4, and a hook 8 which is intended to be attached to a panel 2. The hook 8 attached to the panel 2 is configured to be attached by a vertical hooking movement towards downwards to the support member 6 attached to the structure 4. Furthermore, the attachment

device 10 comprises a flange 7 which makes it possible to lock the hook 8 in the hooked position on the support member 4 to prevent its unhooking. Such a flange 7 will be described below in the description.

The support member 6 is made of one single part. It mainly comprises an attachment zone 61 on the structure, in particular on an upright or a crossmember, and a zone 65 for receiving a hook. The reception zone 62 has a transverse upper edge 66 on which the hook 8 is intended to bear when it occupies a hooked position. The reception zone 62 is transversally delimited in both directions by two vertical sliders which are arranged so as to form abutments to limit or lock the transverse movement of the hook 8 in both directions when it is in the hooked position.

10 In the embodiment illustrated in figure 4, the support member 6 is formed from a plate which, in the attached position, extends into a transverse vertical plane. The support member 6 thus has a front face 65 and a rear face.

The plate comprises a first section forming the attachment zone 61 and a second section forming the reception zone 62, which is intended to receive the hook 8. The two zones 61, 62 are arranged side by side in a transverse direction, such that the reception zone 62 projects transversally with respect to the upright 42 on which it is attached, as can, for example, be seen in figure 1.

A face, in this case the rear face, of the attachment zone 61 is intended to bear longitudinally on the structure 4. In particular, the attachment zone 61 is provided with at least one attachment orifice 63 which is configured to receive a member for attaching the support member 6 to the structure 4, such as a screw. In this case, the attachment zone 61 comprises two attachment orifices 63 to avoid the support member rotating around one of the attachment screws.

The reception zone 62 is presented in the form of a section of the plate which is delimited in the longitudinal direction by two faces and vertically upwards by an upper transverse edge 66. 25 The reception zone 62 is delimited by two vertical sliders 64 which project over a face of the support member 6, in this case, the front face 65.

The support member 6 illustrated in figure 4 is particularly suitable for being attached to an end upright 42a of the structure 4. Below, such a support member 6 will be called, "end support member" or "simple support member".

30 In an embodiment illustrated in figure 5, the support member 6' comprises an attachment zone 61' on either side of which two reception zones 62a', 62b' extend. The attachment zone 61' is

provided with attachment orifices 63' which are intended to receive a member for attaching the support member 6' to the structure 4. Each reception zone 62a', 62b' is delimited by two vertical sliders 67' identically to what has been described for the zone 62 for receiving the simple support member 6.

5 The support member 6' illustrated in figure 5 is particularly suitable for being mounted on a central upright 42b of the structure 4. Thus, the reception zones 62a', 62b' extend transversally projecting on either side of the central upright 42b. This makes it possible to support two adjacent panels. Below, such a support member 6' will be called "central support member" or "double support member".

10 In the support members 6, 6' described above, the attachment zone 61, 61' and the respective reception zones 62, 62a', 62b' are arranged substantially in one same vertical transverse plane.

In a variant illustrated in figure 6, the support members 6 and 6' have an attachment zone 61, 61' which is offset longitudinally rearwards with respect to their respective reception zones 62, 62a', 62b'. As will be seen below, this features makes it possible, after mounting a panel 2 on a structure 4, to have a wider space between the panel and the stonework element, for example to insert thermal or phonic thermal insulating element layers. Furthermore, this wider space facilitates the subsequent mounting of a flange 7.

Each support member 6, 6' is, in this case, made of a metal material, such as aluminium or steel. However, any other material having mechanical properties suitable for supporting such panels can be considered for manufacturing this support member 6, 6'.

Now, the hook 8 is described in reference to figures 7 and 8. The hook 8 comprises a front vane 81 and a rear vane 82 which are connected together to form a transverse upper edge 83. Each vane 81, 82 mainly extends into a transverse vertical plane. The vanes 81, 82 longitudinally delimit a notch 84 which is open downwards. The front vane 81 and the rear vane 82 are each provided with an orifice 81a, 82a formed in a longitudinal direction. These orifices 81a, 82a, respectively called front orifice and rear orifice, are arranged longitudinally coinciding to form a passage intended to receive a member 9 for attaching the hook 8 to a panel 2, such as a screw. The rear orifice 82a is best illustrated in figures 11 and 14.

The front vane 81 has a front face 85 which is intended to be positioned facing the rear face 21 of the panel 2. In particular, the front face 85 comprises an upper portion 85a and a lower portion 85b. Said portions 85a, 85b are defined on either side of a transverse groove 85c.

Furthermore, said portions 85a, 85b are each provided with a housing, in this case transverse, wherein a buffer 86a, 86b is attached. The buffers 86a, 86b are made of a flexible material and project with respect to the front face 85. Thus, the buffers 86a, 86b are intended to bear against the rear face 21 of the panel 2. Such an arrangement of the buffers 86a, 86b makes it possible to prevent a marking of the rear face 21 of the panel 2 and to thus protect its structural integrity, as well as its aesthetic appearance.

The attachment orifice 81a passes through the front face 85 at the transverse groove 85c. Thus, this guarantees that the clamping forces of the screw will only be transmitted to the panel 2 by means of buffers 86a, 86b.

The front vane 81 is passed through in its thickness in a transverse direction by an upper opening 87a and a lower opening 87b. These openings extend between opposite side faces 87 of the front vane 81. Furthermore, these openings 87a, 87b contribute to alleviating the hook 8.

Still in reference to figures 7 and 8, the member 9 for attaching the hook 8 to the panel 2 comprises a female part 91 and a male part 92. The female part 91 comprises a tapped sleeve 91a which is equipped with a head 91b. The male part 92 is presented in the form of a screw comprising a threaded body 92a provided with a head 92b. The threaded body 92a of the male part 92 is intended to be screwed in the tapped sleeve 91a of the female part 91 to attach the hook 8 to the panel 2 by clamping the front vane 81 of the hook 8 and of the panel 2 between the two heads 91b and 92b.

In the example represented in the figures, the female part 91 is in this case intended to be mounted through an opening 22 of the panel 2, and the male part 92 is intended to be mounted through the passage formed by the orifices 82a, 81a of the hook 8.

The heads 91b, 92b are milled, in this case. They are received in millings made respectively in the panel 2 and in the hook 8. The diameter of the front orifice 81a is less than that of the head 92b of the screw so as to attach the hook 8 to the panel by clamping between the two heads 91b, 92b.

In a variant not represented of the invention, the male part 92 is intended to be mounted through the opening 22 of the panel 2, and the female part 91 is intended to be mounted through the passage formed by the orifices 82a, 81a of the hook 8.

To attach the hook 8 to the panel 2, the front face 85 of said hook is initially positioned facing the rear face 21 of said panel. The buffers 86a, 86b previously attached to the hook 8 are thus

placed against the rear face 21 of the panel 2. This positioning of the hook 8 with respect to the panel 2 is achieved by ensuring that the passage formed by the orifices 81a, 82a of said hook 8 is aligned with the opening 22 of said panel 2.

Secondly, one of the two parts, in this case, the female part 91 of the attachment member 9 is inserted through the opening 22 of the panel 2. Likewise, the other of the two parts, in this case, the male part 92 of the attachment member 9 is inserted through the rear orifice 82a of the hook 8. Said rear orifice 82a has a diameter which is greater than that of the head 92b. This makes it possible for the whole male part 92 to pass through the rear vane 82 to reach the front vane 81 and bear in the milling surrounding the front orifice 81a of the hook 8.

Finally, a screwing operation is performed to couple the threaded body 92a of the male part 92 with the tapped sleeve 91a of the female part 91. At the end of this operation, the head 92b of the male part 92 is abutted against the milling (not illustrated) of the front orifice 81a. Likewise, the head 91b of the female part 91 is abutted against the milling 22a of the opening 22 of the panel 2. The panel 2 thus forms with the hook 8, a movable subassembly capable of being mounted on a fixed subassembly formed by the structure 4 and the support member 6.

A movable subassembly formed by a panel 2 and four hooks 8 is represented in figure 9. The hooks 8 are attached to the rear face 21 of the panel 2 respectively in an upper-right corner, an upper-left corner, a lower-right corner and a lower-left corner. Below, these hooks 8 will be respectively called upper-right hook 8A, upper-left hook 8B, lower-right hook 8C, and lower-left hook 8D.

In a variant, when the dimensions and/or the weight of the panel 2 requires a greater number of attachment points, said panel 2 is equipped with a greater number of hooks (see figure 2).

In reference to figures 10 to 14, steps for mounting the movable subassembly of figure 9 on a fixed subassembly formed by a structure 4 and four support members 6 is represented.

In a first step illustrated in figures 10 and 11, the movable subassembly is positioned facing the fixed subassembly, then is progressively moved towards the latter in a longitudinal direction, from the front to the rear. Then, approaching or in contact with the fixed subassembly, the movable subassembly is adjusted so as to vertically align the hooks 8 and the reception sections 62 of the associated support members 6 (figure 12). Finally, as illustrated in figures 13 and 14, the movable subassembly is slid in a vertical direction from top to bottom leading to a vertical hooking of the hooks 8 along the associated support members 6.

To guide the hooking, the rear vane 82 of each hook 8 has a lower end section 82b slightly folded rearwards. Such an inclination gives the notch 84, as a side view, a profile flared downwards, and a wider access.

After hooking, as best illustrated in figure 14, the front 81 and rear 82 vanes of each hook 8 are positioned longitudinally on either side of the reception section 62 of the associated support member 6. Thus, said hook 8 is longitudinally attached with respect to said support member 6.

In addition, each hook 8 has its upper edge 83 positioned above an upper edge 66 of the associated support member 6. More specifically, the two upper hooks 8A, 8B are each in contact with the upper edge 66 of the adjacent support member 6 to lock the panel 2 vertically downwards with respect to said support member.

To avoid the disadvantages linked to a hyperstatic mounting, and to enable a dilatation of the panel 2, a vertical clearance is reserved between the lower hooks 8C, 8D and the upper edges 66 of the associated support members 6. This clearance is represented in figure 9 by the arrow JV.

Furthermore, the front vane 81 is received between the two sliders. The front vane of the upper-right hook is received between the two sliders with a clearance which is just sufficient for its insertion, such that the hook is locked transversally sliding in both directions with respect to the support member. One of the upper hooks, in this case, the upper-left hook 8B, and the two lower hooks are mounted with a transverse articulation on the associated support member 6. To this end, the front vane 81 of these hooks has a transverse width less than the gap between the two sliders to enable the transverse articulation. The panel is thus attached in the transverse position by the upper-right attachment device. The transverse articulation is represented in figure 9 by the arrow DT.

Moreover, the panel 2 also longitudinally bears on the sliders 64 of the support members 6. Pads 67 are interposed between the sliders 64 and the rear face 21 of the panel 2 to reduce the clearances and the noise due to the vibrations and the movements of the structure. The pads 67 are best illustrated in figure 5.

The hooks 8 thus limit the movements of the panel 2 in all directions, except for upwards, in an unhooking direction.

To prevent a removal of the movable subassembly vertically with respect to the fixed subassembly, in other words, to prevent an unhooking of the panel 2 from its hooked position

on the structure 4, a flange 7 is provided at at least one of the points for attaching said panel 2 to said structure 4.

The flange 7 is configured to elastically engage with the support member 6. To this end, as best illustrated in figure 16, the flange 7 has the shape of a U-shaped rider which comprises two vertical legs 71, 72 elastically flexible in a transverse plane. The legs 71, 72 are connected by a transverse segment 73. Said legs 71, 72 and said transverse segment 73 are made of one single part which is made, for example, of a metal material, such as aluminium or steel.

The legs 71, 72 together define a gap, called nominal gap, when they are at rest. They each have a distal end provided with a barb 71a, 72a. In particular, each barb 71a, 72a projects outwards from the flange 7 in the transverse direction. In this case, each barb 71a, 72a has an upper face which extends projecting with respect to the leg 71a, 72a which carries it, and a lower face which obliquely extends with respect to the vertical direction. As a front view, each barb 71a, 72a is presented, in this case, in the form of a peak half-tip rotated downwards.

In reference again to figure 4, the support member 6 has at its sliders 64, housings 64a which are delimited outwards by an outer wall. The outer walls are separated from one another by a distance "d", taken transversally, slightly less than the nominal gap of the projecting edges of the barbs of the legs 71, 72.

In a variant of the invention which is not represented, each barb projects inwards from the flange 7. In this case, the housings of the sliders are delimited inwards by an inner wall. The inner walls are thus separated from one another by a transverse distance slightly greater than the nominal gap of the projecting edges of the barbs of the legs.

The housings 64a are configured to receive the legs 71, 72 of the flange 7 by elastic interlocking. This interlocking is done as follows.

The housings 64a have a tubular shape with a closed profile which makes it possible to guide the legs, vertically sliding.

First, the inclined faces of the barbs 71a, 72a come into contact with upper edges of the outer walls of the sliders 64. These inclined faces are intended to facilitate an insertion of the legs 71, 72 in the housings 64a, by upper openings of the sliders 64.

In reference to figure 19, it can be noted that during such an insertion, due to the projecting position of the barbs 71a, 72a outwards from the flange 7, and due to the gap of the legs 71, 72 which is slightly greater than the distance "d" separating the outer walls of the sliders 64, said

legs are stressed in elastic bending inwards from the flange 7. The insertion of the legs 71, 72 in the sliders 64 is generated by a vertical force directed downwards and represented by the arrow F_i . The bending of the legs 71, 72 is represented by the arrow F_f .

All along their travel through the housings 64a, the legs 71, 72 remain bent, and the barbs 71a, 72a remain in contact with the outer wall of said housings.

As illustrated in figure 20, the barbs 71a, 72a end their travel by opening onto the lower openings of the sliders 64. The legs 71, 72 are thus elastically returned to their rest position. The upper faces of the barbs 71a, 72a are opposite the lower edges of the sliders 64, and more specifically, vertically abutted against said lower edges. Opposite, the transverse segment 73 is flattened against the upper edge 83 of the hook 8.

The flange 7 thus overlaps the hook 8 and overhangs the support member 6.

As a result, a locking of the hook 8 in the hooked position on the support member 6, and consequently, a locking of the panel 2 on the structure 4 by means of the flange 7. In other words, the flange 7 prohibits any vertical movement of the panel 2, from bottom to top, thus preventing an unhooking of said panel with respect to the structure 4.

Thus, according to the invention, a force F_d for unhooking the panel 2 is transmitted to the support member 6 by means of the legs 71, 72 of the flange 7, generating a vertical fraction in said legs. The force in the support member 6 is represented by the arrow F_s . The traction force in the legs is represented by the arrow F_j .

Advantageously, the flange 7 is associated with the support member 6 and with the hook 8 according to a mounting which comprises one single movement, which is executed in one single direction, namely the vertical direction from top to bottom. In this way, the invention simplifies the method for locking the hook 8 on the support member 6, and due to this, facilitates the locking of a panel 2 mounted on a structure 4. It is in particular possible to easily achieve this movement, even when the support member is not very accessible and that the operator only has little visibility.

To release the flange 7 from its interlocked position in the sliders 64, and thus enable an unhooking of the panel 2, a pressure is exerted on the barbs 71a, 72a, oriented transversally inwards from said flange 7 (by crimping the flange). Simultaneously, the transverse segment 73 of the flange 7 is gripped and it is pulled upwards.

Thus, the flange 7 according to the invention can be reversibly mounted on the support member 6. In other words, the flange 7 is dismountable.

Figure 21 is a cross-sectional view of the attachment device 10 at the upper hook 8.

5 The hook 8 comprises, in this case, in particular, two walls 89a, 89 in contact, in the installed state, with the support member 6, 6', i.e. the walls inside the hook 8 which have a curved or convex shape.

10 These curved walls 89a, 89b make it possible to reduce the support surface against the support member 6, 6' and therefore to avoid a hyperstatic mounting, due to having several hooks 8 per panel 2 which could make the mounting and dismounting of the panel 2 on the support member 6, 6' difficult, as the hooks 8 would thus be able to wedge the panel 2 in a potentially unaligned position.

CLAIMS

1. Device (10) for attaching a transverse vertical panel (2), in particular a glass panel, to a structure (4), comprising:

5 a support member (6, 6') intended to be attached to the structure (4);

a hook (8) intended to be attached to the panel (2), the hook (8) being arranged to be slidably attached to the support member (6, 6'), so as to position the panel (2) on the structure (4);

10 a flange (7) intended to lock the hook (8) in the hooked position on the support member (6, 6');

characterised in that the flange (7) has the shape of a U-shaped rider comprising two legs (71, 72) mounted in the support member (6, 6') in an elastically interlocking manner by overlapping the hook (8), a force for unhooking the panel (2) being transmitted to the support member (6, 6') by means of the legs (71, 72) of the rider (7).

15 2. Attachment device (1) according to the preceding claim, characterised in that the legs (71, 72) are connected by a transverse segment (73), the legs (71, 72) being elastically flexible and each having a lower end provided with a barb (71a, 72a).

20 3. Attachment device (10) according to the preceding claim, characterised in that the legs (71, 72) are configured to respectively be engaged in guide sliders (64, 64') formed on the support member (6, 6'), the sliders (64, 64') projecting over a front face (65, 65') of the support member (6, 6').

25 4. Attachment device (10) according to the preceding claim, characterised in that, after insertion of the legs (71, 72) in the sliders (64, 64'), the barbs (71a, 72a) are opposite one another with the lower edges of the sliders (64, 64'), and the transverse segment (73) is positioned above an upper edge (83) of the hook (8), so as to flatten the hook (8) against the support member (6, 6') in a vertical direction.

30 5. Attachment device (10) according to any one of the preceding claims, characterised in that the flange (7) overhangs the hook (8) and the support member (6, 6').

6. Attachment device (10) according to any one of the preceding claims, characterised in that the flange (7) is made of a metal material, such as aluminium.

7. Attachment device (10) according to any one of claims 3 to 6, characterised in that the support member (6, 6') comprises an attachment zone on the structure (4), called attachment zone (61, 61'), and a zone for receiving the hook (8), called reception zone (62, 62a', 62b'), said reception zone being delimited transversally by the sliders (64, 64') for guiding the legs (71, 72).

8. Attachment device (10) according to the preceding claim, characterised in that the attachment zone (61, 61') of the support member (6, 6') comprises, in a normal direction, at least one orifice (63, 63') configured to receive an attachment member on the structure (4).

9. Attachment device (10) according to any one of claims 3 to 8, characterised in that the sliders (64, 64') of the support member (6, 6') are configured to lock a lateral movement of the hook (8) with respect to the support member (6, 6').

10. Attachment device (10) according to any one of claims 3 to 9, characterised in that the sliders (64, 64') of the support member are provided with pads (67, 67') forming zones for supporting the panel (2) against said support member (6, 6').

11. Assembly comprising a panel (2) intended to be mounted on a structure (4), and at least one attachment device (10) achieved according to the teaching of the invention.

12. Assembly according to the preceding claim, characterised in that it comprises at least two attachment devices (10) achieved according to the teaching of the invention which are arranged in an upper-right corner and in an upper-left corner of the panel (2).

13. Assembly according to the preceding claim, characterised in that one of the attachment devices (10) comprises a hook (8) which is fixedly attached to its associated support member (6, 6'), the other of said devices (10) comprising a hook (8) which is configured to be slidably attached to the associated support member (6, 6') in a transverse direction with a determined articulation.

14. Assembly according to any one of claims 11 to 13, characterised in that it comprises at least two attachment devices (10) achieved according to the teaching of the invention which are arranged in a lower-right corner and in a lower-left corner of the panel (2).
- 5 15. Assembly according to the preceding claim, characterised in that each attachment device (10) comprises a hook (8) configured to be slidably attached to the associated support member (6, 6') in a transverse direction and/or a vertical direction with a determined articulation.