

**Title: Mounting for panels attached at a supporting
 construction**

Description

The invention relates to a mounting for panels, which is
5 attached at a supporting construction by means of a joining
member, having a torsion-resistant connection to the
supporting construction and presenting a joining thread for
the connection to a spacer, distancing the panel in relation
to the supporting construction, which spacer, at the end
10 thereof oriented towards the panel, presents a joining
thread for the connection to a panel holder.

On the one hand, the above mentioned type of mounting
has to offer a possibility for a torsion-resistant connection
to a supporting construction and, on the other hand, a
15 possibility for a connection of a glass panel or the like,
whereby it is desired that the mounting provides length
adaptability to compensate for construction tolerances, i.e.
the structural members of the mounting have to be
designed such that, in order to allow for realization of an
20 aligned disposition of adjoining glass panels or façade
panels, the distance between the connection of the
mounting to the supporting construction and the glass
panel or the façade panel is adaptable and lockable. As a
general rule, a spacer being a component of the mounting
25 serves this purpose.

The document DE 195 28 489 A1 describes a device of this species. In the known state-of-the-art glass pane holder a threaded bolt, welded to a support, is provided, which bolt is overlapped by a locating sleeve forming a
5 spacing member. The threaded rod of a panel holder is screwable into the ball-joint-shaped head of the locating sleeve, the screw-in depth of the threaded rod into the locating sleeve being determined through the abutment of a support plate of the panel holder at the locating sleeve,
10 i.e. the threaded rod, respectively the ball-joint-shaped head of the locating sleeve are not suitable for distancing the glass pane in relation to the support.

The document DE 93 18 862 U1 discloses a mounting for multi-layer insulating glass panes, in which a mounting bolt
15 is screwable into a mounting sleeve and securable therein, while providing a possibility for tolerance compensation. In this case again, a single screw connection allows for providing the distancing between the glass pane and the supporting construction.

20 The solution, according to DE 195 19 526 A1 for the mounting of panels, offers the same approach, wherein the shank part of a support member, at the end thereof turned away from the ball-and-socket head, engages with a thread into a fixed structural member referenced as a building.

- With regard to the clamping fitting for the attachment of glass panes according to DE 197 13 038 C2, a single point fixing, clamping the glass pane, is connected to a wall by means of a clamp screw. A spacing nut screwed to an adjustable nut serves for providing the required distancing, which spacing nut allows for adjusting the distance between the wall and the glass pane while using an intermediate distance sleeve. A holder for a glass pane is known from DE 196 23 797 A1, wherein a single point fixing is supported at a load-bearing framework via a support member. The support member passes with a threaded journal through a borehole in the load-bearing framework and is locatable at the load-bearing framework on both sides of the borehole by means of lock nuts.
- 15 The above mentioned connections between a panel and a supporting construction have in common that each time only a single adjustable member is provided, serving to modify the distance between a panel and a supporting construction.
- 20 It is an object of the invention to provide a mounting for the connection of glass panels, of façade panels or the like to a supporting construction, by means of which the distance between the supporting construction and the panel is adjustable and lockable in a simple way. Moreover, the possibility for a major distance modification in conjunction
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with the possibility for an optimized fine adjustment should be guaranteed. The connection of the mounting to the glass panel or to the façade panel can be optionally formed, for example in the shape of a single point fixing, by
5 means of a so-called spider, or the like.

The invention solves the given problem with the characteristics of claim 1.

By virtue of the adjustability of the spacer, in relation to the joining member as well as to the panel holder, the possible
10 adjusting length is doubled compared to the same structural length of the state-of-the-art spacer, while guaranteeing an exact fine adjustment.

Further features of the invention are characterized by the dependent claims.

15 A mirror-symmetrical disposition of the structural members of the joining member connected to the spacer, on the one hand, and of the panel holder at the spacer, on the other hand, allows for using identical structural members for the joining member and for the panel holder. The allocation of
20 the same threaded journals to the spacer, both at the end oriented towards the supporting construction and at the end oriented towards the panel, allows for a symmetrical design of the spacer and thus for simple and cost effective manufacture.

In a way to be described below, the grooves, extending at the spacer in the direction of the axis of the spacer and intersecting the joining thread of the threaded journal, serve as a torsion-resistant device between the spacer, on the one hand, and, on the other hand, the joining member, respectively the panel holder, advantageously each threaded journal of the spacer presenting four grooves in diametrical disposition.

A simple technical embodiment of the joining member and of the panel holder results from a further embodiment of the invention, if the joining member and the panel holder are formed as sleeve-shaped nuts, overlapping the joining thread of the spacer, the aforementioned nuts being secured against axial displacement by means of associated lock nuts.

While preventing the joining member respectively the panel holder from a possible axial displacement in relation to the spacer through the aforementioned lock nuts, an additional torsion-resistant device is guaranteed in that threaded boreholes are disposed in the walls of the nuts for the reception of headless screws, that are screwable into the grooves of the threaded journals described above, one headless screw being screwable into each of the four grooves of a threaded journal. This results in the advantage of an exactly controllable adjustment, because,

with a rotation of the joining member, respectively the panel holder, about a quarter of the circumference thereof, a locking is possible between the spacer, on the one hand, and the joining member respectively the panel holder, on
5 the other hand.

In a further embodiment of the invention, this fine adjustment can be improved, if the joining threads of the joining member and of the panel holder are formed as fine pitch threads.

- 10 The joining thread of the joining member and of the panel holder can be formed optionally as a thread having the same thread direction or having a different thread direction; in the latter case a single rotational actuation of the spacer allows for achieving a simultaneous axial regulation of
15 both, the joining member and the panel holder in relation to the spacer.

As described above, the structural members of the joining member and of the panel holder are mirror-symmetrically disposed at the spacer; this applies to the structural
20 members serving for the axial regulation and thus for the fine adjustment; moreover, in a further embodiment of the invention, the panel holder can constitute the direct or indirect connection for a single point fixing of a glass panel or of a façade panel, i.e. the holder can be optionally

designed for the connectability to a panel, to a so-called spider, or the like.

The functional actuation of the above described mounting requires that the joining member has a torsion-resistant
5 connection to the supporting construction; this torsion-resistant connection can basically consist of a releasable screw connection; however, the connection between the joining member and the supporting construction is preferably executed through welding.

10 According to another characteristic of the invention, while suppressing the threaded journals disposed at the spacer and for achieving a further simplified manufacture, the spacer can be practically formed as a threaded bolt and present a joining thread over the total length of the
15 longitudinal extension thereof and can present grooves intersecting the joining thread.

The invention will now be described in more detail, on the basis of two embodiment examples, in which:

Figure 1: is a view of the mounting while using threaded
20 journals.

Figure 2: is a view of the mounting while using a threaded bolt.

In the Figure 1 and 2, identical structural members are referenced with the same reference numerals.

A mounting 1 according to Figure 1 essentially consists of a spacer 3, which presents threaded journals 9 at both ends thereof. The lower threaded journal 9 with respect to the image plane is screwed, via a joining thread 6, to a joining member 4, which is welded to a supporting construction 2. The upper threaded journal 9 with respect to the image plane is correspondingly screwed to a panel holder 5 via a joining thread 6. It is noticeable that, on the one hand, the threaded journals 9 are disposed at an end 7 of the spacer 3 oriented towards the not-illustrated panel and, on the other hand, at an end 8 of the spacer 3 oriented towards the supporting construction 2. In symmetrical disposition with respect to the spacer 3, grooves 10, extending in axial direction A, are provided in the region of the threaded journal 9, into which grooves headless screws 15 are screwable, forming a torsion-resistant device. The headless screws 15 pass through threaded boreholes 14 in a joining member 4, respectively in a panel holder 5 formed as a nut 11. It is noticeable that respectively four diametrically opposed grooves 10 are provided. The axial location between the spacer 3, on the one hand, and the joining member 4, respectively the panel holder 5, on the other hand, is realized through lock nuts 12 locatable at the joining member 4, respectively at the panel holder 5.

The embodiment example according to Figure 2 is different from the embodiment example according to Figure 1 merely in that a spacer referenced with 3' is formed as a threaded bolt and in that grooves referenced with 10', as well as the joining thread 6' extend over the total length of the spacer 3.

References

	1	mounting
	2	supporting construction
	3	spacer
5	3'	spacer
	4	joining member
	5	panel holder
	6	joining thread
	6'	joining thread
10	7	end of the spacer
	8	end of the spacer
	9	threaded journal
	10	grooves
	10'	grooves
15	11	nut
	12	lock nut
	13	wall
	14	threaded borehole
	15	headless screw
20	Arrow A	direction of axis

Patent claims

1. A mounting (1) for panels, which is attached at a supporting construction (2) by means of a joining member (4) having a torsion-resistant connection to the supporting construction (2) and presenting a joining thread (6, 6') for the connection to a spacer (3, 3') distancing the panel in relation to the supporting construction (2), which spacer, at the end (7) thereof oriented towards the panel, presents a joining thread (6, 6') for the connection to a panel holder (5), characterized in that the spacer (3, 3'), in relation to the joining member (4) and to the panel holder (5), is axially adjustable and lockable.
2. A mounting according to claim 1, characterized in that the structural members of the joining member (4) and of the panel holder (5) are mirror-symmetrically disposed at the spacer (3, 3').
3. A mounting according to claim 1 and 2, characterized in that the spacer (3), at the end (8) thereof oriented towards the supporting construction (2) and at the end thereof (7) oriented towards the plate, presents identical threaded journals (9).

4. A mounting according to any of the claims 1 to 3, characterized in that the spacer (3) presents grooves (10), extending in the axial direction (arrow A) of the spacer (3) and intersecting the joining thread (6) of the threaded journal (9).
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5. A mounting according to claim 4, characterized in that each threaded journal (9) of the spacer (3) presents four grooves (10) in diametrical disposition.
- 10 6. A mounting according to any of the claims 1 to 5, characterized in that the joining member (4) and the panel holder (5) are formed as sleeve-shaped nuts (11) overlapping the joining thread (6, 6') of the spacer (3, 3').
- 15 7. A mounting according to any of the claims 1 to 6, characterized in that the nuts (11) are secured against axial displacement by means of lock nuts (12).
- 20 8. A mounting according to any of the claims 1 to 7, characterized in that threaded boreholes (14) are provided in a wall (13) of the nuts (11) for the accommodation of headless screws (15), that are screwable into the grooves (10) of the threaded journals (9).

9. A mounting according to claim 8, characterized in that one headless screw (15) is associated to each groove (10) of a threaded journal.
- 5 10. A mounting according to any of the claims 1 to 9, characterized in that the joining threads (6, 6') of the joining member (4) and of the panel holder (5) are formed as fine pitch threads.
- 10 11. A mounting according to any of the claims 1 to 10, characterized in that the joining thread (6, 6') of the joining member (4) and of the panel holder (5) is formed as threads having the same thread direction.
- 15 12. A mounting according to any of the claims 1 to 11, characterized in that the joining thread (6, 6') of the joining member (4) and of the panel holder (5) is formed as thread having different thread directions.
- 20 13. A mounting according to any of the claims 1 to 12, characterized in that the panel holder (5) forms the indirect or the direct connection for a single point fixing of a glass panel or of a façade panel.
14. A mounting according to any of the claims 1 to 13, characterized in that the joining member (4) is welded to the supporting construction.

15. A mounting according to any of the claims 1 to 14,
characterized in that the spacer (3') presents a
joining thread (6'), extending over the total length
of the longitudinal extension thereof, and grooves
5 (10') intersecting the joining thread (6').