

SECURING DEVICE FOR A PANE OF GLASS

Description

The present invention relates to an attachment device for a glass pane at a wall, at a substructure fixed to the building, or the like, using a clamping fitting clamping the glass pane, and
5 a mounting restricted three-dimensionally articulately supported at the clamping fitting. An earlier application of the applicant (file number 199 15 193.8), which is not yet included in the state-of-the-art, relates to a clamping fitting, at which
10 interior clamping element a coupling bell is supported with adjustable pre-stress, whereby a permanently elastic spring member is arranged between the coupling bell and the interior clamping element, which member allows a relative movement of the coupling bell with regard to the clamping element. The
15 permanently elastic spring member practically forms a restricted three-dimensionally articulated connection between the clamping fitting and the mounting fixed to the building, and joining the clamping fitting. In this case, the permanently elastic spring member serves to compensate stress
20 introduced into the glass pane and can be executed for example as an elastic cushion.

It is desirable with the aforementioned attachment device species, to execute the connection between the clamping fitting, clamping the glass pane, and a wall, a substructure or
25 another glass pane, such to stress-free compensate tolerances of the components to be connected. This is particularly important when it comes to connect a glass pane with a wall or a substructure. In this case, it may be required to connect the clamping fitting, clamping the glass pane, or the
30 so-called single point fixing via a mounting with a wall, with a

substructure or the like, which provides this mounting with a multiple support at the wall respectively at the substructure.

On the basis of a clamping fitting species described above, the invention solves the problem with the teaching according
5 to claim 1.

According to this the mounting comprises a two-armed connector bridge, which is locatable at the clamping fitting by means of a central holding tenon, and at which exterior free ends stiffening connector joints are arranged for the respective
10 connection with a compensating axle, which at its end opposite to the connector bridge is connected via a stiffening articulation with an adapter for attachment at a wall, at a substructure or the like.

All forces, which are introduced into the clamping fitting
15 holding the glass pane, are transferred via the before-described connector bridge to two compensating axles, which at their free end are fastened via appropriate adapters for example to a wall or to any other optional component. As stiffening articulations are arranged at both free ends of the
20 compensating axle, on the one hand each of both individual adapters is perfectly connected, taking into account possible building tolerances, and on the other hand, thanks to the articulations' stiffening capability, it is possible to completely stiffen the mounting, once assembly is completed.

25 Further features of the inventive embodiments are characterised by the sub-claims.

Articulated forks executed at the exterior free ends of the connector bridges' arms are an advantage, whereas, at the

opposite free ends of the compensating axle, articulated fishplates are arranged, whereby these articulated fishplates are preferably rotated by 90° with regard to each other. It is obvious that as a result of kinematic inversion, for example the articulated forks can be provided at the compensating axles, and appropriate articulated fishplates can be provided at the connector bridge respectively at the adapter.

For stiffening the above described articulations, the articulated forks of the connector bridge and the articulated fishplates of the compensating axles as well as the articulated forks of the adapters present aligned boreholes to accommodate clamp screws.

According to the inventive embodiment of the above described mounting, it is obviously possible to attach for example one of the adapters at a vertical wall and the second adapter at a ceiling running orthogonally with regard to the aforementioned wall. The articulations executed as foregoing are suitable for said installation.

In a further embodiment, the connector bridge's arms and the holding tenon locatable at the clamping fitting are executed as one-piece, that means these components form one in itself rigid T-part.

The proper fastening of the connector bridge's holding tenon at the clamping fitting is realised by means of a union nut overlapping a coupling bell of the clamping fitting. At their envelope surfaces the union nut, the holding tenon and the compensating axles present wrench areas, which are provided to turn the individual components during assembly into the required position for adaptation to building tolerances, prior to

stiffen the articulations and prior to fasten the holding tenon between the coupling bell and the union nut. In yet another embodiment of the invention, the articulated fishplates can be rotatably supported in the compensating axles.

- 5 As a result, the invention proposes an attachment device for a glass pane, which mounting presents two support points respectively two connection points, whereby the mounting's components are adjustable and can be stiffened after completed adjustment in a way that they not only provide an
10 adaptation to extremely high building tolerances but they can also be connected to structural units of a substructure which for example are in an angled arrangement.

Hereinafter the invention is explained in detail on the basis of one embodiment example. It shows:

- 15 Figure 1: a perspective illustration of the attachment device.

Figure 2: a lateral view.

Figure 3: a top view on the illustration according to Figure 2.

- 20 An attachment device generally identified by the reference numeral 1 comprises a clamping fitting 4 to clamp a glass pane 2 (Figures 2 and 3). The clamping fitting 4 can be basically optionally composed, however it should include a restricted three-dimensionally articulated connection of the
25 mounting generally identified by the reference numeral 5. The mounting 5 engages the clamping fitting 4 with a holding tenon 7, whereby the holding tenon 7 is fastened at the clamping

fitting 4 between a coupling bell 20 and a union nut 21. A connector bridge 6 with the holding tenon 7 is executed as one-piece. Stiffening connector joints 10 executed as articulated forks 15 are arranged at the free ends 9 of the connector bridge's 6 arms 8. Articulated fishplates 17 of two compensating axles 11, 11' engage into these articulated forks 15. At an end 12 of the compensating axles 11 respectively 11' opposite to the connector bridge 6, there are likewise stiffening articulations 13, which respectively consist of an articulated fork 29 being integral part of an adapter 14, and of the articulated fishplates 17 of the compensating axles 11 respectively 11'. The articulated fishplates 17, arranged at the free ends 12, 16 of the compensating axles 11, 11', can be replaced by articulated forks, as a result of the kinematic inversion of the articulation execution. The connector joints 10 and 13 are stiffened by means of clamp screws 19 penetrating the aligned boreholes 18.

As the drawings furthermore reveal, at its envelope surface 22 the union nut 21 is equipped with a wrench area 24, whereas a wrench area 25 is provided at an envelope surface 23 of the holding tenon 7 and another wrench area 27 is provided at an envelope surface 26 of the compensating axles 11, 11'. These wrench areas 24, 25, 27 serve to adjust the mounting 5 during assembly respectively to tighten the holding tenon 7 between the coupling bell 20 and the union nut 21.

The adapters 14 attachable at a wall 3 or the like consist of two components rotatable in opposite directions with regard to each other, their position towards each other can be fixed via hexagon socket screws 28.

References

	1	Attachment device
	2	Glass pane
	3	Wall
5	4	Clamping fitting
	5	Mounting
	6	Connector bridge
	7	Holding tenon
	8	Arms of connector bridge
10	9	Free ends of connector bridge
	10	Stiffening connector joints
	11	Compensating axle
	11'	Compensating axle
	12	End of compensating axle
15	13	Connector joint / stiffening articulation
	14	Adapter
	15	Articulated forks
	16	Free end of compensating axle
	17	Articulated fishplates
20	18	Boreholes
	19	Clamp screws
	20	Coupling bell
	21	Union nut
	22	Envelope surface
25	23	Envelope surface
	24	Wrench area
	25	Wrench area
	26	Envelope surface
	27	Wrench area
30	28	Hexagon socket screw
	29	Articulated forks



Patent claims

1. An attachment device for a glass pane (2) at a wall (3), at a substructure fixed to a building or the like, using a clamping fitting (4) clamping the glass pane (2), and a mounting (5) restricted three-dimensionally articulately supported at the clamping fitting (4), characterised in that the mounting (5) presents a two-armed (arms 8) connector bridge (6) locatable at the clamping fitting (4) by means of a central holding tenon (7), at which exterior free ends (9) stiffening connector joints (10) are arranged for the respective connection of a compensating axle (11, 11'), which at its end (12) opposite to the connector bridge (6) is connected via a stiffening articulation (13) with an adapter (14) for attachment at a wall (3), at a substructure or the like.
2. An attachment device according to claim 1, characterised in that articulated forks (15) are executed at the exterior free ends (9) of the connector bridge's (6) arms (8).
3. An attachment device according to claim 1, characterised in that articulated fishplates (17) are arranged at the opposite free ends (12, 16) of the compensating axle 11, 11'.
4. An attachment device according to claim 3, characterised in that the articulated fishplates



(17) are arranged rotated by 90° with regard to each other.

5. An attachment device according to any of the claims 1 to 4, characterised in that the articulated forks (15) of the connector bridge (6) and the articulated fishplates (17) of the compensating axle (11, 11') present aligned boreholes (18) to accommodate clamp screws (19).
6. An attachment device according to any of the claims 1 to 5, characterised in that the arms (8) of the connector bridge (6) and the holding tenon (7) locatable at the clamping fitting (4) are executed as one-piece.
7. An attachment device according to any of the claims 1 to 6, characterised in that the holding tenon (7) of the connector bridge (6) is locatable at the clamping fitting (4) by means of a union nut (21) overlapping a coupling bell (20) of the clamping fitting (4).
8. An attachment device according to claim 7, characterised in that the union nut (21) and the holding tenon (7) present wrench areas (24, 25) at their envelope surfaces (22, 23).
9. An attachment device according to any of the claims 1 to 8, characterised in that the compensating axles (11, 11') present wrench areas (27) at their envelope surfaces (26).



- 9 -

10. An attachment device according to any of the claims 1 to 9, characterised in that the articulated fishplates (17) are rotatably supported in the compensating axles (11, 11').
- 5 11. An attachment device according to any of the claims 1 to 10, characterised in that the articulated connections of the adapters (14) are executed as articulated forks (29).