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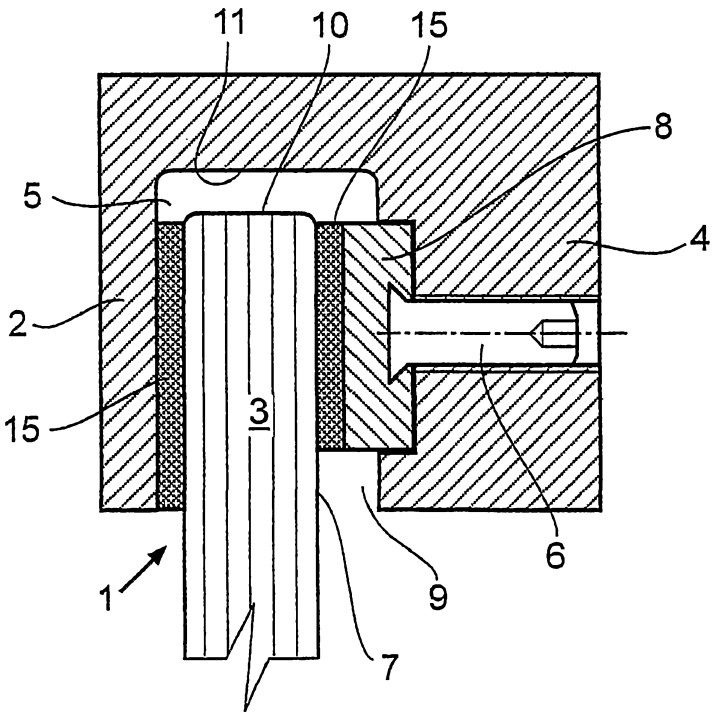
[Fortsetzung auf der nächsten Seite]

(54) **Title:** CLAMPING CONNECTION BETWEEN THE CLAMPING SHOE OF A ROLLER AND A SLIDING LEAF

(54) **Bezeichnung:** KLEMMVERBINDUNG ZWISCHEN DEM KLEMMSCHUH EINES ROLLENWAGENS UND EINEM SCHIEBEFLÜGEL



(57) Abstract: The invention relates to a clamping connection (1) between the clamping shoe (2) of a roller (4) and a sliding leaf which is clamped and suspended in a clamping compartment (5) of the clamping shoe (2) by means of clamping screws. The invention is characterized in that a clamping plate (8) is mounted in the clamping compartment (5) and can be adjusted in relation to a flat surface (7) of the sliding leaf by means of adjusting screws (6).

(57) Zusammenfassung: Die Erfindung betrifft eine Klemmverbindung (1) zwischen dem Klemmschuh (2) eines Rollenwagens (4) und einem hängend in einer Klemmkammer (5) des Klemmschuhes (2) mittels Klemmschrauben eingespannten Schiebeflügel. Die Erfindung richtet sich darauf, dass in der Klemmkammer (5) eine gegen eine Planfläche (7) des Schiebeflügels mittels Stellschrauben (6) anstellbare Klemmplatte (8) angeordnet ist.

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Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

Title: Clamping connection between the clamping shoe of a roller carriage and a sliding leaf

Description

The invention relates to a clamping connection between the clamping shoe of a roller carriage and a sliding leaf, in particular a glass pane, which is suspended in a clamping compartment of the clamping shoe and restrained therein by means of clamping screws.

Generally, prior art clamping connections have a clamping shoe restraining the sliding leaf, which shoe, via a carrying bolt, is suspended in a roller carriage and connected thereto, which carriage is disposed above the clamping shoe and guided in a roller rail. As basically boreholes or openings in the sliding leaf are to be avoided, the adhesive friction force required for restraining the sliding leaf in the clamping shoe is obtained by a screw connection, which is disposed above the upper frontal face of the sliding leaf and presses the two cheeks of the flanks, which laterally delimit a groove shaped recess of the clamping shoe, non-positively against the plane surfaces of the sliding leaf. As a consequence, the disposition of the screw connection above the upper frontal face delimitation of the sliding leaf, on the one hand, inevitably results in a high construction height of the clamping shoe; and, on the other hand, on account of the above described lever ratios, a relatively

important clamping force needs to be applied in the area of the screw connection, and the selection of an appropriate material for the above described clamping connection is required.

The object of preferred embodiments of the invention, in a clamping connection of the type mentioned in the introduction, is to prevent the loss of clamping force resulting from the above described lever ratios, and to minimize the required construction height for restraining a sliding leaf at the same time.

According to the invention, there is provided a clamping connection between a clamping shoe of a roller carriage and a sliding leaf which is suspended in a clamping compartment of the clamping shoe and restrained therein by means of clamping screws, the connection including a clamping plate which is disposed in the clamping compartment and acts on a plane surface of the sliding leaf by means of the clamping screws, wherein the torque applied by the clamping screws is directly transferred onto the plane surface of the glass pane, characterized in that the clamping shoe has a lateral recess for the reception of a roller bracket supporting a rotational mounting for a carrying roller, which recess extends orthogonally with regard to the plane surface of the sliding leaf and the roller is within the lateral recess.

Accordingly, in preferred embodiments a clamping plate, which is adjustable against a plane surface of the sliding leaf by means of clamping screws, is disposed in the clamping compartment of the clamping shoe.

This means that, while foregoing the lever arm, recognized as being disadvantageous, the force transfer of the clamping screws is done directly into the sliding leaf, resulting in a considerable reduction of the required construction height. The torque applied by the clamping screws is directly transformed into a resultant clamping force, whereby, at a comparable resultant clamping force, less stress needs to be transferred to the structural parts, such that a material of less stringent requirements, but still matching the stress can be used. In addition, with an appropriate shaping of the width of the groove-shaped clamping compartment, the inventive solution allows for using a scalable system, i.e. the restraining of sliding leaves without need for structural modification, particularly glass panes with different thicknesses, moreover, thickness tolerances do not matter anymore.

Preferably the clamping compartments are formed as grooves open to below. This permits disposing the upper frontal face of the sliding leaf adjacent the groove bottom, i.e. the sliding leaf can be introduced as far into the clamping compartment until its upper frontal face is located in the area of the groove bottom of the clamping compartment.

In an embodiment where the clamping shoe is guided at a roller carriage by means of a carrying tenon, it is preferred that the clamping compartment be integral with the roller carriage. The above mentioned feature results in a further considerable reduction of the required construction height. In this case, the clamping shoe and the roller carriage may form a structural unit, and the roller

bracket is disposed height-adjustable at the clamping shoe.

It will be noted that, there is no loss of clamping force as a consequence of the constructional lever arms, which would result in a reduced clamping force compared to the applied torque, such that, with equal or higher clamping force, the construction height can be reduced considerably.

The invention will now be described by way of example only with reference to the drawings, in which:

Figure 1: shows schematically a clamping connection in accordance with the prior art,

Figure 2: shows a cross-sectional view of a clamping connection in accordance with a preferred embodiment of the invention,

Figure 3: shows a clamping connection integral with a roller carriage.

A clamping connection 1' according to Figure 1 shows a glass pane 3 restrained between side cheeks 16 of a clamping shoe 2'. A first functional area, identified by A,

virtually forms a centre of rotation or an abutment W; a second functional area, identified by B, symbolizes the clamping location K determined by the screw connection, not referenced in detail, at which the torque is applied. The restraining of the glass pane 3 is realized in the third functional area C. Evidently, the distances h1, h2, and h3 sum up to an undesired high construction height H. It is further visible that a relatively high torque needs to be applied in the second functional area B, in order to reliably restrain the glass pane 3 in the area of the clamping compartment 5'.

In the clamping connection 1 according to Figures 2 and 3, a clamping shoe 2 likewise has a groove 5 open to below, which however may be formed wider in the exemplary embodiment, in order to be able to restrain glass panes 3 of different thicknesses. In the area of a clamping compartment 5, the glass pane 3 with its upper edge 10 is inserted approximately up to the area of a groove bottom 11 of the groove 9. This means that the torque applied by a clamping screw 6 can be directly transferred to a plane surface 7 of the glass pane 3. Reference 15 identifies a glass protection, which, on the one end, abuts in the clamping shoe 2 and, on the other end, at the clamping plate 8 charged by the clamping screw 6.

In this case, the glass protection 15 can be formed such that an additional friction and thus an increased holding force are generated.

According to the perspective illustration of Figure 3, the clamping shoe 2 and a roller carriage 4 form a structural unit, i.e. the clamping shoe 2 is not suspended in a roller carriage nor guided therein via a carrying tenon.

For this purpose, the clamping shoe 2 has a lateral recess 12 for the reception of a roller bracket 14 carrying the carrying rollers 13. As is clearly shown in Figure 3, the rollers 13 are mounted on the bracket 14 via rotational mounting pins, the configuration of the bracket 14 in the recess 12 being such that the rollers 13 are within the recess 12. Also in the exemplary embodiment according to Figure 3, the clamping plate 8, disposed in the clamping compartment 5, can be adjusted at the glass pane 3.

List of References

1	clamping connection
1'	clamping connection
2	clamping shoe
2'	clamping shoe
3	glass pane
4	roller carriage
5	clamping compartment
5'	clamping compartment
6	clamping screws
7	plane surface
8	clamping plate
9	groove
10	upper edge
11	groove bottom
12	lateral recess
13	carrying roller
14	roller bracket
15	glass protection
16	side cheeks
A	functional area
B	functional area
C	functional area
h1	axial distances of the functional areas
h2	axial distances of the functional areas
h3	axial distances of the functional areas

H	construction height
W	abutment
K	clamping location

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A clamping connection between a clamping shoe of a roller carriage and a sliding leaf which is suspended in a clamping compartment of the clamping shoe and restrained therein by means of clamping screws, the connection including a clamping plate which is disposed in the clamping compartment and acts on a plane surface of the sliding leaf by means of the clamping screws, wherein the torque applied by the clamping screws is directly transferred onto the plane surface of the glass pane, characterized in that the clamping shoe has a lateral recess for the reception of a roller bracket supporting a rotational mounting for a carrying roller, which recess extends orthogonally with regard to the plane surface of the sliding leaf and the roller is within the lateral recess.

2. A clamping connection according to claim 1, characterized in that the clamping compartment is formed as a groove open to below and in that the upper edge of the sliding leaf is disposed adjacent the groove bottom of the groove.

3. A clamping connection according to claim 1 or 2, characterized in that the clamping compartment is incorporated in the roller carriage.

4. A clamping connection according to any of the claims 1 to 3, characterized in that the clamping shoe and the roller carriage form a structural unit.

5. A clamping connection according to claim 1, characterized in that the roller bracket is disposed height-adjustable at the clamping shoe.

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6. A clamping connection substantially as hereinbefore described with reference to Figures 2 and 3 of the accompanying drawings.

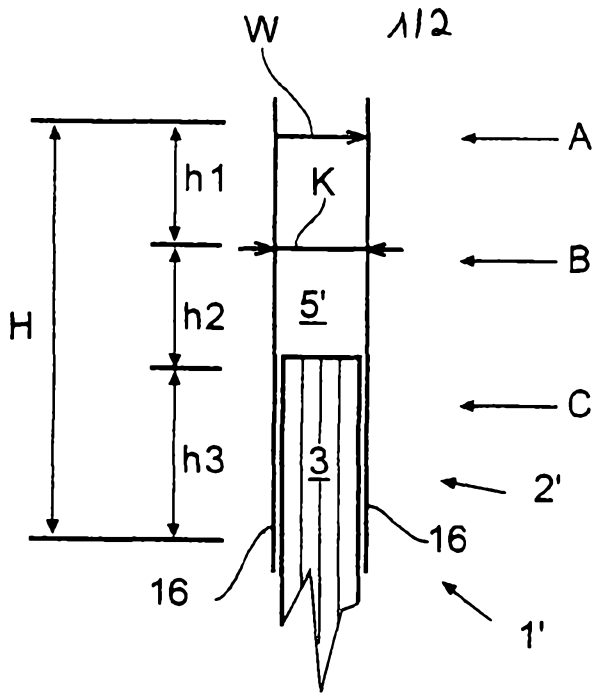

Fig. 1

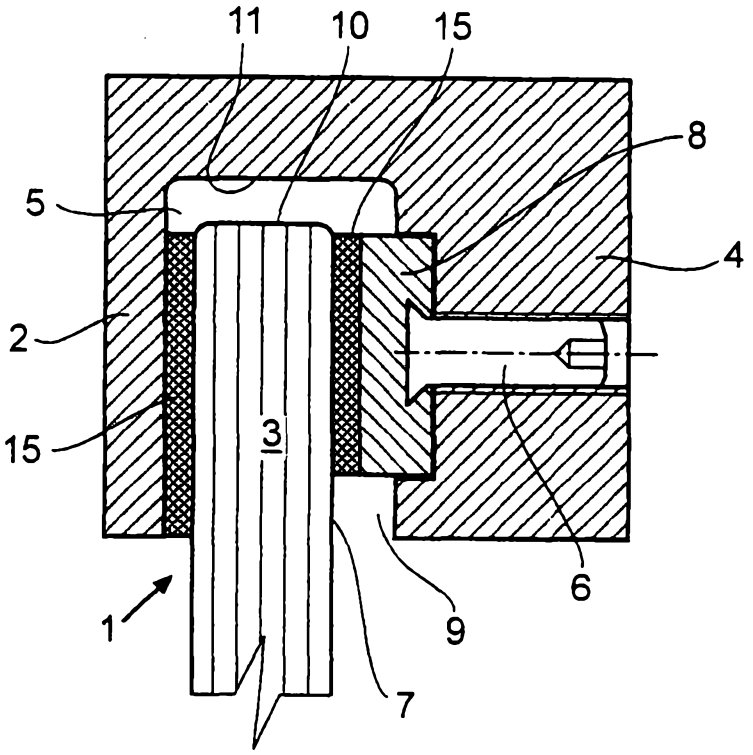

Fig. 2

Fig. 3