



(11)

EP 3 121 345 A1

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.01.2017 Bulletin 2017/04

(51) Int Cl.:
E04F 11/18 (2006.01)

(21) Application number: **15180605.6**

(22) Date of filing: **11.08.2015**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA

(72) Inventor: **ZHOU, Daning**
266000 Qingdao (CN)

(74) Representative: **Price, Nigel John King**
J A Kemp
14 South Square
Gray's Inn
London WC1R 5JJ (GB)

(30) Priority: **22.07.2015 CN 201510434039**

Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(71) Applicant: **Qingdao Jinfer International Trading Co., Ltd**
Qingdao Shandong 266000 (CN)

(54) **CLAMPING SYSTEM FOR MOUNTING GLASS BALUSTRADE**

(57) The invention patent discloses a clamping system for mounting glass balustrade, including a base with a U-shaped channel, an adjusting component A and an adjusting component B. The adjusting component A comprising: an L-shaped plate and a trapezoid plate, both the two ladder surfaces of the trapezoid plate are symmetrical arc convex surfaces of the same arc; A trapezoid groove is configured in the inner side of the L-shaped plate, which matches with the trapezoid convex surface of the trapezoid plate, with shorter length than that of the trapezoid convex. The adjusting component B comprising: a supporting plate with a trapezoid groove inside, a wedge A, a wedge B, an adjusting bolt A and an adjusting bolt B. Both the wedge A and the wedge B are single-side wedge structure, with one plane side and another bevel side. A hole channel is situated on the middle top of the supporting plate, reaching through the trapezoid groove; A horizontally placed locating element is situated in the middle of the trapezoid groove. The top part of adjusting bolt A connects with the Wedge A by thread screwing, and bottom part of adjusting bolt A connects with the locating element permanently. The top part of adjusting bolt B connects with the locating element by screwing, and bottom part of adjusting bolt B connects with the wedge B permanently. This invention patent not only benefits the angle adjusting during glass installation, but also guarantees the stability of the glass installation.

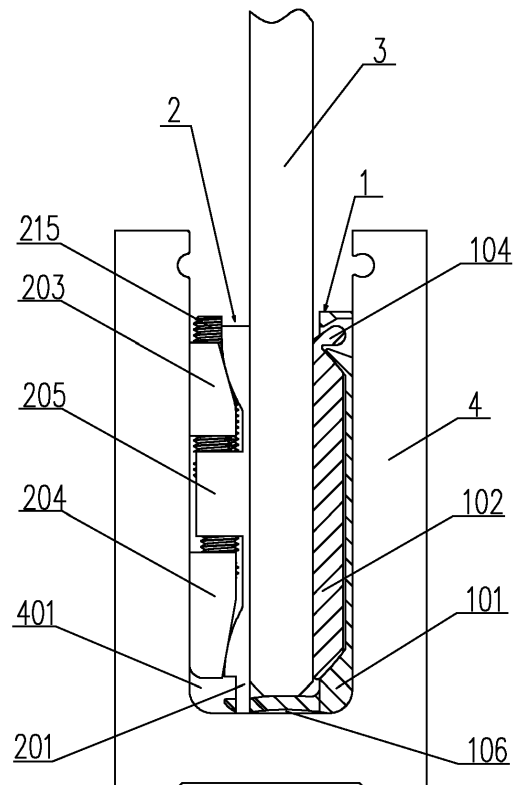


Fig.1

Description

Technical Field

[0001] The present invention belongs to the technical field of balustrade fittings, in some embodiments thereof, relates to a clamping system for mounting glass balustrade.

Background of the Invention

[0002] The frameless glass balustrade enjoys a modern, simple and attractive appearance, and is widely applied to architectural fence. In general, two methods are employed to fix the present frameless glass balustrades. In one of the method, a U shaped channel is utilized in order for the fixing. The opening of the U shaped channel is of a fixed value, but for different glass panes with different widths, the widths of channel may vary. In this way of fixing, several defects are founded: 1. lack of popularity; 2. lack of ability to resist pushing force, difficulties of installing and the increase of cost for thickening the steel plate of the U-shaped channel to enhance the push-resist strength; 3. strict angle demanding and difficulty of adjusting the glass after installation. While in the other method, the channel is strictly dug into the floor, into which the glass pane is inserted and the glue is injected. There are also some defects in this way: 1. more workload for digging the channel; 2. difficulties of changing the glass pane; 3. constrains imposed by the floor, some inadmissibility of fluting or drilling. In recent years, with the higher demands for artistic permeability of construction design, the glass balustrades are usually designed to be merely fixed at the bottom, with one side impending. In this case, it is very difficult to change the angle in the conventional two-sided manual adjusting way.

[0003] The utility model patent CN 201809915 U discloses an aluminum alloy frameless balustrade and a partition fixing system thereof. The plate fixing system includes a fixing base and an adjustable pushing base, which are fixed and connected by fasteners and making up a partition receiving part. Steel bars can be fixed into the base, while threaded holes can also be fixed on the steel bars. The fixing base and the adjustable pushing base can have through-holes respectively, and the fasteners can be the locking bolts, which stick through the through-holes of the fixing base and the adjustable pushing base and screw into the threaded holes on the steel bars. This structure is of good popularity, with no need to match the different fixing systems with glasses of different widths. But on the other hand, the structure is complex and thus inconvenient for installation. Most important is that, this structure cannot meet the demands of adjusting the angle of the glass. Besides, it cannot be easily dismantled, because of the glue injected in the late period.

[0004] The USA patent US14058337 discloses a wedge for clamping the glass balustrade, with the struc-

ture thereof to achieving the purpose of altering the distance between the glass and the inner walls of the U-shaped channel, by changing the width of the whole wedge through the opposite movement of two single-side wedge blocks which are housed opposite. The defect is that the angle of the glass is also unchangeable during installation.

[0005] The invention patent CN 201410108718.2 discloses a clamping system for mounting glass balustrade, including a base with a U-shaped channel, an adjusting component A and an adjusting component B. The adjusting component A comprising: an L-shaped Plate with an arc groove inside, fitting for an arc panel; an arc panel with longer arc-length than that of the arc groove in the L-shaped Plate. The adjusting component B comprising: a supporting plate with a trapezoid groove inside; a wedge A, a wedge B and an adjusting bolt; a hole channel on the middle top of the supporting plate, reaching through the trapezoid groove. Both the wedge A and the wedge B are single-side wedge structure. A threaded hole in the middle of the wedge A, which has internal thread matching with the adjusting bolt; the adjusting bolt, with top part screwing through the threaded hole of the wedge A, with the bottom part connecting with the wedge B; an embossing belt A on the two bevel surfaces of the trapezoid groove, paralleling to the center line of the trapezoid groove, symmetrical about the center line. This structure is easily dismantled, as well as allowing the angle of the glass changeable. Nevertheless, there are some defects as follows: 1. the thickness of adjusting component B is adjusted by rotating the adjusting bolt. However, the wedge A and the wedge B are connected by the same adjusting bolt, and therefore it is hard to adjust the wedge A or the wedge B separately to meet the needs of the actual situation; 2. the arc panel of the adjusting component A and the arc groove of the L-shaped Plate are sliding connected; if it needs to be adjusted at a big angle, the thickness of the adjusting component A will be too thick, which leading to a decrease in stability of glass installation.

Brief Summary of Embodiments of the Invention

[0006] In order to solve the prior technical problems, the invention discloses a new clamping system which can adjust the angle of glass easily, as well as ensuring the stability of glass installation.

[0007] The technical scheme of the invention is as below: a clamping system for mounting glass balustrade, including a base with a U-shaped channel, an adjusting component A and an adjusting component B. The adjusting component A comprising: an L-shaped Plate and arc panel. An arc groove inside of the L-shaped Plate is matched with the arc panel, with shorter arc-length than that of the arc panel. The adjusting component B comprising: a supporting plate with a trapezoid groove inside, a wedge A, a wedge B, an adjusting bolt A and an adjusting bolt B. Both the wedge A and the wedge B are

single-side wedge structure, with one plane side and another bevel side. A hole channel is situated on the middle top of the supporting plate, reaching through the trapezoid groove; A horizontally placed locating element is situated in the middle of the trapezoid groove. A threaded hole A is in the middle of the wedge A, which has internal thread matching with the adjusting bolt A. The top part of adjusting bolt A, screws through the threaded hole A of the wedge A, connecting with the Wedge A, and bottom part of adjusting bolt A connects with the locating element permanently. A threaded hole B is situated on the other side of the locating element that away from the adjusting bolt A, with internal thread fitting for the adjusting bolt B. The top part of adjusting bolt B, screws through the threaded hole B of the locating element, connecting with the locating element, and bottom part of adjusting bolt B connects with the wedge B permanently. The arc panel embedded into the arc groove of L-shaped plate can slide up and down freely, without sliding out of the arc groove.

[0008] The other optimal scheme of the invention is as below: a clamping system for mounting glass balustrade, including a base with a U-shaped channel, an adjusting component A and an adjusting component B. The adjusting component A comprising: an L-shaped plate and a trapezoid plate that inside the L-shaped plate. Both the two ladder surfaces of the trapezoid plate are symmetrical arc convex surfaces of the same arc; A trapezoid groove is configured in the inner side of the L-shaped plate, which matches with the trapezoid convex surface of the trapezoid plate, with shorter length than that of the trapezoid convex. The adjusting component B comprising: a supporting plate with a trapezoid groove inside, a wedge A, a wedge B, an adjusting bolt A and an adjusting bolt B. Both the wedge A and the wedge B are single-side wedge structure, with one plane side and another bevel side. A hole channel is situated on the middle top of the supporting plate, reaching through the trapezoid groove; A horizontally placed locating element is situated in the middle of the trapezoid groove. A threaded hole A is in the middle of the wedge A, which has internal thread matching with the adjusting bolt A. The top part of adjusting bolt A, screws through the threaded hole A of the wedge A, connecting with the Wedge A, and bottom part of adjusting bolt A connects with the locating element permanently. A threaded hole B is situated on the other side of the locating element that away from the adjusting bolt A, with internal thread fitting for the adjusting bolt B. The top part of adjusting bolt B, screws through the threaded hole B of the locating element, connecting with the locating element, and bottom part of adjusting bolt B connects with the wedge B permanently. Both the two bevel surfaces of the trapezoid groove are arc embossing surfaces. The arc panel embedded into the arc groove of L-shaped plate can slide up and down freely, without sliding out of the arc groove. The adjusting component A adopts the trapezoid plate instead of an arc panel, during doing the same angling, the structure of this scheme reduces the thickness of the adjusting component A,

therefore improves the stability of the glass installation.

[0009] Protruding parts are on the top of the trapezoid plate of the adjusting component A, while slots at the corresponding position on the top of the L-shaped plate, the height of the slots is higher than that of the protruding parts, and the width of the slots is slightly wider than that of the protruding parts. The trapezoid plate embedded into the L-shaped plate by the protruding parts, can slide up and down freely, without sliding out of the trapezoid groove.

[0010] A contacting part of the L-shaped plate and the trapezoid plate is a hollow frame structure. A sliding block is in the middle of the frame structure lengthwise, while a slide-way in the trapezoid plate is at the corresponding position to the lengthwise frame/ block. The width of the slide-way is slightly wider than that of the lengthwise frame/sliding block. Due to the setting of the lengthwise frame/sliding block and the slide-way, which can reduce the contact area of the trapezoid plate and the L-shaped plate, thereby decrease the frictional resistance of sliding, as well as save the materials and cut down the production cost.

[0011] In another variant, a slot A is situated on the top of the locating element; A blocking foot is at the end of the adjusting bolt A, fitting for the slot A, connecting with the locating element by assembling the blocking foot and the slot A; a slot B is at the end of the wedge B; a blocking foot at the end of adjusting bolt B, fitting for the slot B, connecting with the wedge B by assembling the blocking foot and the slot B. A hexagon socket is on the top of the adjusting bolt. Supporting feet are at the bottom of the supporting plate. Steel panels are installed at the bottom of the slot A and the slot B to enhance the strength.

[0012] In still another variant, a drain hole is under the bottom of the L-shaped plate for drainage.

[0013] In yet another variant, an arc embossing belt B is configured on the bottom of the L-shaped plate, which can facilitate the glass sliding on the L-shaped plate during adjusting the installing angle of glass.

[0014] When installing the glass balustrade, the adjusting component A is put into the fixed U-shaped channel, making the L-shaped plate against the wall of the U-shaped channel. Then the glass is put inwards, making the glass against the plane surface of arc panel / trapezoid plate completely. Then a magnet and a magnetic spirit level are attached to each side of the glass for the use of observing the horizontal plane. The glass is angled to keep vertical with horizontal plane, by the measure of sliding the arc panel /trapezoid plate which is clung to the glass in the trapezoid groove. After angling, the adjusting component B is put inside. By wresting the wrench and making the adjusting bolt A and adjusting bolt B rotated clockwise, the wedge A and the wedge B make backwards movement, and then the thickness of the adjusting component B is enhanced till it can fasten the glass. The wedge A and wedge B only contact with the arc embossing surfaces A on the bevel surface of the trapezoid groove, therefore the pressure from the wedge

A and wedge B during their moving can only apply to the arc embossing surfaces A which located symmetrically with the center line of the trapezoid groove. During the backwards movement of wedge A and wedge B, the force point doesn't change with the movement of wedge A or wedge B, and thus it can guarantee the force delivered from the glass to the trapezoid plate keeping balance, which can prevent the trapezoid plate from sliding due to the asymmetrical force bearing.

[0015] If there is a deviation during the process of glass clamping, the adjusting bolt A / the adjusting bolt B can be rotated to adjust the clamping force of the wedge A/the wedge B against to the glass, thereby changing the angle of the glass; after adjusting the glass to the right angle, the glass can be clamped by rotating the he adjusting bolt.

[0016] When dismounting of the glass balustrade, by twisting the adjusting bolt A and the adjusting bolt B anticlockwise, the wedge A and the wedge B make the opposite movement, and then the thickness of the adjusting component B is reduced to unfix and release the glass.

[0017] The invention has the beneficial effects that:

1. the support plate of the adjusting component B connects two tapered wedges with two bolts, the bolts can be rotated to control the tapered wedges moving up and down separately; operating by a hexagon wrench, it is not only easy to install or dismount, but also easy to adjust the glass angle during installation.
2. the adjusting component A adopts the trapezoid plate and the L-shaped plate with a trapezoid groove inside, compared with the arc panel, the curvature of the trapezoid plate increases; therefore, when doing the same angling, this structure reduces the thickness of the adjusting component A, improves the stability of the glass installation.
3. the adjusting component A and adjusting component B have large contacting area with the glass, thus the clamping is stable and the pressure is well-distributed;
4. by angling the glass through the arc panel, the error aroused by the uneven of the floor is eliminated, making the glass vertically installed which is fastened by the wedge structure;
5. the glass can be fastened and angled only at one side, which increases the working efficiency, especially on the condition that the glass balustrade is impending settled, therefore it is more convenient for application

Brief Description of the Drawings

[0018]

Fig.1 is the schematic illustration of the present invention.

Fig.2 is one of the schematic illustrations of the adjusting component A in the present invention.

Fig.3 is the schematic illustration of the L-shaped plate of the adjusting component A in the present invention.

Fig.4 is the schematic illustration of the trapezoid plate of the adjusting component A in the present invention.

Fig.5 is one of the schematic illustrations of the adjusting component B in the present invention.

Fig.6 is the schematic illustration of the supporting plate of the adjusting component B in the present invention.

Fig.7 is the schematic illustration of the wedge A of the adjusting component B in the present invention.

Fig.8 is the schematic illustration of the wedge B of the adjusting component B in the present invention.

Fig. 9 is the section view of B-B' in fig.5.

Fig. 10 is the section view of A-A' in fig.5.

Fig.11 is the schematic illustration of the adjusting bolt in the present invention.

Hereinto:

[0019]

- | | | |
|----|-----|------------------------------|
| 25 | 1 | the adjusting component A |
| | 2 | the adjusting component B |
| | 3 | the glass |
| | 4 | the base |
| | 101 | the L-shaped plate |
| 30 | 102 | the trapezoid plate |
| | 103 | the arc embossing belt B |
| | 104 | the protruding parts |
| | 105 | the slots |
| | 106 | the drain hole |
| 35 | 107 | the sliding block |
| | 108 | the slide-way |
| | 201 | the supporting plate |
| | 202 | the adjusting bolt A |
| | 203 | the wedge A |
| 40 | 204 | the wedge B |
| | 205 | the locating element |
| | 206 | the hole channel |
| | 207 | the supporting feet |
| | 208 | the slot A |
| 45 | 209 | the blocking foot |
| | 210 | the steel panel A |
| | 211 | the trapezoid panel groove |
| | 212 | the arc embossing surfaces A |
| | 213 | the threaded hole A |
| 50 | 214 | the hexagon hole |
| | 215 | the adjusting bolt B |
| | 216 | the slot B |
| | 217 | the steel panel B |
| | 218 | the threaded hole B |
| 55 | 401 | the U-shaped channel |

Detailed Embodiment of the Invention

[0020] The present invention is described herein in terms of example environments and drawings:

Embodiment 1:

[0021] As shown in fig. 1, and fig.5 to fig. 11, a clamping system for mounting glass balustrade comprises a base 4 with U-shaped channel 401, an adjusting component A1 and an adjusting component B2. The adjusting component A1 comprising: an L-shaped Plate 101 and arc panel. An arc groove inside of the L-shaped Plate 101 is matched with the arc panel, with shorter arc-length than that of the arc panel. The adjusting component B2 comprising: a supporting plate 201 with a trapezoid groove 211 inside, a wedge A203, a wedge B204, an adjusting bolt A202 and adjusting bolt B215. Both the wedge A203 and the wedge B204 are single-side wedge structure, with one plane side and another bevel side. A hole channel 206 is situated on the middle top of the supporting plate 201, reaching through the trapezoid groove 211; A horizontally placed locating element 205 is situated in the middle of the trapezoid groove 211. A threaded hole A213 is in the middle of the wedge A203, which has internal thread matching with the adjusting bolt A202. The top part of adjusting bolt A202, screws through the threaded hole A213 of the wedge A203, connecting with the Wedge A203, and bottom part of adjusting bolt A202 connects with the locating element 205 permanently. A threaded hole B218 is situated on the other side of the locating element 205 that away from the adjusting bolt A202, with internal thread fitting for the adjusting bolt B215. The top part of adjusting bolt B202, screws through the threaded hole B218 of the locating element 205, connecting with the locating element 205, and bottom part of adjusting bolt B202 connects with the wedge B204 permanently. Both the two bevel surfaces of the trapezoid groove 211 are arc embossing surfaces. slot A208 is situated on the top of the locating element 205; A blocking foot 209 is at the end of the adjusting bolt A202, fitting for the slot A208, connecting with the locating element 205 by assembling the blocking foot 209 and the slot A208. A slot B216 is at the end of the wedge B204; A blocking foot 209 at the end of adjusting bolt B215, fitting for the slot B216, connecting with the wedge B204 by assembling the blocking foot 209 and the slot B216.

Embodiment 2:

[0022] As shown in fig. 1 to fig.11, a clamping system for mounting glass balustrade, including a base 4 with a U-shaped channel 401, an adjusting component A1 and an adjusting component B2. The adjusting component A1 comprising: an L-shaped plate 101 and a trapezoid plate 102 that inside the L-shaped plate 101. Both the two ladder surfaces of the trapezoid plate 102 are symmetrical arc convex surfaces of the same arc; A trapezoid

groove is configured in the inner side of the L-shaped plate 101, which matches with the trapezoid convex surface of the trapezoid plate 102, with shorter length than that of the trapezoid convex. Protruding parts 104 are on the top of the trapezoid plate 102, while slots 105 at the corresponding position on the top of the L-shaped plate 101, the height of the slots 105 is higher than that of the protruding parts 104, and the width of the slots 105 is slightly wider than that of the protruding parts 104. The combination of the protruding parts 104 and the slots 105 connects the trapezoid plate 102 and the L-shaped plate 101 together. The trapezoid plate 102 embedded into the L-shaped plate 101 can slide up and down freely, without sliding out of the trapezoid groove.

[0023] The adjusting component B2 comprising: a supporting plate 201 with a trapezoid groove 211 inside, a wedge A203, a wedge B204, an adjusting bolt A202 and adjusting bolt B215. Both the wedge A203 and the wedge B204 are single-side wedge structure, with one plane side and another bevel side. A hole channel 206 is situated on the middle top of the supporting plate 201, reaching through the trapezoid groove 211; A horizontally placed locating element 205 is situated in the middle of the trapezoid groove 211. A threaded hole A213 is in the middle of the wedge A203, which has internal thread matching with the adjusting bolt A202. The top part of adjusting bolt A202, screws through the threaded hole A213 of the wedge A203, connecting with the Wedge A203, and bottom part of adjusting bolt A202 connects with the locating element 205 permanently. A threaded hole B218 is situated on the other side of the locating element 205 that away from the adjusting bolt A202, with internal thread fitting for the adjusting bolt B215. The top part of adjusting bolt B202, screws through the threaded hole B218 of the locating element 205, connecting with the locating element 205, and bottom part of adjusting bolt B202 connects with the wedge B204 permanently. Both the two bevel surfaces of the trapezoid groove 211 are arc embossing surfaces. slot A208 is situated on the top of the locating element 205; A blocking foot 209 is at the end of the adjusting bolt A202, fitting for the slot A208, connecting with the locating element 205 by assembling the blocking foot 209 and the slot A208. A slot B216 is at the end of the wedge B204; A blocking foot 209 at the end of adjusting bolt B215, fitting for the slot B216, connecting with the wedge B204 by assembling the blocking foot 209 and the slot B216.

[0024] When installing the glass balustrade, the adjusting component A1 is put into the fixed U-shaped channel 401 of the base 4, making the L-shaped plate 101 against the wall of the U-shaped channel 401. Then the glass 3 is put inwards, making the glass 3 against the plane surface of the trapezoid plate 102 completely. Then a magnet and a magnetic spirit level are attached to each side of the glass 3 for the use of observing the horizontal plane. The glass 3 is angled to keep vertical with horizontal plane, by the measure of sliding the trapezoid plate 102 which is clung to the glass in the trapezoid groove.

After that, the adjusting component B2 is put into the interspace between the glass 3 and the wall of U-shaped channel 401, with the supporting plate 201 of adjusting component B2 tightly against the glass 3. By wresting the wrench and making the adjusting bolt A202 and adjusting bolt B215 rotated clockwise, the wedge A203 and the wedge B204 make backwards movement, and then the thickness of the adjusting component B2 is enhanced till it can fasten the glass 3. The wedge A203 and wedge B204 only contact with the arc embossing surfaces A212 on the bevel surface of the trapezoid groove 211, therefore the pressure from the wedge A203 and wedge B204 during their moving can only apply to the arc embossing surfaces A212 which located symmetrically with the center line of the trapezoid groove 211. During the backwards movement of wedge A203 and wedge B204, the force point on supporting plate 201 doesn't change with the movement of wedge A203 or wedge B204, and thus it can guarantee the force delivered from the glass 3 to the trapezoid plate 102 keeping balance, which can prevent the trapezoid plate 102 from sliding due to the asymmetrical force bearing. If there is a deviation during the process of glass clamping, the adjusting bolt A / the adjusting bolt B can be rotated to adjust the clamping force of the wedge A/the wedge B against to the glass, thereby changing the angle of the glass; after adjusting the glass to the right angle, the glass can be clamped by rotating the he adjusting bolt.

[0025] When dismounting of the glass 3 balustrade, by twisting the adjusting bolt A202 and the adjusting bolt B215 anticlockwise, the wedge A203 and the wedge B204 make the opposite movement, and then the thickness of the adjusting component B2 is reduced to unfix and release the glass 3.

Embodiment 3:

[0026] Except for the differences listed as below, others are the same as the embodiment 2.

[0027] As shown in fig.3 and fig. 4, a contacting part of the L-shaped plate 101 and the trapezoid plate 102 is a hollow frame structure. A sliding block 107 is in the middle of the frame structure lengthwise, while a slide-way 108 in the trapezoid plate 102 is at the corresponding position to the lengthwise frame/ block 107. The width of the slide-way 108 is slightly wider than that of the lengthwise frame/sliding block 107. Due to the setting of the lengthwise frame/sliding block 107 and the slide-way 108, which can reduce the contact area of the trapezoid plate 102 and the L-shaped plate 101, thereby decrease the frictional resistance of sliding, as well as save the materials and cut down the production cost.

Embodiment 4:

[0028] Except for the differences listed as below, others are the same as the embodiment 3.

[0029] As shown in fig. 11, a hexagon hole 214 is on

the top of the adjusting bolt A202 and the adjusting bolt B215.

Embodiment 5:

[0030] Except for the differences listed as below, others are the same as the embodiment 3.

[0031] As shown in fig.5 and fig.6, supporting feet 207 are situated at the bottom of the supporting plate 201.

Embodiment 6:

[0032] Except for the differences listed as below, others are the same as the embodiment 3.

[0033] As shown in fig.5, fig.6 and fig. 8, a steel panel A210 is installed at the bottom of the groove A208, a steel panel B217 is installed at the bottom of the groove B216. The function of the steel panel A210 / the steel panel B217 is to increase the hardness of the bottom of the slot A208 / the slot B216.

Embodiment 7:

[0034] Except for the differences listed as below, others are the same as the embodiment 3.

[0035] As shown in fig. 1 and fig.2, a drain hole 104 for drainage is under the bottom of the L-shaped plate 101.

Embodiment 8:

[0036] Except for the differences listed as below, others are the same as the embodiment 3.

[0037] As shown in fig.2, an arc embossing belt B103 is configured on the bottom of the L-shaped plate 101, which can facilitate the glass 3 sliding on the L-shaped plate 101 during adjusting the installing angle of glass 3.

Embodiment 9:

[0038] Except for the differences listed as below, others are the same as the embodiment 3.

[0039] As shown in fig. 5, the supporting plate 201, the wedge A203 and the wedge B204 are all designed with pockets, which can facilitate the casting and processing, as well as save the materials and reduce the cost.

Claims

1. A clamping system for mounting glass balustrade, including a base(4) with a U-shaped channel(401), an adjusting component A(1) and an adjusting component B(2); adjusting component A(1) comprising: an L-shaped plate(101) and an arc panel which is put inside of the L-shaped plate(101), the L-shaped plate(101) with an arc groove inside, fitting for the arc panel, the arc groove with shorter arc-length than that of the arc panel; adjusting component B(2) com-

- prising: a supporting plate(201) with a trapezoid groove(211) inside, a wedge A(203), a wedge B(204) and an adjusting bolt A(202); both the wedge A(203) and the wedge B(204), with one plane side and another bevel side, as single-side wedge structure; a hole channel(206) on the middle top of the supporting plate(201), reaching through the trapezoid groove(211); a threaded hole A(213) in the middle of the wedge A(203), which has internal thread matching with the adjusting bolt A(202), is **characterized in that**: a horizontally placed locating element(205) in the middle of the trapezoid groove(211); adjusting bolt A(202), with top part screwing through the threaded hole A(213) of the wedge A(203), with the bottom part permanently connecting with the locating element(205); adjusting component B(2) also comprising: an adjusting bolt B(215), a threaded hole B(218) on the other side of the locating element(205) that away from the adjusting bolt A(202), which has internal thread matching with the adjusting bolt B(215); adjusting bolt B(215), with top part screwing through the threaded hole B(218) of the locating element(205), with the bottom part permanently connecting with the wedge B(204); both the two bevel surfaces of the trapezoid groove(211) are arc embossing surfaces.
2. A clamping system for mounting glass balustrade of claim 1, wherein the base, is further **characterized in that**:
- adjusting component A (1) comprising: an L-shaped plate (101) and a trapezoid plate (102) that inside the L-shaped plate (101), both the two ladder surfaces of the trapezoid plate are symmetrical arc convex surfaces of the same arc; trapezoid groove in the inner side of the L-shaped plate (101), which matches with the trapezoid convex surface of the trapezoid plate (102), with shorter length than that of the trapezoid convex
3. A clamping system for mounting glass balustrade of claim2, wherein the base, is further **characterized in that**:
- Protruding parts (104) on the top of the trapezoid plate (102), slots (105) at the corresponding position on the top of the L-shaped plate(101), the height of the slot(105) is higher than that of the protruding parts(104), and the width of the slot(105) is slightly wider than that of the protruding parts (104).
4. A clamping system for mounting glass balustrade of claim2, wherein the base, is further **characterized in that**:
- a contacting part of the L-shaped plate(101) and the trapezoid plate(102) is a hollow frame structure, a sliding block(107) in the middle of the frame structure lengthwise, a slide-way (108) in the trapezoid plate(102) at the corresponding position to the lengthwise frame/ block, the width of the slide-way (108) is slightly wider than that of the lengthwise frame/sliding block(107).
5. A clamping system for mounting glass balustrade of claim3, wherein the base, is further **characterized in that**:
- a contacting part of the L-shaped plate(101) and the trapezoid plate(102) is a hollow frame structure, a sliding block(107) in the middle of the frame structure lengthwise, a slide-way (108) in the trapezoid plate(102) at the corresponding position to the lengthwise frame/ block, the width of the slide-way (108) is slightly wider than that of the lengthwise frame/sliding block(107).
6. A clamping system for mounting glass balustrade of any one of claim 1-5, wherein the base, is further **characterized in that**:
- a slot A(208) on the top of the locating element(205); a blocking foot A(209) at the end of the adjusting bolt A(202), fitting for the slot A(208), connecting with the locating element(205) by assembling the blocking foot A(209) and the slot A(208); a slot B(216) at the end of the wedge B(204); a blocking foot A(209) at the end of adjusting bolt B(215), fitting for the slot B(216), connecting with the wedge B(204) by assembling the blocking foot A(209) and the slot B(216).
7. A clamping system for mounting glass balustrade of any one of claim 1-5, wherein the base, is further **characterized in that**:
- Supporting feet (207) at the bottom of the supporting plate (201).
8. A clamping system for mounting glass balustrade of any one of claim 1-5, wherein the base, is further **characterized in that**:
- a drain hole(106) under the bottom of the L-shaped plate(101).
9. A clamping system for mounting glass balustrade of any one of claim 1-5, wherein the base, is further **characterized in that**:
- an arc embossing belt B(103) on the bottom of

the L-shaped plate(101).

Amended claims in accordance with Rule 137(2) EPC.

1. A clamping system for mounting glass balustrade, including

a base (4) with a U-shaped channel (401),
an adjusting component A (1) and
an adjusting component B (2);
adjusting component A (1) comprising:

(a) an L-shaped plate (101) and an arcuate panel which is put inside of the L-shaped plate (101), the L-shaped plate (101) having an arc groove inside, for fitting the arcuate panel, the arc-length of the arc groove being shorter than that of the arcuate panel; or
(b) an L-shaped plate (101) and a trapezoid plate (102) that inside the L-shaped plate (101), both the two lateral side surfaces of the trapezoid plate are arcuate convex surfaces which are symmetrical and belong to the same arc; trapezoid groove in the inner side of the L-shaped plate (101), which matches with the trapezoid convex surface of the trapezoid plate (102), with shorter length than that of the trapezoid convex surface;

adjusting component B (2) comprising:

a supporting plate (201) with a trapezoid groove (211) inside,
a wedge A (203),
a wedge B (204),
an adjusting bolt A (202); both the wedge A (203) and the wedge B (204), with one plane side and another bevel side, as single-side wedge structure; a hole channel (206) on the middle top of the supporting plate (201), reaching through the trapezoid groove (211); a threaded hole A (213) in the middle of the wedge A (203), which has internal thread matching with the adjusting bolt A (202), a horizontally placed locating element (205) in the middle of the trapezoid groove (211); adjusting bolt A (202), with top part screwing through the threaded hole A (213) of the wedge A (203), with the bottom part of the adjusting bolt A (202) permanently connecting with the locating element (205);
an adjusting bolt B (215), and
a threaded hole B (218) on the other side of the locating element (205) that away from

the adjusting bolt A (202), which has internal thread matching with the adjusting bolt B (215); adjusting bolt B (215), with top part screwing through the threaded hole B (218) of the locating element (205), with the bottom part permanently connecting with the wedge B (204); both the two bevel surfaces of the trapezoid groove (211) are arcuate surfaces.

2. A clamping system for mounting glass balustrade of claim 1, wherein the adjusting component A (1) comprises: an L-shaped plate (101) and an arcuate panel which is put inside of the L-shaped plate (101), the L-shaped plate (101) having an arc groove inside, for fitting the arcuate panel, the arc-length of the groove being shorter than that of the arcuate panel.

3. A clamping system for mounting glass balustrade of claim 1, wherein the adjusting component A (1) comprises: an L-shaped plate (101) and a trapezoid plate (102) that inside the L-shaped plate (101), both the two lateral side surfaces of the trapezoid plate are arcuate convex surfaces which are symmetrical and belong to the same arc; trapezoid groove in the inner side of the L-shaped plate (101), which matches with the trapezoid convex surface of the trapezoid plate (102), with shorter length than that of the trapezoid convex surface.

4. A clamping system for mounting glass balustrade of claim 3, wherein: protruding parts (104) on the top of the trapezoid plate (102), slots (105) at the corresponding position on the top of the L-shaped plate (101), the height of the slot (105) is higher than that of the protruding parts (104), and the width of the slot (105) is slightly wider than that of the protruding parts (104).

5. A clamping system for mounting glass balustrade of claim 3, wherein:

a contacting part of the L-shaped plate (101) and the trapezoid plate (102) is a hollow frame structure, a sliding block (107) in the middle of the frame structure lengthwise, a slide-way (108) in the trapezoid plate (102) at the corresponding position to the lengthwise frame/ block, the width of the slide-way (108) is slightly wider than that of the lengthwise frame/sliding block (107).

6. A clamping system for mounting glass balustrade of claim 4, wherein:

a contacting part of the L-shaped plate (101) and the trapezoid plate (102) is a hollow frame structure, a sliding block (107) in the middle of the frame structure lengthwise, a slide-way (108) in

the trapezoid plate (102) at the corresponding position to the lengthwise frame/ block, the width of the slide-way (108) is slightly wider than that of the lengthwise frame/sliding block (107).

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7. A clamping system for mounting glass balustrade of any one of claims 1-6, wherein:

a slot A (208) on the top of the locating element (205); a blocking foot A (209) at the end of the adjusting bolt A (202), fitting for the slot A (208), connecting with the locating element (205) by assembling the blocking foot A (209) and the slot A (208); a slot B (216) at the end of the wedge B (204); a blocking foot A (209) at the end of adjusting bolt B (215), fitting for the slot B (216), connecting with the wedge B (204) by assembling the blocking foot A (209) and the slot B (216).

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8. A clamping system for mounting glass balustrade of any one of claims 1-6, wherein:

supporting feet (207) at the bottom of the supporting plate (201).

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9. A clamping system for mounting glass balustrade of any one of claims 1-6, wherein:

a drain hole (106) under the bottom of the L-shaped plate (101).

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10. A clamping system for mounting glass balustrade of any one of claims 1-6, wherein:

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an arcuate belt B (103) on the bottom of the L-shaped plate (101).

11. A clamping system for mounting glass balustrade of claim 10, wherein the arcuate belt B (103) is convex.

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12. A clamping system for mounting glass balustrade of any one of claims 1-11, wherein both the two bevel surfaces of the trapezoid groove (211) are convex.

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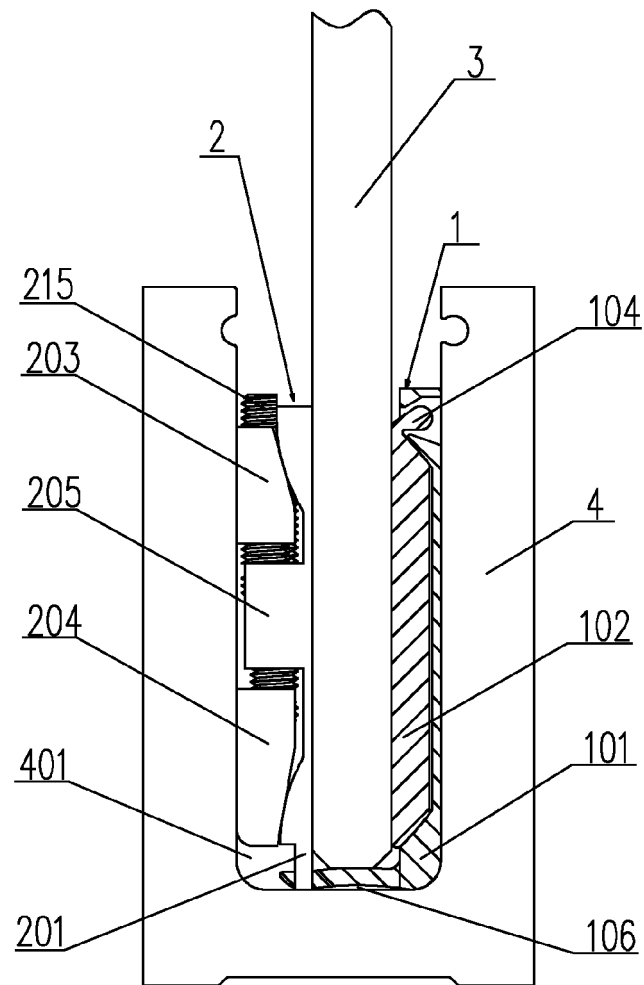


Fig.1

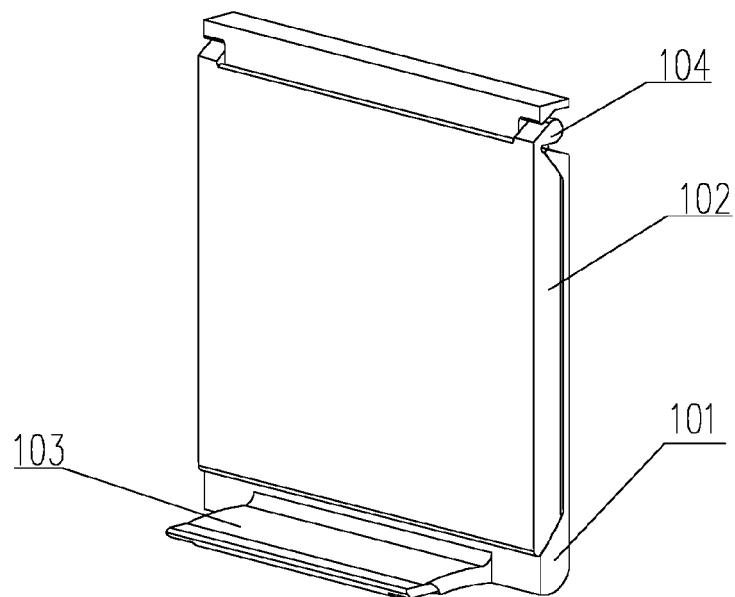


Fig.2

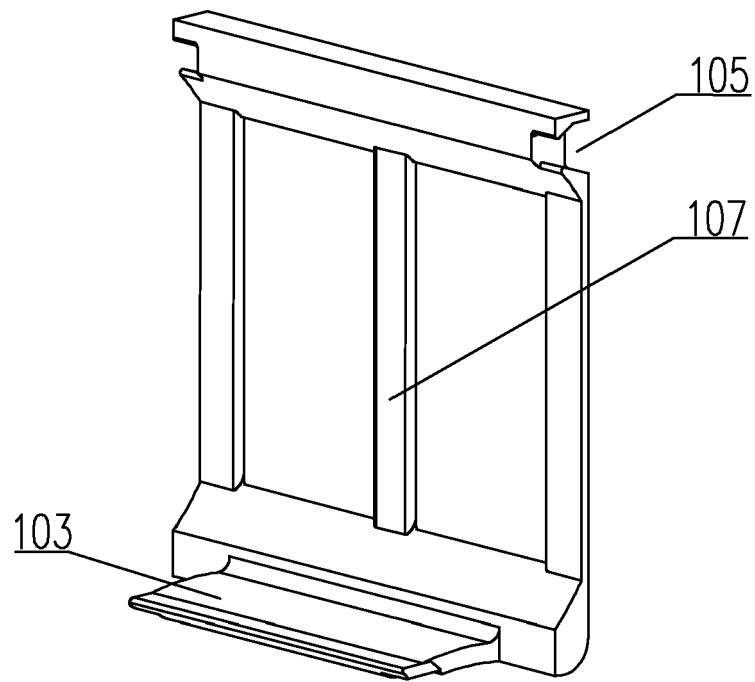


Fig.3

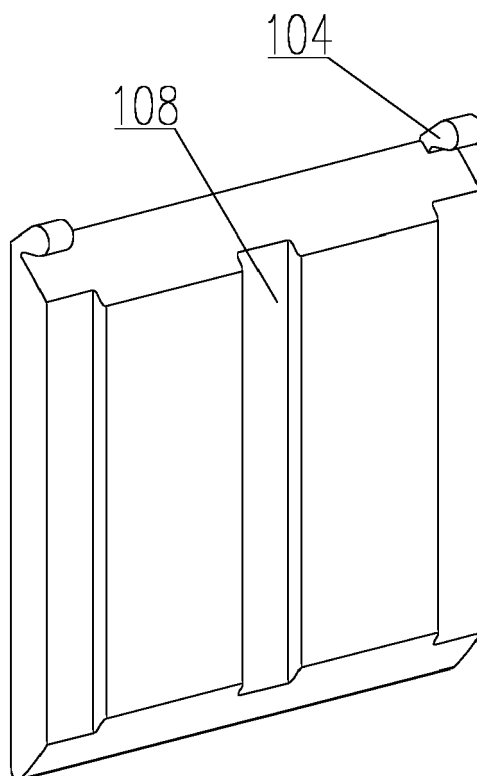


Fig.4

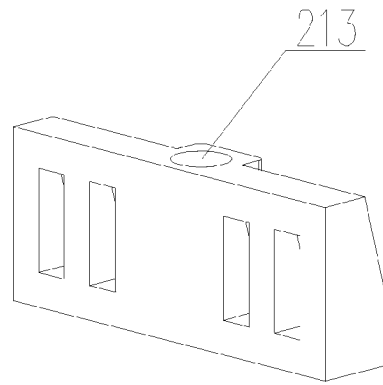


Fig.7

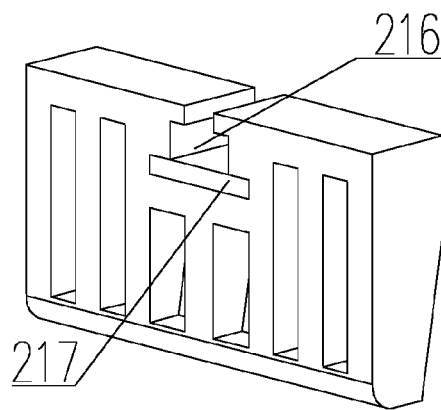


Fig.8

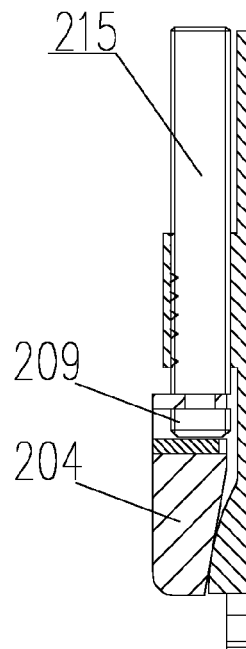


Fig.9

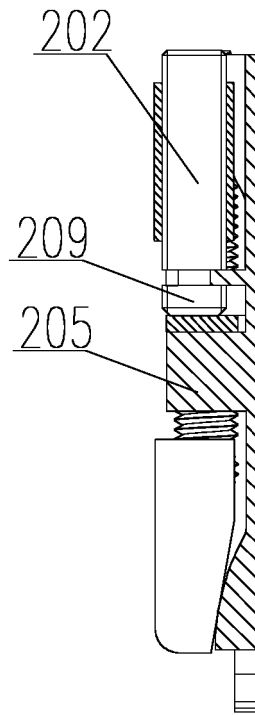


Fig.10

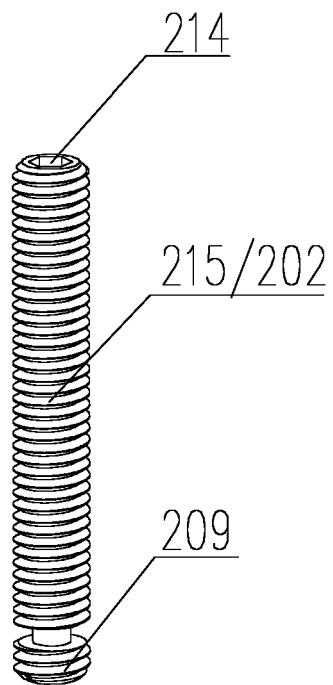


Fig.11



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 Application Number
EP 15 18 0605

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Place of search Munich		Date of completion of the search 6 November 2015	Examiner Arsac England, Sally
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The members are as contained in the European Patent Office EDP file on
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