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(71) Applicant: **COMPAS S.R.L.**  
**20090 Buccinasco (MI) (IT)**

(72) Inventor: **CARMIGNANI, Massimo**  
**20143 Milano (MI) (IT)**

(74) Representative: **Frasson, Luca et al**  
**Barzanò & Zanardo Milano S.p.A.**  
**Via Borgonuovo, 10**  
**20121 Milano (IT)**

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(54) **SYSTEM FOR FIXING SLAB-LIKE ELEMENTS, PARTICULARLY FOR RAILINGS, BALUSTRADES AND PARAPETS**

(57) The present invention relates to a system for fixing (1) slab-like elements (16), particularly for railings, balustrades and parapets, comprising:

- at least one base body (10), configured to be placed and fixed on a generic installation surface, made in the form of a box-shaped profile with a substantially U-shaped cross-section, open at the upper part, defining a channel (14) within which the lower portion of at least one protection slab-like element (16) is inserted;
- at least one lower support element (18) mounted on the lower internal surface of said channel (14);
- at least one lateral support and retaining element (26) of said at least one slab-like element (16), mounted on a first internal lateral surface (22) of said channel (14), wherein said lateral support and retaining element (26) comprises a plate (27) pivoting around a fixed pin element (38);

According to the invention, the fixing system (1) comprises a plurality of lateral support and retaining groups (24) of said at least one slab-like element (16), mounted on a second internal lateral surface (20) of said channel (14) which faces said first internal lateral surface (22), each of said lateral support and retaining groups (24) comprising:

- a slider (240) pivoting around a fixed pin element (241),

said slider (240) comprising a tab (242) protruding towards the inside of said channel (14), and a pair of inclined surfaces (243, 244) that are mutually opposite with respect to said protruding tab (242),

- a pair of wedges (245, 246), positioned so as to be mutually opposite with respect to said tab (242), each of said wedges (245, 246) having its own inclined surface (247, 248) adapted to slide on a respective inclined surface (243, 244) of said pair of inclined surfaces (243, 244) of said slider (240), a first wedge (245) of said pair of wedges (245, 246) being clampable on said tab (242) along a first clamping direction, by means of at least a first clamping member (249), a second wedge (246) of said pair of wedges (245, 246) being clampable on said tab (242) along a second clamping direction, substantially opposite to said first clamping direction, by means of at least one second clamping member (250), the adjustment of the clamping of said at least one first clamping member (249) and of said at least one second clamping member (250) allowing to modify, in synergy with the oscillation of said at least one lateral support and retaining element (26), the inclination of said slab-like element (16) around a vertical plane to obtain the perpendicularity of said slab-like element (16).

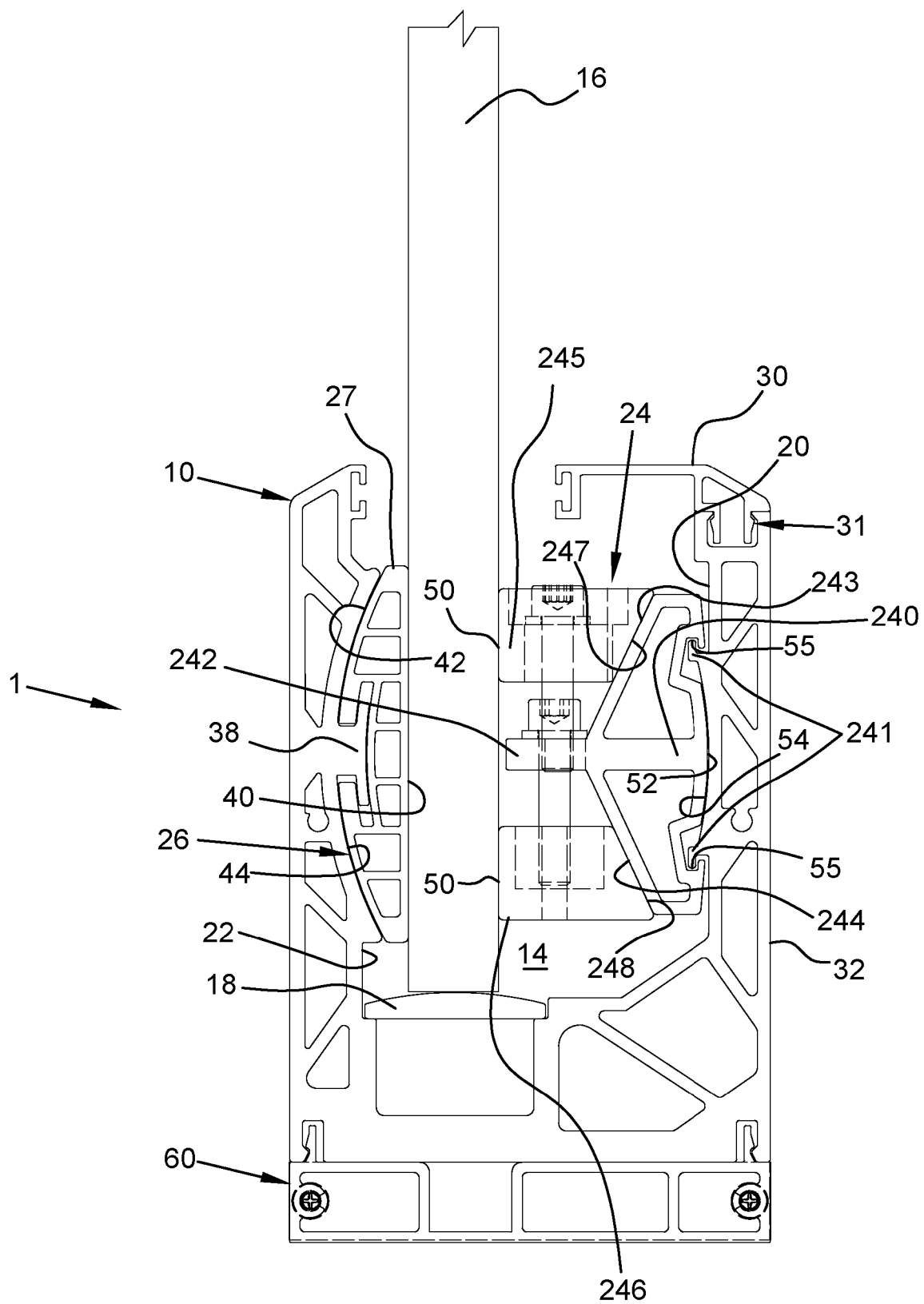


Fig. 3

## Description

**[0001]** The present invention relates to a system for fixing slab-like elements, particularly for railings, balustrades and parapets, where the slab-like elements constitute the protective elements of such railings, balustrades and parapets.

**[0002]** As is well known, there are parapets whose protective elements are of the slab type and are in many cases comprised of glass slabs.

**[0003]** Generally, such parapets made of glass slabs comprise a plurality of elements or base bodies capable of holding and supporting the slabs, whether or not in combination with a plurality of vertical uprights. Parapet elements or base bodies are configured to be permanently fixed to the ground or to the generic installation surface of the parapet, such as the walkable surface of a balcony or terrace.

**[0004]** In addition, it is well known that the walkable surfaces of balconies and terraces are built with a slope, in the order of about 1-2 degrees (about 2%-3%) with respect to a horizontal plane, to allow adequate rainwater runoff. As a result, the base elements or bodies of the parapets, once installed on the aforesaid surfaces, are also slightly inclined with respect to the horizontal and vertical planes.

**[0005]** On the other hand, the protective elements of the parapets, especially when they are made in the form of slab-like elements such as glass slabs, must be perfectly vertical for both aesthetic and safety reasons. The base elements or bodies of the parapets are therefore equipped with mechanisms for adjusting the inclination of the respective protective slab-like elements.

**[0006]** An example of an embodiment of a system for fixing slab-like elements for parapets that allows adjustment of the inclination of the respective protective slab-like elements is described in European patent EP3009580B1.

**[0007]** This fixing system comprises a plurality of base bodies fixed to the walkable surface, made in the form of a box-shaped profile with a U-shaped cross-section, open at the top so as to define a channel into which the lower portion of the slab-like element, such as a glass slab, is inserted.

**[0008]** The slab rests, with its lower edge, on a lower support element, and is held in a vertical position by two opposing lateral support and retaining elements, associated respectively with the two vertical side walls of the box-shaped profile with a U-shaped cross-section.

**[0009]** A first side element is defined by a pivoting plate that rests on the side face of the lower portion of the glass slab that is inserted into the base body.

**[0010]** A second lateral element is defined by two parallel series of oscillating plates resting on the opposite side face of the glass slab, which are individually clamped against the latter, in a direction substantially orthogonal to the plane defined by the glass slab itself.

**[0011]** The glass slab is then fixed in the desired posi-

tion by clamping each oscillating plate accordingly.

**[0012]** However, this well-known type of fixing system is not without its drawbacks. In particular, the positioning and inclination of the glass slab depends on the clamping adjustment of each of these plates in relation to the adjacent ones.

**[0013]** For example, clamping one or more plates of the upper series gives the glass slab an inclination in relation to the vertical plane opposite to that which is obtained by clamping one or more plates of the lower series.

**[0014]** Furthermore, in order to be able to safely support the glass slabs, this known type of fixing system has a large number of oscillating plates, for example six or eight plates for every 30 cm of length of the base body. Therefore, each metre of length of the glass slab has no less than 16 plates to be regulated one by one.

**[0015]** Consequently, the installer is forced to adjust the clamping of each plate very precisely and, taking into account that the clamping of one plate often involves a slight readjustment of the glass slab which affects the clamping of adjacent plates, the clamping operation must be repeated until the glass slab is stable in the desired position.

**[0016]** The main task of the present invention is to create a system for fixing slab-like elements, particularly for railings, balustrades and parapets, which solves the problems and overcomes the limitations of the prior art in a simple and functional way.

**[0017]** Within the context of this task, an object of the present invention is to create a fixing system that will simplify installation operations and reduce the duration thereof.

**[0018]** A further object of the invention consists of creating a fixing system that is capable of providing the broadest guarantees of reliability and safety when used.

**[0019]** The above-mentioned task, as well as the aforementioned purposes and others which will appear more clearly below, are achieved by a system for fixing slab-like elements, particularly for railings, balustrades and parapets as set out in claim 1.

**[0020]** Other features are provided in the dependent claims.

**[0021]** Further characteristics and advantages will become apparent from the description of a preferred but not exclusive embodiment of a system for fixing slab-like elements, particularly for railings, balustrades and parapets, illustrated only by way of non-limitative example with the aid of the accompanying drawings, in which:

figure 1 is a perspective view of a system for fixing slab-like elements, according to the invention;  
figure 2 is an exploded perspective view of the fixing system of figure 1;  
figure 3 is a schematic sectional view of the fixing system of figure 1;  
figure 4 is an exploded perspective view of a component of the fixing system of figure 1, according to the invention.

**[0022]** With reference to the above-mentioned figures, the system for fixing slab-like elements, particularly for railings, balustrades and parapets, indicated globally by reference number 1, comprises:

- at least one base body 10, configured to be placed and fixed on a generic installation surface, made in the form of a box-shaped profile with a substantially U-shaped cross-section, open at the upper part, defining a channel 14 within which the lower portion of at least one protection slab-like element 16 is inserted;
- at least one lower support element 18 mounted on the lower internal surface of the channel 14;
- at least one lateral support and retaining element 26 of the at least one slab-like element 16, mounted on a first internal lateral surface 22 of the channel 14, wherein such lateral support and retaining element 26 comprises a plate 27 pivoting around a fixed pin element 38.

**[0023]** According to the invention, the fixing system 1 comprises a plurality of lateral support and retaining groups 24 of the slab-like element 16, mounted on a second internal lateral surface 20 of the channel 14 which faces the first internal lateral surface 22. Each of said lateral support and retaining groups 24 comprises:

- a slider 240 pivoting around a fixed pin element 241, where such said slider 240 comprises a tab 242 protruding towards the inside of the channel 14, and a pair of inclined surfaces 243, 244 that are mutually opposite with respect to such protruding tab 242, one above and the other below the tab 242,
- a pair of wedges 245, 246, positioned so as to be mutually opposite with respect to the tab 242 of the slider 240, one above and the other below the tab 242, where each of the wedges 245, 246 has its own inclined surface 247, 248 adapted to slide on a respective inclined surface 243, 244 of the pair of inclined surfaces 243, 244 of the slider 240.

**[0024]** A first wedge 245 of the pair of wedges 245, 246 is clampable on the tab 242 along a first clamping direction, by means of at least a first clamping member 249, whereas a second wedge 246 of the pair of wedges 245, 246 is clampable on the tab 242 along a second clamping direction, substantially opposite to said first clamping direction, by means of at least one second clamping member 250.

**[0025]** The adjustment of the clamping of the first clamping member 249 and of the second clamping member 250 allowing to modify, in synergy with the oscillation of the at least one lateral support and retaining element 26 around the fixed pin element 38, the inclination of the slab-like element 16 around a vertical plane to obtain the perpendicularity of the slab-like element 16 itself.

**[0026]** Advantageously, the two wedges 245 and 246

are each provided with a substantially flat front surface 50, configured to engage by contrast with the slab-like element 16.

**[0027]** Advantageously, the installation surface of the base body 10 may be a walkable surface, such as the walkable surface of a balcony of a building. It should be noted that in this description, the horizontal and vertical planes and directions, as well as the terms "upper" and "lower" refer to the aforementioned installation surface of fixing system 1.

**[0028]** As illustrated in particular in figure 3, the lower portion of the slab-like element 16 is inserted into the channel 14 formed in the base body 10 so that its lower edge rests on the lower support element 18, while the opposite faces of the slab-like element 16 are retained, on one side, by the at least one lateral support and retaining element 26, and on the opposite side, by the plurality of lateral support and retaining groups 24.

**[0029]** The clamping of the first and/or second clamping elements 249, 250 causes a slight slippage of the first and/or second wedge 245, 246 with respect to the inclined surfaces 243, 244 of the pivoting slider 240. Due to the pivoting possibility also provided by the pivoting plate 27, the differential clamping of the first and second clamping elements 249, 250 performs the dual function of adjusting the inclination with respect to a vertical plane of the slab-like element 16 and of holding the slab-like element 16 in position, by contrast.

**[0030]** Since the first and second clamping elements 249, 250 act in opposite directions, the clamping of one of the two clamping elements 249, 250 imparts an inclination with respect to a vertical plane opposite to the inclination imparted by means of the clamping of the other of the two clamping elements 249, 250.

**[0031]** Advantageously, the at least one base body 10 may be provided at the bottom with one or more fixing means, such as bolts, for fixing the base body to the installation surface of the system 1 itself, such as the walkable surface of a balcony or terrace.

**[0032]** Advantageously, the protective slab-like element 16 can be comprised of a slab of laminated glass. The transverse thickness of the slab-like element can be comprised between 15 and 30 millimetres, and preferably comprised between 17 and 25 millimetres.

**[0033]** Advantageously, the at least one base body 10 has a length which is greater than or equal to the length in the longitudinal direction of the slab-like element 16 inserted therein.

**[0034]** The length of the base body 10 may be comprised between 1 and 6 metres, preferably comprised between 3 and 6 metres. Even more preferably, each base body 10 may have a length substantially equal to 3 metres or substantially equal to 6 metres.

**[0035]** Advantageously, it is possible to join two or more base bodies 10 longitudinally to cover overall lengths of the parapet, railing or balustrade that are multiples of the length of the single base body 10.

**[0036]** In essence, the base body 10 may consist of a

single aluminium profile adapted to retain a single glass slab.

**[0037]** Advantageously, the fixing system 1 comprises for each meter of length of the base body 10 a number of lateral support and retaining groups 24 between four and six, preferably between four and five, and even more preferably equal to four.

**[0038]** Advantageously, the lower support element 18 is provided with a convex upper surface to facilitate any inclinations, with respect to a vertical plane, that the slab-like element 16 may assume during assembly.

**[0039]** The lower support element 18 may have a length that is substantially equal to the length in the longitudinal direction of the corresponding base body 10, as well as a width that is substantially equal to the width in the transverse direction of the channel 14, so as to provide the maximum possible support surface for the protective slab-like element 16. The lower support element 18 may be made of a polymeric material, such as polyvinyl chloride or polycarbonate.

**[0040]** Advantageously, the plate 27 pivoting around the fixed pin element 38 is provided with a substantially flat front surface 40, configured to engage by contrast with the slab-like element 16, as well as a convex rear surface 42, configured to adhere to and slide over a corresponding concave portion 44 of the first inner side surface 22 when the plate 27 pivots around the fixed pin element 38.

**[0041]** Preferably, a single plate 27 is provided on the first inner side surface 22 of the channel 14. Said plate 27 conveniently has a length that is substantially equal to the length in the longitudinal direction of the corresponding base body 10, as well as a height that is substantially equal to the height in the vertical direction of the channel 14, so as to provide the maximum possible support surface (consisting of the front surface 40) for the slab-like element 16.

**[0042]** Advantageously, as illustrated in particular in figures 2 and 3, the at least one first clamping member 249 and the at least one second clamping member 250 of each group 24 are both accessible from above, through the portion of the channel 14 open at the top, on the same side as the base body 10. Preferably the side from which the clamping members 249 and 250 are accessible is the inside of the parapet or railing or balustrade.

**[0043]** Since the clamping members 249 and 250 of the groups 24 need to be accessible from above, and therefore there is a space between the slab-like element 16 and the inner side wall 32 of the base body 10, the fixing system 1 may comprise an upper cover profile 30 configured to close at the top the opening present between the slab-like element 16 and the inner side wall 32 of the base body 10. Preferably such upper cover profile 30 has, on a first side, snap coupling means 31, or sliding coupling means, with the inner side wall 32 of the base body 10 and, on a second side, opposite to such first side, a gasket 33 configured to abut against the internal face of the slab-like element 16.

**[0044]** Advantageously, at the outer side wall 34 of the base body 10 an additional gasket 35 is provided, configured to abut against the outer face of the slab-like element 16.

**[0045]** By means of the upper cover profile 30, it is possible to cover the upper part of the base body 10 and thus protect the components inside the channel 14, leaving only the slab-like elements 16 to emerge in the assembled configuration of the system.

**[0046]** The presence of the gaskets 33 and 35 prevents the infiltration and accumulation of water inside the base body 10.

**[0047]** Advantageously, the fixing system 1 also comprises closing plates of the open longitudinal ends of the base body 10, preferably sealed and preferably with a snap or sliding coupling.

**[0048]** Advantageously, the at least one first clamping member 249 comprises a screw 251, for example of the Allen type, passing through a through hole 253 obtained in the first wedge 245, while the corresponding nut screw 255 is formed in the tab 242.

**[0049]** Advantageously, the at least one second clamping member 250 comprises a screw 252, for example of the Allen type, passing through a through hole or opening 254 obtained in the tab 242, whereas the corresponding nut screw 256 is formed in the second wedge 246.

**[0050]** As illustrated in particular in figure 4, there are two first clamping members 249 associated with the first wedge 245 and a single second clamping member 250 associated with the second wedge 246. The first two clamping members 249 are preferably located on opposite sides of the second clamping member 250.

**[0051]** Advantageously, the second wedge 246 may have a pair of through holes 257 which may be at least partially crossed by the lower end of the screws 251, without any mutual mechanical engagement.

**[0052]** Advantageously, the slider 240 is provided with a convex rear surface 52, configured to adhere to and slide over a corresponding concave portion 54 of the second inner side surface 20 when the slider 240 pivots around the fixed pin element 241.

**[0053]** As illustrated particularly in figures 3 and 4, the fixed pin element 241 is advantageously defined by a pair of longitudinal hooks that engage in respective longitudinal seats 55 formed in the slider 240.

**[0054]** The coupling between the longitudinal hooks and their respective longitudinal seats 55 has mechanical play such that the slider 240 can be pivoted around the fixed pin element 241.

**[0055]** Advantageously, one or more substantially flat profiles 60 may be interposed between the installation surface of the fixing system 1 and the base body 10 to define channels 61 configured to allow rainwater to drain from the inside to the outside of the parapet, railing or balustrade.

**[0056]** The operation of the fixing system 1 is clear and evident from what has been described.

**[0057]** The installation of the system for fixing 1 slab-like elements 16 according to the invention is carried out as follows.

**[0058]** A first step is to support and subsequently fix the base body 10, or the base bodies 10 if there are several of them, to the installation surface.

**[0059]** Following the installation of the base body 10, the slab-like element 16 required to complete the parapet, railing or balustrade is inserted into the channel 14.

**[0060]** Once the slab-like element 16 is inserted into the channel 14 and rests at the bottom on the lower support element 18 and laterally on the pivoting plate 27 of the lateral support and retaining element 26, the clamping of the clamping elements 249 and 250 of each of the lateral support and retaining groups 24 is adjusted, so as to simultaneously adjust the vertical inclination for the perpendicularity of the slab-like element 16 and clamp the slab-like element 16 in position.

**[0061]** The adjustment of the clamping elements 249, 250 is conveniently carried out from the inside of the parapet, railing or balustrade and easily from above, rather than, for example, from the side, as is the case with the solution described in European patent EP3009580B1.

**[0062]** In practice, it has been found that the system for fixing slab-like elements, particularly for railings, balustrades and parapets, according to the present finding, fulfils the task as well as the intended purpose as it allows the vertical inclination of the slab-like element to be adjusted very simply and quickly, locking it in the desired position with a few simple screw clamping operations.

**[0063]** Another advantage of the clamping system, according to the invention, is that it significantly reduces the number of components that need to be clamped in order to lock the slab-like element in position, and also reduces the readjustment effects that the clamping of one clamping element has on those nearby.

**[0064]** Yet another advantage of the fixing system, according to the invention, is that the installation of the slab-like element, as well as the maintenance of the system itself can be carried out from the inside of the parapet, railing or balustrade, thus remaining inside the balcony or terrace, without having to resort to external ladders or scaffolding, as it is not necessary to reach the outside of the parapet, railing or balustrade.

**[0065]** The system for fixing slab-like elements, particularly for railings, balustrades and parapets, thus conceived, is subject to numerous modifications and variations, all of which fall within the scope of the inventive concept.

**[0066]** Furthermore, all the details can be replaced by other technically equivalent elements.

**[0067]** In practice, any materials can be used according to requirements, as long as they are compatible with the specific use, the dimensions and the contingent shapes.

## Claims

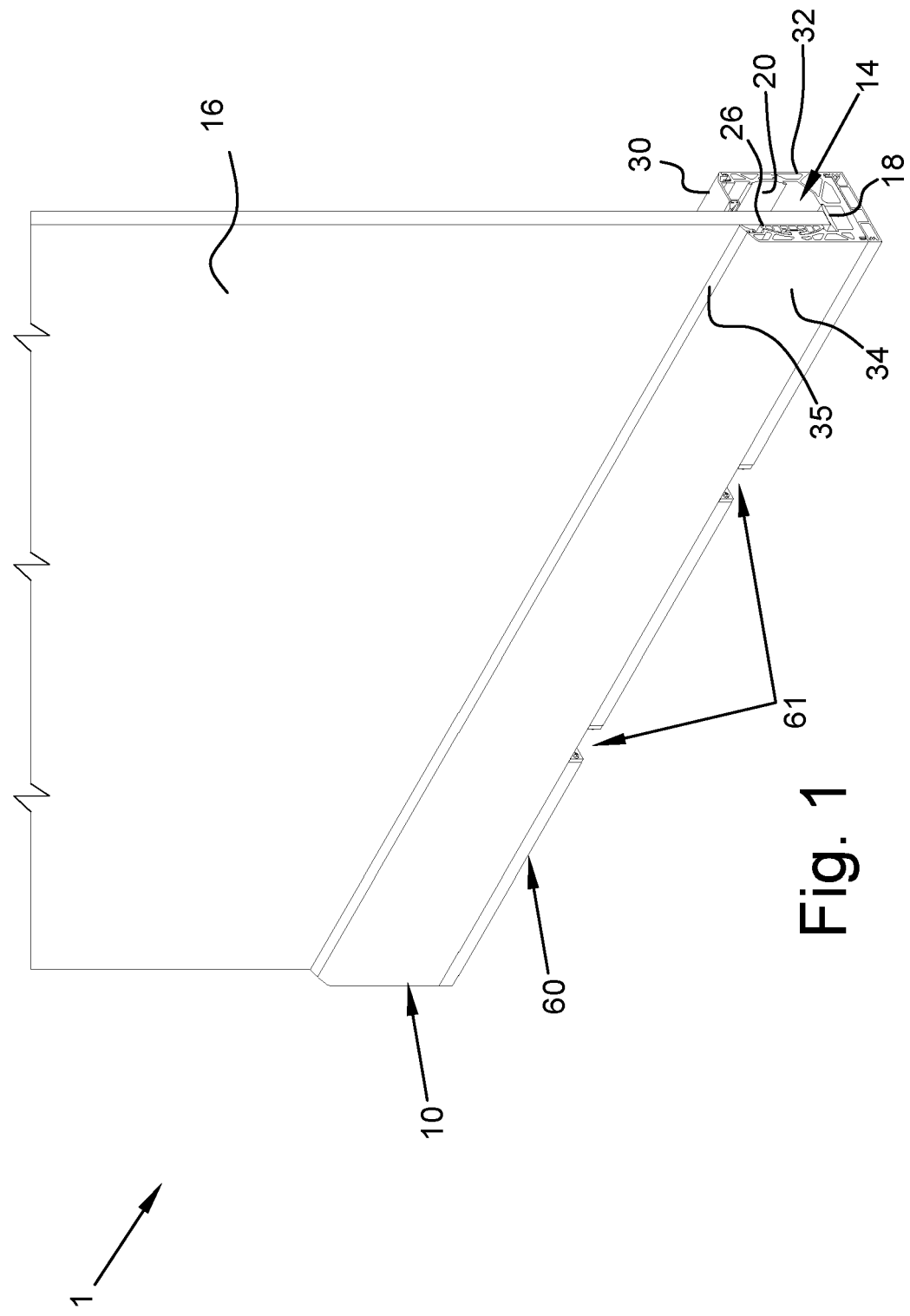
1. Fixing system (1) of slab-like elements (16), particularly for railings, balustrades and parapets, comprising:

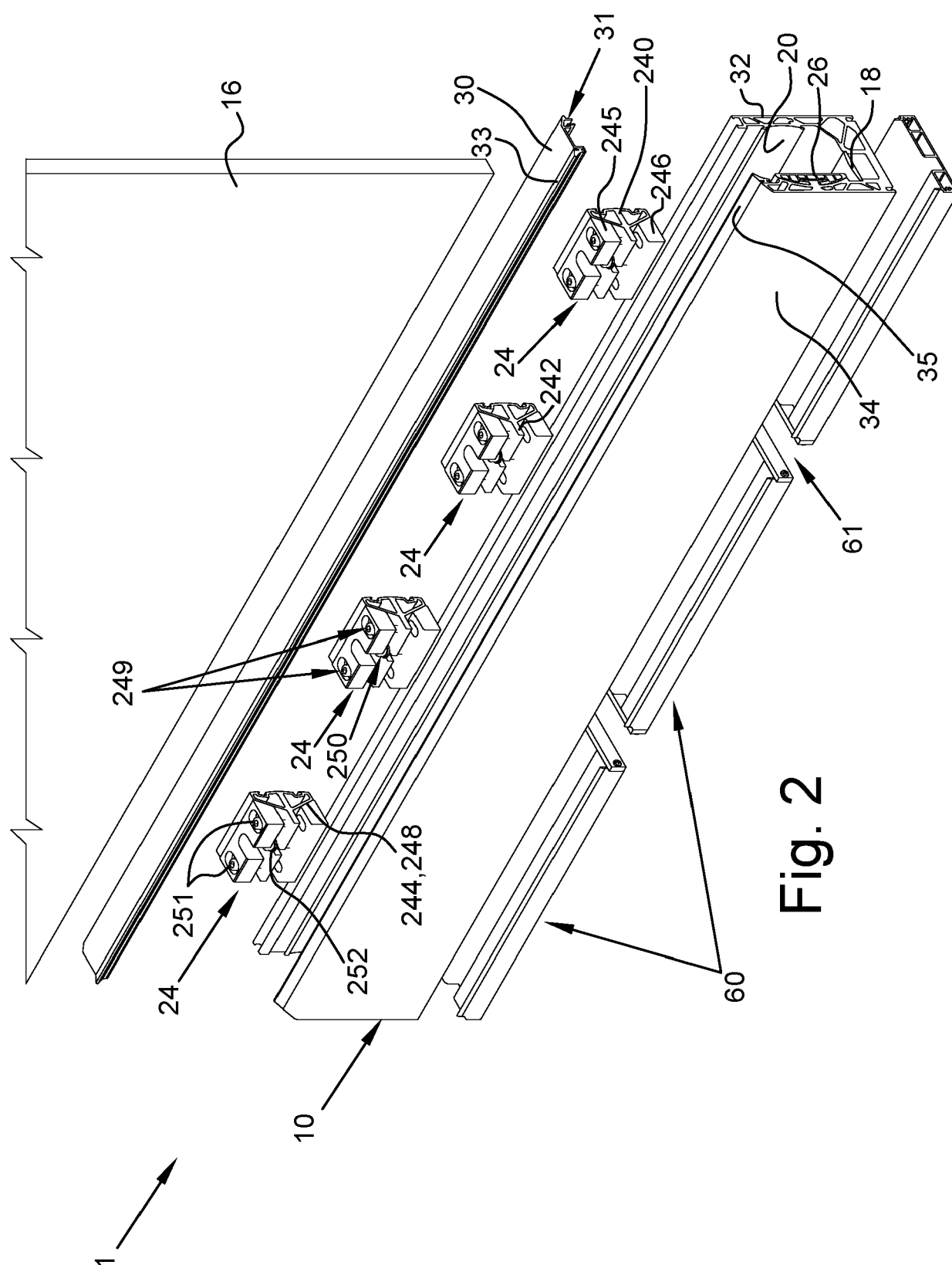
- at least one base body (10), configured to be placed and fixed on a generic installation surface, made in the form of a box-shaped profile with a substantially U-shaped cross-section, open at the upper part, defining a channel (14) within which the lower portion of at least one protection slab-like element (16) is inserted;
- at least one lower support element (18) mounted on the lower internal surface of said channel (14);
- at least one lateral support and retaining element (26) of said at least one slab-like element (16), mounted on a first internal lateral surface (22) of said channel (14), wherein said at least one lateral support and retaining element (26) comprises a plate (27) pivoting around a fixed pin element (38);

**characterized in that** it comprises a plurality of lateral support and retaining groups (24) of said at least one slab-like element (16), mounted on a second internal lateral surface (20) of said channel (14) which faces said first internal lateral surface (22), each of said lateral support and retaining groups (24) comprising:

- a slider (240), provided with a convex back surface (52), configured to slide on a corresponding concave portion (54) of said second inner side surface (20), pivoting around a fixed pin element (241), said slider (240) comprising a tab (242) protruding towards the inside of said channel (14), and a pair of inclined surfaces (243, 244) that are mutually opposite with respect to said protruding tab (242),
- a pair of wedges (245, 246), positioned so as to be mutually opposite with respect to said tab (242), each of said wedges (245, 246) having its own inclined surface (247, 248) adapted to slide on a respective inclined surface (243, 244) of said pair of inclined surfaces (243, 244) of said slider (240), a first wedge (245) of said pair of wedges (245, 246) being clampable on said tab (242) along a first clamping direction, by means of at least a first clamping member (249), a second wedge (246) of said pair of wedges (245, 246) being clampable on said tab (242) along a second clamping direction, substantially opposite to said first clamping direction, by means of at least one second clamping member (250), the adjustment of the clamping of said at least one first clamping member (249) and of

- said at least one second clamping member (250) allowing to modify, in synergy with the oscillation of said at least one lateral support and retaining element (26), the inclination of said slab-like element (16) around a vertical plane to obtain the perpendicularity of said slab-like element (16). 5
2. Fixing system (1), according to claim 1, **characterized in that** said first wedge (245) and said second wedge (246) are provided with a substantially flat front surface (50), configured to engage by contrast with said slab-like element (16). 10
  3. Fixing system (1), according to claim 1 or 2, **characterized in that** said at least one base body (10) has a length which is greater than or equal to the length in the longitudinal direction of the slab-like element (16) inserted therein. 15
  4. Fixing system (1), according to one or more of the preceding claims, **characterized in that** it comprises for each metre of length in the longitudinal direction of said base body (10) a number of said lateral support and retaining groups (24) comprised between four and six, preferably comprised between four and five, and even more preferably equal to four. 20 25
  5. Fixing system (1), according to one or more of the preceding claims, **characterized in that** said at least one first clamping member (249) and said at least one second clamping member (25) are both accessible from above, through the upper open portion of said channel (14), on the same side of said base body (10) and of said slab-like element (16). 30 35
  6. Fixing system (1), according to one or more of the preceding claims, **characterized in that** it comprises an upper cover profile (30) configured to close at the top the opening present between said slab-like element (16) and the inner side wall (32) of said base body (10). 40
  7. Fixing system (1), according to claim 6, **characterized in that** said upper cover profile (30) has, on a first side, snap coupling means (31), or sliding coupling means, with said inner side wall (32) of said base body (10) and on a second side, opposite to said first side, a gasket (33) configured to abut against said slab-like element (16). 45 50
  8. Fixing system (1), according to one or more of the preceding claims, **characterized in that** said at least one first clamping member (249) comprises a screw (251) passing through a through hole (253) obtained in said first wedge (245), a corresponding nut screw (255) being formed in said tab (242). 55
  9. Fixing system (1), according to one or more of the preceding claims, **characterized in that** said at least one second clamping member (250) comprises a screw (252) passing through a through hole (254) obtained in said tab (242), a corresponding nut screw (256) being formed in said second wedge (246).
  10. Fixing system (1), according to one or more of the preceding claims, **characterized in that** it comprises two first clamping members (249) and a single second clamping member (250), wherein said two first clamping members (249) are placed on opposite sides with respect to said second clamping member (250).





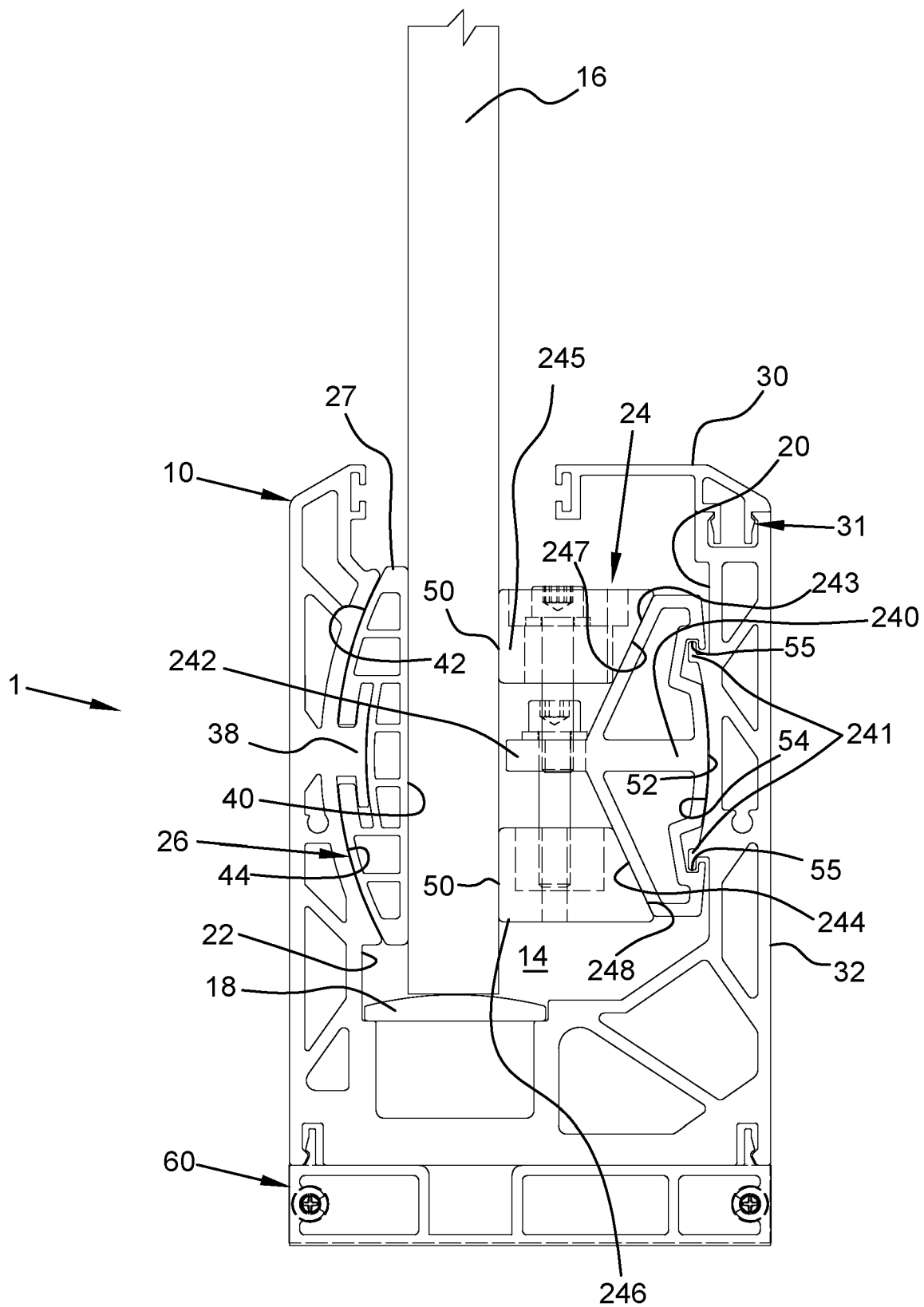


Fig. 3

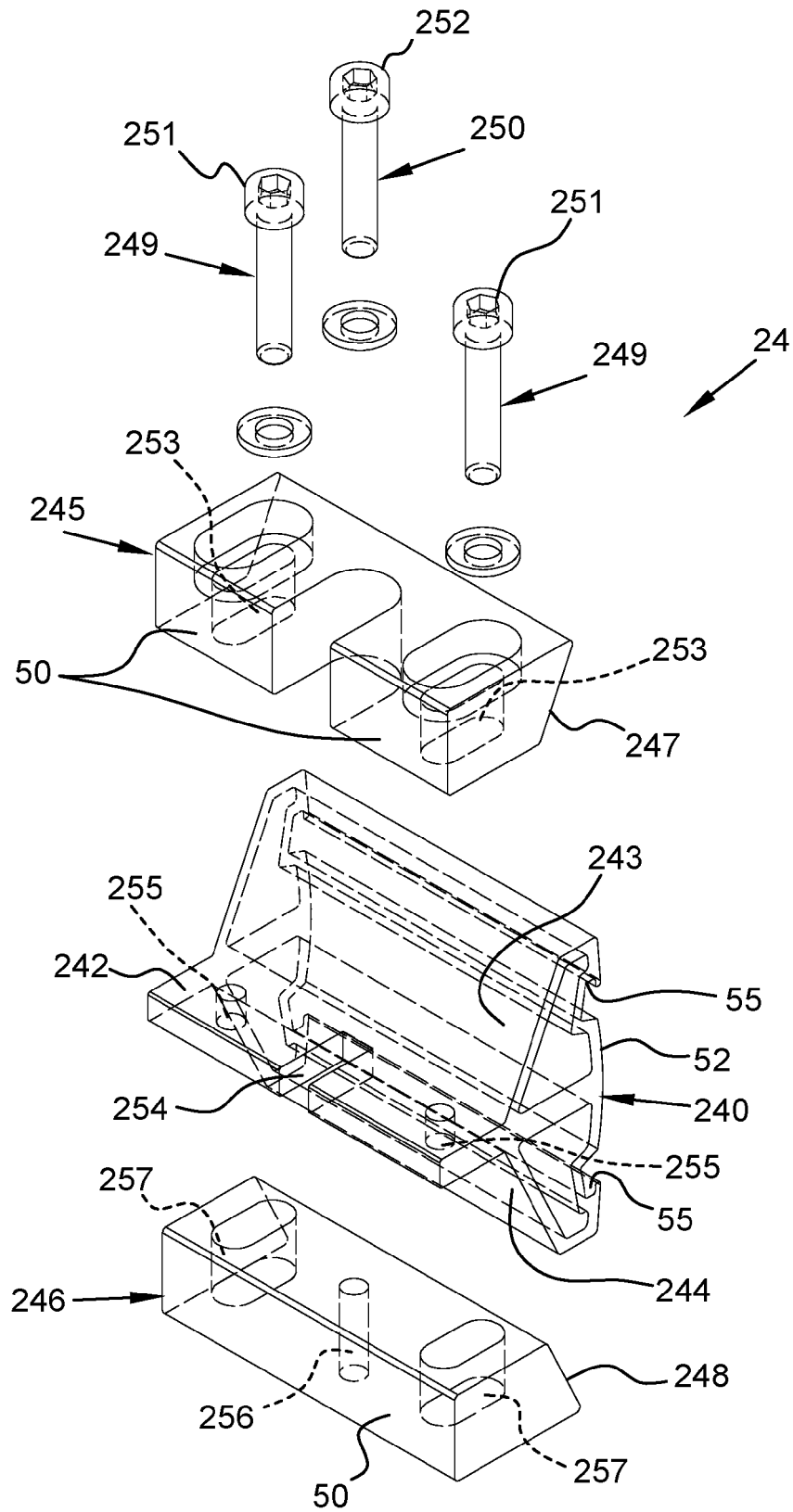


Fig. 4



## EUROPEAN SEARCH REPORT

Application Number

EP 22 17 8161

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EPO FORM 1503 03:82 (P04C01)

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                       |                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                          | Relevant to claim                                                                                                                                                                                                                                                                     | CLASSIFICATION OF THE APPLICATION (IPC) |
| A,D                                                                                                                                                                                                                                                    | EP 3 009 580 B1 (COMPAS SRL [IT])<br>22 March 2017 (2017-03-22)<br>* paragraphs [0001], [0016], [0017],<br>[0020], [0022], [0031] *<br>* figures 2,3 *                 | 1-10                                                                                                                                                                                                                                                                                  | INV.<br>E04F11/18                       |
| A                                                                                                                                                                                                                                                      | EP 3 121 345 A1 (QINGDAO JINFER INT<br>TRADING CO LTD [CN])<br>25 January 2017 (2017-01-25)<br>* paragraphs [0001], [0006], [0015],<br>[0017] *<br>* figures 1,2,5,6 * | 1-10                                                                                                                                                                                                                                                                                  |                                         |
| A                                                                                                                                                                                                                                                      | EP 2 921 606 A1 (QINGDAO JINFER INTERNAT<br>TRADING CO LTD [CN])<br>23 September 2015 (2015-09-23)<br>* figures 1-7 *                                                  | 1-10                                                                                                                                                                                                                                                                                  |                                         |
| A                                                                                                                                                                                                                                                      | WO 2018/111208 A1 (SAKAR BURAK [TR])<br>21 June 2018 (2018-06-21)<br>* figures 1-3 *                                                                                   | 1-10                                                                                                                                                                                                                                                                                  | TECHNICAL FIELDS<br>SEARCHED (IPC)      |
| A                                                                                                                                                                                                                                                      | EP 1 818 476 A1 (RAHIKKA JOUKO [FI])<br>15 August 2007 (2007-08-15)<br>* figure 2 *                                                                                    | 1-10                                                                                                                                                                                                                                                                                  | E04F                                    |
| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                       |                                         |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                       |                                                                                                                                                                        | Date of completion of the search<br><b>21 October 2022</b>                                                                                                                                                                                                                            | Examiner<br><b>Arsac England, Sally</b> |
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