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(54) **A fixation element and a washer/dryer device**

(57) A fixation element (3) according to the present invention is suitable for use in assembling a body part (1) and a base part (2) together in a washer/dryer device comprising said body part (1) having lateral walls (1 a) and a rear wall (1 b); and said base part (2) having a body (2a), a frame part (2b) disposed on the upper edge of the body (2a) so as to extend outward along said edge, and a support part (2c) disposed on said edge on the side of the frame part (2b) facing the body (2) such that a gap (2g) is formed between the frame part (2b) and the support part, wherein the lower part of the wall (1a, 1 b) at the body part (1) is placed into said gap (2g) of the base part, said fixation element (3) comprising a base (3a); a first leg (3b) extending from one corner of the base (3a); a second leg (3c) extending in parallel to the first leg (3b) from an opposite corner of said base and a gap (3f) disposed between said legs (3b, 3c).

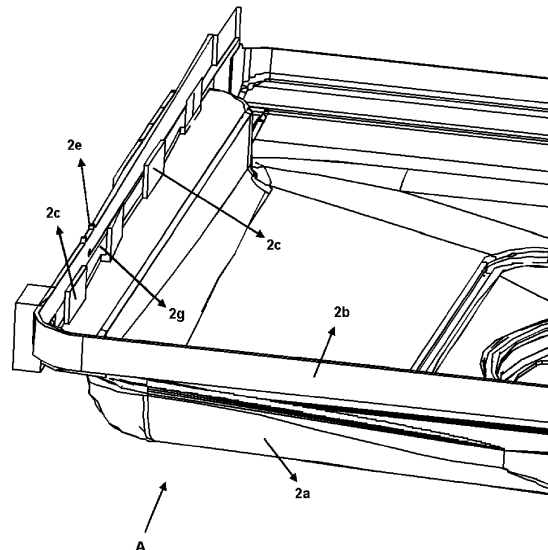


Figure 4

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## Description

### Field of Invention

[0001] The present invention relates to fixation elements employed in washer/dryer devices and to washer/dryer devices comprising such fixation elements.

### Prior Art

[0002] Washer/dryer devices and particularly the dishwashers according to the prior art comprise a body part, a base part and various connection devices, which constitute a tub suitable for placing items to be washed. The body part and the base part can be monolithically produced and one representative embodiment thereof is disclosed in the published patent document US2009211614A1. However, various difficulties are encountered in the production of a monolithic structure. For this reason, these parts can alternatively be produced separately and then mounted to each other during assembly using various fixation elements.

[0003] For instance, the patent document JP2004267679A according to the prior art discloses a dishwasher with a simply and inexpensively produced washing tub. The washing tub of the dishwasher disclosed in said document comprises an upper surface structural member constituting an upper part, a washing tub member constituting a side face, and a bottom structural member constituting a bottom thereof. Said dishwasher further comprises a connection member, which is positioned on the outer side surface of the washing tub member, and joins the upper surface structural member and the bottom structural member to each other. Thus, the components constituting the washing tub are produced separately and then assembled in a simple manner. However, said connection member joins the upper surface structural member and the bottom structural member to each other, but cannot provide a solution for the assembly of those components constituting the body of the washing tub.

### Brief Description of Invention

[0004] A fixation element developed according to the present invention is suitable for assembling a body part and a base part together in a washer/dryer device, said device comprising at least one body part having at least two lateral walls and at least one rear wall; and at least one base part having at least one body, at least one frame part disposed on at least one upper edge of the body so as to extend outward along said edge, and at least support part disposed on said upper edge of the body on the side of the frame part facing the body such that at least one gap is formed between the frame part and the support part, wherein the body part and the base part are mounted to each other by placing the lower part of at least one wall comprised by the body part into said gap provided

in the base part, said fixation element comprising at least one base; at least one first leg, extending from one corner of the base and being disposed so as to contact an outer surface of the frame part not facing said gap when the body part is placed into the gap provided in the base part; at least one second leg, extending in parallel to the first leg from an opposite corner of said base and being disposed so as to be placed between one wall of the body part and the frame part when the body part is placed into the gap provided in the base part; and at least one gap provided between the first leg and the second leg, wherein said fixation element has a U-shape and is produced from a flexible material by which the fixation element can maintain the U-shape and said legs can be resiliently moved relative to each other.

[0005] By virtue of the fixation element developed according to the present invention, the body part and the base part of a washer/dryer device can be assembled in a simple and firm manner. The fixation element according to the present invention further provides an assembly which does not cause corrosion and/or deformation.

### Object of Invention

[0006] The object of the present invention is to develop a fixation element suitable for use in washer/dryer devices.

[0007] Another object of the present invention is to develop a fixation element which can easily be mounted and dismantled.

[0008] A further object of the present invention is to develop a fixation element which provides a firm and reliable assembly, and at the same time is easily mounted and dismantled.

[0009] Another object of the present invention is to provide a washer/dryer device comprising a fixation element developed to achieve the objects given above.

### Description of Figures

[0010] Illustrative embodiments of a fixation element developed according to the present invention and a washer/dryer device in which this element can be used are illustrated in the accompanying figures briefly described hereunder.

Figure 1 is a perspective illustration of a body part comprised by a washer/dryer device according to the present invention.

Figure 2 is a perspective illustration of a base part comprised by the washer/dryer device according to the present invention.

Figure 3 is a side illustration of the base part comprised by the washer/dryer device according to the present invention.

Figure 4 is a perspective illustration of detail A given in Figure 2.

Figure 5 is a perspective illustration of a fixation de-

vice according to the present invention.

Figure 6 is a detailed illustration of the fixation device in a mounted state to the washer/dryer device.

Figure 7 is a cross-sectional side illustration of the part of the washer/dryer device to which the fixation element is mounted.

**[0011]** The parts in said figures are individually referenced as following.

|                      |          |
|----------------------|----------|
| Body part            | (1)      |
| Lateral wall         | (1a)     |
| Rear wall            | (1b)     |
| Base part            | (2)      |
| Body                 | (2a)     |
| Frame part           | (2b)     |
| Support part         | (2c)     |
| Fastening protrusion | (2e)     |
| Hole                 | (2f)     |
| Gap                  | (2g, 3f) |
| Fixation element     | (3)      |
| Base                 | (3a)     |
| First leg            | (3b)     |
| Second leg           | (3c)     |
| Third leg            | (3d)     |
| Outer surface        | (3e)     |
| Inclined surface     | (3g)     |
| Inner surface        | (3h)     |
| Connection slot      | (3j)     |
| Connection member    | (4)      |

### **Description of Invention**

**[0012]** Washer/dryer devices and particularly the dish-washers according to the prior art comprise a body part and a base part, which constitute a washing tub where items to be washed are placed. These parts can either be produced monolithically or separately and assembled afterwards. Various methods such as screwing, gluing and coupling can be used for this assembly process. The present invention, in turn, provides a fixation element which was developed as an alternative to said assembly methods, as well as a washer/dryer device comprising this fixation element.

**[0013]** The fixation element (3) developed according to the present invention, illustrated in Figure 5, is suitable for assembling a body part (1) and a base part (2) together in a washer/dryer device (not illustrated in the figures), comprising at least one body part (1) illustrated in Figure 1 and at least one base part (2), illustrated in figures 2-4, to which said body part (1) is mounted. Said body part (1) has at least two lateral walls (1 a) and at least one rear wall (1 b), whereas said base part (2) comprises at least one body (2a) preferably with a pool shape, at least one frame part (2b) disposed on at least one upper edge

of the body (2a) so as to extend outward along said edge, and at least support part (2c) disposed on said upper edge of the body (2a) on the side of the frame part (2b) facing the body (2) such that at least one gap (2g) is formed between the frame part (2b) and the support part. The lower part of at least one wall (1 a or 1 b) comprised by the body part (1) is placed into said gap (3g) provided in the base part (2) so that the body part (1) and the base part (2) are mounted to each other. This support part (2c) can either be a monolithic part extending along said upper edge, or may have a multipart structure disposed along the upper edge at certain intervals.

**[0014]** The fixation element (3) has a U-shape comprising at least one base (3a); at least one first leg (3b) extending from one corner of the base (3a); at least one second leg (3c) extending in parallel to the first leg (3b) from an opposite corner of said base (3a); and at least one gap (3f) provided between the first leg (3b) and the second leg (3c). The fixation element (3) is further biased to maintain this U-shape and is produced from a flexible material by which said legs (3b, 3c) can be resiliently moved relative to each other. As illustrated in figures 6 and 7, the fixation element (3) is mounted so that the second leg (3c) is placed in between the frame part (2b) and one wall (lateral wall (1a) or rear wall (1b)) of the body part (1), and the first leg (3b) contacts one outer surface of the frame part (2b) not facing said gap (2g), when the body part (1) is placed into the gap (2g) provided in the base part (2). Accordingly, the fixation element (3) exerts a force on the body part (1) towards the support part (2c), such that the body part (1) becomes wedged between the fixation element (3) and the support part (2c) and fixed. By virtue of the fixation element (3) according to the present invention, the body part (1) and the base part (2) are mounted to each other in a single action, without using any components (e.g. screw) which would cause corrosion and/or deformation. Besides the ease of assembly, the fixation element (3) according to the present invention further enables to disassemble the body part (1) and the base part (2) from each other in an easy manner.

**[0015]** According to a preferred embodiment of the present invention, the fixation element (3) comprises at least one third leg (3d) extending from a free end of the first leg (3b) towards the second leg (3c). When the fixation element (3) is mounted, an inner surface (3h) of this third leg (3d) facing the gap (3f) provided in the fixation element (3) rests against a lower side of the frame part (2b). Thus, a more secure and reliable mounting is ensured for the fixation element (3). Additionally, the body part (1) and the base part (2) are wedged in between the second leg (2c) and the third leg (2d), such that these are tightly mounted to each other. According to this embodiment of the present invention, an outer surface (3e) of the third leg (3d) is provided with a inclined structure to facilitate the mounting of the fixation element (3).

**[0016]** According to another preferred embodiment of the present invention, at least one inclined surface (3g)

is provided on the part of the free end of the second leg (3c) disposed in the fixation element (3) facing the gap (3f) provided therein (3). This inclined surface (3g) exerts force on the body part (1) so that the body part (1) is pressed against the support part (2c) when the second leg (3c) is placed in between the frame part (2b) and the body part (1) and, at the same time, the mounting of the fixation element (3) is facilitated with this inclined surface (3g) making contact with the frame part (2b). This inclined surface (3g) is preferably obtained by means of a chamfering method.

**[0017]** According to a further preferred embodiment of the present invention, the fixation element (3) comprises at least one concentric connection slot (3j) on each of the first leg (3b) and second leg (3c). According to this embodiment, preferably at least one hole (2f) is provided on the frame part (2b) which is concentric with the connection holes (3j), wherein at least one connection member (4) (illustrated in Figure 6) is mounted to said slots (3j) and hole (2f) so that the fixation element (3) is fixed to the frame part (2b).

**[0018]** In another representative embodiment of the present invention illustrated in the figures, the base (3a) of the fixation element (3) is placed in between at least two fastening protrusions (2e) disposed on the frame part (2b). Thus, any dislocation of the fixation element (3) is prevented when the device is operated and/or transported.

**[0019]** By virtue of the fixation element (3) developed according to the present invention, the body part (1) and the base part (2) of a washer/dryer device can be assembled in a simple and firm manner. Additionally, the fixation element (3) according to the present invention makes it possible to mount said parts to each other without causing any corrosion and/or deformation.

## Claims

1. A fixation element (3) suitable for use in assembling a body part (1) and a base part (2) together in a washer/dryer device, said device comprising at least one body part (1) having at least two lateral walls (1 a) and at least one rear wall (1 b); and at least one base part (2) having at least one body (2a), at least one frame part (2b) disposed on at least one upper edge of the body (2a) so as to extend outward along said edge, and at least support part (2c) disposed on said upper edge of the body (2a) on the side of the frame part (2b) facing the body (2) such that at least one gap (2g) is formed between the frame part (2b) and the support part, wherein the body part (1) and the base part (2) are mounted to each other by placing the lower part of at least one wall (1 a or 1 b) comprised by the body part (1) into said gap (2g) provided in the base part (2), **characterized by** comprising

- at least one base (3a);
- at least one first leg (3b), extending from one corner of the base (3a) and being disposed so as to contact an outer surface of the frame part (2b) not facing said gap (2g) when the body part (1) is placed into the gap (2g) provided in the base part (2);
- at least one second leg (3c), extending in parallel to the first leg (3b) from an opposite corner of said base (3a) and being disposed so as to be placed between one wall (1 a or 1b) of the body part (1) and the frame part (2b) when the body part (1) is placed into the gap (2g) provided in the base part (2); and
- at least one gap (3f) disposed between the first leg (3b) and the second leg (3c);

wherein said fixation element has a U-shape and is produced from a resilient material by which the fixation element (3) can maintain its U-shape and said legs (3b, 3c) can be resiliently moved relative to each other.

2. A fixation element (3) according to Claim 1, **characterized by** comprising at least one third leg (3d) extending from a free end of the first leg (3b) towards the second leg (3c); and comprising at least one inner surface (3h) facing the gap (3f) provided in the fixation element (3) and resting against a lower side of the frame part (2b) when the fixation element (3) is mounted.
3. A fixation element (3) according to Claim 2, **characterized in that** the outer surface (3e) of the third leg (3d) has an inclined structure.
4. A fixation element (3) according to Claim 1, **characterized in that** the free end of the second leg (3c) comprises at least one inclined surface (3g) on the side thereof facing the gap (3f) provided in the fixation element (3).
5. A fixation element (3) according to Claim 1, **characterized by** comprising at least one connection slot (3j) on each of the first leg (3b) and the second leg (3c).
6. A fixation element (3) according to Claim 5, **characterized in that** said slots (3j) are concentric.
7. A washer/dryer device comprising at least one body part (1) having at least two lateral walls (1a) and at least one rear wall (1 b); and at least one base part (2) having at least one body (2a), at least one frame part (2b) disposed on at least one upper edge of the body (2a) so as to extend outward along said edge, and at least support part (2c) disposed on said upper edge of the body (2a) on the side of the frame part

(2b) facing the body (2) such that at least one gap (2g) is formed between the frame part (2b) and the support part (2c), wherein the body part (1) and the base part (2) are mounted to each other by placing the lower part of at least one wall (1 a or 1 b) comprised by the body part (1) into said gap (2g) provided in the base part (2), **characterized by** comprising at least one fixation element (3) according to any of the preceding claims.

8. A washer/dryer device according to Claim 7, **characterized in that** the frame part (2b) comprises at least one hole (2f) on the part thereof where the fixation element (3) is mounted.
9. A washer/dryer device according to Claim 8, **characterized in that** said hole (2f) is concentric with the connection slots (3j) disposed in the fixation element (3).
10. A washer/dryer device according to Claim 7, **characterized by** comprising at least two fastening protrusion (2e) disposed on the frame part (2b), the base (3a) of the fixation element (3) being placed between said fastening protrusions (2e).
11. A washer/dryer device according to Claim 7, **characterized in that** said body (1) has a pool shape.
12. A washer/dryer device according to Claim 7, **characterized in that** said support part (2c) has a monolithic structure extending along said upper edge.
13. A washer/dryer device according to Claim 7, **characterized in that** said support part (2c) has a multi-part structure disposed along the upper edge at certain intervals.

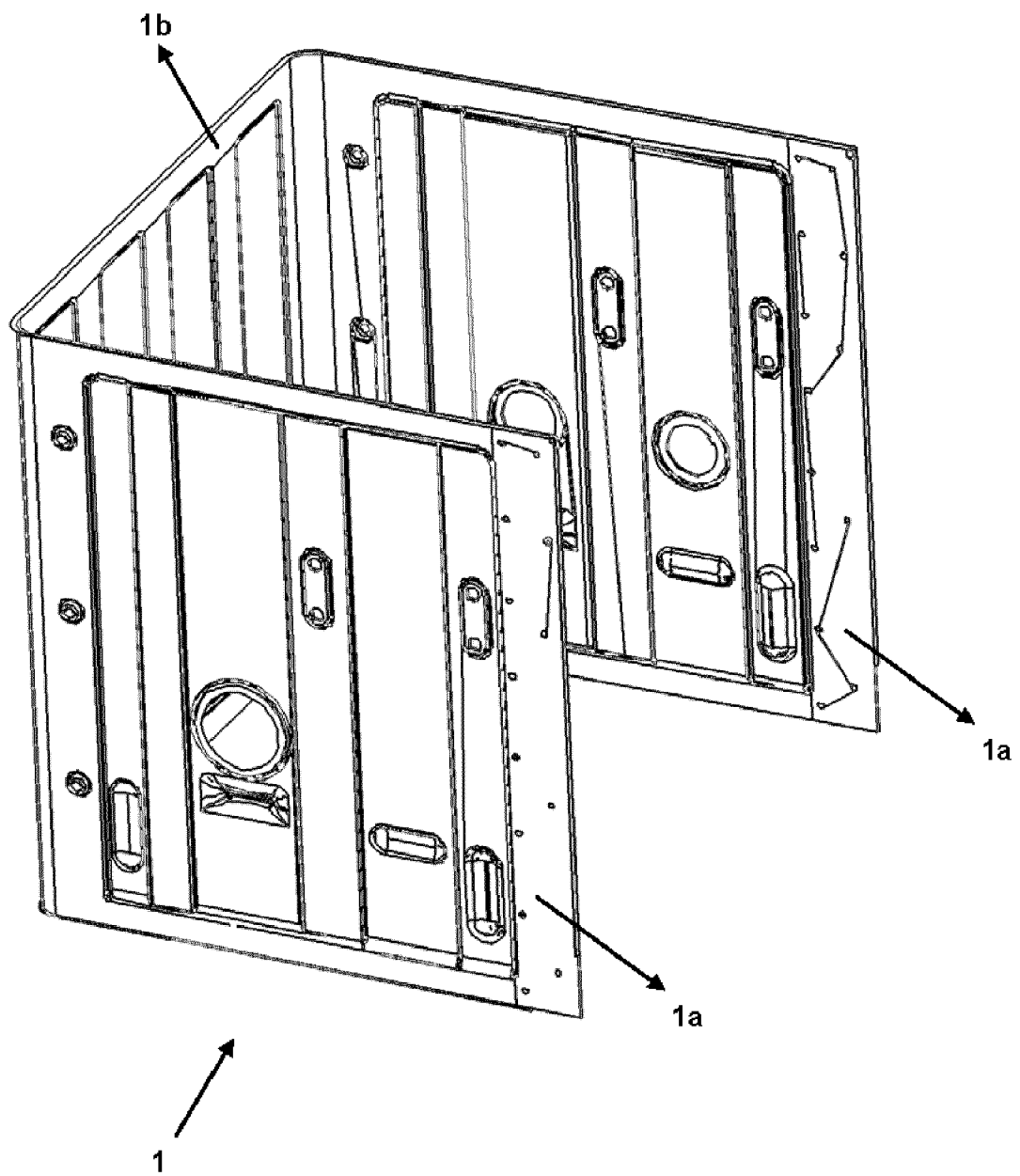


Figure 1

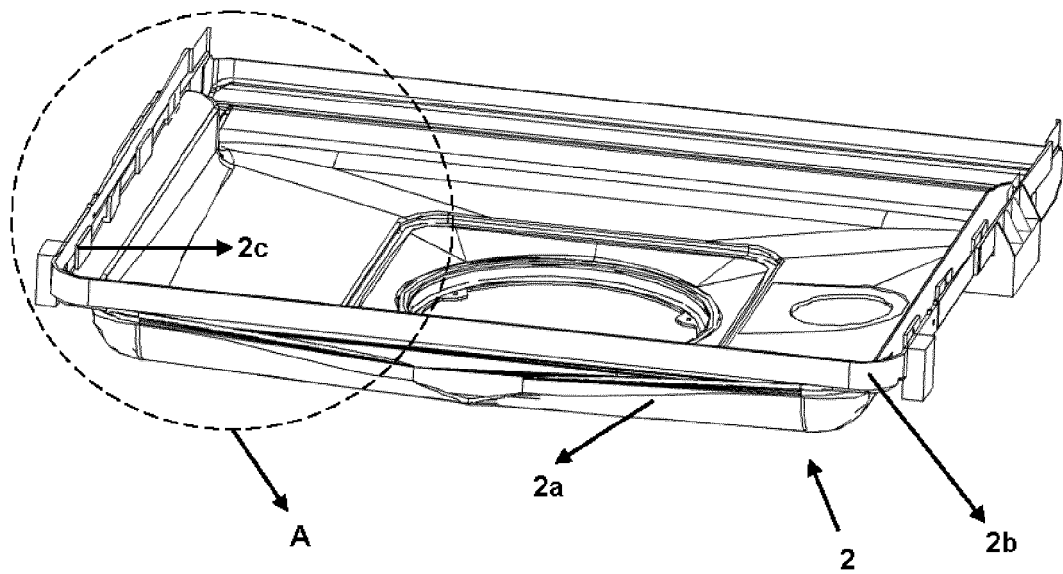


Figure 2

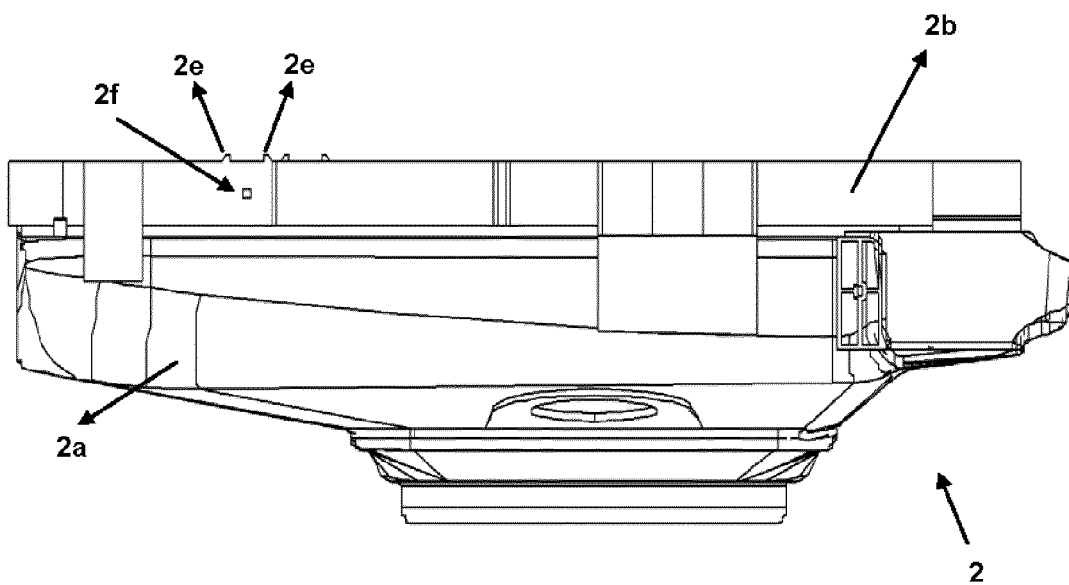


Figure 3

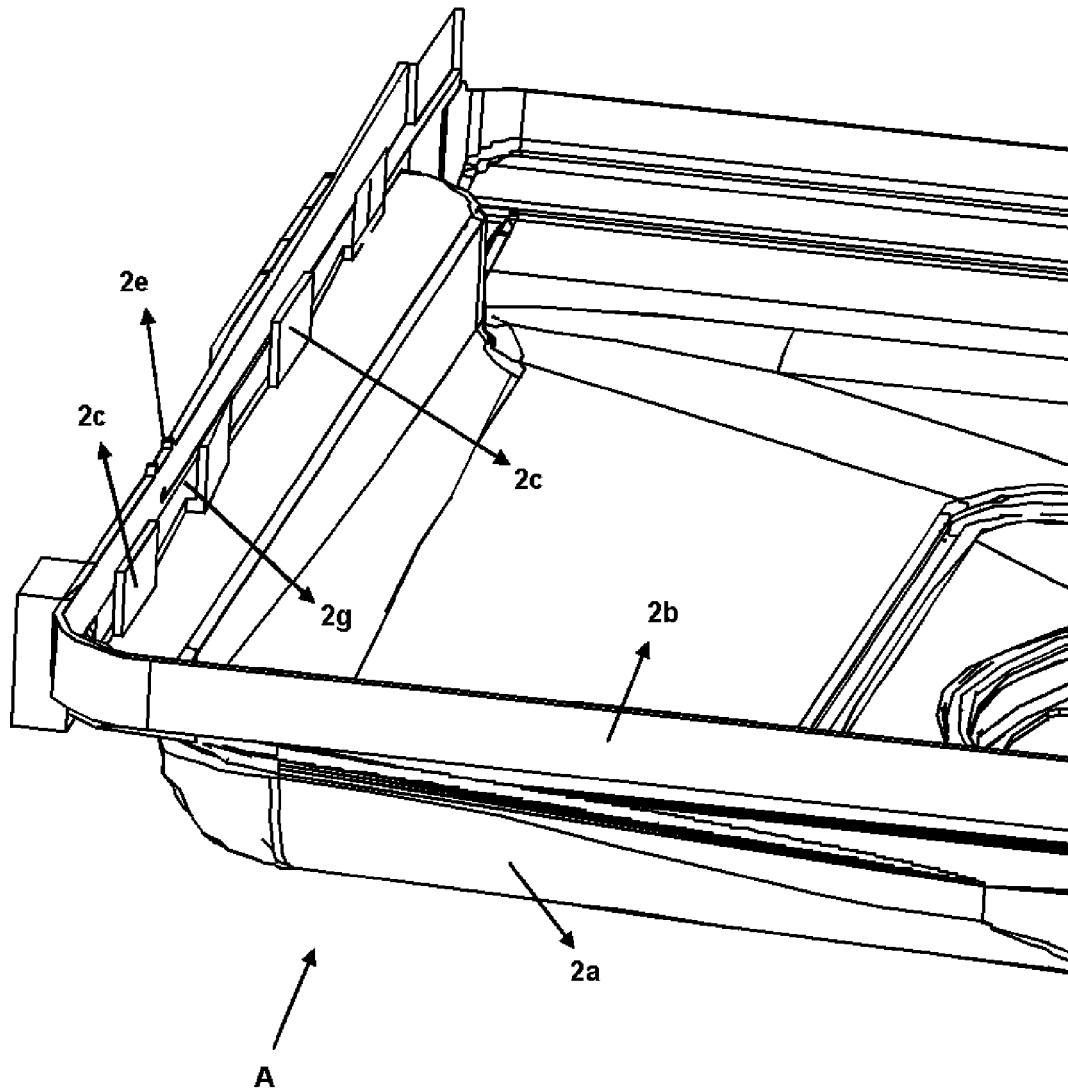


Figure 4

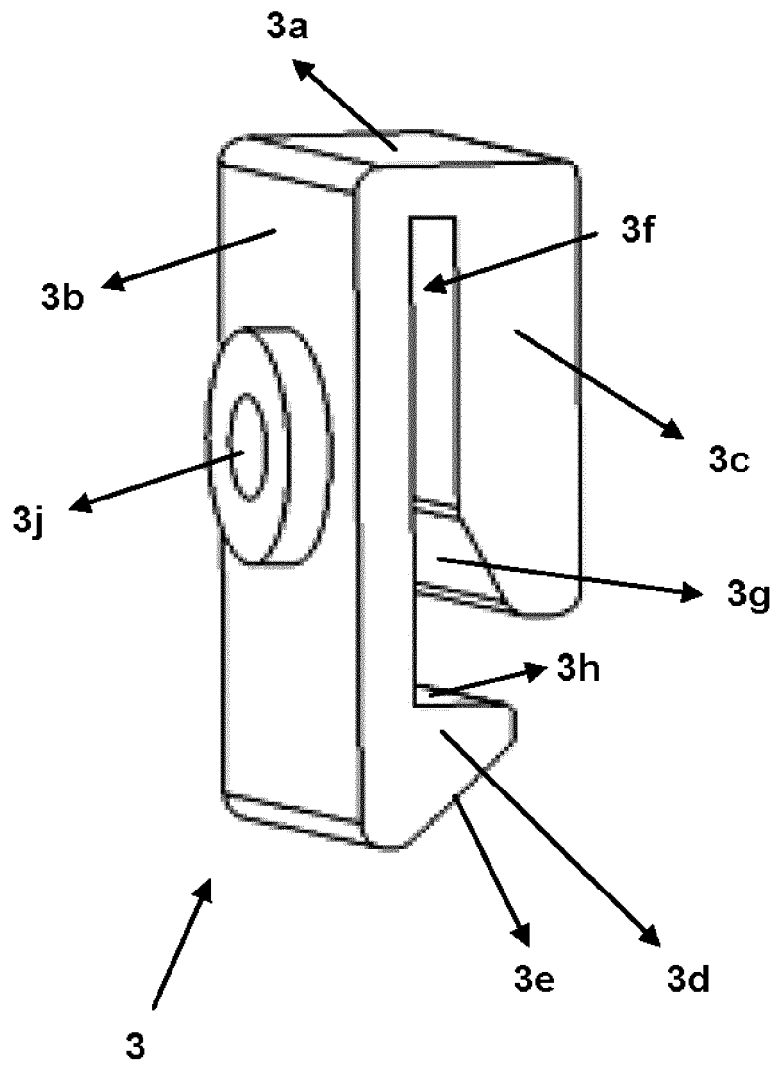


Figure 5

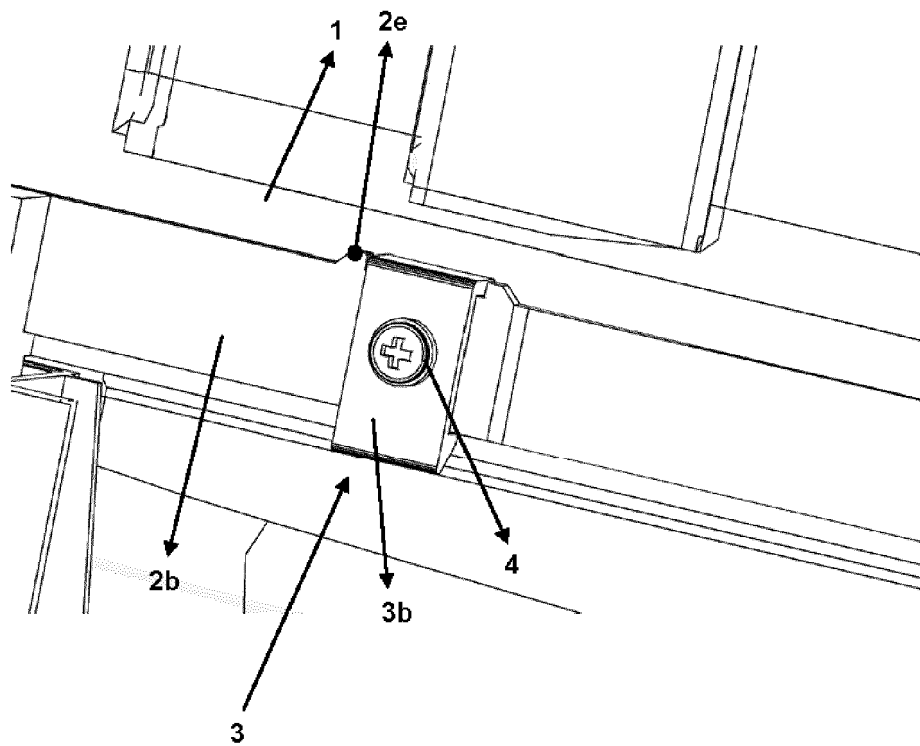


**Figure 6**

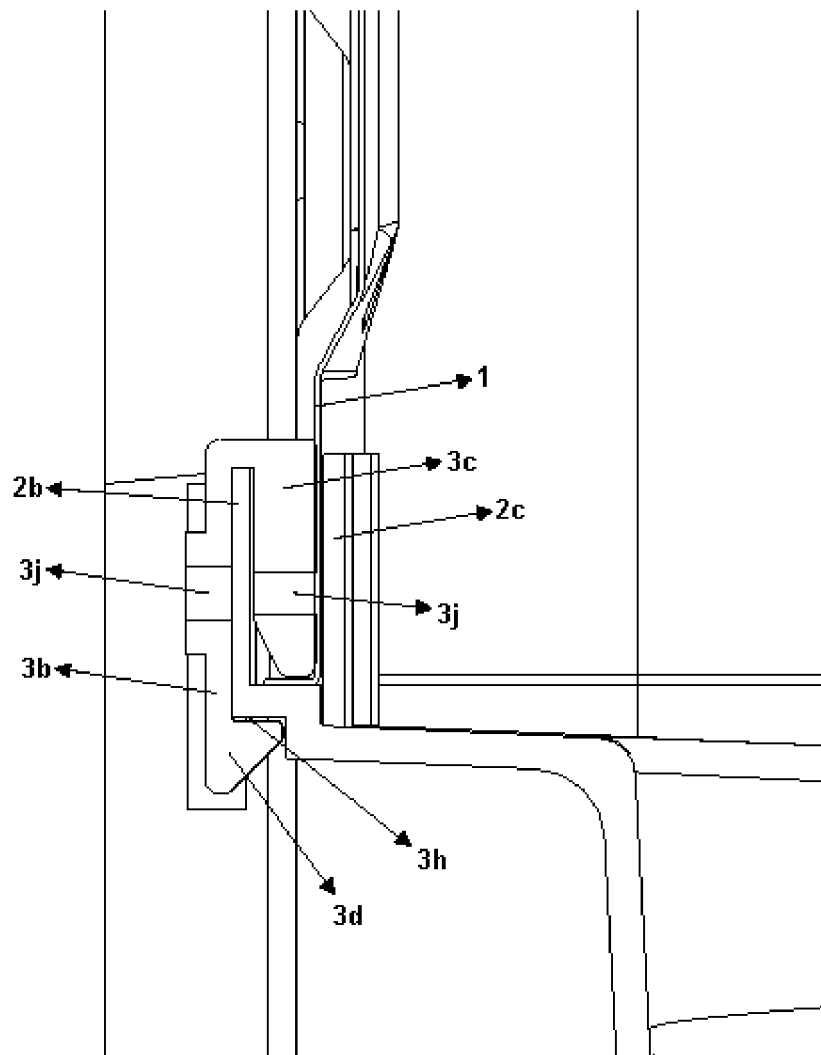


Figure 7



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Application Number  
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| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                               | Relevant to claim                                         | CLASSIFICATION OF THE APPLICATION (IPC) |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                             |                                                           | A47L                                    |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                             | Date of completion of the search<br><b>1 October 2013</b> | Examiner<br><b>Kising, Axel</b>         |
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