(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 085 270 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
26.10.2016 Bulletin 2016/43

(51) Int Cl.:
A47B 88/04 *(2006.01)*

(21) Application number: **16166014.7**

(22) Date of filing: **19.04.2016**

(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 MD

(30) Priority: **21.04.2015 ES 201530538**

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(54) VERTICAL AND HORIZONTAL ADJUSTING DEVICE FOR DRAWERS

(57) Vertical and horizontal adjusting device for drawers, the adjusting body (2) of which contains a vertical groove (3) able to receive the flat vertical extension (6) of the slide of the runner (5) and also contains a guided horizontal groove (4) able to accommodate the sliding horizontal plate (7), and with this adjusting body (2) incorporating a respective vertical adjusting spindle (10) and horizontal adjusting spindle (11).

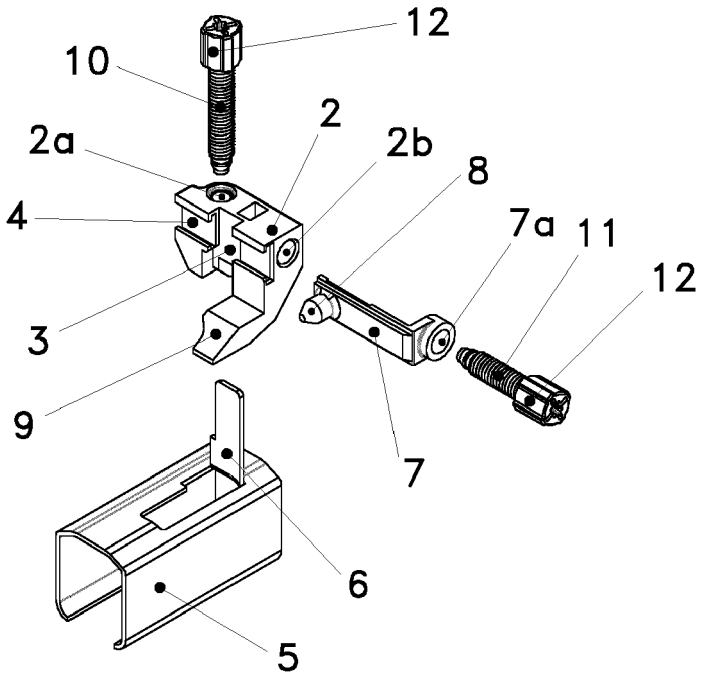

Fig. 2

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a vertical and horizontal adjusting device for drawers of modules or furniture, having an adjusting body secured to the drawer and means for adjusting the relative position of the drawer.

PRIOR ART

[0002] At present and with regard to the state of the art, it is common and known in drawer adjusting devices to use mechanisms comprising various elements in order to be able to modify the position of the drawer relative to the runners on which it is to be supported, in order to achieve a correct alignment of the front of the drawer in the module or furniture. In addition, concerning said drawer adjusting devices, a number of systems are known that perform the vertical adjustment and which are positioned both in the front and the back part of the drawer.

[0003] These models that are in the market have certain disadvantages, however. The first is that they consist of a large number of elements, making them difficult to install at the back of the drawer and/or on the runner and increasing the likelihood of failure of the mechanism that enables the adjustment of the drawer position, given the large number of elements and the complex system. Secondly, fitting the rear adjusting device in the drawer and/or on the runner sometimes requires tools with which it is difficult to access the area in which they must be employed, since it is normal to use coach screws or similar, which may require large tools. There are also models that include an L- or U-shaped vertical extension which insert in only one of the sides of the adjusting body, weakening the attachment of the adjusting body to the runner.

EXPLANATION OF THE INVENTION AND ADVANTAGES

[0004] In view of this state of affairs, the present invention refers to a vertical and horizontal adjusting device for drawers, the adjusting body of which contains a vertical groove able to receive the flat vertical extension of the slide of the runner and also contains a guided horizontal groove able to accommodate the sliding horizontal plate, with this adjusting body incorporating a respective vertical adjusting spindle and horizontal adjusting spindle.

[0005] Thanks to this configuration, the mechanism for making the connection between the slide of the runner and the drawer is simplified. By means of a device with much fewer elements, a solid connection is achieved between the drawer and the runner. This also allows the position of the drawer to be modified in relation to the runner both vertically and horizontally using a single adjusting device, by means of the adjusting spindles that it incorporates.

[0006] Another characteristic of the invention is that the slide of the runner has a vertical flat extension able to lodge in the adjusting body, which incorporates a vertical adjusting spindle attached to the vertical threaded hole of this adjusting body and with the tip of the vertical adjusting spindle inserted in the slide of the runner.

[0007] Thanks to this configuration, acting on the vertical adjusting spindle allows a modification of the position in elevation of the drawer relative to the runner, since by rotating this spindle, which has its tip inserted and fixed in the slide of the runner, the adjusting body is raised or lowered, without the vertical adjusting spindle changing its height positioning. As a result of the vertical movement of the adjusting body, the drawer connecting lug displaces by the same amount, thereby modifying the height of the drawer, allowing it to be positioned at the correct height in relation to the rest of the module or furniture.

[0008] Another characteristic of the vertical and horizontal adjusting device for drawers is that the adjusting body incorporates a sliding horizontal plate from which the drawer connecting lug protrudes for connecting to the horizontal adjusting spindle accommodated in the horizontal hole of the adjusting body by means of the threaded ring in this sliding horizontal plate.

[0009] Thanks to this configuration, the horizontal position of the drawer connecting lug protruding from the sliding horizontal plate can be modified. The rotation of the horizontal adjusting spindle causes the displacement of the sliding horizontal plate along the guided horizontal groove in the adjusting body, since the sliding horizontal plate and the vertical adjusting spindle are connected together by means of the threaded ring in this plate. Therefore, the drawer displaces horizontally as a function of the rotation of the horizontal adjusting spindle, due to the fact that the drawer connecting lug protruding from the sliding horizontal plate is accommodated in the cavity at the back of the drawer.

[0010] Another characteristic of the invention is that both the vertical adjusting spindle and the horizontal adjusting spindle contain a spindle head that can be manipulated by hand.

[0011] This characteristic of the invention allows both the height and the horizontal position of the drawer to be modified by hand by rotating the vertical adjusting spindle and the horizontal adjusting spindle without the need to employ tools.

[0012] Finally, another characteristic of the invention is that both the vertical adjusting spindle and the horizontal adjusting spindle have a plurality of notches in the front part of their spindle heads.

[0013] This characteristic of the invention allows both the height and the horizontal position of the drawer to be manipulated using an appropriate tool, as an alternative to the manipulation by hand discussed in the above paragraphs.

DRAWINGS AND REFERENCE NUMERALS

[0014] For a better understanding of the nature of the invention the attached drawings show an industrial embodiment which has the character of a merely illustrative and non-limiting example.

Figure 1 is an isometric view of the adjusting device (1) on the slide of the runner (5).
Figure 2 is an exploded view of the various components of this adjusting device (1) and of how these connect together and with the slide of the runner (5).
Figure 3 is a view of the cavity (14) of the drawer (13) in which the drawer connecting lug (8) of the adjusting device (1) is to be accommodated.
Figure 4 is an isometric view of the position taken by the adjusting device (1) once the connections with the slide of the runner (5) and with the drawer (13) are made, and shows how to act on the vertical adjusting spindle (10) and the horizontal adjusting spindle (11) to modify the relative position of the drawer (13).

1 - Adjusting device.
2 - Adjusting body.
2a - Threaded vertical hole.
2b - Horizontal hole.
3 - Vertical groove.
4 - Guided horizontal groove.
5 - Slide of the runner.
6 - Flat vertical extension.
7 - Sliding horizontal plate.
7a - Threaded ring.
8 - Drawer connecting lug (14).
9 - Lug guiding protrusion.
10 - Vertical adjusting spindle.
10a - Tip of the vertical adjusting spindle (10).
11 - Horizontal adjusting spindle.
12- Spindle head.
12a - Notches.
13- Drawer.
14- Cavity.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0015] With reference to the drawings and reference numerals listed above, the attached diagrams illustrate a preferred mode of carrying out the subject matter of the invention, relating to a vertical and horizontal adjusting device for drawers, which connects the slide of the runner to the back of the drawer and the adjusting body (2) of which contains a vertical groove (3) able to receive the flat vertical extension (6) of the slide of the runner (5) and also contains a guided horizontal groove (4) able to accommodate the sliding horizontal plate (7), with this adjusting body (2) incorporating a respective vertical adjusting spindle (10) and horizontal adjusting spindle (11).

[0016] Figures 1 and 2 show that this adjusting device (1) consists of an adjusting body (2), a sliding horizontal plate (7) from which the drawer connecting lug (8) protrudes, a vertical adjusting spindle (10) and a horizontal adjusting spindle (11). For its assembly, the sliding horizontal plate (7) is first introduced via the guided horizontal groove (4) and then secured by means of the horizontal adjusting spindle (11), which is screwed to the threaded ring (7a) in the sliding horizontal plate (7) and has its tip introduced into the horizontal hole (2b) of the adjusting body (2). To complete its assembly, the flat vertical extension (6) of the slide of the runner (5), on which the adjusting device (1) is to be mounted, is introduced via the vertical groove (3) of the adjusting body (2) and adjusted by means of the vertical adjusting spindle (10) which is accommodated in the threaded vertical hole (2a), with the tip of its vertical adjusting spindle (10a) being accommodated in the slide of the runner (5).

[0017] Figure 3 shows how the connection between the adjusting device (1) and the drawer (13) is made by means of the cavity (14) and the drawer connecting lug (8).

[0018] In Figure 4 it can be seen how the adjusting device (1) is positioned once it has been assembled on the slide of the runner (5) and the connection with the drawer (13) has been made. Once the adjusting device (1) is positioned in the back of the drawer (13), it is very simple to modify its relative position to locate it correctly in the module or furniture.

[0019] Firstly, by acting on the vertical adjusting spindle (10), with the tip of the vertical adjusting spindle (10a) inserted in the slide of the runner (5), a height displacement of the adjusting body (2) is achieved, since this vertical adjusting spindle (10) is connected to the vertical threaded hole (2a) of this adjusting body (2). In this way, as the adjusting body (2) incorporates the sliding horizontal plate (7) from which the drawer connecting lug (8) protrudes, all the elements of the adjusting device (1) experience a simultaneous change in height, and therefore so does the drawer (13), which is connected by the cavity (14) to the adjusting device (1) by means of the drawer connecting lug (8). This allows a height of the drawer (13) to be achieved which is consistent with the rest of the module or furniture.

[0020] Secondly, if the horizontal adjusting spindle (11) accommodated in the horizontal hole (2b) of the adjusting body (2) is acted upon, due to the connection of the sliding horizontal plate (7) by means of its threaded ring (7a) to the horizontal adjusting spindle (11), the horizontal displacement of this sliding horizontal plate (7) along the guided horizontal groove (4) in the adjusting body (2) is achieved. As mentioned above, this sliding horizontal plate (7) has a protruding drawer connecting lug (8), which provides the connection between the drawer (13) and the adjusting device (1), such that if the sliding horizontal plate (7) changes its horizontal position the drawer connecting lug (8) and the drawer (13) do so with it. In this way the horizontal position of the front of the drawer (13) can be modified so that it is aligned with the rest of

the module or furniture.

[0021] Finally, it should be pointed out that the vertical adjusting spindle (10) and the horizontal adjusting spindle (11) can be manipulated using an appropriate tool or by hand, since these spindles have both a spindle head (12) and notches (12a) for their manipulation.

Claims

1. A vertical and horizontal adjusting device for drawers, which connects the slide of the runner to the back of the drawer, **characterised in that** the adjusting body (2) contains a vertical groove (3) able to receive the flat vertical extension (6) of the slide of the runner (5) and also contains a guided horizontal groove (4) able to accommodate the sliding horizontal plate (7), with this adjusting body (2) incorporating a respective vertical adjusting spindle (10) and horizontal adjusting spindle (11).

2. The vertical and horizontal adjusting device for drawers according to Claim 1, **characterised in that** the slide of the runner (5) has a flat vertical extension (6) able to lodge in the adjusting body (2), which incorporates a vertical adjusting spindle (10) connected to the vertical threaded hole (2a) of this adjusting body (2) and with the tip of the vertical adjusting spindle (10a) inserted in the slide of the runner (5).

3. The vertical and horizontal adjusting device for drawers according to the preceding claims, **characterised in that** the adjusting body (2) incorporates a sliding horizontal plate (7) from which the drawer connecting lug (8) protrudes for connecting to the horizontal adjusting spindle (11) accommodated in the horizontal hole (2b) of the adjusting body (2) by means of the threaded ring (7a) in this sliding horizontal plate (7).

4. The vertical and horizontal adjusting device for drawers according to the preceding claims, **characterised in that** both the vertical adjusting spindle (10) and the horizontal adjusting spindle (11) contain a spindle head (12) that can be manipulated by hand.

5. The vertical and horizontal adjusting device for drawers according to the preceding claims, **characterised in that** both the vertical adjusting spindle (10) and the horizontal adjusting spindle (11) have a plurality of notches (12a) in the front part of their spindle heads (12).

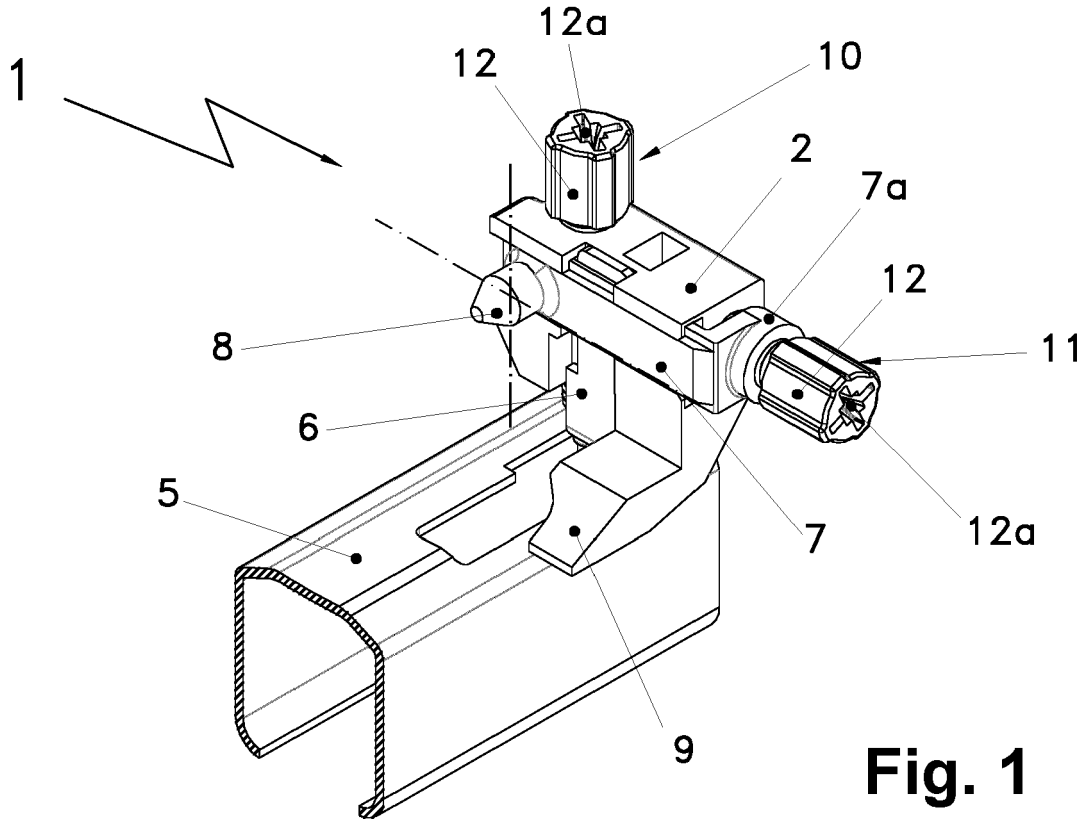

Fig. 1

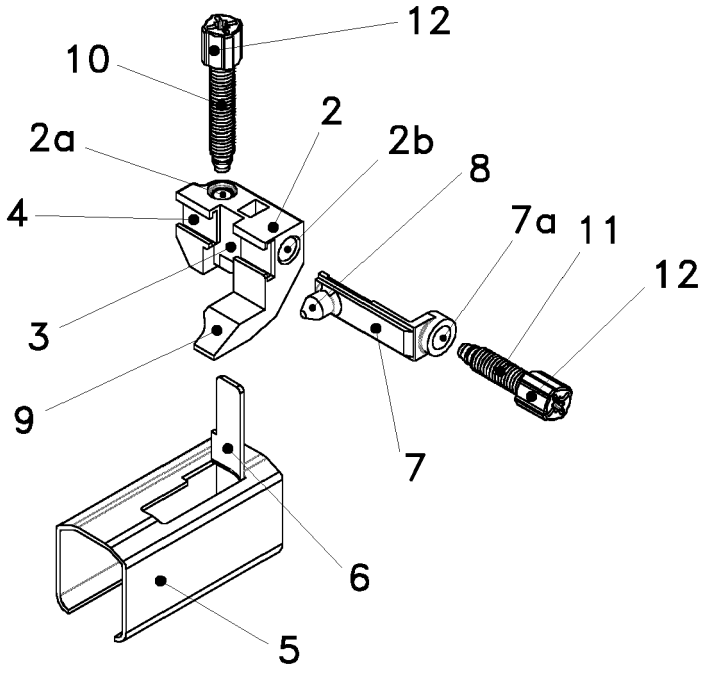

Fig. 2

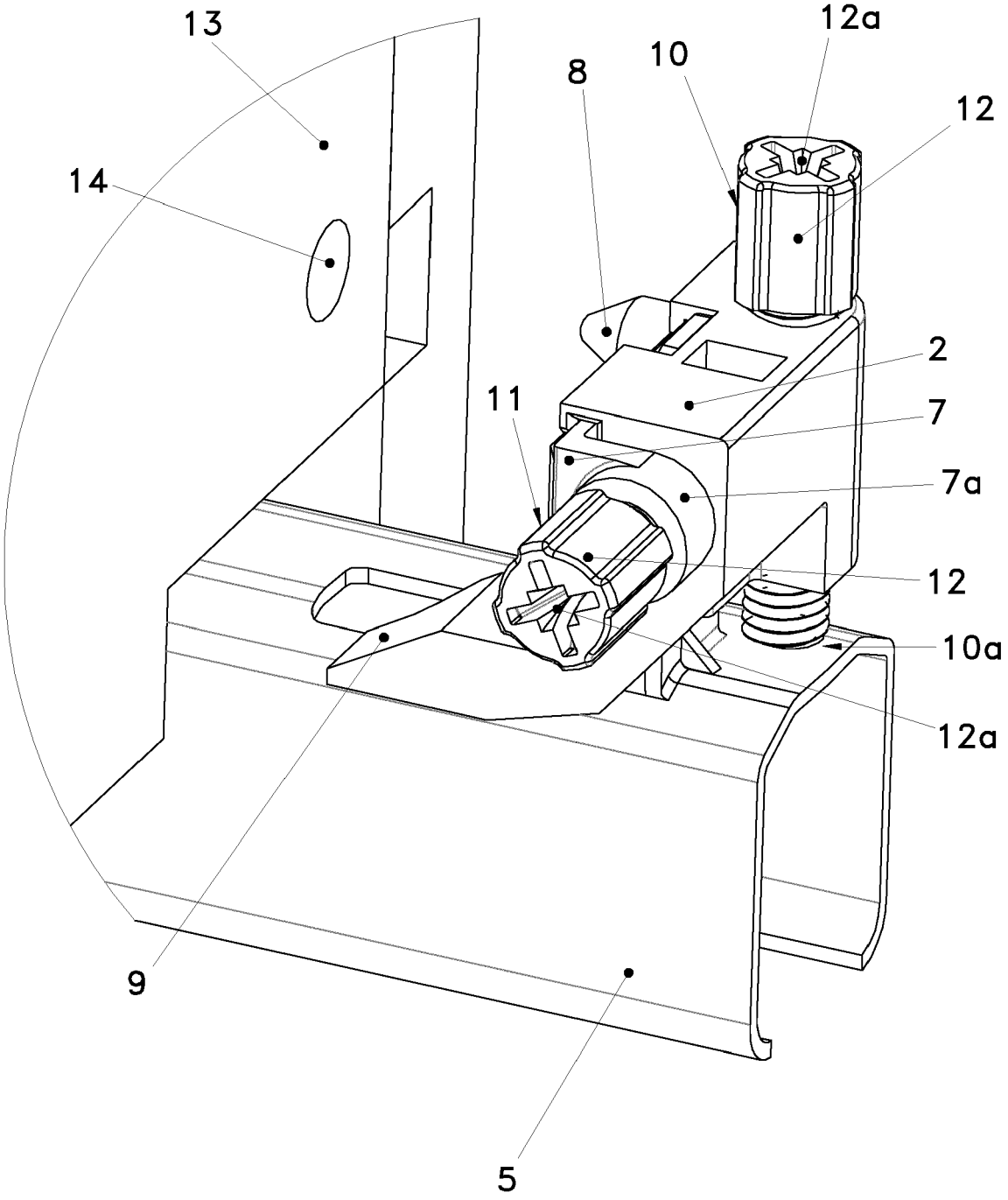

Fig. 3

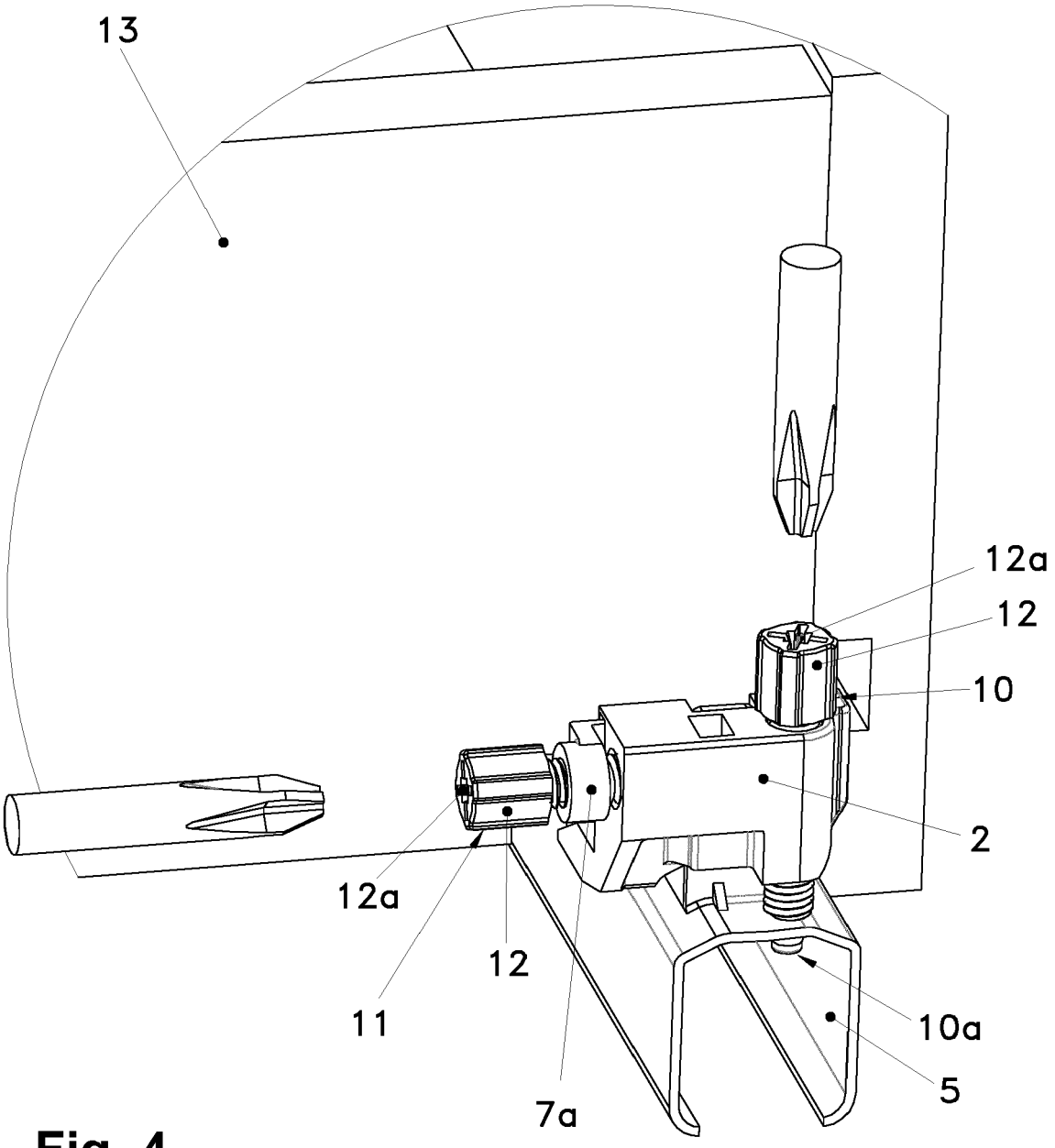

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 16 16 6014

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	EP 2 476 340 A1 (KING SLIDE WORKS CO LTD) 18 July 2012 (2012-07-18) * figures 1,4 *	1-5	INV. A47B88/04
A	EP 2 676 574 A1 (SCHNEIDER ANTON GMBH & CO KG) 25 December 2013 (2013-12-25) * figures 2a,2b *	1-5	

TECHNICAL FIELDS SEARCHED (IPC)

A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 August 2016	de Cornulier, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 16 6014

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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01-08-2016

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