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

(11) **EP 3 258 042 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
20.12.2017 Bulletin 2017/51

(51) Int Cl.:
E05D 15/06 *(2006.01)*

(21) Application number: **17174726.4**

(22) Date of filing: **07.06.2017**

(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: **14.06.2016 ES 201630808**

(71) Applicant: **Industrias Auxiliares, S.A.**
20808 Getaria (ES)

(72) Inventor: **Rioja Calvo, Miguel Angel**
20808 Getaria (Guipuzcoa) (ES)

(74) Representative: **Gulde & Partner**
Patent- und Rechtsanwaltskanzlei mbB
Wallstraße 58/59
10179 Berlin (DE)

(54) **ANTI-DERAILMENT SAFETY DEVICE FOR SLIDING DOORS**

(57) Anti-derailment safety device for sliding doors, in particular for slide carriages positioned on sliding doors, wherein the wheel support (3) has, on at least one of its sides, an extension in the form of flexible pins (4) with a barbed tip (5) and a sliding shim (7) with its respective lateral actuation protrusion (8), which sliding shim (7), on being placed in a forward position, does not allow the extension in the form of flexible pins (4) to flex, securing its position between the rail heads (14).

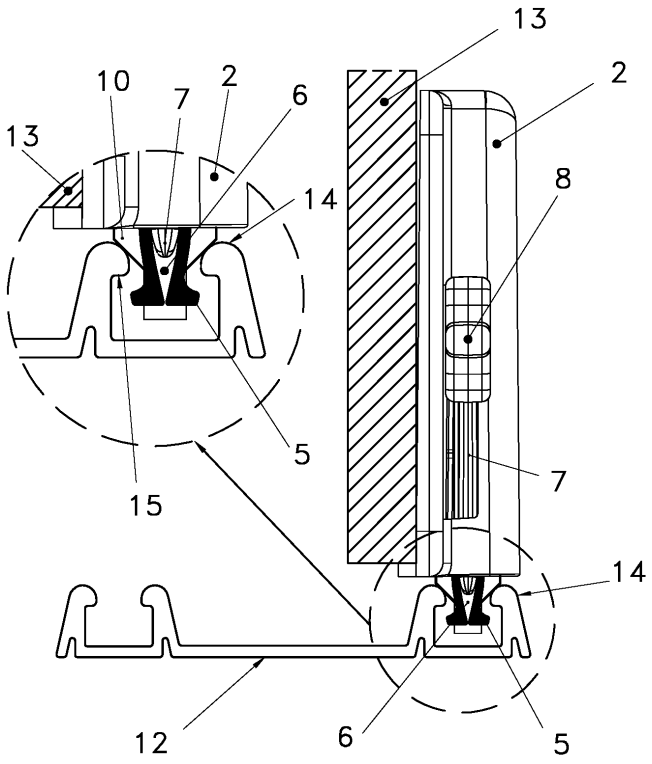


Fig. 3a

EP 3 258 042 A1

(Cont. next page)

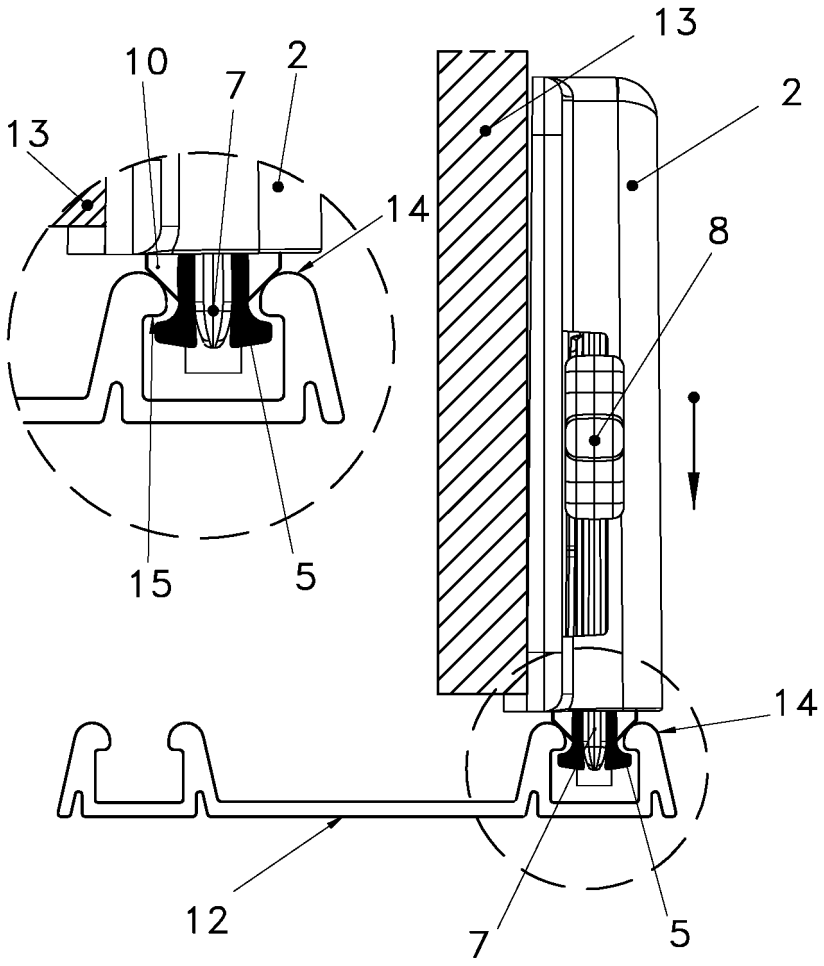


Fig. 3b

Description

FIELD OF THE INVENTION

[0001] This invention relates to an anti-derailment safety device for sliding doors, particularly an anti-derailment safety device of the type used in furniture slide carriages, to prevent the derailment of said slide carriages from the rails engaged with a sliding door.

PRIOR ART

[0002] Currently, with reference to the prior art, it is known and common for anti-derailment safety devices to be used for sliding doors, to prevent the slide carriages of the inner doors or the outer door of a piece of furniture from being derailed from the lower rail.

[0003] There are various solutions available on the market, which have the following drawbacks.

[0004] Many anti-derailment safety devices for sliding doors consist of a support or housing incorporating the wheel that slides over the lower rail provided for that purpose, and said support or housing contains pins or claws with retainers that fit into the rail and prevent the wheel from leaving it. However, these pins are not usually rigid enough and, in the event of sudden impacts, or if some element impedes the sliding of the wheel over the rail, the door is likely to leave its position and become derailed.

[0005] Furthermore, some anti-derailment safety systems for sliding doors are characterised in that they incorporate said anti-derailment safety device in the component that is fixed to the sliding door, or integrated into the latter, and therefore if the slider device incorporating the safety system is damaged, the whole assembly needs to be replaced, and the door also needs to be disassembled.

EXPLANATION OF THE INVENTION AND ADVANTAGES

[0006] Faced with this situation, the present invention relates to an anti-derailment safety device for sliding doors, in particular for slide carriages positioned on sliding doors, mainly on the lower rail, wherein the wheel support has, on at least one of its sides, an extension in the form of flexible pins with a barbed tip and a sliding shim with its respective lateral actuation protrusion, which sliding shim, on being placed in a forward position, does not allow the extension in the form of flexible pins to flex, securing its position between the rail heads.

[0007] Thanks to this configuration, once the extensions in the form of flexible pins are inserted into the lower rail to prevent the wheel from derailment, because of the barbed tip that they have, which engages with the rail head stops in case the door wobbles, operation of the lateral actuation protrusion that juts out from the sliding shim so as to place the latter in the forward position causes said sliding shim to stay housed between the extensions in the form of flexible pins, making them rigid and preventing them from easily flexing. In this way, if there is any incident that might cause the slide carriage to wobble or become derailed, the extensions in the form of flexible pins will become more rigid, withstanding greater forces and increasing protection against the tipping of the sliding door.

[0008] Another characteristic of the invention is that the position of the barbed tip of the flexible pins is preferably close together and capable of spreading apart when the sliding shim is moved between them.

[0009] Thanks to this configuration of the extensions in the form of flexible pins, when the pins are inserted into the rail it is not necessary to force the pins in order to insert them, thus preventing breakage, which leads to greater durability. Abrasion of the barbed tip by the rail head stop is also avoided, since it remains housed between the barbed tip and the protuberance of the wheel support thanks to its configuration suited to the profile of the rail.

[0010] Another characteristic of the invention is that the wheel support has, on at least one of its sides, a guide channel housing the sliding shim.

[0011] This configuration allows the sliding shim to reach the desired position between the extension in the form of flexible pins, and thus to have greater rigidity against flexion.

[0012] Another characteristic of the invention is that, in a preferred embodiment, the wheel support has both an extension in the form of flexible pins and a sliding shim on both sides.

[0013] This configuration of the wheel support, in which there are extensions in the form of flexible pins and sliding shims on both sides of the wheel support, results in greater protection against possible derailment and better prevention of tipping of the door.

DRAWINGS AND REFERENCE NUMERALS

[0014] To get a better understanding of the nature of the invention, the attached drawings illustrate an industrial embodiment solely by way of explanatory, non-restrictive example.

Figure 1 shows an exploded view of the slide carriage (1) with an enlarged detail of the extensi0ons in the form of flexible pins (4) inserted into the lower rail (12) before the sliding shim (7) is inserted and another detail of afterwards.

Figure 2 shows an isometric view of the slide carriage (1) installed on the sliding door (13).

Figure 3a shows a profile view of the slide carriage (1) installed on the sliding door (13) with the lateral actuation protrusion (8) in the retracted position.

Figure 3b shows a profile view of the slide carriage (1) installed on the sliding door (13) with the lateral actuation protrusion (8) in the forward position.

1. Slide carriage.
2. Housing for fixing to the door.
3. Wheel support.
4. Extension in the form of flexible pins.
5. Barbed tip.
6. Guide channel.
7. Sliding shim.
8. Lateral actuation protrusion.
9. Wheel.
10. Running surface.
11. Wheel axle.
12. Lower rail.
13. Sliding door.
14. Rail heads.
15. Rail head stop.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0015] In relation to the drawings and reference numerals listed above, the attached plans illustrate a preferred embodiment of the subject-matter of the invention, relating to an anti-derailment safety device for sliding doors, in particular for slide carriages positioned on sliding doors, wherein the wheel support (3) has on, at least one of its sides, an extension in the form of flexible pins (4) with a barbed tip (5) and a sliding shim (7) with its respective lateral actuation protrusion (8), which sliding shim (7), on being placed in a forward position, does not allow the extension in the form of flexible pins (4) to flex, securing its position between the rail heads (14).

[0016] Figure 1 shows an exploded isometric view of the slide carriage (1), formed by a housing for fixing to the door (2), a wheel support (3), two sliding shims (7), a wheel (9) and a wheel axis (11). As shown in Figure 2, said slide carriage (1) is installed on the lower portion of the sliding door (13), by means of screws that fix the housing for fixing to the door (2), which contains the other elements, the wheel (9) and its running surface (10) remaining on the rail heads (14).

[0017] As can be seen in Figure 3a and 3b, the extensions in the form of flexible pins (4) that jut out from the bottom of the wheel support (3) are housed in the lower rail (12). The barbed tip (5) of said extensions in the form of flexible pins (4) stays within the lower rail (12) in the normal closed situation, and the rail heads (14) are designed so that they incorporate rail head stops (15) that engage with the barbed tip (5) to prevent the slide carriage (1) from coming out of the lower rail (12) once said barbed tip opens up. If there are sudden impacts on the sliding door (13) or some element gets into the lower rail (12), the door may tip and the slide carriage (1) may come out of position, causing the sliding door (13) to be derailed. With the aim of opening said extensions in the form of flexible pins (4) and making them rigid, and ensuring that they do not come out of the lower rail (12) in the event of such impacts, when the lateral actuation protrusion (8) that juts out from the sliding shim (7) is slid downwards and put into the forward position, this sliding shim (7) remains housed between the extensions in the form of flexible pins (4) owing to the guide channel (6) present on the sides of the wheel support (3), this guide channel housing the sliding shim (7) and extending towards said extensions in the form of flexible pins (4). This results in increased rigidity of the extensions in the form of flexible pins (4) and increased resistance to sudden impacts or unwanted elements getting into the lower rail (12), which can cause the sliding door (13) to tip and subsequently become derailed.

[0018] It should be noted that a preferred embodiment provides for the extensions in the form of flexible pins (4) to jut out from both sides of the wheel support (3), for greater stability and protection against possible derailment of the slide carriage (1) and preventing the sliding door (13) from tipping.

[0019] The essential features of this patent are not altered by variations in materials, shape, size and arrangement of the component elements, which are described non-restrictively.

Claims

1. Anti-derailment safety device for sliding doors, in particular for slide carriages positioned on sliding doors, mainly on the lower rail, of the type formed by a housing fixed to the door, which houses a support for at least one wheel that rests on rails positioned on the lower plane of the cavity of the piece of furniture, **characterised in that** the wheel support (3) has, on at least one of its sides, an extension in the form of flexible pins (4) with a barbed tip (5) and a sliding shim (7) with its respective lateral actuation protrusion (8), which sliding shim (7), on being placed in a forward position, does not allow the extension in the form of flexible pins (4) to flex, securing its position between the rail heads (14).

2. Anti-derailment safety device for sliding doors according to claim 1, **characterised in that** the position of the barbed tip (5) of the flexible pins (4) is preferably close together and capable of spreading apart when the sliding shim (7) is displaced between them.

3. Anti-derailment safety device for sliding doors according to the preceding claims, **characterised in that** the wheel support (3) has, on at least one of its sides, a guide channel (6) housing the sliding shim (7).

4. Anti-derailment safety device for sliding doors according to the preceding claims, **characterised in that,** in a preferred embodiment, the wheel support (3) has both an extension in the form of flexible pins (4) and a sliding shim (7) on both sides.

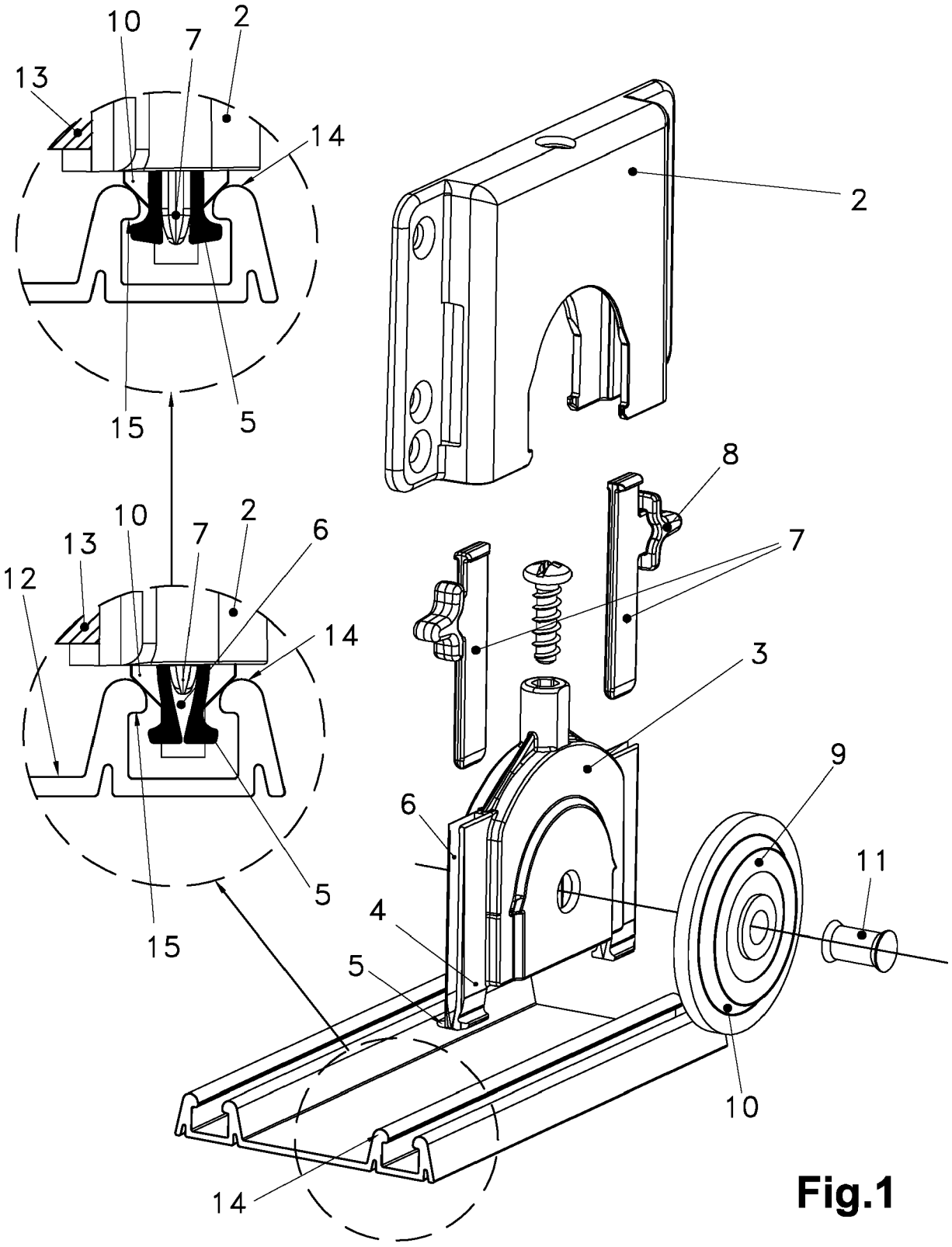
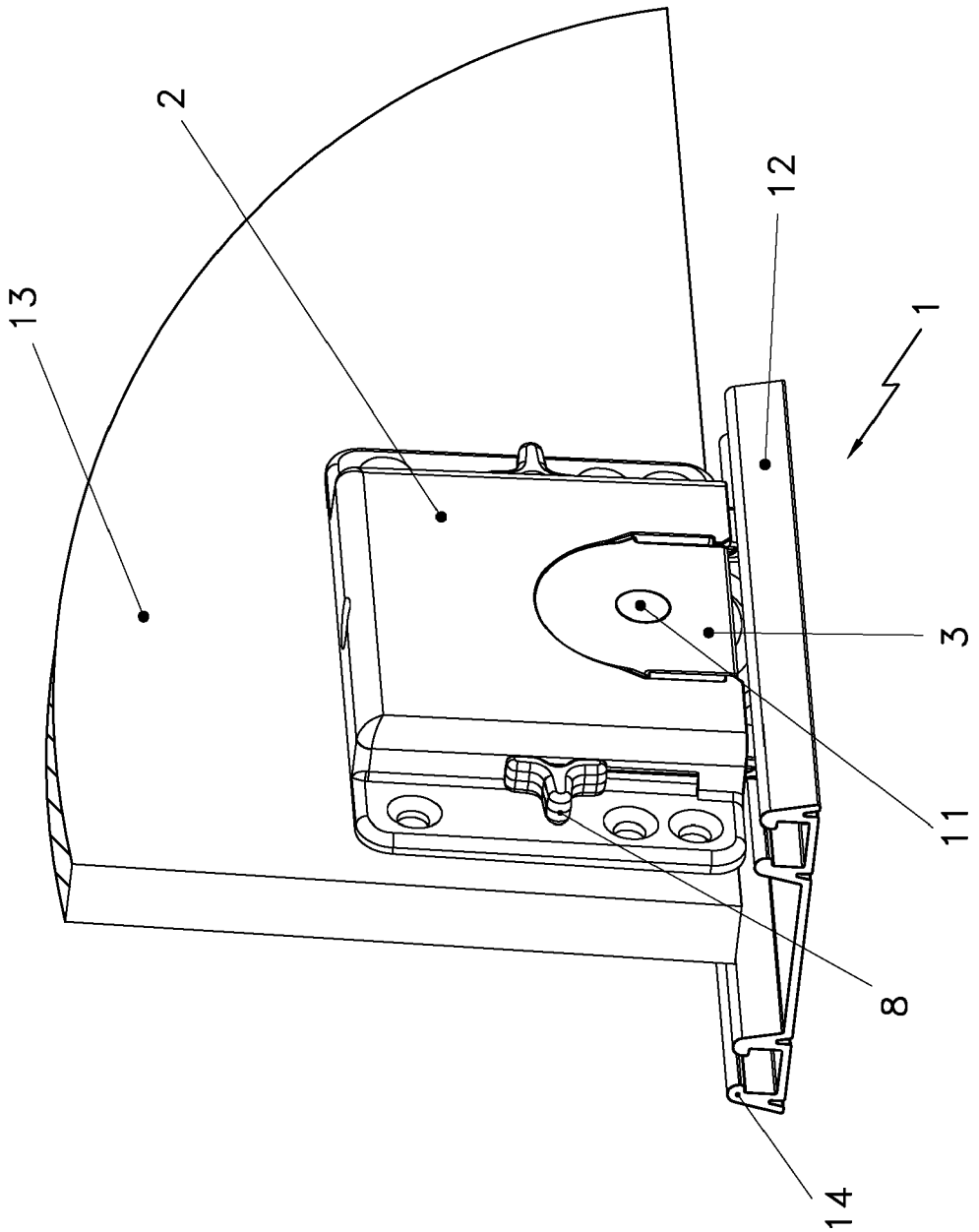


Fig.1

Fig. 2



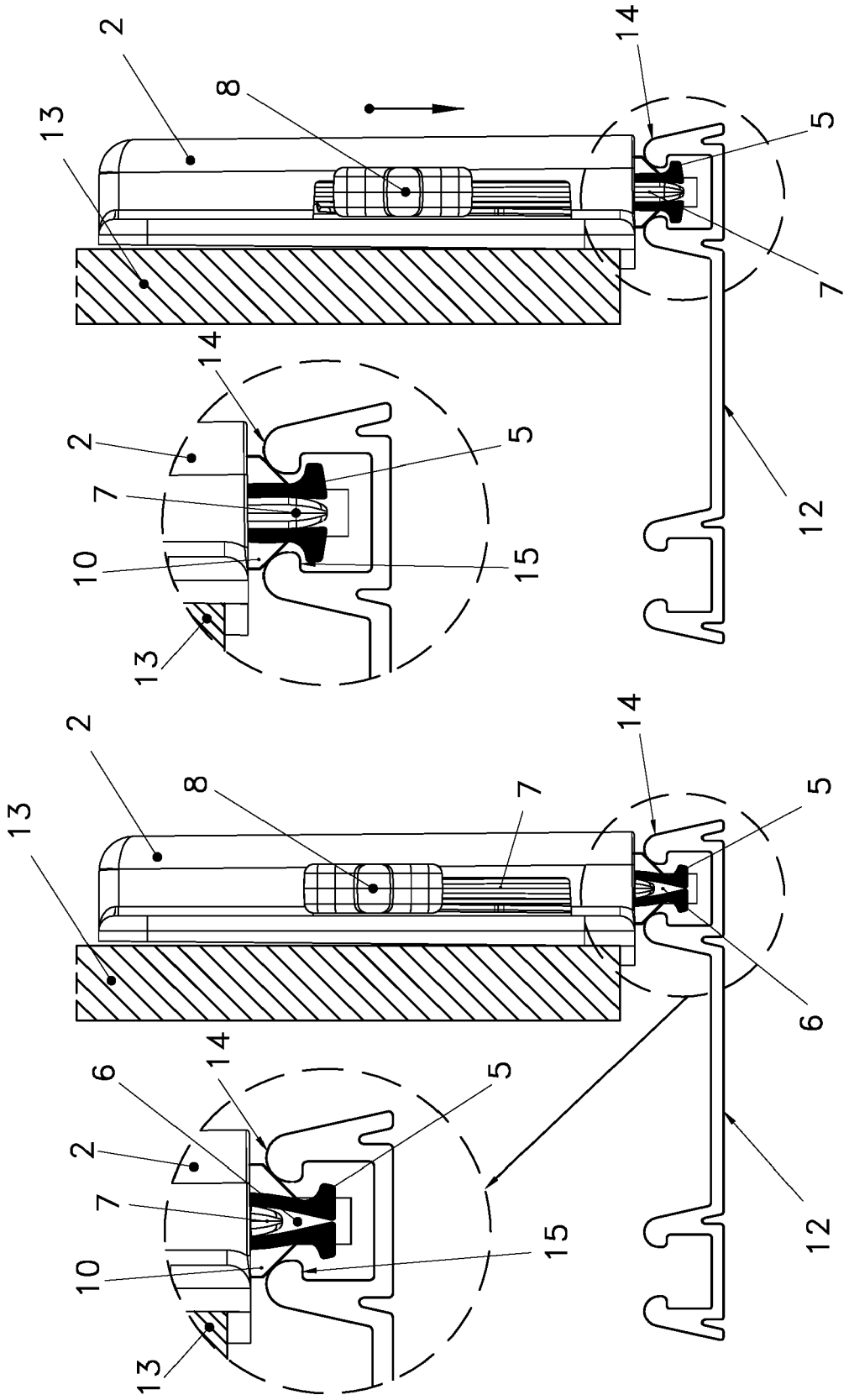


Fig. 3b

Fig. 3a

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 17 17 4726

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 10 2004 001284 A1 (ZAMBELLI STAHLMOEBEL GMBH & CO [DE]) 25 August 2005 (2005-08-25)	1,4	INV. E05D15/06
A	* paragraph [0023]; figures 1-3 *	2,3	
A	WO 95/02105 A1 (SOGAL FRANCE [FR]; CATTOIRE MICHEL [FR]; HASSENFRATZ ROBERT [FR]; VALL) 19 January 1995 (1995-01-19) * page 5, line 32 - line 36; figures 2-4 *	1-4	
A	DE 101 48 761 A1 (RAUMPLUS GUDDAS KG [DE]) 10 April 2003 (2003-04-10) * paragraph [0033]; figures 1-5 *	1-4	
A	FR 2 855 204 A1 (CG2 IND [FR]) 26 November 2004 (2004-11-26) * page 5, line 17 - page 6, line 23; figures 1-7 *	1-4	
A	WO 2004/025060 A1 (RAUMPLUS GUDDAS GMBH & CO KG [DE]; GERHART GUENTER [DE]) 25 March 2004 (2004-03-25) * page 4, line 21 - page 5, line 17; figures 1-6 *	1-4	TECHNICAL FIELDS SEARCHED (IPC) E05D A47H A47B
A	US 5 671 502 A (EZMAN LUCIAN S [PL]) 30 September 1997 (1997-09-30) * column 2, line 51 - column 6, line 31; figures 1-5 *	1-4	
A	US 4 123 874 A (SCOTT VICTOR J) 7 November 1978 (1978-11-07) * column 6, line 59 - column 7, line 9; figures 9-14 *	1-4	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24 October 2017	Rémondot, Xavier

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 17 4726

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-10-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102004001284 A1	25-08-2005	AT 502878 A1	15-06-2007
		DE 102004001284 A1	25-08-2005
		NL 1027976 C2	12-07-2006
WO 9502105 A1	19-01-1995	AT 163725 T	15-03-1998
		AU 7231094 A	06-02-1995
		DE 69408844 D1	09-04-1998
		DE 69408844 T2	25-06-1998
		DK 0707681 T3	07-12-1998
		EP 0707681 A1	24-04-1996
		ES 2115243 T3	16-06-1998
		FR 2707328 A1	13-01-1995
		HK 1009344 A1	28-05-1999
		WO 9502105 A1	19-01-1995
DE 10148761 A1	10-04-2003	NONE	
FR 2855204 A1	26-11-2004	NONE	
WO 2004025060 A1	25-03-2004	AT 428837 T	15-05-2009
		AU 2003266294 A1	30-04-2004
		BR 0314144 A	12-07-2005
		CA 2495707 A1	25-03-2004
		CN 1482337 A	17-03-2004
		DE 10242208 A1	01-04-2004
		EP 1537286 A1	08-06-2005
		UA 83640 C2	11-08-2008
		US 2005284028 A1	29-12-2005
		WO 2004025060 A1	25-03-2004
US 5671502 A	30-09-1997	PL 59330 Y1	30-09-2002
		PL 316319 A1	08-12-1997
		US 5671502 A	30-09-1997
US 4123874 A	07-11-1978	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82