



(11) **EP 2 264 262 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
22.12.2010 Bulletin 2010/51

(51) Int Cl.:
E05B 3/06 (2006.01)

(21) Application number: **09425237.6**

(22) Date of filing: **19.06.2009**

(84) Designated Contracting States:
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 SE SI SK TR
Designated Extension States:
AL BA RS

(72) Inventors:
• **Colombo, Fabrizio**
20048 Carate Brianza (Milano) (IT)
• **Capra, Tiziano**
22036 Erba (Como) (IT)

(71) Applicants:
• **Colombo, Fabrizio**
20048 Carate Brianza (Milano) (IT)
• **Capra, Tiziano**
22036 Erba (Como) (IT)

(74) Representative: **Lunati & Mazzoni S.r.L.**
Via Carlo Pisacane, 36
20129 Milano (IT)

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

(54) **Support device for handle closing system and the like**

(57) There is provided a support device (1) for a handle closing system (2) and the like, for a door (20) and the like, the door (20) comprising a hole (21) for the closing system (2), and the closing system (2) comprising a handle (3) movable with respect to the door (20), the support device (1) comprising a fixed element (4), suitable to be constrained solidly to the door (20), by means

of a flange (8) complete with a cover (11) of any shape, thickness and dimension, a movable element (5), suitable to support the handle (3), connected to the fixed element (4) and movable with respect thereto, a return mechanism (6) suitable to exert a return force opposing the relative movement of said elements (4, 5), and a first portion (7), comprising at least part of the return mechanism (6) and suitable to be arranged inside the hole (21).

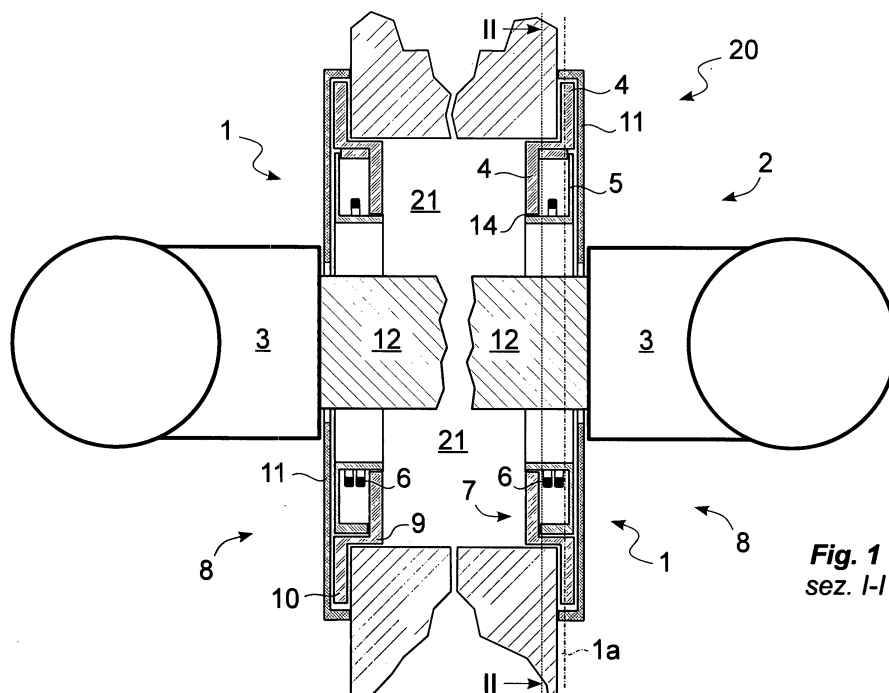


Fig. 1
sez. I-I

EP 2 264 262 A1

Description

[0001] The present invention relates to a support device for a handle closing system and the like, in particular for door closing systems including handles, of the type specified in the preamble of claim 1.

[0002] Door closing systems are generally provided with a graspable handle and a support device suitable to support the handle on the door.

[0003] Closing systems arranged on doors also frequently comprise a pair of handles with relative support devices. In fact, each side of the door comprises a handle and the two handles are mutually connected by means of a metal rod arranged inside a through hole, made inside the door.

[0004] The metal rod also preferably produces the constraint of the door closing system. Some support devices also comprise a return spring, suitable to return the handle to the correct position after use thereof.

[0005] In other cases said support devices do not include the return spring and therefore make use exclusively of the return spring that may be present inside the lock controlled by the system.

[0006] Due to numerous drawbacks and malfunctions this latter type of handle system has now become obsolete and is no longer chosen or marketed.

[0007] Nonetheless, support devices for closing systems comprising a return spring also have some important drawbacks.

[0008] In particular, they have a relatively high thickness protruding from the surface of the door.

[0009] This thickness is above all due to the presence of the return spring and correlated elements.

[0010] The support device is therefore an element that could possibly get in the way and cause accidents. In fact, a passing person could accidentally knock against it. Moreover, the considerable thickness has a relatively displeasing aesthetic appearance.

[0011] In this situation the technical aim of the present invention is to devise a support device for handle closing systems capable of substantially overcoming the aforesaid drawbacks.

[0012] Within said technical aim an important object of the invention is to obtain a support device which has a limited thickness protruding from the surface of the door.

[0013] The technical aim and the objects specified are achieved by a support device for handle closing systems as claimed in the appended independent claims.

[0014] Preferred embodiments are highlighted in the dependent claims.

[0015] Further characteristics and advantages of the invention are clarified below by the detailed description of a preferred embodiment of the invention, with reference to the attached drawings, wherein:

Fig. 1 shows the section I-I, indicated in Fig. 2, of the support device according to the invention;

Fig. 2 show the section II-II, indicated in Fig. 1, of

the device according to the invention;

Fig. 3a shows a first variant of the section of Fig. 1; **Fig. 3b** shows a second variant of the section of Fig. 1; e

Fig. 4 is an overall view of a handle including one of the support devices according to the invention.

[0016] With reference to the aforesaid Figures, the support device according to the invention is indicated as a whole with the number 1.

[0017] It is suitable to be part of closing systems 2 positioned on doors 20 and the like and commonly called "handles". In particular, the term door is preferably intended as a door 20 for people, i.e. suitable to allow people to pass through walls of buildings and the like, or can also be intended as doors of furniture, wardrobes, vehicle doors, windows for buildings and the like.

[0018] Moreover, the closing systems 2 are positioned in a hole 21 present in the door 20, and comprise a handle 3 and a support device 1.

[0019] Preferably, the closing systems comprise a pair of handles 3 as shown in Fig. 1, arranged on opposite sides of the door 20 and each connected to a relative support device 1, which are mutually connected by means of a rod 12 passing through the hole 21 and suitable to guide the lock. Alternatively, a single handle 3 can be provided.

[0020] The closing systems 2 are suitable to be controlled by the handle 3, through which opening and closing of the door 20 can be controlled.

[0021] The handle 3 is therefore movable with respect to the door 20 and in particular rotatable.

[0022] The support device 1 extends mainly along a plane 1a, preferably perpendicular to the direction of rotation of the handle 3 and parallel to the main extension plane of the door 20.

[0023] Summarily, it comprises a fixed element 4, suitable to be constrained solidly to the door 20, a movable element 5, suitable to support the handle 3 and connected to the fixed element 4 and movable with respect thereto, and a return mechanism 6 suitable to exert a return force opposing the relative movement of the elements 4 and 5.

[0024] In particular, the fixed element 4 comprises a first part 10 of a flange 8, suitable to support the device on the door 21 and, appropriately, an inner part 9 suitable to contain the movable element 5 and the return mechanism 6.

[0025] It also preferably comprises three holes 10a for support by means of screws or the like.

[0026] The flange 8 is then composed of a first part 10, part of the fixed element 4, and a cover 11, constrainable to the first part 10 preferably by interlocking.

[0027] Alternatively, the flange 8 can be produced by only one of the two parts, and in particular only by the cover 11 constrained directly to the inner part 9.

[0028] The flange 8 also preferably has an average outer diameter greater than or equal to the average outer

diameter of the inner part 9 in the main extension plane 1a. Moreover, it can be square or circular in shape, or of yet other types.

[0029] The inner part 9 is instead preferably circular in shape, just as the movable element 5 contained therein, and the two elements are mutually constrained by forcible profiles 14.

[0030] The fixed 4 and movable 5 elements are also preferably provided with abutments for the return mechanism 6. In particular fixed abutments 13a are provided integral with the fixed element 4 and movable abutments 13b are provided integral with the movable element 5.

[0031] The return mechanism 6 is also appropriately an elastic element preferably realized by a circular spring.

[0032] Finally, the fixed element 4 comprises a limit stop abutment 13c for the movable element 5.

[0033] Moreover, advantageously, a first portion 7 of the support device 1, comprising at least part of the return mechanism 6, is arranged inside the hole 21.

[0034] Preferably, the first portion 7 comprises the entire return mechanism 6 and at least part of the fixed element 4, and in particular the entire inner part 9, and at least part of the movable element 5. This solution is shown in Fig. 1.

[0035] In this case the hole 21 is preferably circular, or of different type, and with a constant diameter and of standard dimension in proximity of 35 mm, or greater. Alternatively, also the first part 10 of the flange 8 is arranged inside the hole 21, as shown in Fig. 3a.

[0036] In a different alternative, the entire flange 8 is arranged in the hole 21 and therefore the entire device 1 is inside the hole 21, as shown in Fig. 3b.

[0037] In these last two cases, the hole 21 includes a portion of greater diameter, or different shape, suitable to contain at least part of the flange.

[0038] The invention achieves important advantages.

[0039] In fact, the support device 1 has a limited thickness protruding from the surface of the door 20, or aligned therewith.

[0040] Moreover, this device 1 can be inserted inside holes 21 having standard diameters, or of different types, in particular in the field of doors, furniture and wardrobes.

[0041] The device 1 is therefore aesthetically pleasing and does not get in the way of passing people.

[0042] Moreover, it is simple and economical.

[0043] The invention is susceptible to modifications and variants falling within the inventive concept. All the details can be replaced by equivalent elements and the materials, shapes and dimensions can be any.

Claims

1. A support device (1) for a handle closing system (2) and the like, for a door (20) and the like, said door (20) comprising a hole (21) for said closing system (2), said closing system (2) comprising at least one handle (3) movable with respect to said door (20),

and said support device (1) comprising: a fixed element (4), suitable to be constrained solidly to said door (20), a movable element (5), suitable to support said handle (3), connected to said fixed element (4) and movable with respect thereto, a return mechanism (6) suitable to exert a return force opposing the relative movement of said elements (4, 5), **characterized in that** it comprises a first portion (7), comprising at least part of said return mechanism (6) and suitable to be arranged inside said hole (21), and **in that** it comprises a flange (8), suitable to support said device on said door (21).

2. The support device (1) according to claim 1, wherein said first portion (7) comprises the whole of said return mechanism (6).

3. The support device (1) according to one or more of the preceding claims, wherein said first portion (7) comprises at least part of said fixed element (4) and at least part of said movable element (5).

4. The support device (1) according to one or more of the preceding claims, wherein said fixed element (4) comprises a first part (10) of said flange (8) and an inner part (9) suitable to contain said movable element (5) and said return mechanism (6).

5. The support device (1) according to claim 4, extending along a main extension plane (1a) wherein said flange (8) has an average outer diameter greater than said inner part (9) in said main extension plane (1a).

6. The support device (1) according to one or more of the preceding claims, wherein said flange (8) comprises a first part (10), in one piece with said inner part (9), and a cover (11), constrainable to said first part (10).

7. A closing system (2) for doors (20) comprising a hole (21), comprising two handles (3), movable with respect to said door (20) and arranged on opposite sides of said door (20), and two support devices (1), according to one or more of the preceding claims, each suitable to support one of said handles (3) and wherein said movable elements (5) of said support devices (1) are mutually connected by means of a rod (12) arranged in said hole (21).

8. A door (20) comprising a closing system (2) and a hole (21) for said closing system (2), said closing system (2) comprising a support device (1) and at least one handle (3) movable with respect to said door (20), said support device (1) comprising a fixed element (4), suitable to be constrained solidly to said door (20), a movable element (5), suitable to support said handle (3), connected to said fixed element (4)

- and movable with respect thereto, a return mechanism (6) suitable to exert a return force opposing the relative movement of said elements (4, 5), and **characterized in that** said return mechanism (6) is at least partly arranged inside said hole (21). 5
9. The door (20) according to claim 8, wherein said return mechanism (6) is arranged entirely inside said hole (21). 10
10. The door (20) according to one or more of claims 8-9, wherein at least part of said fixed element (4) and at least part of said movable element (5) are arranged inside said hole (21). 15
11. The door (20) according to claim 10, wherein said fixed element (4) and said movable element (5) are arranged entirely inside said hole (21). 20
12. The door (20) according to one or more of claims 8-11, wherein said support device (1) comprises a first portion (7), suitable to be arranged inside said hole (21), and a flange (8), suitable to support said device on said door (20). 25
13. The door (20) according to claim 12, wherein said fixed element (4) comprises an inner part (9), suitable to contain said fixed element (4) and said return mechanism (6), and a first part (10) of said flange (8), in one piece with said inner part (9). 30
14. The door (20) according to claim 13, wherein the whole of said fixed element (4) is positioned inside said hole (21) and said cover (11) is positioned on the outside of said hole (21). 35
15. The door (20) according to one or more of claims 8-14, wherein said closing system (2) comprises two of said handles (3), arranged on opposite sides of said door (20), and two support devices (1) each suitable to support one of said handles (3) and wherein said movable elements (5) of said support devices (1) are mutually connected by means of a rod (12) arranged in said hole (21). 40
45

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

1. A support device (1) for a handle closing system (2) and the like, for a door (20) and the like, said door (20) comprising a hole (21) for said closing system (2), said closing system (2) comprising at least one handle (3) movable with respect to said door (20), and said support device (1) having a main extension plane (1a) and comprising: a fixed element (4), suitable to be constrained solidly to said door (20), a movable element (5), suitable to support said handle (3), connected to said fixed element (4) and movable with respect thereto, a return mechanism (6) suitable to exert a return force opposing the relative movement of said elements (4, 5), a first portion (7), comprising at least part of said return mechanism (6) and suitable to be arranged inside said hole (21), a flange (8), suitable to support said device on said door (21), extending along said main extension plane (1a) and having an average outer diameter greater than said inner part (9), and **characterized in that** said flange (8) comprises a first part (10), in one piece with said inner part (9), and a cover (11), constrainable by interlocking to said first part (10). 50
55
2. The support device (1) according to claim 1, wherein said first portion (7) comprises the whole of said return mechanism (6).
3. The support device (1) according to one or more of the preceding claims, wherein said first portion (7) comprises at least part of said fixed element (4) and at least part of said movable element (5).
4. The support device (1) according to one or more of the preceding claims, wherein said fixed element (4) comprises a first part (10) of said flange (8) and an inner part (9) suitable to contain said movable element (5)

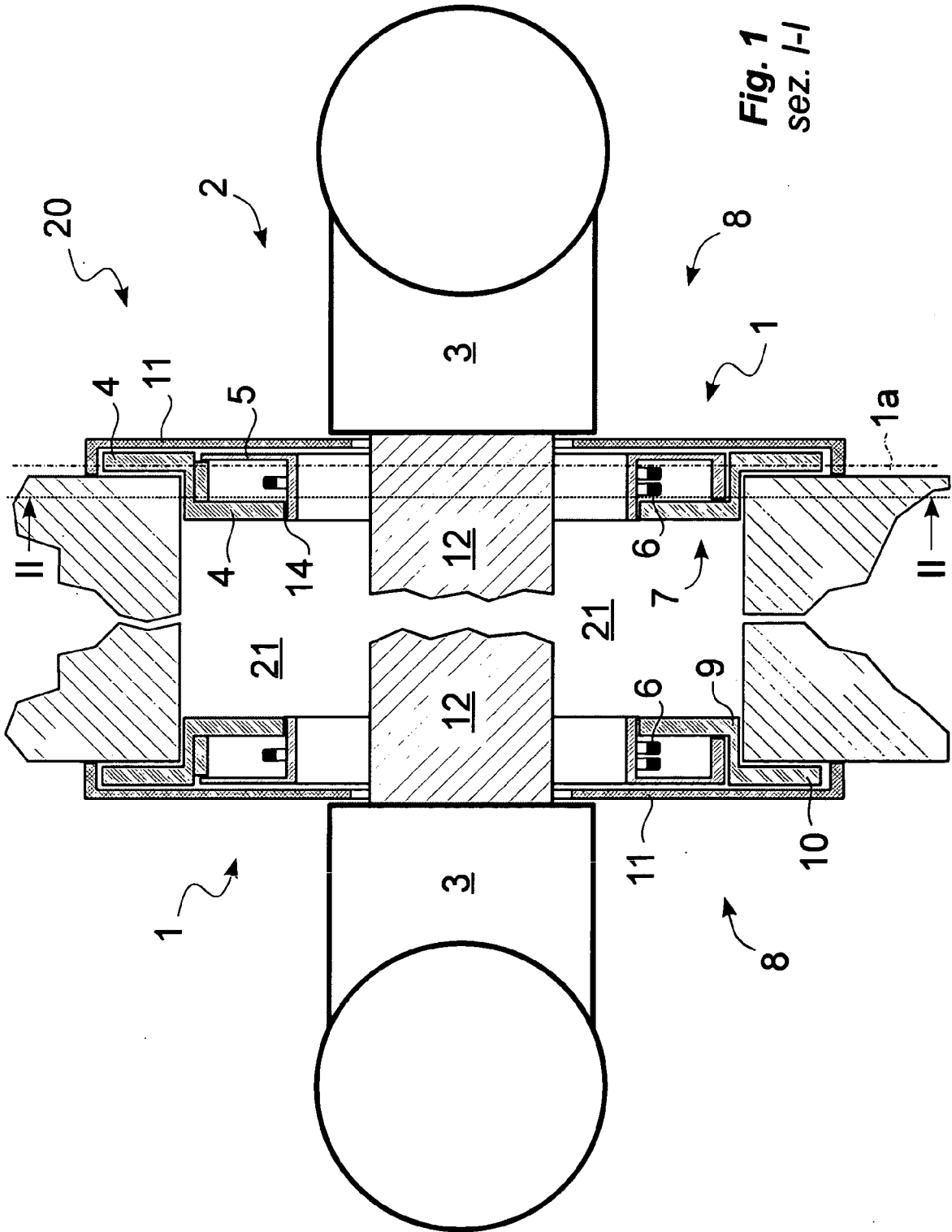
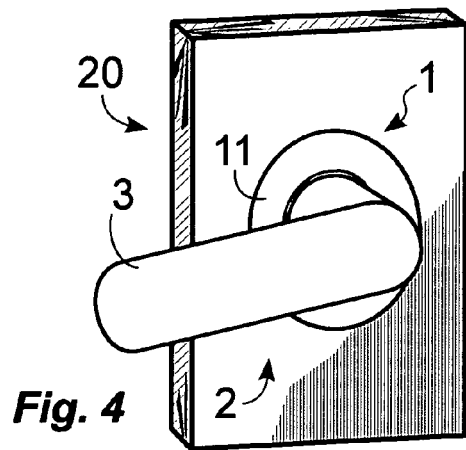
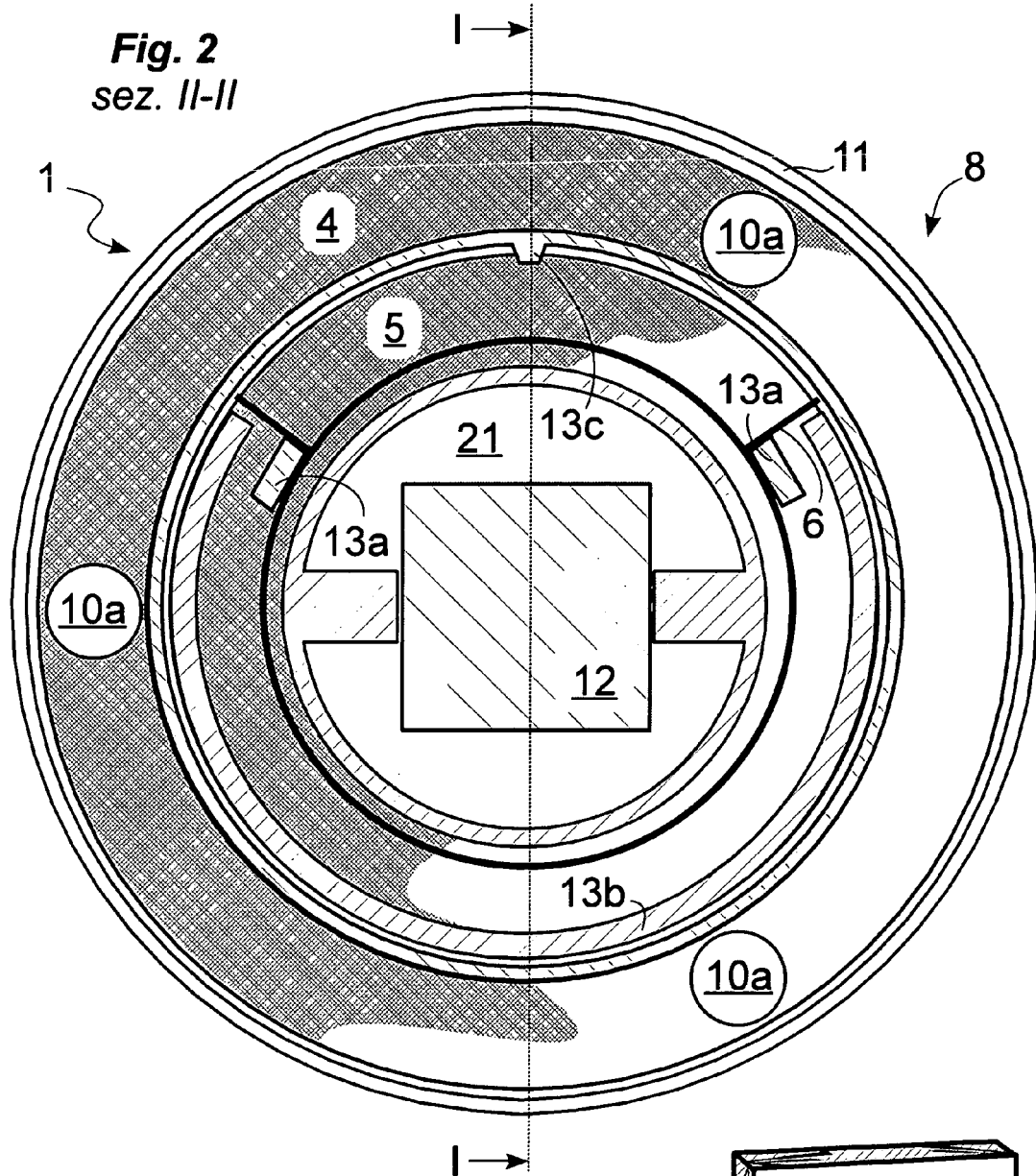


Fig. 1
sez. I-I



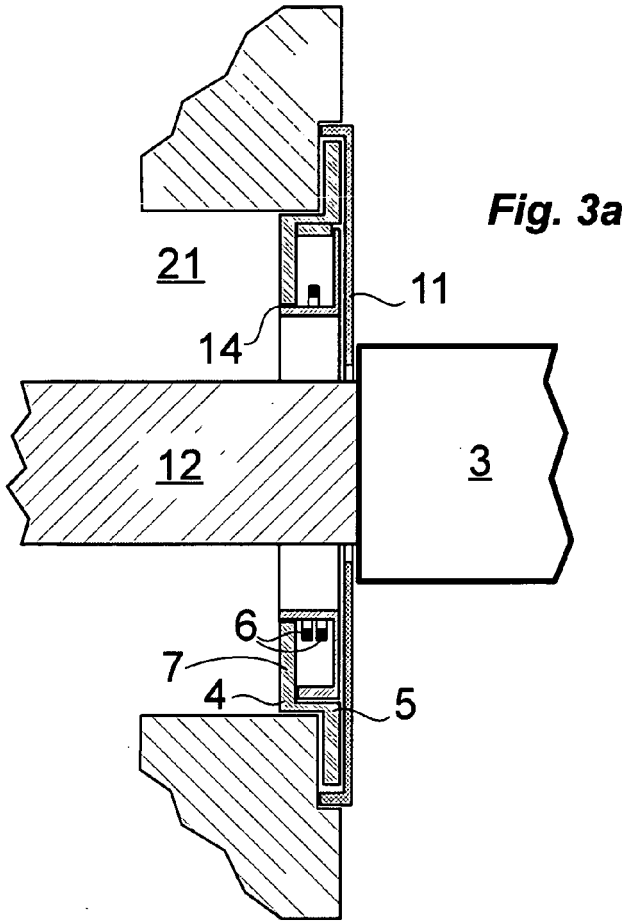


Fig. 3a

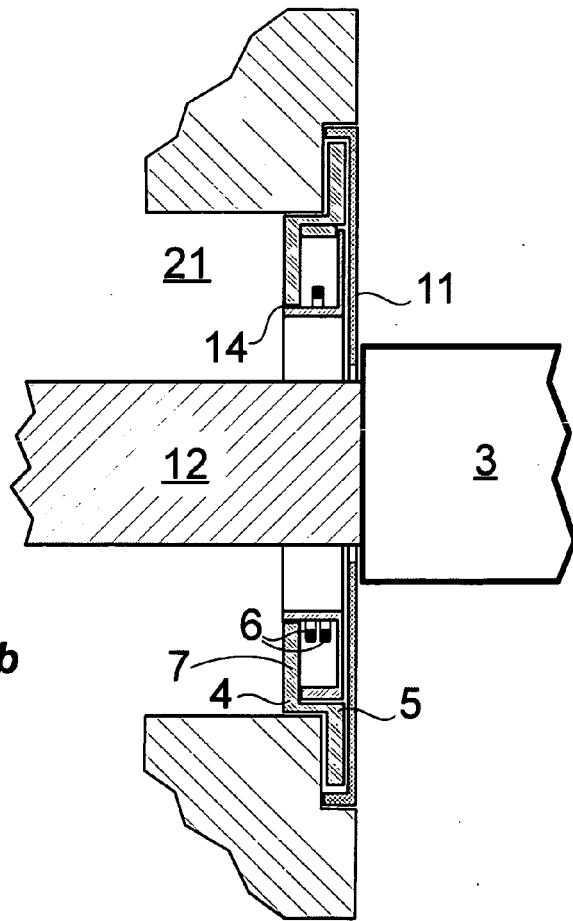


Fig. 3b



EUROPEAN SEARCH REPORT

 Application Number
 EP 09 42 5237

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	GB 470 358 A (JOHN ERNEST LEGGE; ARCHIBALD HAMMOND WILSON) 13 August 1937 (1937-08-13) * the whole document *	1-15	INV. E05B3/06
X	DE 102 00 113 A1 (HEINZ W. PERPLIES) 17 July 2003 (2003-07-17) * paragraphs [0020], [0023] - [0026]; figures 1, 4, 5 *	1-15	
X	GB 445 637 A (EDWIN SHOWELL & SONS LTD; ALFRED JESSE PEARCE; HAROLD GEORGE BRADBURN) 16 April 1936 (1936-04-16) * page 3, line 95 - page 4, line 75; figures 1-3 *	1-15	
X	US 3 708 191 A (HEGEDUS D) 2 January 1973 (1973-01-02) * the whole document *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		30 November 2009	Cruyplant, Lieve
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category		E : earlier patent document, but published on, or after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	

 1
 EPO FORM 1503-03-02 (F04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 42 5237

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.

30-11-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 470358	A	13-08-1937	NONE	

DE 10200113	A1	17-07-2003	NONE	

GB 445637	A	16-04-1936	NONE	

US 3708191	A	02-01-1973	NONE	

EPO FORM P0459

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