



EUROPEAN PATENT APPLICATION

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

(51) Int Cl.:
E05B 65/10 (2006.01) **E05B 63/04** (2006.01)
E05B 13/00 (2006.01) **E05B 15/00** (2006.01)

(21) Application number: **16165387.8**

(22) Date of filing: **14.04.2016**

(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

(72) Inventors:
• **OTEGUI ODRIOZOLA, Eduardo**
20305 Irun (Guipuzcoa) (ES)
• **GOÑI URBIETA, Fernando**
20305 Irun (Guipuzcoa) (ES)

(74) Representative: **Boden, Keith McMurray**
Fry Heath & Spence LLP
The Gables
Massetts Road
Horley
Surrey RH6 7DQ (GB)

(30) Priority: **21.04.2015 ES 201530537**

(71) Applicant: **Talleres De Escoriaza, S.A.**
20305 Irun (Guipuzcoa) (ES)

(54) **MULTIFUNCTION HANDLE FOR FIRE DOORS**

(57) Multifunction handle for doors, particularly for fire doors, which incorporates an inner follower (5) from which there emerges an opening projection (5c) capable of being located on either the right or the left of the vertical axis (1 a) of the multifunction handle (1) according to its assembly position, which depends on the opening rotation ("hand") of the door, and there being a toggle lever (4) that, in the situation where the door is dead-bolted,

is located at an angle to the vertical axis (1 a) of the multifunction handle (1) on the side opposite the position of the opening projection (5c) of the inner follower (5), the toggle lever (4) being capable of being linked via its side surfaces (4b) to an opening transmitter (6) during the step of configuring the door from being dead-bolted to open or vice versa.

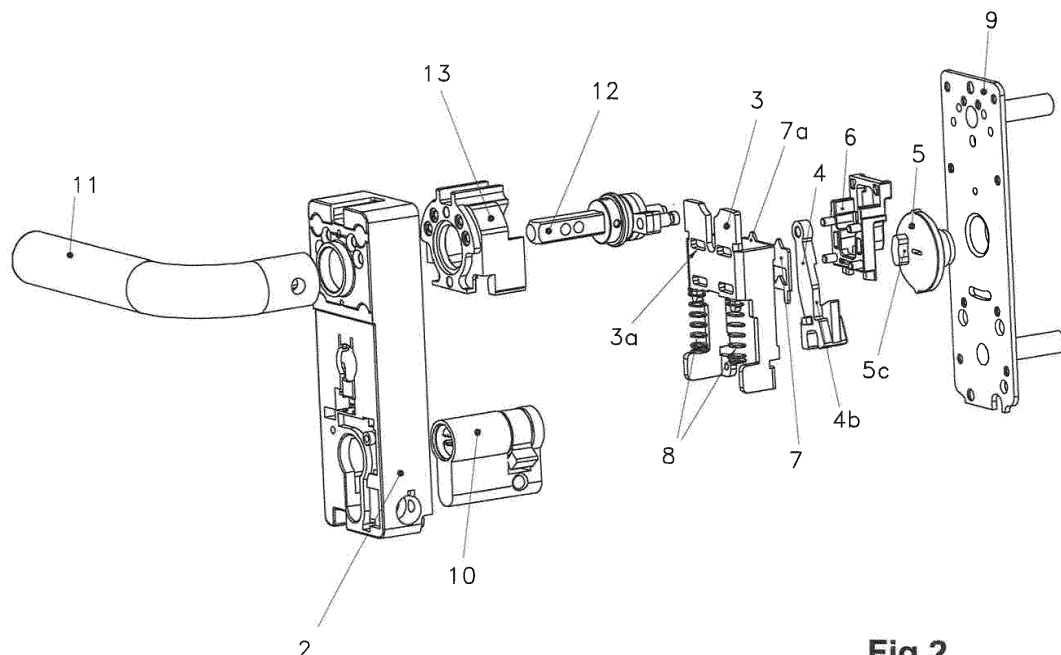


Fig.2

Description

FIELD OF THE INVENTION

[0001] This invention relates to a multifunction handle for doors, in particular, fire doors provided with a panic bar on the inside.

PRIOR ART

[0002] Currently, and with reference to the prior art, it is usual and known in multifunction handles for fire doors to use mechanisms that, by actuating the handle installed on the outer portion of the door, make it possible to draw back the latch of the panic bar located inside, opening said door.

[0003] Many of the systems available on the market allow the door to be opened or dead-bolted, acting by means of a key in the corresponding lock cylinder positioned in the device, making it possible to draw back the latches of the panic bar or not. The movements made by the mechanism in order to dead-bolt the door vary greatly in this type of system, but they all share the need to add further components (generally, spindles or screws) depending on which hand of the door is involved. The mechanisms for opening or dead-bolting the door have three possible positions, two of which depend on the hand of the door, and thus, once the latter is established, the position of the mechanism that is not involved (the one corresponding to the other hand) will have to be locked by means of further components. This feature of existing multifunction handles for fire doors on the market makes them difficult to install and adds complexity to the system.

EXPLANATION OF THE INVENTION AND ADVANTAGES

[0004] In view of this situation, the present invention refers to a multifunction handle for doors, particularly for fire doors, which incorporates an inner follower from which there emerges an opening projection capable of being located on either the right or the left of the vertical axis of the multifunction handle according to its assembly position, which depends on the opening rotation ("hand") of the door, and there being a toggle lever that, in the situation where the door is dead-bolted, is located at an angle to the vertical axis of the multifunction handle on the side opposite the position of the opening projection of the inner follower, the toggle lever being capable of being linked via its side surfaces to an opening transmitter during the step of configuring the door from being dead-bolted to open or vice versa.

[0005] Because of this configuration, the multifunction handle for doors is a device that can be used on both hands of the door, with just two possible positions of the mechanism parts, without it being necessary to add additional parts such as screws or spindles for locking the position that the mechanism would have if the handle

were installed on the other hand. The use of an inner follower and a toggle lever that can have only two positions, according to the opening rotation of the door, makes it easy to install the mechanism and makes it less complex. Moreover, by acting on the lock cylinder with a key, it is very easy to change from the configuration where the door is dead-bolted to the open position or vice versa, since the toggle lever performs a pendulum movement and its side surfaces contact the opening transmitter, moving it horizontally so that it occupies the required position.

[0006] Another characteristic of the invention is that, through its pins, the locking lever is capable of being linked to the springs incorporated in the transmission body.

[0007] Because of this configuration it is not necessary to add any other parts for linking the locking lever to the mechanism, since the same springs are used as are installed in the transmission body.

[0008] Another characteristic of the invention is that the mechanism support incorporates a flexible pin.

[0009] Because of this configuration of the mechanism support, it is possible for said support to include a microswitch for those cases where an electrical signal is required in the handle. It is not necessary to remove any part of the multifunction handle in order to insert said microswitch since, because a flexible pin is involved, it can be squeezed down for inserting the microswitch and the fixing lugs fix the position of the microswitch once squeezing on said flexible pin ceases.

[0010] Another characteristic of the invention is that the mechanism support allows the incorporation of a microswitch capable of being linked to the activation protrusion that emerges from the toggle lever during the step of configuring the door from being dead-bolted to open or vice versa.

[0011] Because of this configuration, it is the actual toggle lever that activates and deactivates any microswitch incorporated in the handle, by means of its activation protrusion.

DRAWINGS AND REFERENCE NUMERALS

[0012] To get a better understanding of the nature of the invention, the attached drawings illustrate an industrial embodiment by way of explanatory, non-restrictive example.

Fig. 1 a shows a view of the central mechanism of the multifunction handle (1) in the rest position with the door dead-bolted, showing the positioning adopted by the toggle lever (4) and the inner follower (5) for the hand of the door with the hinges to the left.

Fig. 1b shows a view of the central mechanism of the multifunction handle (1) in the rest position with the door dead-bolted, showing the positioning adopted by the toggle lever (4) and the inner follower (5)

for the hand of the door with the hinges to the right.

Fig. 2 shows an exploded isometric view of the parts making up the multifunction handle (1).

Fig. 3 shows a view of the modular handle (1) in the open position for a door with hinges on the left, with an enlarged detail of the mechanism.

Fig. 4 shows a view of the modular handle (1) in the open position for a door with hinges on the left, with an enlarged detail of the mechanism when the hand grip (11) is acted upon.

Fig. 5 shows a view of the modular handle (1) in the dead-bolted position for a door with hinges on the left, with an enlarged detail of the mechanism.

Fig. 6 shows a view of the modular handle (1) in the dead-bolted position for a door with hinges on the left, with an enlarged detail of the mechanism when the hand grip (11) is acted upon.

Fig. 7a and 7b show isometric views of the inner follower (5) from the front and back.

Fig. 8a and 8b show isometric views of the opening transmitter (6) from the front and back.

Fig. 9a and 9b show isometric views of the toggle lever (4) from the front and back.

Fig. 10 shows a front view of the mechanism support (2).

Fig. 11 shows an isometric view of the transmission body (3) and its springs (8).

Fig. 12 shows an isometric view of the locking lever (7).

- 1.- Multifunction handle.
- 1a.- Vertical axis.
- 2.- Mechanism support.
- 2a.- Flexible pin.
- 2b.- Fixing studs.
- 3.- Transmission body.
- 3a.- Guide channels.
- 4.- Toggle lever.
- 4a.- Activation protrusion.
- 4b.- Side surfaces.
- 5.- Inner follower.
- 5a.- Slot.
- 5b.- Position indicator.
- 5c.- Opening projection.
- 6.- Opening transmitter.
- 6a.- Guide projections.
- 6b.- Actuation surface.

- 7.- Locking lever.
- 7a.- Locking castellations.
- 7b.- Pins.
- 8.- Springs.
- 9.- Connector plate.
- 10.- Locking cylinder.
- 11.- Hand grip.
- 12.- Outer butterfly-type follower.
- 13.- Support for outer follower.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0013] In relation to the drawings and reference numerals listed above, a preferred embodiment of the subject-matter of the invention is illustrated on the attached drawings, with reference to a multifunction handle for doors, particularly for fire doors, which incorporates an inner follower (5) from which there emerges an opening projection (5c) capable of being located on either the right or the left of the vertical axis (1 a) of the multifunction handle (1) according to its assembly position, which depends on the opening rotation ("hand") of the door, and there being a toggle lever (4) that, in the situation where the door is dead-bolted, is located at an angle to the vertical axis (1 a) of the multifunction handle (1) on the side opposite the position of the opening projection (5c) of the inner follower (5), the toggle lever (4) being capable of being linked via its side surfaces (4b) to an opening transmitter (6) during the step of configuring the door from being dead-bolted to open or vice versa.

[0014] Fig. 1 a shows the mechanism with the door dead-bolted for the hand of the door with hinges to the left of the multifunction handle (1), consisting of a transmission body (3), a pair of springs (8), a locking lever (7), a toggle lever (4), an opening transmitter (6) and an inner follower (5). Fig. 1b shows the same mechanism, with the dead-bolted configuration for use on the hand of the door that has the hinges on the right. The position indicator (5b) of the inner follower (5) shows on which side of the vertical axis (1a) of the multifunction handle (1) the opening projection (5c) is located. These two figures show the only two possible configurations of the mechanism when dead-bolted, and it can be seen that no additional parts are required in order to use the multifunction handle (1) on the different hands of the door.

[0015] Fig. 3 shows the multifunction handle (1) in the rest position, with the configuration of the parts of its mechanism positioned for door opening. As can be seen in Fig. 4, by acting on the hand grip (11), the outer butterfly-type follower (12) comes into contact with the transmission body (3), causing it to move down. The opening transmitter (6) is linked to said transmission body (3) by means of the guide projections (6a). Said guide projections (6a) of the opening transmitter (6) are housed in the corresponding guide channels (3a) provided in the transmission body (3). Furthermore, the pins (7b) of the locking lever (7) are inserted into the springs (8) contained by the transmission body (3) so that, as the trans-

mission body (3) moves down, the opening transmitter (6) and the locking lever (7) move down at the same time. The position of the opening transmitter (6) remains fixed owing to the castellations (7a) incorporated into the locking lever (7), which prevent the guide projections (6a) incorporated into said opening transmitter (6) from sliding along the guide channels (3a) of the transmission body (3).

[0016] During the downward movement of the assembly formed of the transmission body (3), locking lever (7) and opening transmitter (6), with the multifunction handle (1) in the open state, the actuation surface (6b) of the opening transmitter (6) comes into contact with the opening projection (5c) that emerges from the inner follower (5), causing it to rotate. Said inner follower (5) is the part linking the multifunction handle (1) to the latch retraction mechanism of the panic bar positioned on the inside of the door. In this way, as the inner follower (5) rotates, the latch retraction mechanism is activated and the door is opened.

[0017] Furthermore, if a key is used to act on the lock cylinder (10) positioned in the multifunction handle (1), the door changes from an open situation to a dead-bolted situation, and the mechanism adopts the configuration shown in Fig. 5 for a rest situation. When the key is turned in the lock cylinder (10), the toggle lever (4) performs a pendulum movement and moves to the other side of the vertical axis (1 a), such that the movement of its side surfaces (4b) pull the opening transmitter (6) along, causing it to move horizontally. During this movement of the opening transmitter (6), the guide projections (6a) exert a force on each of the castellations (7a) of the locking lever (7), such that the latter moves downward and allows the configuration of the mechanism to change.

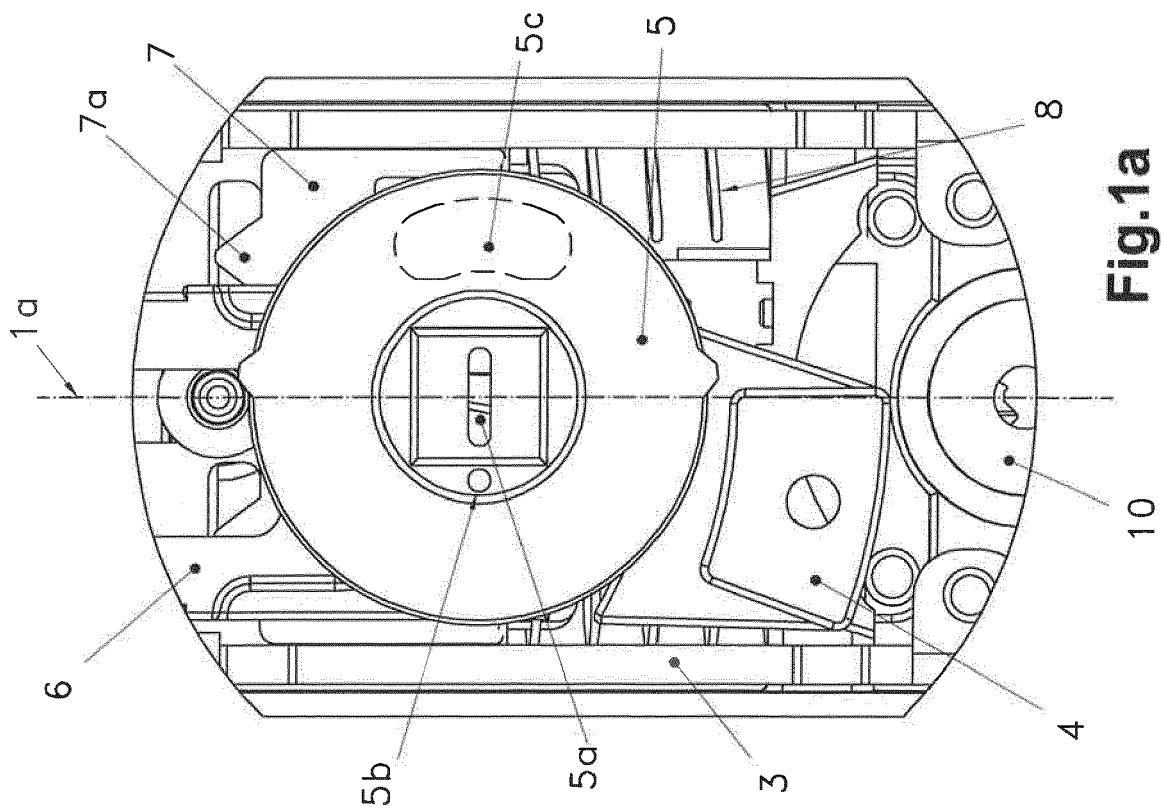
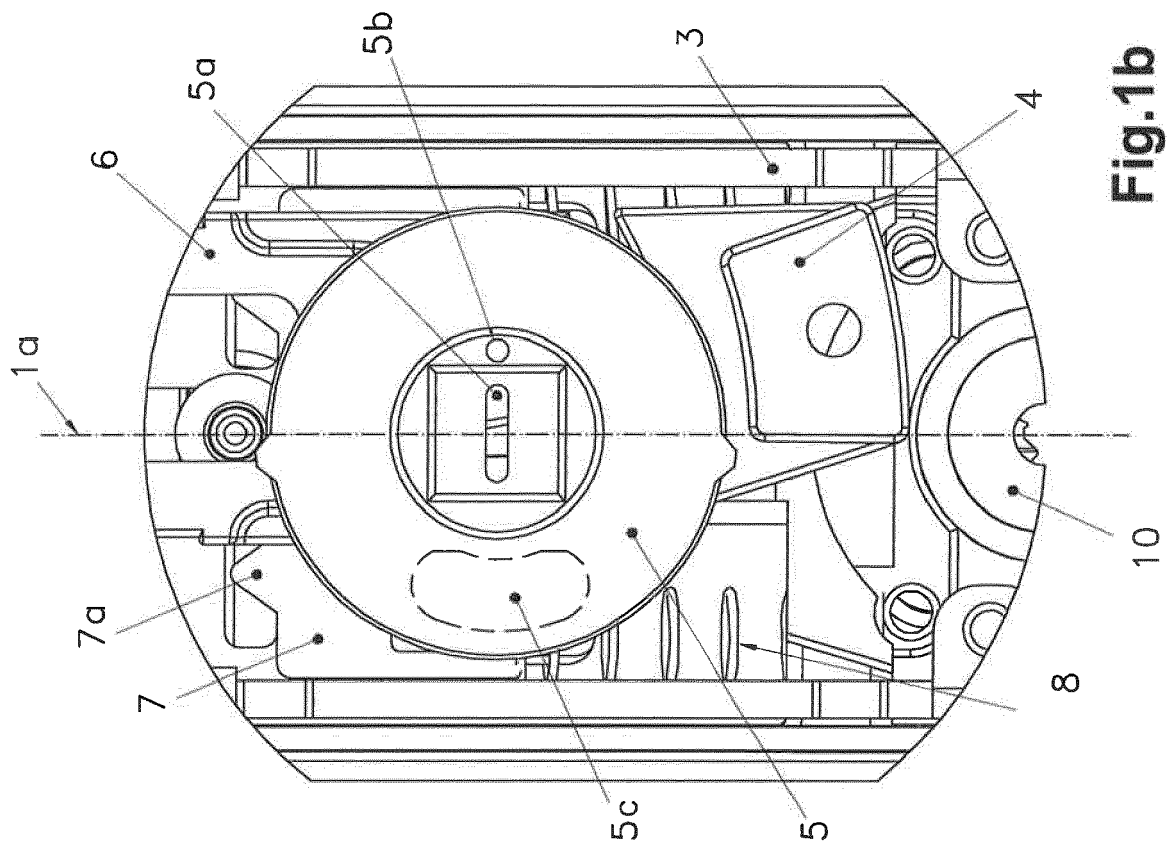
[0018] As can be seen in Fig. 6, in the situation with the door dead-bolted, by acting on the hand grip (11), the outer butterfly-type follower (12) causes the transmission body (3) to move down, thus pulling along the locking lever (7) and the opening transmitter (6). The actuation surface (6b) of the opening transmitter (6) does not collide with the opening projection (5c) of the inner follower (5), because that is on the other side of the vertical axis (1 a) of the multifunction handle (1). In this way, the inner follower (5) stays immobile, and does not actuate the latch of the panic bar, keeping the door closed.

[0019] It should be noted that there is also provision for the mechanism support (2) to incorporate a flexible pin (2a) with fixing studs (2b) at its free end, such that a microswitch can easily be incorporated if an electrical signal is required. The properties of the flexible pin (2a) allow it to be squeezed down in order to insert said microswitch; when it is released the fixing studs (2b) hold it in the required position so that it cannot come away. Moreover, the toggle lever (4) has an activation protrusion (4a) in its rear portion, designed so as to activate or deactivate any microswitch that may be incorporated in the mechanism support (2), when the toggle lever (4) moves from the dead-bolted situation to the open one,

or vice versa.

Claims

1. Multifunction handle for doors, particularly for fire doors provided with a panic bar on its inner portion, which are installed on the outer face of doors with a lock in the plane formed by said door, which contains a mechanism support incorporating a hand grip in the outer portion, which hand grip acts, when actuated, by means of an outer follower on a mechanism for transmitting displacement parallel to the plane of the door formed by a transmission body joined to at least one spring and an activator which, in the open position, allows the latches of the panic bar located on the inside of the door to be retracted, and which incorporates a lock cylinder for opening or dead-bolting the door by means of a key, **characterised in that** it incorporates an inner follower (5) from which there emerges an opening projection (5c) capable of being located on either the right or the left of the vertical axis (1 a) of the multifunction handle (1) according to its assembly position, which depends on the opening rotation ("hand") of the door, and there being a toggle lever (4) that, in the situation where the door is dead-bolted, is located at an angle to the vertical axis (1 a) of the multifunction handle (1) on the side opposite the position of the opening projection (5c) of the inner follower (5), the toggle lever (4) being capable of being linked via its side surfaces (4b) to an opening transmitter (6) during the step of configuring the door from being dead-bolted to open or vice versa.
2. Multifunction handle for doors, according to the first claim, **characterised in that**, through its pins (7b), the locking lever (7) is capable of being linked to the springs (8) incorporated in the transmission body (3).
3. Multifunction handle for doors, according to the previous claims, **characterised in that** the mechanism support (2) incorporates a flexible pin (2a).
4. Multifunction handle for doors, according to the previous claims, **characterised in that** the mechanism support (2) allows the incorporation of a microswitch capable of being linked to the activation protrusion (4a) that emerges from the toggle lever (4) during the step of configuring the door to be dead-bolted in the open state or vice versa.



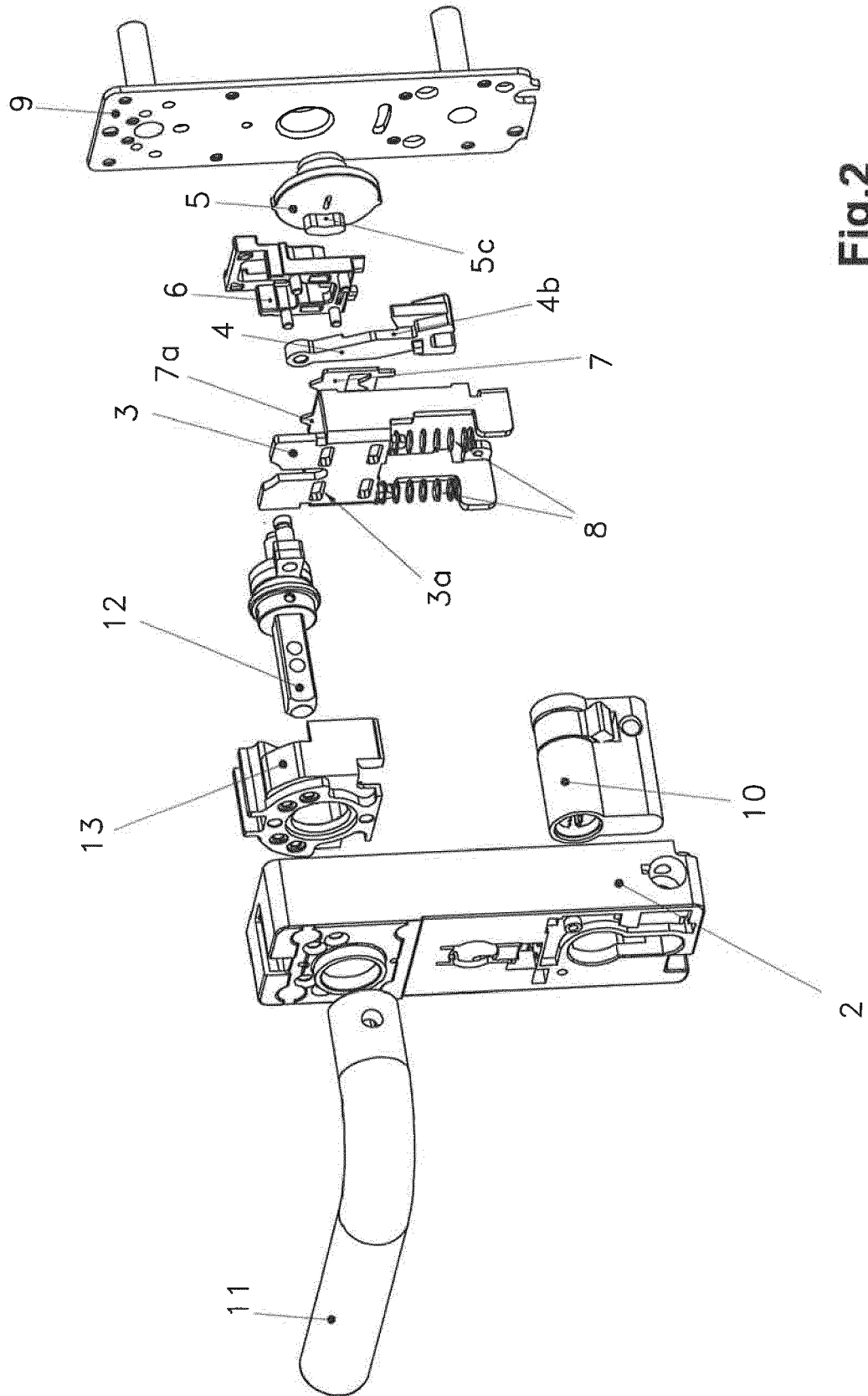


Fig.2

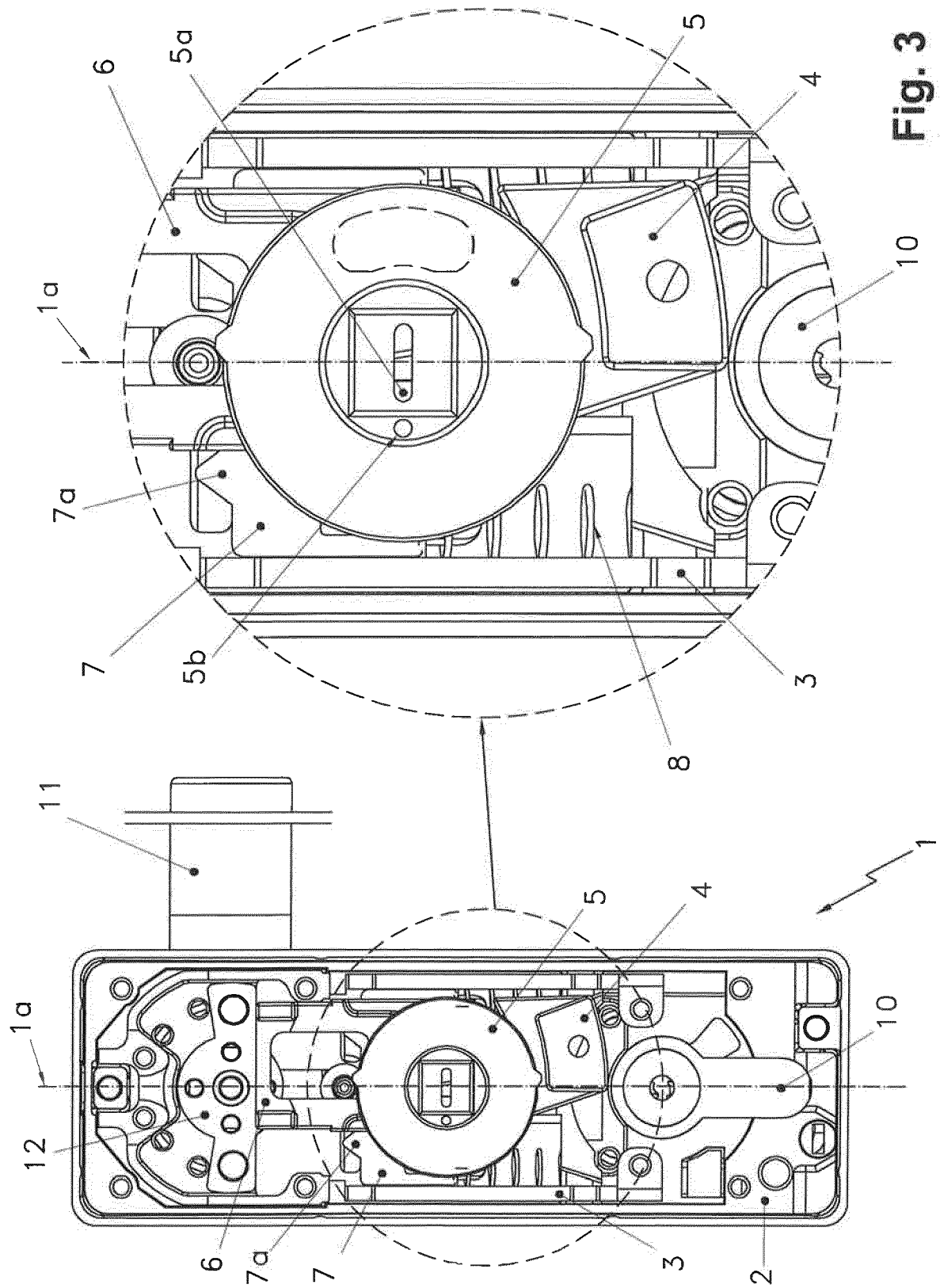


Fig. 3

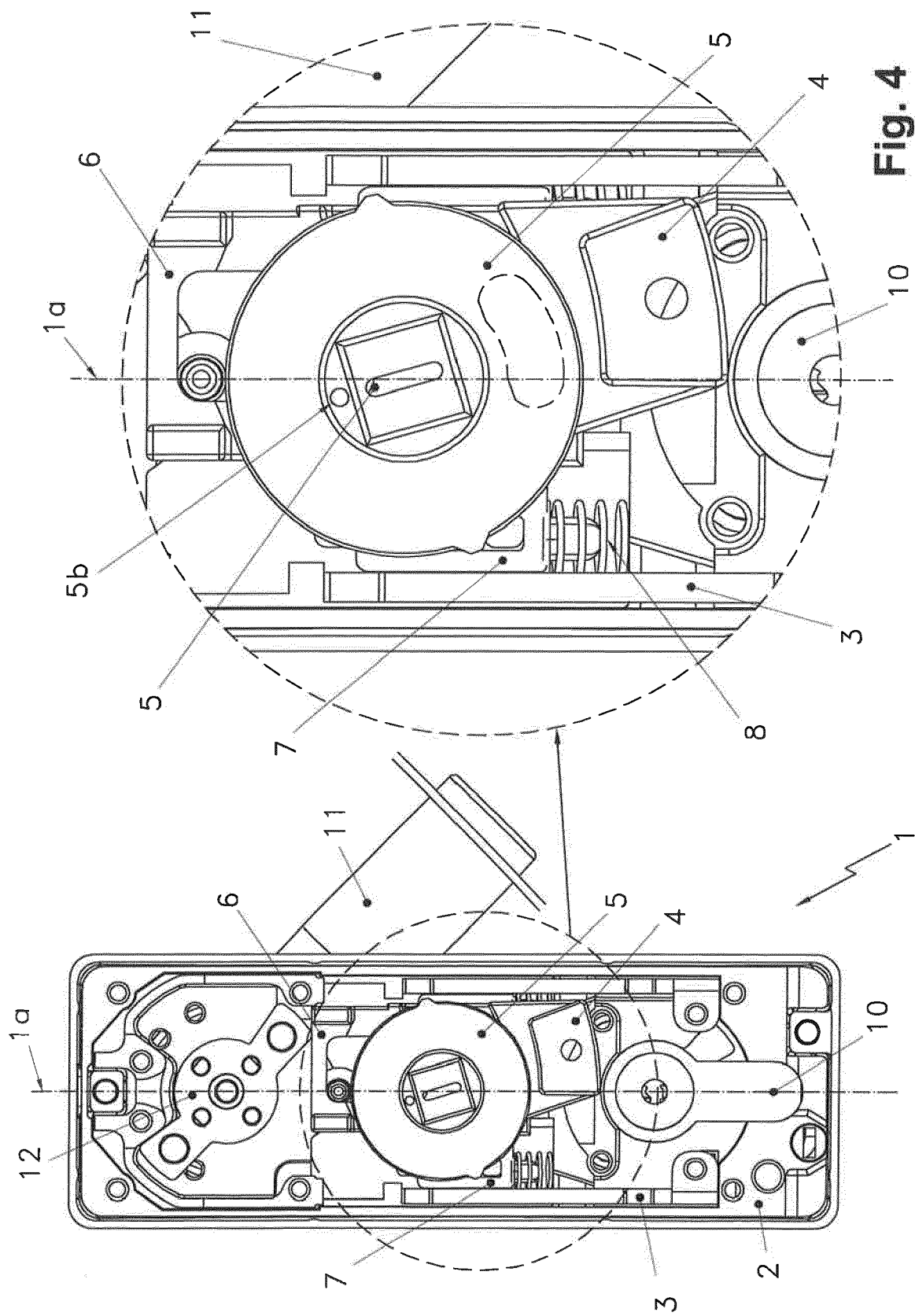


Fig. 4

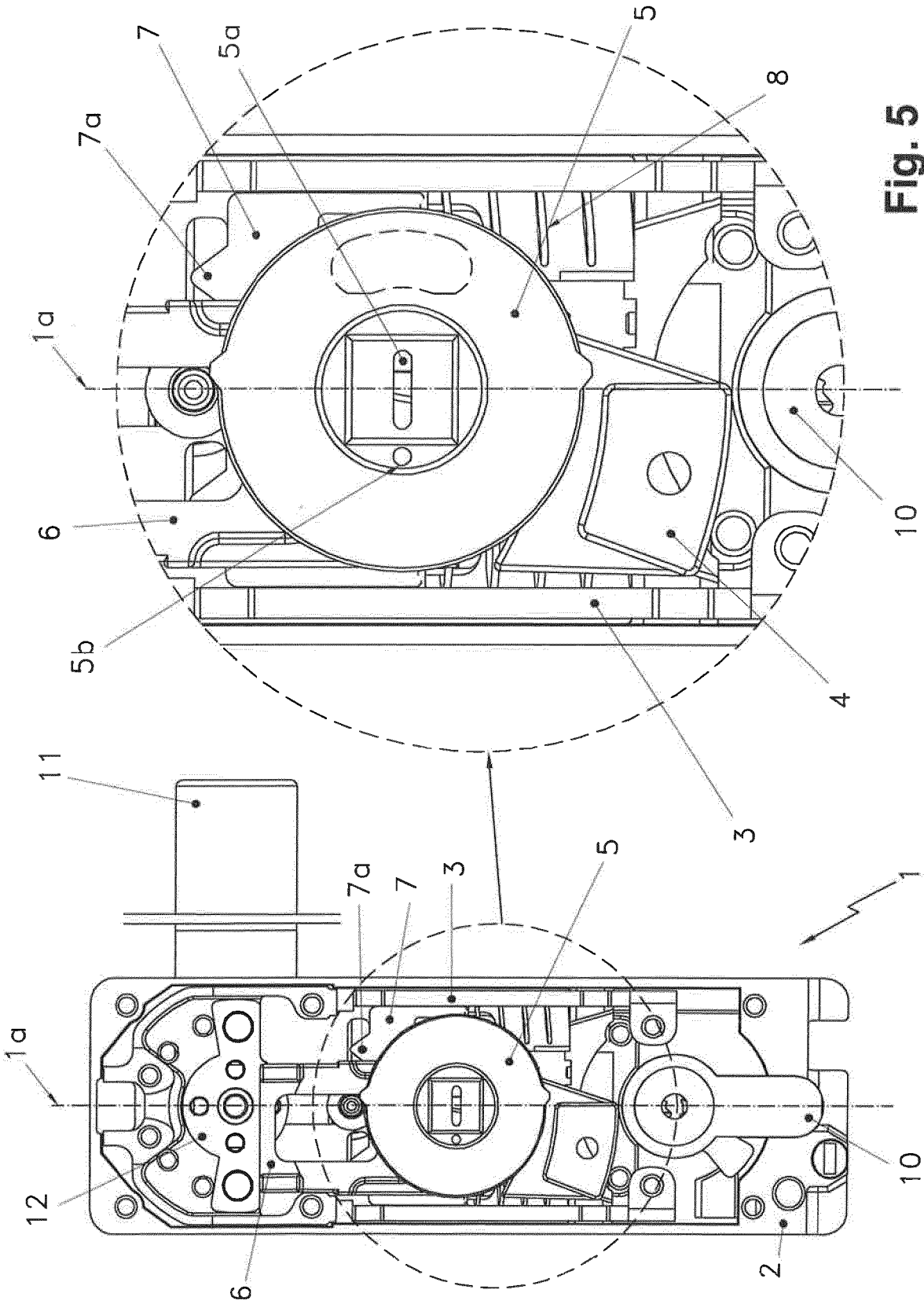
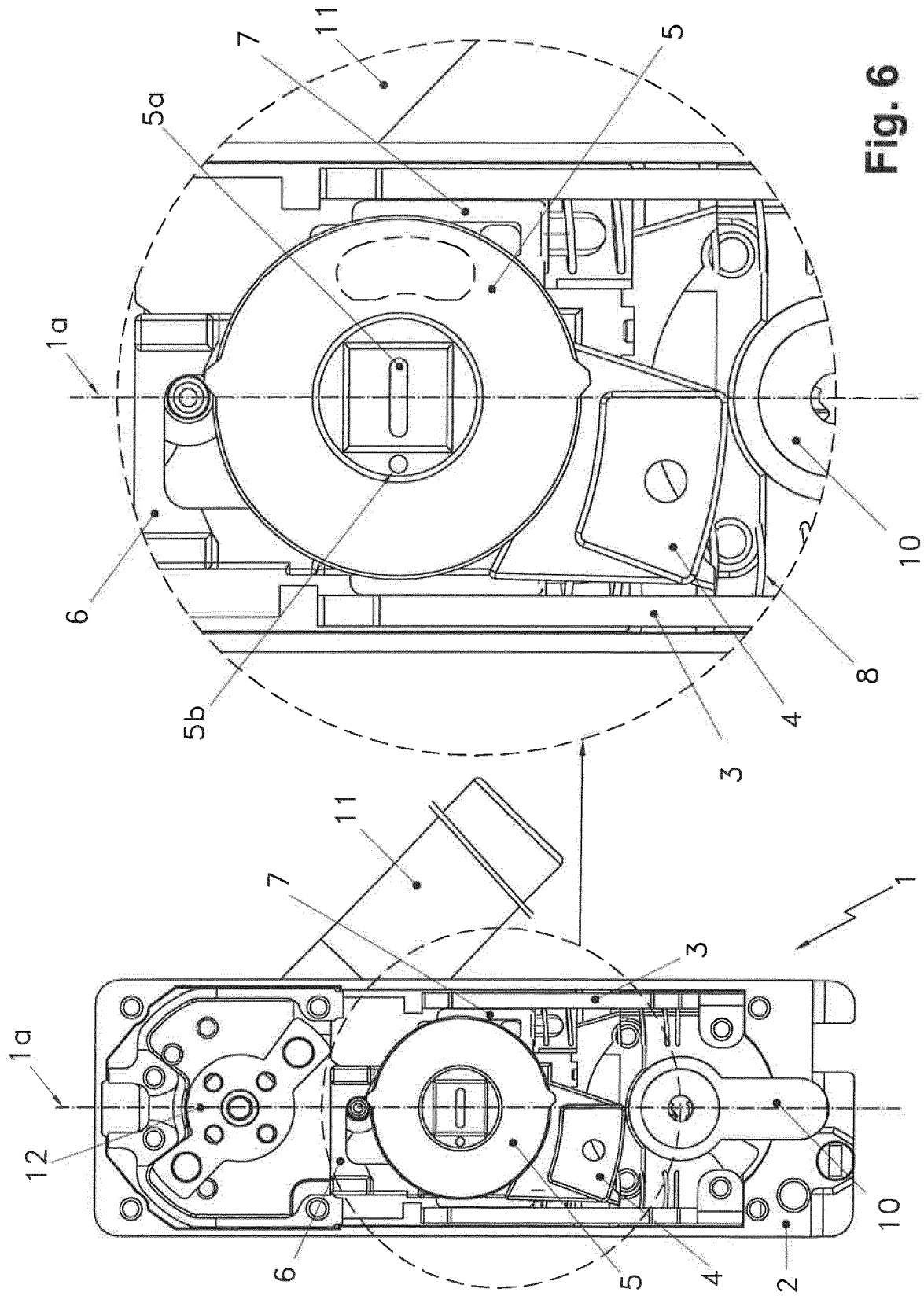


Fig. 5



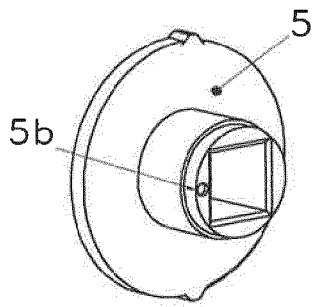


Fig. 7a

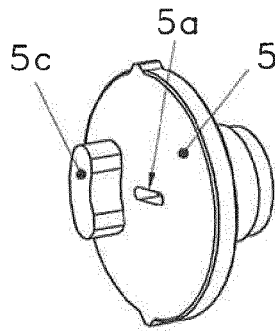


Fig. 7b

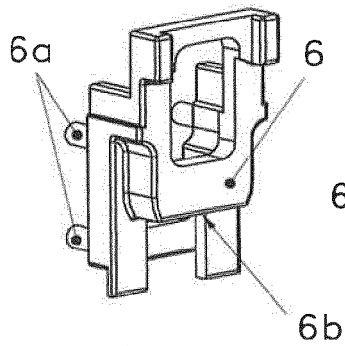


Fig. 8a

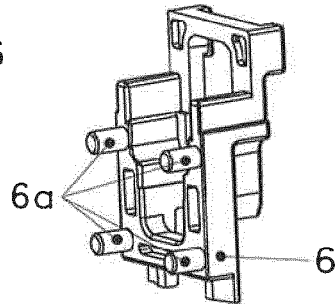


Fig. 8b

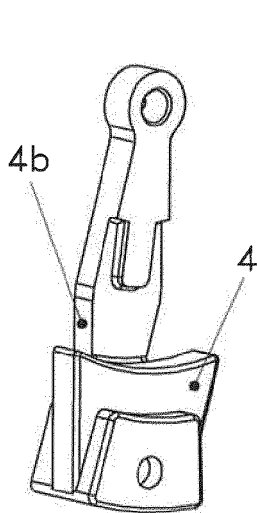


Fig. 9a

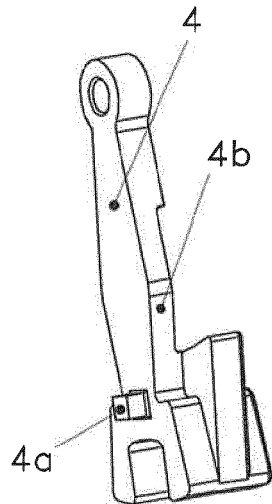


Fig. 9b

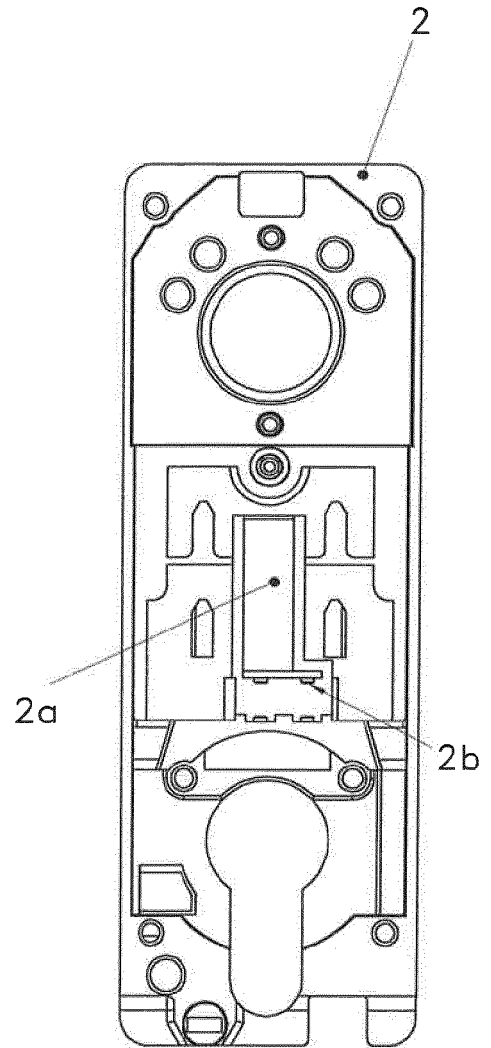


Fig. 10

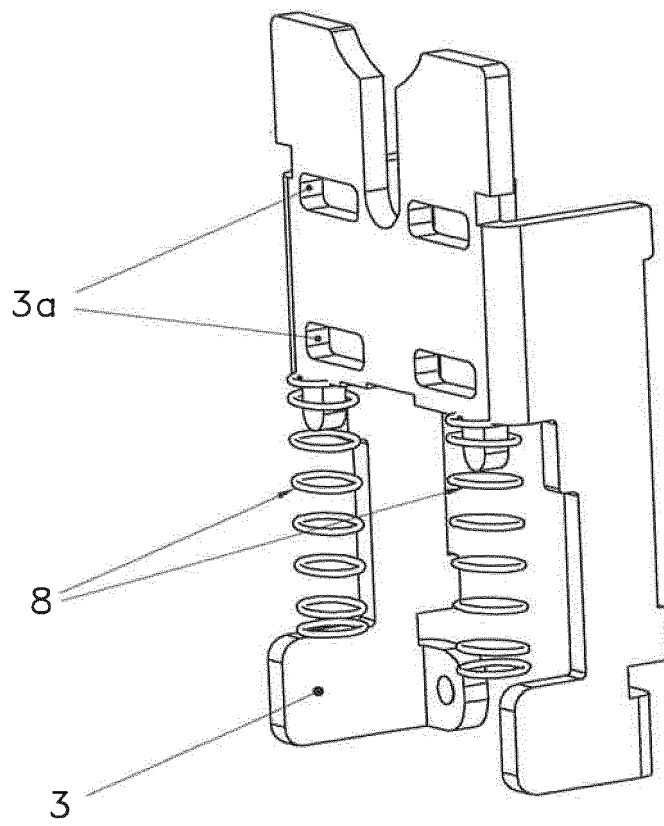


Fig. 11

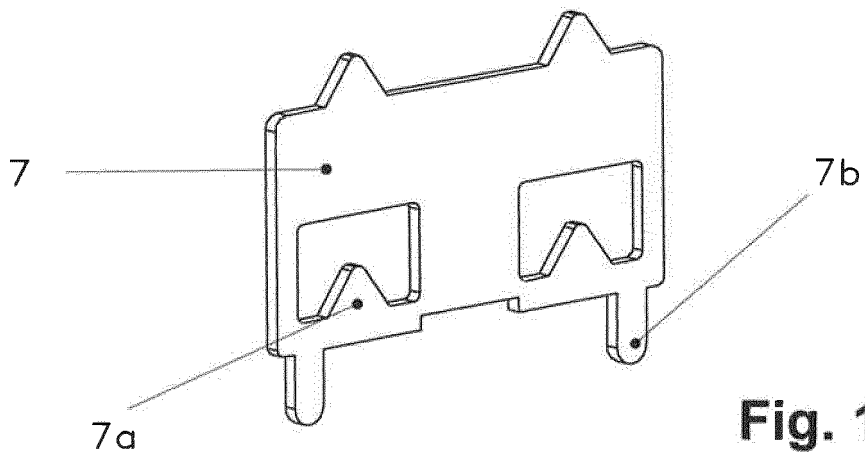


Fig. 12



EUROPEAN SEARCH REPORT

Application Number
EP 16 16 5387

5

10

15

20

25

30

35

40

45

50

55

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	WO 2008/084144 A2 (JPM SAS [FR]; ACHERON THIERRY [FR]; BAILLIA-PREL QUENTIN [FR]; BEL FRE) 17 July 2008 (2008-07-17) * the whole document *	1-4	INV. E05B65/10 E05B63/04 E05B13/00 E05B15/00
A	US 2014/165669 A1 (TIEN HUNG-JEN [TW]) 19 June 2014 (2014-06-19) * the whole document *	1	
A	EP 0 870 888 A2 (TALLERES ESCORIAZA SA [ES]) 14 October 1998 (1998-10-14) * the whole document *	1	
A	EP 0 922 824 A1 (IMP IND METALMECC PERUGIA [IT]) 16 June 1999 (1999-06-16) * the whole document *	1	
A	US 2005/257583 A1 (LIN CHING-TIEN [TW]) 24 November 2005 (2005-11-24) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 August 2016	Examiner Ansel, Yannick
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 16 16 5387

5

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.

22-08-2016

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008084144 A2	17-07-2008	EP 2102435 A2	23-09-2009
		ES 2392199 T3	05-12-2012
		FR 2909701 A1	13-06-2008
		WO 2008084144 A2	17-07-2008

US 2014165669 A1	19-06-2014	NONE	

EP 0870888 A2	14-10-1998	EP 0870888 A2	14-10-1998
		ES 1036905 U	16-11-1997
		RU 2142041 C1	27-11-1999

EP 0922824 A1	16-06-1999	DE 69805942 D1	18-07-2002
		DE 69805942 T2	20-02-2003
		EP 0922824 A1	16-06-1999
		ES 2176888 T3	01-12-2002
		IT B0970709 A1	10-06-1999

US 2005257583 A1	24-11-2005	TW M258148 U	01-03-2005
		US 2005257583 A1	24-11-2005
