

(19)



(11)

EP 4 826 196 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.10.2026 Bulletin 2026/43

(51) International Patent Classification (IPC):
E05B 9/10 (2006.01) E05B 63/00 (2006.01)

(21) Application number: **26172007.2**

(52) Cooperative Patent Classification (CPC):
E05B 9/105; E05B 9/10; E05B 63/006

(22) Date of filing: **13.04.2026**

(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 ME MK MT NL
NO PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA
Designated Validation States:
GE KH LA MA MD TN

(71) Applicant: **Cisa S.p.a.**
48018 Faenza (IT)

(72) Inventor: **FABBRI, Matteo**
47121 Forlì FC (IT)

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners
Via Meravigli, 16
20123 Milano (IT)

(30) Priority: **14.04.2025 IT 202500008169**

(54) **TRANSMISSION DEVICE FOR MODULAR CYLINDERS**

(57) A transmission device (1) for modular cylinders (100) configured for interposition between a coded module (101), constituted by a stator (102) and by a rotor (103) which can rotate, affected by encoding pins (104) which lead to a channel (105) of the rotor (103) for accommodating a key (106), and a mechanical mating module (107) for mating with elements for moving bolts, latches, catches and equivalent components, which is provided with a rotatable actuation cam

(107a) which rotates with respect to the stator (102) of the module (101); the device (1) further comprises a fixed body (2), which is integral with the rotor (103), is provided with a longitudinal channel (105) within which a shank (104) can slide which has a first end (104a) facing the channel (105) and a second end (104b) facing and close to the module (107); the channel (105) is misaligned with respect to the axis of rotation of the rotor (103) and of the mechanical mating module (107).

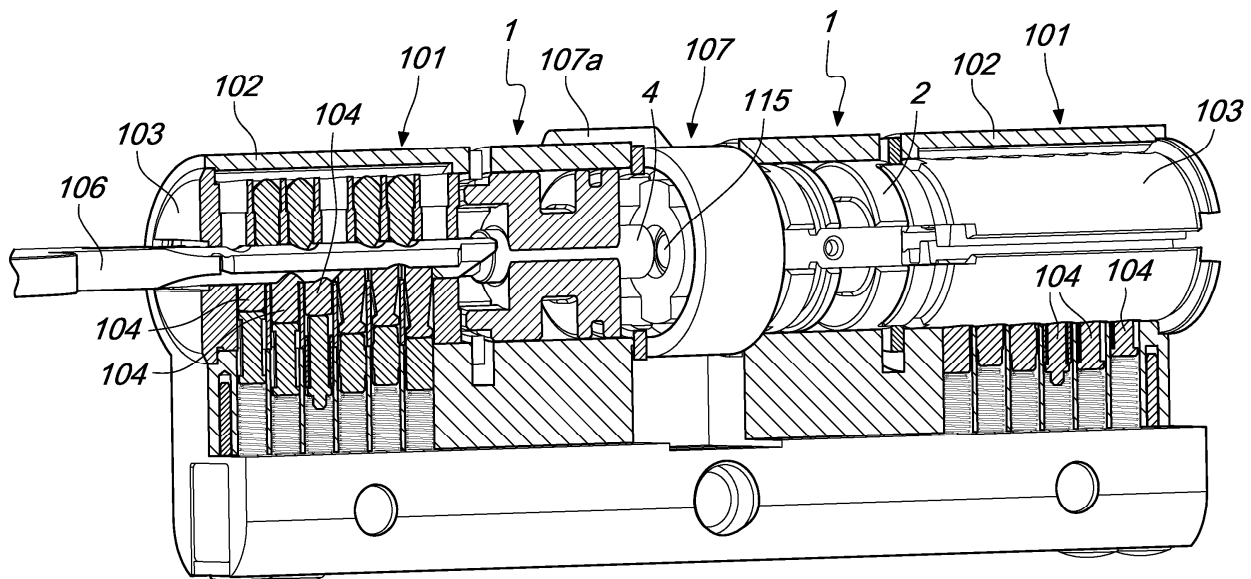


Fig. 8

Description

[0001] The present invention relates to a transmission device for modular cylinders.

[0002] Increasingly often, in the manufacture of cylinders for locks, use is made of head components (into which the coded key is inserted) of standardized type, between which a rotating actuation cam and respective transmission elements are interposed which are made in different sizes and which make it possible to adapt the overall length of the cylinder to the installation door.

[0003] Thanks to this modularity of the components, for manufacturers it is no longer necessary to make a plurality of different types of cylinder, each of which is specifically designed for a specific thickness of the installation door, and instead it is sufficient to assemble the standardized components using transmission elements of suitable length (which are among the few components that need to be made in different sizes). In this manner it is possible to rationalize production of individual components (so favoring the manufacture of universal modules), reduce the number of variants to manage in the maker's management systems, and reduce the space taken up in stores by stocks of components.

[0004] It should be noted that in the current production of security cylinders, there are two families of rotating actuation cams: cams with an emergency function (also called clutch cams) which allow keys to be used on both sides of the cylinder simultaneously, and traditional cams, which allow only one key at a time to be used (i.e. the cylinder can be actuated using only one key inserted on one side of the cylinder and, until that key is removed, the cylinder cannot be actuated with a key inserted in the other side).

[0005] In cylinders fitted with clutch cams, the element that pulls the cam has elastically yielding components that receive the tip of the key and which therefore, by virtue of the capacity to translate axially (opposed by a spring) when pushed by a key, allow the simultaneous accommodation of two keys inserted in seats present on opposite sides of the cylinder.

[0006] In traditional cylinders, by contrast, the element that pulls the cam is rigid (i.e. it cannot perform any translation).

[0007] In order to allow the above mentioned distinction between clutch cam cylinders and traditional cylinders, dedicated transmission elements are used in modular cylinders as well, i.e. elements that are specifically designed to operate on only one type of cam (with an elastically yielding traction element or with a rigid traction element).

[0008] For the manufacturer, this diversification translates to less rationalization of production, of component management systems, and of storage.

[0009] The principal aim of the present invention is to solve the above mentioned drawbacks, by providing a transmission device for modular cylinders that can be

used both for providing clutch cylinders, and for providing traditional cylinders.

[0010] Within this aim, an object of the invention is to provide a transmission device for modular cylinders that makes it possible to reduce the number of components to be produced in order to have a complete range of modules with which to provide any type of cylinder.

[0011] Another object of the invention is to provide a transmission device for modular cylinders that makes it possible to reduce the number of components to be handled via management systems in order to have a complete range of modules with which to provide any type of cylinder.

[0012] Another object of the invention is to provide a transmission device for modular cylinders that makes it possible to reduce the number of components to be kept in stores in order to have sufficient stocks of components to form a complete range of modules with which to provide any type of cylinder.

[0013] Another object of the invention is to provide a transmission device for modular cylinders that can be associated both with clutched rotating actuation cams and with rigid rotating actuation cams.

[0014] Another object of the invention is to provide a transmission device for modular cylinders that has a structure suitable for transferring stresses only to the mechanically strongest parts of the components with which it interacts.

[0015] Another object of the present invention is to provide a transmission device for modular cylinders which is low cost, easily and practically implemented and safe in use.

[0016] This aim and these objects and others that will become more apparent hereinafter are achieved by a transmission device for modular cylinders according to claim 1.

[0017] Further characteristics and advantages of the invention will become better apparent from the detailed description that follows of a preferred, but not exclusive, embodiment of the transmission device for modular cylinders, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a partially cross-sectional schematic perspective view of a possible embodiment of a modular cylinder fitted with a transmission device according to the invention;

Figure 2 is an exploded perspective view of a transmission device according to the invention and the key of the installation cylinder of the clutch type;

Figure 3 is an exploded perspective view of a transmission device according to the invention and the key of the installation cylinder of the traditional, non-clutch type;

Figure 4 is a schematic side view of the cylinder of Figure 1;

Figure 5 is a cross-sectional view taken along the line V-V in Figure 4;

Figure 6 is an enlarged view of Figure 5;

Figure 7 is an enlarged view of Figure 1;

Figure 8 is a partially cross-sectional schematic perspective view of an additional embodiment of a modular cylinder of the conventional type, i.e. non-clutch, fitted with an additional transmission device according to the invention;

Figure 9 is an enlarged view of Figure 8;

Figure 10 is a schematic side view of the cylinder of Figure 8;

Figure 11 is a cross-sectional view taken along the line XI-XI in Figure 10;

Figure 12 is an enlarged view of Figure 11;

Figure 13 a schematic front elevation view of the cylinder in Figure 1;

Figure 14 is a cross-sectional view taken along the line XIV-XIV in Figure 10;

Figure 15 a schematic front elevation view of the cylinder in Figure 8, with the key inserted;

Figure 16 is a cross-sectional view taken along the line XVI-XVI in Figure 15;

Figure 17 is a schematic front elevation view of the cylinder in Figure 8, with two keys inserted, of which only one is engaged, misaligned with each other;

Figure 18 is a cross-sectional view taken along the line XVIII-XVIII in Figure 15;

Figure 19 is a schematic front elevation view of the cylinder of Figure 8 with a key inserted and partially rotated;

Figure 20 is a cross-sectional view taken along the line XX-XX in Figure 19.

[0018] With particular reference to the figures, the reference numeral 1 generally designates a transmission device for modular cylinders 100.

[0019] The modular cylinders 100 of interest are of the type configured to be interposed between a coded

module 101, constituted by a stator 102 and by a rotor 103 which can rotate within the stator 102, affected by encoding pins 104 which lead to a channel 105 of the rotor 103, for accommodating a coded key 106, and a mechanical mating module 107 for mating with elements for moving bolts, latches, catches and equivalent components. Such module 107 is of the type provided with an actuation cam 107a, which can rotate with respect to the stator 102 of the coded module.

[0020] The device 1 according to the invention comprises a fixed body 2, which is integral with the rotor 103 of the coded module 101, is provided with a longitudinal channel 3 within which a shank 4 can slide which has a first end 4a facing the channel 105 for accommodating the key 106 and a second end facing and close to the mechanical mating module 107.

[0021] The longitudinal channel 3 is misaligned with respect to the axis of rotation of the rotor 103 and of the mechanical mating module 107.

[0022] It should be noted that the mechanical mating module 107 comprises a rotatable shell 108 and a substantially cylindrical internal insert 109, which can slide longitudinally within a seat 110 in the shell 108 that is complementary thereto.

[0023] The seat 110 comprises at least one recess 111 the shape and dimensions of which are complementary to those of protruding tabs 112 of the internal insert 109.

[0024] The arrangement of at least one tab 112 of the insert 109 within the at least one recess 111 determines the rigid mating of the internal insert 109 with the shell 108, rendering them temporarily integral.

[0025] In this manner, according to how the internal insert 109 is moved in the seat 110 of the shell 108 (pushed by the shank 4 of one of the two devices 1 contiguous to the module 107, in turn translated following the abutment of the tip of the key 103 against its end 4a), the rotation of the cam 107a will be determined by the rotation of a specific rotor 103 of the coded module 101 in which the key 106 (which abuts against the end 4a of the shank 4) is inserted.

[0026] With particular reference to a specific embodiment, the rotatable shell 108 of the mechanical mating module 107 can advantageously be integral with the rotatable actuation cam 107a.

[0027] Similarly, the slideable insert 109 of the mechanical mating module 107 can also (in a version of the invention of the type shown by way of non-limiting example in the accompanying Figure 8 and in the accompanying figures linked to it) be elastically deformable in a longitudinal direction: in the specific embodiment, therefore, the slideable insert 109 can vary its longitudinal extension between a first configuration of maximum length, in the absence of external stresses and in the presence of only the elastic forcing of respective elastic means 113 associated therewith, and a second configuration of minimum length, in the presence of external stresses (for example the thrust ex-

erted by the key 106 on the shank 4 which in turn is forced against the insert 109) in contrast with the action of the elastic means 113.

[0028] In detail, it should be noted that the shell of the mechanical mating module 107 comprises an internal annular wall 114, delimiting the seat 110.

[0029] The at least one recess 111, configured for the temporary accommodation of at least one tab 112 of the insert 109, is defined on this wall 114.

[0030] With particular reference to such embodiment, it should be noted that the insert 109 of the mechanical mating module 107 comprises two contoured disks 109a, 109b and a pin 115 which is accommodated within an axial hole of the disks 109a, 109b for their mutual mating, according to a mutually facing and proximate arrangement. The disks 109a, 109b, when they are mutually mated by means of the pin 115, have the internal annular wall 114 of the shell 108 interposed between them.

[0031] It should be noted that the second end 4b of the shank 4, i.e. the end facing and proximate to the mechanical mating module 107, is misaligned with respect to the pin 115, being non-coaxial with it and abutting against a surface of one of the disks 109a, 109b. Basically the main part of the end 4b will abut outside the contour of a head of the pin 115.

[0032] The end 4a, insofar as it applies thrust on the surface facing it of the respective disk 109a, 109b and it is not centered on the pin 115 (as happens in the prior art), cannot cause any malfunctioning of the module 107.

[0033] With particular reference to an embodiment of the type of that shown, by way of non-limiting example in the accompanying Figure 8 and in the figures linked to it, elastic means 113 are interposed between the disks 109a and 109b and are configured to force such disks 109a and 109b to remain at a mutual predefined distance, in the absence of external stresses.

[0034] A first disk 109a comprises a hollow protruding sleeve 116 directed toward the second disk 109b.

[0035] The second disk 109b comprises a protruding bushing 117 which is directed toward the first disk 109a and at least partially accommodated slideably within the cavity inside the sleeve 116.

[0036] A pin is coupled within the bushing 117 and is provided with a head 118 which protrudes with respect to the contour of the bushing 117 for abutment against a shoulder 119 of the cavity inside the sleeve 116 and for the consequent mutual mating of the first disk 109a to the second disk 109b.

[0037] The pin can also be an integral part of the bushing 117 and the enlarged head 118 could be simply obtained by riveting until a small permanent deformation is obtained on the end face of the bushing 117.

[0038] Interposed between the first disk 109a and the internal wall 114 of the shell 108 there can conveniently be a first spring 120 which has an axial action, coaxially to the sleeve 116, for forcing the first disk 109a to a

maximum distance from the wall 114 in the absence of external stresses.

[0039] Similarly, interposed between the second disk 109b and the internal wall 114 of the shell 108 there can profitably be a second spring 121 which has an axial action, coaxially to the bushing 117, for forcing the second disk 109 to a maximum distance from the wall 114 in the absence of external stresses.

[0040] The set of the first axial spring 120 and of the second axial spring 121 constitutes the elastic means 113.

[0041] The protection offered by the present invention also extends to every modular cylinder 100 that comprises at least one transmission device 1 of the type described previously, so that it can interact with a mechanical actuation module 107 of the type illustrated (also comprised in the cylinder 100).

[0042] Basically the decentered arrangement of the shank 4 enables it to exert the pressure transmitted by the key 106 on the internal insert 109 of the module 107, so that a respective tab 112 engages within the recess 111 of the wall 114, rendering the insert 109 and the respective shell 108 temporarily integral, so that a rotation of the rotor 103 imposed by the key 106 is transmitted to the cam 107a, so enabling the latter to actuate the spring latches, bolts or other kinds of latches.

[0043] At the same time, the decentered arrangement ensures that the shank 4 does not abut against the head of the pin that mates the two disks 109a and 109b, so reducing (or even eliminating) problems of wear and/or tear that could arise with the prior art.

[0044] If the internal insert 109 is elastically deformable (for example constituted by two disks 109a and 109b between which elastic means, such as the springs 120 and 121, are interposed) the condition can arise wherein respective keys 106 are inserted into the channels 105 of mutually opposing coded modules 101: in such a case only one of the two, by deforming the elastic means 120 or 121, can make the tab 112 of a respective disk 109a or 109b engage in the recess 111, so ensuring the rotary entrainment of the cam 107a.

[0045] Advantageously the present invention solves the above mentioned problems, by proposing a transmission device 1 for modular cylinders 100 that can be used both for providing clutch modular cylinders 100 (of the type shown in Figure 8 and in the figures linked to it), and for providing traditional modular cylinders 100 (of the type shown in Figure 1 and in the figures linked to it).

[0046] Conveniently the transmission device 1 according to the invention makes it possible to reduce the number of components to be produced in order to have a complete range of modules with which to provide any type of modular cylinder 100.

[0047] Advantageously the transmission device 1 according to the invention makes it possible to reduce the

number of components to be handled via management systems in order to have a complete range of modules with which to provide any type of modular cylinder 100.

[0048] Profitably the transmission device 1 according to the invention makes it possible to reduce the number of components to be kept in stores in order to have sufficient stocks of components to form a complete range of modules with which to provide any type of modular cylinder 100.

[0049] Positively the transmission device 1 according to the invention can be associated both with clutched rotating actuation cams 107a and with rigid rotating actuation cams 107a.

[0050] Usefully the transmission device 1 according to the invention has a structure suitable for transferring stresses only to the mechanically strongest parts of the components with which it interacts.

[0051] Positively the transmission device 1, and each modular cylinder 100 that comprises it, according to the invention is easily and practically implemented and is low cost: such characteristics make the device 1 and the cylinder 100 according to the invention an innovation that is safe in use.

[0052] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0053] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

[0054] The disclosures in Italian Patent Application No. 102025000008169 from which this application claims priority are incorporated herein by reference.

[0055] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A transmission device for modular cylinders (100) of the type configured for interposition between a coded module (101), constituted by a stator (102) and a rotor (103) which can rotate within the stator (102), affected by encoding pins (104) which lead to a channel (105) for accommodating a coded key (106) of said rotor (103), and a mechanical mating module (107) for mating with elements for moving bolts, latches, catches and equivalent components,

which is provided with a rotatable actuation cam (107a) which rotates with respect to said stator (102) of said coded module (101), **characterized in that** it comprises a fixed body (2), which is integral with said rotor (103) of said coded module (101), is provided with a longitudinal channel (103) within which a shank (104) can slide which has a first end (104a) facing said channel (105) for accommodating said key (106) and a second end (104b) facing and close to said mechanical mating module (107), said longitudinal channel (103) being misaligned with respect to the axis of rotation of said rotor (103) and of said mechanical mating module (107).

2. The device according to claim 1, **characterized in that** said mechanical mating module (107) comprises a rotatable shell (108) and an internal insert (109), which is substantially cylindrical and can slide longitudinally within a seat (110) in said shell (108) that is complementary thereto, said seat (110) comprising at least one recess (111) the shape and dimensions of which are complementary to those of protruding tabs (112) of said internal insert (109), the arrangement of at least one tab (112) of said insert (109) within said at least one recess (111) rigidly coupling said internal insert (109) and said shell (108), rendering them temporarily integral.
3. The device according to the preceding claim, **characterized in that** said rotatable shell (108) of said mechanical mating module (107) is integral with said rotatable actuation cam (107a).
4. The device according to the preceding claim, **characterized in that** said slideable insert (109) of said mechanical mating module (107) is elastically deformable in a longitudinal direction between a first configuration of maximum length, in the absence of external stresses and in the presence of only the elastic forcing of respective elastic means (113) associated therewith, and a second configuration of minimum length, in the presence of external stresses in contrast with the action of said elastic means (113).
5. The device according to one or more of the preceding claims, **characterized in that** said shell (108) of said mechanical mating module (107) comprises an internal annular wall (114) delimiting said seat (110), said at least one recess (111), configured for the temporary accommodation of at least one tab (112) of said insert (109), being defined on said wall (114).
6. The device according to the claim 5, **characterized in that** said insert (109) of said mechanical

mating module (107) comprises two contoured disks (109a, 109b) and a pin (115) which is accommodated within an axial hole of said disks (109a, 109b) for their mutual mating according to a mutually facing and proximate arrangement with the interposition of said internal annular wall (114) of said shell (108). 5

prises at least one transmission device (1) according to at least one of the preceding claims.

7. The device according to claim 6, **characterized in that** said second end (4b) of said shank (4), which faces and is proximate to said mechanical mating module (107), is misaligned with respect to said pin (115), being non-coaxial therewith and abutting against a surface of one of said disks (109a, 109b) almost exclusively outside the contour of a head (118) of said pin (115). 10 15

8. The device according to claim 6, **characterized in that** elastic means (113) are interposed between said disks (109a, 109b) and are configured to force said disks (109a, 109b) to remain at a predefined mutual distance in the absence of external stresses. 20

9. The device according to claim 8, **characterized in that** a first disk (109a) comprises a hollow protruding sleeve (116) directed toward said second disk (109b), said second disk (109b) comprises a protruding bushing (117) which is directed toward said first disk (109a) and at least partially accommodated slideably within the cavity of said sleeve (116), said pin (115) being coupled within said bushing (117) and being provided with a head (118) which protrudes with respect to the contour of said bushing (117) for abutment against a shoulder (119) of said cavity of said sleeve (116) and for the consequent mutual mating of said first disk (109a) and said second disk (109b). 25 30 35

10. The device according to claim 9, **characterized in that:** 40

- interposed between said first disk (109a) and said internal wall (114) of said shell (108) there is a first spring (120) which has an axial action, coaxially to said sleeve (116), for forcing said first disk (109a) to a maximum distance from said wall (114) in the absence of external stresses, 45
- interposed between said second disk (109b) and said internal wall (114) of said shell (108) there is a second spring (121) which has an axial action, coaxially to said bushing (117), for forcing said second disk (108) to a maximum distance from said wall (114) in the absence of external stresses. 50 55

11. A modular cylinder, **characterized in that** it com-

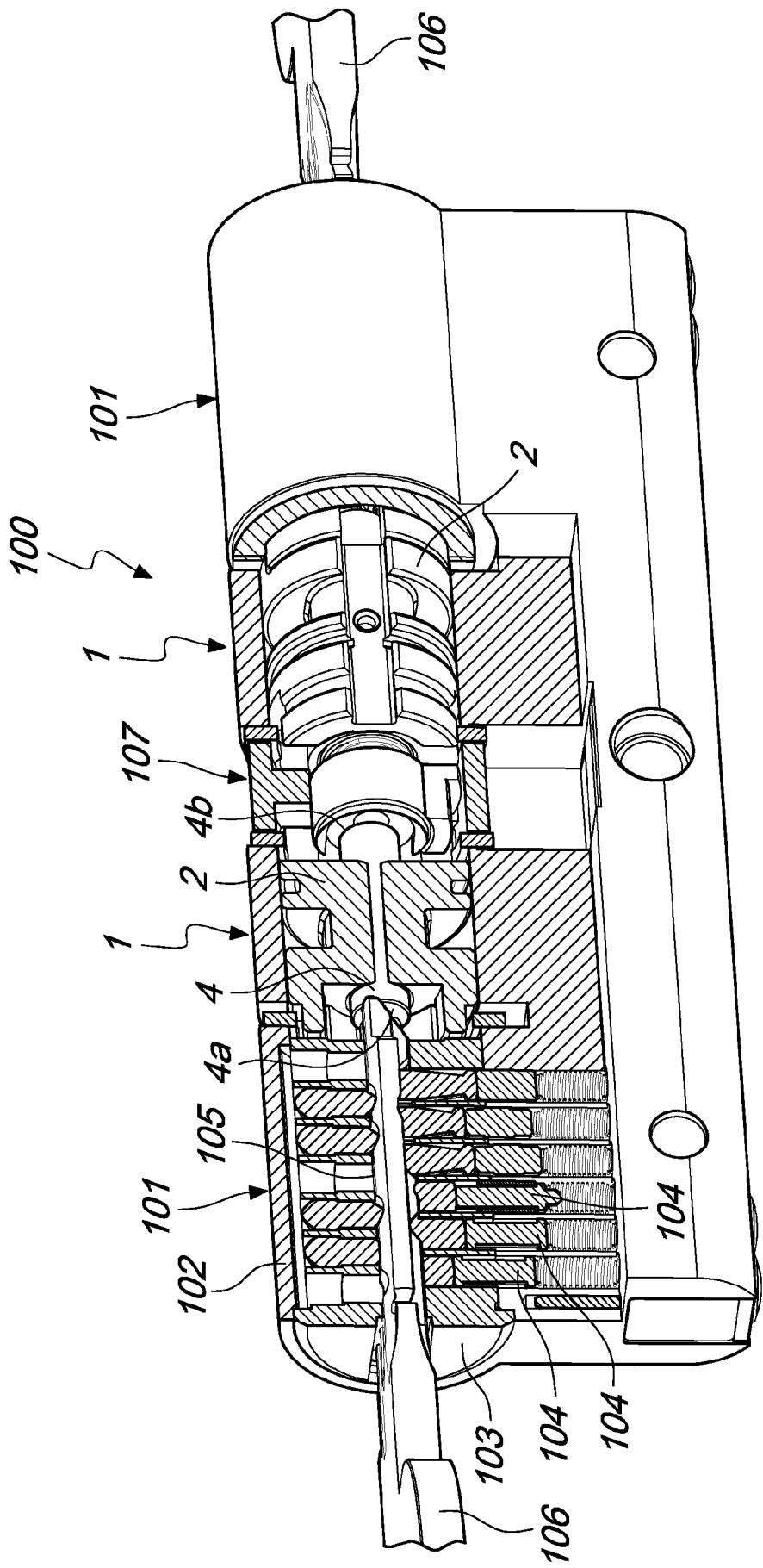


Fig. 1

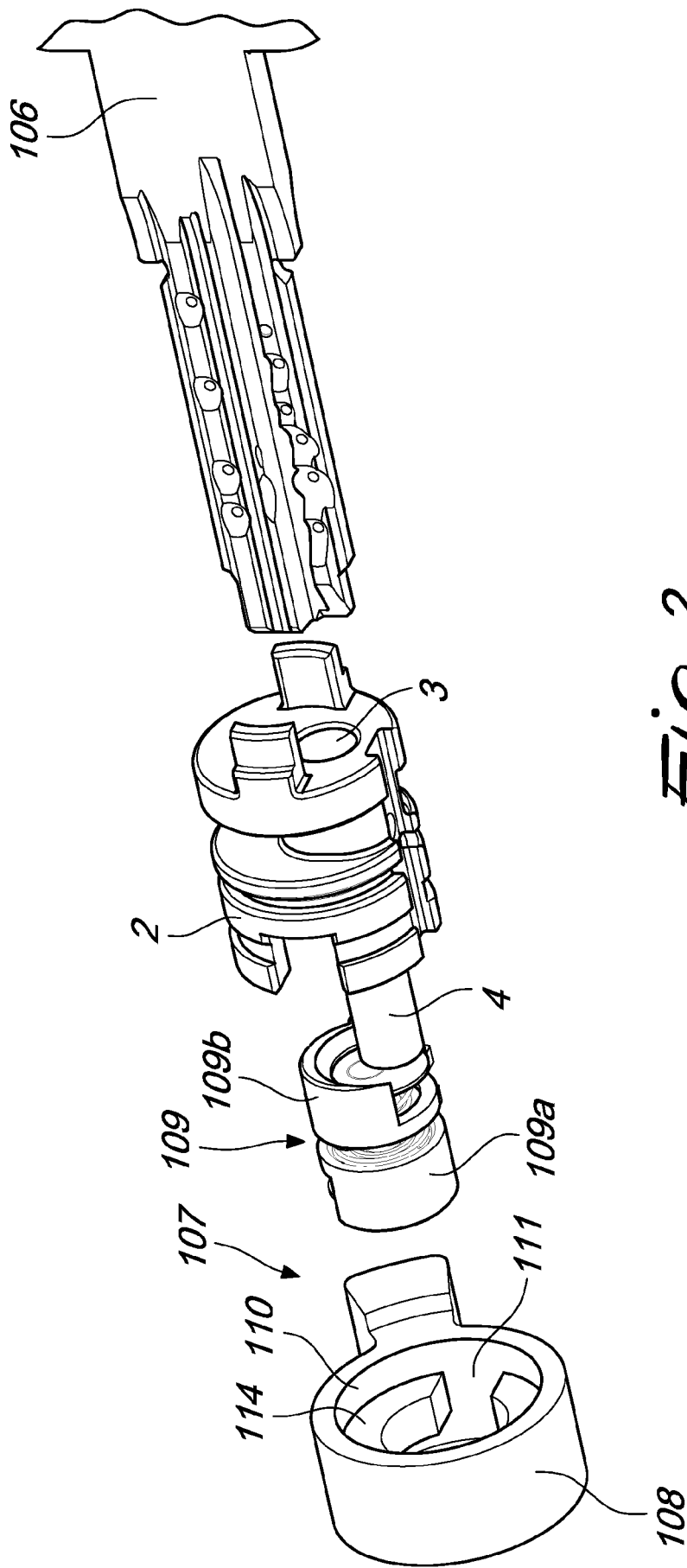
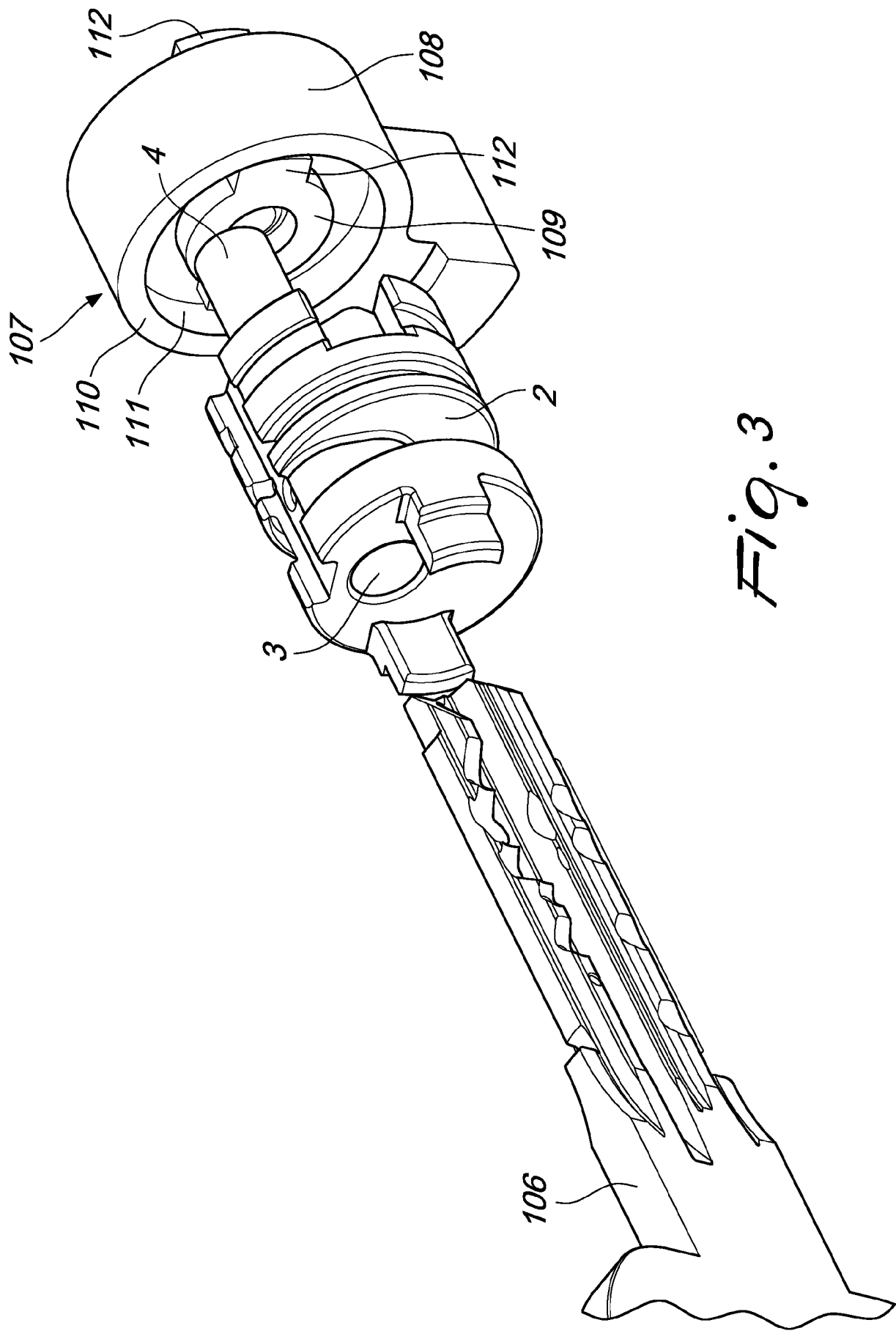


Fig. 2



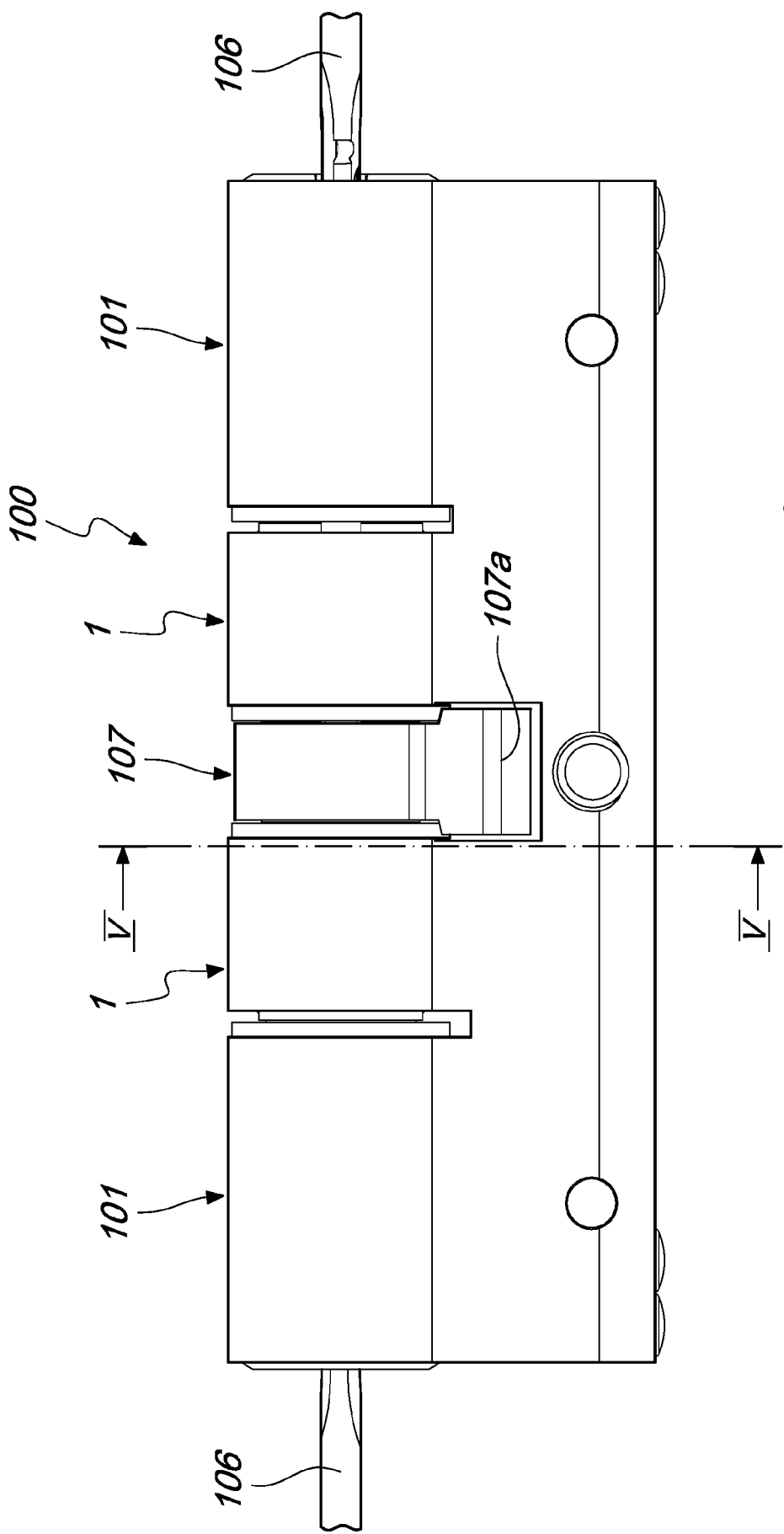


Fig. 4

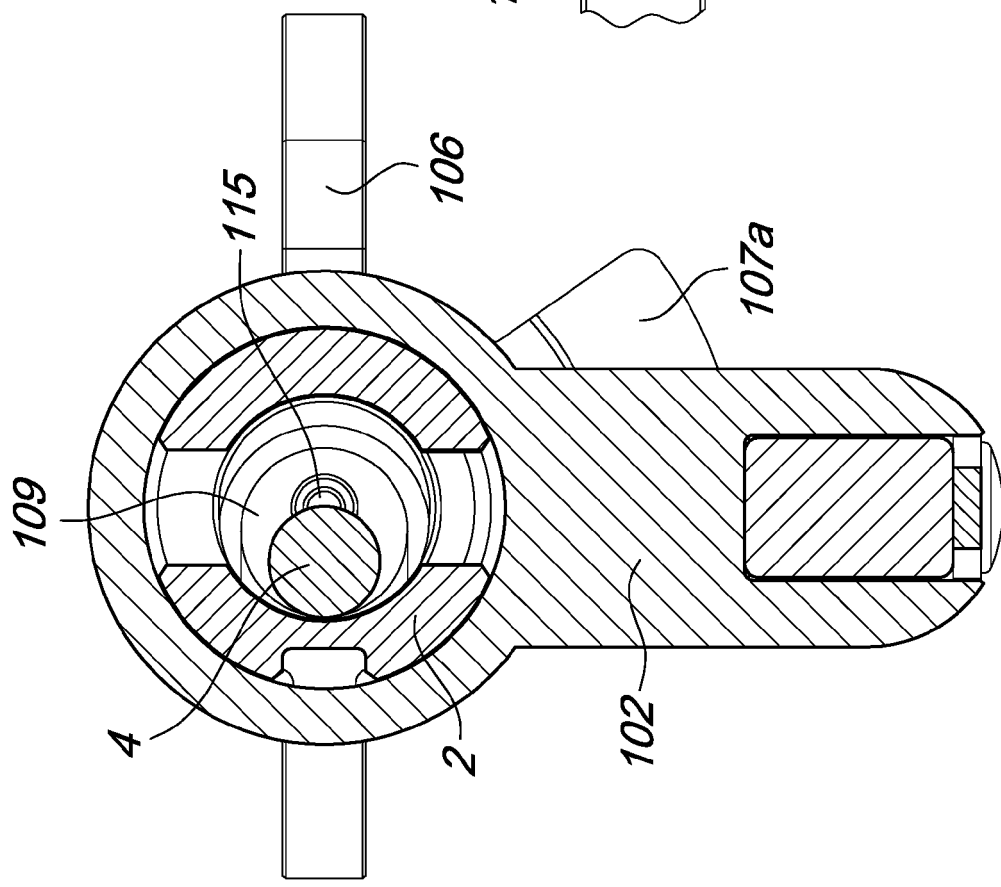


Fig. 5

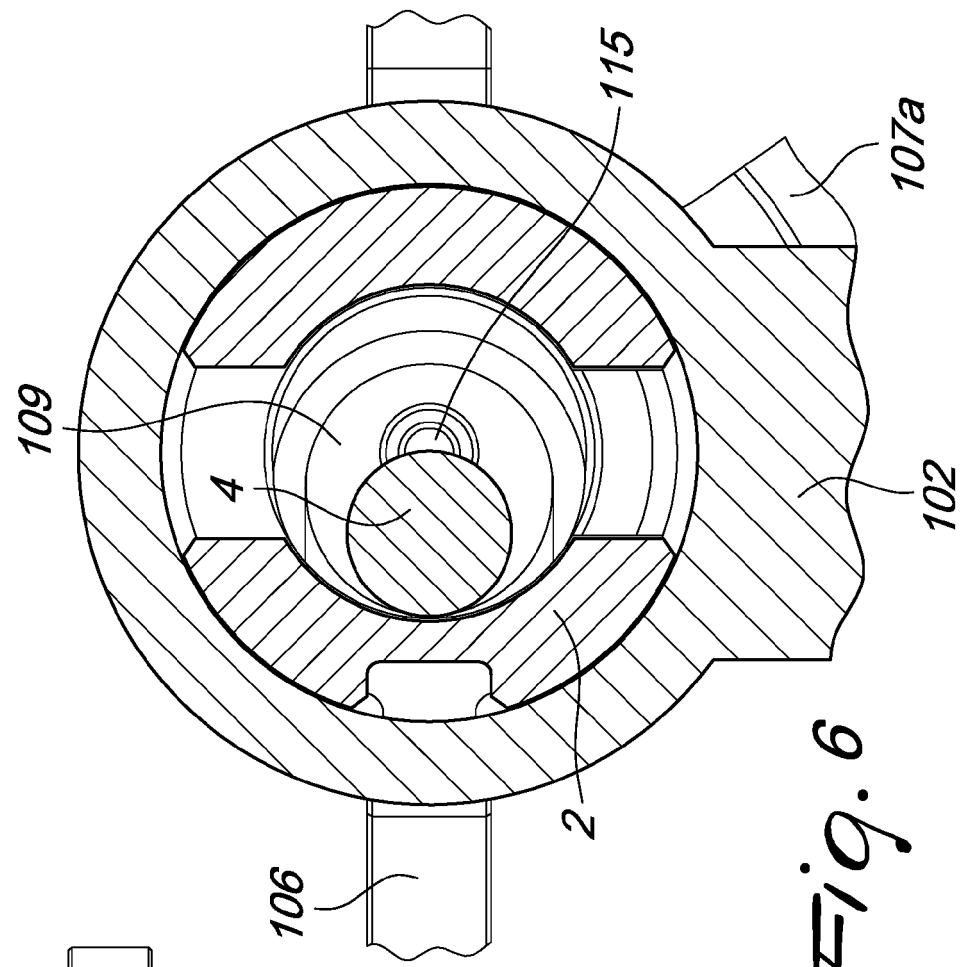
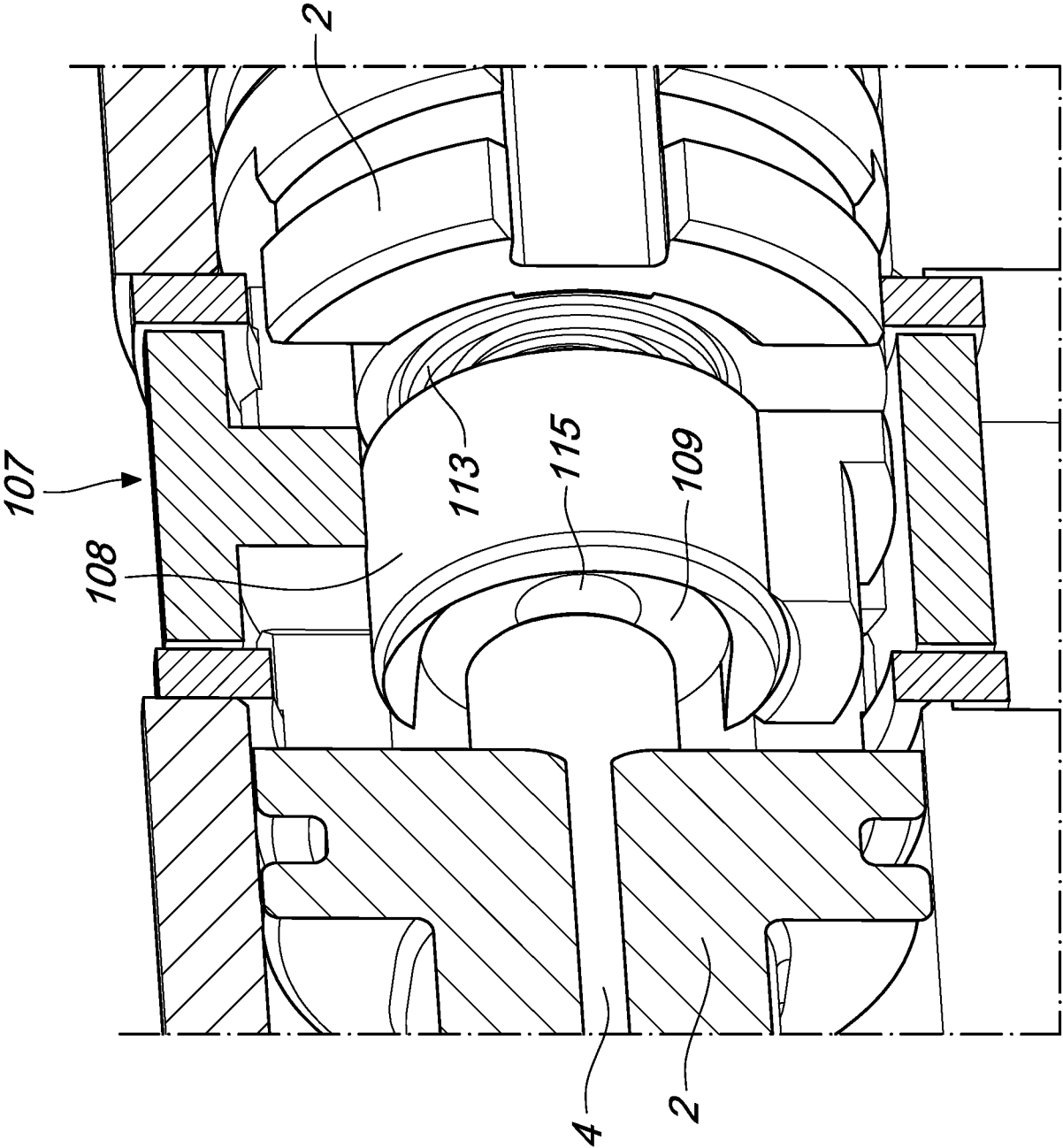


Fig. 6

Fig. 7



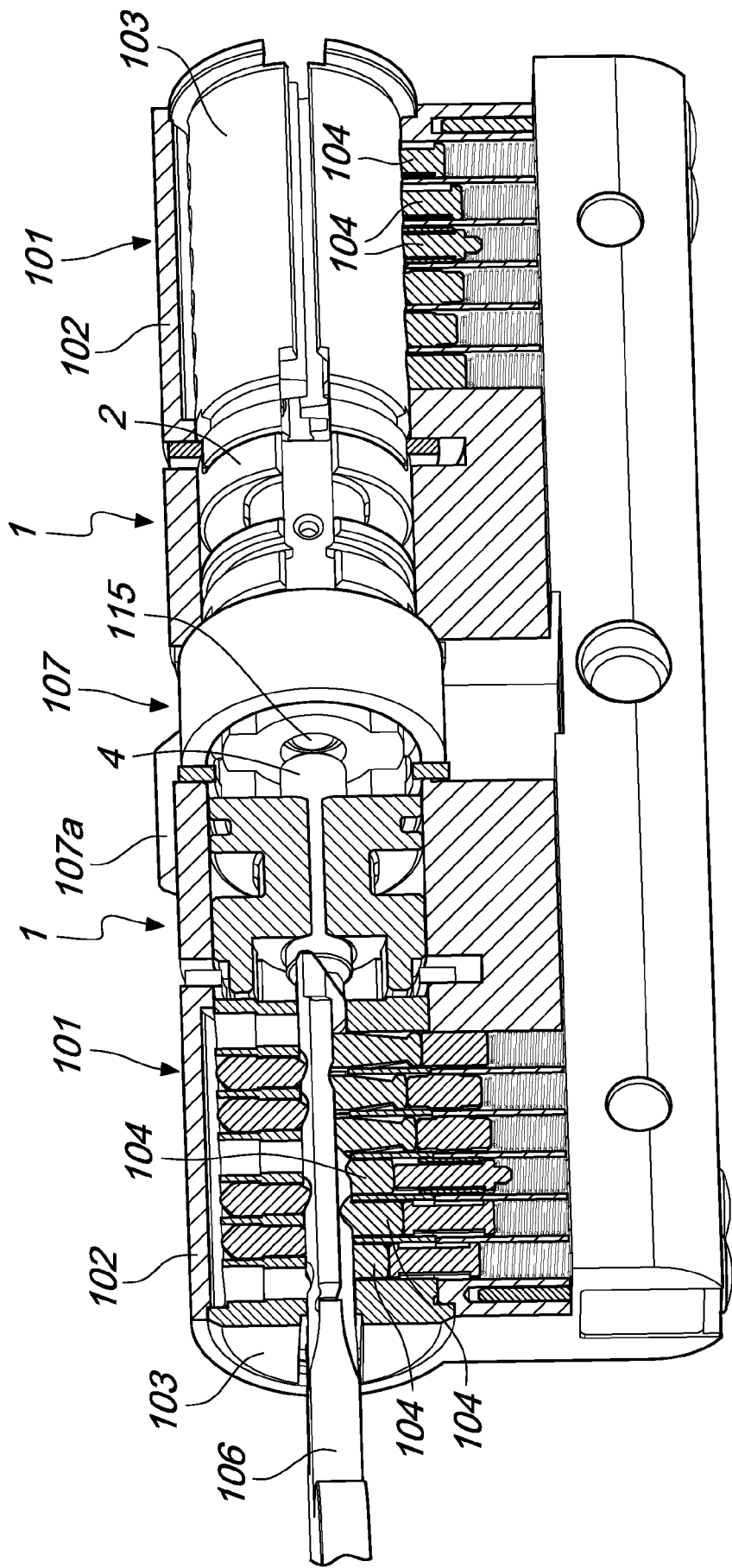
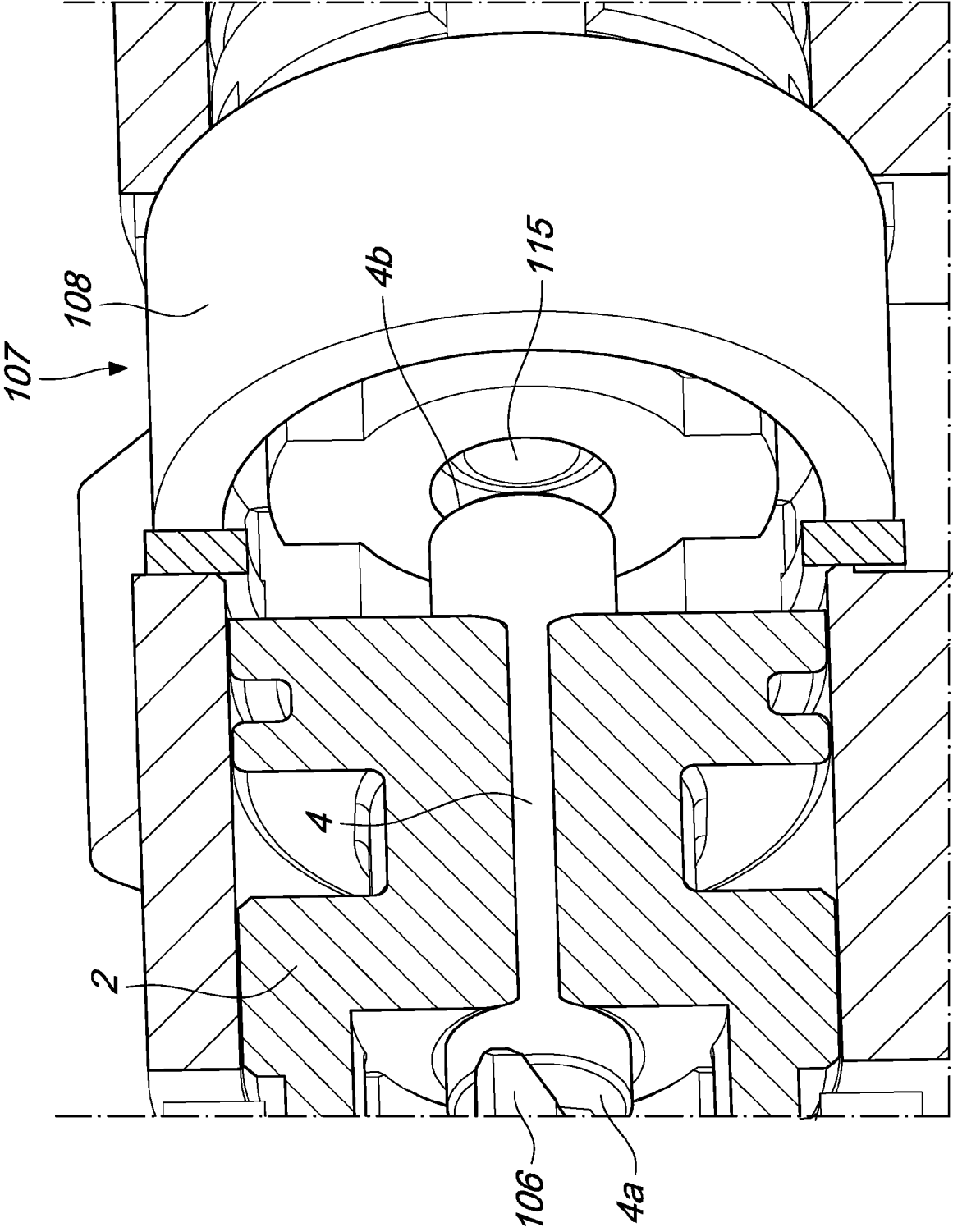
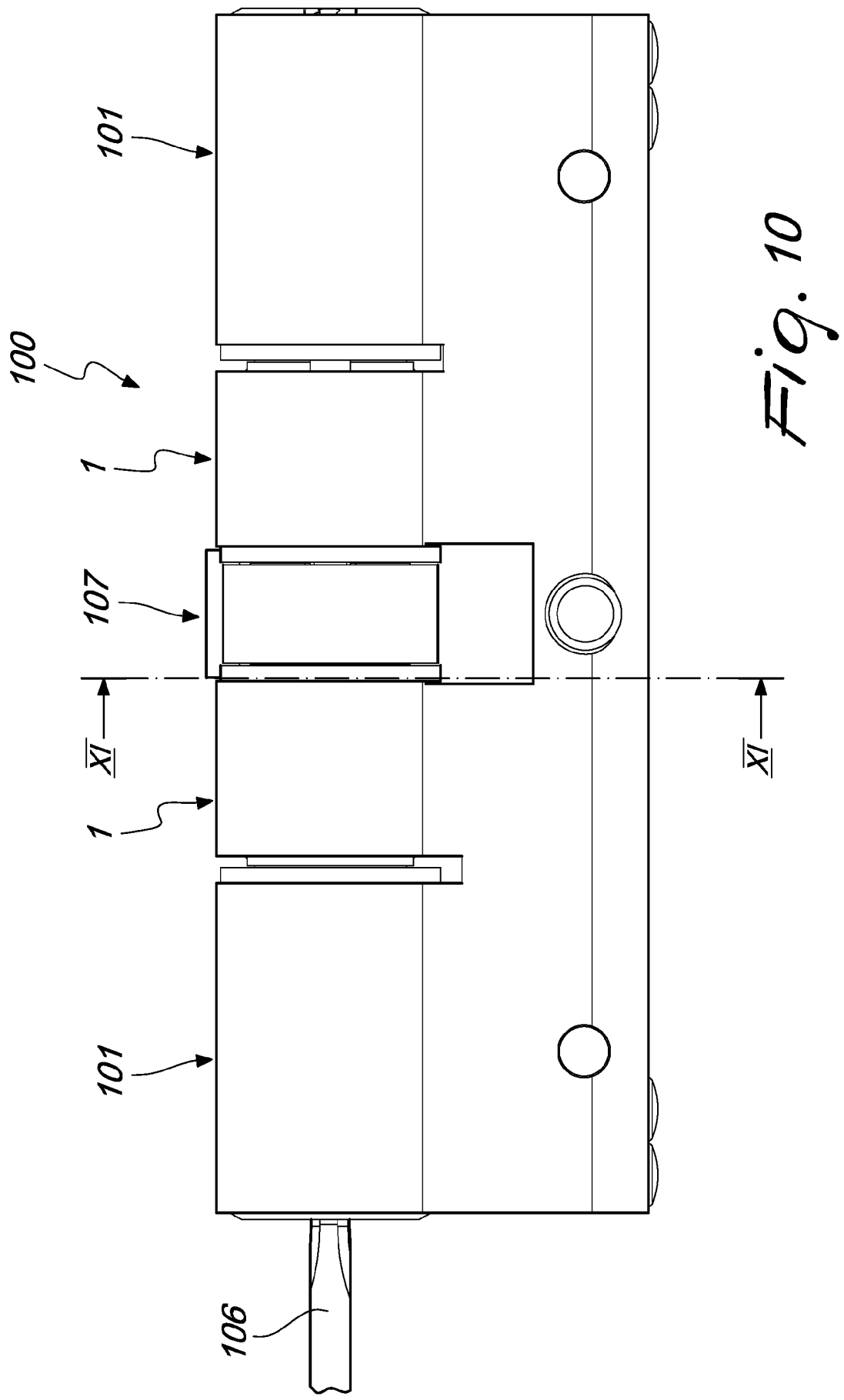
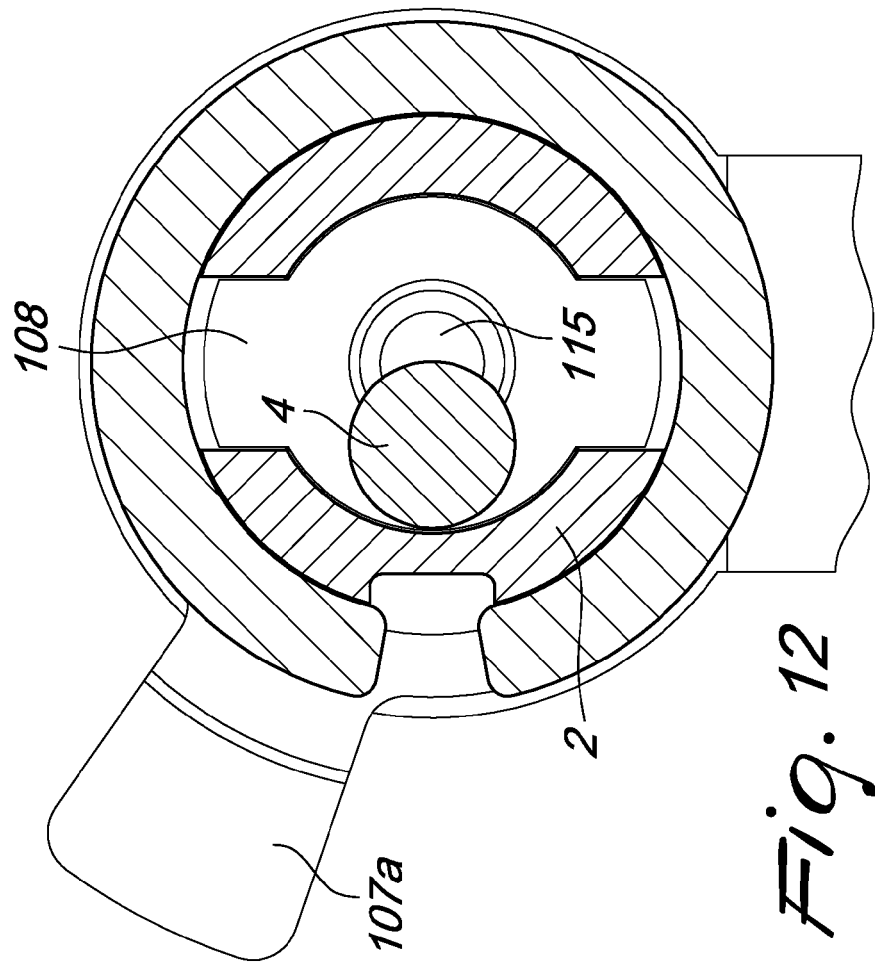
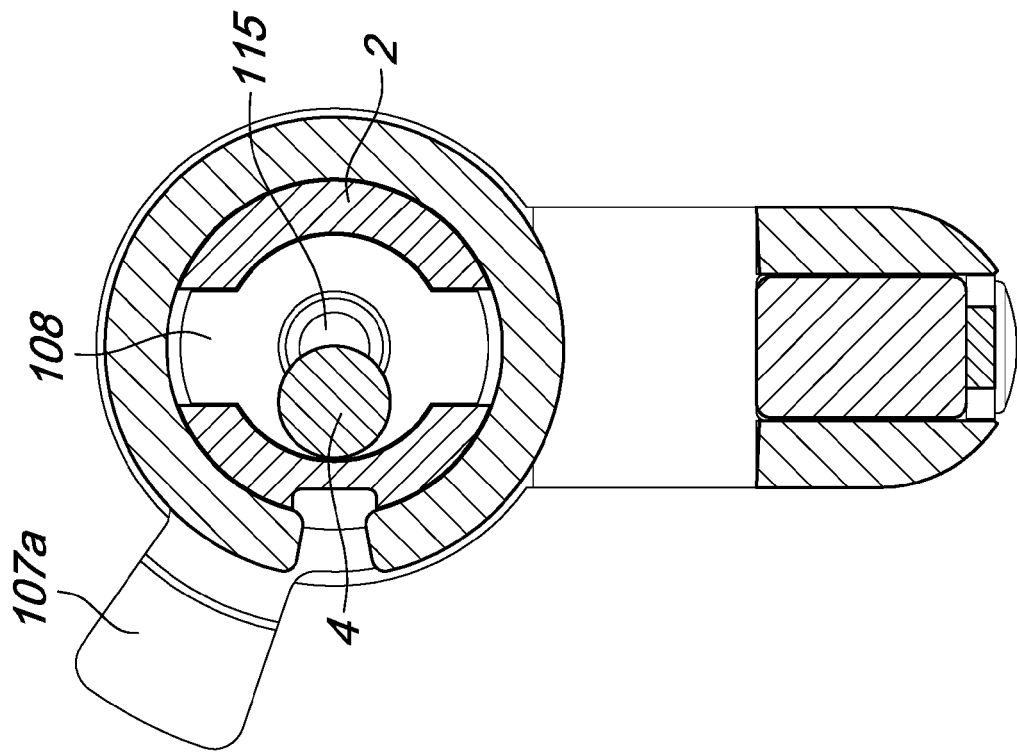


Fig. 8

Fig. 9







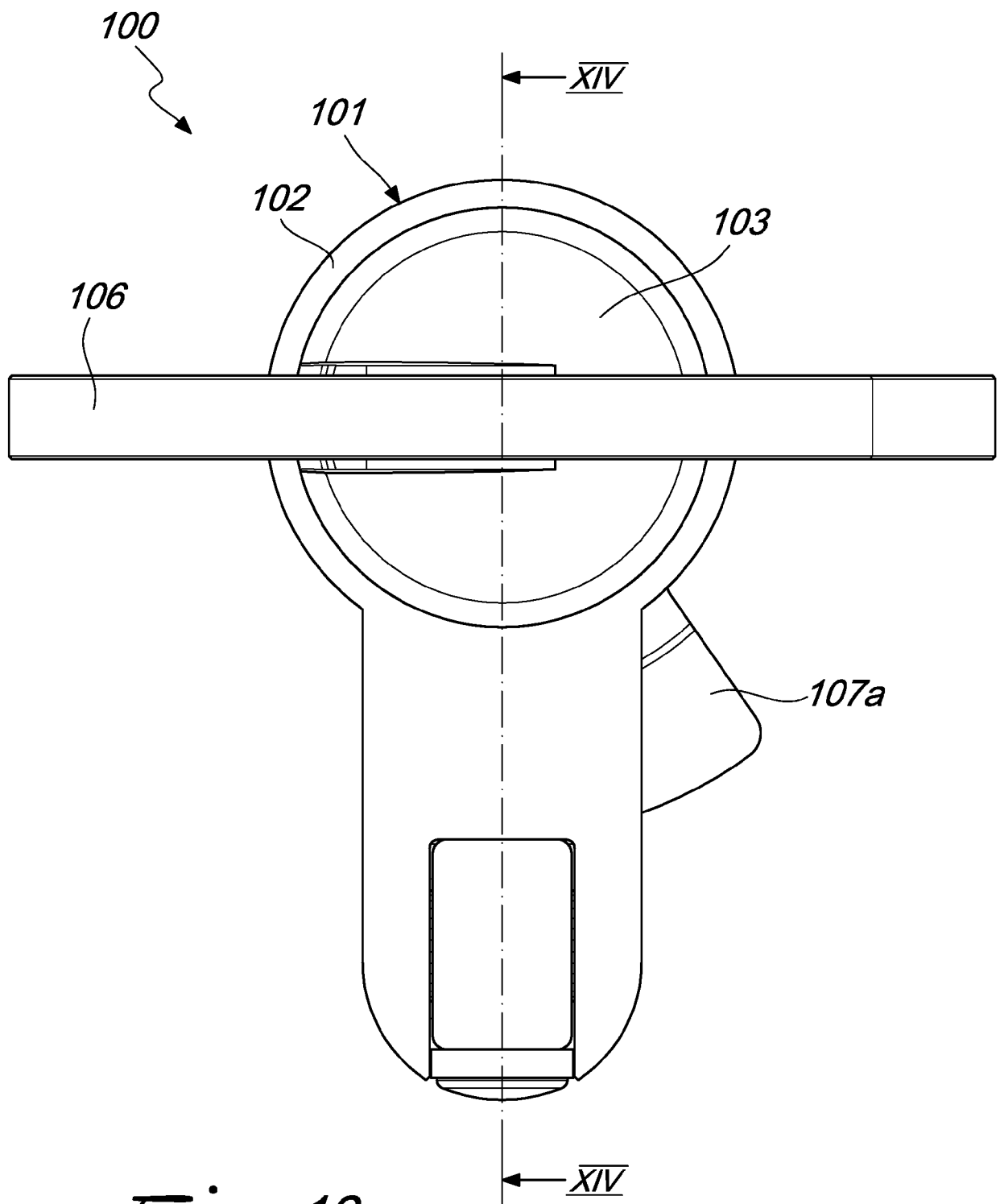


Fig. 13

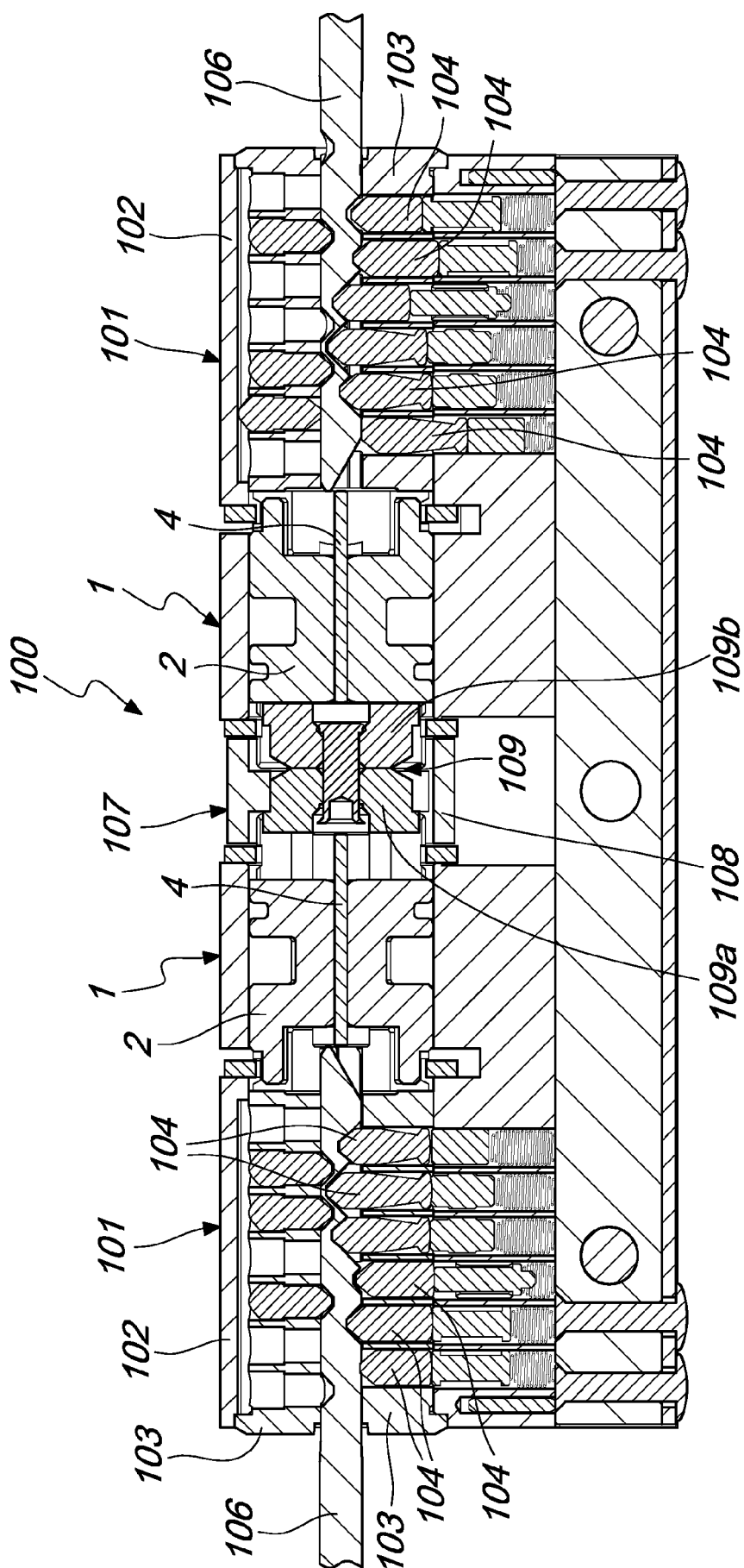


Fig. 14

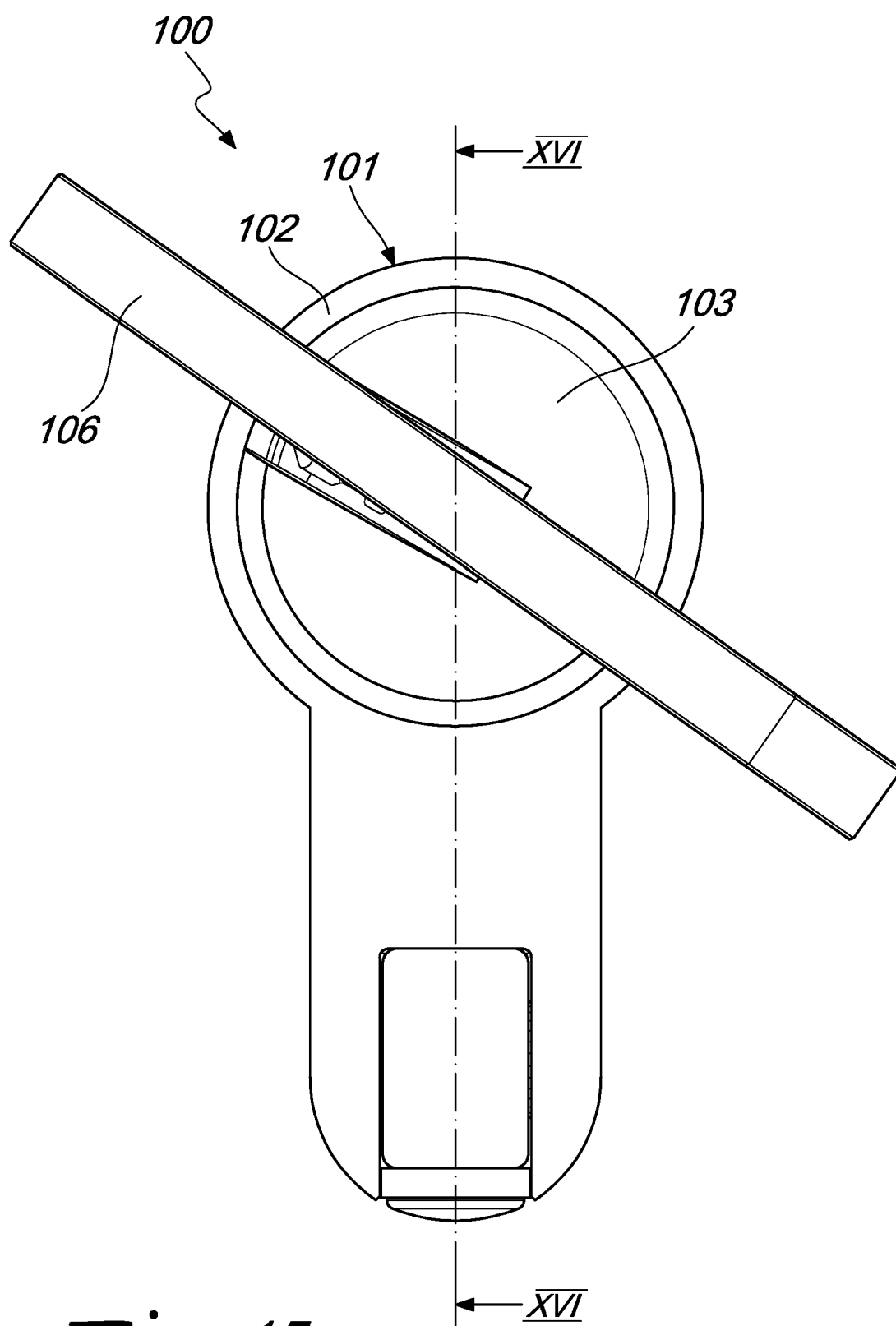


Fig. 15

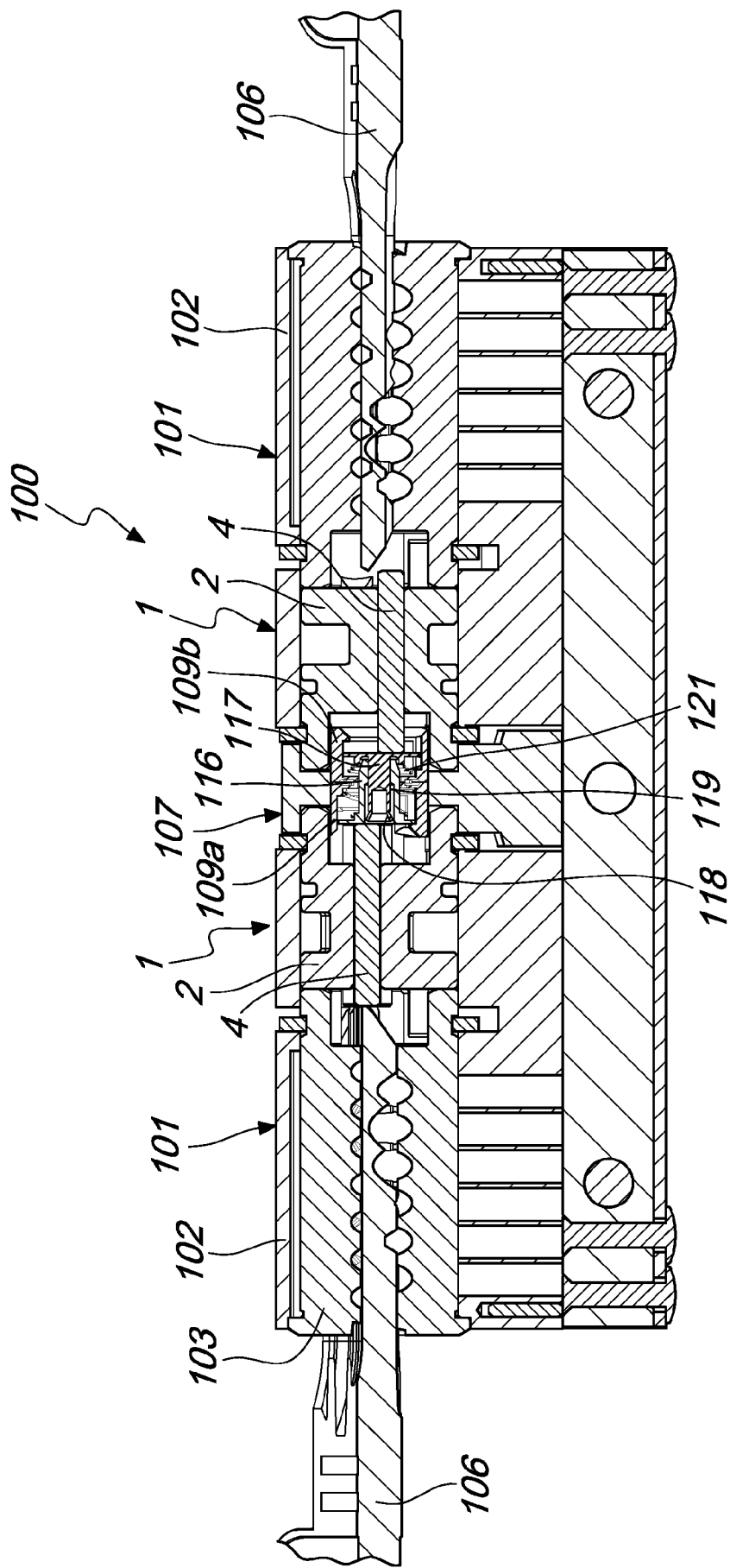


Fig. 16

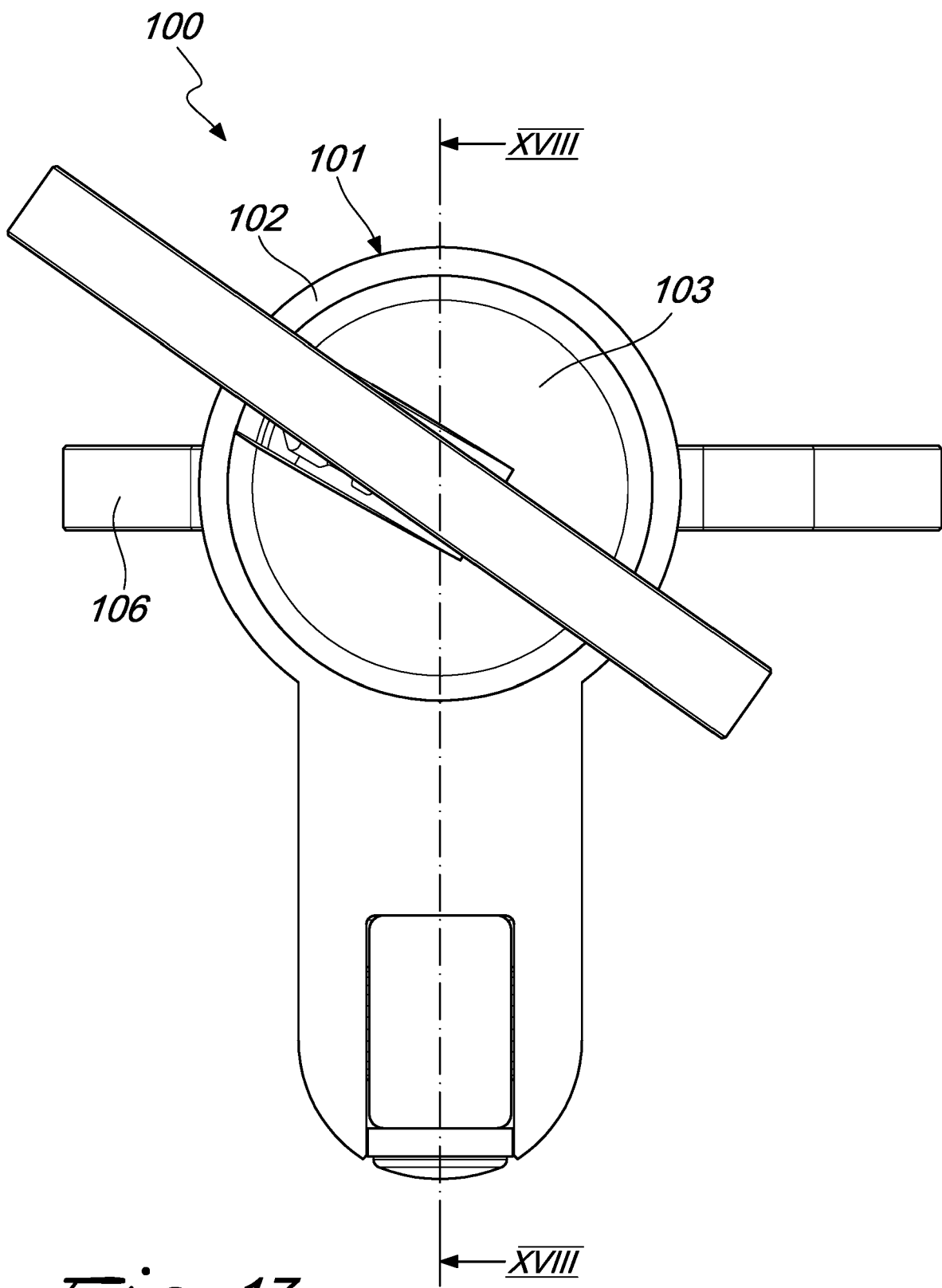


Fig. 17

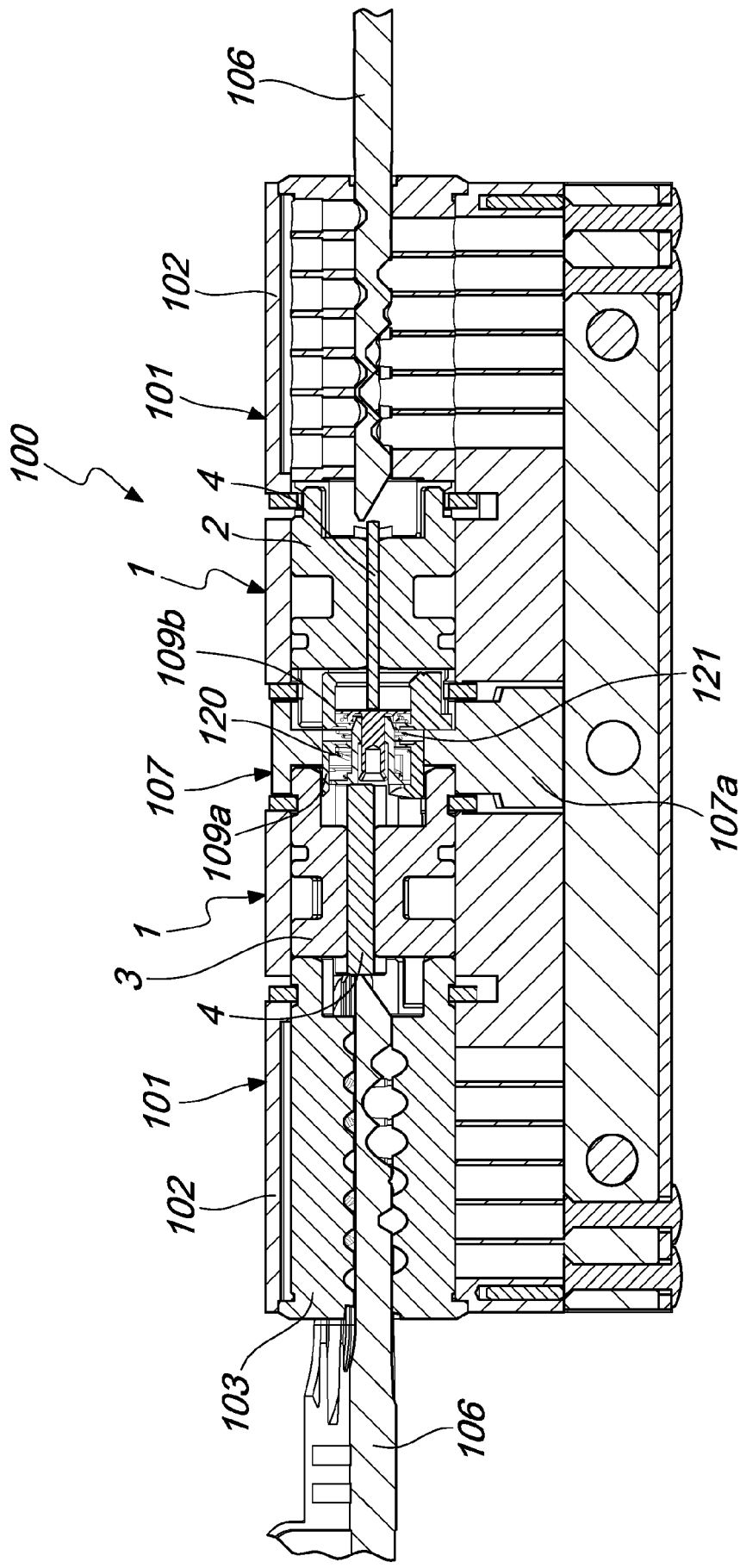


Fig. 18

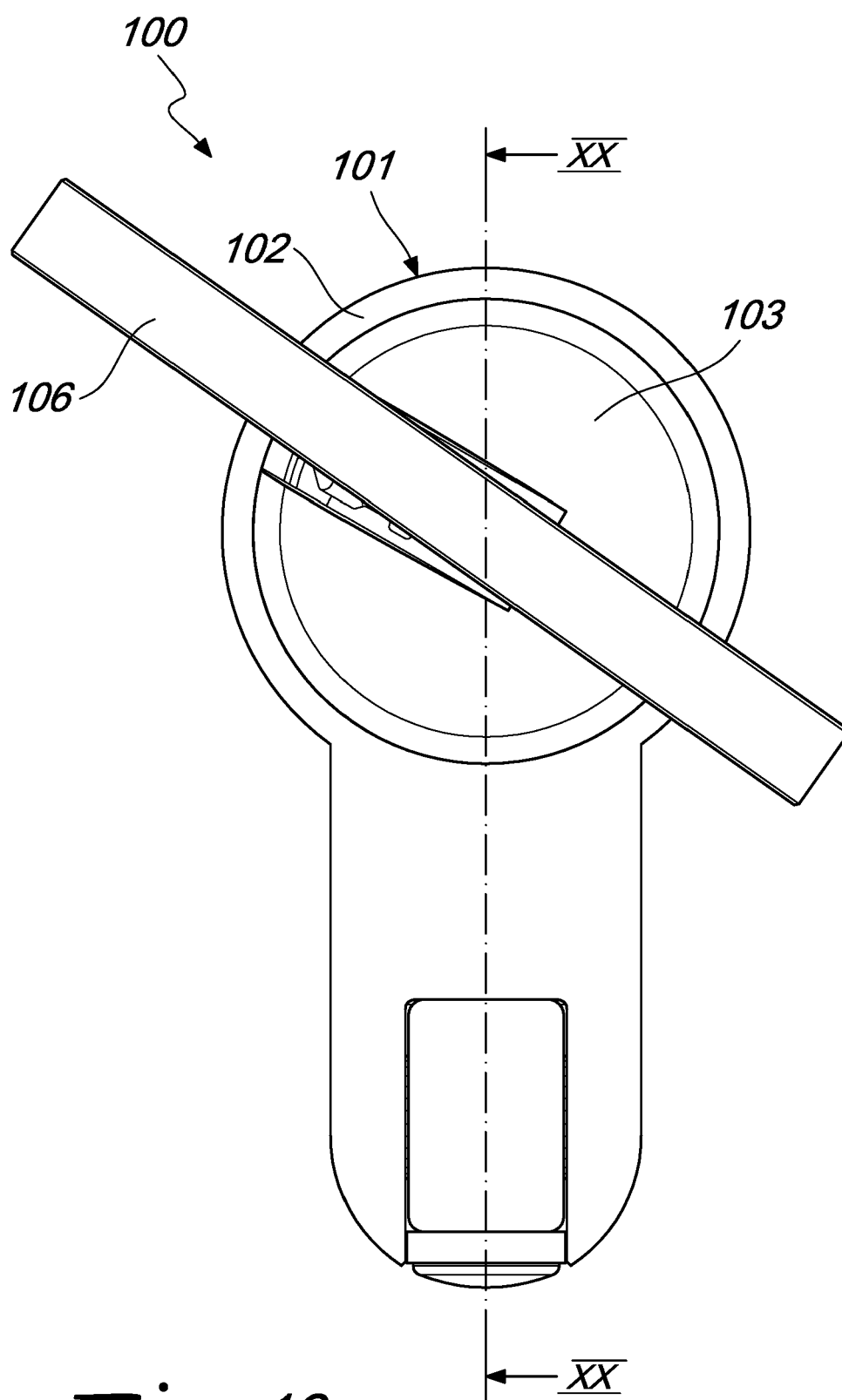


Fig. 19

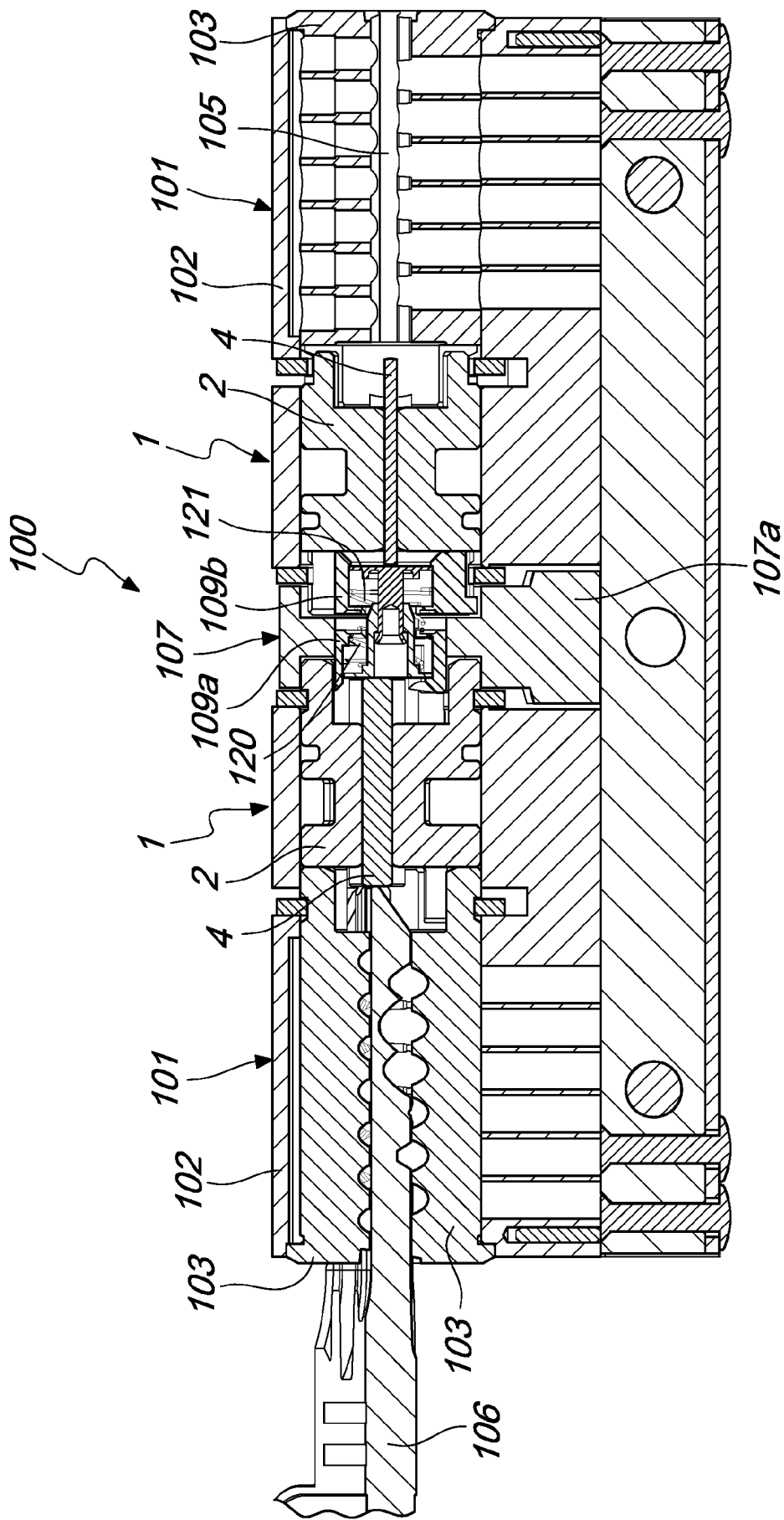


Fig. 20



EUROPEAN SEARCH REPORT

Application Number

EP 26 17 2007

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	WO 2012/063101 A1 (CISA SPA [IT]; FUSTINI FAUSTO [IT]; SANTOLINI ROBERTO [IT]) 18 May 2012 (2012-05-18) * page 5, line 8 - page 8, line 15 * * figures 1-14 *	1-11	INV. E05B9/10 E05B63/00
Y	WO 2020/079715 A1 (CISA SPA [IT]) 23 April 2020 (2020-04-23) * page 4, line 25 - page 8, line 30 * * figures 1-10 *	1-11	
Y	DE 16 78 016 B1 (KARRENBERG FA WILHELM) 25 February 1971 (1971-02-25) * column 2, line 14 - line 66 * * figures 1-8 *	1-11	
Y	EP 0 902 138 A1 (LAPERCHE SA [FR]) 17 March 1999 (1999-03-17) * paragraph [0012] - paragraph [0036] * * figures 1-4 *	1-11	
Y	EP 1 013 854 A1 (ITALIANA SERRATURE COSTR [IT]) 28 June 2000 (2000-06-28) * paragraph [0009] - paragraph [0031] * * figures 1-8 *	2-6,8-10	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		2 September 2026	Antonov, Ventseslav
CATEGORY OF CITED DOCUMENTS		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	
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			

EPO FORM 1503 03.82 (P24C01)

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

EP 26 17 2007

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.

02-09-2026

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 2012063101 A1	18-05-2012	EA 201390671 A1	30-10-2013
		EP 2638225 A1	18-09-2013
		ES 2671770 T3	08-06-2018
		WO 2012063101 A1	18-05-2012
		ZA 201304163 B	27-08-2014

WO 2020079715 A1	23-04-2020	EP 3867466 A1	25-08-2021
		WO 2020079715 A1	23-04-2020

DE 1678016 B1	25-02-1971	NONE	

EP 0902138 A1	17-03-1999	EP 0902138 A1	17-03-1999
		FR 2768454 A1	19-03-1999

EP 1013854 A1	28-06-2000	AT E243291 T1	15-07-2003
		DE 69908894 T2	24-06-2004
		DK 1013854 T3	06-10-2003
		EP 1013854 A1	28-06-2000
		ES 2201622 T3	16-03-2004
		IT 1304245 B1	13-03-2001
		PT 1013854 E	31-10-2003

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- IT 102025000008169 [0054]