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(71) Applicant: **Assa Oem AB**
631 05 Eskilstuna (SE)

(72) Inventors:
- **Jensen, Lars**
  S-633 41 ESKILSTUNA (SE)
- **Pärus, Fredrik**
  S-633 42 ESKILSTUNA (SE)

(74) Representative: **Wennborg, Johan et al**
Kransell & Wennborg KB,
Box 27834
115 93 Stockholm (SE)

(54) **Lock device with switchable blocking mechanism**

(57) Lock device comprising a lock housing (10, 210), in which there is arranged: a lock bolt (30, 230), which is movable between an unlocked position and a locked position, and a first follower (50, 250). A driver (60, 260) is coupled to the first follower and is arranged to, by means of the first follower, manoeuvre the lock bolt between its unlocked and locked position, as well as, in the locked position of the lock bolt, to dead lock the lock bolt by contact against the lock bolt. A second follower (70, 270) is arranged to, by rotation, influence the functioning of the lock device. A blocking mechanism (100, 300) is switchable between a blocking state, in which rotation of the second follower is barred, and a non-blocking state, in which rotation of the second follower is allowed. The blocking mechanism (100, 300) is arranged to, when the lock bolt (30, 230) is in its locked, dead locked position and the blocking mechanism has assumed its blocking state, by mechanical interaction with the driver (60, 269), bar the blocking mechanism from being switched from its blocking state to its non-blocking state.

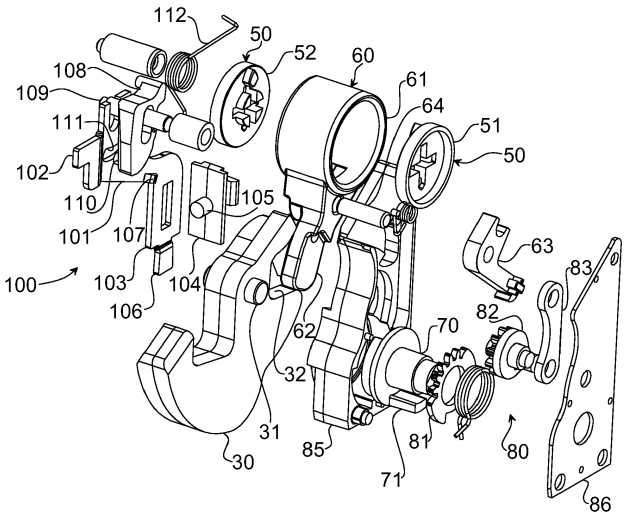

Fig. 2

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Description

Field of the invention

[0001] The invention relates to a lock device comprising a lock housing having a lock bolt, a first and a second follower, and a blocking mechanism for selectively blocking or allowing rotation of the second follower.

Background and prior art

[0002] Many locks for house doors, for example, are provided firstly with a lock cylinder, which is coupled to a first follower and with which a bolt belonging to the lock can be locked out and locked in by key operation, and secondly with a thumb turn, which is coupled to a second follower and has the same function, which thumb turn is disposed on the inner side of the door. The purpose of the thumb turn is that, from the inner side of the door, the lock shall be easily able to be brought into the locked and unlocked position without the need to use a key. A drawback with this solution is that an unauthorized person who has gained entry to the inner side of the door through a window, for example, can quite simply unlock the door by means of the thumb turn and thereafter leave the premises through the normal exit.

[0003] Locks having a so-called thumb turn latch are known. This means that a person who holds a valid key, for example an owner or occupier of an apartment, can block the thumb turn function and thereafter lock the door with the aid of the key. Whoever is on the inside of the door cannot then leave the premises by that route, but is referred to another exit.

[0004] In certain known locks, the thumb turn latch is activated via a button disposed on the forend side of the lock, which button, prior to locking with a key, is led into a specific position, whereby the thumb turn latch is activated. SE 431 574 describes a previously known lock having a switchable thumb turn latch of this kind.

[0005] WO 03/078767 describes another previously known lock, provided with a switchable thumb turn latch, in which lock, following activation of the thumb turn latch, it is not possible to determine from outside whether the thumb turn latch has been activated or not.

[0006] For other types of lock, too, comprising a first and a second follower with which the lock bolt can be influenced, for example for displacement of the bolt and/or for latching of the same, it may be desirable to be able to prevent one or both followers from being used to influence the bolt.

[0007] Previously known lock devices having switchable blocking mechanisms of this kind have difficulties, however, in meeting today's very stringent security requirements.

Summary of the invention

[0008] One object of the invention is to provide an improved lock device having a switchable blocking mechanism for temporary jamming the function of one of two followers belonging to the lock device.

[0009] Another object is to provide a lock device of this kind which provides high security.

[0010] A further object is to provide a lock device of this kind in which manipulation of the lock by the insertion of objects into the lock housing is prevented or made considerably more difficult.

[0011] Yet another object is to provide a lock device of this kind in which manipulation of the lock by blows, shocks or vibrations upon the outer side of the lock housing is prevented or made considerably more difficult.

[0012] One more object is to provide a lock device of this kind which is simple and reliable.

[0013] These and other objects are obtained with a lock device of the type which is defined in the preamble to Claim 1 and which has the special technical features defined in the characterizing part of the claim. The lock device comprises a lock housing in which there is arranged: a lock bolt, which is movable between an unlocked position and a locked position, a first follower, and a driver, which is coupled to the first follower and is arranged to, by means of the first follower, manoeuvre the lock bolt between its unlocked and locked position, as well as, in the locked position of the lock bolt, to latch the lock bolt by contact against the lock bolt. A second follower is arranged to, by rotation, influence the functioning of the lock device. A blocking mechanism is switchable between a blocking state, in which rotation of the second follower is barred, and a non-blocking state, in which rotation of the second follower is allowed. The blocking mechanism is arranged to, when the lock bolt is in its locked, dead locked position and the blocking mechanism has assumed its blocking state, by mechanical interaction with the driver, bar the blocking mechanism from being switched from its blocking state to its non-blocking state.

[0014] With the switchable blocking mechanism, it is possible to temporarily prevent the second follower from being used to influence the functioning of the lock. The second follower can be constituted, for example, by a thumb turn follower, which is coupled to the lock bolt for operation of the lock bolt. The switchable blocking mechanism can then be used to allow switching of the lock device between a so-called home-convenient and away-secure operating mode. In the home-convenient operating mode, a thumb turn disposed on the inner side of a door or the like can be used to quickly and easily allow the door to be opened from the inside without the use of a key. In the away-secure operating mode, the thumb turn cannot be used to unlock the lock. Passage out through the door is thereby made impossible or considerably more difficult for a person who has illegally gained entry, for example, through a window or the like.

[0015] Alternatively, the second follower can be constituted by a follower which is designed to, by rotation, influence some other function of the lock device. For ex-

ample, the second follower, in an electromechanical lock device, can be constituted by a thumb turn follower which is designed to selectively allow and ignore a connection and disconnection function of an electric actuator, such as a motor between a handle follower and a lock bolt. In the non-blocking state of the blocking mechanism, a thumb turn follower can be used to mechanically effect connection of the handle follower and the lock bolt, via the driver, in order thereby to allow simple passage out through the door. In the blocking state of the blocking mechanism, rotation of the thumb turn follower is prevented, whereupon authorization-verifying measures for making the actuator connect the handle follower to the lock bolt are required in order to allow outward passage.

[0016] The blocking mechanism is further configured so that, in the locked and dead locked position of the lock bolt, it is barred by mechanical interaction with the driver from being switched from its blocking state to its non-blocking state. As a result, the second follower cannot be operated unless the lock bolt is first brought by means of the first follower, constituted, for example, by a cylinder follower, into its unlocked position. This results in considerably increased security of the lock device compared with previously known lock devices having switchable blocking mechanisms. In the usual manner, the whole of the construction of the lock device is configured and optimized to prevent the lock bolt or the driver from being broken open, or from being brought in some other unauthorized manner from their respective positions corresponding to the locked, dead locked position of the lock bolt. By virtue of the inventive mechanical interaction between the switchable blocking mechanism and the driver, the high security with which the lock bolt is held in its locked, dead locked position is utilized also to keep the switchable blocking mechanism in its blocking state. In this way, manipulation of the switchable blocking mechanism, for example by inserting manipulation tools into the lock housing or by subjecting the lock housing to vibrations, blows or shocks, is made considerably more difficult.

[0017] The driver and the blocking mechanism expediently comprise interacting first engagement members, which in the blocking state, in mutual engagement with each other, prevent the blocking mechanism from being switched to the non-blocking state. This ensures, in a simple and expedient manner, the jamming mechanical interaction between the blocking mechanism and the driver, when the latter is in its dead locking position.

[0018] The blocking mechanism expediently comprises a rectilinearly displaceable blocking member. This allows a simple and space-saving construction of the blocking mechanism, which likewise allows high security and long working life.

[0019] The first engagement members expediently comprise a first protrusion, which is disposed on the driver, and a second protrusion, which is disposed on the blocking member, which protrusions have interacting stop faces. This embodiment contributes to a simple and reliable jamming of the blocking mechanism in the blocking state.

[0020] The blocking member and the second follower expediently have interacting second engagement members. In the blocking state of the blocking mechanism, the interacting engagement members prevent rotation of the second follower. This ensures, in a simple and reliable manner, that the second follower cannot be used to manoeuvre the lock bolt, or to otherwise influence the functioning of the lock device.

[0021] The second engagement members expediently comprise a male member disposed on the blocking member and a female member disposed on the second follower. A male-female engagement of this kind allows a securely jamming engagement and thus a simple and likewise secure jamming of the second follower.

[0022] The female member of the second follower expediently comprises a radial recess. A space-saving and secure jamming of the second follower is hereby achieved.

[0023] The blocking mechanism expediently comprises a manually operable button, by means of which the blocking mechanism can be activated to assume its blocking state by subsequent manoeuvring of the lock bolt into the locked position by means of the first follower. Simple and reliable activation of the blocking mechanism is hereby allowed.

[0024] The button expediently extends through a forend or face plate disposed on the lock housing. In this way, easy access to the activating button, for example in connection with a home departure involving passage out through the door to which the lock device is fitted, is allowed.

[0025] The blocking mechanism expediently comprises a restoring member, which, by manoeuvring of the lock bolt by means of the first follower into the unlocked position, switches the blocking mechanism from the blocking to the non-blocking state. The blocking mechanism is hereby allowed to be restored to the non-blocking state when the lock device is unlocked, for example with a legitimate key inserted into a lock cylinder coupled to the first follower. Day-to-day use of the lock device is hereby facilitated, at the same time as personal safety is improved, since in the event of fire, for example, it is important that persons who have legitimately gained entry through the door shall quickly be able to unlock the door with the aid of the thumb turn for passage out.

[0026] The second follower is expediently constituted by a thumb turn follower.

[0027] The driver can be concentrically rotatable with the first follower and comprises a projecting driver arm, which is arranged to drive and latch the lock bolt. In this way, secure driving and latching of the lock bolt is obtained in a reliable and space-saving manner. The first follower can in this case expediently be constituted by a cylinder follower. The lock device can also comprise a third follower for operation of the lock bolt, which third follower is expediently a handle or lever handle follower.

[0028] Alternatively, the driver can comprise a rectilinearly displaceable element having a pin which cooperates with a cam surface disposed on the lock bolt. The cam surface is in this case expediently formed by a groove which is recessed in the lock bolt and through which the pin extends.

[0029] Further objects and advantages of the invention emerge from the following detailed description and from the claims.

Description of the Figures

[0030] Examplifying embodiments of the invention are described below with reference to the Figures, of which:

Figs. 1a and 1b are plan views of a lock device according to a first embodiment of the invention and show the lock device in an unlocked and locked position respectively.

Fig. 2 is an exploded view in perspective, which shows certain of the parts which form part of the lock device illustrated in Figs. 1a-b.

Fig. 3 is a perspective view of certain of the parts belonging to the lock device shown in Figs. 1a-b.

Figs. 4a and 4b are sections through certain of the parts belonging to the lock device shown in Figs. 1a-b and show these parts in different positions.

Figs. 5a-e are plan views of certain parts belonging to the lock device illustrated in Figs. 1a-b and show these parts in different positions.

Figs. 6a-b are perspective views of a lock device according to a second embodiment of the invention and show the lock device in an unlocked and locked position respectively.

Fig. 7 is a perspective view of certain of the parts belonging to the lock device shown in Figs. 6a-b.

Figs. 8a-c are perspective views of certain of the parts belonging to the lock device shown in Figs. 6a-b and show these parts once they have assumed different positions.

Detailed description of illustrative embodiments

[0031] In Figs. 1a-5e is shown an illustrative lock device according to a first embodiment of the invention. With reference first to Figs. 1a-b and 2, this lock device comprises a lock housing 10, which is joined by means of a U-profile (not shown) to a forend 20. A lock bolt 30 in the form of a swing bolt is rotatably fixed in the lock housing by means of a pivot pin 31. The forend has for this purpose a bolt opening (not shown), which allows the lock bolt 30 to be guided between a retracted, unlocked position illustrated in Fig. 1a and a locked position, extended through the bolt opening, in Fig. 1b.

[0032] A first follower 50 in the form of a cylinder follower is rotatably received in the lock housing 1. As can be seen from Fig. 2, the first follower 50, in the example described here, is constituted by a two-part cylinder follower having two opposing follower plates 51, 52 arranged in axial alignment.

[0033] The first follower 50 is coupled by means of a driver 60 to the lock bolt 30, so as drive the lock bolt 30 to and fro between the retracted, unlocked position and the extended, locked position. The driver 60 comprises a cylindrical portion 61, which is arranged concentrically with the first follower 50, and a radially projecting driver arm 62. The follower plates 51, 52 of the first follower 50 are each arranged to transmit their rotary motion to the driver 60, via a blocking arm 63, which is rotatably arranged on a pin 64 disposed on the driver 60. The configuration and interaction of the first follower 50, of the driver 60 and of the blocking arm 63 are described in greater depth in SE 1050383-7, which is incorporated herewith by reference.

[0034] The free end of the driver arm 62 cooperates with a cam surface of a recess 32 disposed in the lock bolt 30, so as to drive the lock bolt 30. The lock bolt also has a tail portion 33 disposed in the vicinity of the recess. In the extended, locked position of the lock bolt 30 which is shown in Fig. 1b, the driver arm 62 assumes a position in relation to the cam surface of the recess 32 such that the lock bolt 30 is dead locked in the extended, locked position. In the locked and dead locked position, the angular position of the driver arm 62, in relation to the geometry of the cam surface, is here such that a break-open force which is applied to the lock bolt 30 in the unlocking direction does not result in a corresponding rotation (clockwise in Fig. 1b) of the driver. By dead locked position is here meant, therefore, that the driver and the lock bolt have entered into self-locking engagement with each other.

[0035] As can be seen from Figs. 3 and 4a-b, the driver arm 62 has a first engagement member 65 in the form of a protrusion which projects substantially in parallel with the rotational axis of the driver 60.

[0036] A second follower 70 in the form of a thumb turn follower is also rotatably arranged in the lock housing 10. The second follower 70 is coupled to the driver 60 via a coupling mechanism 80 so as to allow the driver 60, and thus the lock bolt 30, to be driven. The coupling mechanism 80 comprises a toothed washer 81, which can be driven for rotation of a driving pin 71 on the second follower 70. The toothed washer 81 is in meshing engagement with an eccentric 82 coupled to a coupling arm 83, which in turn is coupled to the blocking arm 63 of the driver 60. The second follower 70 and the coupling mechanism 80 are received in a module housing 85 having a cover plate 86. Upon, according to Fig. 1a-b and 2, clockwise rotation of the second follower 70, the coupling

mechanism 80 converts this rotary motion into a likewise clockwise rotation of the driver 60. Anti-clockwise rotation of the second follower 70 results correspondingly in an anti-clockwise rotation of the driver 60.

[0037] With the above-described lock device, it is thus possible to drive the lock bolt 30 to and fro between the retracted, unlocked position and the extended, locked and dead locked position by rotation of both the first follower 50 and the second follower 70.

[0038] In the example which is described here, the lock device further comprises a latch bolt 91 and a third follower 92, in the form of a lever handle follower arranged to allow operation of the latch bolt 91.

[0039] With reference now also to Figs. 3, 4a-b and 5a-e, an illustrative blocking mechanism 100 belonging to the above-described lock device is described below. The blocking mechanism 100 comprises a linearly displaceable blocking member 101 in the form of a blocking arm having a operating end 102 and a blocking end 103. A displaceable operating member 104 is arranged for engagement with the operating end 102. The operating member 104 is guided in a straight line along the inner side of the forend 20 and comprises a manually operable button 105, which extends out through a blocking operating opening (not shown) in the forend 20.

[0040] The blocking mechanism 100 also comprises a first engagement member 107, which cooperates with the first engagement member 65 of the driver 60. The first engagement member 107 of the blocking mechanism 100 is constituted by a second protrusion, disposed on the blocking member 101, in the form of an embossment projecting substantially at right angles to the plane of extension of the blocking member 101. The first engagement member 65 of the driver 60 and the first engagement member 107 of the blocking mechanism 100 project in mutually opposite directions and have interacting stop faces. At the blocking end 103 of the blocking member 101 is arranged a second engagement member 106. The second engagement member 106 constitutes a male member in the form of a pin projecting in parallel with the direction of displacement of the blocking member 101.

[0041] The blocking mechanism 100 also comprises a restoring member 108, which is arranged so as to be rotatable and limitedly displaceable on an axle journal 109 which is fixed in the lock housing 10. The restoring member 108 comprises a laterally projecting pin 110, which is received in a curved groove 111 disposed in the blocking member 101. A spring 112 bears against a cam surface 113 on the restoring member 108. The spring 112 presses the restoring member 108 in the direction of a normal rotation position and effects bistable detention of the restoring member 108 in two different displacement positions.

[0042] As can most clearly be seen from Figs. 4a-b, the second follower 70 has a second engagement member 72, which is configured for interaction with the second engagement member 106 of the blocking member 101. The second engagement member 72 of the second follower 70 constitutes a female member in the form of a radial recess.

[0043] In Figs. 5a-e are shown the lock bolt 30 and the blocking mechanism 100 once they have assumed different positions during use of the blocking mechanism 100. In Fig. 5a, the lock bolt 100 is in its unlocked, retracted position. The driver (not shown in Figs. 5a-e) is in the position shown in Fig. 1a. The blocking member 101 is in an upper, non-activated position, in which position the second engagement member 106 of the blocking member 101 does not engage with the second engagement member 72 of the second follower 70. The blocking mechanism 100 has here assumed its non-blocking state, wherein both the first 50 and the second 70 follower can be used to drive the driver 60 and the lock bolt 30 into the locked, dead locked position. The spring 112 bears against a lower part of a bulge on the cam surface 113 of the restoring member 108. The restoring member 108 is here held bistably in its upper position. The blocking member 101 is thus also held, by the engagement of the laterally projecting pin 110 with the groove 111, in its upper, non-activated position.

[0044] In order from this position to switch the blocking mechanism 100 to its blocking state, the blocking mechanism 100 is first activated by depressing the button 105 which juts out through the forend 20. The operating member 104, whereof the button 105 constitutes a part, will hereupon, in contact against the operating end 102 of the blocking member 101, press the blocking member 101 into a lower, activated position shown in Fig. 5b. In this position, the second engagement member 106 of the blocking member 101 engages with the second engagement member 72 of the second follower 70, whereupon rotation of the second follower 70 is barred. The second follower 70 can thus no longer be used to operate the driver 60 or the lock bolt 30. In this activated position, the blocking member 101 is held in its lower engagement position only bistably by the spring 112, which now bears against an upper part of the bulge on the cam surface 113 of the restoring member 108. In order to ensure that the blocking mechanism securely maintains its blocking state, a lock-out and dead locking of the lock bolt 30 by means of the first follower is required.

[0045] In Fig. 5c, the blocking mechanism 100 and the lock bolt 30 are illustrated with the lock bolt 30 locked out. The lock-out is effected by anti-clockwise rotation of the first follower 50, from the position shown in Fig. 1a into the position shown in Fig. 1b.

[0046] During lock-out, the lock bolt 30 is rotated clockwise from the position shown in Fig. 5b. As illustrated in Fig. 5c, the tail portion 33 of the lock bolt 30, during this rotation, comes into contact with the restoring member 108 and forces this to rotate about the axis 109. Due to the curvature of the groove 111 in the blocking member 101, in which groove the pin 111 is received, the rotation of the restoring member 108 will not affect the position of the blocking member 101. The lock-out motion can

thus be carried on until the lock bolt 30 and the driver 60 have assumed the locked and dead locked position shown in Fig. 1b. The blocking mechanism 100 has then assumed its blocking state, which is illustrated in Figs. 4b and 5d. As can clearly be seen from Fig. 4b, the second engagement members 106, 72 of the blocking member 101 and of the second follower 70 are mutually engaged. In this blocking state, moreover, the first engagement members 65, 107 of the driver 60 and of the blocking member 101 are mutually engaged by mutual contact of the interacting stop faces of these engagement members 65, 107. Since the lower engagement position of the blocking member 101, in the blocking state, is held by means of the driver 60, which also effects the dead locking of the lock bolt 30, a very secure jamming of the blocking mechanism in the blocking state is obtained.

[0047] In order to again switch the blocking mechanism 100 to the non-blocking state, it is sufficient to drive the driver 60 and the lock bolt from the locked, dead locked position into the unlocked position by means of the first follower 50. As can be seen from Fig. 5e, the tail portion 33 of the lock bolt, during this anti-clockwise rotation of the lock bolt 30, comes into contact with the restoring member 108. The pin 111 is located however in the left-hand end position, in the figure, of the groove 111, in which case the restoring member 108 is not allowed to rotate about the axis 109. Instead, the tail portion 33 will press the restoring member 108 and, through the engagement of the pin 111 with the groove 111, the blocking member 101 upwards. Once the rotation of the lock bolt 30 is completed into the fully retracted, unlocked position, the restoring member 108, the blocking member 101 and the operating member 104 with the button 105 will hereupon resume the starting position shown in Fig. 5a.

[0048] When the driver 60 and the lock bolt 30 are driven by means of the first 50 or second 70 follower from the retracted, unlocked position into the extended, locked and dead locked position, without the blocking mechanism 100 first having been activated, the first engagement members 65, 107 of the driver 60 and of the blocking member 101 assume the positions illustrated in Fig. 4a.

[0049] In Figs. 6a and 6b is illustrated a lock device according to a second embodiment of the invention. This lock device is of the electromechanical type. The lock device comprises a lock housing 210 and a forend 220. A lock bolt 230 in the form of a swing bolt can be driven between a retracted, unlocked position shown in Fig. 6a and an extended, locked position shown in Fig. 6b. A first follower 250 is rotatably received in the lock housing 210. An actuator 240 comprising an electric motor is disposed in the lock housing and is designed to switch the functioning of the first follower. The first follower 250 is coupled by means of a follower arm (not shown) and a pin 251 disposed on this same to a rectilinearly displaceable driver 260. The driver comprises a plate-like element 261 and a driving pin 262 fixed to this same. The driving pin 262 extends through a groove 231 recessed in the lock bolt. The groove 231 comprises a cam surface, which is shaped to effect driving of the lock bolt 230 between the retracted and the extended position and to effect dead locking of the lock bolt in the extended position, by self-locking interaction with the pin 262.

[0050] A second follower 270 is rotatably received in the lock housing. The second follower 270 is coupled to the actuator 240 by means of a coupling mechanism 280, so as, by rotation of the second follower 270, to ignore a switching function of the actuator 240.

[0051] In the shown example, the first follower 250 is realized by a handle follower and the second follower 270 by a thumb turn follower.

[0052] The lock device also comprises a blocking mechanism 300, which is disposed in the lock housing 210 to prevent rotation of the second follower 270 and thus also prevent neglect of the switching function of the actuator 240.

[0053] With reference now also to Figs. 7 and 8a-c, the blocking mechanism 300 comprises a rectilinearly displaceable blocking member 301 having an operating end 302 and a blocking end 303. An end face 310 and a pointed protrusion 311 are arranged at the operating end 302. At the operating end 302 is also arranged a first engagement member 307, in the form of a laterally projecting protrusion. An operating member 304, having a button 305 projecting through an operating opening made in the forend 220, is arranged such that it is longitudinally displaceable along the inner side of the forend 220. The operating member 304 comprises an oblique face 306 facing towards the blocking member 301 and a tip 306a adjoining the oblique face 306. A first spring 308 is arranged to press the blocking member 301 in the direction of the operating member 304 and the forend 220. A second spring 309 is arranged to force the operating member 304 in an upward direction. An end portion arranged at the blocking end 303 constitutes a second engagement member 312 in the form of a male member.

[0054] The driver 260 has a through-recess 263 having a first engagement member 265, which is constituted by a protrusion projecting into the recess 263. The second follower 270 has a second engagement member 272, which is constituted by a female member in the form of a radial recess.

[0055] In Fig. 8a, the blocking mechanism 300 and the driver 260 are shown when the driver has assumed a downwardly displaced position, which corresponds to the lock bolt 230 having assumed its extended, locked and dead locked position. The blocking mechanism 300 has assumed its non-blocking state, in which case the second engagement member 312 of the blocking member does not engage with the corresponding second engagement member 272 on the second follower 270. The second follower 270 can thus be used to effect neglect of the coupling function of the actuator 240. In order to switch the blocking mechanism 300 to the blocking state, the driver is first made (by means of the first follower 250) to shift upwards, during retraction of the lock bolt 230, into the position shown in Fig. 8b. After this, the blocking

mechanism is activated by the operating member 304 being pressed downwards by means of the button 305. The oblique face 306 on the operating member here comes into contact with the pointed protrusion 311 on the blocking member 301. The blocking member 301 is then pressed, counter to the action of the first spring 308, in the direction of the second follower 270, so that the second engagement member 312 on the blocking member 310 engages with the second blocking member 272 of the second follower 270. Since the first spring 308 presses the blocking member 301 in the direction of the operating member 304, the tip 306a on the operating member 304 snaps in place beneath the pointed protrusion 311 at the operating end of the blocking member 301. The second spring 309 is thus incapable of forcing the operating member 304 upwards, the operating member 304 and the blocking member 301 being held in the activated state shown in Fig. 8b.

[0056] By subsequently driving, by means of the first follower 250, the driver 260 and the lock bolt 230 into the locked and dead locked position shown in Fig. 6b, the blocking mechanism assumes its jammed blocking state. During the downward displacement of the driver 260 from the position shown in Fig. 8b into the position shown in Fig. 8c, the first engagement member 265 on the driver 260 comes into contact with the first engagement member 307 on the blocking member 301. Since the blocking member 301, and thus its first engagement member 307, during the preceding activation, have been displaced by a certain amount, to the right according to the figure, in the direction of the second follower 270, the first engagement member 307 on the blocking member 301 will come into contact with a stop face disposed on the right-hand side, in the figure, of the first blocking member 265 of the driver. As can be seen from the figures, this stop face is oblique, which means that the blocking member 301, due to the mutual contact of the two first engagement members 265, 307, will be displaced a bit more to the right as the downward displacement of the driver 260 is completed. The snap-in engagement between the tip 306a of the operating member and the pointed protrusion 311 on the blocking member will here be released, whereupon the second spring 309 can return the operating member 304 to its upper starting position. The blocking member 301 is, however, securely held in its blocking state by virtue of the contact between the peripheral surface, serving as the stop face, on the first engagement member 307 of the blocking member and the corresponding stop face on the first engagement member 265 of the driver. Just as in the above-described embodiment, in the embodiment, too, which is described here jamming of the blocking mechanism 300 in the blocking state is thus achieved with the aid of the driver 260, which also effects deat locking of the lock bolt 230.

[0057] In order to cancel the jamming and again switch the blocking mechanism to the non-blocking state, it is sufficient to again drive the driver 260 and the lock bolt 230 by means of the first follower 250 into the unlocked position shown in Fig. 6a. The engagement between the first engagement members 265, 307 on the driver 260 and blocking member 301 respectively is thereby released, whereupon the first spring 308 displaces the blocking member 301 in the direction away from the second follower 270, so that the engagement between the two second engagement members 312, 272 is released. If the lock bolt 230 is thereafter brought into the locked position, the blocking mechanism resumes the position shown in Fig. 8a.

[0058] Above, a description has been given of exemplifying embodiments of the invention. The invention is not limited to the given description, but can be freely varied within the scope of the following claims. The invention is well suited to applications in which the second follower is constituted by a thumb turn follower, but it is also possible to utilize the invention in applications in which the second follower is constituted by, for example, a cylinder follower, a handle follower or an electrically driven follower. The type and configuration of the lock bolt belonging to the invention can also be varied within broad limits.

Claims

1. Lock device comprising a lock housing (10, 210), in which there is arranged:

   - a lock bolt (30, 230), which is movable between an unlocked position and a locked position,
   - a first follower (50, 250),
   - a driver (60, 260), which is coupled to the first follower and is arranged to, by means of the first follower, manoeuvre the lock bolt between its unlocked and locked position, as well as, in the locked position of the lock bolt, to latch the lock bolt by contact against the lock bolt,
   - a second follower (70, 270), which is arranged to, by rotation, influence the functioning of the lock device, and
   - a blocking mechanism (100, 300), which is switchable between a blocking state, in which rotation of the second follower is barred, and a non-blocking state, in which rotation of the second follower is allowed, **characterized in that** the blocking mechanism (100, 300) is arranged to, when the lock bolt (30, 230) is in its locked, dead locked position and the blocking mechanism has assumed its blocking state, by mechanical interaction with the driver (60, 269), bar the blocking mechanism from being switched from its blocking state to its non-blocking state.

2. Lock device according to Claim 1, in which the driver (60, 260) and the blocking mechanism (100, 300) comprise interacting first engagement members (65, 256), which in the blocking state, in mutual engagement with each other, prevent the blocking mecha-

nism from being switched to the non-blocking state.

3. Lock device according to either one of Claims 1-2, in which the blocking mechanism (100, 300) comprises a rectilinearly displaceable blocking member (101, 301).

4. Lock device according to Claim 3, in which the first engagement members (65, 265) comprise a first protrusion, which is disposed on the driver (60, 260), and a second protrusion, which is disposed on the blocking member (101, 301), which protrusions have interacting stop faces.

5. Lock device according to any one of Claims 1-4, in which the blocking member (101, 301) and the second follower (70, 270) have interacting second engagement members (106, 72, 312, 272).

6. Lock device according to Claim 5, in which the second engagement members (106, 72, 312, 272) comprise a male member disposed on the blocking member and a female member disposed on the second follower.

7. Lock device according to Claim 6, in which the female member of the second follower comprises a radial recess.

8. Lock device according to any one of Claims 1-7, in which the blocking mechanism (100, 300) comprises a manually operable button (105, 205), by means of which the blocking mechanism can be activated to assume its blocking state by subsequent manoeuvring of the lock bolt (30, 230) into the locked position by means of the first follower (50, 250).

9. Lock device according to Claim 8, in which the button (105, 305) extends through a forend (20, 220) or face plate disposed on the lock housing (10, 210).

10. Lock device according to any one of Claims 1-9, in which the blocking mechanism (100, 300) comprises a restoring member (108, 308), which, by manoeuvring of the lock bolt (30, 230) by means of the first follower (50, 250) into the unlocked position, switches the blocking mechanism from the blocking to the non-blocking state.

11. Lock device according to any one of Claims 1-10, in which the second follower (70, 270) is a thumb turn follower.

12. Lock device according to any one of Claims 1-11, in which the driver (60) is concentrically rotatable with the first follower (50) and comprises a projecting driver arm (62), which is arranged to drive and latch the lock bolt (30).

13. Lock device according to any one of Claims 1-12, in which the first follower (50) is a cylinder follower.

14. Lock device according to any one of Claims 1-13, comprising a third follower (92) for operation of the lock bolt, which third follower is a handle or lever handle follower.

15. Lock device according to any one of Claims 1-11, in which the driver (260) comprises a rectilinearly displaceable element (261) having a pin (262) which cooperates with a cam surface disposed on the lock bolt (230).

16. Lock device according to Claim 15, in which the cam surface is formed by a groove (231) which is recessed in the lock bolt (230) and in which the pin (262) is received.

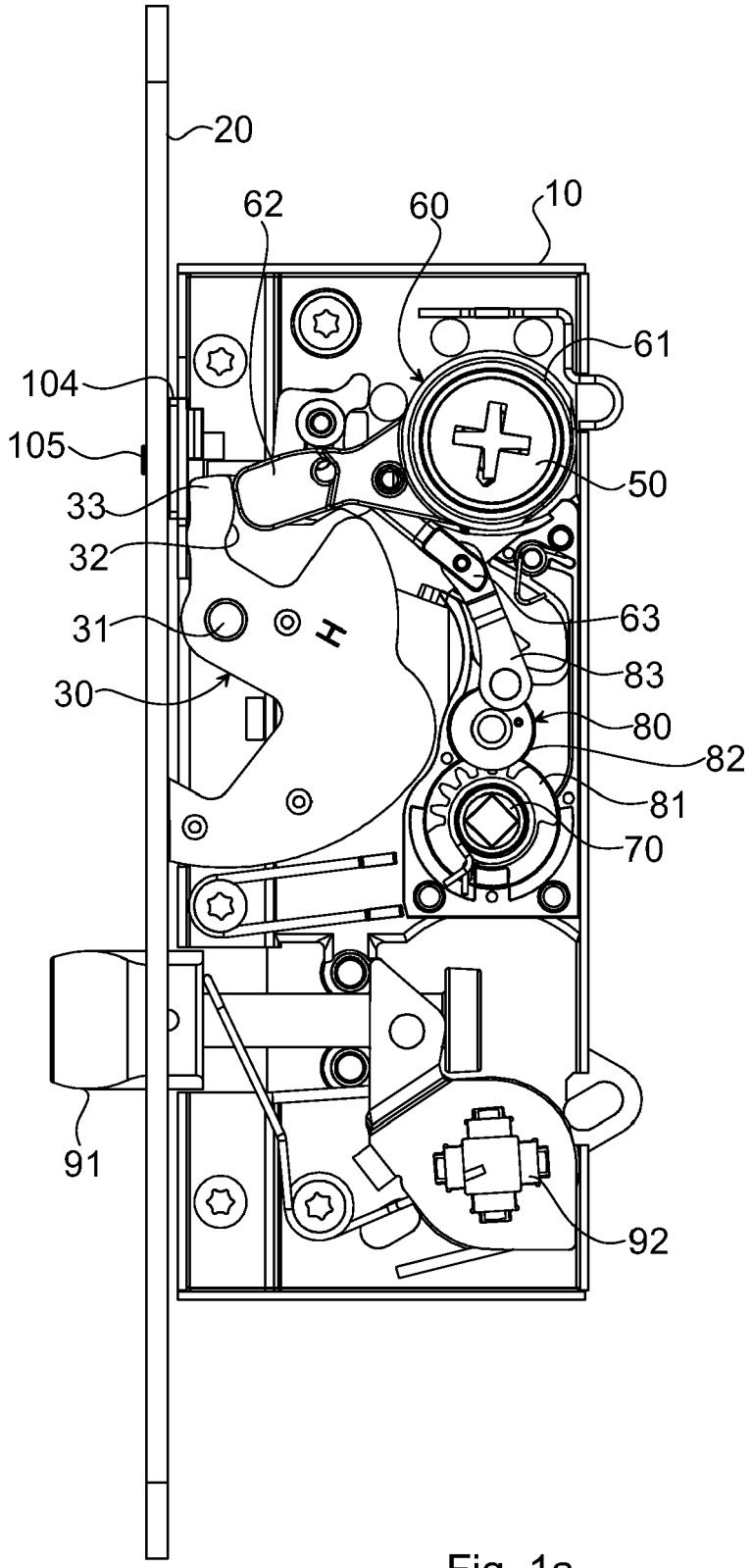

Fig. 1a

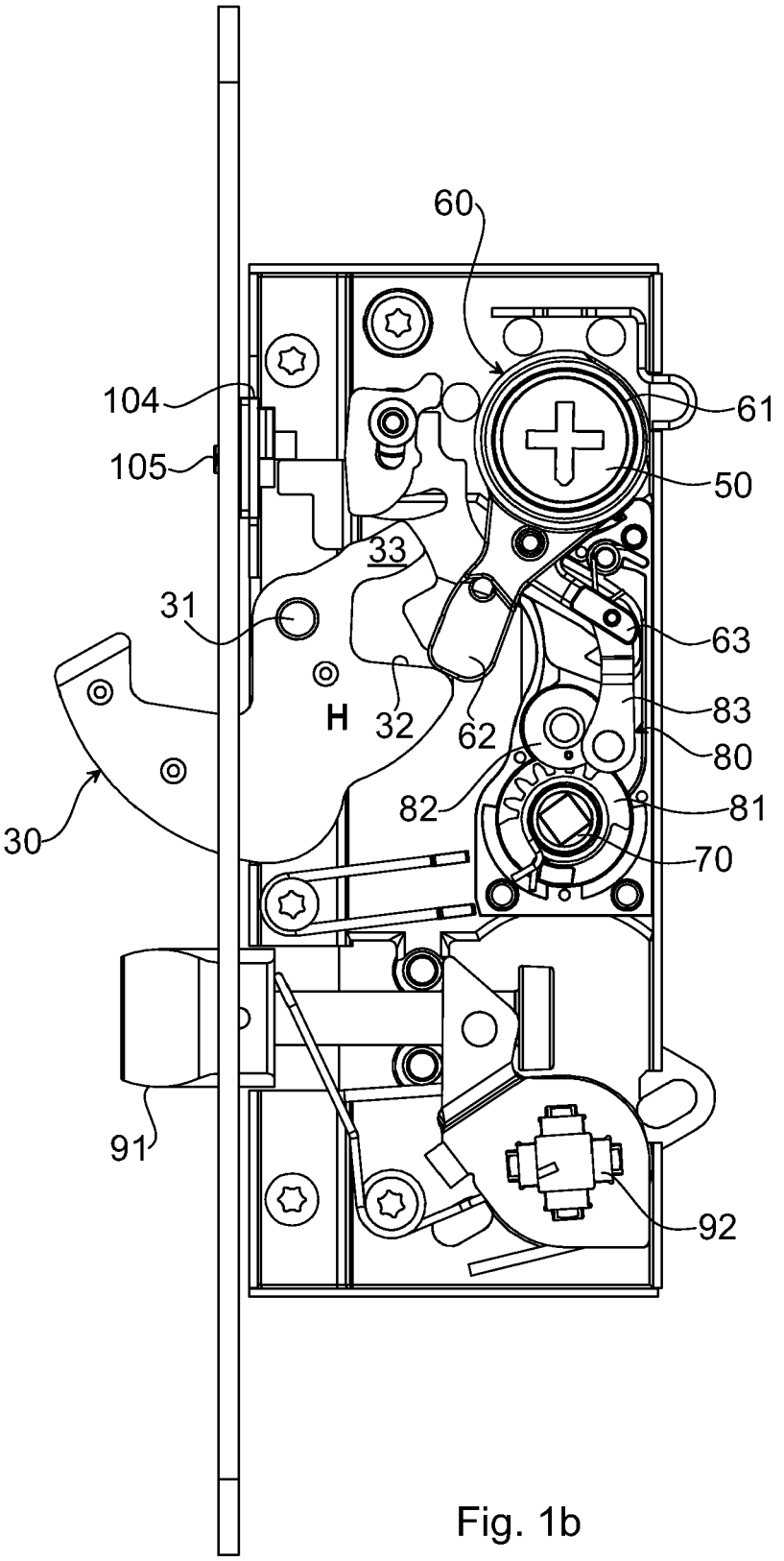

Fig. 1b

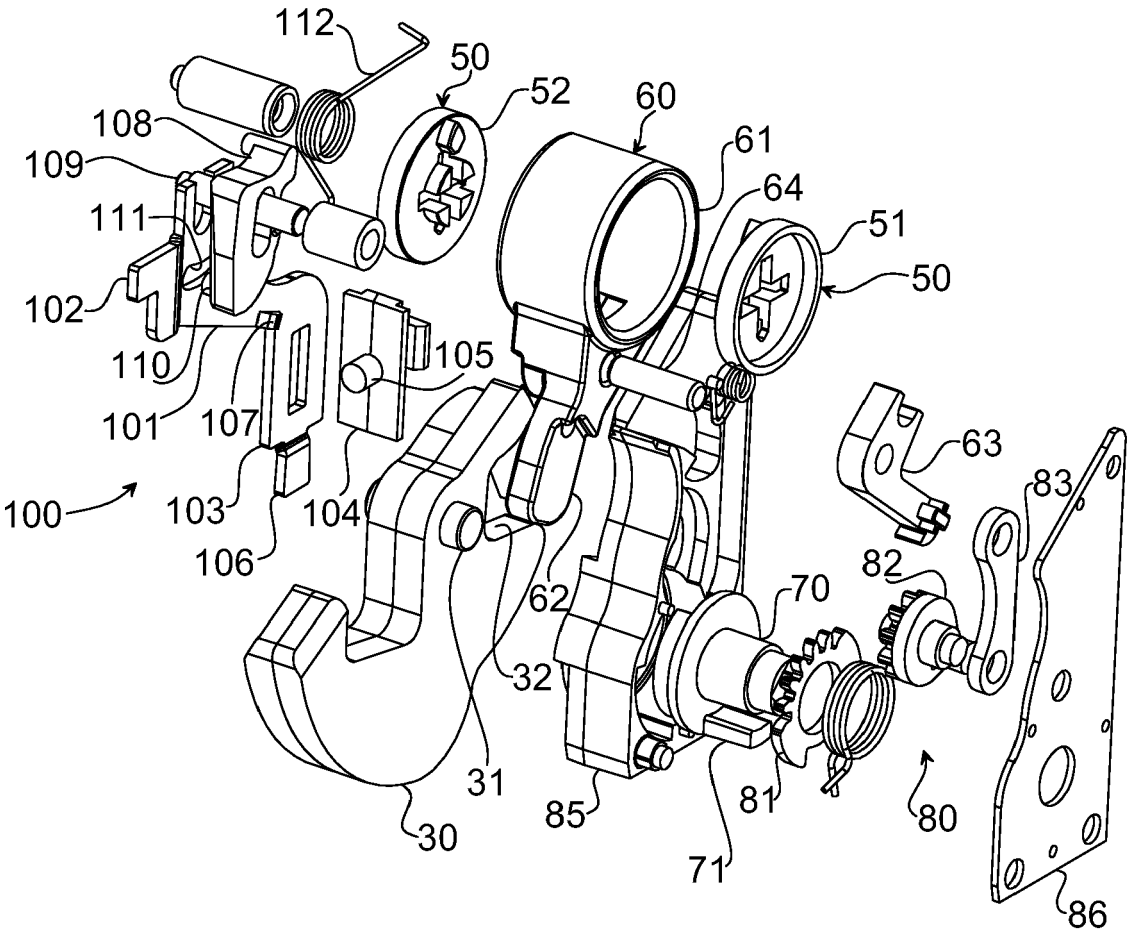
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Fig. 2

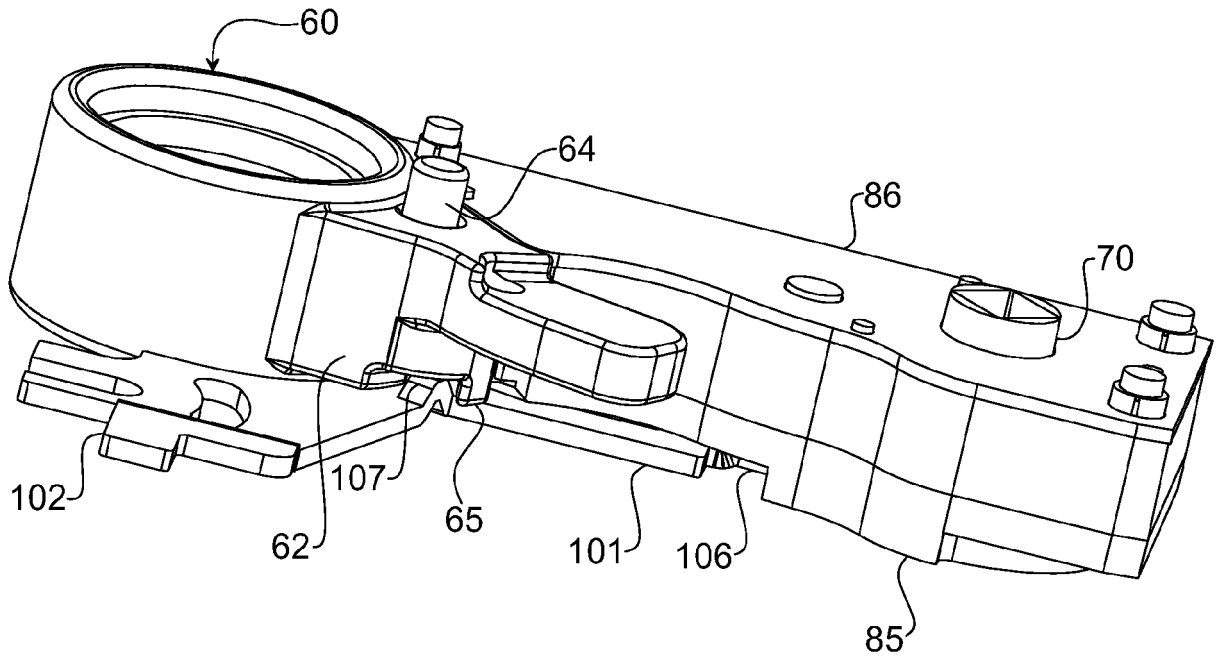

Fig. 3

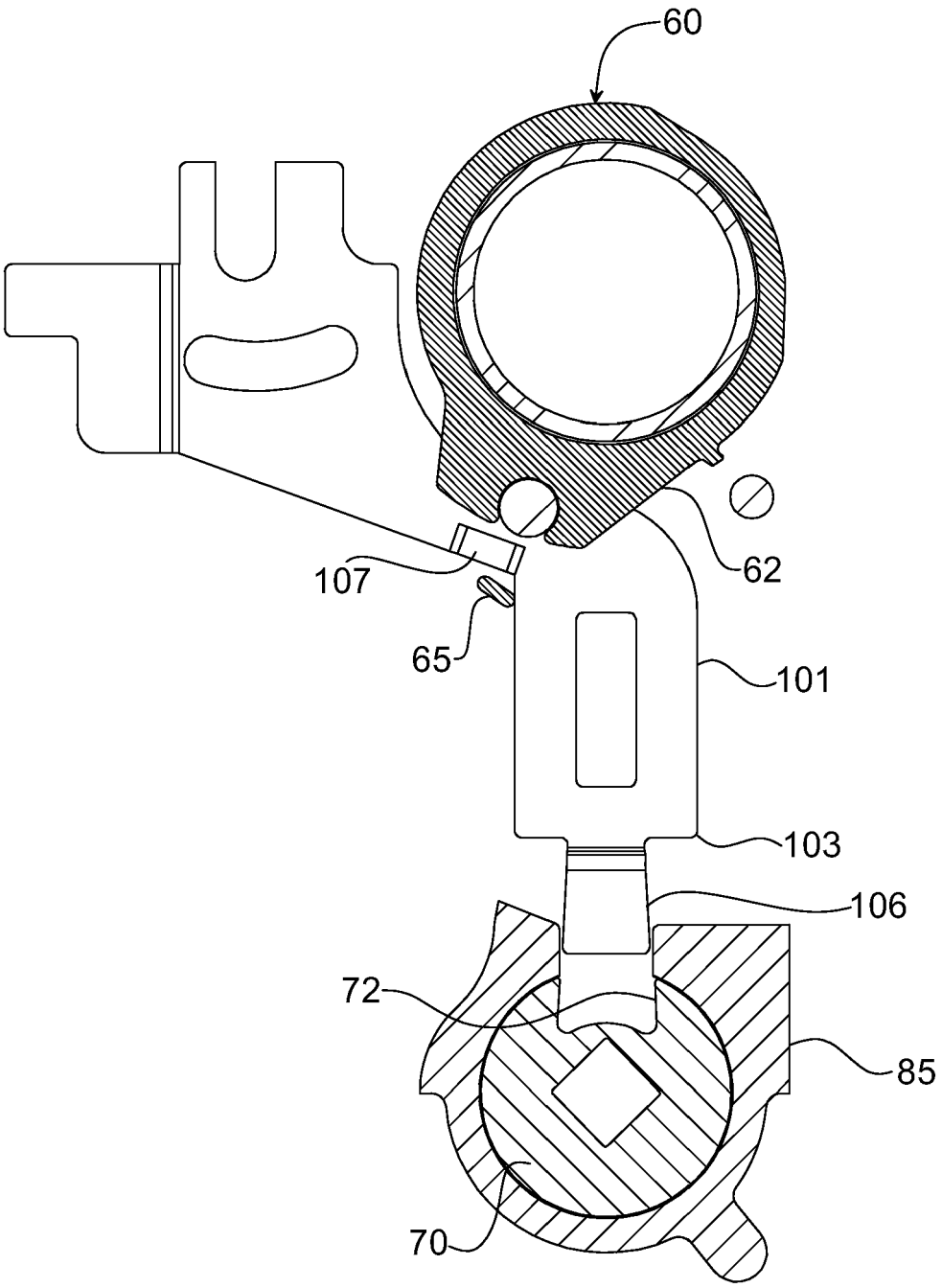

Fig. 4a

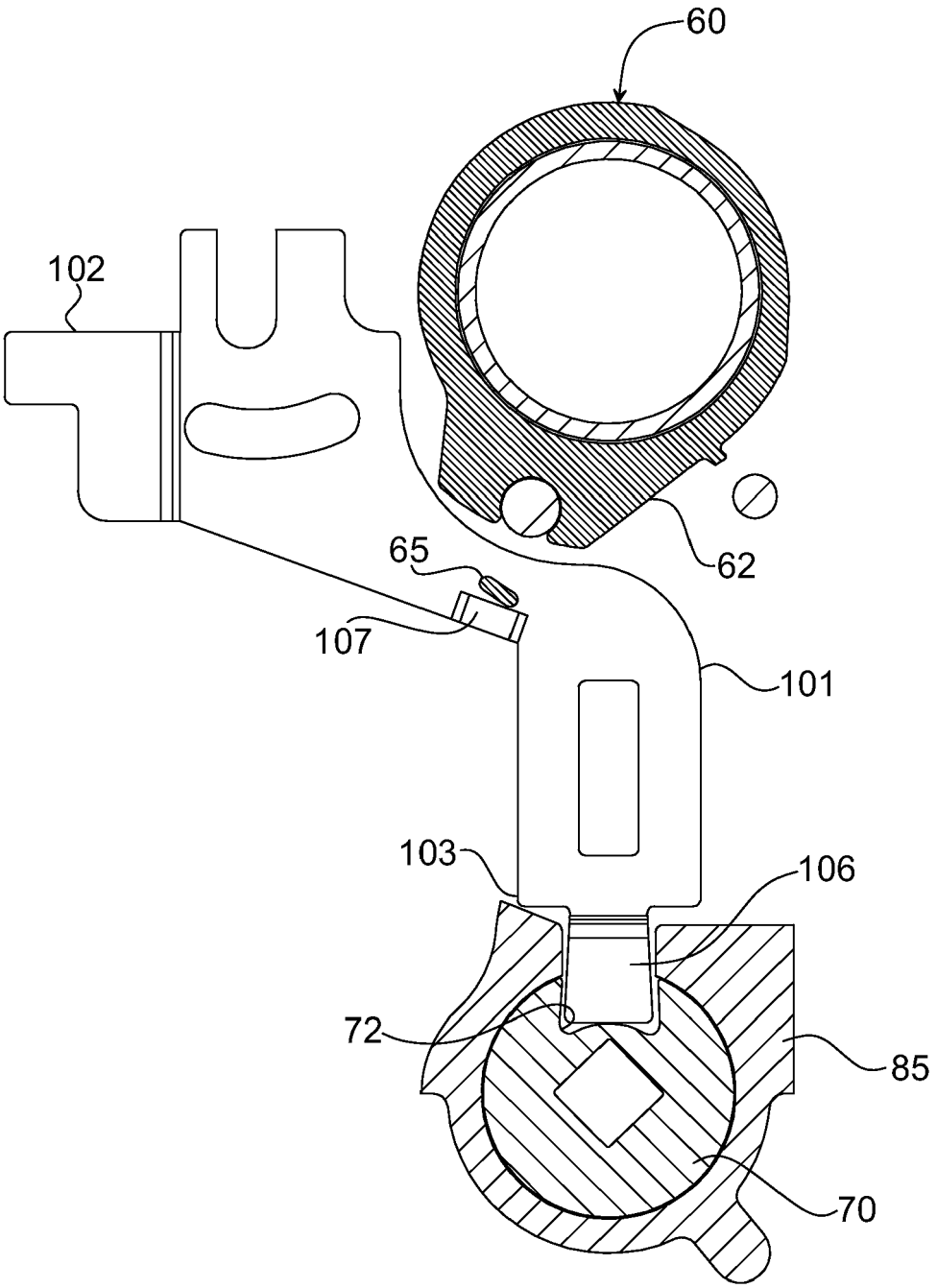

Fig. 4b

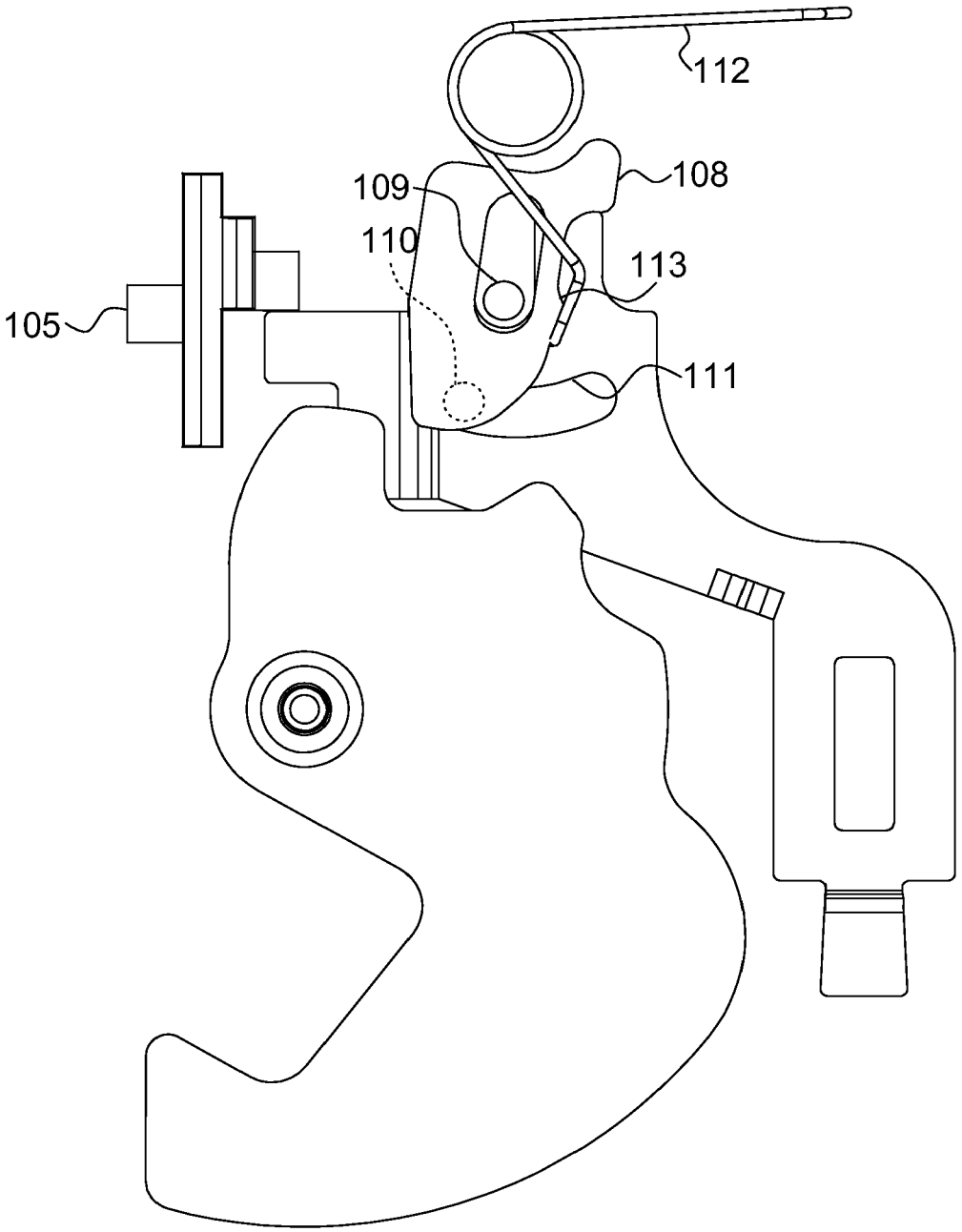

Fig. 5a

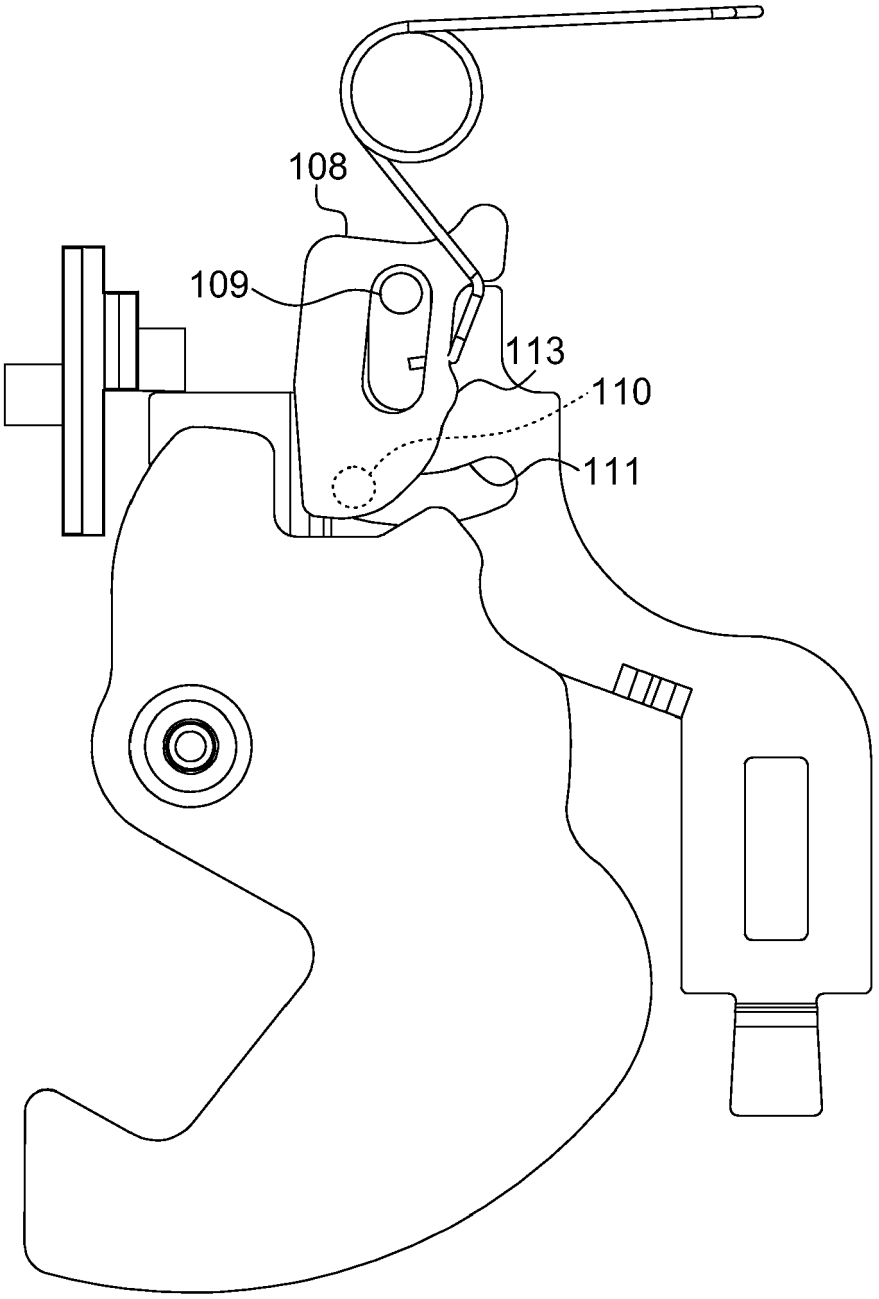

Fig. 5b

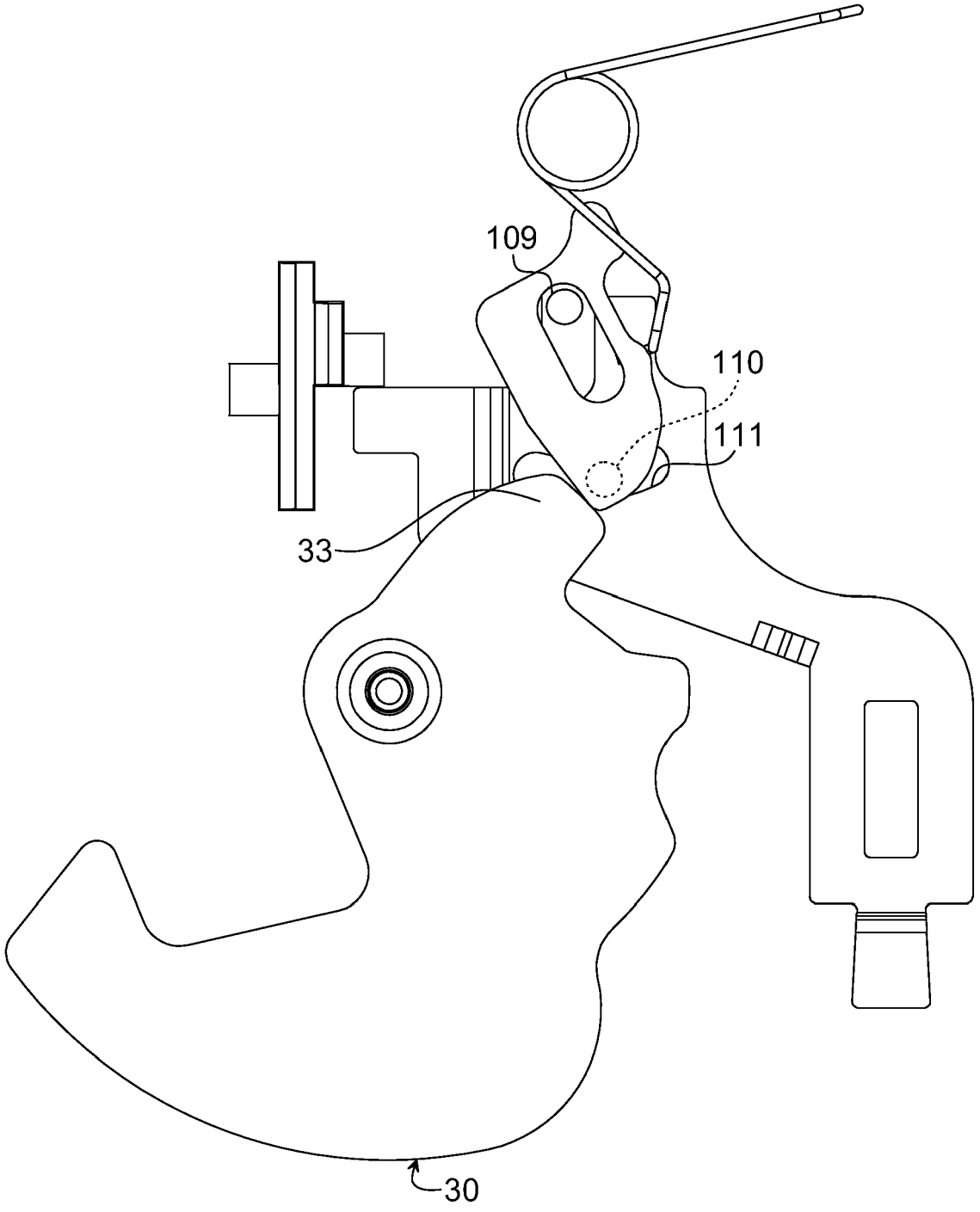

Fig. 5c

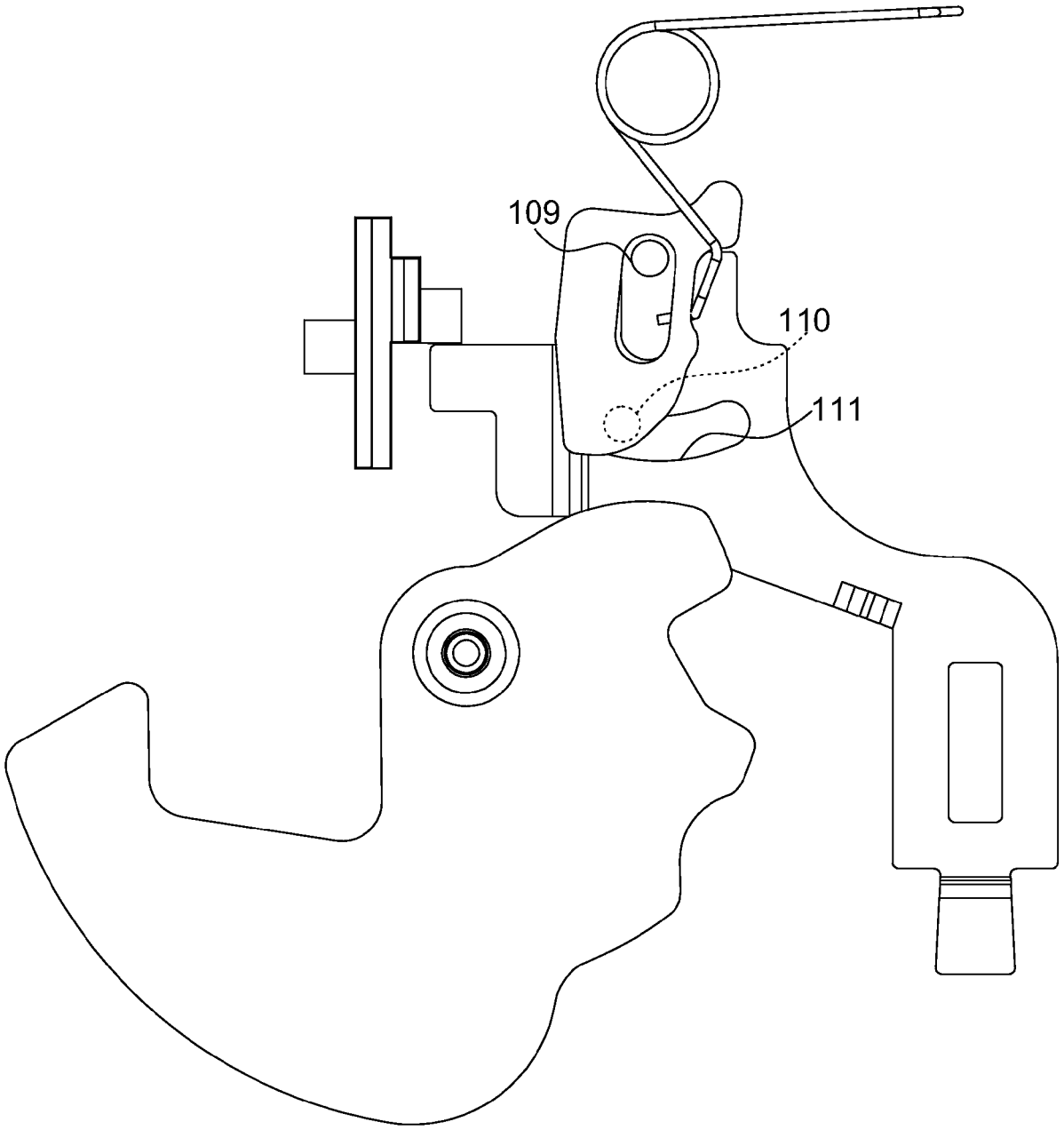

Fig. 5d

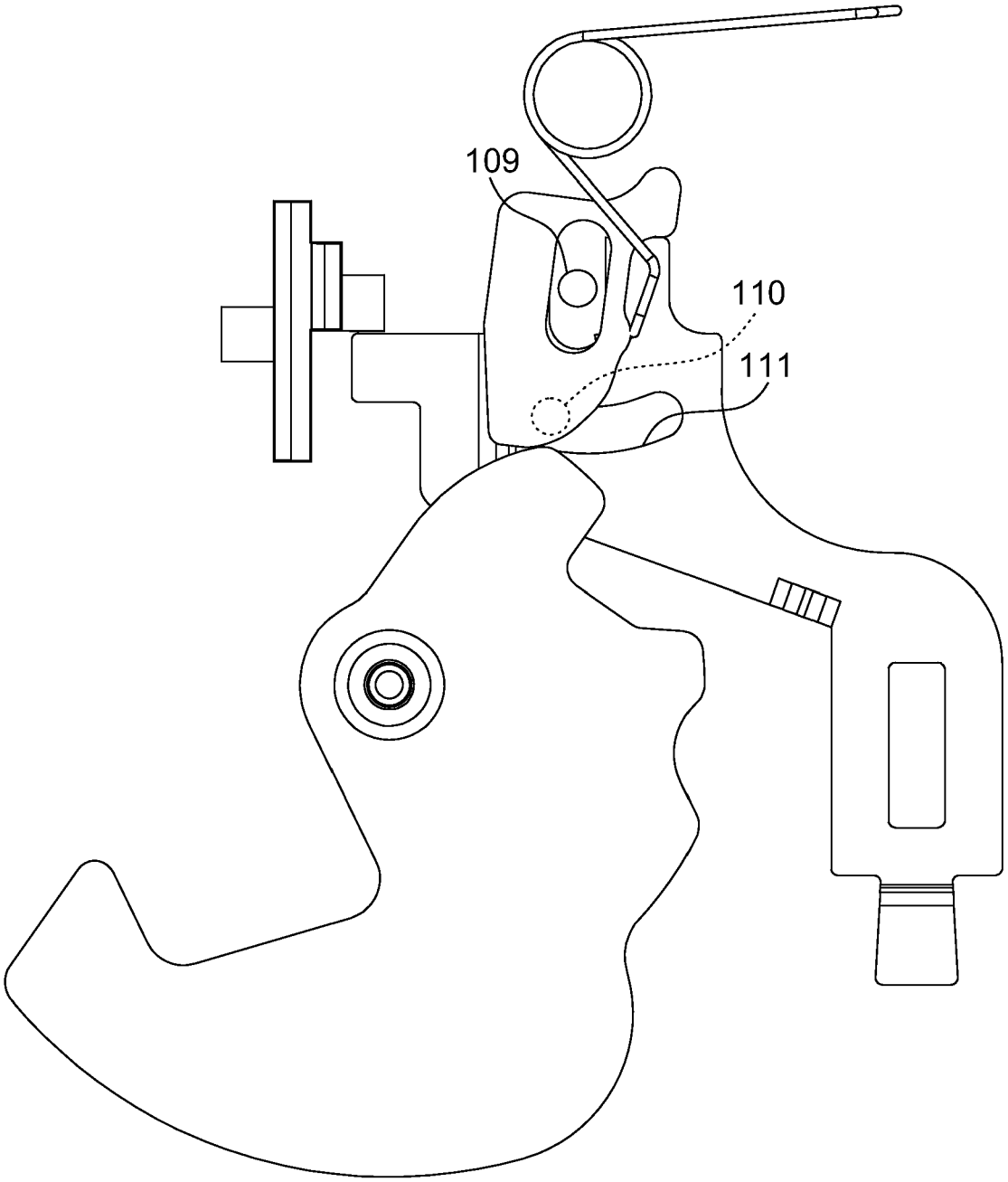

Fig. 5e

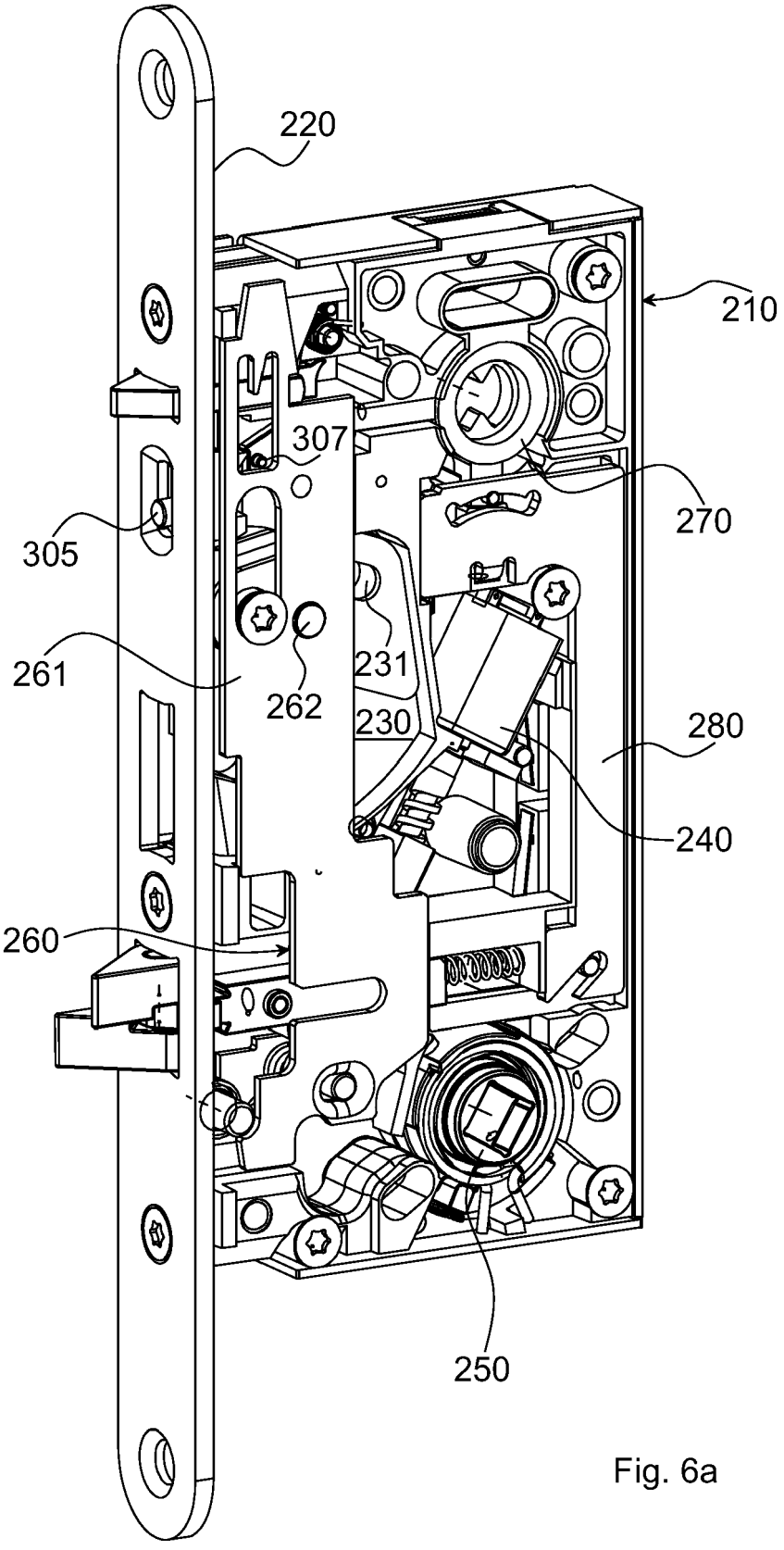

Fig. 6a

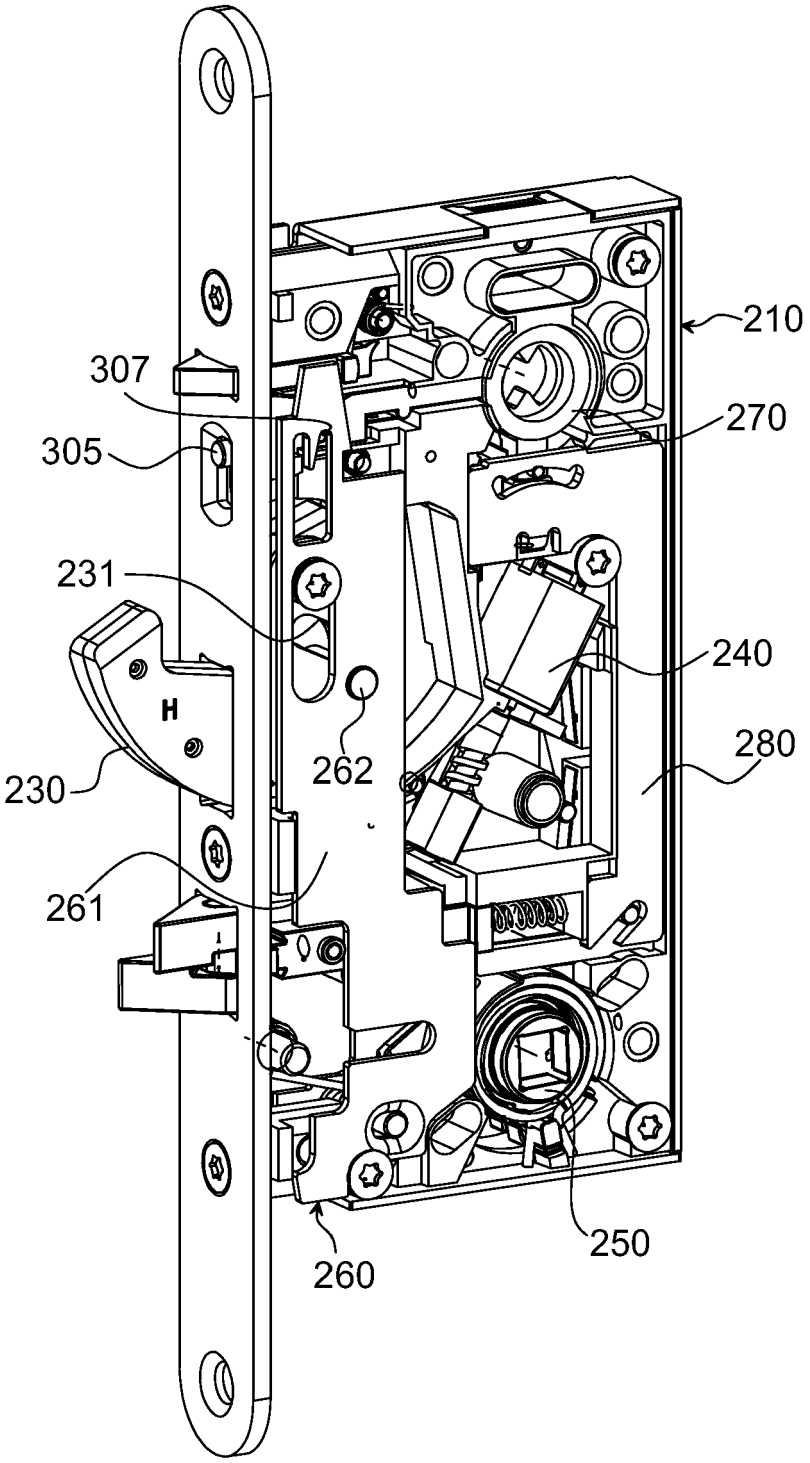

Fig 6b

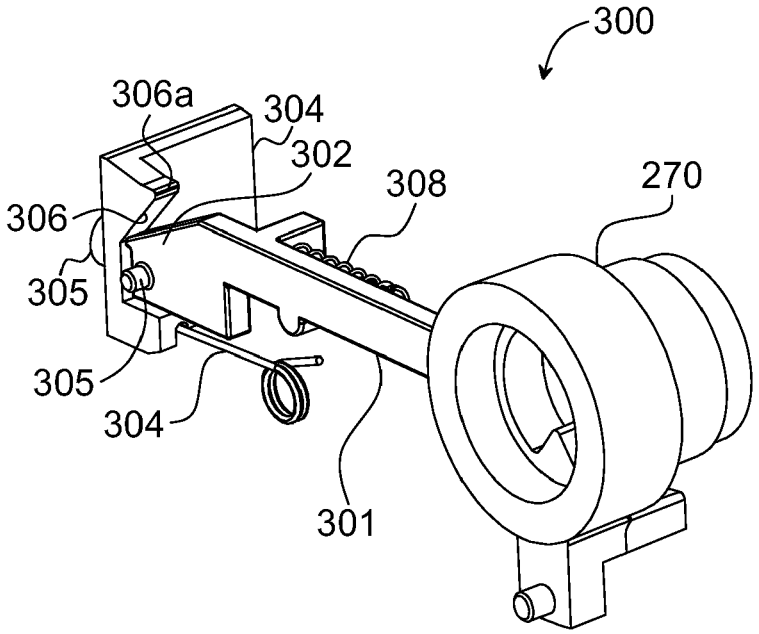

Fig. 7

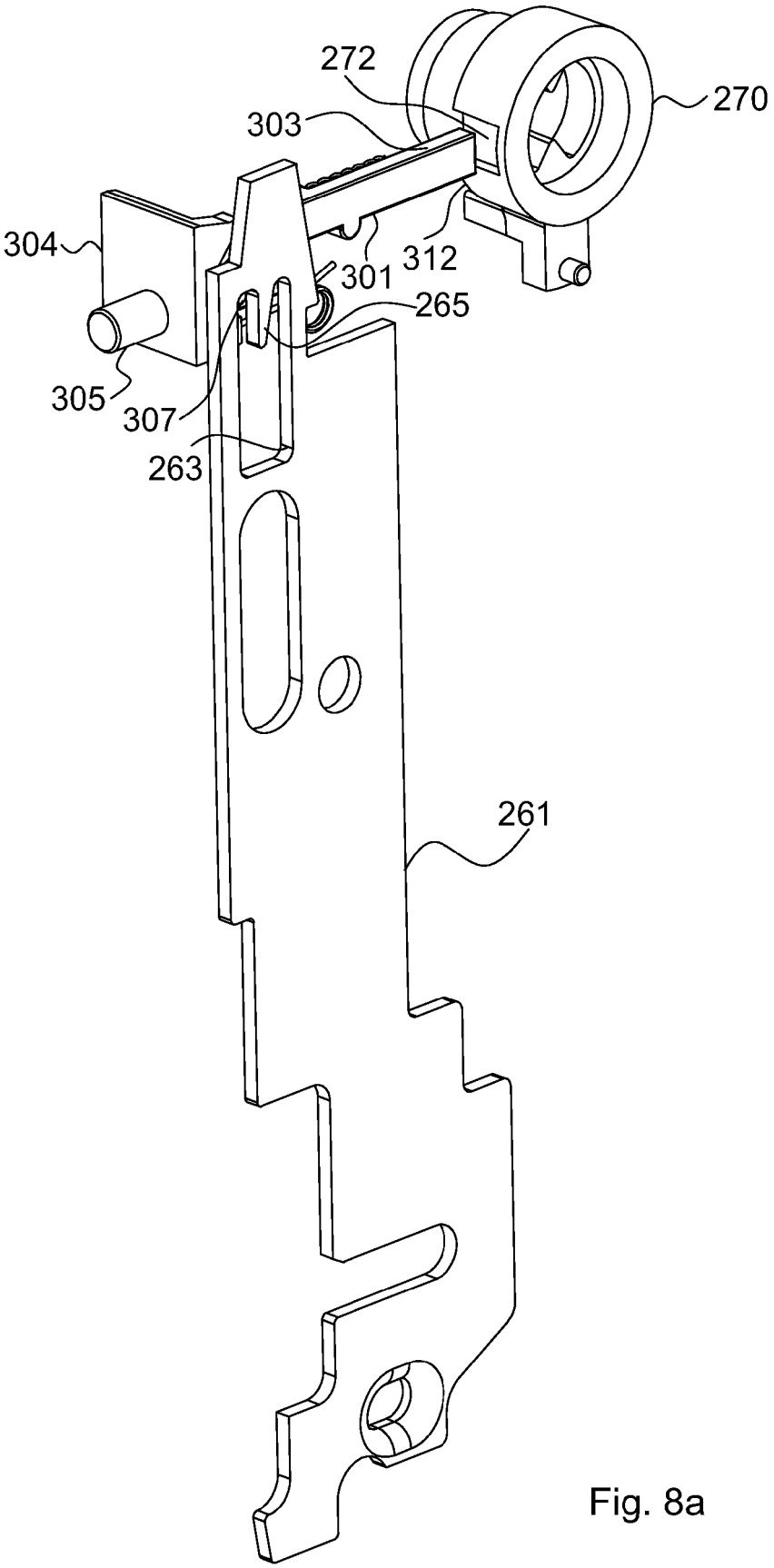

Fig. 8a

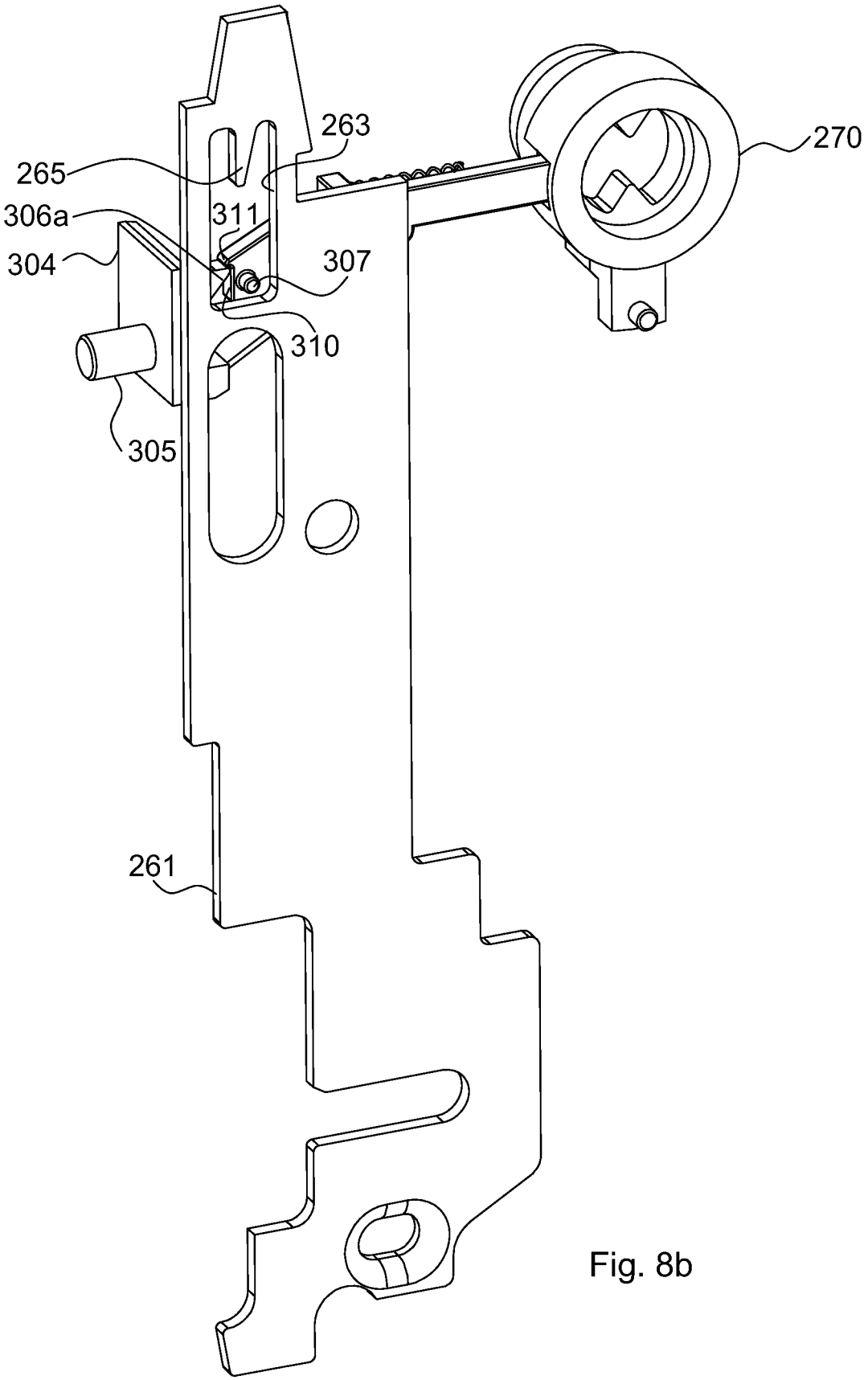

Fig. 8b

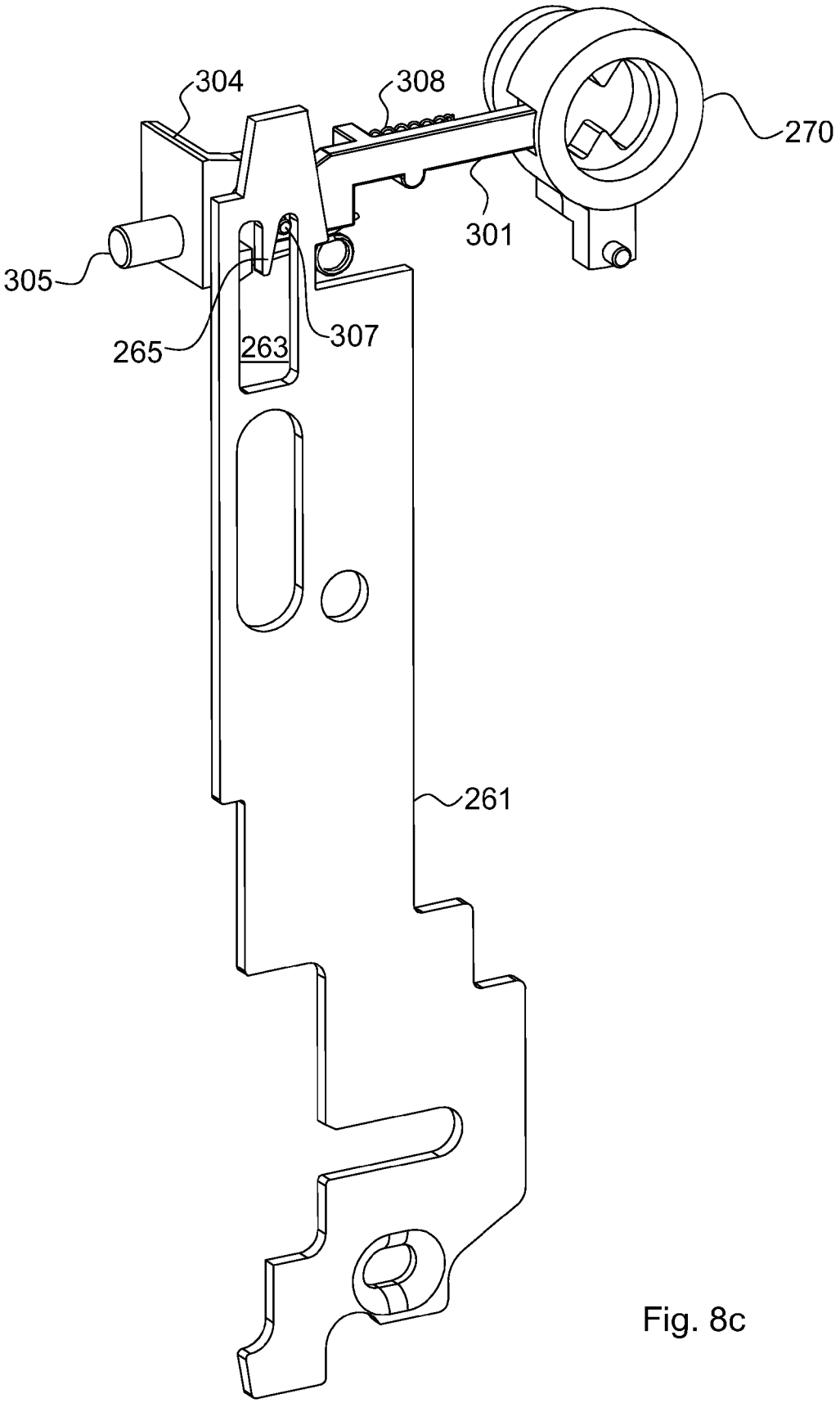

Fig. 8c

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- SE 431574 **[0004]**
- WO 03078767 A **[0005]**
- SE 10503837 **[0033]**