



(11) **EP 1 618 271 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
23.12.2009 Bulletin 2009/52

(21) Application number: **04725575.7**

(22) Date of filing: **02.04.2004**

(51) Int Cl.:
E05B 47/06^(2006.01)

(86) International application number:
PCT/SE2004/000518

(87) International publication number:
WO 2004/088069 (14.10.2004 Gazette 2004/42)

(54) **ELECTRICALLY CONTROLLED FOLLOWER UNIT AND A LOCK DEVICE COMPRISING SUCH A UNIT**

ELEKTRISCH GESTEUERTE ZUHALTEREINHEIT UND VERRIEGELUNGSVORRICHTUNG MIT EINER SOLCHEN EINHEIT

UNITE DE GACHETTE A COMMANDE ELECTRIQUE ET DISPOSITIF DE VERROUILLAGE COMPORTANT UNE TELLE UNITE

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
LT LV

(30) Priority: **04.04.2003 SE 0300984**

(43) Date of publication of application:
25.01.2006 Bulletin 2006/04

(73) Proprietor: **ASSA AB**
S-631 05 Eskilstuna (SE)

(72) Inventor: **COLLIN, Kjell**
ESKILSTUNA, SE-632 30 (SE)

(74) Representative: **Estreen, Lars J.F.**
Kransell & Wennborg KB
P.O. Box 27834
115 93 Stockholm (SE)

(56) References cited:
EP-A1- 1 291 478 EP-A2- 0 819 810
WO-A1-02/059440 FR-A1- 2 747 149

EP 1 618 271 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

FIELD OF INVENTION

[0001] The present invention relates generally to lock devices and more specifically to a follower unit and a lock device that includes an electrically controlled lever handle function.

BACKGROUND OF THE INVENTION

[0002] Certain known lock devices are of the type in which the lever handle function can be engaged and disengaged electrically at least on one side of the door to which the lock device is fitted. Activation and deactivation of the handle function is effected through the agency of a solenoid arrangement, or the like, included in the lock, said solenoid arrangement, or the like, being controlled by a lock-coupled keypad, card reader or corresponding means, or by remote control. Such electrically operated lock handles can be fitted to interior doors, for instance in the doors of storage facilities, archives and computer rooms. The lock opens immediately in response to a control signal and the lock bolt is moved automatically to a locking position when closing the door. Outer doors that are equipped with a code lock and a lock with which the handle is controlled electrically provide comfortable entrance and exit to all authorised personnel while ensuring that the doors remain locked effectively to all unauthorised persons.

[0003] Known lock arrangements of the aforesaid kind are, however, encumbered with several drawbacks. As a result of this electrical actuating facility, the lock requires space-demanding components, which has made it difficult to produce a lock of small dimensions whose handle is controlled electrically. Moreover, selective engagement and disengagement of the handles on both sides of the lock arrangement requires the inclusion of many separate components, which makes manufacture of the lock more expensive and also reduces the reliability of the lock. Furthermore, known lock devices consume far too much energy to allow power to be taken from a battery placed in the lock arrangement. Many known lock arrangements have also been difficult to reconfigure, particularly after they have been assembled or fitted.

[0004] The International Patent Publications WO 02/059440 and WO 02/059441 describe a lock arrangement adapted for the engagement and disengagement of a knob function. The lock device includes a hub that has a spindle-connected outer part, and further includes a centrally positioned follower. This outer part and the follower are interconnected by a coupling means. The coupling means is movably mounted about an axis which extends parallel with the centre axis of the hub, and can be moved between a position of engagement and a position of disengagement by means of an electrically powered solenoid. This enables selective engagement of the spindle function. However, the lock device taught by

these prior publications is space-consuming and is not suitable for modular construction of the device.

[0005] European Patent Specification EP 0 537 531 A1 describes a door lock in which a hub can be engaged selectively with a lock bolt by means of a bolt-mounted arm which selectively engages a recess in the peripheral surface of the hub. This lock construction is also space-consuming. Neither is it suited for modular construction of the lock device.

[0006] U.S. Patent Specification U.S. 4,429,556 (Kambic) describes a lock device in which a hub can be engaged selectively with a lock bolt through the agency of a spring biased coupling means that rotates together with the hub. This lock construction is complicated. Neither is it suitable for modular construction of the lock device.

[0007] French Patent Specification FR 2 747 149 describes a lock device in which a motor-driven knob engagement and disengagement means is arranged in a fitting. The arrangement takes up a large amount of space and includes a coupling means driven by an actuator in the form of an electric motor fixedly mounted to a handle pin.

[0008] European Patent Specification EP 0 819 810 A2 describes a lock device comprising an inside rotary body, an outside rotary body and coupling lever, which can be turned radially in relation to the axis of rotation of the rotary bodies for coupling the bodies rotationally fast.

SUMMARY OF THE INVENTION

[0009] One object of the present invention is to provide a follower unit and a lock device of the kind mentioned in the introduction, with which the problems associated with known technology are avoided or at least reduced. More specifically, an object of the present invention is to provide a follower unit and a lock device with which selective engagement of a hub is enabled with the aid of a simple and compact construction that is suitable for modular construction of the lock device.

[0010] The invention is based on the insight that a hub in an electrically controlled follower unit that includes several mutually separate rotating components can be provided with a coupling means that can rotate about an axis that extends at right angles to the rotational axis of the hub. In combination with an actuating means arranged separately from the hub, this enables the achievement of a compact construction that allows the coupling means to be placed closer to the centre axis of the hub than that achieved in the case of the known technology.

[0011] According to a first aspect of the invention, an inventive follower unit is characterised by the special technical features set out in the characterizing portion of claim 1.

[0012] According to a second aspect of the invention, there is provided a lock device as defined in the accompanying Claim 13.

[0013] The aforesaid drawbacks of the known technology are avoided or at least reduced, by means of the

inventive follower unit and the inventive lock device. The inventive lock device is a compact construction that includes few component parts and which also allows modular construction of the lock.

[0014] According to one preferred embodiment, the coupling means is placed on the intermediate hub part, wherewith the coupling function lies in a compact module. It is preferred that the actuating means includes a rocker, which is mounted for rotation about a rocker mounting point and which, when rotating about said mounting point, causes the coupling means to move between a coupling position and a release position, thereby achieving simple control of the follower unit function. It is preferred in particular that the actuating means includes a reciprocatingly movable forked part, which has two selectively chosen rocker coupling points, said coupling points being positioned on respective sides of the rocker mounting point. This enables the function of the follower unit to be readily readjusted between a fail locked function and a reverse function.

[0015] In the case of one preferred embodiment, the follower unit includes a movable adjustment arm that has a delimiting surface which allows the coupling means to be moved to its release position in a first position of the adjustment arm and which prevents movement of the coupling means to said release position in a second position of said adjustment arm. This enables the disengagement function of a hub-connected handle to be deactivated.

[0016] Further preferred embodiments will be apparent from the accompanying dependent Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The invention will now be described in more detail by way of example with reference to the accompanying drawings, in which

Fig. 1 is an exploded overview in perspective of a lock device constructed in accordance with the invention;

Fig. 2 is a perspective view of an electrically controlled lever handle follower unit intended for a lock device according to the invention;

Fig. 3 illustrates the handle follower unit of Fig. 2 with its casing removed;

Fig. 4 is a plan view of the handle follower unit with an electrically engaged lever handle function;

Fig. 5 is a plan view of the handle follower unit, showing an electrically disengaged lever handle function;

Fig. 6 illustrates a hub included in the handle follower unit;

Fig. 7 is an exploded view of the hub shown in Fig. 6;

Fig. 8 illustrates the co-action between the hub shown in Fig. 6 and function determining adjustment arms;

Figs. 9 and 10 illustrate a handle fail locked function controlled with the aid of an electrically controlled solenoid arrangement;

Fig. 11 shows the reverse handle function control; and

Fig. 12 is a perspective view of the co-action between the component parts of the handle unit.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0018] A preferred embodiment of an inventive lock device and an inventive handle follower unit will be described in the following text, initially with reference to Fig. 1. In this figure, the lock device is generally referenced 1 and is shown in perspective with its cover removed. The lock device includes a forend unit 10 comprising a forend 11 and a beam 12 of U-shaped cross-section welded thereto. The U-beam encloses all front-proximal lock functions, such as guiding and driving of a latch bolt 13 and a dead bolt 14.

[0019] The lock device also includes a housing, which comprises a box and a cover plate 22. These parts are in mirror image with each other, although are in other respects generally identical parts fitted to the U-beam 12 with the aid of fasteners, in the illustrated case screws and socket nuts 24a, 24b, which extend through holes 23a-d in the cover plate and through corresponding holes in the box.

[0020] Finally, the lock device includes follower units or follower modules, in the case of the illustrated embodiment a cylinder follower unit 30 and an electrically controlled handle follower unit 40. The follower units are mounted between the box 21 and the cover plate 22 and, to this end, include through-penetrating holes which register with the holes 23c and 23d in the cover plate 22 and with corresponding box mounted pins.

[0021] The cylinder follower unit 30 is essentially four-sided and includes the drive arrangements typical in the case of cylinder followers. This unit is described in detail in the pending patent application SE 0103247-3 and will not be described further in the present document.

[0022] The handle follower unit 40 is adapted for communication with an arm (not shown) that guides movement of the latch bolt between an extended and a retracted position. A pressure rod 15 of appropriate length is used in this regard. The handle follower is caused to rotate by means of a handle (not shown) that includes a four-sided pin inserted into a square opening in the handle follower. The handle follower unit 40 includes an arrangement which, when the handle follower is rotated

clockwise, as shown in the figure, urges the pressure rod 15 to the left in the figure. This causes the arm (not shown) to rotate and forcibly guide the latch bolt to its retracted position (not shown). When the spring-biased handle follower is caused to return to its starting position, the latch bolt, which is also spring-biased, is returned to its extended position.

[0023] The handle follower unit will now be described in more detail, initially with reference to Fig. 2. The handle follower unit, generally referenced 40, includes an electrically controlled actuating unit, generally referenced 50, and a hub 60 whose function is controlled by the actuating unit. The hub 60 is mounted between an upper casing 41 and a lower casing 42 and forms together with the actuating unit a module that functions as an independent part of the lock device 10.

[0024] The actuating unit 50 includes a conventional solenoid arrangement 51, including a coil and an armature which is able to move axially, up and down in Figs. 4 and 5, in response to electrical power supply to the coil. This supply may be from an external source or from a battery (not shown) provided in the lock device. The solenoid arrangement 51 causes a fork-shaped extension part 52 to move reciprocatingly, as shown by the double-headed arrow in Fig. 4. The fork-shaped part has two legs 52a, 52b, which embrace a point 53a of rotation of a rocker 53, which includes a magnet 53b on its outer end. The fork-shaped extension is also spring-biased in a downward direction in the figure, by means of a pressure spring 54. The function of the actuating unit will be described below with reference to Figs. 9-11.

[0025] Several advantages are afforded by the fact that the actuating unit is a separate component part. This enables a module construction to be obtained in which the actuating unit and the hub can be designed in accordance with specific requirements. It also enables the actual hub to be given a compact construction.

[0026] The hub 60 will now be described in detail with reference to Figs. 6 and 7. As will be seen, the hub includes an intermediate hub part 61, which lies between an upper, outer hub part 62 and a lower, outer hub part 63. The outer hub parts are identical mirror images of each other and are spring-biased by a respective handle follower spring 64a, 64b. These springs ensure that the handles coupled to the outer hub parts will be returned resiliently to their original positions. It will also be seen that the upper outer hub part 62 has a centrally placed square opening 62a for receiving a handle pin (not shown), a coupling shoulder 62b and end-position shoulders 62c, 62d for rotational limitation. The lower outer hub part has corresponding features.

[0027] The intermediate hub part 61 includes a bolt actuating projection 61a, which is coupled mechanically to the latch bolt 13 via the pressure rod 15, for movement of the latch bolt between its outer and inner end positions. The intermediate hub part also includes a driving shoulder 61b, which is coupled mechanically to the cylinder follower unit 30, see Fig. 1, so as to enable the interme-

mediate hub part 61 to be caused to rotate for activation of the latch bolt 13 by cylinder actuation.

[0028] An upper wing 65 and a lower wing 66 are mounted about a pin secured in the intermediate hub part 61. This enables the wings to move between a retracted coupling position, such as the upper wing 65 in Fig. 6, and an outwardly extended release position, such as for the lower wing 66 in Fig. 6. As will be seen, when in the coupling position the wings 65, 66 engage with the coupling shoulders 62b, 63b of the outer hub parts so that the wing, and therewith the entire intermediate hub parts 61, will rotate together with the outer hub part for which the wing is in a coupling position. If the wing is in its release position, the outer hub part will rotate independently of the intermediate hub part and depression of a lever handle coupled to the outer hub part will have no influence on the intermediate hub part, which therefore fails to influence the position of the latch bolt 13. The handle function is thus deactivated when the wing is in a release position.

[0029] The influence exerted by the wings 65, 66 in their respective positions will be described below with reference to Figs. 8-11. The Fig. 8 embodiment includes respectively an upper and a lower adjustment arm 57, 58. These arms are movable between a coupling position such as with regard to the arm 57 in Fig. 8, and a release position in regard of the arm 58 in said figure. The arms can be locked in position by means of a respective locking screw 59a, 59b, said screws extending through the casing 41 of the handle follower unit 40 and thus accessible from the outside; see, for instance, Fig. 1. The adjustment arms actuate their respective wings in the following manner. In its coupling position, a delimiting surface 57a, 58a of the adjustment arm prevents the wing from moving to its outwardly projected release position; see the arm 57 and the wing 65 in Fig. 8. This will always prevent free-coupling between the intermediate hub part and the outer hub part, and the handle function in respect of the side concerned will thus always be engaged, regardless of the effect of the actuating means. On the other hand, when in its release position, the adjustment arm allows the wing to move to its release position (see the arm 58 and the wing 66 in Fig. 8) and the position of the wing will, instead, be determined by the actuating unit 50, as described below with reference to Figs. 9 and 10.

[0030] Fig. 9 shows the actuating unit 50 and the solenoid arrangement in the absence of voltage application. The forked element is shown in its lower end position. The rocker 53 is therewith rotated clockwise to a maximum and has drawn therewith the wings 65, 66 to their release position through the agency of a magnetic force, provided that none of the adjustment arms 57, 58 prevents this from taking place with regard to a respective wing 65 or 66. The handle function is thus deactivated or disengaged in the Fig. 9 illustration.

[0031] In Fig. 10, voltage has been applied to the solenoid arrangement and the solenoid has drawn the forked element 52 to an upper end position. The right-

hand leg 52b of the forked element is connected to the rocker 53 by means of a screw 56 and the rocker 53 has therewith been rotated anti-clockwise maximally to a position in which the wings 65, 66 are prevented from leaving their coupling position. If the upper outer hub part 62 is rotated clockwise in this position, by means of a handle having a handle pin inserted into the upper outer hub part, for instance, the outer hub part will cause co-rotation of the wing 65 and therewith also of the intermediate hub part, which, in turn, actuates the latch bolt 13.

[0032] Because the wings 65 and 66 include an inclined abutment surface against the coupling shoulder 62b, 63b, which has a co-acting abutment surface, the wing will be locked in an inwardly retracted coupling position upon initial rotation of the outer hub part. It is therefore sufficient for the rocker 53 to hold in the wing for a limited length of time, for instance three seconds, provided that rotation of the outer hub part is initiated during this time period by pressing down the lever handle.

[0033] Figs. 9 and 10 show an example where the handle function is disengaged in the absence of voltage application to the solenoid arrangement, so-called fail locked function. In the case of the Fig. 11 embodiment, the rocker 53 is, instead, coupled to the left-hand leg of the forked element 52. When voltage is applied to the solenoid arrangement, resulting in upward movement of the forked element 52, the rocker 53 will, instead, rotate anti-clockwise. In distinction to the embodiments shown in Figs. 9 and 10, the lever handle function will be engaged when no voltage is applied to the solenoid arrangement 51, so-called fail unlocked function. Thus, the lock can be set to satisfy a user-desired function, by placing the screw 56 in an appropriate leg 52a, 52b. This can be readily achieved even when the lock device has been assembled, since the screw 56 can be accessed through openings provided in the cover plate of said device to this end; see Fig. 1.

[0034] Fig. 12 clearly shows the co-action between the actuating unit 50 and 60.

[0035] Although a lock device and a follower unit included in said device have been described with reference to a preferred embodiment of the invention, it will be understood by the person of average skill in this particular technical field that variations and modifications can be made within the scope of the accompanying Claims. In the case of the described embodiment, the actuating unit 50 comprises a solenoid arrangement 51. This arrangement can be substituted by an electric motor used to move the rocker 53. The motor will draw current only when the link arm is moved and therewith enable the consumption of energy to be kept to a minimum, which is beneficial when the electrical energy source consists of a battery provided in the lock device.

[0036] Even though the hub 60 has been shown to include two wings 65, 66 for selective functioning of both sides of the lock, it will be understood that one wing may suffice when needing to actuate the function of only one side of the lock. This solution may be particularly relevant

when the hub is mounted in a fitting on one side of a door. It will be understood that in this latter case, one of said outer hub parts may be omitted and the intermediate hub part coupled directly to a handle pin.

5 **[0037]** In the case of the described lock device, the intermediate hub part is driven only in one direction. It will be understood, however, that the peripheral surfaces of the outer hub parts can be designed to drive the intermediate hub part in two directions.

10 **[0038]** The wings 65, 66 have been described as being mounted on the intermediate hub part 61. It will be understood, however, that these wings or corresponding elements may, instead, be mounted on the outer hub parts and function to engage the intermediate hub part in said coupling position.

15 **[0039]** The outer hub parts 62, 63 have been described as including a respective wing-coupling shoulder 62b, 63b, such as to cause the intermediate hub part to rotate together with the outer hub parts in one direction of rotation. It will be understood, however, that a further coupling shoulder may be provided on each outer hub part, so that the intermediate hub part will rotate together with the outer hub parts in both rotational directions.

25 Claims

1. A follower unit for mounting in a lock device, wherein said follower unit (30) comprises

30 - an electrically controlled actuating means (50);
- a hub (60) having a hub axis and adapted to receive at least one lever handle pin, wherein the hub comprises

35 - a first outer hub part (62) which is rotatable about the hub axis and which is adapted to receive a first lever handle pin;

40 - an intermediate hub part (61) which is rotatable about the hub axis and coupled to a bolt in the lock device for movement of said bolt between an outer and an inner end position; and

45 - a first coupling means (65) which is movable under control of the actuating means between a coupling position in which the intermediate hub part rotates together with the first outer hub part and a release position in which the first outer hub part rotates freely in relation to said intermediate hub part, wherein the first coupling means is rotatable about an axis which extends generally at right angles to the hub axis,

50 - wherein the actuating means is separate from the hub:

55 characterised in that

- the actuating means (50) includes a rocker (53)

- which is mounted for movement about a rocker mounting point and which, upon rotation about said point, causes the coupling means (65, 66) to move between said coupling position and said release position; and
- the actuating means (50) includes a reciprocatingly movable fork-shaped part (52) which is connected to the rocker (53) via two selectively chosen coupling points disposed on respective sides of the rocker mounting point.
2. The follower unit according to Claim 1, wherein said unit comprises
 - a second outer hub part (63) which is adapted to receive a second lever handle pin, wherein said intermediate hub part (61) is disposed between the first and the second outer hub parts (62, 63); and
 - wherein said follower unit further comprises a second coupling means (66) which is movable under the control of the actuating means between a coupling position in which the intermediate hub part rotates together with the second outer hub part (63), and a release position in which the second outer hub part rotates independently of the intermediate hub part, wherein the second coupling means is rotatable about an axis which extends generally at right angles to the hub axis.
 3. The follower unit according to Claim 1 or 2, in which the coupling means (65, 66) is mounted on the intermediate hub part (61).
 4. The follower unit according to Claim 1 or 2, in which the coupling means (65, 66) is mounted on the outer hub part (62, 63).
 5. The follower unit according to any one of Claims 1-4, in which the outer hub part (62, 63) includes a coupling shoulder (62b, 63b) adapted for engagement with the coupling part (65, 66) when said part is located in its coupling position.
 6. The follower unit according to Claim 5, in which the coupling shoulder (62b, 63b) and the coupling part (65, 66) have co-acting inclined coupling surfaces such as to keep the coupling part in its coupling position upon rotation of the outer hub part (62, 63).
 7. The follower unit according to any of Claims 1-6, in which the rocker includes a magnet (53b) intended for actuation of the coupling means (65, 66).
 8. The follower unit according to any one of Claims 1-7, wherein said unit includes a coil spring (64a, 64b) mounted between the outer hub part (62, 63) and the intermediate hub part (61) and functioning to return the outer hub part to an original position.
 9. The follower unit according to any one of Claims 1-8, in which the outer hub part (62, 63) includes end position shoulders (62c, 62d) for limiting rotation of the outer hub part.
 10. The follower unit according to any one of Claims 1-9, in which the intermediate hub part (61) includes a drive shoulder (61b) adapted for mechanical coupling to a second follower unit for rotation of the intermediate hub part independently of the outer hub part (62,63).
 11. The follower unit according to any one of Claims 1-10, which includes a movable adjustment arm (57, 58) having a limitation surface (57a, 58a) which permits the coupling means (65, 66) to move to its release position in a first position of the adjustment arm, and which prevents movement of the coupling means to its release position in a second position of said adjustment arm.
 12. The follower unit according to Claim 5, in which the outer hub part (62, 63) includes a further coupling shoulder adapted for engagement with the coupling part (65, 66) when said coupling part is located in its coupling position, wherein the coupling shoulder and the further coupling shoulder are directed in mutually opposite directions of rotation of the outer hub part.
 13. A lock device comprising a follower unit according to any one of Claims 1-12.

Patentansprüche

1. Eine Zuhaltungseinheit zum Installieren in einer Schließvorrichtung, worin die Zuhaltungseinheit (30) umfasst:
 - ein elektrisch gesteuertes Bedienungsmittel (50);
 - eine Nabe (60), welche eine Nabenachse aufweist und angepasst ist, um zumindest einen Klinkenstift aufzunehmen, wobei die Nabe umfasst
 - einen ersten äußeren Nabenteil (62), welcher um die Nabenachse rotierbar ist und welcher angepasst ist, um einen ersten Klinkenstift aufzunehmen; ein Zwischennabenteil (61), welches um die Nabenachse rotierbar ist und an einen Bolzen in der Schließvorrichtung gekoppelt ist zur Bewegung des Bolzens zwischen einer äußeren und einer inneren Endposition; und
 - ein erstes Kopplungsmittel (65) welches unter der Steuerung des Betätigungsmittels zwischen

einer Kopplungsposition, in welcher das Zwischennabenteil zusammen mit dem äußeren Nabenteil rotiert, und einer Löseposition, in welchem der erste äußere Nabenteil frei in Bezug auf den mittleren Nabenteil rotiert, bewegt, wobei das erste Kopplungsmittel um eine Achse rotierbar ist, welche sich im Allgemeinen im rechten Winkel zu der Nabenachse erstreckt, - wobei das Betätigungsmittel von der Nabe getrennt ist:

dadurch gekennzeichnet, dass

- das Betätigungsmittel (50) eine Wippe (53) umfasst, welche zur Bewegung um einen Wippenbefestigungspunkt installiert ist, und welche, bei einer Drehung um diesen Punkt, eine Bewegung des Kopplungsmittels (65, 66) zwischen der Kupplungsposition und der Löseposition bewirkt; und

- das Betätigungsmittel (50) ein reziprokbewegliches Gabel geformtes Teil (52) umfasst, welches an der Wippe (53) über zwei selektiv gewählte Krüppungspunkte verbunden ist, welche auf jeweiligen Seiten des Wippenbefestigungspunkts angeordnet sind.

2. Zuhalteeinheit nach Anspruch 1, wobei die Einheit umfasst:

- einen zweiten äußeren Wippenteil (63) welcher angepasst ist um einen zweiten Klinkenstift aufzunehmen, wobei das Zwischennabenteil (61) zwischen den ersten und zweiten äußeren Nabenteilen (62, 63) angeordnet ist;

und

wobei die Zuhalteeinheit des Weiteren ein zweites Kopplungsmittel (66) umfasst, welches unter der Steuerung des Betätigungsmittels zwischen einer Kopplungsposition in welcher das Zwischennabenteil zusammen mit dem zweiten äußeren Nabenteil (63) rotiert, und einer Löseposition, in welcher das zweite äußere Nabenteil unabhängig von dem Zwischennabenteil rotiert, beweglich ist, wobei das zweite Kopplungsmittel um eine Achse, welche sich im Allgemeinen im rechten Winkel zu der Nabenachse erstreckt, rotierbar ist.

3. Zuhalteeinheit nach Anspruch 1 oder 2, in welcher das Kopplungsmittel (65, 66) an dem Zwischennabenteil (61) installiert ist.
4. Zuhalteeinheit nach Anspruch 1 oder 2, in welcher das Kopplungsmittel (65, 66) an dem äußeren Nabenteil (62, 63) installiert ist.
5. Zuhalteeinheit nach einem der Ansprüche 1 bis 4, in welchem der äußere Nabenteil (62, 63) eine Kupplerschulter (62b, 63b) umfasst, welche angepasst

ist, um in den Kupplungsteil (65, 66) einzugreifen, wenn dieser Teil sich in seiner Kupplungsposition befindet.

6. Zuhalteeinheit nach Anspruch 5, in welcher die Kupplungsschulter (62b, 63b) und der Kupplungsteil (65, 66) zusammenwirkende, geneigte Kupplungsoberflächen aufweisen, um den Kupplungsteil in seiner Kupplungsposition bei der Rotation des äußeren Nabenteils (62, 63) zu halten.

7. Zuhalteeinheit nach einem der Ansprüche 1 bis 6, in welcher die Wippe einen Magneten (53b) umfasst, welcher vorgesehen ist, um das Kopplungsmittel (65, 66) zu bedienen.

8. Zuhalteeinheit nach einem der Ansprüche 1 bis 7, wobei die Einheit eine Schraubenfeder (64a, 64b) umfasst, die zwischen dem äußeren Nabenteil (62, 63) und dem Zwischennabenteil (61) installiert ist und so wirkt, um den äußeren Nabenteil in eine Ausgangsposition zurückzubringen.

9. Zuhalteeinheit nach einem der Ansprüche 1 bis 8, in welcher der äußere Nabenteil (62, 63) Endpositionsschultern (62c, 62d) zum Begrenzen einer Drehung des äußeren Nabenteils umfasst.

10. Zuhalteeinheit nach einem der Ansprüche 1 bis 9, in welcher der Zwischennabenteil (61) eine Betätigungsschulter (61b) umfasst, welche zum mechanischen Koppeln an eine zweite Zuhalteeinheit angepasst ist, zum Drehen des Zwischennabenteils, unabhängig von dem äußeren Nabenteil (62, 63).

11. Zuhalteeinheit nach einem der Ansprüche 1 bis 10, welche einen beweglichen Anpassungsarm (57, 58) umfasst, welcher eine Begrenzungsoberfläche 57a, 58a aufweist, welche es dem Kopplungsmittel (65, 66) ermöglicht, sich in seine Löseposition zu bewegen, in einer ersten Position des Anpassungsarms, und welches eine Bewegung des Kopplungsmittels zu seiner Löseposition in einer zweiten Position des Anpassungsarms verhindert.

12. Zuhalteeinheit nach Anspruch 5, in welcher der äußere Nabenteil (62, 63) eine weitere Kupplungsschulter umfasst, welche zum Eingreifen mit dem Kupplungsteil (65, 66) angepasst ist, wenn das Kupplungsteil sich in seiner Kupplungsposition befindet, wobei die Kupplungsschulter und die weitere Kupplungsschulter in entgegengesetzte Rotationsrichtung des äußeren Nabenteils ausgerichtet sind.

13. Eine Schließvorrichtung umfassend eine Zuhalteeinheit nach einem der Ansprüche 1 bis 12.

Revendications

1. Unité d'arrêt de gâchette pour installation dans un dispositif de serrure, ou l'unité d'arrêt de gâchette (30) comprend
- un moyen de manoeuvrer (50) contrôlé électriquement;
 - un moyeu (60) ayant une axe de moyeu et étant adapté afin de recevoir au moins une goupille de poignée, ou le moyeu comprend
 - une première partie du moyeu extérieur (62) qui peut pivoter autour de l'axe de moyeu et qui est adaptée afin de recevoir une première goupille de poignée;
 - une partie du moyeu intermédiaire (61) qui peut pivoter autour de l'axe de moyeu et est couplée à un goujon dans le dispositif de serrure pour mouvement du goujon entre une position finale extérieure et une position finale intérieure; et
 - un premier moyen de couplage (65) qui est mobile sous le contrôle d'un moyen de manoeuvrer entre une position de couplage, dans laquelle la partie du moyeu intermédiaire pivote ensemble avec la première partie du moyeu extérieure et une position de déblocage dans laquelle la première partie du moyeu extérieure pivote librement en relation à la partie du moyeu intermédiaire, ou le premier moyen de couplage peut pivoter autour d'une axe qui s'étend généralement rectangulairement par rapport à l'axe du moyeu,
 - où le moyen de manoeuvrer est séparé du moyeu:
- caractérisé par le fait que**
- le moyen de manoeuvrer (50) comprend une bascule (53) qui est installée afin de bouger autour d'un point de fixation de bascule et qui, pendant une rotation autour de ce point, provoque que le moyen de couplage (65, 66) bouge entre la position de couplage et la position de déblocage; et
 - le moyen de manoeuvrer (50) inclut une partie en forme de fourchette réciproquement mobile (52) qui est connecté à la bascule (53) par deux points de couplage choisis sélectivement disposés sur des côtés respectives du point d'installation de la bascule.
2. Unité d'arrêt de gâchette de revendication 1, où l'unité comprend
- une deuxième partie du moyeu extérieure (63) qui est adaptée à recevoir une deuxième poignée, la partie du moyeu intermédiaire (61) étant disposée entre la première et la deuxième partie du moyeu extérieure (62, 63); et
 - ou l'unité d'arrêt de gâchette comprend en outre un deuxième moyen de couplage (66) qui est mobile sous le contrôle d'un moyen de manoeuvrer entre une position de couplage, dans laquelle la partie du moyeu intermédiaire pivote ensemble avec la deuxième partie du moyeu extérieure (63), et une position de déblocage, dans laquelle la deuxième partie du moyeu extérieure pivote indépendamment de la partie du moyeu intermédiaire, ou le deuxième moyen de couplage peut pivoter autour d'une axe, qui s'étend généralement rectangulairement par rapport à l'axe du moyeu.
3. Unité d'arrêt de gâchette de revendication 1 ou 2, dans laquelle le moyen de couplage (65, 66) est installé sur la partie du moyeu intermédiaire (61).
4. Unité d'arrêt de gâchette de revendication 1 ou 2, dans laquelle le moyen de couplage (65, 66) est installé sur la partie du moyeu extérieur (62, 63).
5. Unité d'arrêt de gâchette d'après une des revendications précédentes, dans laquelle la partie du moyeu extérieure (62, 63) inclut une épaulement de couplage (60 b, 63 b) adaptée pour s'engager avec la partie de couplage (65, 66) quand la partie se trouve dans sa position de couplage.
6. Unité d'arrêt de gâchette d'après la revendication 5, dans laquelle l'épaulement de couplage (62b, 63b) est la partie de couplage (65, 66) ont des surfaces de couplage inclinées coopèrent afin de garder la partie de couplage dans sa position de couplage pendant une rotation de la partie de moyeu extérieure (62,63).
7. Unité d'arrêt de gâchette d'après une des revendications 1 à 6, dans laquelle la bascule inclut un aimant (53b), prévu pour manoeuvrer le moyen de couplage (65, 66).
8. Unité d'arrêt de gâchette d'après une des revendications 1 à 7, dans laquelle l'unité inclut un ressort en spirale (64a, 64b), qui est installé entre la partie du moyeu extérieur (62, 63) et la partie du moyeu intermédiaire (61) et qui fonctionne afin de retourner la partie du moyeu extérieure à une position initiale.
9. Unité d'arrêt de gâchette d'après une des revendications 1 à 8, dans laquelle la partie du moyeu extérieure (62, 63) inclut des épaulements de position finale (62c, 62d) pour limiter la rotation d'une partie du moyeu extérieur.
10. Unité d'arrêt de gâchette d'après une des revendications

cations 1 à 9, dans laquelle la partie du moyeu intermédiaire (61) inclut une épaule à engendrer (61b), qui est adapté pour coupler mécaniquement à une deuxième unité d'arrêt de gâchette pour pivoter la partie du moyeu intermédiaire indépendamment de la partie du moyeu extérieure (62, 63). 5

11. Unité d'arrêt de gâchette d'après une des revendications 1 à 10, qui inclut un bras d'adaptation mobile (57, 58), ayant une surface limitante (57a, 58a), qui permet aux moyens de couplage (65, 66) de bouger dans sa position de déblocage dans une première position du bras d'adaptation et qui empêche un mouvement du moyen de couplage dans sa position de déblocage dans une deuxième position du bras d'adaptation. 10 15
12. Unité d'arrêt de gâchette d'après la revendication 5, dans laquelle la partie du moyeu extérieur (62, 63) inclut une épaule de couplage supplémentaire, adapté afin de s'engager avec la partie de couplage (65, 66) quand la partie de couplage se trouve dans sa position de couplage, ou l'épaule de couplage et l'épaule de couplage supplémentaire sont orientées dans des directions mutuellement opposées de rotation de la partie du moyeu extérieur. 20 25
13. Un dispositif de serrure comprenant une unité d'arrêt de gâchette d'après une des revendications 1 à 12. 30

35

40

45

50

55

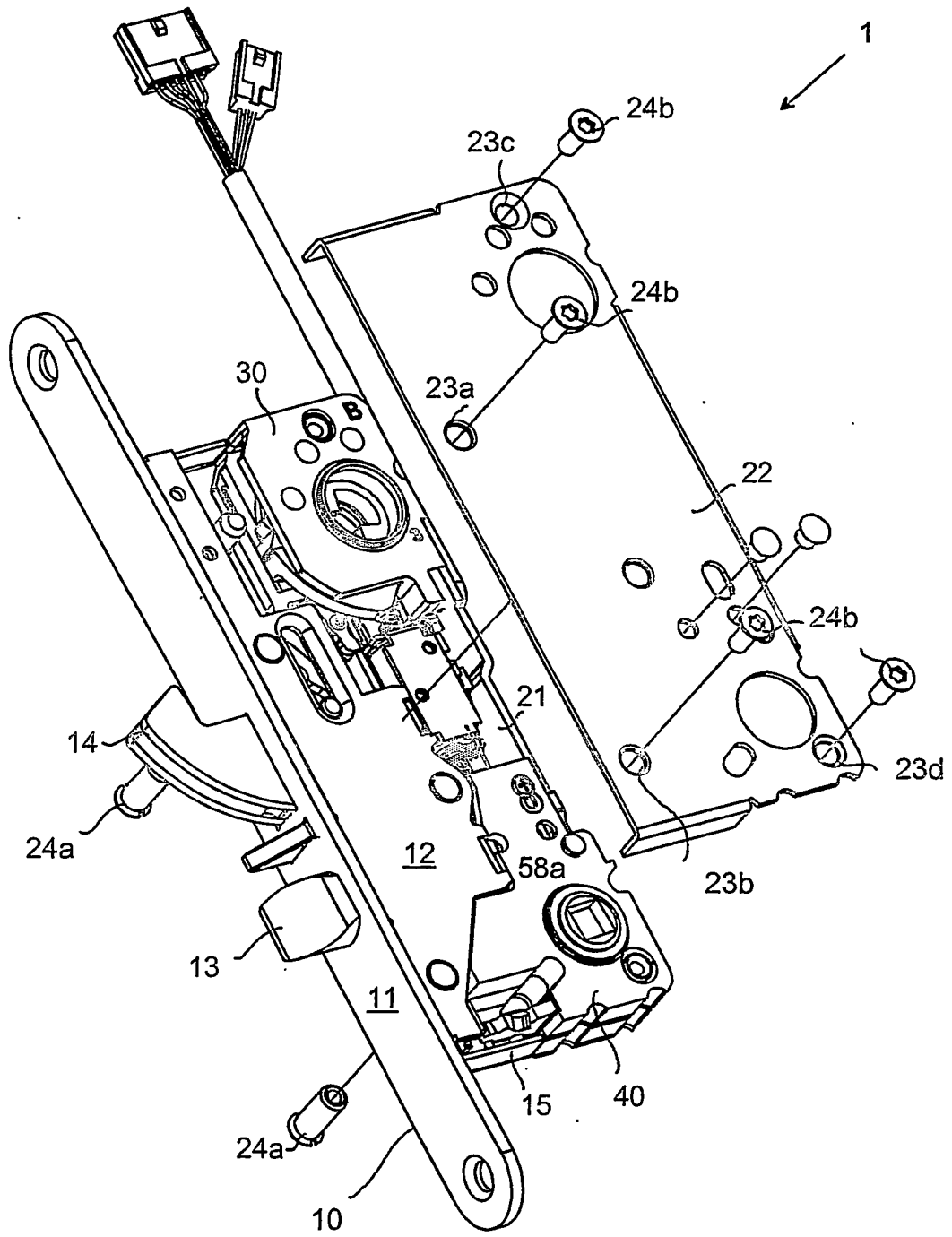


Fig. 1

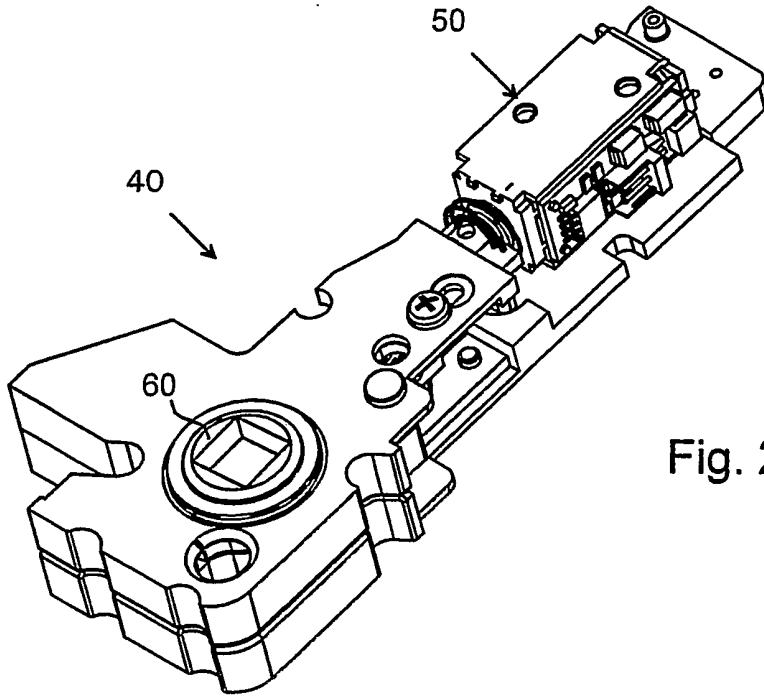


Fig. 2

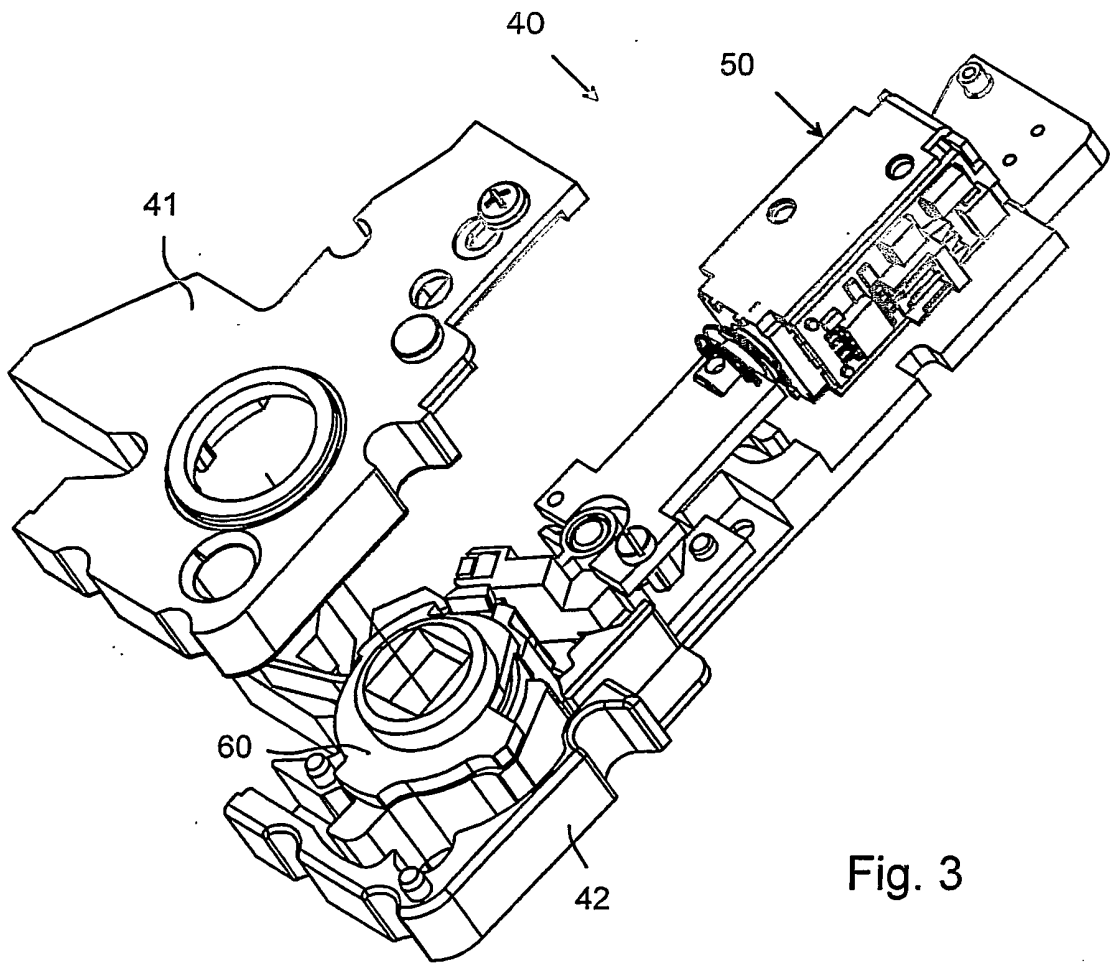


Fig. 3

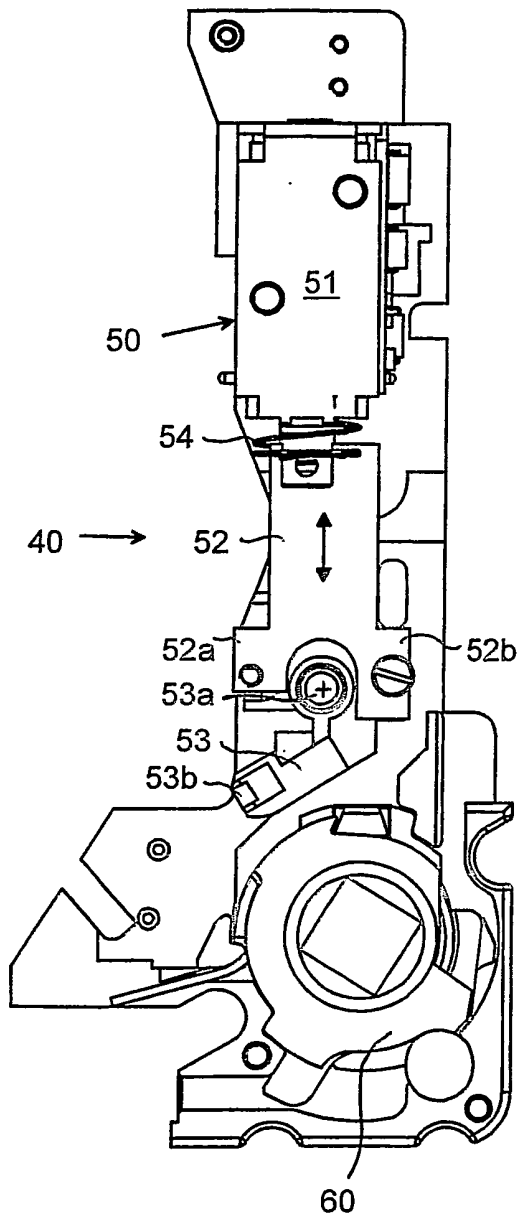


Fig. 4

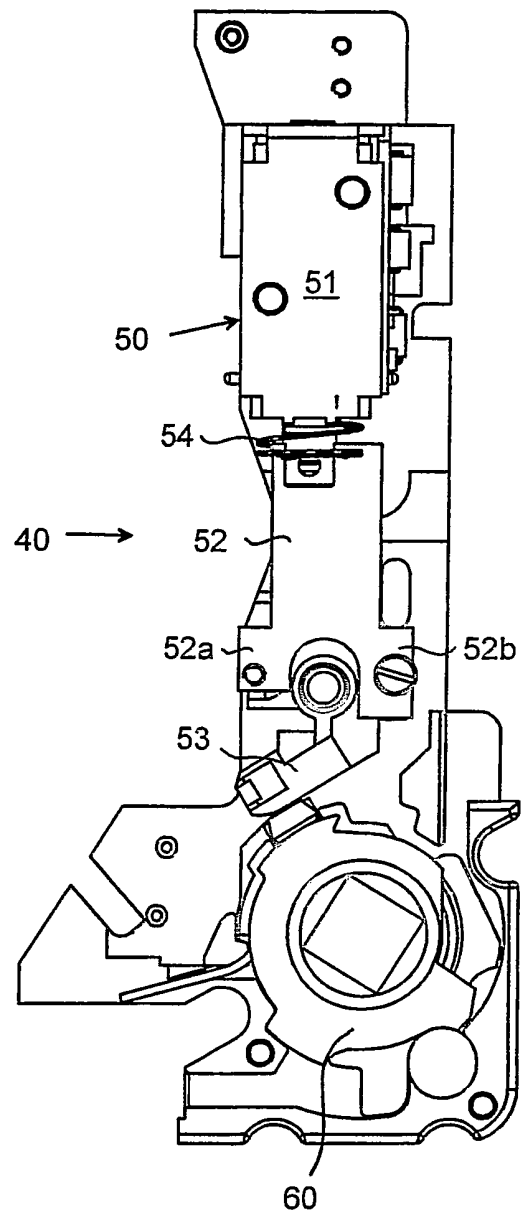


Fig. 5

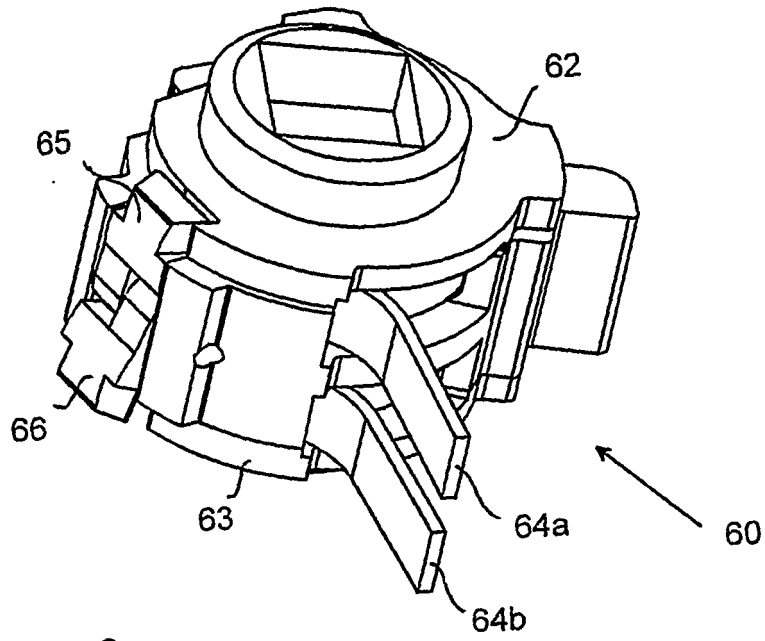


Fig. 6

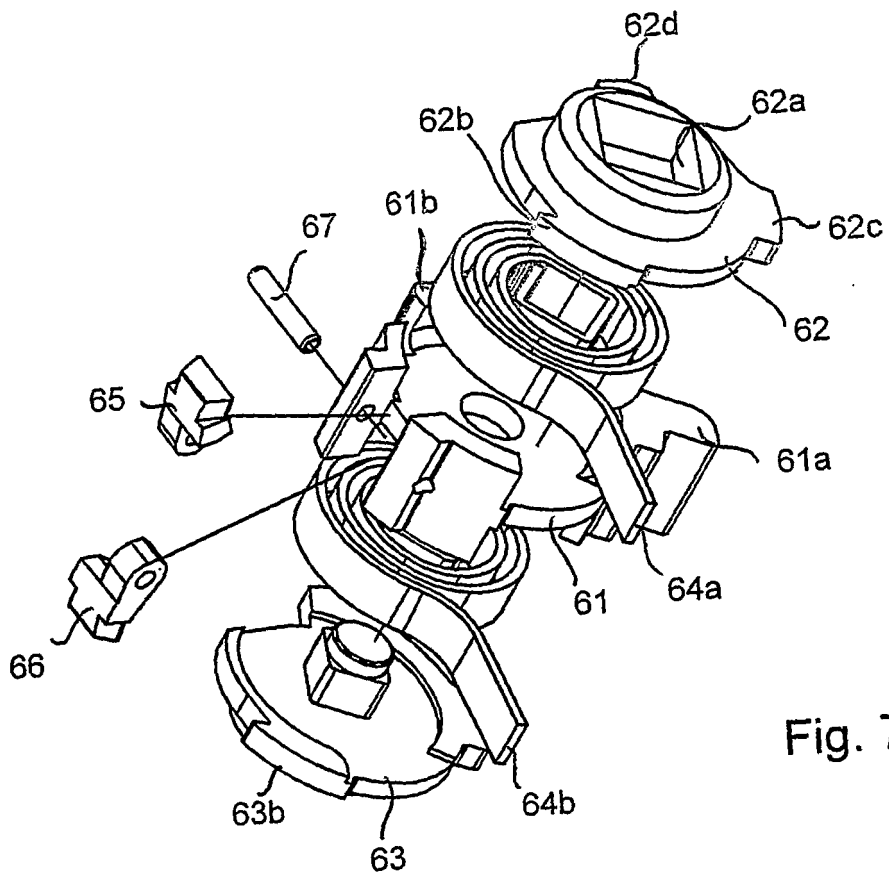


Fig. 7

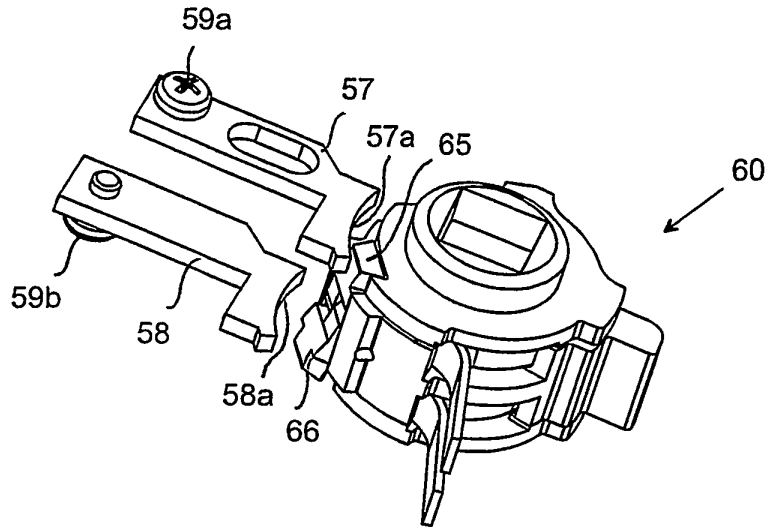


Fig. 8

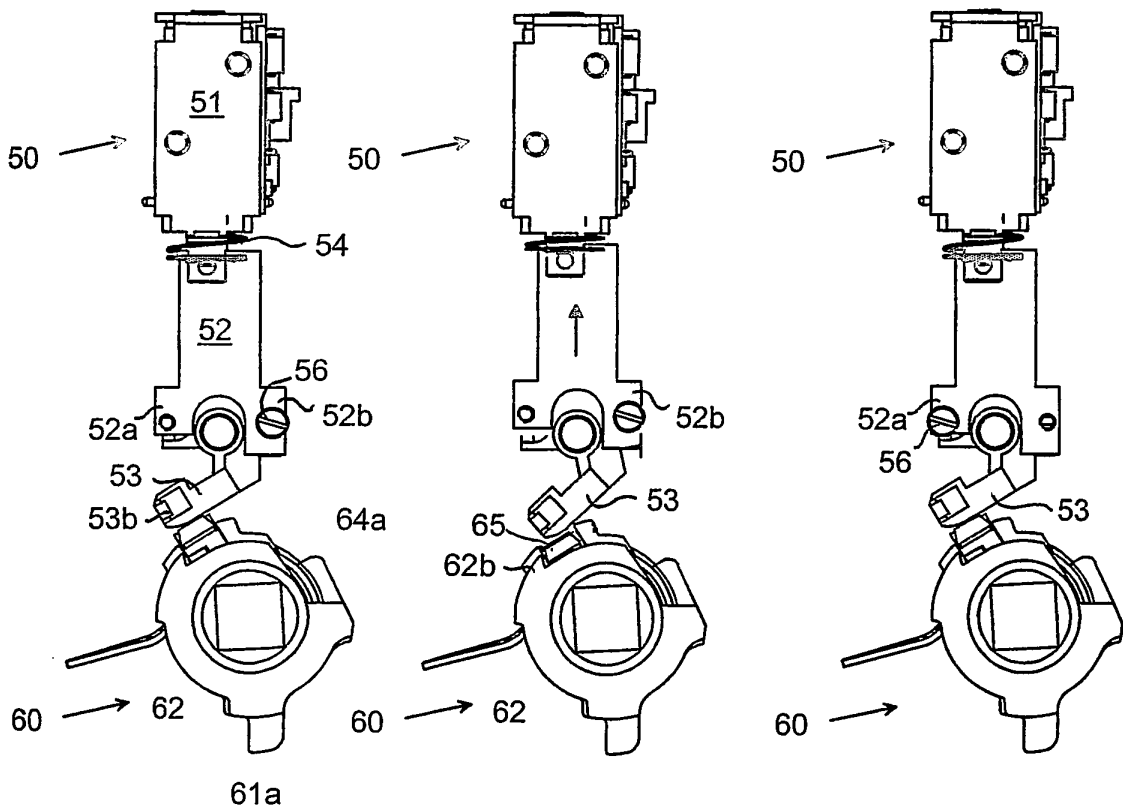


Fig. 9

Fig. 10

Fig. 11

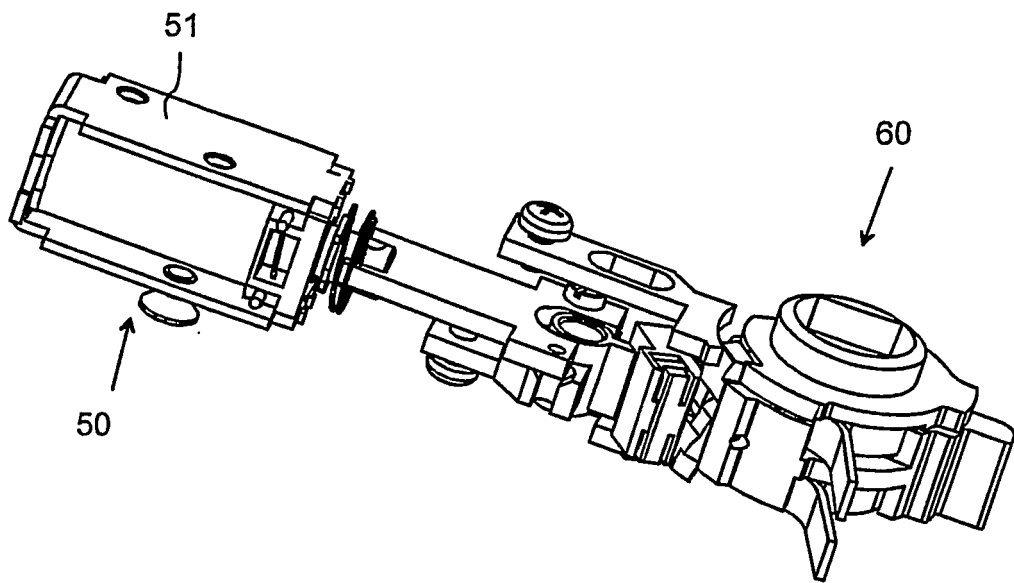


Fig. 12

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

- WO 02059440 A [0004]
- WO 02059441 A [0004]
- EP 0537531 A1 [0005]
- US 4429556 A, Kambic [0006]
- FR 2747149 [0007]
- EP 0819810 A2 [0008]
- SE 01032473 [0021]