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(54) LOCK WITH A BLOCKING FUNCTION

SCHLOSS MIT SPERRFUNKTION

VERROU AVEC FONCTION DE BLOCAGE

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Description

Area of the invention

[0001] The invention relates generally to a lock, and in particular to a lock which permits blocking of an interlocking mechanism inside the lock.

Background

[0002] Locks of the above-mentioned kind are used, for example, in different types of door. These locks can consist of a lock case, which comprises a follower, such as a cylinder follower, for the mechanical coupling of the follower by means of the rotational movement from a first coupling means. The rotational movement is taken up by the rotation of a cylinder core when this is caused to rotate by means of a key. The follower is in turn coupled by means of a second coupling means, such as a driver, for interaction with a lock plunger, for example a bolt, in order, through rotation of the key in the cylinder core, to bring about a bolting condition for the lock, in which the bolt projects from the lock case, and a non-bolting condition for the lock, in which the bolt in its entirety is essentially accommodated inside the lock case. The bolting condition corresponds to when the bolt has entered into engagement with a plate or similar.

[0003] The bolted condition should preferably be maintained for as long as the non-bolting condition is not required by causing the cylinder core to rotate by means of a key belonging to the lock.

[0004] In order to meet this security requirement, the lock can comprise a blocking means which can be displaced between a blocking position and a release position. By causing the follower to rotate by means of a key, the blocking means can be displaced into its blocking position, in which it engages with the second coupling means and in so doing blocks the actuation of the bolt. In this position, the bolt is prevented from adopting its non-bolting condition for as long as the follower is not rotated backwards by means of the first coupling means, so that the blocking means adopts its release position.

[0005] In previously disclosed locks of this kind, it has been possible to manipulate the blocking means or the locking means with the help of a thin object such as a steel wire or similar, for example inserted through a bolt opening in the face plate of the lock case.

Disclosure of the invention

[0006] One purpose of the invention is to make available an improved lock which permits the blocked interlocking of a bolt in the lock.

[0007] Another purpose is to make available a lock in which, in conjunction with the manipulation of the lock by means of objects introduced into the lock case, is prevented or made difficult to a considerable degree.

[0008] A lock comprising a lock case and a lock mechanism is made available in accordance with the foregoing, which lock mechanism is arranged inside the lock case and comprises: a bolt so arranged as to adopt a bolting position in which the bolt projects outwards in relation to the lock case, a follower for actuation of the bolt, which follower is rotatably arranged inside the lock case, a driver so arranged as to transfer movement mechanically from the follower to the bolt, which driver is so arranged as to adopt an interlocked position preventing movement of the bolt when the bolt adopts its bolting position, and a blocking mechanism for blocking movement of the driver, which blocking mechanism is so arranged as to be capable of being positioned in a blocking position and a non-blocking position, the follower and the blocking mechanism having means for operational interaction whereby the blocking mechanism can be actuated by the follower from the blocking position, the driver having a portion in rotating interaction with the follower, which portion is arranged concentrically with the follower to permit rotation about the same axis.

[0009] A more compact lock can be produced by making available a lock in which the follower and the driver are arranged concentrically. The lock mechanism can be simply encapsulated, furthermore, in order to increase security against manipulation of the lock.

[0010] The follower and the driver can be arranged with free play in one direction of rotation, so that the follower is capable of displacement relative to the driver a first part of the movement. In this way, the follower is able to interact with the blocking mechanism during the first part of the movement in order to release the driver from its blocking position.

[0011] The driver can be entrained by a second part of the movement. In this way the driver is able to entrain the bolt from its bolting position.

[0012] The lock can comprise an inner case inside the lock case, the blocking mechanism being arranged inside the inner case. The security of the lock can be further increased by arranging the blocking mechanism inside an inner case.

[0013] The follower and the driver can have interacting means for the mechanical coupling of the movement, which interacting means are arranged inside the inner case.

[0014] Manipulation of the lock is made more difficult and security is also increased by arranging the interacting devices inside the inner case.

[0015] The blocking mechanism can comprise a spring-loaded blocking element that is capable of displacement in a recess in the driver. In this way, the driver is blocked in its interlocking position by the bolt, as a consequence of which manipulation of the driver is made considerably more difficult.

[0016] The means for operational interaction can comprise sliding surfaces for permitting displacement of the blocking element when the blocking mechanism and the follower move in relation to one another, one of the sliding surfaces consisting of an inclined sliding surface. The

inclined sliding surface is able in this way to release the blocking element by rotation of the follower and to release the driver in this way. The driver is thus released by rotation of the follower, but not by means of rotation of the driver itself, for example by manipulation.

[0017] The blocking mechanism can comprise a pivotally arranged lever arm with a hook for blocking the driver in its interlocked position. An alternative arrangement for blocking of the driver in its interlocking position can be achieved in this way.

[0018] The means for operational interaction can comprise projections on the follower so arranged, in the event of rotation, as to actuate the hook for release of the driver.

Description of the drawings

[0019] Illustrative embodiments of the invention are described below in detail by way of example, with reference to the Figures, in which:

Figures 1a-b depict plan views of a lock according to a first embodiment, the lock being depicted respectively in a bolting position and in a non-bolting position.

Figure 2 depicts an exploded view of a lock mechanism in the lock in Figures 1a-b.

Figures 3a-c depict how the lock mechanism in Figure 2 is actuated from an interlocking position to a non-bolting position.

Figure 4 depicts the lock mechanism in Figures 1a-b in an interlocked position.

Figures 5a-b depict plan views of a lock according to a second embodiment, the lock being depicted respectively in a bolting position and in a non-bolting position.

Figure 6 depicts an exploded view of a lock mechanism in the lock in Figures 5a-b.

Figures 7a-c depict how the lock mechanism in Figure 6 is actuated from an interlocking condition to a non-bolting condition.

Detailed description of embodiments of the invention

[0020] An illustrative first embodiment of a lock 1 according to the invention is now described with reference to Figures 1-4.

[0021] The lock 1 comprises, among other things, a lock case 3 constituted by a housing consisting of a first and a second cover plate (not illustrated) and a lock face plate 5, a handle 7 and a latch bolt 9. The handle 7 is intended to actuate the latch bolt 9 by means of the coupling means 13, which, in conjunction with actuation of the handle 7 via the pivot 15, pushes the latch bolt 9 on a linear path L in and out through an opening in the face plate 5. By means of a spring means 14, the latch bolt 9 is preferably displaced into a position in which it projects from the face plate 5 when the handle 7 is in its neutral position.

[0022] The lock case 3 comprises a lock mechanism 11 consisting of, among other things, a bolt 17, exemplified by a swing bolt, a follower 21, which, in the depicted example, consists of a cylinder follower, and a driver 23.

[0023] The bolt 17, the follower 21 and the driver 23 are in a state of interacting mechanical coupling. Rotation of the follower 21 in the direction of rotation A' causes the driver 23 to entrain the bolt 17 into a bolting position A, as depicted in Figure 1 a. In the bolting position A, the bolt 17 projects from the face plate 5, customarily for the purpose of preventing a door, in which the lock 1 is installed, from opening. In the bolting position A, the driver 23 adopts its corresponding interlocking position A for interlocking the bolt 17.

[0024] In Figure 1b, the lock 1 is depicted in a non-bolting position B. The non-bolting position B is achieved by causing the follower 21 to rotate in a direction of rotation B'. The direction of rotation B' is a direction opposite to the direction A'. In the non-bolting position B, the driver adopts its corresponding free position B.

[0025] Rotation of the follower 21 in the direction of rotation B', causes the driver 23 to entrain the bolt 17 so that it is accommodated essentially in its entirety in the lock case 3. In this way, the opening of a door is permitted in the event that the lock case is installed in the door.

[0026] Figure 2 depicts an exploded view of the lock mechanism 11. The lock mechanism 11 consists of the bolt 17, the follower 21, the driver 23, an inner case 19, a blocking mechanism 25, a distance piece 27 and a driver spring 29.

[0027] The inner case 19 has a cylindrical through-hole so arranged as to accommodate, at least partially, the follower 21 and a portion 23-1 of the driver 23. The portion 23-1 has a through-hole arranged for rotating interaction with the follower 21. This rotating interaction is achieved by the portion 23-1 being arranged concentrically with the follower 21. In this first illustrative embodiment, the portion 23-1 is so arranged as to enclose a first cylindrical portion 21-1 of the follower 21 having a first radius r_1. A second cylindrical portion 21-2 of the follower 21 has a second radius r_2, which is greater than r_1 and is essentially the same as a radius r_3 of the through-hole in the inner case 19, thus permitting rotation of the follower 21 therein.

[0028] As illustrated in Figure 3a, the inner case 19 has a chamber 31 that is connected by means of an opening to the cylindrical through-hole. The chamber 31 is so arranged as to accommodate the blocking mechanism 25, which blocking mechanism 25 comprises a blocking element 25-1 in interaction with a blocking spring 25-2, thereby producing a sprung blocking element 25-1.

[0029] The second cylindrical portion 21-2 of the follower 21 has a radial recess 21-3 arranged in its outer peripheral surface. The radial recess 21-3 is provided to receive the blocking element 25-1, thereby blocking the driver 23 from leaving the interlocking position A with the driver in the interlocking position A. The radial recess 21-3 and the blocking element 25-1 together constitute

means for operational interaction between the follower 21 and the blocking mechanism 25. The driver 23 has a corresponding radial recess 23-4, which is aligned with the radial recess 21-3.

[0030] It can be seen in Figure 3 a that the radial recess 21-3 has a first side wall 21-3' which constitutes a sliding surface that is inclined in relation to a second side wall 21-3" in the radial recess 21-4, which second side wall constitutes an opposing side of the radial recess 21-3 in relation to the first side wall 21-3'. The radial recess 21-3 thus constitutes a converging recess, where the first side wall 21-3' presents a radially inward-converging surface towards the second side wall 21-3". The first side wall 21-3' thus permits the displacement of the blocking element 25-1 radially outwards in conjunction with rotation of the follower 21 in the direction of rotation B'. Rotation of the follower 21 in the direction of rotation A' does not permit displacement of the blocking element 25-1 from the radial recess 21-3 when the second side wall 21-3" is essentially parallel with the side surface 25-3 of the blocking element, as clearly illustrated in Figure 3 a. The displacement effect is achieved preferably by the first wall 21-3' constituting the wall which, in the event of rotation of the follower 21 in the direction B', bears against the blocking element 25.

[0031] Alternatively, the first and second walls of the radial recess can be parallel with one another, the blocking element in this case having an inclined sliding surface on its side which bears against the first wall of the radial recess in the event of rotation of the follower in the direction B'. The inclined sliding surface is preferably formed so that the blocking element tapers in its direction of extension towards the follower.

[0032] In order to prevent manipulation of the driver 23 from releasing the blocking element 25-1, the opposing walls of the recess 23-4 of the driver 23 are preferably parallel.

[0033] The driver 23 has a driving arm 23-2 for the purpose of engaging with a recess 17-1 in the bolt 17, the driver 23 being permitted upon actuation to be actuated continuously by the bolt 17 between its bolting position A and its non-bolting position B.

[0034] The through-hole in the portion 23-1 has a plurality of radial recesses 23-3 running along the periphery of the through-hole, which recesses are intended to interact with corresponding radial projections 21-4 in the follower 21. The extent of the radial recesses 23-3 in the horizontal sense is preferably greater than the extent of the corresponding radial projections 21-4 in the horizontal sense, as a result of which free play is formed between the radial recesses 23-3 and the radial projections 21-4. A certain degree of limited relative rotation between the follower 21 and the driver 23 is thus permitted in conjunction with the rotational movement of the follower 21 or the driver 23. This is illustrated in greater detail in Figures 3a-c and Figure 4.

[0035] The spring 29 is arranged in the horizontal sense and is clamped between one of the radial projections 21-4 and one of the radial recesses 23-3 in order to exert pressure between them. In this way, only displacement of the blocking element 25-1 from the radial recess 21-3 is permitted by the constant application of force by the follower 21 in the direction of rotation B'. The security of the lock is increased in this way, as it is now more difficult to raise the blocking element 25-1 up and out of the recess 21-3 by mistake through displacement.

[0036] The spring 29 also ensures that the recess 21-3 in the follower 21 is aligned with the blocking element 25-1 when the driver 23 adopts its interlocking position A.

[0037] The distance piece 27 is so arranged as to enclose the first cylindrical part 21-1 with the part 23-1 of the driver positioned between the follower 21 and the distance piece 27 in order to hold together the arrangement consisting of the follower 21, the driver 23 and the inner case 19. The follower 21 preferably bears against the first cover plate, and the distance piece 27 preferably bears against the opposing second cover plate. This permits a compact design of the lock 1.

[0038] With reference to Figures 3a-c, the subsequent function of the lock mechanism 11 is illustrated when the driver 23 is actuated from its interlocking position A to its free position B. Other details inside the lock case 3, such as the bolt 17, have been omitted for the purpose of making clear the function of the lock mechanism 11.

[0039] Depicted in Figure 3 a is the locking mechanism in its interlocking position A, in which the blocking element 25-1 blocks the movement of the driver 23 by engaging with the radial recess 21-3 of the follower 21 and the radial recess 21-4 of the driver 23. The blocking element 25-1 is accommodated in the radial recesses 21-3 and 23-4 respectively and is retained therein by means of the blocking spring 25-2.

[0040] In the event of rotation of the follower 21 in the direction of rotation B', the first surface 21-3' of the radial recess 21-3 bears against a lower surface 25-3 for the blocking element 25-1, as illustrated in Figure 3 b. The sliding surfaces that are constituted by the first wall 21-3' and the lower surface 25-3 thus permit the blocking element 25-1 to be raised up and out of the radial recesses 21-3 and 23-4 in conjunction with the aforementioned rotation.

[0041] The free play between the radial projections 21-4 and the radial recesses 23-3 and between the radial recess 21-3 and the radial recess 23-4 respectively permits a first part of the movement in the direction of rotation B', in which the driver 23 does not execute any rotation and accordingly does not bring about any actuation of the bolt 17. During this first part of the movement, the blocking element 25-1 is raised up and out of the radial recess 21-3. Further rotation of the follower 21 in the direction of rotation B' causes rotation of the driver 23 and thus actuation of the bolt 17 from the bolted position A to the non-bolted position B. In conjunction with this second part of the movement, the follower 21 entrains the driver 23 in a rotating movement by means of the radial projections 21-4 engaging with the surfaces 33 of

the radial recesses 23-3, as illustrated in Figure 4.

[0042] The design of the radial projections 21-4 and the radial recesses 23-3 thus permits two functions thanks to the free play; these are, in conjunction with a first part of the movement, to cause rotation of only the follower 21 in order to release the driver 23 from its blocked interlocked position A and subsequently, in conjunction with a second part of the movement, to entrain the driver 23 in order to permit actuation of the bolt 17.

[0043] Depicted in Figure 3c is the locking mechanism 11 when the driver is in its free position B after having being rotated through the first part of the movement and through the second part of the movement in the direction of rotation B'. This Figure corresponds to what is depicted in Figure 1 b.

[0044] An illustrative second embodiment of a lock 1' according to the invention is now described with reference to Figures 5 a - 7 c. In a similar manner to that previously described in relation to Figures 1 a and 1 b, the lock comprises a lock case 3' which is constituted by a first and a second cover plate (not illustrated) and a face plate 5'. The lock 1' also comprises a latch bolt 9', which is capable of actuation by means of a handle 7'. The function of the latch bolt 9' and the handle 7' is similar to that already described above, for which reason further description of this has been omitted here.

[0045] The lock case 3' also comprises a lock mechanism 11', which consists of, among other things, a bolt 17', a follower 21' and a driver 23'. Similarly to the first embodiment, the bolt 23' is capable of mechanical actuation by means of the follower 21', in this example a cylinder follower, via the driver 23'.

[0046] Depicted in Figure 5 a is the bolt 17' in its bolting position A, which can be achieved by causing the follower 21' to rotate in a direction of rotation A'. In the bolting position A, the driver 23' adopts its corresponding interlocking position A.

[0047] Depicted in Figure 5b is the bolt 17' in its non-bolting position B, which can be achieved by causing the follower 21' to rotate in a direction of rotation B'. In the non-bolting position B, the driver 23' adopts its corresponding free position B.

[0048] Figure 6 depicts an exploded view of the lock mechanism 11'. The lock mechanism 11' comprises the driver 23', two followers 21', the bolt 17', a blocking mechanism 34 and cover plates 43-1 and 43-2. The blocking mechanism comprises a blocking element housing 35, a blocking element 37, a lever arm spring 39 and a pivot shaft 41.

[0049] The driver 23' has a portion 23'-1 in rotatable interaction with the followers 21', which driver 23' has an entraining arm 23'-2 that is so arranged, in conjunction with rotation of the followers 21', as to actuate the bolt 17' mechanically between its bolting position A and its non-bolting position B. The followers 21' are arranged concentrically with the portion 23'-1 of the driver in that the followers 21' are enclosed by the portion 23'-1, which portion 23'-1 has a circular through-hole 23'-5 for the arrangement of the followers 21' therein.

[0050] The blocking element housing 35 has a channel 35-1 for accommodating the blocking element 37 therein. The blocking element housing 35 has an upper surface 35-5, in which the channel 35-1 has an opening 35-6. A groove 35-2 is present in the remote end of the channel 35-1 in relation to the opening 35-6. The groove 35-2 is oriented transversely in relation to the direction of extension of the channel 35-1. The blocking element 37 comprises a lever arm 37-4 and has a hook 37-1 at its corresponding end for the purpose of enabling the hook 37-1 to engage with the groove 35-2 when the driver 23' adopts its interlocking position A. The blocking element 37 is thus pivotable in the channel 35-1 via an articulation that is formed by a transcurrent hole 37-2 in the blocking element and a through-hole 23'-3 in the driver 23' and the pivot shaft 41 accommodated in these holes.

[0051] A lever arm spring 39 is arranged in the chamber 35-3 of the blocking element housing 35, which lever arm spring 39 bears against the blocking element 37 and thus exerts a force on the hook 37-1 for its engagement with the groove 35-2 when the driver 23' is in its interlocking position A.

[0052] The blocking element 37 has a recess 37-3 at one end of the blocking element 37, which end is accommodated in the blocking element housing 35. This end projects into the circular through-hole 23'-5 through an opening 23'-4 in the portion 23'-1. The blocking element 37 is so arranged as to be actuated by means of an axial projection 21'-3 on each of the followers 21, which projections engage with the recess 37-3. Rotation of the followers 21' in conjunction with a first part of the movement, starting from the interlocking position A, causes the blocking element 37 to pivot about the pivot shaft 41 in a direction away from the groove 35-2 in order to push the hook 37-1 out of it. In conjunction with a second part of the movement of the followers 21', the blocking element 37 slides partially out of the channel 35-1 through the opening 35-6 and permits rotation of the driver 23' during the second part of the movement.

[0053] The blocking element housing 35 has an anti-poking guard 35-4, which consists of a ridge next to the opening 35-6 along a side adjacent to the bolt 17'.

[0054] The function of the lock mechanism 11' when the driver 23' is actuated from its interlocking position A to its free position B is illustrated below with reference to Figures 7a-c. Other details inside the lock case 3', such as the bolt 17', have been omitted for the purpose of making clear the function of the lock mechanism 11. In order further to facilitate understanding, only one of the followers 21' is depicted here. The functional principle and the structure are the same for both followers 21'.

[0055] Figure 7 a depicts the lock mechanism 11' when the driver 23' is in its interlocking position A. In the interlocking position A, the driver 23' bears against the surface 35-5, which prevents access to the blocking element 37. In particular, the anti-poking guard 35-4 is positioned in such a way as to make access to the blocking element

37 more difficult by functioning as a blocking barrier to the blocking element 37 in the event of attempts at manipulation being made, for example via a gap between the bolt 17' and the face plate 5'.

[0056] The hook 37-1 of the blocking element 37 is in engagement with the groove 35-2, thereby preventing actuation of the driver 23'. The spring 39 in this position pushes against the blocking element's 37 in order to ensure the engagement between the hook 37-1 and the groove 35-2.

[0057] Rotation of the follower 21' in the direction of rotation B' causes the projection 21'-3 the recess 37-3 and to apply a force F thereto. In conjunction with the first part of the movement of the follower 21', the hook 37-1 is forced by pivoting about the pivot shaft 41 in a direction of rotation which corresponds to the direction of rotation A', in conjunction with which the blocking element 37 is released. This is illustrated in Figure 7 b.

[0058] Depicted in Figure 7c is a position of the lock mechanism 11' in which the released blocking element 37 slides in the channel 35-1 during the second part of the movement of the follower 21' in the direction of rotation B'. It should be appreciated that the first part and the second part of the movement can consist of a continuous rotating movement, both for the first and for the second embodiment.

[0059] When the blocking element 37 has been released from its blocking position, actuation of the driver 23' is thus permitted through the interaction between the projection 21'-3 and the recess 37-3 in the blocking element 37, which interact mechanically with the driver 23' via the pivot shaft 41. When the driver 23' has been released from its interlocking position A, actuation of the bolt 17' is permitted, thereby enabling the bolt to adopt its non-bolting position B.

[0060] Illustrative embodiments of the invention are described above. The invention is not restricted to these embodiments, but can be varied freely within the scope of the following Patent Claims. For example, the lock can be of the Espagnolette hook bolt type, and the followers 21, 21' can can consist of push-actuated followers or handle followers.

Claims

1. Lock (1; 1') comprising a lock case (3; 3') and a lock mechanism (11; 11'), which lock mechanism (11; 11') is arranged inside the lock case (3; 3') and comprises:

   a bolt (17; 17') so arranged as to adopt a bolting position (A) in which the bolt projects outwards in relation to the lock case (3; 3'),
   a follower (21; 21') for actuation of the bolt (17; 17'), which follower (21; 21') is rotatably arranged inside the lock case (3; 3'),
   a driver (23; 23') so arranged as to transfer movement mechanically from the follower (21; 21') to the bolt (17; 17'), which driver (23; 23') is so arranged as to adopt an interlocked position (A) preventing movement of the bolt (17; 17') when the bolt (17; 17') adopts its bolting position (A),
   a blocking mechanism (25; 34) for blocking movement of the driver (23; 23'), which blocking mechanism (25; 34) is so arranged as to be capable of being positioned in a blocking position and a non-blocking position,
   the follower (21; 21') and the blocking mechanism (25; 34) having means (21-3, 25-1; 21'-3, 37-3) for operational interaction whereby the blocking mechanism (25; 34) can be actuated by the follower (21; 21') from the blocking position (A),
   the driver (23; 23') having a portion (23-1; 23'-1) in rotating interaction with the follower (21; 21'), which portion (23-1; 23'-1) is arranged concentrically with the follower (21; 21') to permit rotation about the same axis.

2. Lock (1; 1') according to Claim 1, in which the follower (21; 21') and the driver (23; 23') are arranged with free play in one direction of rotation, so that the follower (21; 21') is capable of displacement relative to the driver (23; 23') during a first part of the movement.

3. Lock (1; 1') according to Claim 2, in which the follower (21; 21') interacts with the blocking mechanism (25; 34) during the first part of the movement in order to release the driver (23; 23') from its blocking position (A).

4. Lock (1; 1') according to Claim 2 or 3, in which the driver (23; 23') is entrained by a second part of the movement.

5. Lock (1; 1') according to one or other of the preceding Claims, in which the driver (23; 23') is provided with an arm (23-2; 23'-2) for actuation of the bolt (17; 17').

6. Lock (1) according to one or other of the preceding Claims, comprising an inner case (19) inside the lock case (3), the blocking mechanism (25) being arranged inside the inner case (19).

7. Lock (1) according to Claim 6, in which the follower (21) and the driver (23) have interacting means (21-3, 25-1) for the mechanical coupling of the movement, which interacting means (21-3, 25-1) are arranged inside the inner case (19).

8. Lock (1) according to one or other of the preceding Claims, in which the blocking mechanism (25) comprises a spring-loaded blocking element (25-1) that is capable of displacement in a recess (23-4) in the

driver (23).

9. Lock (1) according to Claim 8, in which the means (21-3, 25-1) for operational interaction comprise sliding surfaces (21-3', 25-3) for producing displacement of the blocking element (25-1) when the blocking mechanism (25) and the follower (21) move in relation to one another, one of the sliding surfaces consisting of an inclined sliding surface.

10. Lock (1') according to one or other of Claims 1-5, in which the blocking mechanism (25) comprises a pivotally arranged lever arm (37) with a hook (37-1) for blocking the driver (23') in its interlocked position (A).

11. Lock (1') according to Claim 10, in which the means (21'-3, 37-3) for operational interaction comprise projections (21'-3) on the follower (21') so arranged during rotation as to actuate the hook (37-1) for release of the driver (23').

12. Lock (1') according to Claim 10 or 11, in which the follower (21') is so arranged as to actuate the bolt (17') via the blocking element (37).

13. Lock (1') according to one or other of Claims 10-12, in which the follower (21') is arranged inside the portion (23'-1).

14. Lock (1; 1') according to one or other of the preceding Claims, in which the bolt (17; 17') is a swing bolt.

Patentansprüche

1. Schloss (1; 1') umfassend einen Schlosskasten (3; 3') und einen Verriegelungsmechanismus (11; 11'), wobei der Verriegelungsmechanismus (11; 11') innerhalb des Schlosskastens (3; 3') angeordnet ist und:

einen Riegel (17; 17'), der derart angeordnet ist, dass er eine Verriegelungsposition (A) einnimmt, in welcher der Riegel in Bezug auf den Schlosskasten (3; 3') nach außen ragt,
einen Mitläufer (21; 21') zur Betätigung des Riegels (17; 17'), wobei der Mitläufer (21; 21') innerhalb des Schlosskastens (3; 3') drehbar angeordnet ist,
einen Treiber (23; 23'), der derart angeordnet ist, dass er die Bewegung vom Mitnehmer (21; 21') mechanisch auf den Riegel (17; 17') überträgt), wobei der Treiber (23; 23') derart angeordnet ist, dass er eine verriegelte Stellung (A) einnimmt, welche eine Bewegung des Riegels (17; 17') verhindert, wenn der Riegel (17; 17') seine Verriegelungsposition (A) einnimmt,
einen Sperrmechanismus (25; 34) zum Sperren der Bewegung des Treibers (23; 23'), wobei der Sperrmechanismus (25; 34) derart angeordnet ist, dass er in einer Sperrstellung und einer nicht sperrenden Stellung positioniert werden kann, umfasst,
der Mitläufer (21; 21') und der Sperrmechanismus (25; 34) haben Mitteln (21-3, 25-1; 21'-3, 37-3) zum funktionellen Zusammenwirken, wobei der Sperrmechanismus (25; 34) durch den Mitläufer (21; 21') aus der Sperrstellung (A) bewegt werden kann,
der Treiber (23; 23') aufweisend einen Abschnitt (23-1; 23'-1) in drehendem Zusammenwirken mit dem Mitläufer (21; 21'), wobei der Abschnitt (23-1, 23'-1) konzentrisch mit dem Mitläufer (21; 21') angeordnet ist, um eine Drehung um dieselbe Achse zu ermöglichen.

2. Schloss (1; 1') nach Anspruch 1, in dem der Mitläufer (21; 21') und der Treiber (23; 23') mit einem Spielraum in einer Drehrichtung angeordnet sind, sodass sich der Mitläufer (21; 21') während eines ersten Teils der Bewegung relativ zum Treiber (23; 23') verschieben kann.

3. Schloss (1; 1') nach Anspruch 2, in dem der Mitläufer (21; 21') während des ersten Teils der Bewegung mit dem Sperrmechanismus (25; 34) zusammenwirkt, um den Treiber (23; 23') aus seiner Sperrstellung (A) zu lösen.

4. Schloss (1; 1') nach Anspruch 2 oder 3, in dem der Treiber (23; 23') durch einen zweiten Teil der Bewegung mitgenommen wird.

5. Schloss (1; 1') nach einem der vorstehenden Ansprüche, in dem der Treiber (23; 23') mit einem Arm (23-2, 23'-2) zur Betätigung des Riegels (17; 17') versehen ist.

6. Schloss (1) nach einem der vorstehenden Ansprüche, aufweisend einen Innenkasten (19) innerhalb des Schlosskastens (3), wobei der Sperrmechanismus (25) innerhalb des Innenkastens (19) angeordnet ist.

7. Schloss (1) nach Anspruch 6, in dem der Mitläufer (21) und der Treiber (23) zusammenwirkende Mitteln (21-3, 25-1) zur mechanischen Verbindung der Bewegung aufweisen, wobei die zusammenwirkenden Mitteln (21-3, 25-1) innerhalb des Innenkastens (19) angeordnet sind.

8. Schloss (1) nach einem der vorstehenden Ansprüche, in dem der Sperrmechanismus (25) ein federbelastetes Sperrelement (25-1) aufweist, das in einer Ausnehmung (23-4) im Treiber (23) verschoben werden kann.

9. Schloss (1) nach Anspruch 8, in dem die Mitteln (21-3, 25-1) zum funktionellen Zusammenwirken Gleitflächen (21-3', 25-3) zum Bewirken einer Verschiebung des Sperrelements (25-1), wenn sich der Sperrmechanismus (25) und der Mitläufer (21) relativ zueinander bewegen, umfassen, wobei eine der Gleitflächen aus einer geneigten Fläche besteht.

10. Schloss (1') nach einem der Ansprüche 1 - 5, in dem der Sperrmechanismus (25) einen schwenkbar angeordneten Hebelarm (37) mit einem Haken (37-1) zum Sperren des Treibers (23') in dessen verriegelter Position (A) aufweist.

11. Schloss (1') nach Anspruch 10, in dem die Mitteln (21'-3, 37-3) zum funktionellen Zusammenwirken Vorsprünge (21'-3) am Mitläufer (21') aufweisen, die derart angeordnet sind, dass sie während der Drehung den Haken (37-1) zum Lösen des Treibers (23') betätigen.

12. Schloss (1') nach Anspruch 10 oder 11, in dem der Mitläufer (21') derart angeordnet ist, dass er den Riegel (17') über das Sperrelement (37) betätigt.

13. Schloss (1') nach einem der Ansprüche 10 - 12, in dem der Mitläufer (21') innerhalb des Abschnitts (23'-1) angeordnet ist.

14. Schloss (1; 1') nach einem der vorstehenden Ansprüche, in dem der Riegel (17; 17') ein Schwenkriegel ist.

Revendications

1. Verrou (1 ; 1') comprenant un boîtier de verrou (3 ; 3') et un mécanisme de verrouillage (11 ; 11'), ledit mécanisme de verrouillage (11 ; 11') étant disposé à l'intérieur du boîtier de verrou (3 ; 3') et comprenant :

un boulon (17 ; 17') disposé de manière à adopter une position de boulonnage (A) dans laquelle le boulon fait saillie vers l'extérieur par rapport au boîtier de verrou (3 ; 3'),
un suiveur (21 ; 21') pour l'actionnement du boulon (17 ; 17'), ledit suiveur (21 ; 21') étant disposé de façon rotative à l'intérieur du boîtier de verrou (3 ; 3'),
un entraîneur (23 ; 23') disposé de manière à transmettre un mouvement mécaniquement du suiveur (21 ; 21') au boulon (17 ; 17'), ledit entraîneur (23 ; 23') étant disposé de manière à adopter une position inter-verrouillée (A) empêchant le mouvement du boulon (17 ; 17') lorsque le boulon (17 ; 17') adopte sa position de boulonnage (A),
un mécanisme de blocage (25 ; 34) destiné à bloquer le mouvement de l'entraîneur (23 ; 23'), ledit mécanisme de blocage (25 ; 34) étant disposé de manière à pouvoir être positionné dans une position de blocage et une position de non blocage,
le suiveur (21 ; 21') et le mécanisme de blocage (25 ; 34) comportant des moyens (21-3, 25-1 ; 21'-3, 37-3) pour une interaction fonctionnelle permettant au mécanisme de blocage (25 ; 34) d'être actionné par le suiveur (21 ; 21') de la position de blocage (A),
l'entraîneur (23 ; 23') comportant une partie (23-1 ; 23'-1) en interaction rotative avec le suiveur (21 ; 21'), ladite partie (23-1 ; 23'-1) étant disposée de façon concentrique avec le suiveur (21 ; 21') pour permettre la rotation autour du même arbre.

2. Verrou (1 ; 1') selon la revendication 1, dans lequel le suiveur (21 ; 21') et l'entraîneur (23 ; 23') sont disposés avec un jeu dans une direction de rotation, de telle façon que le suiveur (21 ; 21') peut se déplacer par rapport à l'entraîneur (23 ; 23') pendant une première partie du mouvement.

3. Verrou (1 ; 1') selon la revendication 2, dans lequel le suiveur (21 ; 21') interagit avec le mécanisme de blocage (25 ; 34) pendant la première partie du mouvement pour libérer l'entraîneur (23 ; 23') de sa position de blocage (A).

4. Verrou (1 ; 1') selon la revendication 2 ou 3, dans lequel l'entraîneur (23 ; 23') est entraîné par une deuxième partie du mouvement.

5. Verrou (1 ; 1') selon l'une quelconque des revendications précédentes, dans lequel l'entraîneur (23 ; 23') est pourvu d'un bras (23-2 ; 23'-2) pour l'actionnement du boulon (17 ; 17').

6. Verrou (1) selon l'une quelconque des revendications précédentes, comprenant un boîtier intérieur (19) à l'intérieur du boîtier de verrou (3), le mécanisme de blocage (25) étant disposé à l'intérieur du boîtier intérieur (19).

7. Verrou (1) selon la revendication 6, dans lequel le suiveur (21) et l'entraîneur (23) comportent des moyens d'interaction (21-3, 25-1) pour l'accouplement mécanique du mouvement, lesdits moyens d'interaction (21-3, 25-1) étant disposés à l'intérieur du boîtier intérieur (19).

8. Verrou (1) selon l'une quelconque des revendications précédentes, dans lequel le mécanisme de blocage (25) comprend un élément de blocage sollicité par ressort (25-1), lequel est capable de se déplacer

dans une cavité (23-4) dans l'entraîneur (23 ; 23').

9. Verrou (1) selon la revendication 8, dans lequel les moyens (21-3, 25-1) pour l'interaction fonctionnelle comprennent des surfaces de glissement (21-3', 25-3) pour réaliser un déplacement de l'élément de blocage (25-1) lorsque le mécanisme de blocage (25) et le suiveur (21) se déplacent l'un par rapport à l'autre, l'une des surfaces de glissement consistant en une surface de glissement inclinée.

10. Verrou (1') selon l'une quelconque des revendications 1 à 5, dans lequel le mécanisme de blocage (25) comprend un bras de levier (37) disposé de façon pivotante avec un crochet (37-1) pour bloquer l'entraîneur (23 ; 23') sans sa position inter-verrouillée (A).

11. Verrou (1') selon la revendication 10, dans lequel les moyens (21'-3, 37-3) pour l'interaction fonctionnelle comprennent des saillies (21'-3) sur le suiveur (21'), disposées de manière à actionner le crochet (37-1) pendant la rotation pour libérer l'entraîneur (23').

12. Verrou (1') selon la revendication 10 ou 11, dans lequel le suiveur (21') est disposé de manière à actionner le boulon (17') par le biais de l'élément de blocage (37).

13. Verrou (1') selon l'une quelconque des revendications 10 à 12, dans lequel le suiveur (21') est disposé à l'intérieur de la partie (23'-1).

14. Verrou (1 ; 1') selon l'une quelconque des revendications précédentes, dans lequel le boulon (17 ; 17') est un boulon à oeil.

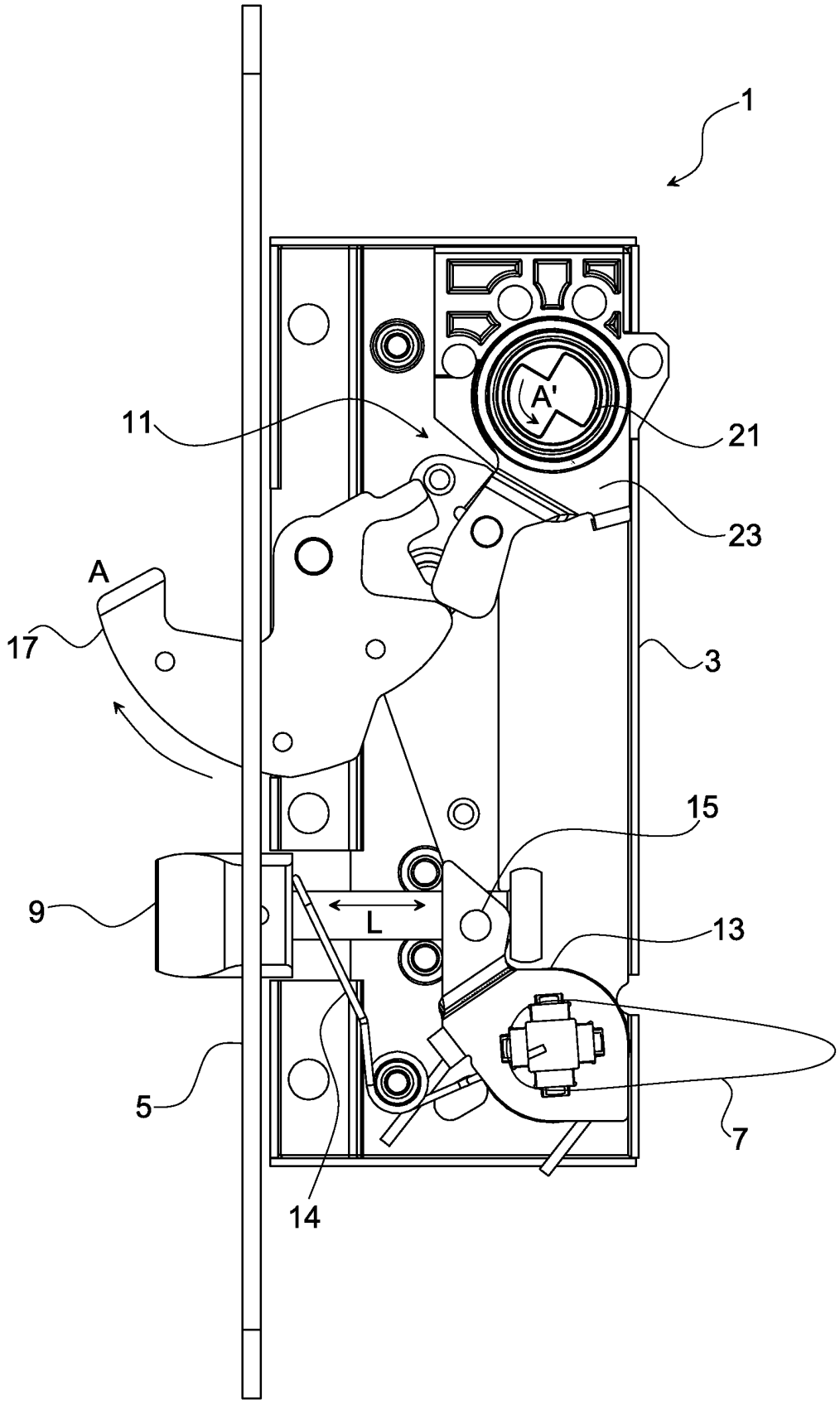


Fig. 1a

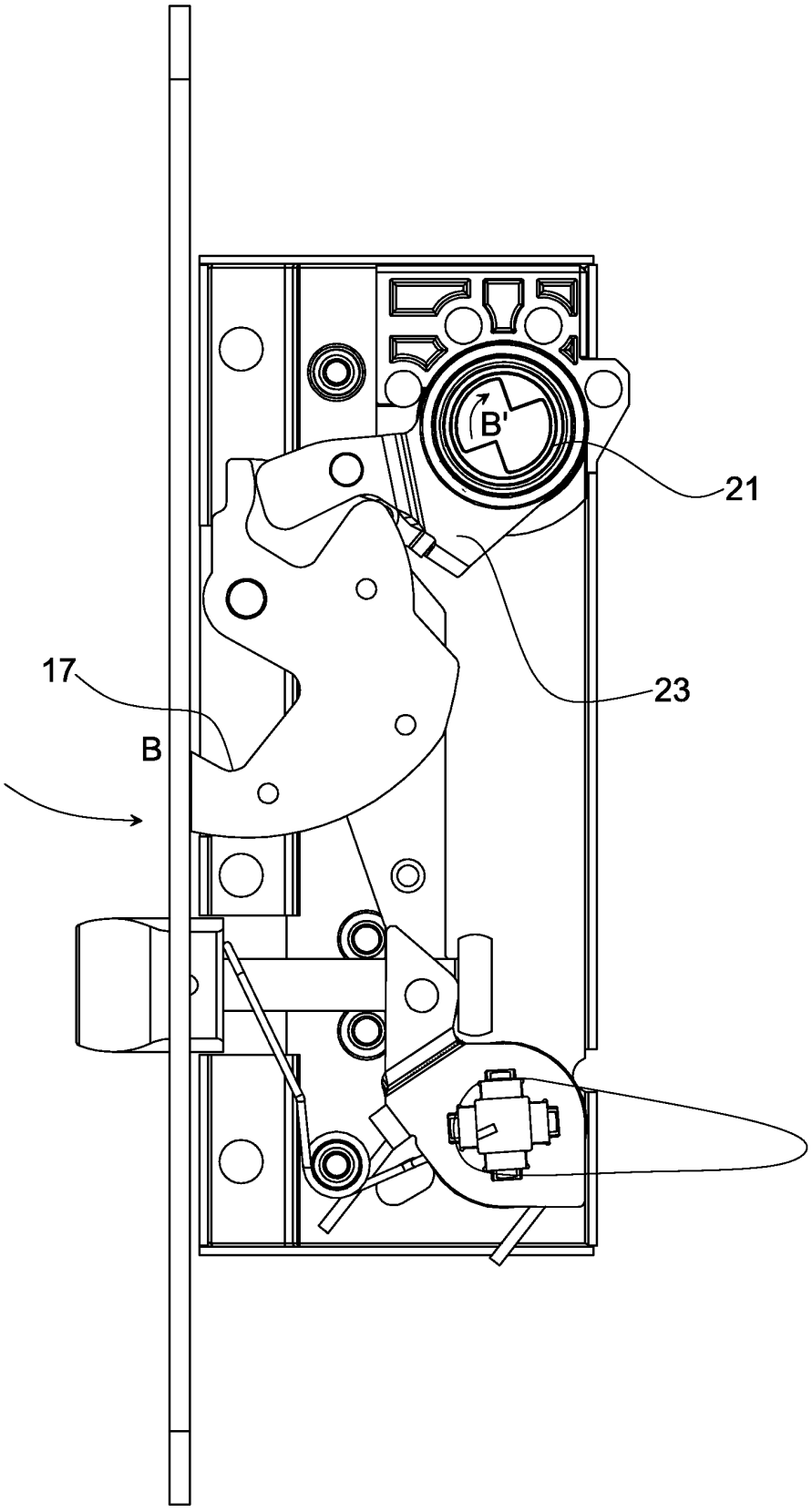


Fig. 1b

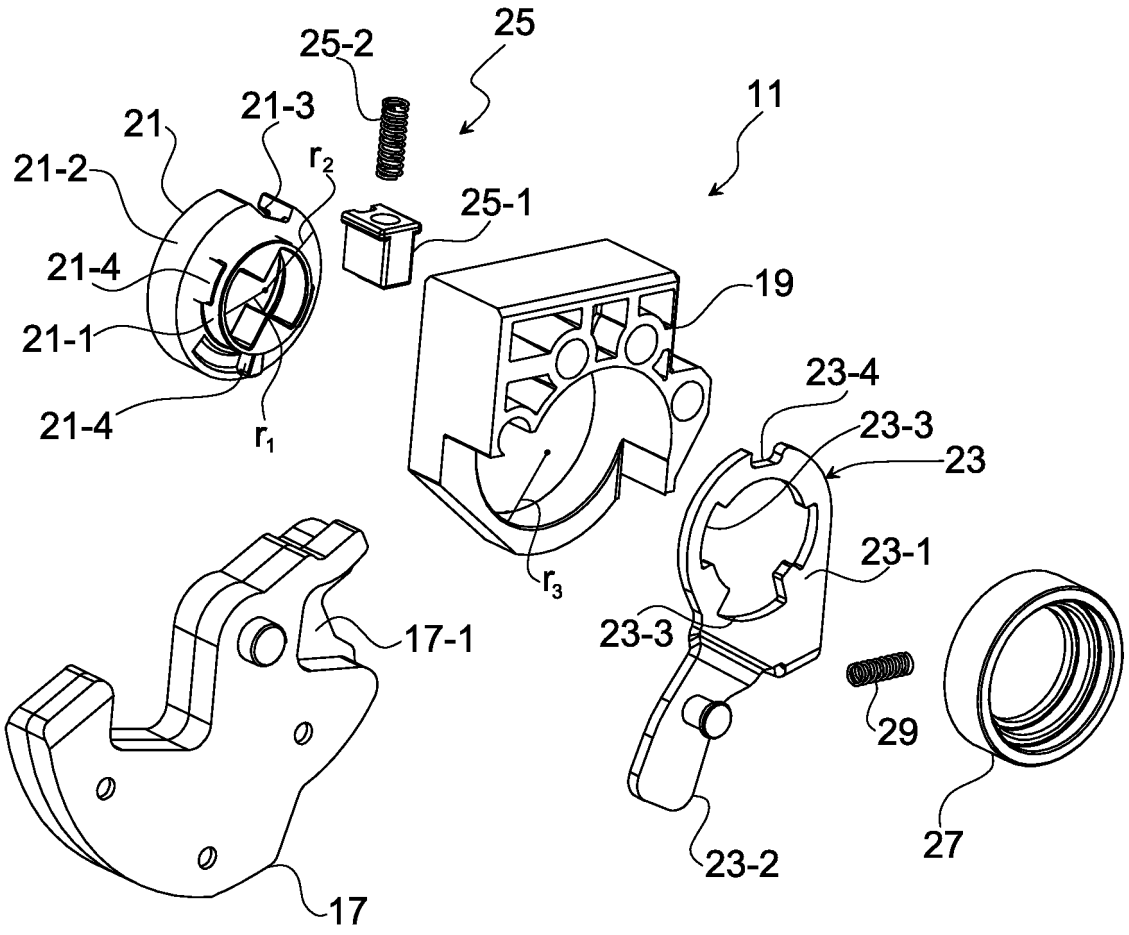

25
25-2
11
21
21-3
21-2
r2
25-1
21-4
19
21-1
23-4
21-4
r1
23-3
23
23-1
r3
17-1
23-3
29
27
23-2
17

Fig. 2

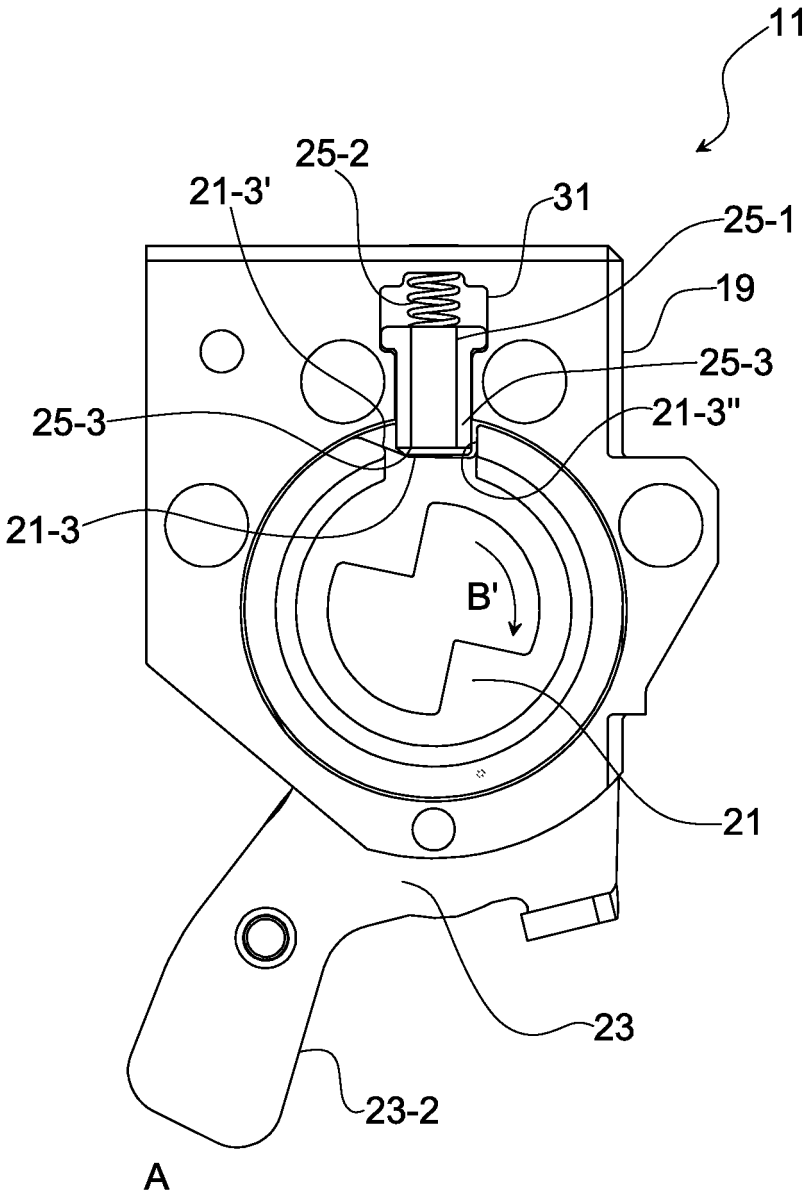


Fig. 3a

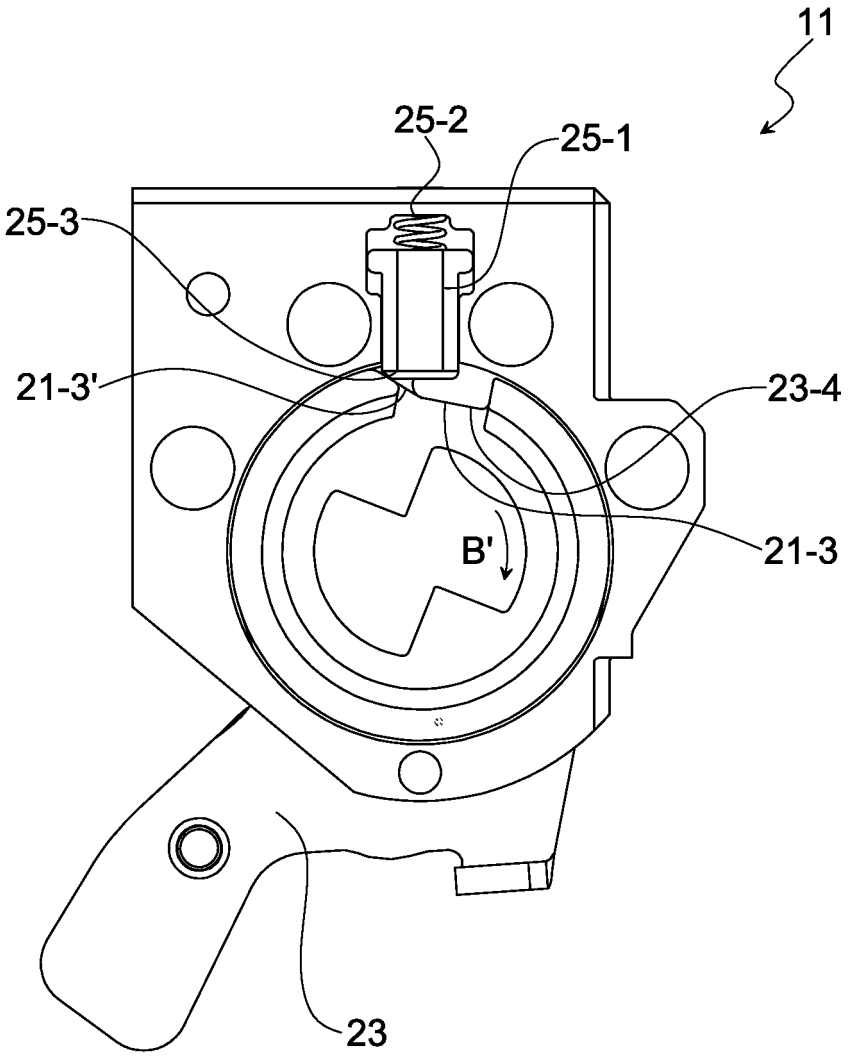


Fig. 3b

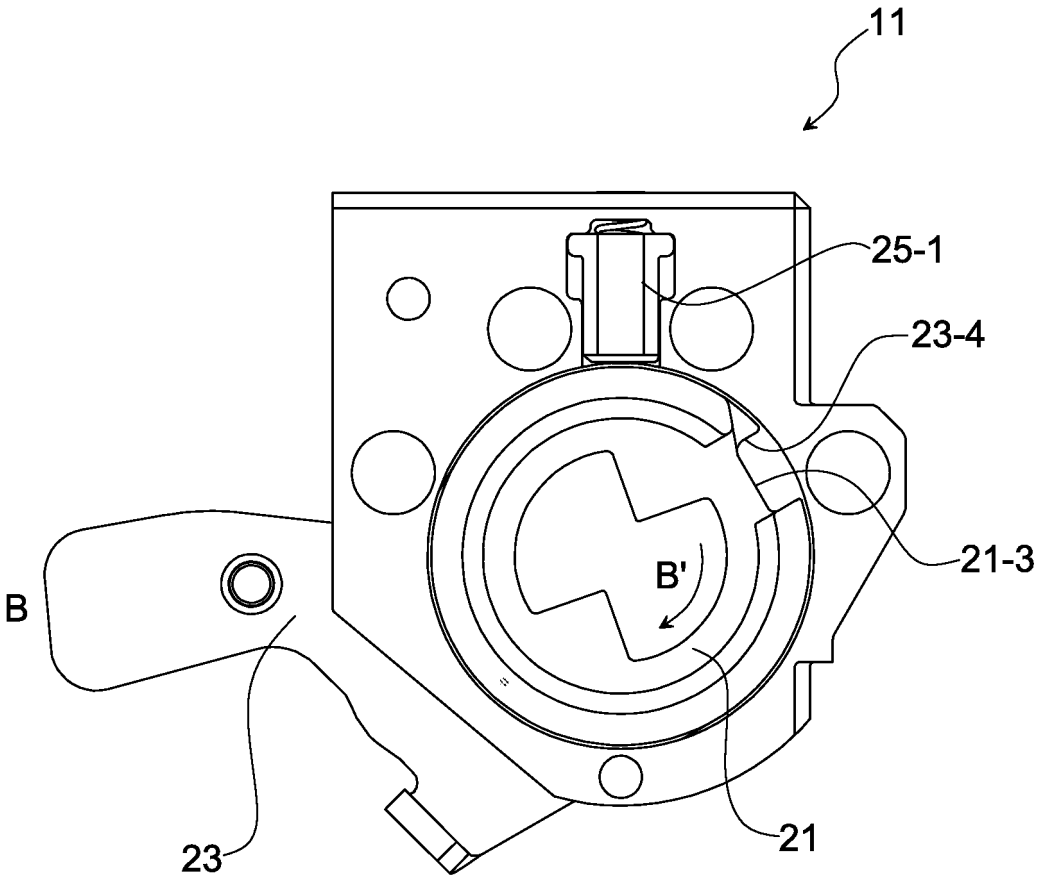


Fig. 3c

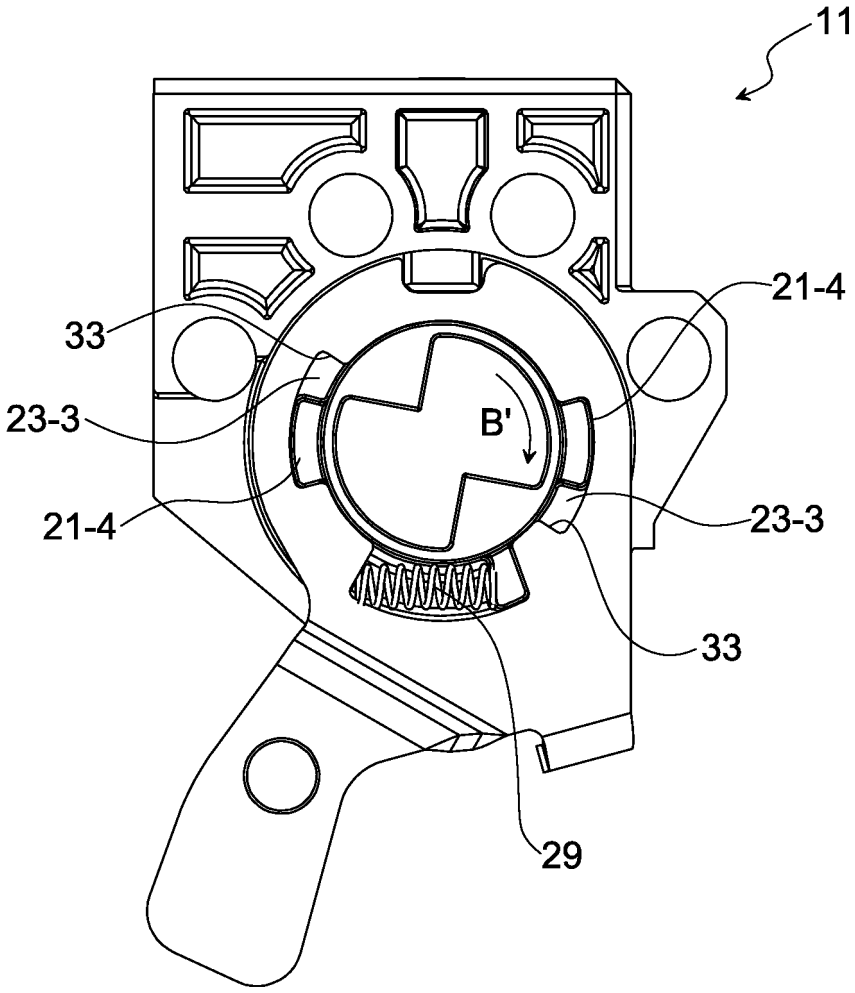


Fig. 4

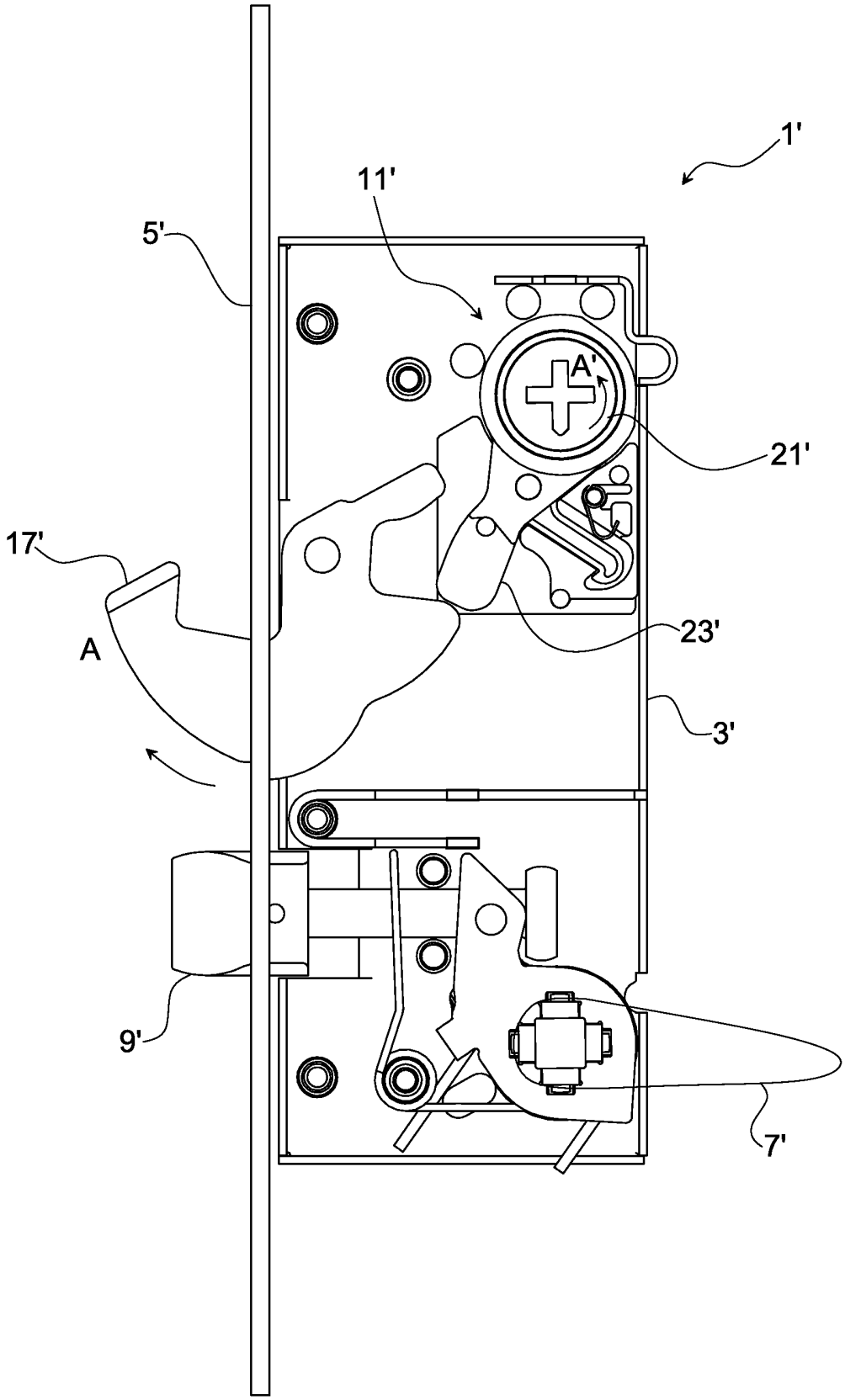


Fig. 5a

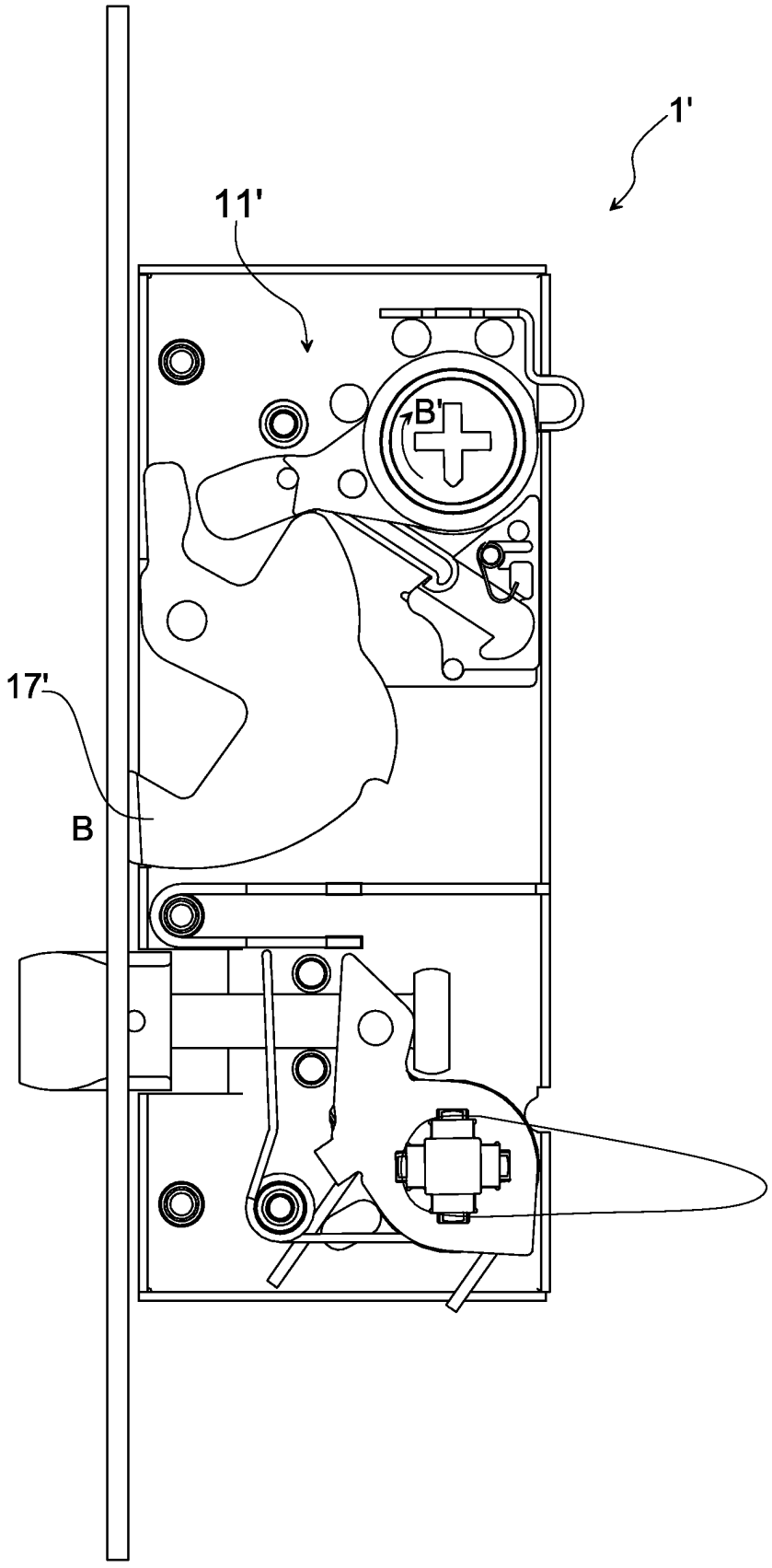


Fig. 5b

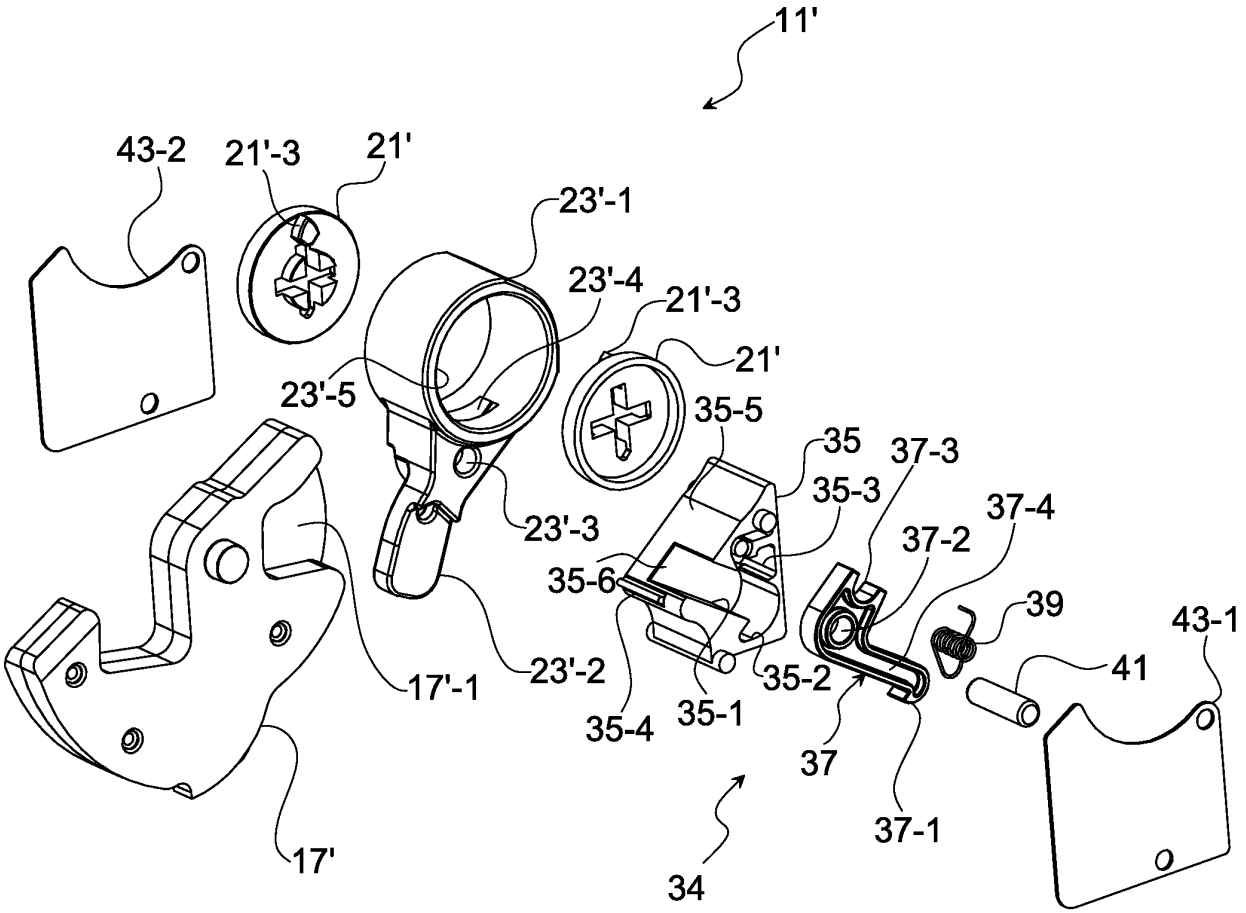

11'
43-2
21'-3
21'
23'-1
23'-4
21'-3
21'
23'-5
35-5
35
37-3
35-3
37-4
37-2
23'-3
35-6
39
43-1
41
17'-1
23'-2
35-2
35-4
35-1
37
37-1
17'
34

Fig. 6

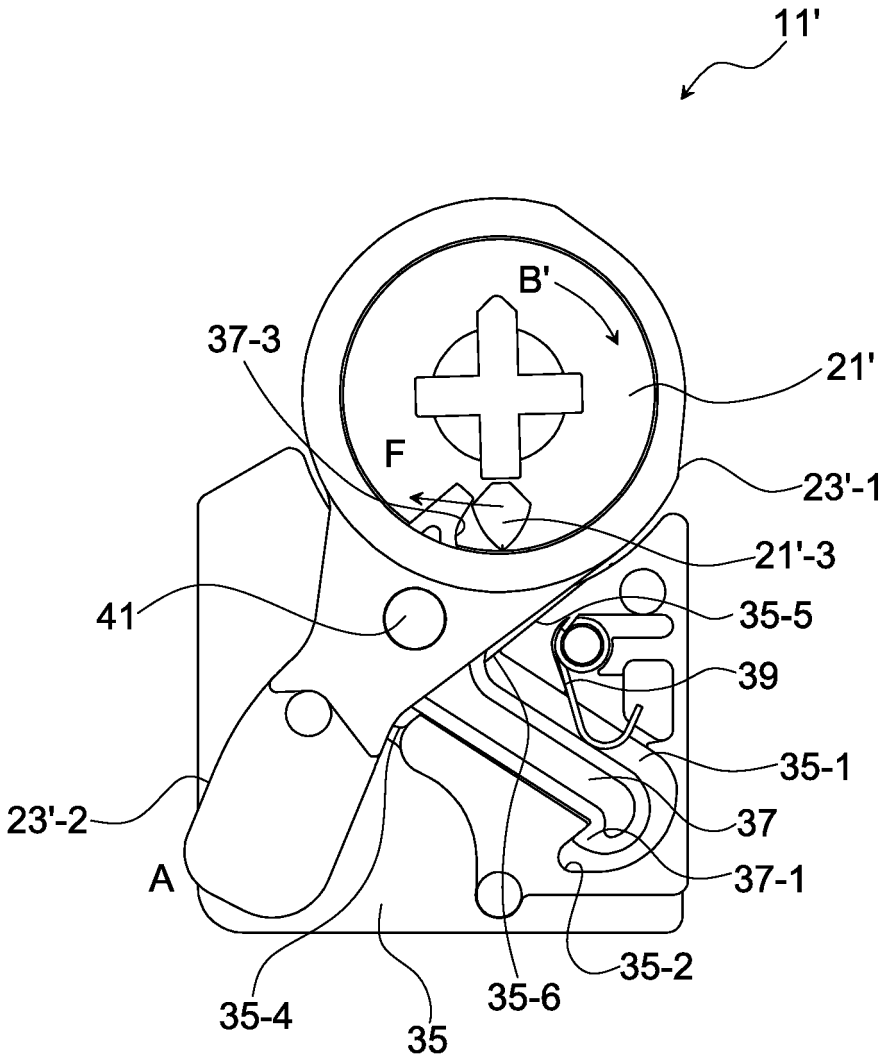


Fig. 7a

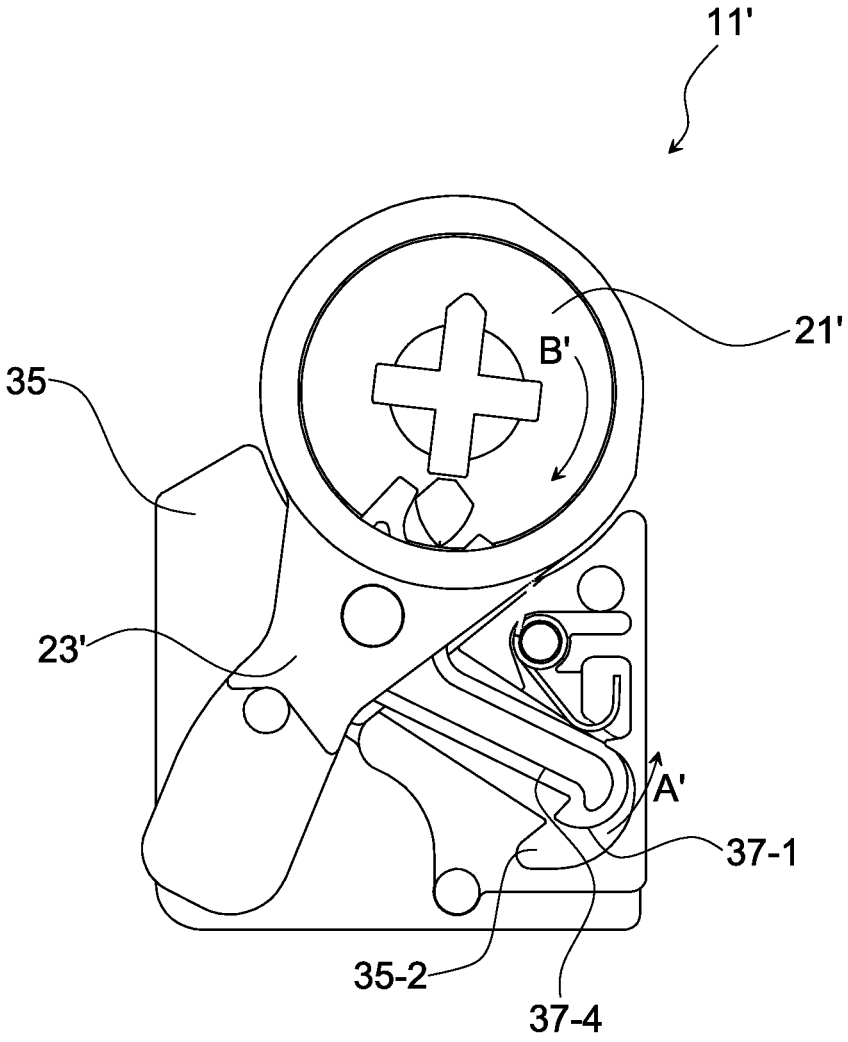


Fig. 7b

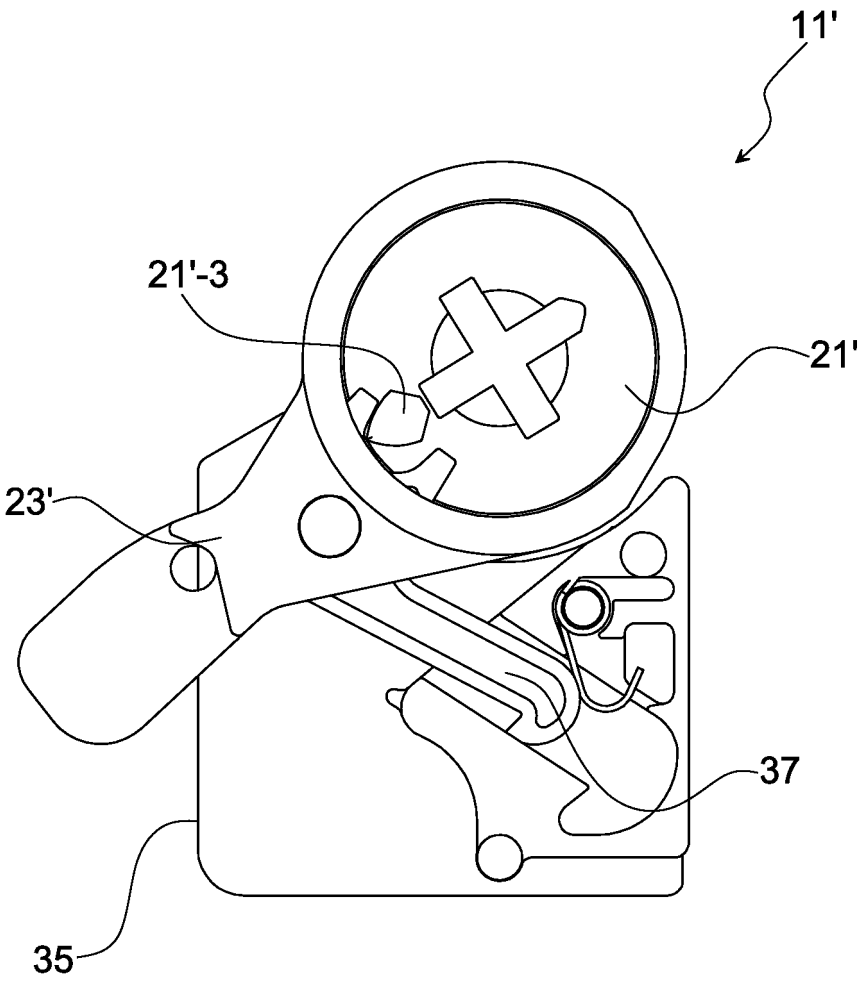


Fig. 7c