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(54) **Electromechanical lock adapted to doors**

Für Türen angepasstes elektromechanisches Schloss

Verrou électromécanique adapté aux portes

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Description

TECHNICAL FIELD

[0001] This invention relates to electromechanical locks adapted to doors, in particular to electromechanical locks that comprise means for engaging the handles that operate said electromechanical locks.

PRIOR ART

[0002] Known electromechanical locks adapted to doors comprise a lever by means of which the door is locked, the lever being capable of being operated by means of a cylinder, and a latch that may be operated by means of an external handle or by means of the cylinder. The electromechanical lock also comprises attachment means that convert the rotational movement of the handle into a movement of the latch.

[0003] In addition, there are known electromechanical locks that comprise clutch means that enable, or otherwise, the rotation movement to be transmitted from one of the handles to the other handle. Document ES2323201A1 thus describes a clutch device that comprises a first clutch member connected to the outer handle that includes a projection that includes a hole into which is introduced a pin assisted by a spring that moves in order to be introduced into a groove of a second clutch member. The clutch device comprises a motor, an endless screw linked to a spring, and a rocker/pusher that is moved by the spring and which comes into contact with the pin. These clutch devices are attached in the manner of a cover to the lock.

[0004] Document US6286347B1 discloses an electromechanical lock according to the preamble of claim 1.

DISCLOSURE OF THE INVENTION

[0005] The object of the invention is to provide an electromechanical lock adapted to doors as described in the claims.

[0006] The electromechanical lock adapted to doors of the invention comprises at least one lever that may be operated by means of a cylinder, a latch that may be operated by means of a first handle arranged on one side of the door or by means of a second handle arranged on the opposite side of the door, means for transmitting the movement associated to the cylinder or to the corresponding handle towards the latch or towards the lever, and clutch means of both handles which comprise a motor, an endless screw, an actuator that includes a contact member adapted to come into contact with the endless screw and a clutch adapted to be operated by the actuator.

[0007] The transmission means comprise a first pusher adapted to rotate operated by the first handle, a second pusher adapted to rotate operated by the second handle, and an intermediate member in the form of a plate that is arranged fixed to one of the pushers, said intermediate member housing in its interior, at least partially, the clutch.

[0008] The pusher that is not fixed to the intermediate member comprises stoppers, which delimit a housing between them.

[0009] In addition, the actuator comprises a contact surface adapted in order to keep the clutch in a retracted position, housed in the intermediate member, in a position in which the handles are disengaged, or to keep the clutch in an extended position projecting out in relation to the intermediate member, said clutch being housed partially in the housing defined by the stoppers of the pusher which is not fixed to the intermediate member, in a position in which the handles are engaged.

[0010] The intermediate member includes a cavity that includes a substantially rectangular first part and a second part with a smaller width than the first part. The clutch comprises a first part that is housed in the second part of the cavity and a second part with a substantially rectangular cross-section and a width greater than the first part that is housed in the first part of the cavity.

[0011] As a result an electromechanical lock is obtained and which integrates the clutch means in a simple and optimal manner.

[0012] These and other advantages and characteristics of the invention will be made evident in the light of the drawings and the detailed description thereof.

DESCRIPTION OF THE DRAWINGS

[0013]

Figure 1 shows a view in perspective of an electromechanical lock that comprises clutch means according to the invention, in a position in which the door is closed or locked.

Figure 2 is a ground view of the electromechanical lock shown in Figure 1, without a cover.

Figure 3 is a view in perspective of the electromechanical lock shown in Figure 1, without a cover.

Figure 4 is a partial view in perspective of transmission means comprised in the electromechanical lock shown in Figure 1.

Figure 5 is a partial view in perspective of the transmission means shown in Figure 4, without a second pusher.

Figure 6 is a view in perspective of an intermediate plate of the transmission means shown in Figure 4.

Figure 7 is a view in perspective of a first pusher of the transmission means shown in Figure 4.

Figure 8 is a view of a unit of followers comprised in the electromechanical lock shown in Figure 1.

Figure 9 is a view of an actuator of the clutch means of the electromechanical lock shown in Figure 1.

Figure 10 is a partial ground view of the lock shown in Figure 1, which shows transmission means in cooperation with clutch means of the lock, in a position

in which the handles are declutched.

Figure 11 is another partial ground view of the lock shown in Figure 1, which shows transmission means in cooperation with clutch means of the lock, in a position in which the handles are declutched.

Figure 12 is a partial ground view of the lock shown in Figure 1, which shows transmission means in cooperation with clutch means of the lock, in a position in which the handles are clutched.

Figure 13 is another partial ground view of the lock shown in Figure 1, which shows transmission means in cooperation with clutch means of the lock, in a position in which the handles are clutched.

Figure 14 is a partial cross-sectional view of the electromechanical lock shown in Figure 1, in particular of the anti-panic release means in a second position in cooperation with the transmission means.

Figure 15 is a partial cross-sectional view of the electromechanical lock shown in Figure 1, in particular of the anti-panic release means in a first position in cooperation with the transmission means.

DETAILED DISCLOSURE OF THE INVENTION

[0014] The electromechanical lock 1 adapted to doors according to the invention, shown in Figures 1 to 3, comprises a case 2 delimited by a base 3, a cover 4, shown in Figure 1, the base 3 and the cover 4 being arranged substantially parallel to each other, side walls 2a and a front 5 arranged substantially orthogonal to the base 3 and the cover 4, a lever 6 that may be operated by means of a cylinder not shown in the figures, a latch 7 that may be operated by means of a first handle or a second handle not shown in the figures or the cylinder not shown in the figures, and a trigger element 9, arranged between the lever 6 and the latch 7.

[0015] The trigger element 9, shown in Figures 2 and 3, comprises a first part 9a that, in an initial open door position not shown in the figures, projects out in relation to the front 5 towards the outside of the electromechanical lock 1, and a second part 9b that is arranged housed inside the case 2, the second part 9b including a groove 9c that cooperates with a projection 57 fixed to the base 3 to guide the movement of the trigger element 9.

[0016] The electromechanical lock 1 comprises means 100 for transmitting the movement associated to the cylinder or the corresponding handle towards the latch 7 or towards the lever 6, the transmission means 100 comprising a first pusher 20 adapted to be operated by the first handle, a second pusher 21 adapted to be operated by the second handle, and at least one slide member 110 adapted so that it may be moved, operated by the first pusher 20 or by the second pusher 21.

[0017] The slide member 110 is arranged coupled to the lever 6, the slide member 110 including a groove 65a along which moves a connector member 55 inserted in the lever 6, shown in Figures 2 and 3.

[0018] In addition, the electromechanical lock 1 includes a traction spring, not shown in the figures, one of the ends of which is arranged fixed to the base 3 of the case 2 and the other end is arranged fixed to one end of the slide member 110.

[0019] In an initial position, in which the electromechanical lock 1 has not been operated, the trigger element 9 keeps the slide member 110 locked. At the moment at which the door is closed, the trigger element 9 moves towards the inside of the case 2, with the result that the first part 9a retracts and is housed in said case 2, and the second part 9b comes into contact with a switch 10, shown in Figure 2, generating an electrical signal that indicates that the door is closed against the frame of the door and, at the same time, releases the slide member 110. When the slide member 110 is released, the traction spring to which is arranged fixed one end of the slide member 110 attracts the slide member 110, with the result that the movement of said slide member 110 causes the operation of the lever 6, which moves and projects out in relation to the case 2 of the electromechanical lock 1, thereby locking the door.

[0020] In addition, the slide member 110 includes guide means 80 that include a first groove 81 that collaborates with a substantially cylindrical guide member 53, shown in Figures 2 and 3, fixed to the base 3 of the case 2 of the electromechanical lock 1, to guide the movement of the slide member 110 in relation to said base 3. In addition, the guide means 80 comprise in the slide member 110 a second groove 84 substantially parallel to the first groove 81 that collaborates with a substantially cylindrical guide member 54, fixed to the case 2, which also acts as a support for the slide member 110, and a projection 66, shown in Figures 1 to 3, that collaborates with a groove 2b arranged on one of the walls 2a of the case 2 for the movement of the slide member 110 inside the case 2.

[0021] The slide member 110 also comprises a projection 45, shown in Figure 2, that acts as a stopper when the lock is in the locked position, preventing said latch 7 from moving towards the inside of the case 2. Additionally, the slide member 110 is arranged attached to the latch 7, with the result that the movement of the slide member 110 brings about the movement of the latch 7.

[0022] In addition, the first pusher 20, shown in detail in Figures 4,5 and 7 comprises a plate 20a that also includes an arm 20b adapted to move the slide member 110 when the first handle is operated and an opening 20c with a rectangular cross-section, in which a follower 26 is attached.

[0023] In addition, the second pusher 21, shown in detail in Figure 4, comprises a second plate 21a that includes a second arm 21b adapted to move the slide member 110 when the second handle is operated and an opening 21c with a rectangular cross-section, in which a follower 26 is attached. The followers 26, shown in detail in Figure 8, each comprise a central part 26b with a substantially rectangular cross-section that is arranged inserted in the opening 20c, 21c of the corresponding push-

er 20,21, and a longitudinal housing 26a in which is attached a shaft of the corresponding handle, with the result that the followers 26, and, therefore, the respective pushers 20,21 rotate independently of each other.

[0024] The electromechanical lock 1 comprises stoppers 29, shown in Figures 2, 3 and 10-13, fixed to the base 3 which cooperate with respective recesses 20f,21f in the respective pusher 20,21 to delimit the rotation of the pushers 20,21.

[0025] The transmission means 100 also comprise an intermediate member 22 in the form of a plate, shown in Figures 4 to 6, which is arranged, in the embodiment described in the figures, fixed to the first pusher 20 by means of coupling pins 28, and a return spring 25 that is arranged housed inside the intermediate plate 22. For this purpose, the intermediate plate 22 includes a substantially concentric housing 22a in which is housed the return spring 25, preferably a torque spring, and a side opening 23 through which a first branch 25a, and a second branch 25b of the spring 25 project out, the ends 23a,23b of the opening 23 defining the limits of rotation of the handles. The intermediate plate 22 also has a central hole 22b in which the respective followers 26 attached to the first pusher 20 and the second pusher 21 are partially attached. The intermediate plate 22 also has a central hole 22b in which the respective followers 26 attached to the first pusher 20 and the second pusher 21 are partially attached.

[0026] The electromechanical lock 1 comprises a stopper 56 that is arranged inserted in the base 3 of the case 2 against which the first branch 25a acts permanently as a stopper. In addition, the first pusher 20 comprises a projection 20d, which extends towards the base 3, against which both branches 25a, 25b of the spring 25 act as stoppers in a position in which the handles are not operated, and against which only the second branch 25b acts as a stopper when the first handle has been operated. Additionally, the second pusher 21 also comprises a projection 21d fixed to the second plate 21a, which extends towards the cover 4, against which both branches 25a,25b of the spring 25 act as stoppers in a position in which the handles are not operated, and against which only the second branch 25b acts as a stopper when the second handle has been operated. Thus, in a position in which the handles are not operated, the projection 20d of the first pusher 20 and the projection 21d of the second pusher 21 are arranged substantially aligned.

[0027] In addition, the electromechanical lock 1 of the invention comprises clutch means 90 that attach both pushers 20,21 for the simultaneous rotation of both handles regardless of which handle is operated by the user. The clutch means 90 are fully inserted in the case 2 of the electromechanical lock 1, with the result that an optimal electromechanical lock in terms of dimensions and assembly is obtained.

[0028] The clutch means 90, shown in Figures 2, 3 and 10-13, comprise a support 91 fixed to the base 3, a motor 92 supported by the support 91, an endless screw 93 attached to the motor 92, an actuator 94 fixed at one end in a pivoting manner to the support 91 and which includes a contact member 94b that is in contact with the endless screw 93, and a clutch 95 that attaches the pushers 20,21 when operated by the actuator 94. The actuator 94 is made of flexible material.

[0029] The contact member 94b has a substantially orthogonal cross-section, its width being smaller than the distance between two consecutive threads of the endless screw 93.

[0030] The actuator 94, shown in detail in Figure 9, comprises a base 94d that includes the contact surface 94c and which is arranged supported on the base 3 of the case 2, a first projection 94e, shown in Figures 2,3 and 10-13, that is fixed substantially orthogonal to the base 94d of the actuator 94, it being inserted in a hole 94a of said base 94d, by means of which the actuator 94 is fixed in a pivoting manner to the support 91, and a second projection 94f from which the contact member 94b is arranged substantially orthogonal to the endless screw 93.

[0031] The clutch 95 is housed in the intermediate plate 22 of the transmission means 100, comprising a substantially rectangular first part 95a and a second part 95b with a substantially rectangular cross-section, and a greater width than the first part 95a. According to the invention, the intermediate plate 22 includes a cavity 24 that has a first part 24a inside which is housed the second part 95b of the clutch 95, and a second part 24b connected to the first part 24a and the exterior, with a smaller width than the first part 24a, inside which is housed the first part 95a of the clutch 95. The clutch 95 includes in the second part 95b a housing 95c in which is housed a compression spring 97.

[0032] Furthermore, the second pusher 21 includes, on the end opposite the arm 21b, grooves 21e, shown in Figure 4, where stoppers 27, shown in Figures 4 and 5, are arranged inserted, arranged facing the first pusher 20 and which delimit a housing 27b between them.

[0033] Thus, in an initial position of the electromechanical lock 1, shown partially in Figures 10 and 11, both pushers 20,21 are declutched, the motor 91 is not operating, and the actuator 94 acts on the clutch 95, in particular on the first part 95a, with the result that the clutch 95 compresses the spring 96, being housed entirely in the cavity 24 of the intermediate plate 22, each pusher 20,21 being capable of rotating independently in relation to the other pusher 21,20, given that the respective projection 27 of the second pusher 21 acts as a stopper, preventing the clutch 95 from expanding outside the cavity 24. Subsequently, the respective pusher 20,21 returns to the initial position by means of the return spring 25.

[0034] When the motor 91 receives a certain electrical impulse the endless screw 93 rotates in an anti-clockwise direction, with the result that the contact member 94b of the actuator 94 is moved by the endless screw 93 in a direction towards the motor 91, with the result that both pushers 20,21 are attached to each other, rotating jointly

when either of the two handles are operated. In this position, shown partially in Figures 12 and 13, the second part 95b of the clutch 95 acts as a stopper against the first part 24a of the cavity 24 of the intermediate plate 22, with the result that the first part 95a is partially housed in the housing 27b delimited by the stoppers 27, with the result that both pushers 20,21 are engaged together.

[0035] From this position, when the motor 91 receives an electrical impulse contrary to the initial one, the endless screw 93 rotates in a clockwise direction, with the result that the end 94b of the actuator 94 is moved by the endless screw 93 in a direction towards the clutch 95, with the result that the actuator 94 once more keeps the clutch 95 pressed down inside the cavity 24, thus keeping the pushers 20,21 declutched.

[0036] In addition, the anti-panic release means 70, shown in detail in Figures 14 and 15, comprise a sleeve 71 that is arranged inserted in the slide member 110, for which purpose respective cams comprised in the slide member 110 respectively include a hole in which the sleeve 71 is inserted fixed. The anti-panic release means 70 also comprise a substantially cylindrical positioning member 75, inserted in a movable manner in the sleeve 71. In particular, the sleeve 71 includes an inner ring-shaped groove 72 in which is housed an elastic means 77, and the positioning member 75 also comprises a first outer groove 76a and a second outer groove 76b, both of them ring-shaped grooves, separated from each other by a certain distance. The elastic means 77 preferably includes an elastic seal. In other embodiments the elastic means 77 may include elastic washers, a spring, ring seals, etc.

[0037] When the anti-panic release means 70 are arranged in a first position, shown in Figure 15, the positioning member 75 is arranged inserted in the sleeve 71 with the result that the elastic seal 77 inserted in the inner groove 72 of the sleeve 71 is housed in the second outer groove 76b of said positioning member 75, the positioning member 75 projecting out in relation to the slide member 110, and in particular in relation to a first free surface 60a of said slide member 110, being supported on the cover 4 of the case 2 of the electromechanical lock 1. As a result, starting from a position in which the door is closed and locked by means of the lever 6, the pushers 20,21 declutched, only the user operating the second handle can unlock the electromechanical lock 1 quickly, as when said second handle is operated, the second pusher 21 rotates and, facing the surface 60a of the first surface 60, acts as a stopper against the part of the positioning member 75 that projects out, thereby moving the slide member 110. The movement of the slide member 110 causes the movement of the lever 6 and the latch 7 towards the inside of the case 2, enabling the opening of the door. If the user operates the first handle, the rotation of the first pusher 20 does not move the slide member 110, and the lever 6 therefore continues to lock the door.

[0038] In contrast, when the anti-panic release means 70 are arranged in a second position, shown in Figure 14, the positioning member 75 is arranged inserted in the sleeve 71, with the result that the elastic seal 77, inserted in the inner groove 72 of the sleeve 71 is housed tightly in the first outer groove 76a of the positioning member 75, the positioning member 75 projecting out in relation to the slide member 110, in particular in relation to a second free surface 30a of the slide member 110, it being supported on the base 3 of the case 2 of the electromechanical lock 1. As a result, starting from a position in which the door is closed and locked by means of the lever 6 and the pushers 20,21 declutched, only the user operating the first handle can unlock the electromechanical lock 1 quickly, as when said first handle is operated, the first pusher 20 rotates and, facing the second surface 30a, acts as a stopper against the part of the positioning member 75 that projects out, thereby moving the slide member 110. The movement of the slide member 110 causes the movement of the lever 6 and the latch 7 towards the inside of the case 2, enabling the opening of the door.

[0039] Finally, both the cover 4 and the base 3 of the case 2 respectively comprise a hole 96, arranged concentric to each other and to the positioning member 75, with the result that by introducing a suitable tool through the corresponding hole 96, the positioning member 75 may be moved from one position to another, thereby allowing the user to change, quickly and easily from the outside of the electromechanical lock 1, the configuration of said electromechanical lock 1 in order to obtain an electromechanical lock 1 that is unlocked when the first handle is operated or is unlocked when the second handle is operated.

Claims

1. Electromechanical lock adapted to doors that comprises at least one lever (6) that may be operated by a cylinder, a latch (7) that may be operated by a first handle arranged on one side of the door or by means of a second handle arranged on the opposite side of the door, transmission means (100) for the movement associated to the cylinder or the corresponding handle towards the latch (7) or towards the lever (6), and clutch means (90) of both handles, the clutch means (90) comprising a motor (92), an endless screw (93), an actuator (94) that includes a contact member (94b) adapted to come into contact with the endless screw (93) and a clutch (95) adapted to be operated by the actuator (94), the transmission means (100) comprising a first pusher (20) adapted to rotate operated by the first handle, a second pusher (21) adapted to rotate operated by the second handle, and an intermediate member (22) in the form of a plate that is arranged fixed to one of the pushers (20,21), said intermediate member (22) housing in its interior, at least partially, the clutch (95), the pusher (20,21) not fixed to the intermediate member (22)

including stoppers (27) that delimit a housing (27b) between them, and the actuator (94) comprising a contact surface (94c) adapted to keep the clutch (95) in a retracted position, housed in the intermediate member (22), in a position in which the handles are declutched or to keep the clutch (95) in an extended position projecting out in relation to the intermediate member (22), said clutch (95) partially being housed in the housing (27b) defined by the stoppers (27) of the pusher (20,21) which is not fixed to the intermediate member (22), in a position in which the handles are clutched, **characterised in that** the intermediate member (22) includes a cavity (24) that includes a substantially rectangular first part (24a) and a second part (24b) with a smaller width than the first part (24a), and the clutch (95) comprises a first part (95a) that is housed in the second part (24b) of the cavity (24) and a second part (95b) with a substantially rectangular cross-section and a width greater than the first part (95a) that is housed in the first part (24a) of the cavity (24).

2. Electromechanical lock according to the preceding claim, wherein the clutch (95) comprises a compression spring (97) housed in a housing (95c) arranged in the second part (95b) of the clutch (95).

3. Electromechanical lock according to any of the preceding claims, wherein the actuator (94) comprises a base (94d) that is arranged supported on the base (3) of the electromechanical lock (1), a first projection (94e) arranged substantially orthogonal to the base (94d) by means of which it is fixed in a pivoting manner to the support (91), and a second projection (94f) arranged substantially orthogonal to the base (94d), from which extends the contact member (94b) arranged substantially orthogonal to the endless screw (93).

4. Electromechanical lock according to the preceding claim, wherein the base (94d) includes a contact surface (94c).

5. Electromechanical lock according to any of the preceding claims, wherein the contact member (94b) has a substantially orthogonal cross-section, its width being smaller than the distance between two consecutive threads of the endless screw (93).

6. Electromechanical lock according to any of the preceding claims, wherein the actuator (94) is made of flexible material.

7. Electromechanical lock according to any of the preceding claims, wherein the clutch means (90) are arranged completely housed in a case (2) of the electromechanical lock (1).

Patentansprüche

1. Für Türen angepasstes elektromechanisches Schloss, das mindestens einen Riegel (6), der durch einen Zylinder betätigt werden kann, eine Falle (7), die durch einen an einer Seite der Tür angeordneten ersten Griff oder mittels eines an einer gegenüberliegenden Seite der Tür angeordneten zweiten Griff betätigt werden kann, Übertragungsmittel (100) für die dem Zylinder oder dem entsprechenden Griff zugeordnete Bewegung in Richtung der Falle (7) oder in Richtung des Riegels (6) und Kupplungsmittel (90) beider Griffe umfasst, wobei die Kupplungsmittel (90) einen Motor (92), eine Endlosschraube (93), einen Aktuator (94), der ein Kontaktelement (94b) umfasst, das angepasst ist, um mit der Endlosschraube (93) in Kontakt zu treten, und eine Kupplung (95) umfassen, die angepasst ist, um durch den Aktuator (94) betätigt zu werden, wobei die Übertragungsmittel (100) einen ersten Schieber (20), der angepasst ist, um sich durch den ersten Griff betätigt zu drehen, einen zweiten Schieber (21), der angepasst ist, um sich von dem zweiten Griff betätigt zu drehen, und ein Zwischenelement (22) in der Form einer Platte umfassen, das an einem der Schieber (20, 21) befestigt angeordnet ist, wobei das Zwischenelement (22) in seinem Inneren zumindest teilweise die Kupplung (95) unterbringt, wobei der Schieber (20, 21), der nicht an dem Zwischenelement (22) befestigt ist, Anschläge (27) umfasst, die ein Gehäuse (27b) zwischen sich begrenzen, und der Aktuator (94) eine Kontaktfläche (94c) umfasst, die angepasst ist, um die Kupplung (95) in einer zurückgezogenen Position, in dem Zwischenelement (22) untergebracht, zu halten, in einer Position, in der die Griffe ausgekuppelt sind, oder die Kupplung (95) in einer ausgefahrenen Position zu halten, die in Bezug auf das Zwischenelement (22) vorsteht, wobei die Kupplung (95) teilweise in dem Gehäuse (27d) untergebracht ist, das durch die Anschläge (27) des Schiebers (20, 21), der nicht an dem Zwischenelement (22) befestigt ist, definiert ist, in einer Position, in der die Griffe eingekuppelt sind, **dadurch gekennzeichnet, dass** das Zwischenelement (22) einen Hohlraum (24) umfasst, der einen im Wesentlichen rechteckigen ersten Teil (24a) und einen zweiten Teil (24b) mit einer kleineren Breite als der erste Teil (24a) umfasst, und die Kupplung (95) einen ersten Teil (95a), der in dem zweiten Teil (24b) des Hohlraums (24) untergebracht ist, und einen zweiten Teil (95b) mit einem im Wesentlichen rechteckigen Querschnitt und einer größeren Breite als der erste Teil (95a) umfasst, der in dem ersten Teil (24a) des Hohlraums (24) untergebracht ist.

2. Elektromechanisches Schloss nach dem vorhergehenden Anspruch, wobei die Kupplung (95) eine Druckfeder (97) umfasst, die in einem in dem zweiten

Teil (95b) der Kupplung (95) angeordneten Gehäuse (95c) untergebracht ist.

3. Elektromechanisches Schloss nach einem der vorhergehenden Ansprüche, wobei der Aktuator (94) eine auf der Basis (3) des elektromechanischen Schlosses (1) abgestützt angeordnete Basis (94d), einen im Wesentlichen orthogonal zu der Basis (94d) angeordneten ersten Vorsprung (94e), mit dem sie schwenkbar an dem Träger (91) befestigt ist, und einen im Wesentlichen orthogonal zu der Basis (94d) angeordneten zweiten Vorsprung (94f) umfasst, von dem sich das Kontaktelement (94b) erstreckt, das im Wesentlichen orthogonal zu der Endlosschraube (93) angeordnet ist.

4. Elektromechanisches Schloss nach dem vorhergehenden Anspruch, wobei die Basis (94d) eine Kontaktfläche (94c) umfasst.

5. Elektromechanisches Schloss nach einem der vorhergehenden Ansprüche, wobei das Kontaktelement (94b) einen im Wesentlichen orthogonalen Querschnitt aufweist, dessen Breite kleiner ist als der Abstand zwischen zwei aufeinanderfolgenden Gewindegängen der Endlosschraube (93).

6. Elektromechanisches Schloss nach einem der vorhergehenden Ansprüche, wobei der Aktuator (94) aus flexiblem Material gefertigt ist.

7. Elektromechanisches Schloss nach einem der vorhergehenden Ansprüche, wobei die Kupplungsmittel (90) vollständig in einem Kasten (2) des elektromechanischen Schlosses (1) untergebracht angeordnet sind.

Revendications

1. Verrou électromécanique adapté aux portes qui comprend au moins un levier (6) qui peut être actionné par un barillet, un loquet (7) qui peut être actionné par une première poignée agencée sur un côté de la porte ou au moyen d'une seconde poignée agencée sur le côté opposé de la porte, des moyens de transmission (100) pour le mouvement associé au barillet ou à la poignée correspondante vers le loquet (7) ou vers le levier (6), et des moyens d'embrayage (90) des deux poignées, les moyens d'embrayage (90) comprenant un moteur (92), une vis sans fin (93), un actionneur (94) qui comprend un élément de contact (94b) conçu pour venir en contact avec la vis sans fin (93) et un embrayage (95) conçu pour être actionné par l'actionneur (94), les moyens de transmission (100) comprenant un premier poussoir (20) conçu pour tourner sous l'action de la première poignée, un second poussoir (21) conçu pour tourner sous l'action de la seconde poignée, et un élément intermédiaire (22) en forme de plaque qui est conçu pour être fixé à l'un des poussoirs (20, 21), ledit élément intermédiaire (22) accueillant dans sa partie intérieure, au moins partiellement, l'embrayage (95), le poussoir (20, 21) non fixé à l'élément intermédiaire (22) comprenant des butées (27) qui délimitent un logement (27b) entre celles-ci, et l'actionneur (94) comprenant une surface de contact (94c) conçue pour maintenir l'embrayage (95) dans une position rentrée, logé dans l'élément intermédiaire (22), dans une position dans laquelle les poignées sont débrayées ou pour maintenir l'embrayage (95) dans une position étendue faisant saillie en relation avec l'élément intermédiaire (22), ledit embrayage (95) étant partiellement logé dans le logement (27b) défini par les butées (27) du poussoir (20, 21) qui n'est pas fixé à l'élément intermédiaire (22), dans une position dans laquelle les poignées sont embrayées, **caractérisé en ce que** l'élément intermédiaire (22) comprend une cavité (24) qui comprend une première partie sensiblement rectangulaire (24a) et une seconde partie (24b) ayant une largeur inférieure à celle de la première partie (24a), et l'embrayage (95) comprend une première partie (95a) qui est logée dans la seconde partie (24b) de la cavité (24) et une seconde partie (95b) ayant une coupe transversale sensiblement rectangulaire et une largeur supérieure à celle de la première partie (95a) qui est logée dans la première partie (24a) de la cavité (24).

2. Verrou électromagnétique selon la revendication précédente, dans lequel l'embrayage (95) comprend un ressort de compression (97) logé dans un logement (95c) agencé dans la seconde partie (95b) de l'embrayage (95).

3. Verrou électromécanique selon l'une quelconque des revendications précédentes, dans lequel l'actionneur (94) comprend une base (94d) qui est conçue pour être supportée sur la base (3) du verrou électromécanique (1), une première saillie (94e) agencée sensiblement orthogonale à la base (94d) au moyen de laquelle elle est fixée pivotante au support (91), et une seconde saillie (94f) agencée sensiblement orthogonale à la base (94d), à partir de laquelle s'étend l'élément de contact (94b) agencé sensiblement orthogonal à la vis sans fin (93).

4. Verrou électromécanique selon la revendication précédente, dans lequel la base (94d) comprend une surface de contact (94c).

5. Verrou électromécanique selon l'une quelconque des revendications précédentes, dans lequel l'élément de contact (94b) a une coupe transversale sensiblement orthogonale, sa largeur étant sensible-

ment inférieure à la distance entre deux filets consécutifs de la vis sans fin (93).

6. Verrou électromécanique selon l'une quelconque des revendications précédentes, dans lequel l'actionneur (94) est composé d'un matériau flexible.

7. Verrou électromécanique selon l'une quelconque des revendications précédentes, dans lequel les moyens d'embrayage (90) sont conçus pour être entièrement logés dans un boîtier (2) du verrou électromécanique (1).

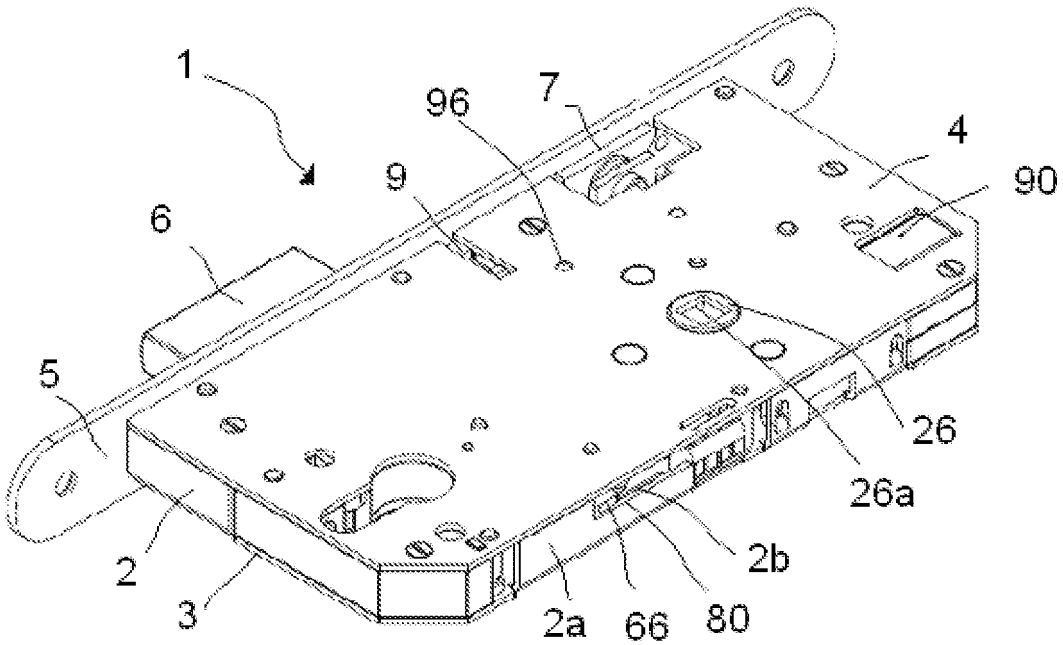


FIG. 1

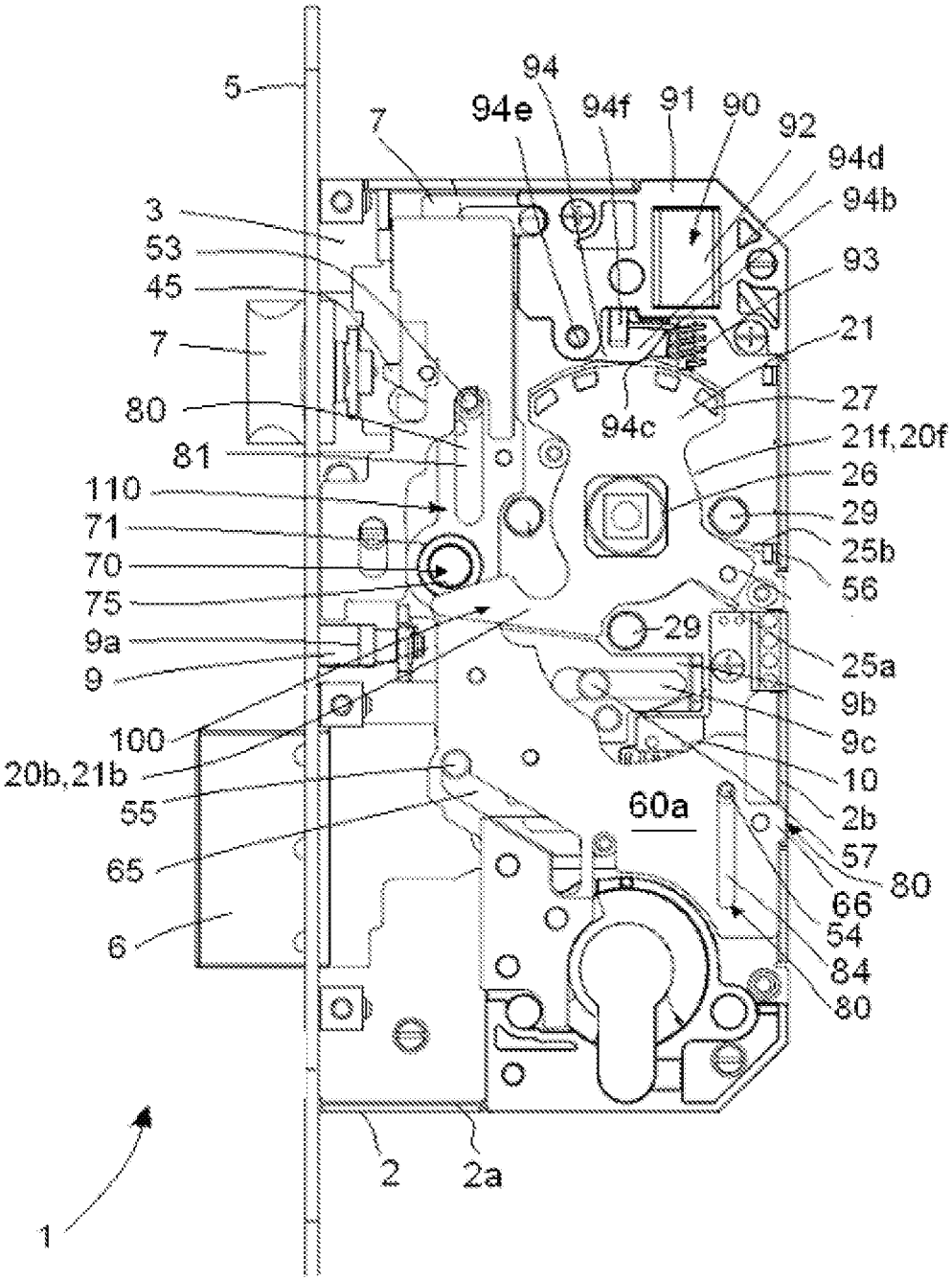

5
7
94
94e
94f
91
90
92
94d
94b
93
21
27
21f,20f
26
29
25b
56
25a
9b
9c
10
2b
57
80
66
54
84
80
3
53
45
7
80
81
110
71
70
75
9a
9
100
20b,21b
55
65
6
94c
29
60a
1
2
2a

FIG. 2

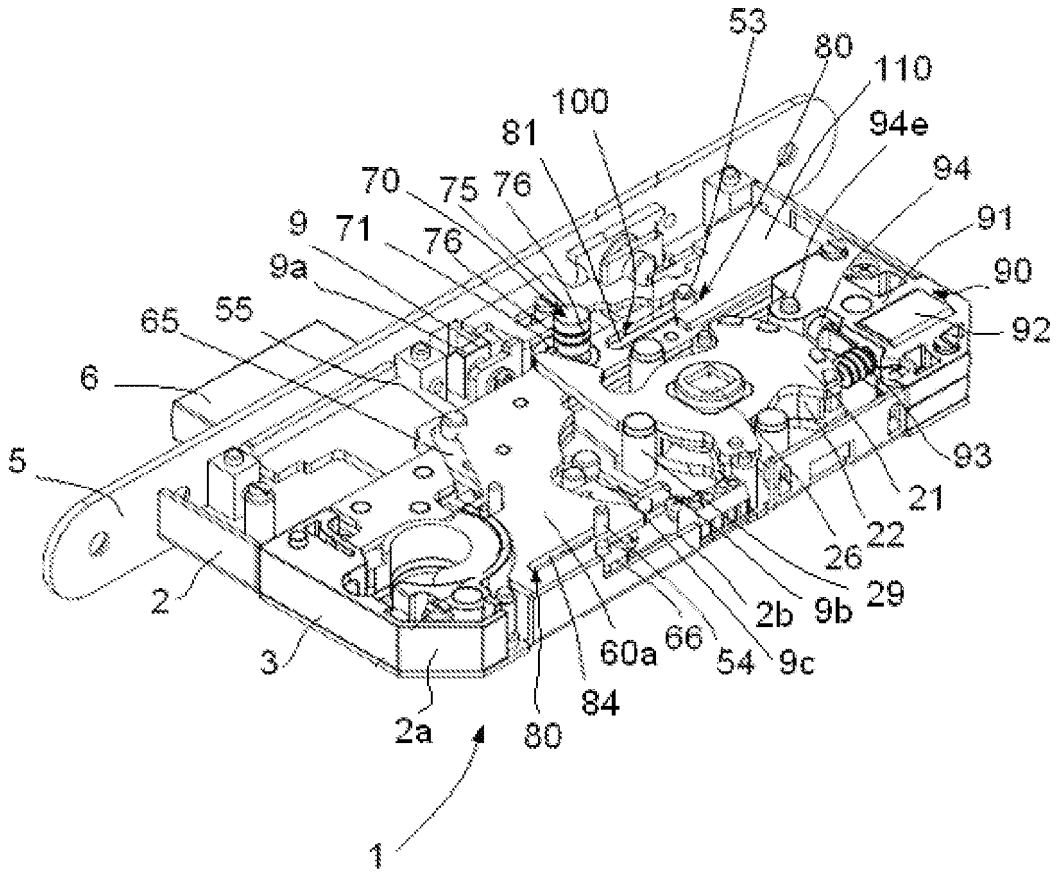

53
80
110
100
94e
81
94
70
75
76
91
9
71
76
90
9a
65
55
92
6
93
5
21
22
26
29
2
2b
9b
3
60a
66
54
9c
84
2a
80
1

FIG. 3

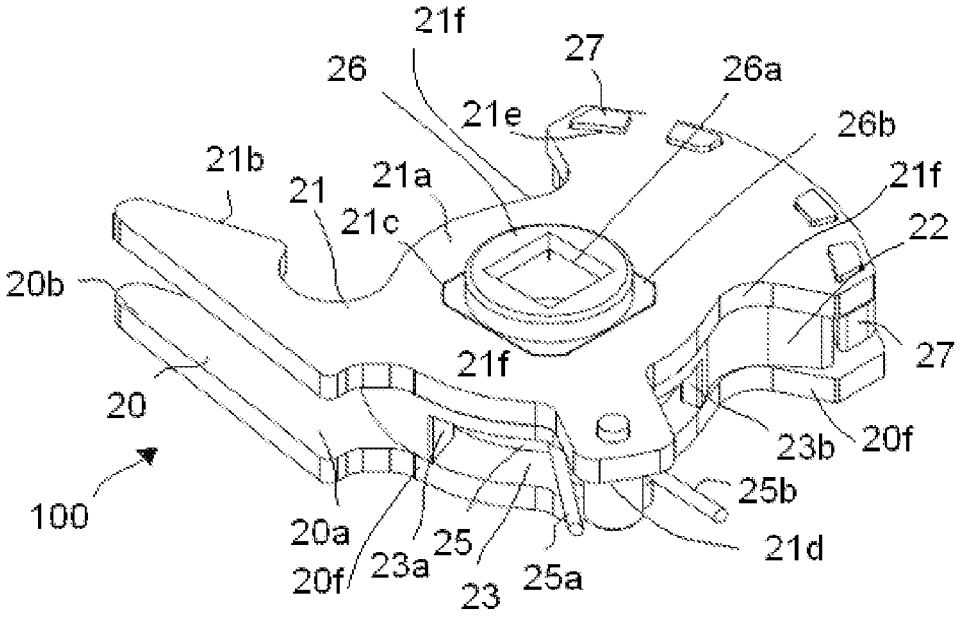

21f
27
26
26a
21e
26b
21b
21a
21
21f
21c
22
20b
27
21f
20
23b
20f
25b
100
20a
25
21d
20f
23a
23
25a

FIG. 4

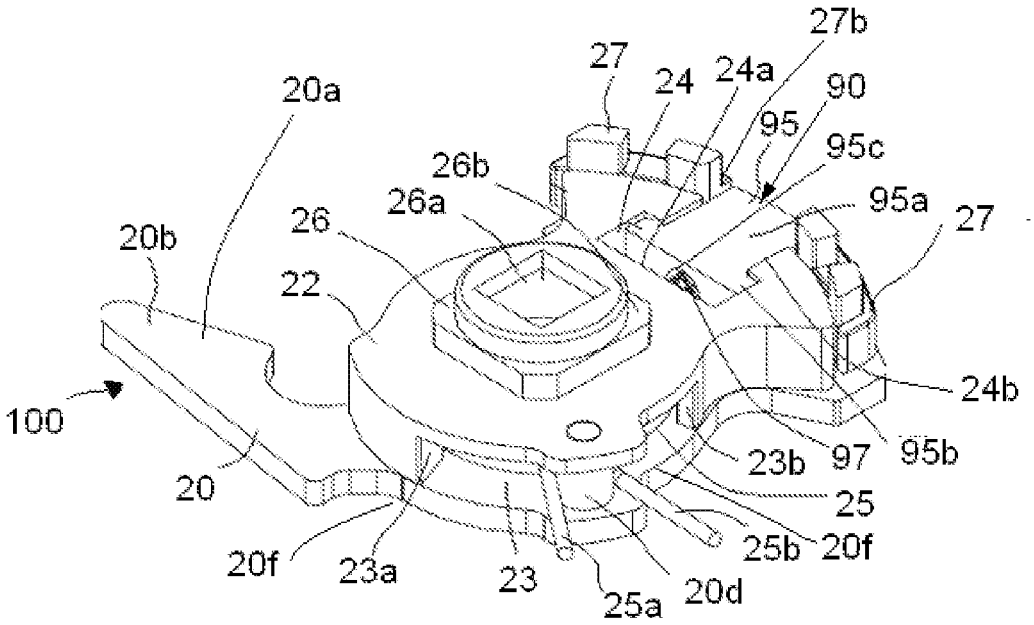

27b
27
24
24a
90
20a
95
95c
26b
26a
95a
27
26
20b
22
24b
100
23b
97
95b
20
25
25b
20f
20f
23a
23
25a
20d

FIG. 5

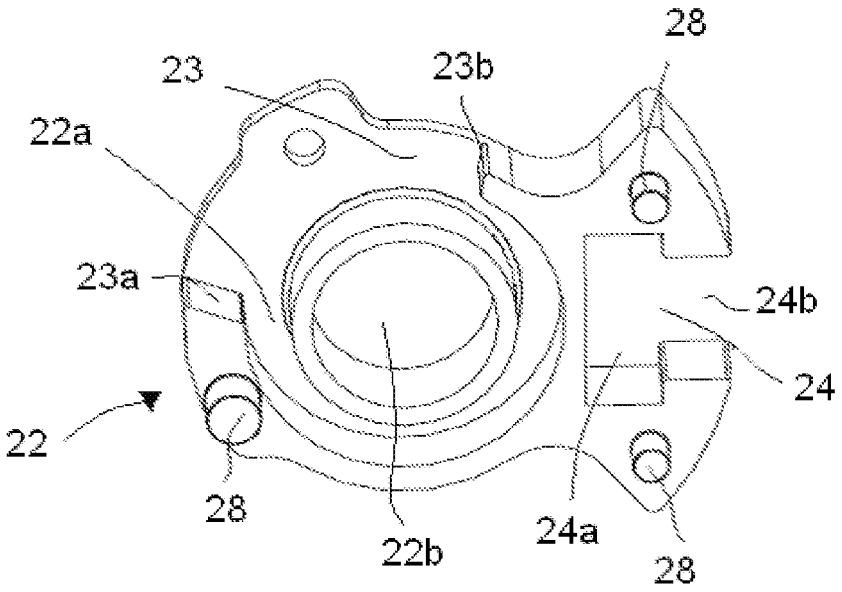

28
23
23b
22a
23a
24b
24
22
28
22b
24a
28

FIG. 6

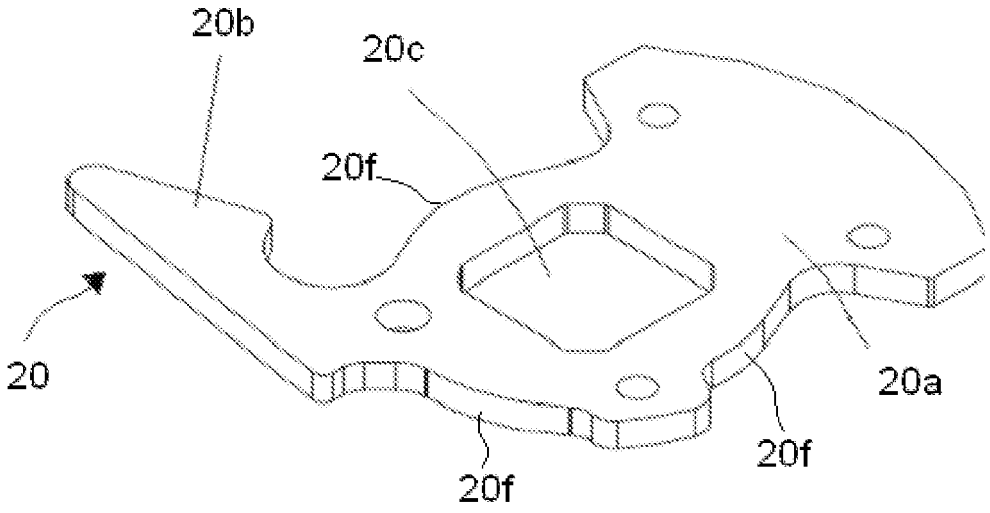

20b
20c
20f
20
20a
20f
20f

FIG. 7

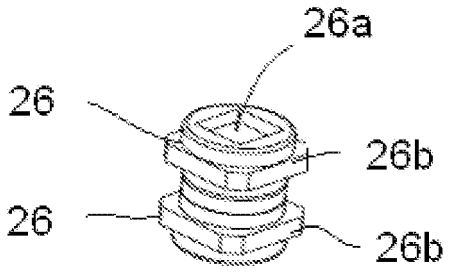


FIG. 8

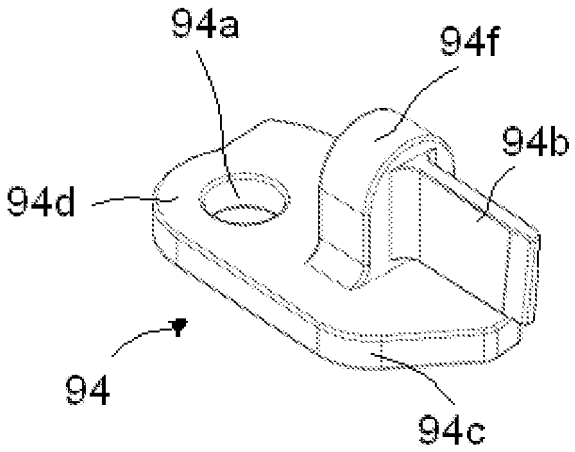


FIG. 9

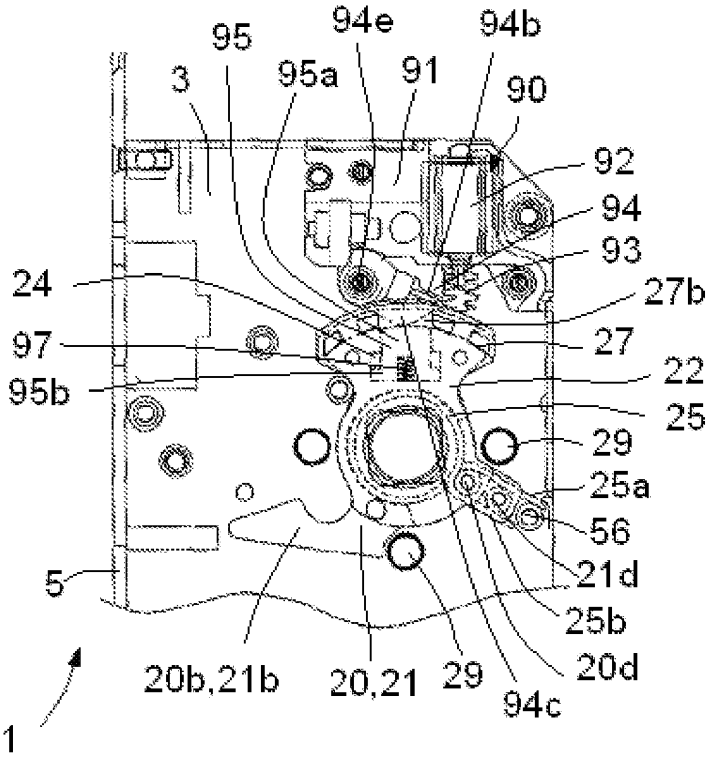

95
94e
94b
3
95a
91
90
92
94
93
24
27b
97
27
22
95b
25
29
25a
56
21d
5
25b
20b,21b
20,21
29
20d
94c
1

FIG. 10

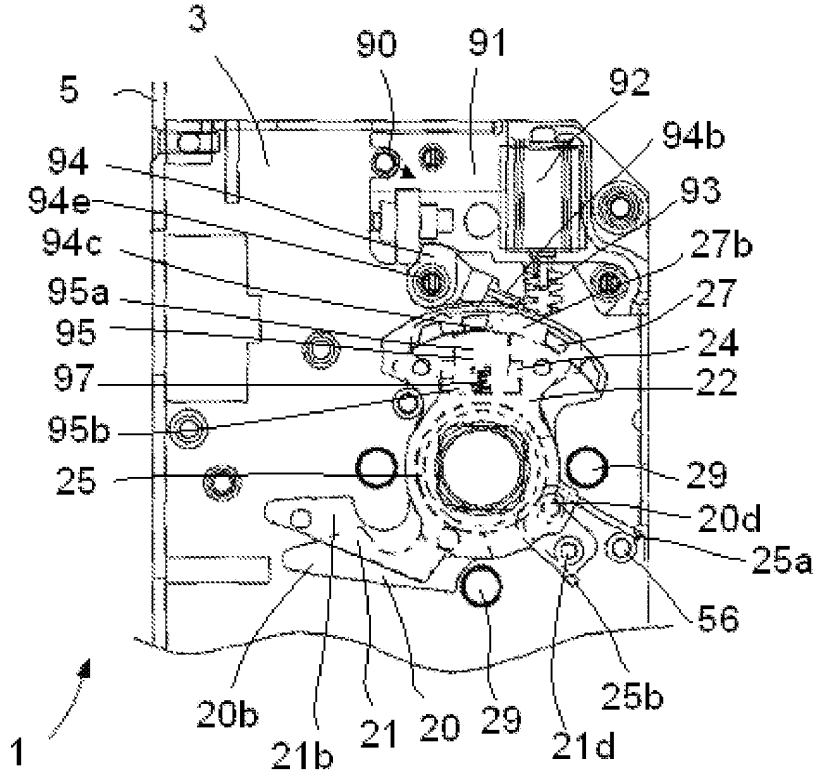

3
90
91
5
92
94b
94
93
94e
27b
94c
27
95a
24
95
22
97
95b
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25
20d
25a
56
20b
21b
21
20
29
25b
21d
1

FIG. 11

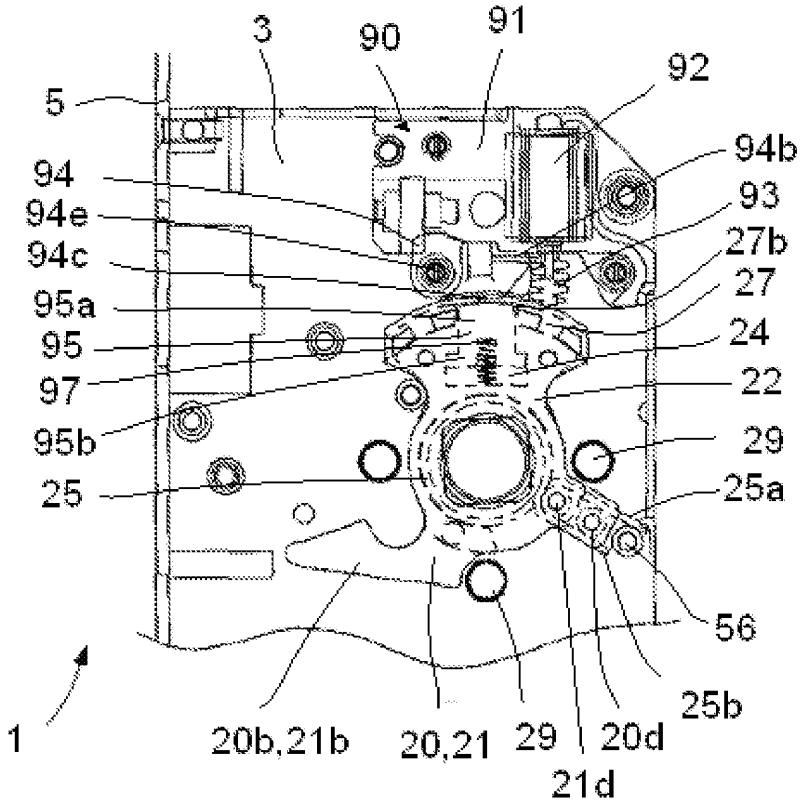

3
90
91
92
5
94b
94
93
94e
27b
94c
27
95a
24
95
22
97
29
95b
25a
25
56
25b
1
20b,21b
20,21
29
20d
21d

FIG. 12

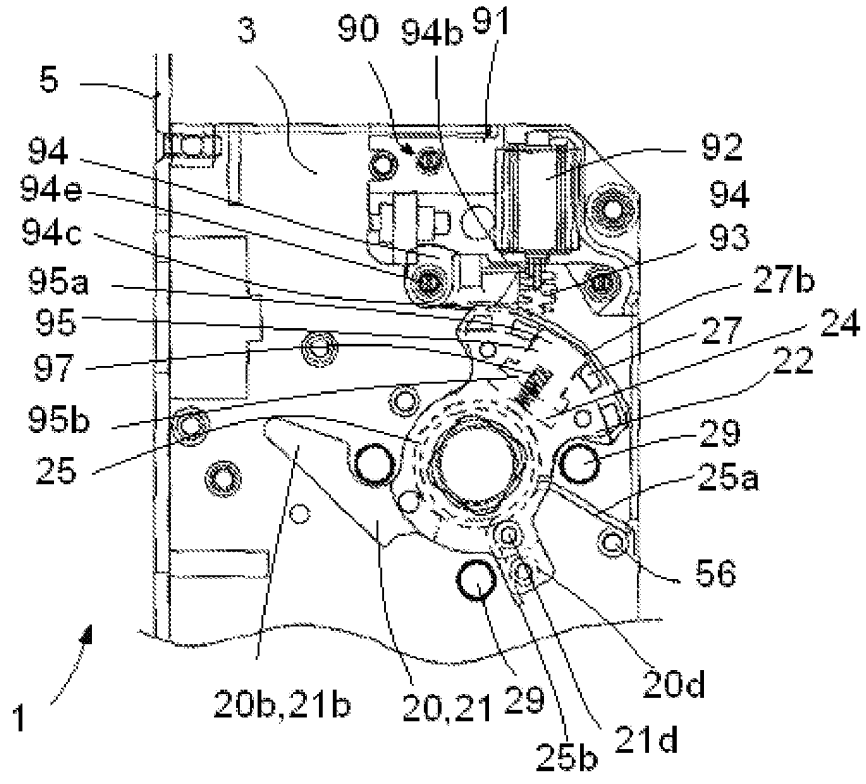

3
90
94b
91
5
92
94
94e
94
93
94c
27b
95a
27
24
95
22
97
29
95b
25a
25
56
1
20b,21b
20,21
29
20d
25b
21d

FIG. 13

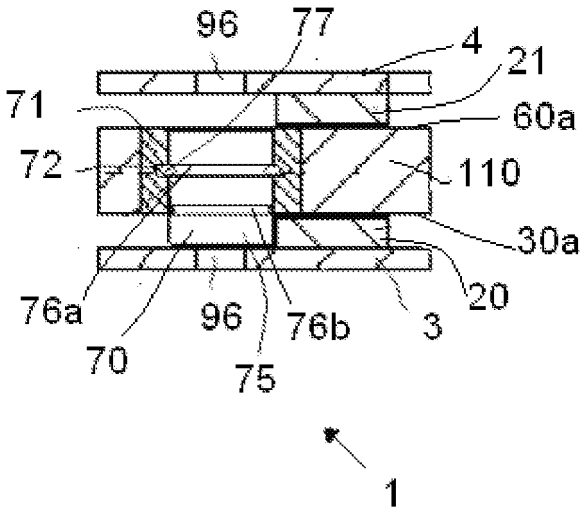

96
77
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21
71
60a
72
110
30a
20
76a
96
76b
3
70
75
1

FIG. 14

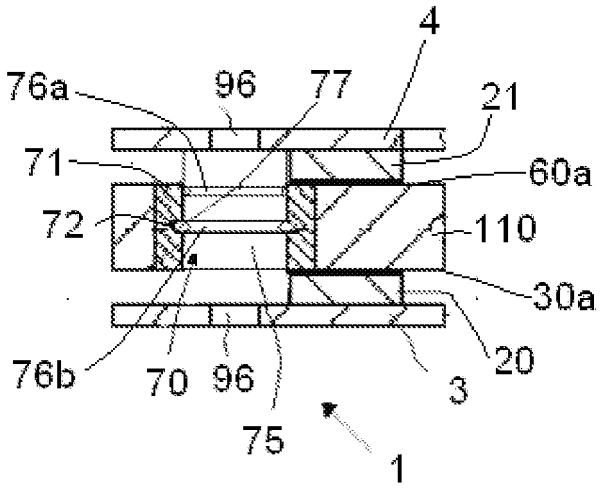

4
76a
96
77
21
71
60a
72
110
30a
76b
70
96
3
20
75
1

FIG. 15

REFERENCES CITED IN THE DESCRIPTION

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- ES 2323201 A1 **[0003]**
- US 6286347 B1 **[0004]**