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(54) **AUXILIARY LOCKING DEVICE FOR SLIDING DOORS OR HINGED DOORS AND THE LIKE FOR APPLICATIONS IN MOTOR VEHICLES**

VERRIEGELUNGSVORRICHTUNG FÜR SCHIEBETÜREN ODER Klapptüren UND
DERGLEICHEN FÜR ANWENDUNGEN IN FAHRZEUGEN

DISPOSITIF DE VERROUILLAGE POUR PORTES COULISSANTES OU PORTES SUR
CHARNIÈRES ET ANALOGUE POUR DES APPLICATIONS DANS DES VÉHICULES À MOTEUR

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Description

BACKGROUND ART OF THE INVENTION

Field of application

[0001] The present invention relates to a locking device of sliding or hinged doors and the like, for applications in motor vehicles. In greater detail, the invention relates to a locking device of cargo doors of a commercial motor vehicle that can be used to prevent the unauthorized opening thereof, in addition to the standard lock.

Prior art

[0002] In the field of commercial motor vehicles, whether they are sliding or hinged, the cargo doors for accessing the loading receptacles of the motor vehicle comprise standard locks which in many cases are easy to force open, thus not being suitable for preventing unauthorized access to the loading receptacles.

[0003] Nowadays, various types of devices or locks for locking the cargo doors of commercial motor vehicles are very common. Such known locking devices may be purchased separately to be fixed to the cargo doors of the motor vehicles, in addition to standard locks.

[0004] A locking device for doors, for example hinged or sliding doors, for commercial motor vehicles of known type typically consists of a lock which comprises, inside a casing, a corresponding mechanism operable by a key that can be inserted into a keyhole arranged on the lock. Such a mechanism comprises a traditional lock which allows the activation of a bolt.

[0005] Such a known lock of the locking device is configured to mechanically act in conjunction with a locking element of the bolt, which is separate from the lock, to ensure the closing of the door. In particular, both the lock and such a locking element of the bolt are each fixed on a respective leaf of the door by means of fixing means so that when the leaves are in the closed position, the bolt of the lock can be inserted into a seat of the locking elements, for example by operating the key. Thereby, any relative movement between the lock and the locking element of the bolt are prevented, thus ensuring that the door remains closed.

[0006] Such a known door locking device using a bolt has the drawback of always requiring a key to control the insertion of the bolt into the seat of the locking element and to lock the door in closed position.

[0007] Moreover, since the movable bolt is included in the lock of the locking device, known systems adapted to release the device from the inside of the motor vehicle under emergency conditions and to allow the opening of the door are usually associated with the lock because they are configured to act on the bolt to release it. This causes certain drawbacks for making and implementing such emergency opening systems of the door since the lock of the device is usually fixed on the leaf of the door

which is opened most often. Indeed, the case may occur in which the emergency opening mechanism of the cargo door of the motor vehicle, and particularly of sliding type, may get caught or otherwise interfere with the fixed portion of the lock applied.

[0008] Document EP2995754 A1 discloses an auxiliary device for opening and closing the loading compartment of a motor vehicle, which can be installed on the back door of the vehicle. Document ES1076172 U discloses a closing for a delivery vehicle.

SUMMARY OF THE INVENTION

[0009] The object of the present invention is to propose a locking device of sliding or hinged doors and the like, for applications in motor vehicles, in particular in commercial motor vehicles, which allows the drawbacks indicated above with reference to the known art described to be overcome.

[0010] A further task of the invention is to provide a locking device for the doors of a motor vehicle comprising contrivances which make it particularly suitable for resisting attempts of forced entry.

[0011] A further task of the invention is to provide a locking device for the doors of a motor vehicle configured to accommodate different types of lock cylinders to meet different needs of use, including at least one suitable for performing the function of "hold open".

[0012] Such objects and tasks are achieved by a locking device for doors of motor vehicles, particularly for sliding doors or hinged doors, as defined by appended claim 1.

[0013] Preferred embodiments of such a door locking device are defined by the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Further features and advantages of the sliding or hinged door locking device according to the invention will become apparent from the following description of preferred embodiments thereof, given only by way of nonlimiting, indicative example, with reference to the accompanying drawings, in which:

- **figure 1** shows a perspective and exploded view of the door locking device of the invention, comprising a first example embodiment of key-operated lock;
- **figure 2** shows a sectional view of the locking device in figure 1, fixed to the door with a disc element for the controlled opening/closing of the lock in closed position;
- **figure 3** shows a sectional view of the locking device in figure 1, fixed to the door with a disc element for the controlled opening/closing of the lock in open position;
- **figure 4** shows a sectional view of the locking device in figure 1, fixed to the door with a disc element for

the controlled opening/closing of the lock in closed position and with a hook of the locking element of the opening/closing disc in open emergency position;

- **figure 5** shows a sectional top view, and with parts separated, of the locking device in figure 1, comprising a lock fixed to a first leaf element of the hinged door and a respective locking element fixed to a second leaf element of the door;
- **figure 6** shows an exploded and enlarged view of the locking element of the locking device of the invention;
- **figure 7** shows a sectional view in assembled configuration, of the locking element in figure 6;
- **figure 8** shows a perspective and exploded view of a second example embodiment of the key-operated lock that can be used in the locking device of the invention;
- **figure 9** shows a perspective and exploded view of a third example embodiment of the key-operated lock that can be used in the locking device of the invention;
- **figure 10** shows a bottom enlarged view of a casing for accommodating a lock unit of the locking device in figure 1.

Equal or similar elements are indicated with the same numerals in the aforesaid figures.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0015] With reference to the aforesaid figures 1 to 7, a locking device for doors of motor vehicles, in particular sliding doors or hinged doors, according to the invention is indicated as a whole with numeral 100.

[0016] The door locking device of the invention can be used in particular to lock the cargo doors of a commercial motor vehicle under closed conditions, in addition to a standard lock, thus preventing the unauthorized opening of such cargo doors and access to the loading receptacle of the motor vehicle.

[0017] Later in the description, the locking device 100 for doors of motor vehicles will also be indicated as locking device or more simply as device.

[0018] With reference to the drawings, the door locking device 100 comprises a lock 10 adapted to be fixed to a first leaf element 50 of the door. Such a lock 10 consists of a casing 1 for accommodating a lock unit 2 which is operable by a key (not shown) that can be inserted into a keyhole 2a prepared in casing 1.

[0019] Such a casing 1 is hemispherical- or cap-shaped with a circular base portion 1a. Such a casing 1 is made of metal material, preferably steel with heat tempering processing to reach a specific degree of hardness HRC 52-54. It is worth noting that due to the cap shape of casing 1 and to the material used to make it, the locking device 100 of the invention ensures an increased resist-

ance to attempts of forced entry both with sharp bodies and with cutting and drilling equipment.

[0020] With reference to figures 2 to 3, the above-mentioned lock unit 2 of the locking device 100 is accommodated in casing 1 along a first axis Z (shown with a dotted line in the drawings) which is orthogonal to a base 4 for fixing lock 10 to the first leaf element 50 of the door. Such a lock unit 2 is operable to control a disc element 3 for opening/closing the locking device 100 and is positioned coaxial to said lock unit 2 to rotate between an open position and a closed position of the device, and vice versa. In other words, the opening/closing disc element 3 operates as a rotating lock bolt of the locking device 100 of the invention. Such a disc element 3 radially extends from the first axis Z and comprises a through hole 3a for the insertion of an actuation end 11' of a cylinder unit 11 or first cylinder unit of the lock unit 2.

[0021] In one example embodiment, the disc element 3 comprises a first arc-shaped engagement surface 3b and a first 3c and a second 3d protruding tooth operating as end stop elements in the rotation of the disc element 3, as will be clarified below.

[0022] In a first embodiment, the aforesaid lock unit 2 comprises a first 12 and a second 13 portion of container/adaptor of the cylinder unit 11 both having a substantially circular section. Such first 12 and second 13 container portion may be coupled with each other to accommodate the cylinder unit 11 itself, thus forming a first adaptor 12-13.

[0023] Moreover, a toroidal-shaped gasket 14, for example made of Teflon, is interposed between the second container portion 13 of the cylinder unit and the disc element 3.

[0024] A further gasket 14' is interposed between the cylinder unit 11 and the disc element 3.

[0025] Moreover, the lock unit 2 comprises protection elements 15, 16, 17 of the cylinder unit 11 interposed between keyhole 2a and the first container portion 12 of the cylinder unit. Such protection elements, of type known to a person skilled in the art, materialize in a defender element 15 and in dust covers 17 operable by springs (not shown) to interact with a respective cover 16. As is known, dust covers, which may be applied on certain types of lock cylinders, have the advantage of avoiding foreign bodies (e.g. dust, water, etc.) from getting inside cylinder 11 once the key is extracted from the lock, thus compromising the correct operation thereof.

[0026] Moreover, with reference to figure 1, the fixing base 4 of lock 10 includes a base sheet 6 fixed to casing 1 by means of first screws 7, in particular four screws. Such a base sheet 6 overlaps and is restrained to an undercut plate 5, which in turn may be fixed to the first leaf element 50 of the door of the motor vehicle by means of second screws 9. Respective third screws 8, in particular two screws, can be inserted into through holes 5a, 6a of the undercut plate 5 and of the base sheet 6, respectively, to ensure a solid fixing of lock 10 to the door of the motor vehicle.

[0027] The locking device 100 of the invention further comprises a locking element 20 of the disc element 3, configured to be fixed to a second leaf element 51 of the door of the motor vehicle.

[0028] Such a locking element 20 is configured to mechanically act in conjunction with the disc element 3 of lock 10 when the door is in a closed configuration, as shown in figure 2. In such a closed configuration of the door, the locking element 20 is inserted in a respective compartment 19 prepared in the hemispherical casing 1 of lock 10.

[0029] In particular, the locking element 20 comprises an engagement unit 21 shaped to delimit a seat 22 adapted to be engaged with the disc element 3 in closed position to prevent any relative movement between lock 10 and the locking element 20 in the closed configuration of the door.

[0030] In a preferred embodiment, the engagement unit of the locking element 20 comprises a hook 21 which is rotatable about a second axis Y orthogonal to the first axis Z of casing 1, from a resting position to a disengaged position. In such a disengaged position, shown in figure 4, hook 21 disengages the disc element 3 by opening the locking device 100 under emergency condition.

[0031] Advantageously, with reference to figures 2 to 4, the locking element 20 comprises manually-operated means 23 configured to operate the rotation of hook 21 about the second axis Y, from the resting position to the disengaged position to release the locking device 100 without using a key.

[0032] In greater detail, such means for operating the rotation of hook 21 consist of a cable 24, for example made of steel, having a first end 24a fixed to a head portion 25 of hook 21 and a second free end 24b which is manually operable from inside the motor vehicle under the emergency condition.

[0033] In addition, with reference to figure 6, the locking element 20 comprises elastic means 26, for example one or more springs, associated with hook 21. Such elastic means 26 are configured to elastically rotate hook 21 from the disengaged position to the resting position following the ceasing of the action executed with the manually-operated means.

For example, the aforesaid elastic means 26 materialize in a torsion spring or a compression spring.

[0034] In a preferred embodiment, the head portion 25 of hook 21 of the locking element 20 comprises a tilted contact and sliding surface 27 adapted to be engaged by the corresponding engagement surface 3b of the disc element 3 rotated in closed position. In particular, the engagement of the first surface 3b of the disc element 3 on the tilted surface 27 of hook 21 causes the rotation of hook 21 itself from the resting position, contrasting the action of the elastic means 26, away from the disc itself. Such a rotation is sufficient to engage the disc element 3 in the seat 22 of hook 21 to lock the door in closed position (figure 2).

[0035] In order to release device 100 and open the

door from such a closed position of the door, there is a need to rotate the disc element, by means of a key, by 90°, from the closed position to the open position (figure 3) to bring device 100 from the locked configuration to the released configuration.

[0036] Generally, the key may only be extracted from the cylinder unit 11 in the locked position of device 100.

[0037] In a preferred embodiment, with reference to figures 1, 6 and 7, the rotatable hook 21 is fixed, for example by means of a pin 35, to a semi-circular plate 28 for fixing the locking element 20 to the second leaf element 51 of the door.

[0038] It is worth noting that such a plate 28 comprises parallel ribs 37 for the insertion of the pin 35 of hook 21 adapted to act in conjunction with a closing element 36 to delimit a rotation compartment 38 for hook 21. It is worth noting that plate 28 and the closing element 36 simultaneously may be fixed to each other and to the second leaf element 52 of the door by means of bolts 39 (shown in figure 1).

[0039] Advantageously, the fixing plate 28 includes first 29 and second 30 security means adapted to hinder attempts to tamper with the device and/or unauthorized opening.

[0040] In particular, the first security means comprise ribs 29 arranged on a circumferential portion of the fixing plate 28 for the protection of hook 21.

[0041] The second security means comprise a tubular conduit 30 made in one piece with the fixing plate 28 and which extends from said fixing plate away from hook 21. Such a tubular conduit 30, which is in communication with the rotation compartment 38 of hook 21, is configured to promote the insertion and the protection of the release cable 24 in an emergency of device 100 (figure 7).

[0042] Such security means 29, 30 make it difficult to reach both hook 21 and the security cable 24 from the outside of device 100 in order to operate the hook in an emergency and therefore they hinder all attempts to force open and release device 100.

[0043] It is worth noting that the cap-shaped casing 1 of device 100 is shaped so as to accommodate various types of cylinder units with the related containers or adapters.

[0044] It is worth noting that the lock unit 2 in figure 1 comprises the first cylinder unit 11 which is operable by a flat key (not depicted).

[0045] Figure 8 shows a perspective and exploded view of a second example embodiment of the key-operated lock unit 2' that can be used in the locking device 100 of the invention.

Such a second lock unit 2' comprises a respective cylinder unit 111 or second cylinder unit which is operable by a tubular key 112 to act on a control element 115 of the lock unit 2'. Such a second cylinder unit 111 can be inserted into a second container or adapter 113 to be accommodated in casing 1.

[0046] Moreover, a respective toroidal-shaped gasket 114, for example made of Teflon, is interposed between

the second container/adaptor 113 of the second cylinder unit and the disc element 3'.

[0047] A head gasket 114a is positioned close to an opening 113a for inserting the second cylinder unit 111 into the second adapter 113.

[0048] The control element 115 comprises an actuation end 115' which can be inserted into the through hole 3a of the disc element 3'. It is worth noting that the disc element 3' comprises the first engagement surface 3b similar to the one of disc 3 in figure 1, but does not have protruding end stop teeth.

[0049] It is worth noting that with the above-described second cylinder unit 111 with tubular key 112, the device 100 of the invention advantageously implements the function of "hold open", known to a person skilled in the art. With such a function, the key may be extracted both in closed lock position and in open lock position in order to meet various needs of use. In other words, the disc element 3' may be locked in open position and key 112 may be extracted from cylinder 111.

[0050] Figure 9 shows a perspective and exploded view of a third example embodiment of the key-operated lock unit 2" that can be used in the locking device 100 of the invention.

[0051] Such a third lock unit 2" comprises a third cylinder unit 211, in particular a double cylinder, which is operable by a key (not shown). Such a double cylinder 211 has an actuation end 211' which can be inserted into the through hole 3a of the disc element 3.

[0052] Such a disc element 3 is similar to the one described with reference to figure 1.

[0053] Such a double cylinder 211 can be inserted into a respective container/adaptor 213 or third adapter having U-shaped cross section to be accommodated in casing 1.

[0054] Moreover, a respective U-shaped gasket 214, for example made of Teflon, is interposed between the third container/adaptor 213 of the cylinder and the disc element 3.

[0055] Additionally, a unit 215 for protecting the double cylinder 211 comprises a defender 215a fixed to a cover 215b between which a membrane 215c, for example a silicone resin membrane, and a respective head gasket 214a are interposed.

[0056] With reference to figure 10, an inner structure of the cap-shaped casing 1 configured to accommodate the various above-mentioned lock units 2, 2', 2" is described in greater detail.

[0057] In particular, casing 1 comprises a through hole 80 in communication with keyhole 2a and configured to accommodate the three types of lock units 2, 2', 2", that is the first 11, the second 111 and the third 211 cylinder unit inserted in the first 12-13, in the second 113 and in the third 213 container/adaptor, respectively.

[0058] In greater detail, the hole 80 is delimited by a first wall 81 connected to an inner wall 82 of casing 1 through radial ribs 83. The aforesaid first wall 81 of hole 80 comprises canals 84, in particular four canals, which

are coaxial to the aforesaid hole 80. Such canals 84 are configured to engage longitudinal ribs 85 prepared on an outer surface S, S', S'' of the first 12-13, of the second 113 and of the third 213 adapter, respectively.

[0059] In particular, such longitudinal ribs 85 allow to insert and keep in position the first adapter 12-13 of the first cylinder 11 (shown in figure 1) in hole 80.

[0060] Moreover, the through hole 80 comprises a first 86 and a second 87 compartment which radially extend from the aforesaid hole 80 along a same main direction or first direction and in opposite direction.

[0061] In greater detail, the above-mentioned second adapter element 113 of the second cylinder unit 111 comprises a protruding portion 88, with a rectangular cross section, prepared on the outer surface S' of such a second adapter element and configured to be housed in the first compartment 86.

[0062] In other words, providing such a first compartment 86 advantageously allows to insert and keep in position the second adapter element 113 of the second cylinder 111 in the hole 80 of casing 1.

[0063] Moreover, the third locking cylinder 211 of the above-described lock unit 2" housed in the third adapter element 213 comprises a first protruding portion 89 configured to be housed in the second compartment 87. In other words, providing such a second compartment 87 advantageously allows to insert and keep in position the third cylinder 211, with the related adapter 213, in the hole 80 of casing 1.

[0064] Moreover, one of the above-mentioned radial ribs 83 of casing 1 comprises a raised element 90 configured to abut with the protruding teeth 3c and 3d of the disc element 3 by acting as end stop for the rotation of such a disc element.

[0065] It is worth noting that all the components of the locking element 20 of the locking device 100 and all the fixing means used in the device are made of metal material, preferably of stainless steel, to ensure an increased resistance to oxidization.

[0066] Preferably, defender 15, 215a of the cylinder unit 11, 211 has the same features as the cap-shaped casing 1 in terms of materials used for the manufacturing thereof.

[0067] As noted above, the locking device 100 for doors of motor vehicles of the invention has several advantages with respect to known solutions and perfectly achieves the set objects.

[0068] In particular, with the locking device 100, there is no need to use the key to lock the door in closed position. Indeed, following the movement of the first leaf element 50 to bring the door of the motor vehicle to the closed position, due to the shape of the head portion 25 of the rotatable hook 21, the disc element 3, which is already in closed position, engages the contact and sliding surface 27 of such a head portion 25, thus causing the rotation of hook 21 away from the disc itself. Such a rotation is sufficient to engage the disc in seat 22 of the hook to lock the door in closed position. Moreover, with

the device of the invention, there is no need to use a mechanism with a "quick release" movement.

[0069] Moreover, unlike known solutions, the locking device 100 for doors of motor vehicles of the invention does not have the drawbacks for making and implementing emergency opening systems of the door since such systems in device 100 are associated with the locking element 20 and not with the lock 10.

[0070] Moreover, as described above, the locking device 100 of the doors of a motor vehicle comprises security means associated with the locking element 20 which prevent the opening of the device with skill, for example by introducing foreign bodies to cause a rotation of hook 21. Such security means therefore make the door locking device 100 of the invention suitable for resisting attempts of forced entry and tampering.

[0071] Moreover, device 100 is configured to accommodate different types of lock cylinders to meet different needs of use, among them one suitable for performing the function of "hold open".

[0072] Those skilled in the art may make several changes and adaptations to the embodiments of the locking device for doors of motor vehicles of the invention, and may replace elements with others which are functionally equivalent in order to meet contingent needs, without departing from the scope of the invention as defined by the appended claims.

Claims

1. A locking device (100) in addition to the standard lock for doors of motor vehicles, in particular sliding doors or hinged doors, comprising:

- a lock (10) adapted to be fixed to a first leaf element (50) of said door, said lock consisting of a casing (1) for accommodating a key-operated lock unit (2; 2'; 2''), said lock unit (2; 2'; 2'') being accommodated in the casing (1) along a first axis (Z) orthogonal to a base (4) for fixing the lock (10) to the first leaf element (50) of the door, said lock unit (2; 2'; 2'') being operable to control a disc element (3; 3') for opening/closing the locking device and being positioned coaxial to said lock unit (2; 2'; 2'') to rotate between an open position and a closed position of the device and vice versa;
- a locking element (20) of said disc element, configured to be fixed to a second leaf element (51) of said door, said locking element (20) being configured to mechanically act in conjunction with the disc element (3; 3') of the lock (10) when the door is in a closed configuration, said locking element (20) comprising an engagement unit (21) shaped to delimit a seat (22) adapted to be engaged with said disc element (3; 3') in closed position to prevent any relative movement be-

tween the lock (10) and the locking element (20) in the closed configuration of the door,

wherein said casing (1) comprises a through hole (80) configured to accommodate said lock unit (2, 2', 2''), said through hole (80) being delimited by a first wall (81) connected to an inner wall (82) of the casing (1) through radial ribs (83), and wherein said first wall (81) of the hole (80) comprises canals (84) which are coaxial to the hole (80) to engage longitudinal ribs (85) prepared on the outer surface (S, S', S'') of an adapter element (12-13; 113; 213) of the lock unit (2, 2', 2'').

2. A locking device (100) for doors of motor vehicles according to claim 1, wherein said engagement unit of the locking element (20) comprises a hook (21) which is rotatable about a second axis (Y) orthogonal to the first axis (Z) of the casing (1) from a resting position to a disengaged position to disengage the disc element (3; 3') by opening the locking device under emergency condition.
3. A locking device (100) for doors of motor vehicles according to claim 2, wherein said locking element (20) comprises manually-operated means (23) configured to operate the rotation of the hook (21) from the resting position to the disengaged position to release the locking device without using a key.
4. A locking device (100) for doors of motor vehicles according to the preceding claim, wherein said means for operating the rotation of the hook (21) consist of a cable (24) having a first end (24a) fixed to a head portion (25) of the hook (21) and a second free end (24b) which is manually operable from inside the motor vehicle.
5. A locking device (100) for doors of motor vehicles according to claim 3, wherein said locking element (20) comprises elastic means (26) associated with said hook (21), said elastic means being configured to elastically rotate the hook (21) from the disengaged position to the resting position following the ceasing of the action executed with said manually-operated means.
6. A locking device (100) for doors of motor vehicles according to claims 4 and 5, wherein the head portion (25) of the hook (21) of the locking element (20) comprises a contact and sliding surface (27) adapted to be engaged by a corresponding surface (3b) of the disc element (3; 3') rotated in closed position to cause the rotation of the hook (21) from the resting position contrasting the action of the aforesaid elastic means (26).
7. A locking device (100) for doors of motor vehicles

according to claim 4, wherein said rotatable hook is fixed to a semi-circular plate (28) for fixing the locking element (20) to the second leaf element (51) of the door, said fixing plate (28) including first (29) and second (30) security means adapted to hinder attempts to tamper with the device.

8. A locking device (100) for doors of motor vehicles according to claim 7, wherein said first security means comprise ribs (29) arranged on a circumferential portion of the fixing plate (28) for the protection of the hook (21) .
9. A locking device (100) for doors of motor vehicles according to claim 7, wherein said second security means comprise a tubular conduit (30) made in one piece with the fixing plate (28) and which extends from said fixing plate away from said hook (21), said conduit being configured to promote the insertion and the protection of the release cable (24) in an emergency of the device.
10. A locking device (100) for doors of motor vehicles according to any one of the preceding claims, wherein said casing (1) is hemispherical- or cap-shaped and is made of steel.
11. A locking device (100) for doors of motor vehicles according to claim 1, wherein said through hole (80) comprises a first (86) and a second (87) compartment which radially extend from the aforesaid hole (80) along a first direction and in opposite direction.
12. A locking device (100) for doors of motor vehicles according to claim 11, wherein said adapter element (113) of the lock unit (2') comprises a protruding portion (88) prepared on the outer surface (S') configured to be housed in said first compartment (86) .
13. A locking device (100) for doors of motor vehicles according to claim 11, wherein said lock unit (2'') comprises a locking cylinder (211) housed in said adapter element (213) and having a first protruding portion (89) configured to be housed in said second compartment (87).

Patentansprüche

1. Verriegelungsvorrichtung (100) zusätzlich zu der Standard Verriegelung für Türen von Motorfahrzeugen, insbesondere Schiebetüren oder angelenkte Türen, umfassend:
 - ein Schloss (10), welches dazu eingerichtet ist, an einem ersten Blattelement (50) der Tür befestigt zu sein, wobei das Schloss aus einem Gehäuse (1) zum Unterbringen einer schlüssel-

betätigten Schlosseinheit (2; 2'; 2'') besteht, wobei die Schlosseinheit (2; 2'; 2'') in dem Gehäuse (1) entlang einer ersten Achse (Z), orthogonal zu einer Basis (4) zum Befestigen des Schlosses (10) an dem ersten Blattelement (50) der Tür untergebracht ist, wobei die Schlosseinheit (2; 2'; 2'') dazu betätigbar ist, ein Scheibenelement (3; 3') zum Öffnen/Schließen der Verriegelungsvorrichtung zu steuern und koaxial zu der Schlosseinheit (2; 2'; 2'') positioniert ist, um zwischen einer offenen Position und einer geschlossenen Position der Vorrichtung und umgekehrt zu rotieren;

- ein Verriegelungselement (20) des Scheibenelements, welches dazu eingerichtet ist, an einem zweiten Blattelement (51) der Tür befestigt zu sein, wobei das Verriegelungselement (20) dazu eingerichtet ist, mechanisch in Zusammenarbeit mit dem Scheibenelement (3; 3') des Schlosses (10) zu wirken, wenn die Tür in einer geschlossenen Konfiguration ist, wobei das Verriegelungselement (20) ein Eingriffselement (21) umfasst, welches geformt ist, um einen Sitz (22) zu begrenzen, welcher dazu eingerichtet ist, mit dem Scheibenelement (3; 3') in geschlossener Position eingegriffen zu sein, um eine relative Bewegung zwischen dem Schloss (10) und dem Verriegelungselement (20) in der geschlossenen Konfiguration der Tür zu verhindern,

wobei das Gehäuse (1) ein Durchgangsloch (80) umfasst, welches dazu eingerichtet ist, die Schlosseinheit (2, 2', 2'') aufzunehmen, wobei das Durchgangsloch (80) durch eine erste Wand (81) begrenzt ist, welche mit einer inneren Wand (82) des Gehäuses (1) durch radiale Rippen (83) verbunden ist, und wobei die erste Wand (81) des Lochs (80) Kanäle (84) umfasst, welche koaxial zu dem Loch (80) sind, um mit longitudinalen Rippen (85) einzugreifen, welche an der äußeren Fläche (S, S', S'') eines Adapterelements (12 - 13; 113; 213) der Schlosseinheit (2, 2', 2'') vorbereitet sind.

2. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 1, wobei die Eingriffseinheit des Verriegelungselements (20) einen Haken (21) umfasst, welcher um eine zweite Achse (Y) orthogonal zu der ersten Achse (Z) des Gehäuses (1) von einer Ruheposition zu einer gelösten Position rotierbar ist, um durch Öffnen der Verriegelungsvorrichtung unter einer Notbedingung das Scheibenelement (3; 3') zu lösen.

3. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 2, wobei das Verriegelungselement (20) manuell betätigte Mittel (23) umfasst, welche dazu eingerichtet sind, die Rotation

des Hakens (21) von der Ruheposition zu der gelösten Position zu betätigen, um die Verriegelungsvorrichtung ohne Verwendung eines Schlüssels freizugeben.

4. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach dem vorhergehenden Anspruch, wobei die Mittel zum Betätigen der Rotation des Hakens (21) aus einem Kabel (24) bestehen, welches ein erstes Ende (24a), welches an einem Kopfabschnitt (25) des Hakens (21) befestigt ist, und ein zweites freies Ende (24b) aufweist, welches von einer Innenseite des Motorfahrzeugs her manuell betätigbar ist.
5. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 3, wobei das Verriegelungselement (20) elastische Mittel (26) umfasst, welche dem Haken (21) zugeordnet sind, wobei die elastischen Mittel dazu eingerichtet sind, den Haken (21) von der gelösten Position zu der Ruheposition elastisch zu rotieren, dem Beenden der Handlung folgend, welche mit den manuell betätigten Mitteln ausgeübt wird.
6. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 4 und 5, wobei der Kopfabschnitt (25) des Hakens (21) des Verriegelungselements (20) eine Kontakt- und Gleitfläche (27) umfasst, welche dazu eingerichtet ist, durch eine entsprechende Fläche (3b) des Scheibenelements (3; 3') eingegriffen zu werden, welches in geschlossene Position rotiert ist, um die Rotation des Hakens (21) aus der Ruheposition zu veranlassen, wobei der Handlung der voranstehend erwähnten elastischen Mittel (26) entgegengewirkt wird.
7. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 4, wobei der rotierbare Haken an einer halbkreisförmigen Platte (28) zum Befestigen des Verriegelungselements (20) an dem zweiten Blattelement (51) der Tür befestigt ist, wobei die Befestigungsplatte (28) erste (29) und zweite (30) Sicherheitsmittel umfasst, welche dazu eingerichtet sind, Versuche zu verhindern, die Vorrichtung unbefugt zu betätigen.
8. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 7, wobei die ersten Sicherheitsmittel Rippen (29) umfassen, welche an einem Umfangsabschnitt der Befestigungsplatte (28) für den Schutz des Hakens (21) angeordnet sind.
9. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 7, wobei die zweiten Sicherheitsmittel eine röhrenförmige Leitung (30) umfassen, welche mit der Befestigungsplatte (28) einstückig hergestellt ist, und welche sich von der Be-

festigungsplatte von dem Haken (21) weg erstreckt, wobei die Leitung dazu eingerichtet ist, das Einführen und den Schutz des Freigabekabels (24) in einem Notfall der Vorrichtung zu fördern.

10. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach einem der vorhergehenden Ansprüche, wobei das Gehäuse (1) halbkugelförmig oder kappenförmig ist und aus Stahl hergestellt ist.
11. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 1, wobei das Durchgangsloch (80) ein erstes (86) und ein zweites (87) Abteil umfasst, welcher sich radial von dem voranstehend erwähnten Loch (80) entlang einer ersten Richtung und in einer entgegengesetzten Richtung erstrecken.
12. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 11, wobei das Adapterelement (113) der Schlosseinheit (2') einen vorstehenden Abschnitt (88) umfasst, welche an der äußeren Fläche (S') vorbereitet ist, welcher dazu eingerichtet ist, in dem ersten Abteil (86) untergebracht zu sein.
13. Verriegelungsvorrichtung (100) für Türen von Motorfahrzeugen nach Anspruch 11, wobei die Schlosseinheit (2") einen Verriegelungszylinder (211) umfasst, welcher in dem Adapterelement (213) untergebracht ist und einen ersten vorstehenden Abschnitt (89) aufweist, welcher dazu eingerichtet ist, in dem zweiten Abteil (87) untergebracht zu sein.

Revendications

1. Dispositif de verrouillage (100) en plus du verrou standard pour portes de véhicules à moteur, en particulier portes coulissantes ou portes sur charnières, comprenant :
 - un verrou (10) adapté pour être fixé à un premier élément de battant (50) de ladite porte, ledit verrou consistant en un boîtier (1) pour le logement d'une unité de verrou actionnée par clé (2 ; 2' ; 2"), ladite unité de verrou (2 ; 2' ; 2") étant logée dans le boîtier (1) le long d'un premier axe (Z) orthogonalement à une base (4) pour la fixation du verrou (10) au premier élément de battant (50) de la porte, ladite unité de verrou (2 ; 2' ; 2") étant actionnable pour commander un élément de disque (3; 3) pour l'ouverture/fermeture du dispositif de verrouillage et étant positionnée coaxiale à ladite unité de verrou (2 ; 2' ; 2") pour tourner entre une position ouverte et une position fermée du dispositif et inversement ;

- un élément de verrouillage (20) dudit élément de disque, configuré pour être fixé à un deuxième élément de battant (51) de ladite porte, ledit élément de verrouillage (20) étant configuré pour agir mécaniquement conjointement avec l'élément de disque (3 ; 3') du verrou (10) lorsque la porte est dans une configuration fermée, ledit élément de verrouillage (20) comprenant une unité de mise en prise (21) formée pour délimiter un siège (22) adapté pour être mis en prise avec ledit élément de disque (3 ; 3') en position fermée pour empêcher tout mouvement relatif entre le verrou (10) et l'élément de verrouillage (20) dans la position configuration fermée de la porte,
- dans lequel ledit boîtier (1) comprend un trou traversant (80) configuré pour recevoir ladite unité de verrou (2, 2', 2''), ledit trou traversant (80) étant délimité par une première paroi (81) reliée à une paroi intérieure (82) du boîtier (1) à travers des nervures radiales (83), et dans lequel ladite première paroi (81) du trou (80) comprend des canaux (84) qui sont coaxiaux au trou (80) pour mettre en prise des nervures longitudinales (85) préparées sur la surface extérieure (S, S', S'') d'un élément d'adaptateur (12-13 ; 113 ; 213) de l'unité de verrou (2, 2', 2'').
2. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 1, dans lequel ladite unité de mise en prise de l'élément de verrouillage (20) comprend un crochet (21) qui est rotatif autour d'un deuxième axe (Y) orthogonalement au premier axe (Z) du boîtier (1) d'une position de repos à une position de mise hors prise pour mettre hors prise l'élément de disque (3 ; 3') par ouverture du dispositif de verrouillage dans des conditions d'urgence.
 3. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 2, dans lequel ledit élément de verrouillage (20) comprend un moyen à commande manuelle (23) configuré pour actionner la rotation du crochet (21) de la position de repos à la position de mise hors prise pour libérer le dispositif de verrouillage sans utiliser de clé.
 4. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication précédente, dans lequel ledit moyen d'actionnement de la rotation du crochet (21) consiste en un câble (24) ayant une première extrémité (24a) fixée à une portion de tête (25) du crochet (21) et une deuxième extrémité libre (24b) qui est actionnable manuellement depuis l'intérieur du véhicule à moteur.
 5. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 3, dans lequel
- ledit élément de verrouillage (20) comprend un moyen élastique (26) associé audit crochet (21), ledit moyen élastique étant configuré pour tourner élastiquement le crochet (21) de la position hors prise à la position de repos après l'arrêt de l'action exécutée avec ledit moyen à commande manuelle.
6. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon les revendications 4 et 5, dans lequel la portion de tête (25) du crochet (21) de l'élément de verrouillage (20) comprend un contact et une surface coulissante (27) adaptée pour être mise en prise par une surface correspondante (3b) de l'élément de disque (3 ; 3') tourné en position fermée pour provoquer la rotation du crochet (21) de la position de repos en contraste avec l'action du moyen élastique susmentionné (26).
 7. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 4, dans lequel ledit crochet rotatif est fixé à une plaque semi-circulaire (28) pour la fixation de l'élément de verrouillage (20) au deuxième élément de battant (51) de la porte, ladite plaque de fixation (28) comprenant des premiers (29) et deuxièmes (30) moyens de sécurité adaptés pour empêcher des tentatives d'effraction du dispositif.
 8. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 7, dans lequel lesdits premiers moyens de sécurité comprennent des nervures (29) agencées sur une portion circonférentielle de la plaque de fixation (28) pour la protection du crochet (21).
 9. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 7, dans lequel lesdits deuxièmes moyens de sécurité comprennent un conduit tubulaire (30) réalisé d'un seul tenant avec la plaque de fixation (28) et qui s'étend de ladite plaque de fixation en s'éloignant dudit crochet (21), ledit conduit étant configuré pour favoriser l'insertion et la protection du câble de libération (24) dans une urgence du dispositif.
 10. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon l'une quelconque des revendications précédentes, dans lequel ledit boîtier (1) est de forme hémisphérique ou de capuchon et est réalisé en acier.
 11. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 1, dans lequel ledit trou traversant (80) comprend un premier (86) et un deuxième (87) compartiment qui s'étendent radialement du trou susmentionné (80) le long d'une première direction et en direction opposée.

12. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 11, dans lequel ledit élément d'adaptateur (113) de l'unité de verrou (2') comprend une portion en saillie (88) préparée sur la surface extérieure (S') configurée pour être logée dans ledit premier compartiment (86). 5
13. Dispositif de verrouillage (100) pour portes de véhicules à moteur selon la revendication 11, dans lequel ladite unité de verrou (2'') comprend un cylindre de verrouillage (211) logé dans ledit élément d'adaptateur (213) et ayant une première portion en saillie (89) configurée pour être logée dans ledit deuxième compartiment (87). 10

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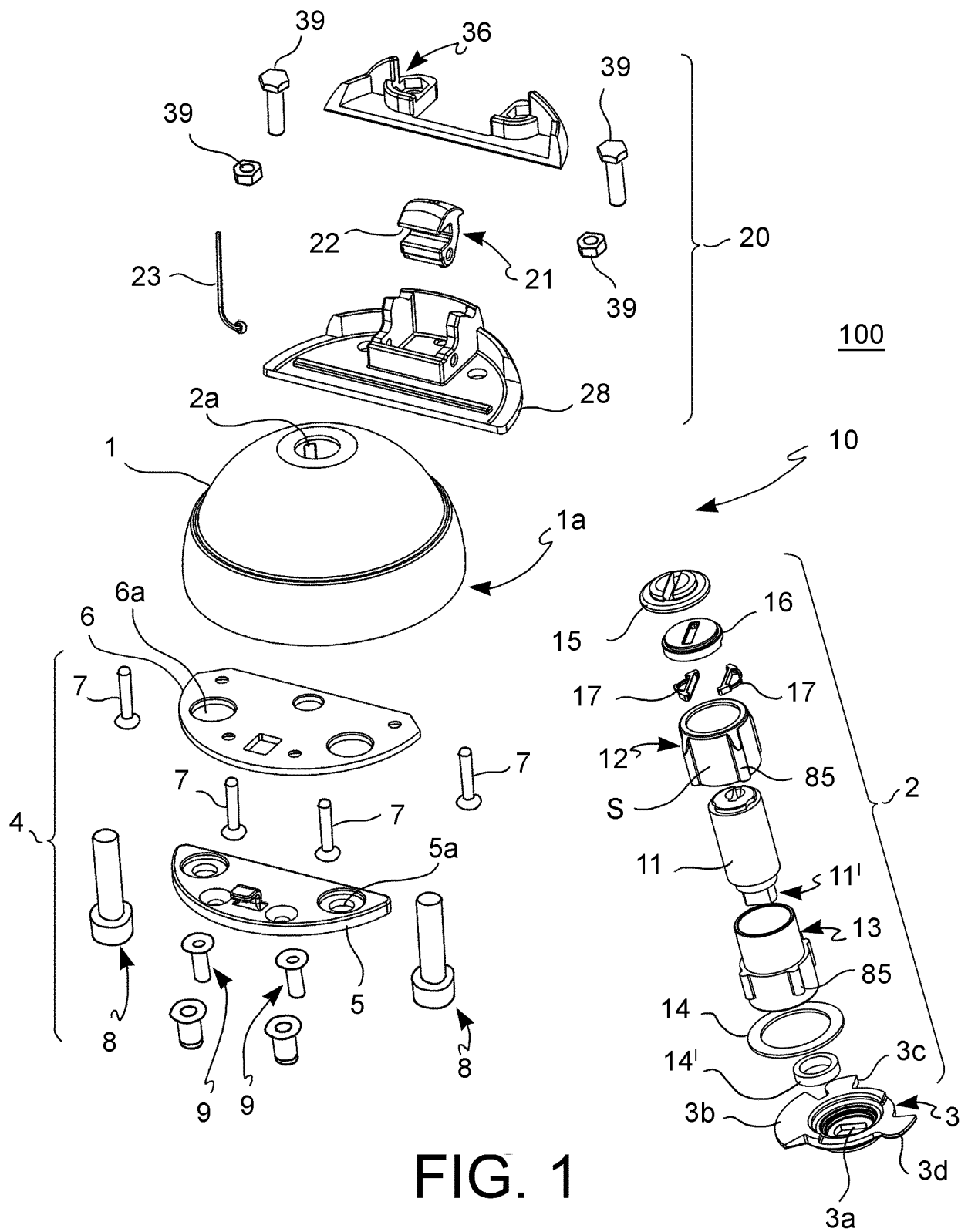


FIG. 1

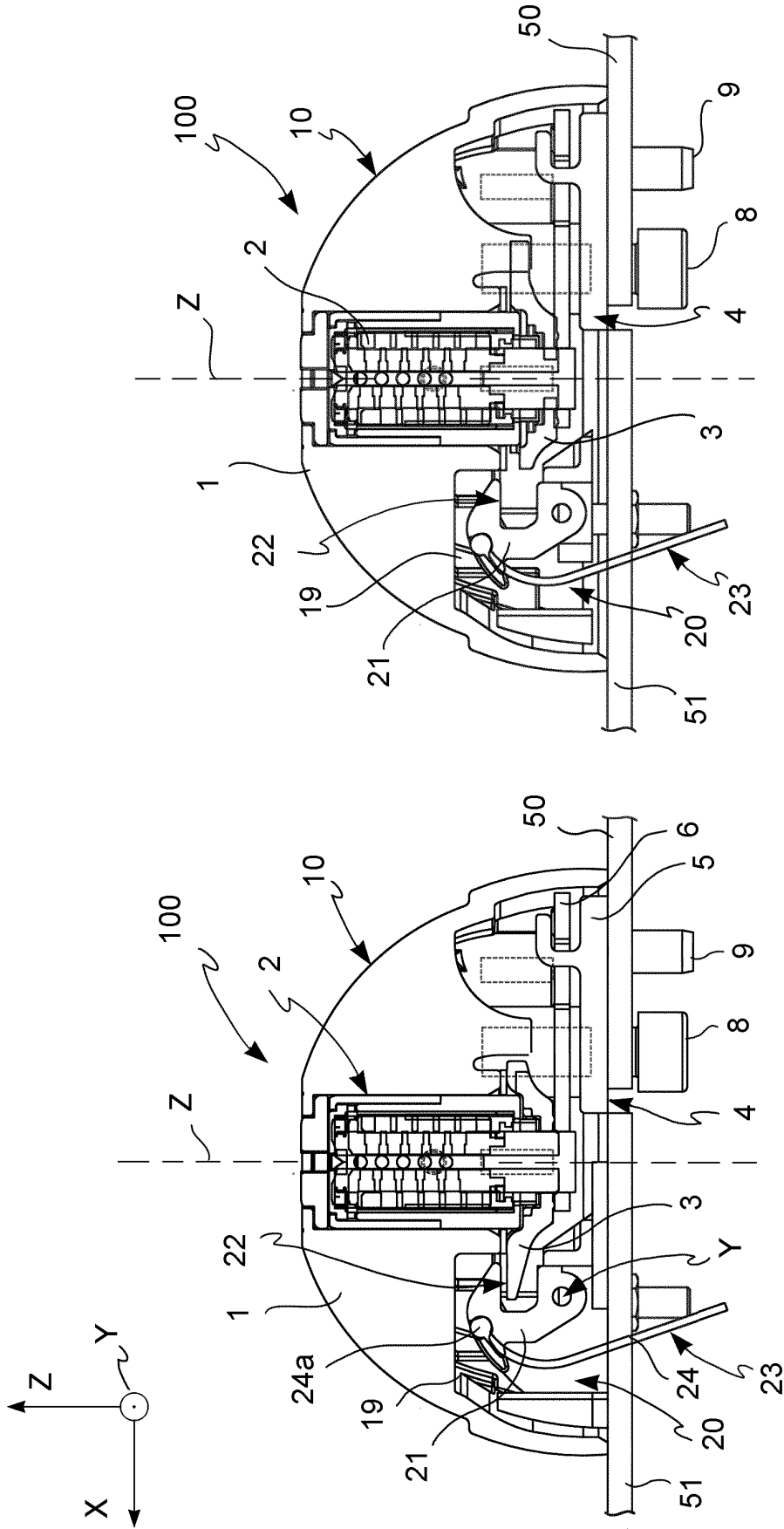


FIG. 3

FIG. 2

FIG. 4

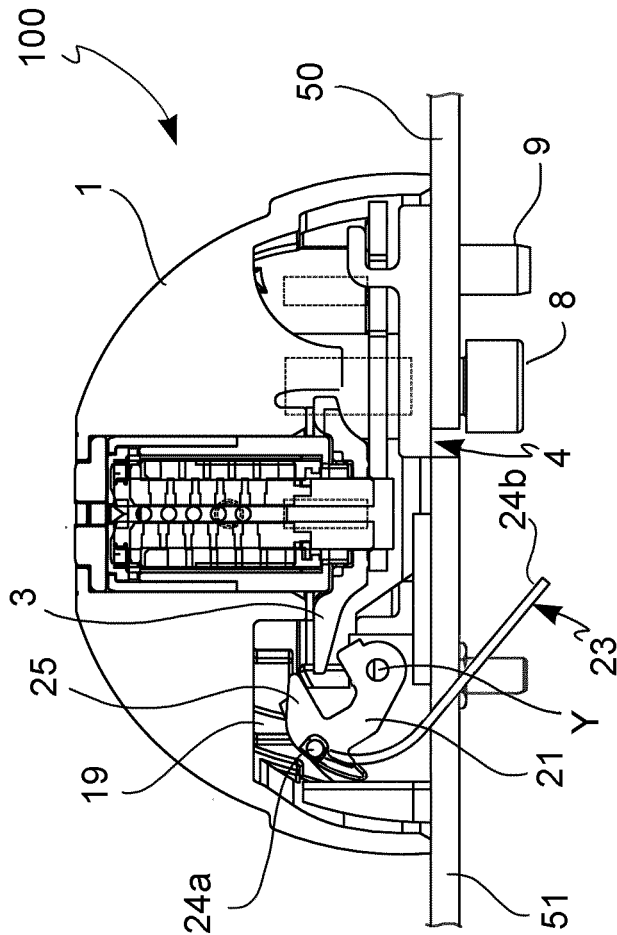
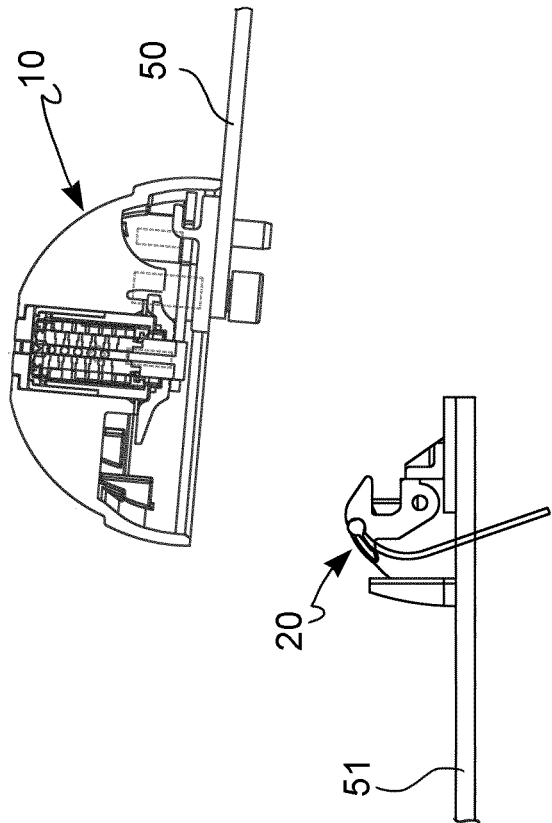


FIG. 5



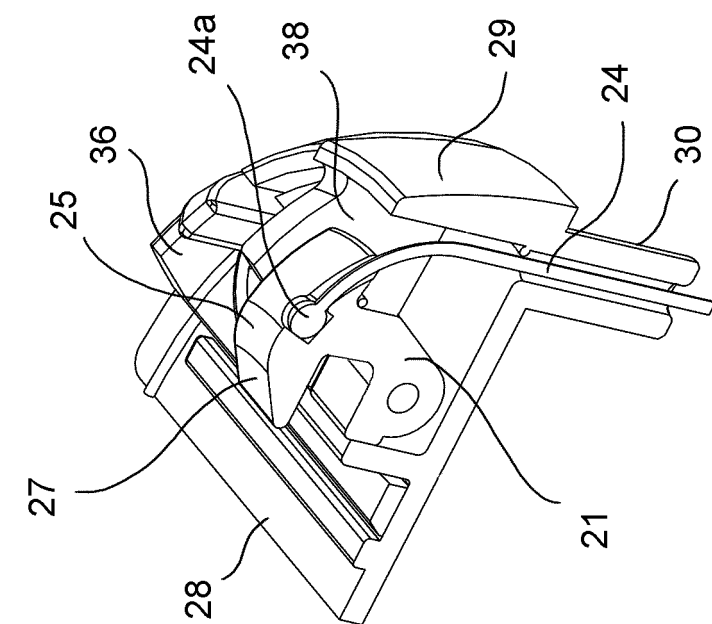


FIG. 7

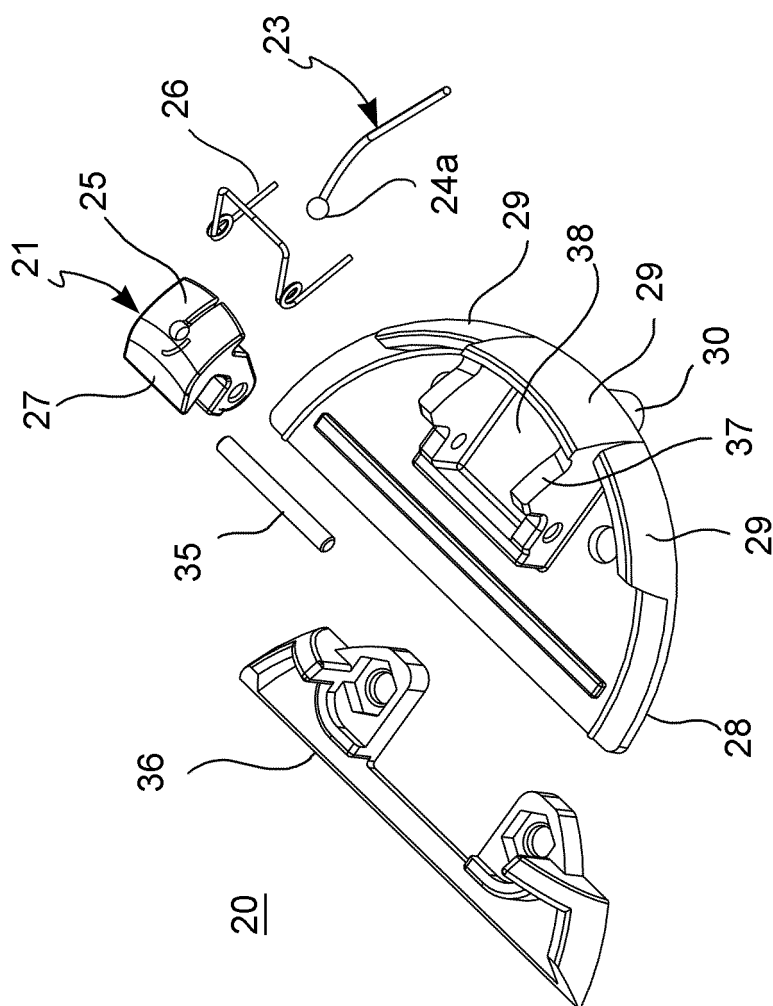


FIG. 6

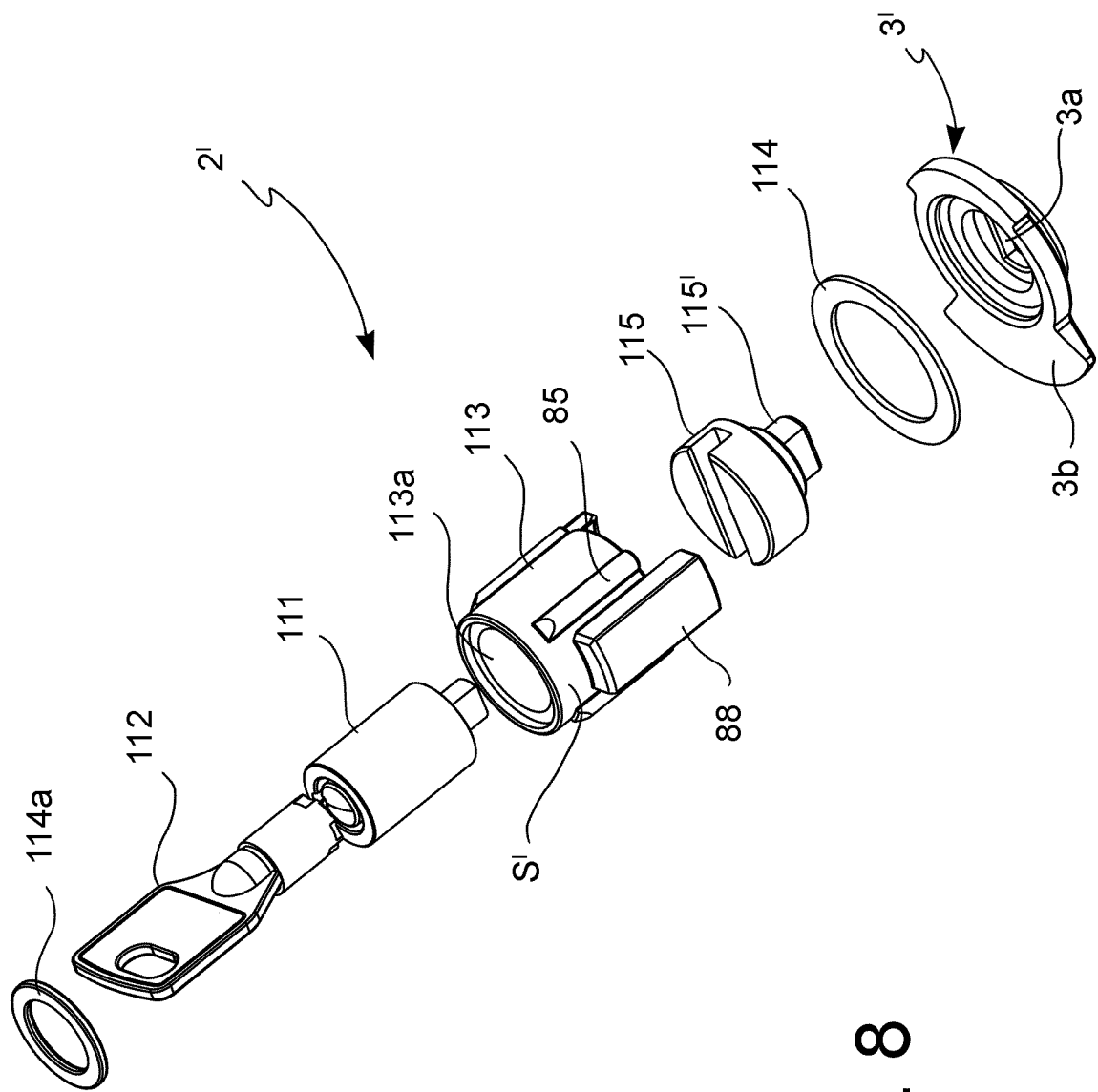


FIG. 8

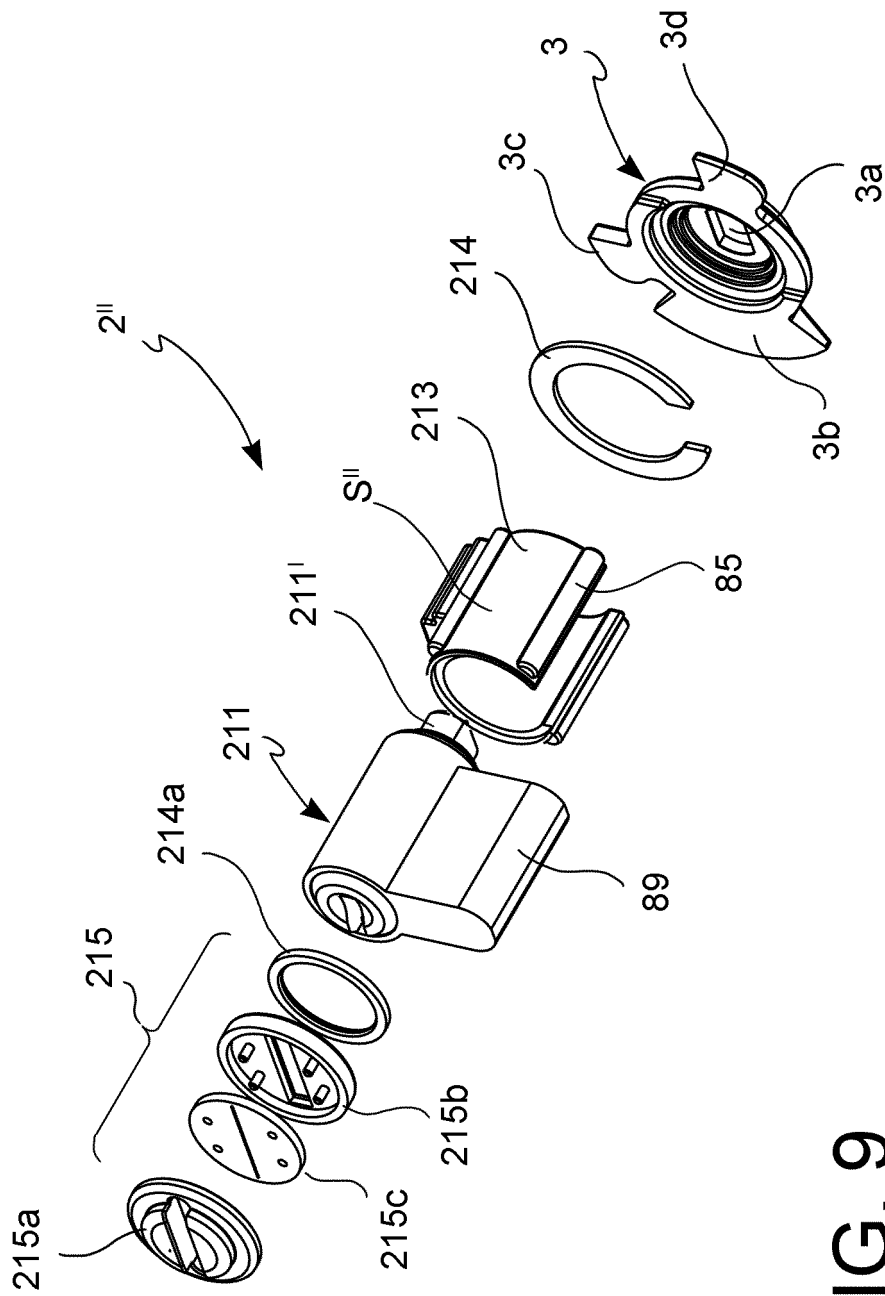


FIG. 9

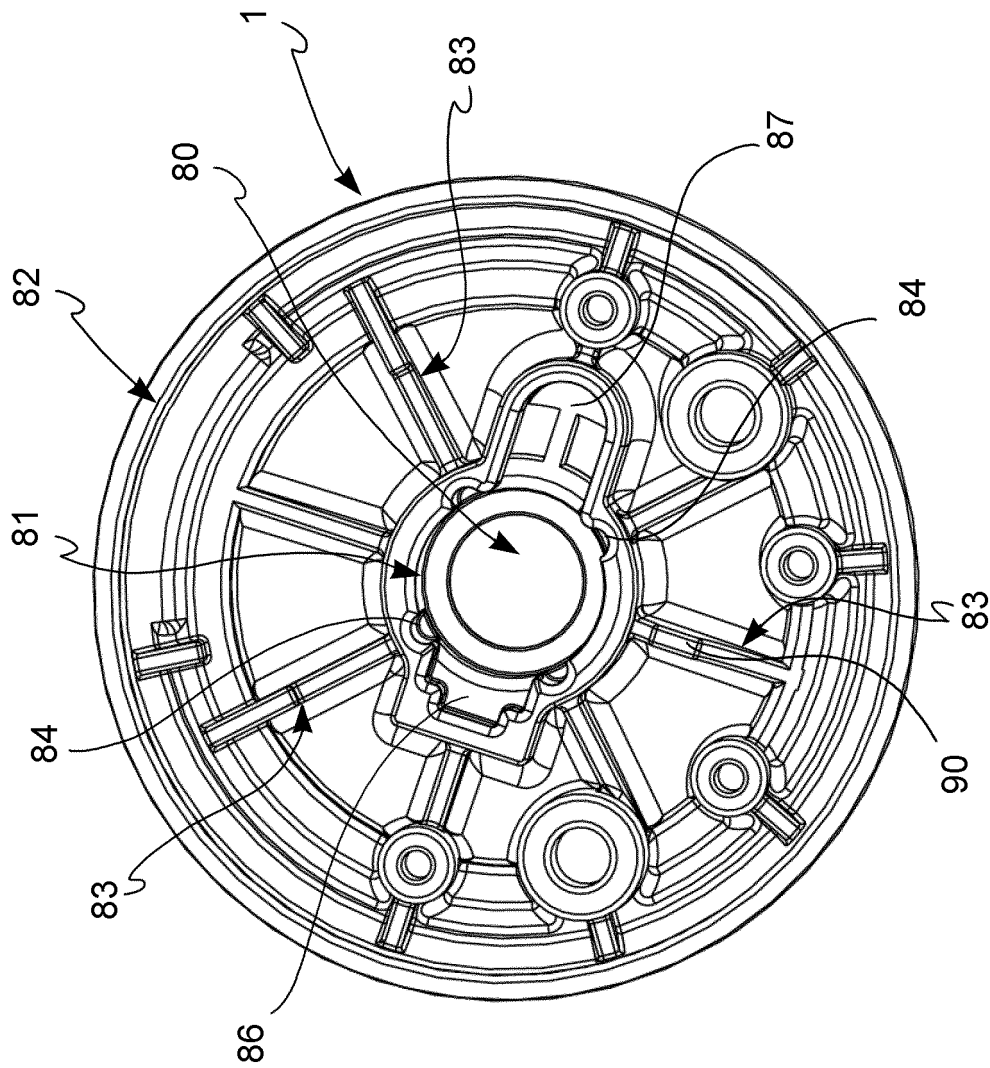


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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