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(54) LATCH RELEASING SYSTEM FOR VEHICLE DOOR

ENTSPERRUNGSSYSTEM FÜR EINE FAHRZEUGTÜR

SYSTÈME DE LIBÉRATION D'UN PÊNE POUR PORTE DE VÉHICULE

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Description

[0001] The present invention relates to a latch releasing system for a vehicle door, comprising: an outer handle and a latch device having an electric actuator capable of exerting a power to release a latched state of the door having an outer surface, which in use is provided with the outer handle for opening and closing operations, the latch device being provided to the door in such a manner as to be capable of actuating the electric actuator in accordance with a predetermined operation by a vehicle user and latch releasing in accordance with a mechanical input of a latch-releasing operation force; and an emergency operation member having an operation section capable of being operated by the vehicle user from outside of a vehicle, the emergency operation member being provided to the door in such a manner as to be capable of exerting the latch-releasing operation force to the latch device.

[0002] It is known from DE 10 2008 055993 to provide a latch releasing system for a vehicle door, comprising an outer handle, a locking mechanism, an electric actuator, and an emergency operation member having an operation section capable of being operated by a vehicle user from outside of a vehicle, the emergency operation member being provided to the door in such a manner as to be capable of exerting a latch-releasing operation force to the locking mechanism, the operation section of the emergency operation member being provided at an outer surface of the door adjacent to the outer handle while having an outer surface continuously flush with an outer surface of the outer handle.

[0003] The following latch releasing system for a vehicle door has been already known from Japanese Patent No. 4598668, in which a latch is released by actuating an electric actuator of a latch device through a predetermined operation of a door switch or the like provided to a vehicle. The latch releasing system for a vehicle door includes an emergency operation member, which is provided in the door and can be operated from the outside of the vehicle. The emergency operation member is to mechanically input a latch-releasing operation force to the latch device in a case where electrical latch releasing of the latch device is impossible due to a dead battery or the like.

[0004] Japanese Patent No. 4598668 discloses that the door is provided with an outer handle capable of being operated with a hand inserted into a recessed section provided on a vehicle body side, and that the emergency operation member is provided in such a manner as to be hidden from the outside by the outer handle. When the emergency operation member is operated, a hand has to be deeply inserted into the outer handle for the operation. It is thus hard to say that the emergency operation member has a good operability. For this reason, it is conceivable that the emergency operation member is provided at the outer surface side of the door to increase the operability. Nevertheless, the structure in which the emergency operation member is simply provided at the outer surface side of the door may deteriorate the vehicle appearance. In addition, with the form having such an appearance that an emergency operation member can be recognized easily, a cover member or the like is needed to prevent a mischief operation. Hence, the number of components is increased.

[0005] The present invention has been made in view of such a circumstance. An object of the present invention is to provide a latch releasing system for a vehicle door, which allows an emergency operation member to be provided at an outer surface side of a door to increase the operability, and which eliminates the need for a cover member covering the emergency operation member.

[0006] According to the present invention, there is provided a latch releasing system for a vehicle door, comprising: an outer handle and a latch device having an electric actuator capable of exerting a power to release a latched state of the door having an outer surface, which in use is provided with the outer handle for opening and closing operations, the latch device being provided to the door in such a manner as to be capable of actuating the electric actuator in accordance with a predetermined operation by a vehicle user and latch releasing in accordance with a mechanical input of a latch-releasing operation force; and an emergency operation member having an operation section capable of being operated by the vehicle user from outside of a vehicle, the emergency operation member being provided to the door in such a manner as to be capable of exerting the latch-releasing operation force to the latch device, characterized in that the latch releasing system comprises a cylinder lock configured to be operated by a mechanical key to put the latch device in an unlocked state, so that in use after such unlocking of the latch device the emergency operation member can be manually operated by the vehicle user to exert the latch-releasing operation force to the latch device, and in that the operation section of the emergency operation member is provided at an outer surface side of the door adjacent to the outer handle while having an outer surface continuously flush with an outer surface of the outer handle.

[0007] Here, an electric motor 20 of an embodiment corresponds to the electric actuator of the present invention; and a front side door D of the embodiment corresponds to the door of the present invention.

[0008] According to the above configuration of the present invention, since the operation section of the emergency operation member is provided at the outer surface side of the door, the operability of the emergency operation member can be increased. Moreover, the operation section is disposed adjacent to the outer handle and has the outer surface continuously flush with the outer surface of the outer handle. Accordingly, it is possible to make such an appearance as if the outer handle and the operation section are integrated. This not only prevents a deterioration of the vehicle appearance, but also prevents an outsider from easily recognizing the opera-

tion section of the emergency operation member. Thus, there is no need for providing a cover member to prevent a mischief operation, and an increase in the number of components can be avoided.

[0009]

[FIG. 1] It is a side view of an essential part of a passenger vehicle.

[FIG. 2] It is a sectional view taken along a line 2-2 in FIG. 1.

[FIG. 3] It is a sectional view taken along a line 3-3 in FIG. 1.

[FIG. 4] It is a sectional view taken along a line 4-4 in FIG. 1.

[FIG. 5] It is a sectional view corresponding to FIG. 4 in a state where an emergency operation member is operated.

[0010] Hereinafter, an embodiment of the present invention will be described with reference to FIGS. 1 to 5 attached hereto. At first, in FIGS. 1 and 2, an outer handle 7 made of a synthetic resin is attached to an outer surface of an outer panel 6 of a door, for example, a front side door D of the passenger vehicle. The outer handle 7 is for a vehicle user to grip in opening and closing the front side door D, and includes: a grip portion 7a extending long in a front-rear direction of the vehicle; a front supporting portion 7b continuously provided to a front end of the grip portion 7a; and a rear supporting portion 7c continuously provided to a rear end of the grip portion 7a. Furthermore, the rear supporting portion 7c includes: a thick portion 7ca forming a front half of the rear supporting portion 7c and having an outer surface continuously flush with an outer surface of the grip portion 7a; and a thin portion 7cb forming a rear half of the rear supporting portion 7c in such a manner as to have a height different from that of the thick portion 7ca.

[0011] A sealing member 8 is interposed between the front supporting portion 7b of the outer handle 7 and the outer surface of the outer panel 6. A bolt 10 is screwed into a nut 9 molded and bonded to an inner surface of a front portion of the front supporting portion 7b, and is inserted through the outer panel 6 and the sealing member 8. By tightening the bolt 10, the front supporting portion 7b of the outer handle 7 is fixed to the outer panel 6.

[0012] Moreover, a base member 11 is fixed to a portion of the outer panel 6 corresponding to the rear supporting portion 7c of the outer handle 7. The base member 11 has: a plate-shaped base plate portion 11a abutting against the outer surface of the outer panel 6 from the outer side; and a bracket portion 11b provided integrally and continuously to the base plate portion 11a and penetrating an opening 12 provided in the outer panel 6 in such a manner as to extend inwardly into the outer panel 6. The base plate portion 11a is formed in such a manner as to project rearward of not only a portion disposed between the rear supporting portion 7c of the outer handle 7 and the outer panel 6 but also a rear end of the rear supporting portion 7c. At the portion projecting rearward of the rear end of the rear supporting portion 7c, the bracket portion 11b is integrally and continuously provided to the base plate portion 11a. Meanwhile, a nut 14 is molded and bonded to the thin portion 7cb of the rear supporting portion 7c. From the inside of the outer panel 6, a bolt 15 is inserted through the outer panel 6, the base plate portion 11a, and a sealing member 13 abutting against the entire outer surface of the base plate portion 11a. By screwing and tightening the bolt 15 into the nut 14, the rear supporting portion 7c of the outer handle 7 and the base member 11 are fixed to the outer panel 6 with the sealing member 13 sandwiched between the rear supporting portion 7c and the base plate portion 11a.

[0013] At a portion of the outer surface of the outer panel 6 corresponding to the grip portion 7a of the outer handle 7, a recessed insertion section 16 for inserting a hand to grip the grip portion 7a is formed. Further, a touch sensor 17 is additionally provided to the grip portion 7a to verify that the vehicle user has gripped the outer handle 7 to open the front side door D.

[0014] Furthermore, a latch device 18 having an electric motor 20, which is an electric actuator, is provided to the front side door D. The latch device 18 is capable of switching a latched state where the front side door D in a closed state is engaged with and held to the vehicle body side and an unlatched state where an opening operation on the front side door D is possible. The latch device 18 is capable of switching an unlocked state enabling latch releasing of the front side door D and a locked state disabling the latch releasing of the front side door D. Moreover, the latch device 18 is capable of actuating the electric motor 20 in the unlocked state and latch releasing in accordance with a mechanical input of a latch-releasing operation force.

[0015] While the closed front side door D is in a latched state, the electric motor 20 actuates to release the latched state of the latch device 18 through a predetermined operation of a legitimate vehicle user. In this embodiment, once the touch sensor 17 verifies that the vehicle user grips the outer handle 7 to open the front side door D, an ID signal is wirelessly transferred between the vehicle and a portable device possessed by the vehicle user. When the legitimate vehicle user is verified with the ID signal, the latch device 18 switches from the locked state to an unlocked state. Then, the electric motor 20 is actuated, and the latch device 18 releases the latched state.

[0016] Meanwhile, to prepare for a case where electrical latch releasing by the latch device 18 is impossible due to a dead battery or the like, a cylinder body 22 of a cylinder lock 21 is fixed to a front portion of the base plate portion 11a of the base member 11. The cylinder lock 21 is configured to switch the latch device 18 from a locked state to an unlocked state. The cylinder body 22 of the cylinder lock 21 is housed in a housing hole 25 provided in the thick portion 7ca of the rear supporting portion 7c of the outer handle 7. A key hole 24 of the cylinder lock 21 is disposed at an outer-end opening of the housing

hole 25. Moreover, a rotor 23 of the cylinder lock 21 penetrates the outer panel 6, extends inwardly of the outer panel 6, and is connected to the latch device 18 with a connecting rod 26.

[0017] The latch device 18 becomes an unlocked state by operating the cylinder lock 21 with a mechanical key. For a subsequent manual operation, an emergency operation member 28 capable of inputting a mechanical latch-releasing operation force to the latch device 18 is provided to the front side door D.

[0018] The emergency operation member 28 integrally has: an operation section 28a provided adjacent to a rear portion of the outer handle 7 and at an outer surface side of the front side door D and capable of being operated from the outside of the front side door D; a supporting arm portion 28b extending from a rear portion of the operation section 28a to the inside of the front side door D and penetrating the sealing member 13, the base plate portion 11a of the base member 11, and the outer panel 6; and a connecting arm portion 28c extending from a front portion of the operation section 28a to the inside of the front side door D and penetrating the sealing member 13, the base plate portion 11a of the base member 11, and the outer panel 6.

[0019] The operation section 28a is formed in such a manner as to cover the thin portion 7cb of the rear supporting portion 7c of the outer handle 7 from the outside, be provided adjacent to a rear portion of the thick portion 7ca, and project rearward from a rear end of the thin portion 7cb. The operation section 28a is provided at the outer surface side of the front side door D and has an outer surface continuously flush with the outer surface of the thick portion 7ca of the outer handle 7.

[0020] Referring to FIG. 3 together, the supporting arm portion 28b of the emergency operation member 28 is supported rotatably around a pin 29 by the bracket portion 11b of the base member 11. The emergency operation member 28 is rotatable between a position represented by a solid line in FIG. 2 and a position represented by a dashed line in FIG. 2. Moreover, recessed sections 30, 30 for facilitating the operation with a hand gripping the operation portion 28a may be formed in opposite side surfaces of the operation section 28a of the emergency operation member 28.

[0021] Referring to FIG. 4 together, a front portion of the thin portion 7cb of the rear supporting portion 7c of the outer handle 7 is integrally provided with a guide tubular portion 7d extending to the inside of the front side door D and penetrating the sealing member 13, the base plate portion 11a of the base member 11, and the outer panel 6. The connecting arm portion 28c of the operation member 28 is inserted into the guide tubular portion 7d in such a manner as to move in the guide tubular portion 7d between a position shown in FIG. 4 and a position shown in FIG. 5 in accordance with a rotation of the operation member 28 around an axis of the pivot 29.

[0022] An annular sealing member 31 surrounding the connecting arm portion 28c is mounted on the front portion of the thin portion 7cb of the rear supporting portion 7c of the outer handle 7. The sealing member 31 is elastically in contact with the operation section 28a when the connecting arm portion 28c is at the position shown in FIG. 4.

[0023] The guide tubular portion 7d is integrally and continuously provided with a lever supporting portion 7e. The lever supporting portion 7e supports a lever 33 rotatably around a pivot 32 extending in the front-rear direction of the vehicle and perpendicularly to a rotation axis of the emergency operation member 28, that is, a central axis of the pin 29.

[0024] Meanwhile, on a tip end side of the connecting arm portion 28c, an opening 34 is provided, which opens the connecting arm portion 28c in an up-down direction. One end portion 33a of the lever 33 penetrates a slit 35 provided in the guide tubular portion 7d and is inserted into the opening 34. One side wall at the opening 34 on the tip end side of the connecting arm portion 28c forms an abutting surface 36. The one end portion 33a of the lever 33 abuts against the abutting surface 36.

[0025] In addition, a torsion spring 37 is provided between the lever supporting portion 7e and the lever 33 to bias and rotate the lever 33 to a side where the one end portion 33a of the lever 33 is pushed against the abutting surface 36. The torsion spring 37 exerts a spring force to bias and rotate the operation section 28a of the operation member 28 toward a position shown in FIG. 4.

[0026] A joint member 38 is mounted on the other end portion of the lever 33. To the joint member 38, one end portion of a transmission rod 39 (see FIG. 2) is connected. The transmission rod 39 mechanically transmits a latch-releasing operation force to the latch device 18.

[0027] Next, operations of this embodiment will be described. Since the operation section 28a of the emergency operation member 28 is provided at the outer surface side of the front side door D, the operability of the emergency operation member 28 can be increased.

[0028] Moreover, the operation section 28a is disposed adjacent to the outer handle 7 and has the outer surface continuously flush with the outer surface of the outer handle 7. Accordingly, it is possible to make such an appearance as if the outer handle 7 and the operation section 28a are integrated. This not only prevents a deterioration of the vehicle appearance, but also prevents an outsider from easily recognizing the operation section 28a of the emergency operation member 28. Thus, there is no need for providing a cover member to prevent a mischief operation, and an increase in the number of components can be avoided.

[0029] An embodiment of the present invention is explained above, but the present invention is not limited to the above-mentioned embodiment and may be modified in a variety of ways as long as the modifications do not depart from the present invention described in claim.

[DESCRIPTION OF REFERENCE NUMERALS AND SYMBOLS]

[0030]

7	Outer handle
18	Latch Device
20	Electric motor, which is an electric actuator
28	Emergency operation member
28a	Operation section
D	Front side door, which is a door

Claims

1. A latch releasing system for a vehicle door (D), comprising:

an outer handle (7) and a latch device (18) having an electric actuator (20) capable of exerting a power to release a latched state of the door (D) having an outer surface, which in use is provided with the outer handle (7) for opening and closing operations, the latch device (18) being provided to the door (D) in such a manner as to be capable of actuating the electric actuator (20) in accordance with a predetermined operation by a vehicle user and latch releasing in accordance with a mechanical input of a latch-releasing operation force; and
an emergency operation member (28) having an operation section (28a) capable of being operated by the vehicle user from outside of a vehicle, the emergency operation member (28) being provided to the door (D) in such a manner as to be capable of exerting the latch-releasing operation force to the latch device (18),
characterized in that
the latch releasing system comprises a cylinder lock (21) configured to be operated by a mechanical key to put the latch device (18) in an unlocked state, so that in use after such unlocking of the latch device the emergency operation member (28) can be manually operated by the vehicle user to exert the latch-releasing operation force to the latch device (18), and **in that**
the operation section (28a) of the emergency operation member (28) is provided at an outer surface side of the door (D) adjacent to the outer handle (7) while having an outer surface continuously flush with an outer surface of the outer handle (7).

Patentansprüche

1. Entsperrungssystem für eine Fahrzeugtür (D), umfassend:

einen äußeren Griff (7) und eine Sperrvorrichtung (18), die einen elektrischen Aktuator (20) aufweist, der imstande ist, eine Kraft auszuüben, um einen Sperrzustand der Tür (D), die eine äußere Fläche aufweist, zu entsperren, die bei Verwendung mit dem äußeren Griff (7) für Öffnungs- und Schließbetätigungen bereitgestellt ist, wobei die Sperrvorrichtung (18) so an der Tür (D) bereitgestellt ist, dass sie imstande ist, den elektrischen Aktuator (20) in Übereinstimmung mit einer vorbestimmten Betätigung durch einen Fahrzeugnutzer und eine Entsperrung in Übereinstimmung mit einem mechanischen Eingang einer Entsperrungsbetätigungskraft auszulösen; und
ein Notbetätigungselement (28), das einen Betätigungsabschnitt (28a) aufweist, der imstande ist, durch den Fahrzeugnutzer von außerhalb eines Fahrzeugs betätigt zu werden, wobei das Notbetätigungselement (28) so an der Tür (D) bereitgestellt ist, dass es imstande ist, die Entsperrungsbetätigungskraft auf die Sperrvorrichtung (18) auszuüben,
dadurch gekennzeichnet, dass
das Entsperrungssystem ein Zylinderschloss (21) umfasst, das konfiguriert ist, um durch einen mechanischen Schlüssel betätigt zu werden, um die Sperrvorrichtung (18) in einen entriegelten Zustand zu bringen, sodass bei Verwendung nach einem solchen Entriegeln der Sperrvorrichtung das Notbetätigungselement (28) manuell durch den Fahrzeugnutzer betätigt werden kann, um die Entsperrungsbetätigungskraft auf die Sperrvorrichtung (18) auszuüben, und dadurch, dass
der Betätigungsabschnitt (28a) des Notbetätigungselements (28) an einer äußeren Flächenseite der Tür (D), die zum äußeren Griff (7) benachbart ist, bereitgestellt ist, während er eine äußere Fläche aufweist, die durchgehend mit einer äußeren Fläche des äußeren Griffs (7) bündig ist.

Revendications

1. Système de déblocage de verrou pour une porte de véhicule (D), comprenant :

une poignée extérieure (7) et un dispositif de verrou (18) ayant un actionneur électrique (20) capable d'exercer une puissance pour débloquer un état verrouillé de la porte (D) ayant une

surface extérieure, qui en utilisation est pourvue de la poignée extérieure (7) pour des commandes d'ouverture et de fermeture, le dispositif de verrou (18) étant prévu sur la porte (D) de manière à être capable d'actionner l'actionneur électrique (20) selon une commande prédéterminée par un utilisateur de véhicule et de déblocage de verrou selon une entrée mécanique d'une force de commande de déblocage de verrou ; et

un organe de commande d'urgence (28) ayant une section de commande (28a) capable d'être commandée par l'utilisateur de véhicule depuis l'extérieur d'un véhicule, l'organe de commande d'urgence (28) étant prévu sur la porte (D) de manière à être capable d'exercer la force de commande de déblocage de verrou sur le dispositif de verrou (18),

caractérisé en ce que

le système de déblocage de verrou comprend une serrure-cylindre (21) configurée pour être commandée par une clé mécanique pour mettre le dispositif de verrou (18) dans un état débloqué, de sorte qu'en utilisation après un tel déblocage du dispositif de verrou l'organe de commande d'urgence (28) puisse être commandé manuellement par l'utilisateur de véhicule pour exercer la force de commande de déblocage de verrou sur le dispositif de verrou (18), et **en ce que**

la section de commande (28a) de l'organe de commande d'urgence (28) est prévue d'un côté de surface extérieure de la porte (D) adjacente à la poignée extérieure (7) tout en ayant une surface extérieure alignée en continu avec une surface extérieure de la poignée extérieure (7).

FIG.1

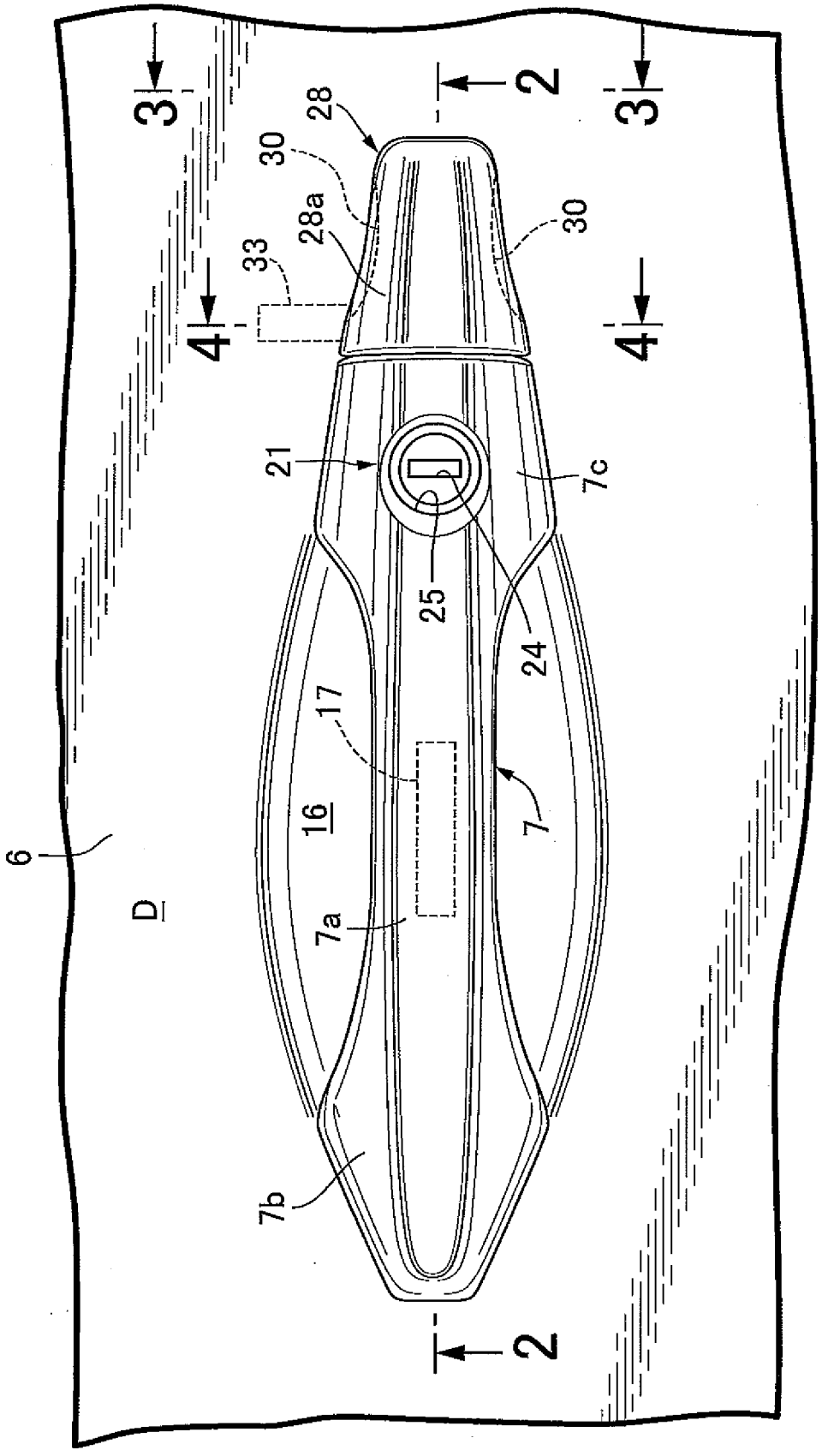
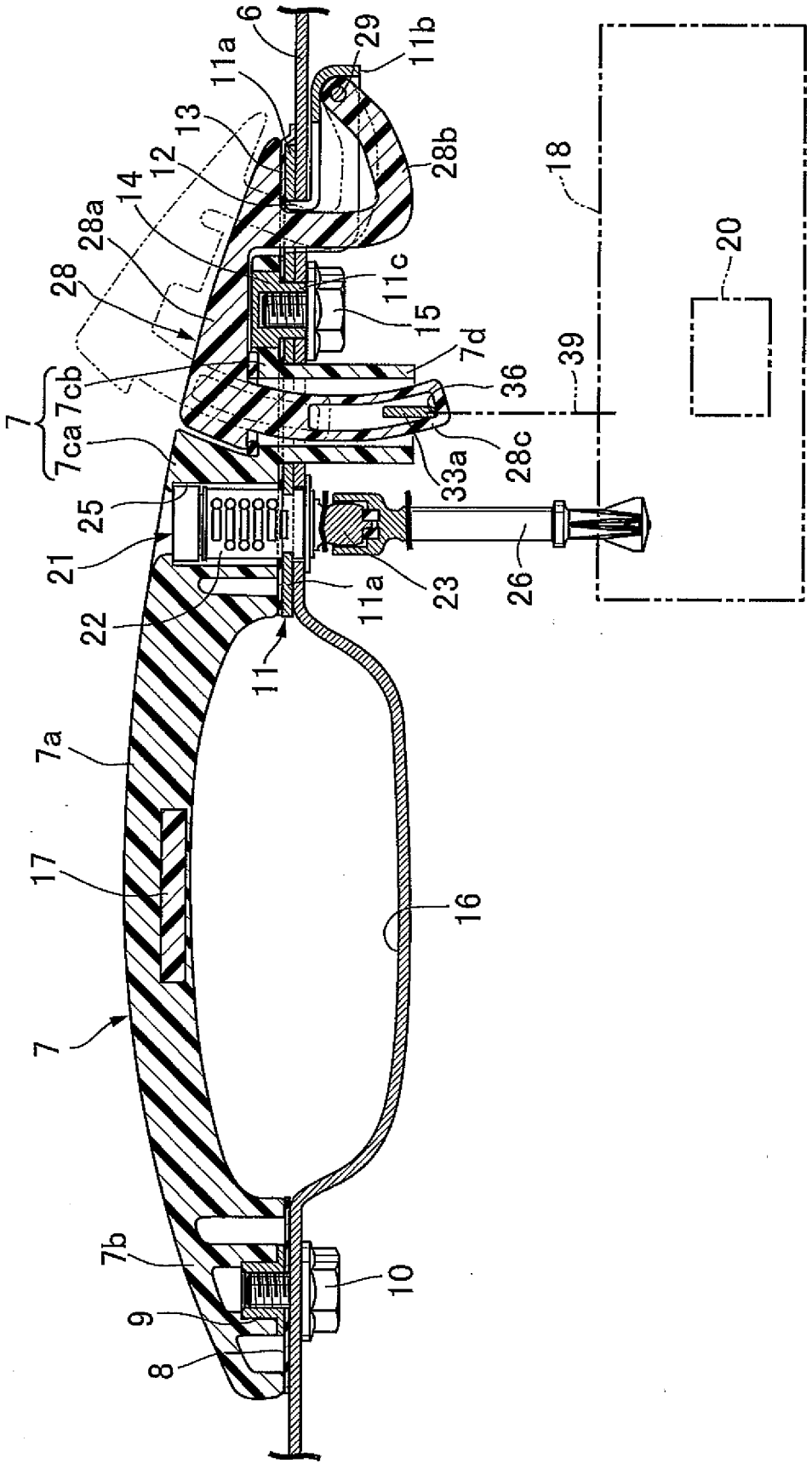


FIG.2


6
29
11b
11a
13
12
28b
18
14
28a
20
28
11c
15
7d
39
7
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36
7ca
28c
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17
16
7
7b
10
9
8

FIG.3

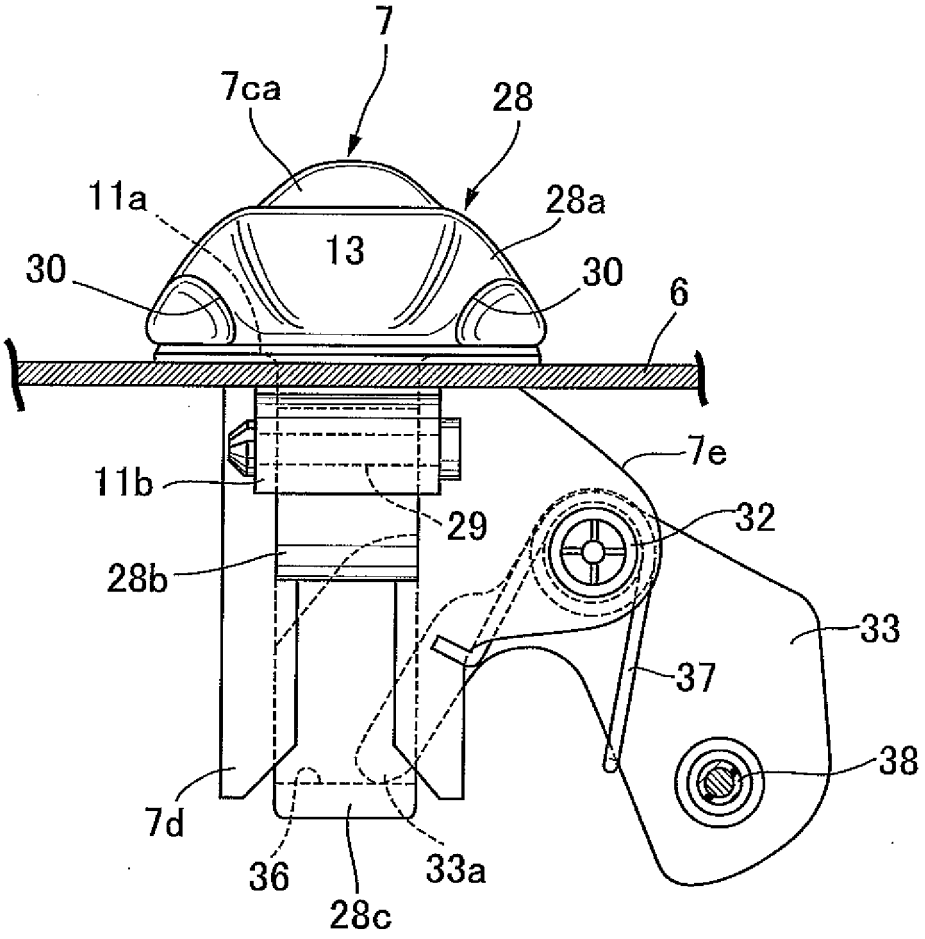


FIG.4

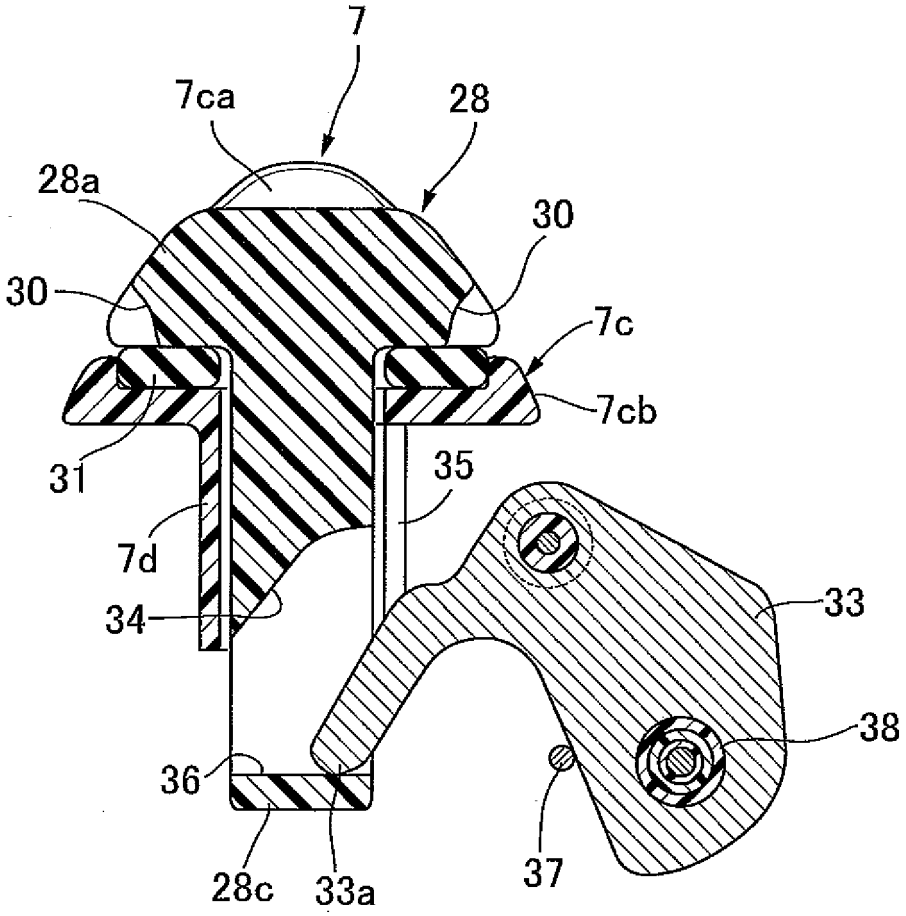
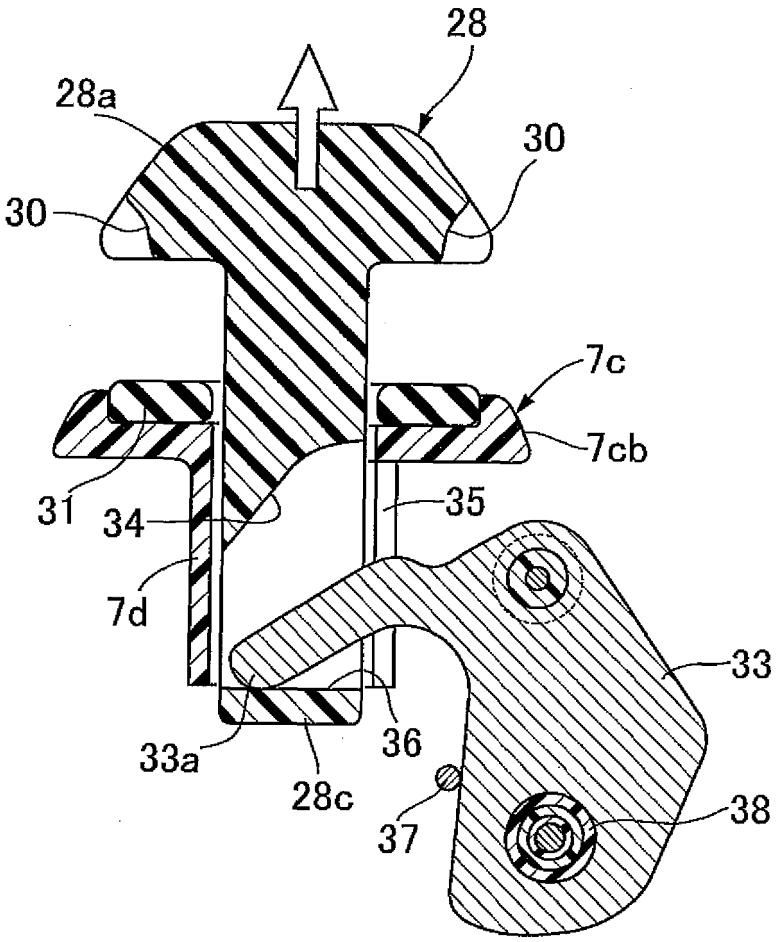


FIG.5



REFERENCES CITED IN THE DESCRIPTION

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- JP 4598668 B **[0003] [0004]**