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(54) LEVER FOR VEHICLE HANDLES

HEBEL FÜR FAHRZEUGGRIFFE

LEVIER POUR POIGNÉES DE VÉHICULE

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EP 2 183 452 B1

Description

[0001] The present invention relates to a lever for vehicle handles, and in particular to a lever which can be pulled for unlocking and simultaneously opening the door of a motor vehicle.

[0002] Known vehicle handles are provided with a lever comprising a main body which includes a cavity for housing one or more electric and/or electronic devices connected to the lock system of the door to which the handle is applied. Said lever is subject to atmospheric events, in particular to rain and sudden changes of temperature, since it is arranged outside a vehicle, so that the electric and/or electronic devices must be suitably protected, which is made diffcult by the cables for the electric connection with the rest of the handle and by the fact that the lever must move with respect to the handle.

[0003] Furthermore, the lever suffers considerable mechanical stresses when it is pulled by the user, so that said devices must be protected also by these stresses, to avoid breakings of their components. For solving the latter technical problem the lever could be manufactured with metal parts or reinforcements, which however would interfere with the electric and/or electromagnetic fields generated by the devices, thereby reducing the performances of the latter.

[0004] Document FR 2 819 538 A discloses a lever for vehicle handles.

[0005] It is therefore an object of the present invention to provide a lever which is free from said disadvantages. Said object is achieved with a lever, whose main features are disclosed in the first claim, while other features are disclosed in the remaining claims.

[0006] Thanks to the particular casings arranged in its inner cavity, the lever according to the present invention effectively protects the electric and/or electronic devices both from the atmospheric events and the mechanical stresses, even if it is made of a plastic material for not interfering with their working. Furthermore, thanks to the particular arrangement of the casings in the cavity, the size of the latter, i.e. the size of the lever, can be reduced, especially if particular deformable pads are employed in the cavity for protecting the casings. Recesses may even be made in the lever for housing parts protruding from the handle.

[0007] The particular position of the interspace between the casings allows to reduce the thickness of the same, even though it allows a suitable mutual movement between the casings if the main body is temporarily deformed.

[0008] The shape and the structure of the main body and the cover of the lever allow to obtain increased ergonomics and resistance, with low production, assembly and maintenance costs, as well as an easy handling of the wiring.

[0009] Further advantages and features of the lever according to the present invention will become clear to those skilled in the art from the following detailed and non-limiting description of an embodiment thereof with reference to the attached drawings, wherein:

- figure 1 shows a perspective view of the lever;
- figure 2 shows a front view of the lever of figure 1;
- figure 3 shows a rear view of the lever of figure 1;
- figure 4 shows a top view of the lever of figure 1;
- figure 5 shows section V-V of figure 4;
- figure 6 shows section VI-VI of figure 4;
- figure 7 shows section VII-VII of figure 4;
- figure 8 shows a side view of the lever of figure 1;
- figure 9 shows section IX-IX of figure 8; and
- figure 10 shows an exploded view of the lever of figure 1.

[0010] Referring to said figures, it is seen that the lever according to the present invention comprises in a known way comprises a main body 1 having a front portion 1a provided with a shaped extension 2 suitable for being coupled with a fulcrum of a handle (not shown in the figure) of a door of a motor vehicle. Rear portion 1b of main body 1 is provided with an appendix 3 suitable for protruding into the frame of the handle and for being coupled with the mechanism for unlocking the door, so that the latter can be opened by pulling the lever. Central portion 1c of main body 1 is comprised between front portion 1a and rear portion 1b and is shaped for obtaining a recess 4 for the hand of the user who has to pull the lever. Recess 4 is arranged on the inner side of main body 1, that is on the side suitable for facing the handle. Main body 1 includes at least one cavity 5 and is preferably made of a single piece of a plastic material molded with shaped extension 2 and appendix 3. One or more electric and/or electronic devices are arranged in cavity 5 of main body 1.

[0011] Said electric and/or electronic devices are enclosed in at least two casings 6, 7 arranged longitudinally in cavity 5 and separated by an interspace 8 more or less wide, even infinitesimal. Casings 6, 7 are electrically connected to each other by at least one flat conductor 9. First casing 6 has a substantially prismoid shape and is arranged substantially in rear portion 1b of main body 1, while second casing 7 has a substantially parallelepiped shape and is arranged substantially in central portion 1c of the main body 1. Interspace 8 is preferably arranged in a zone between rear portion 1b and central portion 1c of the main body 1, in particular in transition zone TZ between recess 4 and rear portion 1b of main body 1, where the cross-section of main body 1 begins to expand. First casing 6 includes a capacitive sensor suitable for detecting a finger of the user close to rear portion 1b of main body 1 for manually locking and/or unlocking the door. For this purpose, rear portion 1b of main body I is provided with one or more protrusions or grooves 10 in the active areas of said capacitive sensor. Second casing 7 includes instead an electronic device provided with an antenna for communicating with an identification device of the user and/or includes a capacitive sensor suitable

for detecting the hand of the user for anticipating the intention to open the door. Said electric and/or electronic devices are connected to an external connector 11 by means of one or more cables 12 coming out of front portion 1a of main body 1, in particular through a canal 13 made in shaped extension 2. The first casing 6 and the second casing 7 are made by molding plastic material around the electric and/or electronic devices, so as to seal them in this plastic material, with conductor 9 and/or cables 12 crossing a wall thereof. A plastic retention member 14 is molded crosswise on cables 12 and is arranged in a seat in front portion 1a of main body 1, so that casings 6, 7 are not stressed if cables 12 are pulled.

[0012] Cavity 5 of main body 1 is closed at least partially by a cover 15 of a molded plastic material which is applied on an opening made on the inner side of main body 1. Cover 15 is provided with a substantially flat central portion 15a with edges provided with ribs and/or grooves 16 for the snap-coupling with complementary ribs and/or grooves made in central portion 1c of the main body 1. Said ribs and/or grooves are substantially parallel to a longitudinal axis L of main body 1. One or more pads 17, 18 of a deformable material are arranged between cover 15 and first casing 6 and/or second casing 7. In particular, one or more pads 17 are applied between first casing 6 and a flat surface of rear portion 15b of cover 15, while at least one pad 18 is applied between second casing 7 and a flat surface of central portion 15a of cover 15. Rear portion 15b of cover 15 is provided with a perforated plate 19 for fixing cover 15 to main body 1 by means of at least one screw 20 screwed in a hole 21 made in rear portion 1b of main body 1, in particular in appendix 3. Also front portion 15c of cover 15 is provided with a perforated plate 22 for fixing cover 15 to main body 1 by means of one or more screws 23 screwed in holes made in front portion 1a of main body 1. Front portion 15c of cover 15 is also provided with a recess 24 suitable for housing parts of the handle which may protrude toward the lever. Cables 12 are retained by protrusions 25, 26 protruding in recess 24 from front portion 1a of main body 1 and/or from front portion 15c of cover 15.

[0013] Possible modifications and/or additions may be made by those skilled in the art to the hereinabove disclosed and illustrated embodiment while remaining within the scope of the following claims.

Claims

1. Lever for vehicle handles, which comprises a main body (1) having a central portion (1c) comprised between a front portion (1a) and a rear portion (1b), as well as at least one cavity (5) in which one or more electric and/or electronic devices are arranged, whereby these electric and/or electronic devices are enclosed in at least two casings (6, 7) arranged longitudinally in the cavity (5) and separated by an interspace (8), **characterized in that** the first casing (6) and the second casing (7) are made by molding plastic material around the electric and/or electronic devices, so as to seal them in this plastic material.

2. Lever according to the previous claim, **characterized in that** the first casing (6) is arranged substantially in the rear portion (1b) of the main body (1).

3. Lever according to one of the previous claims, **characterized in that** the second casing (7) is arranged substantially in the central portion (1c) of the main body (1).

4. Lever according to one of the previous claims, **characterized in that** the interspace (8) is arranged in a zone between the rear portion (1b) and the central portion (1c) of the main body (1).

5. Lever according to one of the previous claims, **characterized in that** the central portion (1c) of the main body (1) is shaped for obtaining a recess (4) arranged on the inner side of the main body (1).

6. Lever according to the previous claim, **characterized in that** the interspace (8) is arranged in the transition zone (TZ) between the recess (4) and the rear portion (1b) of the main body (1), where the cross-section of the main body (1) begins to expand.

7. Lever according to one of the previous claims, **characterized in that** the casings (6, 7) are electrically connected to each other by at least one flat conductor (9).

8. Lever according to one of the previous claims, **characterized in that** the first casing (6) includes a capacitive sensor suitable for detecting a finger of the user close to the rear portion (1b) of the main body (1).

9. Lever according to the previous claim, **characterized in that** the rear portion (1b) of the main body (1) is provided with one or more protrusions or grooves (10) in the active areas of said capacitive sensor.

10. Lever according to one of the previous claims, **characterized in that** the second casing (7) includes an electronic device provided with an antenna for communicating with an identification device of the user.

11. Lever according to one of the previous claims, **characterized in that** the second casing (7) includes a capacitive sensor suitable for detecting the hand of the user.

12. Lever according to one of the previous claims, **characterized in that** said electric and/or electronic de-

vices are connected to an external connector (11) by means of one or more cables (12) coming out of the front portion (1a) of the main body (1).

13. Lever according to the previous claim, **characterized in that** said cables (12) come out of the front portion (1a) of the main body (1) through a canal (13) made in a shaped extension (2) suitable for being coupled with a fulcrum of the handle.

14. Lever according to claim 12 or 13, **characterized in that** a plastic retention member (14) is molded crosswise on the cables (12) and is arranged in a seat of the front portion (1a) of the main body (1).

15. Vehicle handle, **characterized in that** it comprises a lever according to one of the previous claims.

Patentansprüche

1. Hebel für Fahrzeuggriffe, der einen Hauptkörper (1) aufweist, der einen zentralen Teil (1c) aufweist, der zwischen einem Vorderteil (1a) und einem Hinterteil (1b) enthalten ist, sowie mindestens einen Hohlraum (5), in dem eine oder mehrere elektrische und/oder elektronische Vorrichtungen eingerichtet sind, wobei diese elektrischen und/oder elektronischen Vorrichtungen in mindestens 2 Gehäusen (6, 7) eingeschlossen sind, die längs in dem Hohlraum (5) eingerichtet und durch einen Zwischenraum (8) getrennt sind, **dadurch gekennzeichnet, dass** das erste Gehäuse (6) und das zweite Gehäuse (7) durch Formen von Kunststoff-material um die elektrischen und/oder elektronischen Vorrichtungen hergestellt sind, um sie in diesem Kunststoffmaterial zu versiegeln.

2. Hebel nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** das erste Gehäuse (6) im Wesentlichen in dem Hinterteil (1b) des Hauptkörpers (1) eingerichtet ist.

3. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das zweite Gehäuse (7) im Wesentlichen in dem zentralen Teil (1c) des Hauptkörpers (1) eingerichtet ist.

4. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Zwischenraum (8) in einem Bereich zwischen dem Hinterteil (1b) und dem zentralen Teil (1c) des Hauptkörpers (1) eingerichtet ist.

5. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der zentrale Teil (1c) des Hauptkörpers (1) geformt ist, um eine Vertiefung (4) zu erhalten, die auf der Innenseite des Hauptkörpers (1) eingerichtet ist.

6. Hebel nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** der Zwischenraum (8) in dem Übergangsbereich (TZ) zwischen der Vertiefung (4) und dem Hinterteil (1b) des Hauptkörpers (1), wo sich der Querschnitt des Hauptkörpers (1) zu erweitern beginnt, eingerichtet ist.

7. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Gehäuse (6, 7) miteinander elektrisch durch mindestens einen flachen Leiter (9) verbunden sind.

8. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das erste Gehäuse (6) einen kapazitiven Sensor enthält, der geeignet ist, um einen Finger des Benutzers in der Nähe des Hinterteils (1b) des Hauptkörpers (1) zu erfassen.

9. Hebel nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** der Hinterteil (1b) des Hauptkörpers (1) mit einem/einer oder mehreren Vorsprüngen oder Rillen (10) in den aktiven Bereichen des kapazitiven Sensors versehen ist.

10. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das zweite Gehäuse (7) eine elektronische Vorrichtung aufweist, die mit einer Antenne zur Kommunikation mit einer Identifikationsvorrichtung des Benutzers versehen ist.

11. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das zweite Gehäuse (7) einen kapazitiven Sensor aufweist, der geeignet ist, um die Hand des Benutzers zu erfassen.

12. Hebel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die elektrischen und/oder elektronischen Vorrichtungen mit einem externen Stecker (11) mittels eines oder mehrerer Kabel/s (12), die aus dem Vorderteil (1a) des Hauptkörpers (1) herauskommen, verbunden sind.

13. Hebel nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die Kabel (12) aus dem Vorderteil (1a) des Hauptkörpers (1) durch einen Kanal (13), der in einer geformten Erweiterung (2) gemacht ist, der geeignet ist, um mit einem Hebelstützpunkt des Hebels gekuppelt zu werden, herauskommen.

14. Hebel nach Anspruch 12 oder 13, **dadurch gekennzeichnet, dass** ein Plastikrückhalteelement (14) quer auf die Kabel (12) geformt und in einem Sitz des Vorderteils (1a) des Hauptkörpers (1) eingerichtet ist.

15. Fahrzeuggriff, **dadurch gekennzeichnet, dass** er einen Hebel nach einem der vorhergehenden Ansprüche aufweist.

Revendications

1. Levier pour poignées de véhicule, comprenant un corps principal (1) ayant une partie centrale (1c) comprise entre une partie avant (1a) et une partie arrière (1b), ainsi qu'au moins une cavité (5) dans laquelle un ou plusieurs dispositifs électriques et/ou électroniques sont disposés, ces dispositifs électriques et/ou électroniques étant enfermés dans au moins deux enceintes (6, 7) disposées longitudinalement dans la cavité (5) et séparées par un interstice (8), **caractérisé en ce que** la première enceinte (6) et la deuxième enceinte (7) sont fabriquées par moulage de matière plastique autour des dispositifs électriques et/ou électroniques, de manière à les sceller dans cette matière plastique.

2. Levier selon la revendication précédente, **caractérisé en ce que** la première enceinte (6) est disposée essentiellement dans la partie arrière (1b) du corps principal (1).

3. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la deuxième enceinte (7) est disposée essentiellement dans la partie centrale (1c) du corps principal (1).

4. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'interstice (8) est disposé dans une zone entre la partie arrière (1b) et la partie centrale (1c) du corps principal (1).

5. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la partie centrale (1c) du corps principal (1) est formée de manière à obtenir un retrait (4) disposé sur le côté intérieur du corps principal (1).

6. Levier selon la revendication précédente, **caractérisé en ce que** l'interstice (8) est disposé dans la zone de transition (TZ) entre le retrait (4) et la portion arrière (1b) du corps principal (1), à l'endroit où la section transversale du corps principal (1) commence à s'élargir.

7. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les enceintes (6, 7) sont connectées électriquement l'une à l'autre par au moins un conducteur plat (9).

8. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la première enceinte (6) comporte un capteur capacitif approprié pour détecter un doigt de l'utilisateur proche de la partie arrière (1b) du corps principal (1).

9. Levier selon la revendication précédente, **caractérisé en ce que** la partie arrière (1b) du corps principal (1) est munie d'une ou plusieurs saillies ou gorges (10) dans les zones actives dudit capteur capacitif.

10. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la deuxième enceinte (7) comporte un dispositif électronique muni d'une antenne pour communiquer avec un dispositif d'identification de l'utilisateur.

11. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la deuxième enceinte (7) comporte un capteur capacitif approprié pour détecter la main de l'utilisateur.

12. Levier selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits dispositifs électriques et/ou électroniques sont connectés à un connecteur externe (11) au moyen d'un ou de plusieurs câbles (12) sortant de la partie avant (1a) du corps principal (1).

13. Levier selon la revendication précédente, **caractérisé en ce que** lesdits câbles (12) sortent de la partie avant (1a) du corps principal (1) à travers un canal (13) réalisé dans un prolongement façonné (2) approprié pour être accouplé à un pivot de la poignée.

14. Levier selon la revendication 12 ou 13, **caractérisé en ce qu'**un organe de retenue en plastique (14) est moulé transversalement sur les câbles (12) et est disposé dans un siège de la partie avant (1a) du corps principal (1).

15. Poignée de véhicule, **caractérisée en ce qu'**elle comprend un levier selon l'une quelconque des revendications précédentes.

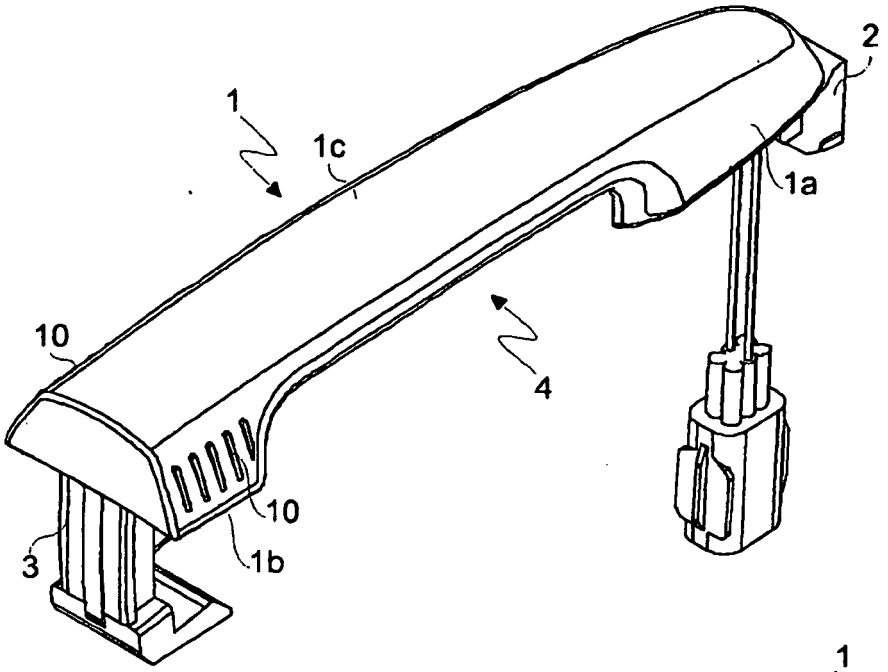


Fig.1

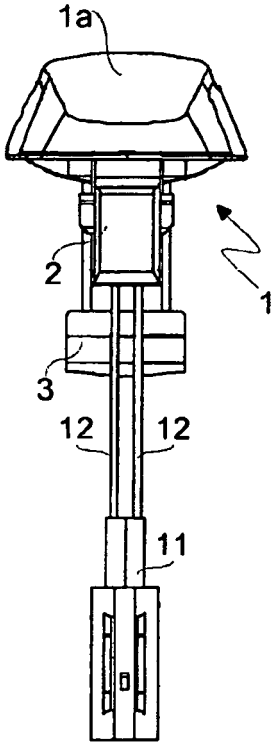


Fig.2

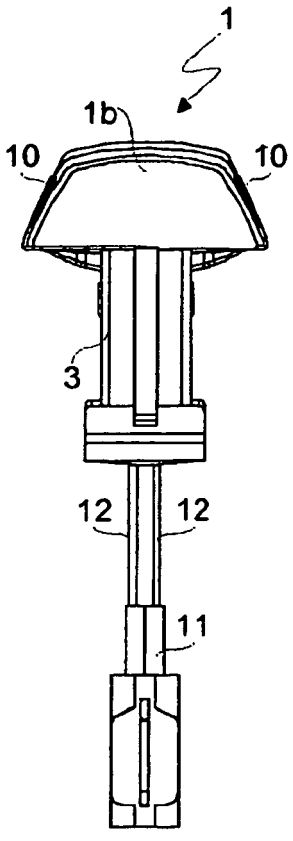


Fig.3

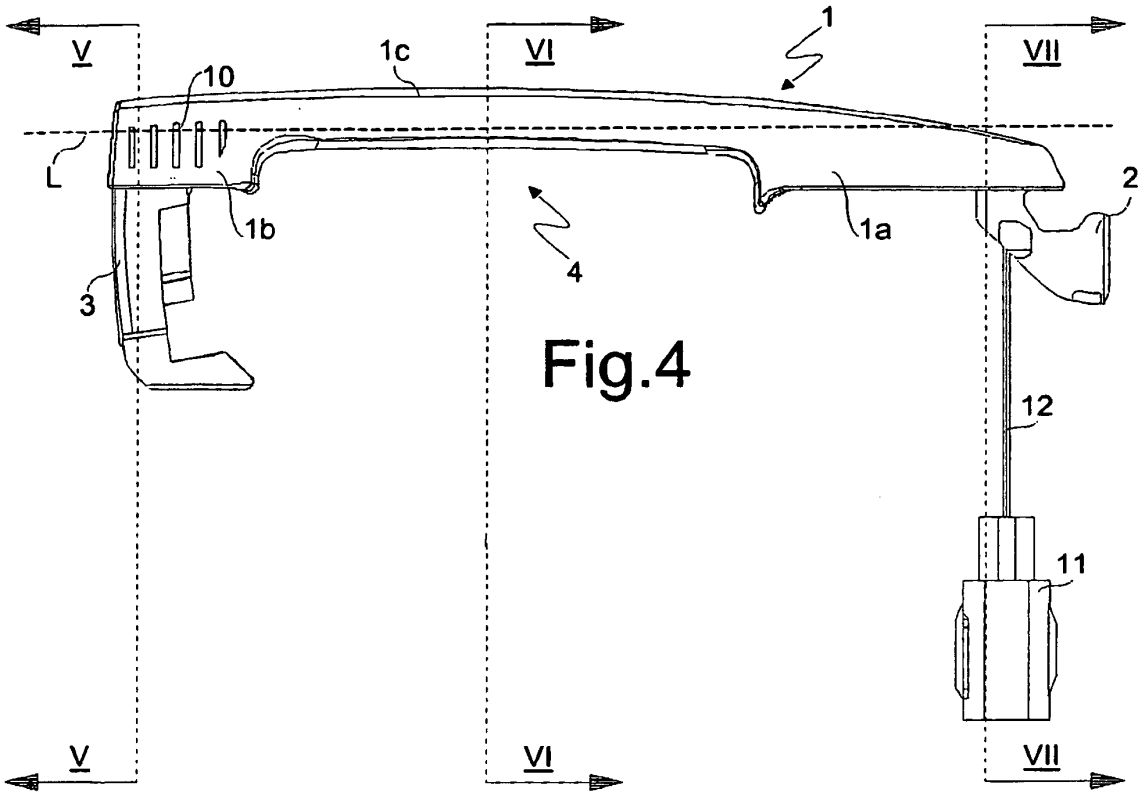


Fig.4

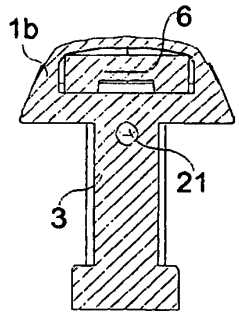


Fig.5

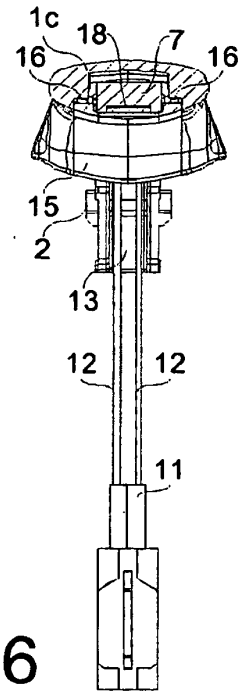


Fig.6

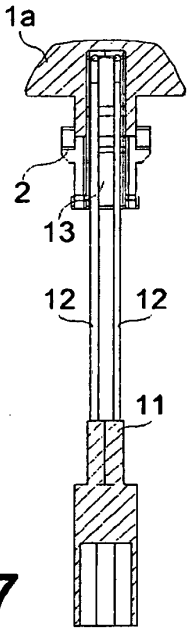


Fig.7

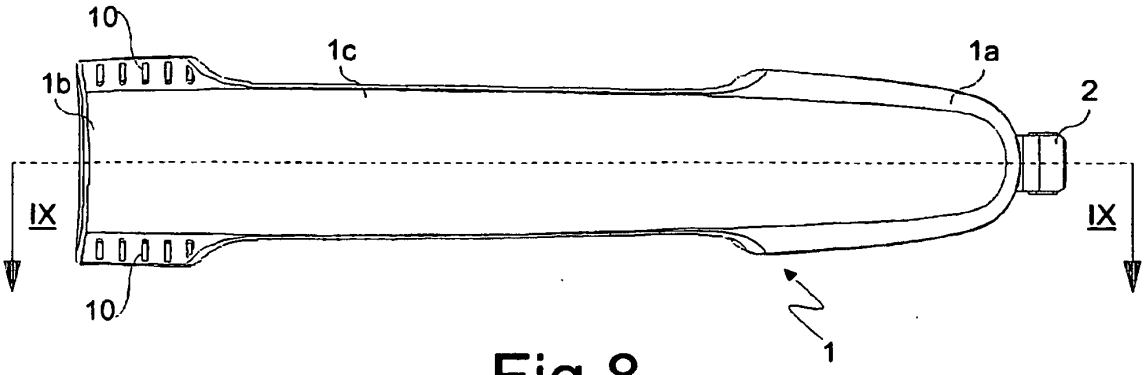

10
1c
1a
1b
2
IX
IX
10
1

Fig.8

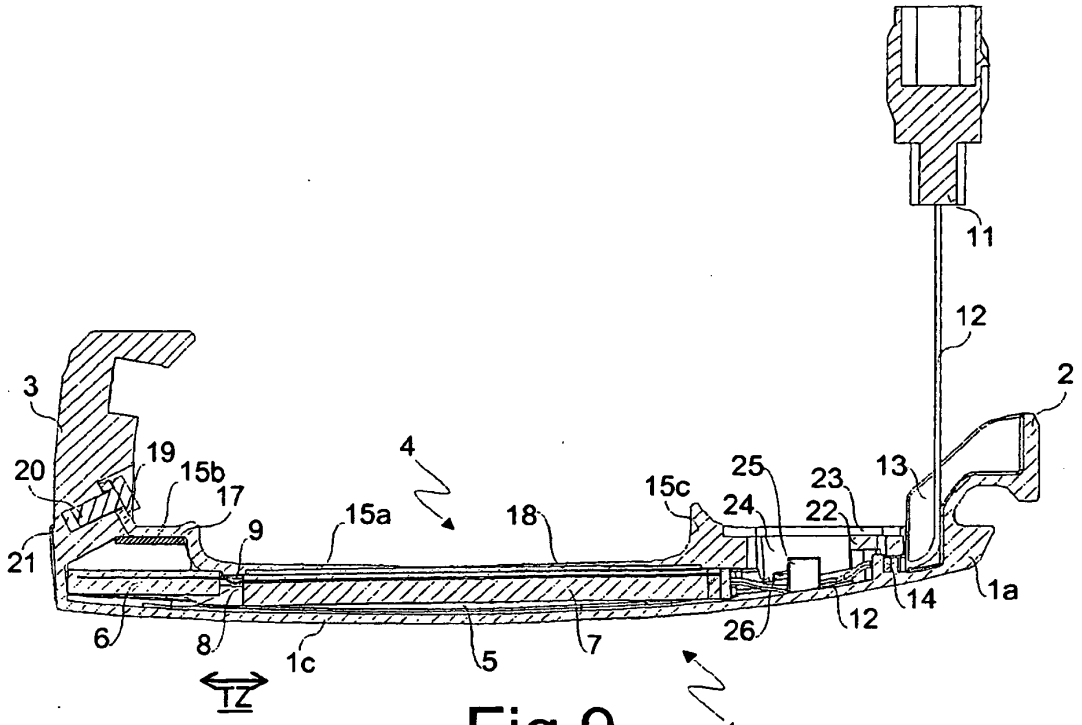

11
12
2
3
19
4
20
15b
17
25
23
13
15c
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22
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15a
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1c
5
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26
12
TZ
1

Fig.9

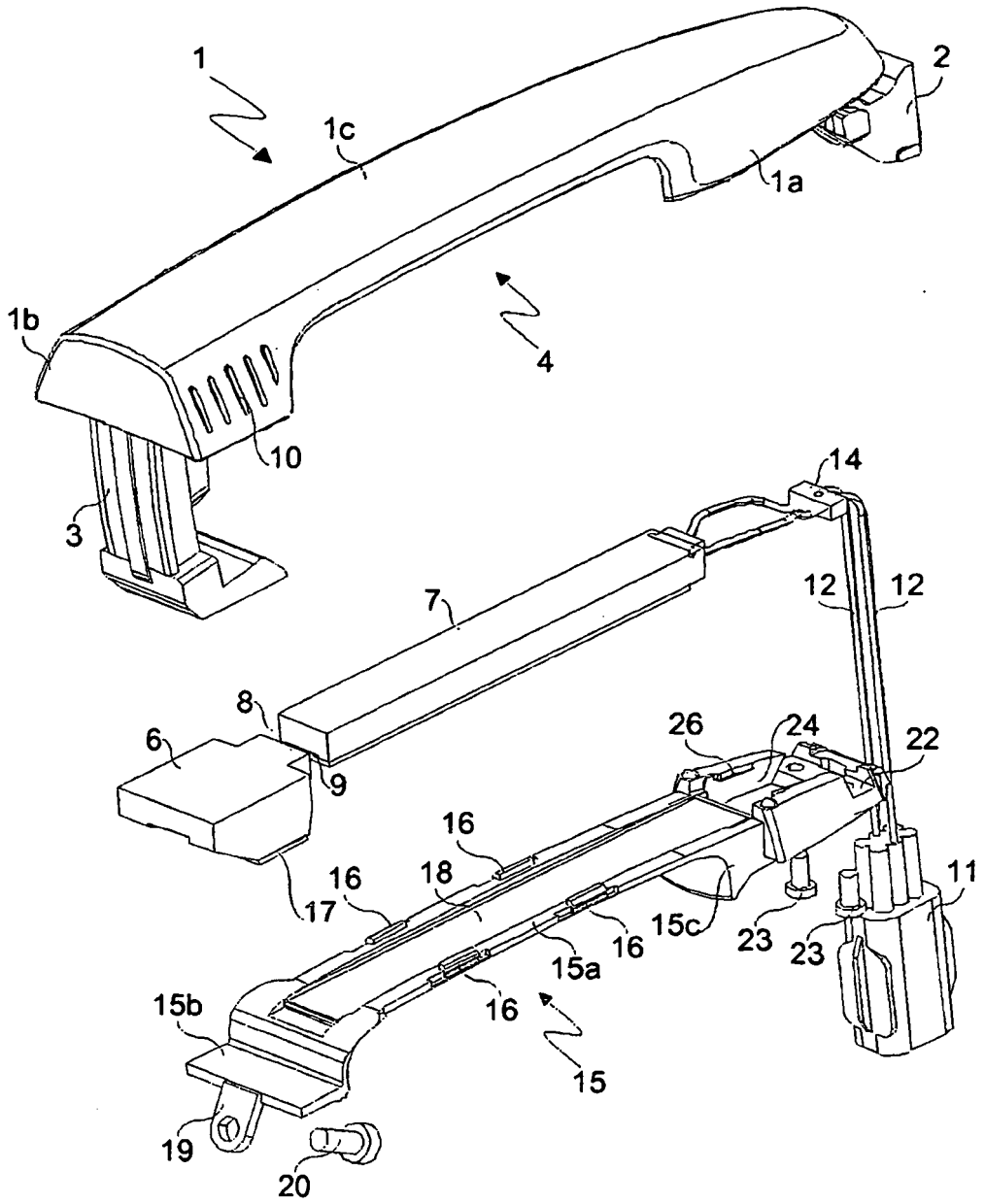

1
2
1c
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1b
4
10
3
14
12
12
7
8
6
9
26
24
22
16
16
18
11
17
15c
23
23
16
15a
15b
16
15
19
20

Fig.10

REFERENCES CITED IN THE DESCRIPTION

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