

(19)



(11)

**EP 1 284 334 B1**

(12)

## EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention  
of the grant of the patent:  
**18.07.2007 Bulletin 2007/29**

(51) Int Cl.:  
**E05B 65/20 (2006.01)**

(21) Application number: **01830539.1**

(22) Date of filing: **16.08.2001**

(54) **Vehicle door handle**

Türgriff für ein Kraftfahrzeug

Poignée de porte pour véhicule

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR**

(43) Date of publication of application:  
**19.02.2003 Bulletin 2003/08**

(73) Proprietor: **Valeo Sicurezza Abitacolo S.p.A.**  
**10026 Santena (IT)**

(72) Inventors:  
• **Meradi, Omar**  
**94042 Créteil Cedex (FR)**

• **Villagrasa, Victor**  
**94042 Créteil Cedex (FR)**  
• **Bergami, Marta**  
**94042 Créteil Cedex (FR)**

(74) Representative: **Hervouet, Sylvie et al**  
**Valeo Sécurité Habitacle S.A.S.**  
**Service Propriété Industrielle**  
**42, rue Le Corbusier**  
**Europarc**  
**94042 Créteil Cedex (FR)**

(56) References cited:  
**EP-A- 1 006 028** **EP-A- 1 035 276**

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

**EP 1 284 334 B1**

## Description

**[0001]** The present invention relates to a vehicle door handle.

**[0002]** More specifically, the present invention relates to a handle of the type comprising a fastening structure for connection to the vehicle door; a lever connected to the fastening structure and which is gripped by a user; and a sensor or detecting antenna.

**[0003]** In most applications, the lever has an inner cavity communicating with the outside through an opening, and into which the antenna or sensor is inserted through the opening, which is then closed by a plug.

**[0004]** Such a handle is known from document EP-A-1035276 which presents a door handle comprising a grip member, intended to be gripped in use by a user, fitted to fastening means connected to the door. The grip member defines an inner cavity housing detecting means which are maintained in a fixed position inside the cavity by a plugging body housing an end portion of the detecting means.

**[0005]** To insert the antenna or sensor easily inside the cavity, the inside of the cavity is normally larger than the antenna or sensor, so that, during normal operation, the antenna or sensor vibrates inside the lever, thus resulting in annoying, undesired acoustic emissions and, in many cases, in rapid failure.

**[0006]** Besides failing to provide an effective solution to the problem, reducing the clearance between the lever and the antenna or sensor also makes it more difficult to insert and position the antenna or sensor correctly.

**[0007]** Moreover, being normally flexible, the lever, when gripped to open or pushed to close the door, flexes and transfers the external pressure to the antenna or sensor, which, as is known, is sensitive to mechanical stress. As a result, the antenna or sensor soon breaks down and must be replaced at far from negligible cost.

**[0008]** It is an object of the present invention to provide a vehicle door handle designed to provide a straightforward solution to the above problems, and which, in particular, provides for a high degree of efficiency and reliability at all times, while at the same time being relatively cheap.

**[0009]** According to the present invention, there is provided a handle for a vehicle door, as claimed in claim 1.

**[0010]** In the handle defined above, said elastic forcing means conveniently act on a surface of said detecting means facing said fastening means, to push the detecting means outwards of the grip member.

**[0011]** A non-limiting embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a section, with parts removed for clarity, of a preferred embodiment of the handle according to the present invention;

Figure 2 shows a section along line II-II in Figure 1;

Figure 3 shows an exploded view in perspective of

a detail of Figure 1;

Figure 4 shows a view in perspective of a variation of the Figure 3 detail.

**[0012]** Number 1 in Figure 1 indicates as a whole a handle for a vehicle door not shown.

**[0013]** Handle 1 comprises a fastening structure 2, which is connected integrally in known manner, not described in detail, to the door (not shown); and a lever 3 for controlling a lock (not shown) on the door.

**[0014]** Lever 3 comprises an end portion 4 hinged to structure 2, in known manner not described in detail, to move, with respect to structure 2, to and from an extracted position to activate the lock (not shown). Lever 3 also comprises a hollow, elongated, intermediate portion 5, which is gripped manually, in use, by a user; and an end portion 6, opposite portion 4, which extends through structure 2 and is connected to the door lock (not shown).

**[0015]** Intermediate portion 5 comprises a longitudinal front wall 7 facing, in use, the user and defined internally by an inner surface 7a; and a rear wall 8 facing front wall 7 and adjacent, in use, to the body of the door. Together with the rest of lever 3, walls 7 and 8 define an elongated cavity 9 communicating with the outside through two facing end openings 11 and 12. Opening 11 extends through end portion 6; opening 12 comes out inside a further cavity 13 formed in portion 4; and cavity 13 is closed partly by a cover 14 to define a chamber 15, and a conduit or passage 16 connecting chamber 15 to the outside.

**[0016]** A known detecting device 18 is housed radially loosely inside elongated cavity 9, and, in the particular example described, comprises a hollow outer casing 19 formed in one piece or by two connected half-shells, and an antenna or sensor 20 locked inside casing 19 and connected to wiring 21. Wiring 21 comes out of an end portion 23, adjacent to chamber 15, of casing 19, and extends outside through chamber 15 and passage 16 (Figure 1).

**[0017]** As shown in Figure 1 and particularly in Figure 2, end portion 23 of casing 19 is connected to intermediate portion 5 by an anchoring device 24 comprising an annular, conveniently elastic body 25 partly surrounding end portion 23 and which is forced inside cavity 9 to form a hinge enabling casing 19 to rotate to and from wall 7.

**[0018]** As shown in Figure 1, casing 19 is pushed against surface 7a of wall 7 by an elastic device 28 interposed between wall 8 and an end portion 26, opposite portion 23, of casing 19.

**[0019]** In the example described and shown in particular in Figures 1 and 3, device 28 comprises a supporting plate 29 resting on a portion of wall 8 adjacent to end portion 6 and end opening 11; and an elastically deformed lever 30, which is integral with plate 29, forms an acute angle A with plate 29, and terminates with a fastening portion 31 resting against an inner surface of portion 26 facing structure 2. Portion 31 has two adjacent holes 32, each engaged by a respective pin 33 integral with casing 19 and projecting from casing 19 parallel to

the other pin 33. The portion of plate 29 opposite the portion integral with lever 30 is connected integrally to a cover 35 for closing end opening 11. In the particular example described, cover 35, supporting plate 29, and lever 30 form part of a single body 36 formed in one piece and connected releasably to portion 6 by a removable retaining pin 37.

**[0020]** In the Figure 4 variation, plate 29 is separate from cover 35; lever 30 is connected directly and integrally to casing 19; and elastic device 28 and casing 19 - or at least part of casing 19, if this comprises a number of parts - preferably form part of a single body 38 formed in one piece.

**[0021]** In actual use, annular body 25 provides for easily hinging one end of detecting device 18 and allowing the rest of device 18 to oscillate, inside cavity 9, to and from wall 7. And, in parallel, elastic device 28 forces portion 26 of casing 19 elastically against wall 7, so that the efficiency of detecting device 18 is in no way impaired by any external force transmitted to intermediate grip portion 5 by the user, or simply by the door being closed sharply, and such as to deform intermediate portion 5. In fact, when such external force is applied, device 18 is free to move, inside cavity 9, with respect to portion 5, upon the external force exceeding the elastic load imparted by device 28. In handle 1 described, elastic device 28 therefore makes detecting device 18 functionally unaffected by any deformation of intermediate portion 5, which may therefore be made of any, even flexible or easily deformable material.

**[0022]** In the absence of external force, device 18 is maintained by elastic device 28 in a stable condition, thus preventing any relative movement resulting in vibration or undesired acoustic emissions.

**[0023]** Forming elastic device 28 in one piece with cover 35 closing end opening 11 of insertion of detecting device 18 reduces the number of component parts, makes assembly faster, and improves the stability of the handle, by the component parts being interconnected so that each maintains its original position.

**[0024]** Cavity 13 and the particular cover 14, on the one hand, permit direct access to detecting device 18 to connect device 18 electrically to wiring 21, if necessary, once detecting device 18 is inserted inside intermediate portion 5 of lever 3, and, on the other, define the wiring conduit while greatly simplifying formation of the lever and assembly of the handle.

**[0025]** Clearly, changes may be made to handle 1 as described herein without, however, departing from the scope of the present invention as defined by the appended claims. In particular, a different elastic forcing device may be provided and located in a different position from the one shown by way of example.

**[0026]** End portion 23 of device 18 may be connected differently to lever 3, even by means of a further elastic retaining device identical with or differing from the one described.

**[0027]** Moreover, detecting device 18 may have no

outer casing 19, and elastic device 28 and the anchoring device may act directly on the sensor or detecting antenna 20.

## Claims

1. A handle (1) for a vehicle door, the handle (1) comprising fastening means (2), which are connectable integrally to said door; a grip member (5), which is fitted to said fastening means (2), is gripped in use by a user, and defines an inner cavity (9); and detecting means (18) housed loosely inside said cavity (9); **characterized in that** said detecting means (18) are maintained inside said cavity (9) by cooperation of
  - anchoring means (24), connecting a first portion (23) of said detecting means (18) to said grip member (5) in an oscillating manner; and
  - elastic forcing means (28) acting on a second portion (26), separate from said first portion (23), of said detecting means (18) for keeping said detecting means (18) in contact with a seating surface (7a) in said cavity (9).
2. A handle as claimed in Claim 1, **characterized in that** said first (23) and said second (26) portion are end portions of said detecting means (18).
3. A handle as claimed in Claim 1 or 2, **characterized in that** said anchoring means (24) comprise an elastic member (25) force-fitted inside said cavity (9).
4. A handle as claimed in Claim 1 to 3, **characterized in that** said elastic forcing means (28) act on a surface of said detecting means (18) facing said fastening means (2), to push the detecting means (18) towards an outer front wall (7) of the grip member (5).
5. A handle as claimed in any one of the foregoing Claims, **characterized in that** said cavity (9) has an insertion opening (11) for insertion of said detecting means (18); and **in that** said elastic forcing means (28) are located close to said insertion opening (11).
6. A handle as claimed in Claim 5, **characterized by** comprising closing means (35) for closing said insertion opening (11); said elastic forcing means (28) being carried by said closing means (35).
7. A handle as claimed in Claim 6, **characterized in that** said closing means comprise a closing member (35); said elastic forcing means (28) and said closing member (35) forming part of a one-piece body (36).
8. A handle as claimed in Claim 6 or 7, **characterized by** comprising releasable further connecting means

(32, 33) interposed between said elastic forcing means (28) and said detecting means (18).

9. A handle as claimed in Claim 8, **characterized in that** said further connecting means comprise at least one retaining seat (32) carried by said elastic forcing means (28) or said detecting means (18); and at least one pin (33) carried by the other of said elastic forcing means (28) or said detecting means (18) and engaging said seat (32).

10. A handle as claimed in one of Claims 7 to 9, **characterized by** comprising releasable fastening means (37) for connecting said one-piece body (36) releasably to said grip member (5).

11. A handle as claimed in any one of the foregoing Claims, **characterized in that** said elastic forcing means (28) comprise at least one elastically deformed push lever (30).

12. A handle as claimed in one of Claims 1 to 5, **characterized in that** said detecting means (18) comprise a detecting member (20), and an outer casing (19) housing said detecting member (20); said elastic forcing means (28) acting on said outer casing (19).

13. A handle as claimed in Claim 12, **characterized in that** said elastic forcing means (28) are carried by said outer casing (19).

14. A handle as claimed in Claim 13, **characterized in that** said elastic forcing means (28) comprise at least one elastically deformed lever (30) integral with said outer casing (19).

15. A handle as claimed in any one of the foregoing Claims, **characterized by** comprising a connecting opening (12, 13) connecting the cavity (9) with the outside; said detecting means (18) comprising wiring (21) extending through said connecting opening (12, 13); and plugging means (14) being provided to partly close said connecting opening (12, 13).

16. A handle as claimed in Claim 15, **characterized in that** said plugging means (14) are fitted releasably, and partly define a channel (16) for the passage of said wiring (21).

#### Patentansprüche

1. Griff (1) für eine Fahrzeugtür, wobei der Griff (1) Folgendes umfasst: Befestigungsmittel (2), die mit der Tür einstückig verbunden werden können; ein Griffteil (5), das an den Befestigungsmitteln (2) angebracht ist, im Gebrauch durch einen Benutzer ergriffen wird und einen inneren Hohlraum (9) definiert;

und Erfassungsmittel (18), die lose in dem Hohlraum (9) untergebracht sind; **dadurch gekennzeichnet, dass** die Erfassungsmittel (18) durch das Zusammenwirken von

- Verankerungsmitteln (24), die einen ersten Abschnitt (23) der Erfassungsmittel (18) oszillierend mit dem Griffteil (5) verbinden; und
- elastischen Drückmitteln (28), die getrennt von dem ersten Abschnitt (23) auf einen zweiten Abschnitt (26) der Erfassungsmittel (18) einwirken, um die Erfassungsmittel (18) mit einer Auflagefläche (7a) in dem Hohlraum (9) in Kontakt zu halten,

in dem Hohlraum (9) gehalten werden.

2. Griff nach Anspruch 1, **dadurch gekennzeichnet, dass** der erste und der zweite Abschnitt (23, 26) Endabschnitte der Erfassungsmittel (18) sind.

3. Griff nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Verankerungsmittel (24) ein elastisches Teil (25) umfassen, das in den Hohlraum (9) hineingepresst ist.

4. Griff nach Anspruch 1 bis 3, **dadurch gekennzeichnet, dass** die elastischen Drückmittel (28) auf eine den Befestigungsmitteln (2) gegenüberliegende Fläche der Erfassungsmittel (18) wirken, um die Erfassungsmittel (18) in Richtung auf eine äußere Stirnwand (7) des Griffteils (5) zu schieben.

5. Griff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Hohlraum (9) eine Einführöffnung (11) zum Einführen der Erfassungsmittel (18) aufweist; und dass sich die elastischen Drückmittel (28) nahe bei der Einführöffnung (11) befinden.

6. Griff nach Anspruch 5, **dadurch gekennzeichnet, dass** er Schließmittel (35) zum Schließen der Einführöffnung (11) umfasst; wobei die elastischen Drückmittel (28) von den Schließmitteln (35) getragen werden.

7. Griff nach Anspruch 6, **dadurch gekennzeichnet, dass** die Schließmittel ein Schließteil (35) umfassen; wobei die elastischen Drückmittel (28) und das Schließteil (35) Bestandteil eines einstückigen Körpers (36) sind.

8. Griff nach Anspruch 6 oder 7, **dadurch gekennzeichnet, dass** er weitere lösbare Verbindungsmittel (32, 33) umfasst, die zwischen den elastischen Drückmitteln (28) und den Erfassungsmitteln (18) angeordnet sind.

9. Griff nach Anspruch 8, **dadurch gekennzeichnet, dass** die weiteren Verbindungsmittel mindestens eine Befestigungsaufnahme (32) umfassen, die von den elastischen Drückmitteln (28) oder den Erfassungsmitteln (18) getragen wird; und mindestens einen Stift (33), der von dem anderen der elastischen Drückmittel (28) oder der Erfassungsmittel (18) getragen wird und an der Aufnahme (32) angreift. 5
10. Griff nach einem der Ansprüche 7 bis 9, **dadurch gekennzeichnet, dass** er lösbare Befestigungsmittel (37) zum lösbaren Verbinden des einstückigen Körpers (36) mit dem Griffteil (5) umfasst. 10
11. Griff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die elastischen Drückmittel (28) mindestens einen elastisch verformten Schiebehebel (30) umfassen. 15
12. Griff nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die Erfassungsmittel (18) ein Erfassungsteil (20) und ein das Erfassungsteil (20) aufnehmendes äußeres Gehäuse (19) umfassen; wobei die elastischen Drückmittel (28) auf das äußere Gehäuse (19) wirken. 20
13. Griff nach Anspruch 12, **dadurch gekennzeichnet, dass** die elastischen Drückmittel (28) von dem äußeren Gehäuse (19) getragen werden. 25
14. Griff nach Anspruch 13, **dadurch gekennzeichnet, dass** die elastischen Drückmittel (28) mindestens einen elastisch verformten Hebel (30) umfassen, der in das äußere Gehäuse (19) integriert ist. 30
15. Griff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er eine Verbindungsöffnung (12, 13) umfasst, die den Hohlraum (9) mit der Außenseite verbindet; wobei die Erfassungsmittel (18) eine Verdrahtung (21) umfassen, die sich durch die Verbindungsöffnung (12, 13) erstreckt; und wobei Dichtungsmittel (14) vorgesehen sind, um die Verbindungsöffnung (12, 13) teilweise zu verschließen. 35
16. Griff nach Anspruch 15, **dadurch gekennzeichnet, dass** die Dichtungsmittel (14) lösbar angebracht sind und teilweise einen Kanal (16) für den Durchgang der Verdrahtung (21) definieren. 40

## Revendications

1. Une poignée (1) pour une porte de véhicule, la poignée (1) comprenant un moyen de fixation (2) qui peut être relié solidairement à ladite porte ; un élément de poignée (5), qui est installé sur ledit moyen de fixation (2), est saisi en utilisation par un utilisate-

teur, et délimite une cavité interne (9) ; et le moyen de détection (18) abrité sans serrage à l'intérieur de ladite cavité (9) ; **caractérisée en ce que** ledit moyen de détection (18) est maintenu à l'intérieur de ladite cavité (9) par la coopération

- du moyen d'ancrage (24), reliant une première partie (23) dudit moyen de détection (18) audit élément de poignée (5) de manière oscillante ; et
- du moyen de forçage élastique (28) agissant sur une seconde partie (26), séparée de ladite première partie (23), dudit moyen de détection (18) pour maintenir ledit moyen de détection (18) en contact avec une surface de portée (7a) dans ladite cavité (9).

2. Une poignée selon la Revendication 1, **caractérisée en ce que** ladite première (23) et ladite seconde (26) parties sont des parties d'extrémité dudit moyen de détection (18).
3. Une poignée selon la Revendication 1 ou 2, **caractérisée en ce que** ledit moyen d'ancrage (24) comprend un élément élastique (25) emmanché en force à l'intérieur de ladite cavité (9).
4. Une poignée selon les Revendications 1 à 3, **caractérisée en ce que** ledit moyen de forçage élastique (28) agit sur une surface dudit moyen de détection (18) faisant face audit moyen de fixation (2), pour pousser le moyen de détection (18) vers une paroi avant extérieure (7) de l'élément de poignée (5).
5. Une poignée selon l'une quelconque des Revendications susmentionnées, **caractérisée en ce que** ladite cavité (9) a une ouverture d'insertion (11) pour l'insertion dudit moyen de détection (18) ; et **en ce que** ledit moyen de forçage élastique (28) est installé à proximité de ladite ouverture d'insertion (11).
6. Une poignée selon la Revendication 5, **caractérisée en ce qu'elle** comprend un moyen de fermeture (35) pour fermer ladite ouverture d'insertion (11) ; ledit moyen de forçage élastique (28) étant supporté par ledit moyen de fermeture (35).
7. Une poignée selon la Revendication 6, **caractérisée en ce que** ledit moyen de fermeture comprend un élément de fermeture (35) ; ledit moyen de forçage élastique (28) et ledit élément de fermeture (35) faisant partie d'une partie monobloc (36).
8. Une poignée selon la Revendication 6 ou 7, **caractérisée en ce qu'elle** comprend des moyens de raccordement amovibles supplémentaires (32,33) interposés entre ledit moyen de forçage élastique (28) et ledit moyen de détection (18).

9. Une poignée selon la Revendication 8, **caractérisée en ce que** lesdits moyens de raccordement supplémentaires comprennent au moins un siège de retenue (32) supporté par ledit moyen de forçage élastique (28) ou ledit moyen de détection (18) ; et au moins un axe (33) supporté par ledit moyen de forçage élastique (28) ou ledit moyen de détection (18) et mettant en prise ledit siège (32). 5
  
10. Une poignée selon l'une des Revendications 7 à 9, **caractérisée en ce qu'elle** comprend un moyen de fixation amovible (37) pour relier ladite pièce monobloc (36) de manière détachable audit élément de poignée (5). 10  
15
  
11. Une poignée selon l'une quelconque des Revendications susmentionnées, **caractérisée en ce que** ledit moyen de forçage élastique (28) comprend au moins un levier poussoir élastiquement déformé (30). 20
  
12. Une poignée selon l'une des Revendications 1 à 5, **caractérisée en ce que** ledit moyen de détection (18) comprend un élément de détection (20), et un boîtier extérieur (19) abritant ledit élément de détection (20) ; ledit moyen de forçage élastique (28) agissant sur ledit boîtier extérieur (19). 25
  
13. Une poignée selon la Revendication 12, **caractérisée en ce que** ledit moyen de forçage élastique (28) est supporté par ledit boîtier extérieur (19). 30
  
14. Une poignée selon la Revendication 13, **caractérisée en ce que** ledit moyen de forçage élastique (28) comprend au moins un levier élastiquement déformé (30) solidaire audit boîtier extérieur (19). 35
  
15. Une poignée selon l'une quelconque des Revendications susmentionnées, **caractérisée en ce qu'elle** comprend une ouverture de raccordement (12, 13) reliant la cavité (9) à l'extérieur ; ledit moyen de détection (18) comprenant le câblage (21) s'étendant à travers ladite ouverture de raccordement (12,13) ; et le dispositif obturateur (14) étant prévu pour fermer partiellement ladite ouverture de raccordement (12,13). 40  
45
  
16. Une poignée selon la Revendication 15, **caractérisée en ce que** ledit dispositif obturateur (14) est fixé de manière détachable, et délimite partiellement un canal (16) pour le passage dudit câblage (21). 50

55

FIG. 1

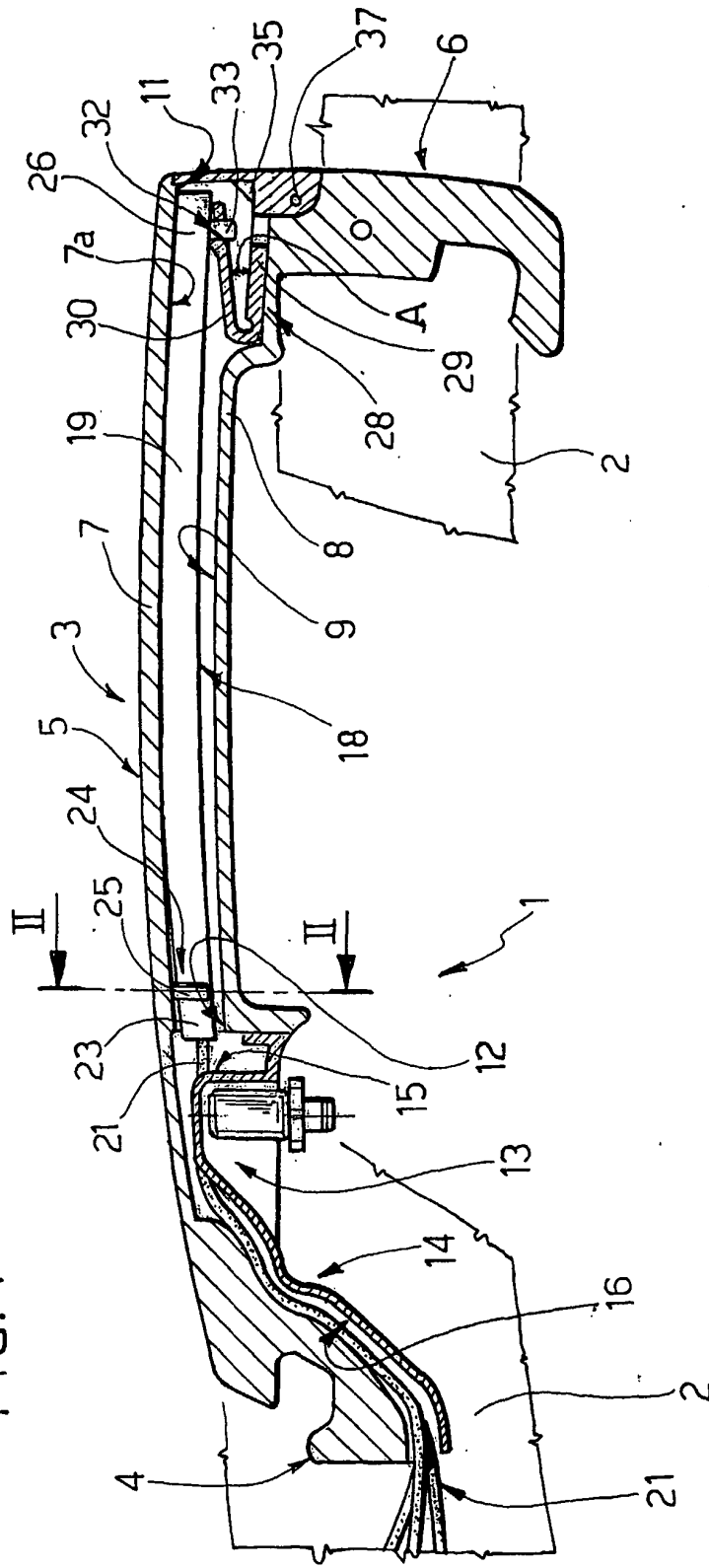


FIG. 2

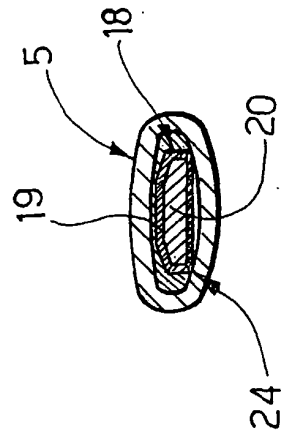


FIG. 3

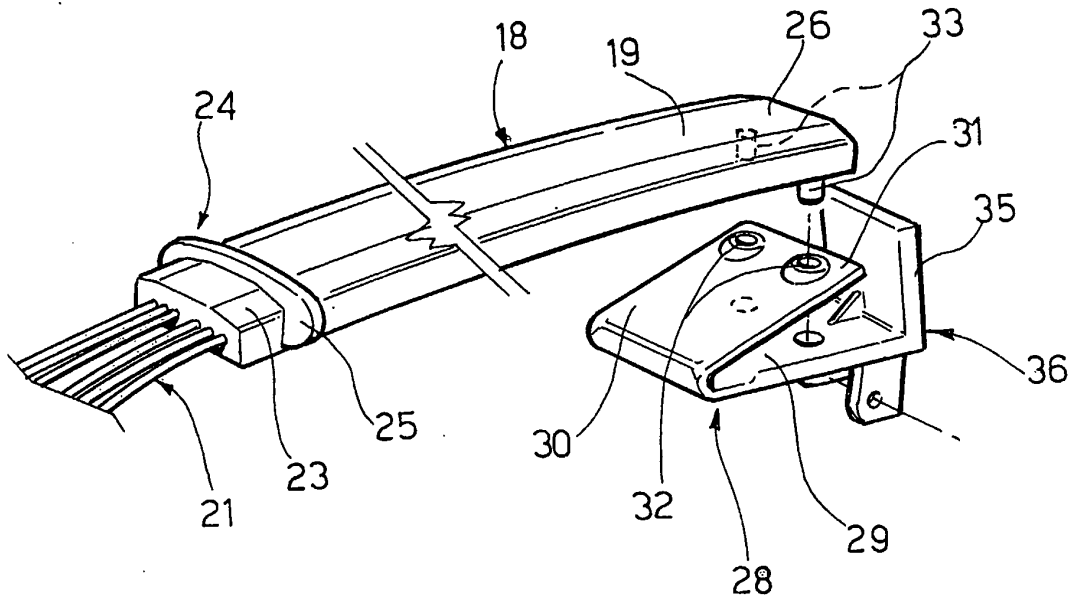
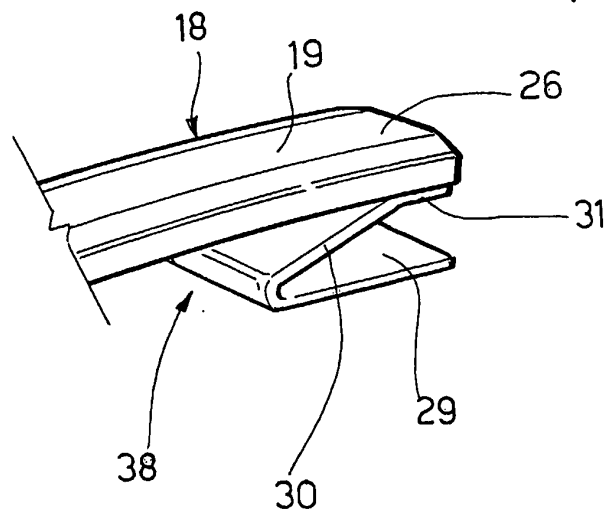


FIG. 4





**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- EP 1035276 A [0004]