



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 275 800 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
28.09.2005 Bulletin 2005/39

(51) Int Cl.7: **E05B 65/20**

(21) Application number: **01830461.8**

(22) Date of filing: **12.07.2001**

(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:
15.01.2003 Bulletin 2003/03

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

(72) Inventors:
• **Savant, Fiorenzo c/o Valeo Sécurité Habitacle
94042 Créteil cedex (FR)**

• **Villagrasa, Victor c/o Valeo Sécurité Habitacle
94042 Créteil cedex (FR)**

(74) Representative: **Rosolen-Delarue, Katell
Valeo Sécurité Habitacle,
Service Propriété Industrielle,
42, rue Le Corbusier - Europarc
94042 Creteil Cedex (FR)**

(56) References cited:
**EP-A- 1 031 684 DE-A- 3 231 210
US-A- 5 651 163**

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 1 275 800 B1

Description

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

[0002] Vehicle doors in general, and motor vehicle doors in particular, are opened by means of a handle, wherein an elongated frame is fitted inside the door and supports an operating lever. The lever normally has a control end portion connected, in use, to the respective lock, and an opposite end portion connected to the frame to rotate, with respect to the frame, between an extracted lock-release position and a withdrawn rest position.

[0003] The hinge of known handles of the above type must allow the operating lever to rotate with respect to the frame, and also permit connection of the lever to the frame when the frame is fitted inside the door. For which reason, the frame of known handles normally has a fixed hinge pin parallel to the hinge axis; and the lever terminates in a fork, the arms of which extend substantially perpendicularly to the pin to define an extension of the lever, and house the pin in between. The pin is retained between the arms by one or more portions of the lever, which, when the lever is connected to the frame, face respective shoulders or contact surfaces on the frame at all times.

[0004] Though widely used, known handles of the above type are unsatisfactory, mainly on account of the way in which the handle is hinged to the frame failing to ensure pure rotation of the lever about a fixed hinge axis. That is, the slack always present between the pin and the fork, and the distance between the lever surfaces and the shoulders on the frame, allow the lever to translate freely in directions perpendicular to the pin, thus resulting, when rotating the lever, in annoying, undesired vibration and relative sliding of the lever and frame, which increase release resistance and, therefore, the force required of the user on the lever, and result in scoring and/or abrasion of the sliding surfaces, which, when visible, impair the appearance of the handle.

[0005] Other known handles, as described in document DE-A-3 231 210, present a cylindrical seat provided on the handle lever and a substantially cylindrical head, of a shape complementary to said seat so as to engage the seat in a rotary manner, the cylindrical head being carried by the frame of the handle.

[0006] This presented handle also comprises elastic forcing means to maintain engagement of the cylindrical head in the complementary seat.

[0007] This handle is partly solving some of the above mentioned problem but some difficulties are remaining especially on the matter of preventing translation of the lever in directions crosswise the hinge axis.

[0008] It is an object of the present invention to provide a handle designed to provide a straightforward, low-cost solution to the above problems.

[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 first head, said seat, and said elastic means preferably form part of a releasable click-on connecting device.

5 **[0011]** A non-limiting embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:

10 Figures 1 and 2 show two different sections, with parts removed for clarity, of a preferred embodiment of the handle according to the present invention; Figure 3 shows a view in perspective, with parts removed for clarity, of an end portion of the Figure 1. and 2 handle.

15 **[0012]** Number 1 in the accompanying drawings indicates as a whole a handle fittable to a body 2 of a door 3 (shown partly) of a vehicle (not shown) to control a lock (not shown) on door 3.

20 **[0013]** Handle 1 comprises a frame 5 fittable inside door 3 and in turn comprising an end portion 6 having an end wall 7, and two facing lateral walls 8 extending from end wall 7.

25 **[0014]** The frame is fitted with a lock-control lever 9 comprising an elongated intermediate portion 10 which is gripped by the user; an end portion (not shown) connected to the lock; and an opposite end portion 11 hinged to portion 6 of frame 5 by a releasable click-on hinge device 13 to rotate about a fixed hinge axis 14 perpendicular to walls 8 and parallel to wall 7.

30 **[0015]** As shown in Figure 3 and particularly in Figures 1 and 2, hinge device 13 comprises an elongated cylindrical seat 15 coaxial with axis 14, formed in portion 11 of lever 9, and communicating with the outside through a flared, elongated inlet opening 16 facing end wall 7 and defining, together with cylindrical seat 15, an axial keyhole-shaped groove.

35 **[0016]** Seat 15 is engaged by two heads 18 and by a head 19, which are all substantially semicylindrical, form part of device 13, and are arranged side by side along axis 14. More specifically, heads 18 are lateral heads, extend on opposite axial sides of head 19 (Figure 3), and are defined laterally by respective identical cylindrical surfaces 18a, each complementary to a respective portion of the cylindrical surface defining seat 15, so as to engage seat 15 solely in rotary manner about axis 14. Heads 18 are each connected integrally to a respective lateral wall 8 and to end wall 7, are conveniently formed in one piece with frame 5, and have respective outer lateral milled portions 20 lying in a common plane P parallel to axis 14 and perpendicular to walls 7 and 8. As shown, particularly in Figure 1, plane P extends facing a flat surface 22 connecting cylindrical seat 15 to inlet opening 16 (Figures 1 and 3), and at such a distance from surface 22 that, when milled portions 20 are positioned contacting surface 22, heads 18 can be detached from seat 15 by simply withdrawing heads 18 in a direction substantially perpendicular to axis 14.

[0017] As shown in the accompanying drawings, head 19 is the same shape and size as heads 18, but rotated 180° with respect to heads 18 about an axis perpendicular to axis 14 and wall 7. More specifically, head 19 is defined laterally by a cylindrical surface 19a complementary to a respective portion of the cylindrical surface defining seat 15, so as to engage 15 solely in rotary manner about axis 14. Like heads 18, head 19 also has an outer lateral milled portion 24, which lies in a plane P1 parallel to and at a distance from plane P and on the diametrically opposite side of axis 14 to plane P, and extends facing a portion of seat 15 adjacent to opening 16 (Figure 2).

[0018] Head 19 is connected integrally to the end of an elastic arm 25, which projects from wall 7, perpendicularly to axis 14 and to wall 7, to define, together with head 19, an elastic device 26 for keeping heads 18 inside seat 15, and which is deformable elastically to permit withdrawal of heads 18 from seat 15. Arm 25, head 19, frame 5, and heads 18 conveniently define a one-piece body.

[0019] As of the condition in which heads 18 and 19 engage seat 15 in rotary and transversely fixed manner, lever 9 is disconnected from frame 5 as follows: to begin with, using portion 10, portion 11 of lever 9 is rotated and at the same time conveniently moved in a direction parallel to walls 7 and 8 to detach it from fixed heads 18; during this movement, the force exerted by head 19 on arm 25 gradually flexes arm 25 (Figure 2), gradually detaches surfaces 18a of heads 18 from the surface defining the inside of seat 15, and gradually moves milled portions 20 towards surface 22; upon milled portions 20 contacting surface 22, lever 9 is pulled in a direction substantially perpendicular to axis 14, so that head 19 and milled portions 20 slide along flat surface 22, and heads 18 and 19 are gradually withdrawn from seat 15 to release lever 9 angularly from frame 5.

[0020] Lever 9 is reassembled to frame 5 by simply inserting heads 18 and 19 inside inlet opening 16 and pushing lever 9 towards end wall 7. When so doing, the force exerted on head 19 flexes arm 25 to allow portion 11 of lever 9 to be pushed towards end wall 7 until heads 18 and 19 click inside seat 15.

[0021] The presence of heads 18 and 19 and the particular way in which heads 18, 19 are connected to frame 5 therefore provide, on the one hand, for simply clicking lever 9 onto frame 5, and, on the other, once the connection is made, for rotating lever 9 about a fixed hinge axis, thus preventing any translation of lever 9 in directions crosswise to the hinge axis.

[0022] Providing an elastic member for maintaining contact between heads 18, 19 and the surface defining cylindrical seat 15 eliminates any vibration of lever 9 and, therefore, any annoying noise.

[0023] Finally, the fact that the hinge method described prevents any translation of the lever with respect to the frame, the resulting handles, as compared with known types, are more attractive in appearance by elim-

inating scoring and/or abrasions on the mating surfaces in relative motion.

[0024] 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, seat 15 formed on the lever, and heads 18 and 19 may differ from those indicated by way of example. Also, seat 15 may be formed on frame 5, and heads 18 and 19 be carried by the lever, still, however, in such a manner as to prevent translation of the lever in directions perpendicular to the hinge axis.

[0025] Finally, the lever may be formed otherwise than as shown by way of example, and be hinged to a different portion of frame 5; different elastic means may be provided for forcing the heads inside the seat; and, obviously, a cylindrical seat may be provided for each head.

Claims

1. A handle (1) for a vehicle door (3), the handle (1) comprising a frame (5) fittable to the door (3); a control lever (9) which is gripped by a user; and hinge means (13) for hinging said lever (9) to said frame (5) to permit rotation of said lever (9) with respect to said frame (5); said hinge means (13) comprising at least one cylindrical seat (15) coaxial with a fixed hinge axis (14) and carried by one of said frame (5) and said lever (9); at least one substantially cylindrical first head (18) carried by the other of said frame (5) and said lever (9); the first head (18) being defined laterally by a lateral surface complementary to at least one portion of the surface defining said seat (15) and coaxial with said axis (14) to engage the seat (15) in rotary manner; and elastic forcing means (26) provided to maintain mutual contact of said surfaces regardless of the position of the lever (9) with respect to the frame (5), and being deformable to permit withdrawal of the first head (18) from said seat (15); **characterized in that** said elastic means (26) comprise at least one further substantially cylindrical head (19) defined laterally by a surface (19a) complementary to at least one portion of said seat (15), and housed inside said seat (15).
2. A handle as claimed in Claim 1, **characterized in that** said first head (18), said seat (15), and said elastic means (26) form part of a releasable click-on connecting device (13).
3. A handle as claimed in Claim 1 or 2, **characterized in that** said first head (18) has an outer lateral milled portion (20) parallel to said axis (14).
4. A handle as claimed in any one of the foregoing Claims, **characterized in that** said further head (19) has an outer lateral milled portion (24) parallel

to said axis (14).

5. A handle as claimed in Claim 3 and 4, **characterized in that** said lateral milled portions (20)(24) lie in respective planes (P)(P1) spaced apart and on diametrically-opposite sides of said axis (14). 5
6. A handle as claimed in any one of the foregoing Claims, **characterized in that** said hinge means (13) comprise two said first heads (18) aligned along said axis and on opposite axial sides of said further head (19). 10
7. A handle as claimed in any one of the foregoing Claims, **characterized in that** said seat (15) is carried by said lever (9). 15
8. A handle as claimed in any one of the foregoing Claims, **characterized in that** said first head (18) is fixed with respect to said frame (5). 20
9. A handle as claimed in any one of the foregoing Claims, **characterized in that** said further head (19) is carried by said frame (5). 25
10. A handle as claimed in Claim 9, **characterized in that** said elastic means also comprise an elastic arm (25) interposed between said frame (5) and said further head (19). 30
11. A handle as claimed in Claim 10, **characterized in that** said frame (5), said arm (25), and said heads (18)(19) form part of a single one-piece body. 35

Patentansprüche

1. Handgriff (1) für eine Fahrzeugtür (3), wobei der Handgriff (1) einen Rahmen (5) aufweist, der an der Tür (3) angebracht werden kann, einen Steuerhebel (9), den ein Benutzer greift, und Scharniermittel (13) zum Anlenken des Hebels (9) an den Rahmen (5), um das Drehen des Hebels (9) bezüglich des Rahmens (5) zu ermöglichen, wobei die Scharniermittel (13) mindestens eine zylindrische Aufnahme (15) aufweisen, die zu einer festen Scharnierachse (14) koaxial ist und von dem Rahmen (5) oder dem Hebel (9) getragen ist, mindestens einen im Wesentlichen zylindrischen, ersten Kopf (18), der von dem anderen der beiden Elemente Rahmen (5) und Hebel (9) getragen ist, wobei der erste Kopf (18) seitlich durch eine seitliche Oberfläche begrenzt ist, die zu mindestens einem Abschnitt der Oberfläche komplementär ist, die die Aufnahme (15) begrenzt, und zur Achse (14) koaxial ist, um drehend in die Aufnahme (15) einzugreifen, und elastische Zwangsmittel (26), die dazu vorgesehen sind, den gegenseitigen Kontakt der Oberflächen unabhän-

gig von der Position des Hebels (9) bezüglich des Rahmens (5) zu halten, und die so verformbar sind, dass das Entnehmen des ersten Kopfes (18) aus der Aufnahme (15) ermöglicht wird, **dadurch gekennzeichnet, dass** die elastischen Mittel (26) mindestens einen weiteren, im Wesentlichen zylindrischen Kopf (19) aufweisen, der seitlich durch eine Oberfläche (19a) begrenzt ist, die zu mindestens einem Abschnitt der Aufnahme (15) komplementär ist, und der in der Aufnahme (15) aufgenommen ist.

2. Handgriff nach Anspruch 1, **dadurch gekennzeichnet, dass** der erste Kopf (18), die Aufnahme (15) und die elastischen Mittel (26) einen Teil einer lösbaren Einschnapp-Verbindungsvorrichtung (13) bilden.
3. Handgriff nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der erste Kopf (18) einen äußeren, gefrästen Seitenabschnitt (20) aufweist, der parallel zur Achse (14) ist.
4. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der weitere Kopf (19) einen äußeren, gefrästen Seitenabschnitt (24) aufweist, der parallel zur Achse (14) ist.
5. Handgriff nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** die gefrästen Seitenabschnitte (20), (24) in entsprechenden, voneinander beabstandeten Ebenen (P), (P1) und an diametral entgegengesetzten Seiten der Achse (14) liegen.
6. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Scharniermittel (13) zwei erste Köpfe (18) aufweisen, die entlang der Achse und an entgegengesetzten, axialen Seiten des weiteren Kopfes (19) ausgerichtet sind.
7. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Aufnahme (15) von dem Hebel (9) getragen ist.
8. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der erste Kopf (18) bezüglich des Rahmens (5) fest ist.
9. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der weitere Kopf (19) von dem Rahmen (5) getragen ist.
10. Handgriff nach Anspruch 9, **dadurch gekennzeichnet, dass** die elastischen Mittel ebenfalls einen elastischen Arm (25) aufweisen, der zwischen dem Rahmen (5) und dem weiteren Kopf (19) angeordnet ist.

11. Handgriff nach Anspruch 10, **dadurch gekennzeichnet, dass** der Rahmen (5), der Arm (25) und die Köpfe (18), (19) einen Teil eines einzelnen, einstückigen Körpers bilden.

Revendications

1. Poignée (1) pour une porte de véhicule (3), cette poignée (1) comprenant un cadre (5) qu'il est possible de fixer sur la porte (3) ; un levier de commande (9) empoigné par un utilisateur ; et des moyens d'articulation (13) pour articuler ledit levier (9) sur ledit cadre (5) afin de permettre la rotation dudit levier (9) par rapport audit cadre (5) ; lesdits moyens d'articulation (13) étant constitués au moins d'un support cylindrique (15) situé dans le sens coaxial par rapport à un axe de charnière fixe (14) et supporté par ledit cadre (5) ou ledit levier (9) ; au moins une première tête principalement cylindrique (18) supportée par ledit levier (9) ou ledit cadre (5) restant ; la première tête (18) étant formée latéralement d'une surface latérale complétant au moins une partie de la surface formant ledit support (15) et dans le sens coaxial par rapport audit axe (14) afin de s'engager dans le support (15) de manière rotative ; et des moyens de contrainte élastiques (26) permettant de maintenir le contact mutuel des dites surfaces, quelle que soit la position du levier (9) par rapport au cadre (5) et déformable afin de permettre le retrait de la première tête (18) dudit support (15) ; **caractérisée en ce que** lesdits moyens élastiques (26) comprennent au moins une autre tête principalement cylindrique (19) formée latéralement par une surface (19a) complétant au moins une partie dudit support (15) et logée à l'intérieur dudit support (15).
2. Poignée selon la Revendication 1, **caractérisée en ce que** ladite première tête (18), ledit support (15) et lesdits moyens élastiques (26) font partie d'un dispositif de raccordement encliquetable détachable (13).
3. Poignée selon la Revendication 1 ou 2, **caractérisée en ce que** ladite première tête (18) possède une partie latérale extérieure laminée (20) parallèle audit axe (14).
4. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce que** ladite autre tête (19) possède une partie latérale extérieure laminée (24) parallèle audit axe (14).
5. Poignée selon les Revendications 3 et 4, **caractérisée en ce que** lesdites parties latérales laminées (20)(24) reposent sur des plans respectifs (P)(P1) espacés l'un de l'autre et situés sur les côtés dia-

métralement opposés dudit axe (14).

6. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce que** lesdits moyens d'articulation (13) comprennent les deux premières têtes (18) alignées le long dudit axe et sur des côtés opposés axialement de ladite autre tête (19).
7. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce que** ledit support (15) est supporté par ledit levier (9).
8. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce que** ladite première tête (18) est fixe par rapport audit cadre (5).
9. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce que** ladite autre tête (19) est supportée par ledit cadre (5).
10. Poignée selon la Revendication 9, **caractérisée en ce que** lesdits moyens élastiques comprennent également un bras élastique (25) interposé entre ledit cadre (5) et ladite autre tête (19).
11. Poignée selon la Revendication 10, **caractérisée en ce que** ledit cadre (5), ledit bras (25) et lesdites têtes (18)(19) forment un même corps monobloc.

FIG. 1

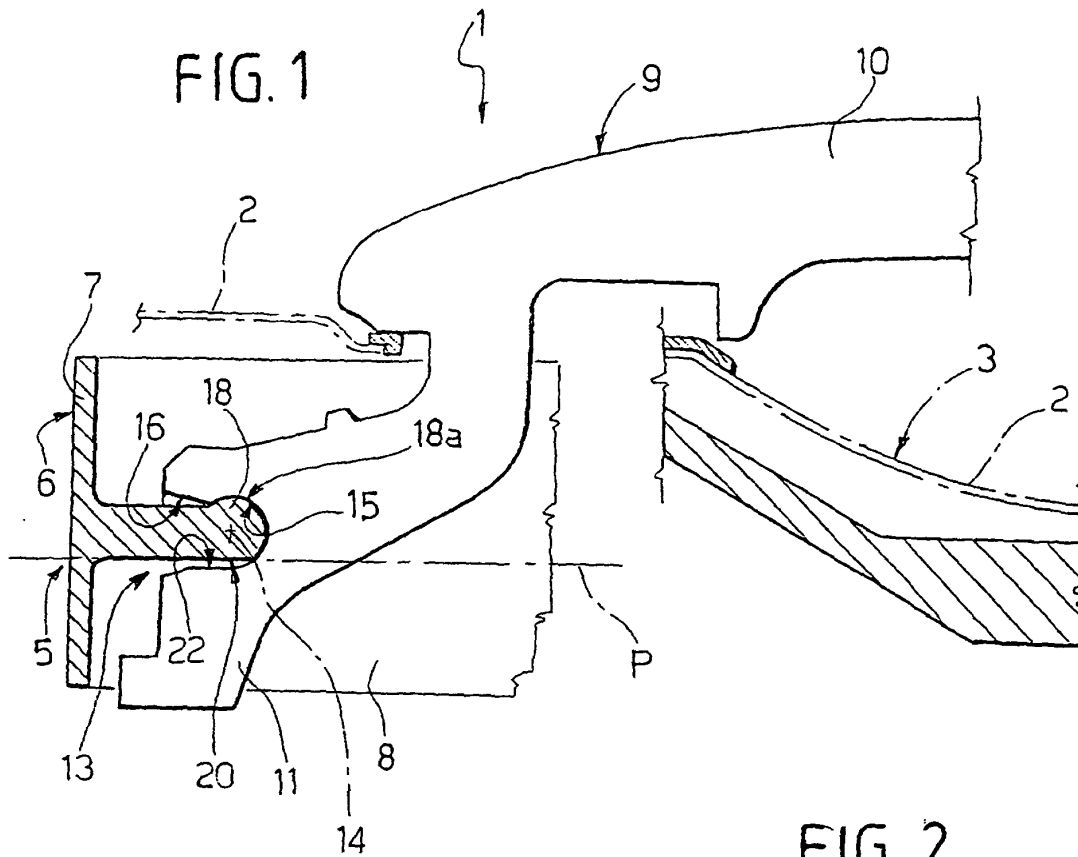


FIG. 2

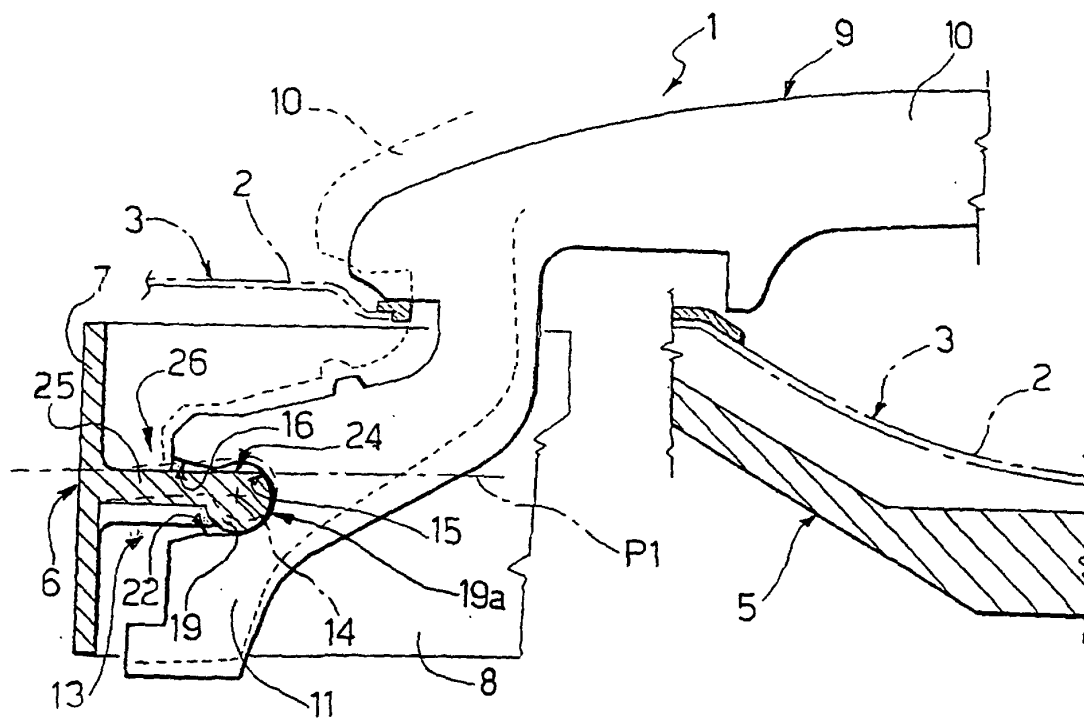


FIG. 3

