

(19)



(11)

EP 4 245 180 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
28.05.2025 Bulletin 2025/22

(51) International Patent Classification (IPC):
A42B 3/22 (2006.01)

(21) Application number: **23160655.9**

(52) Cooperative Patent Classification (CPC):
A42B 3/223

(22) Date of filing: **08.03.2023**

(54) **DEVICE FOR OPENING/CLOSING THE VISOR OF A HELMET**

VORRICHTUNG ZUM ÖFFNEN/SCHLIESSEN DES VISIERS EINES HELMS

DISPOSITIF D'OUVERTURE/FERMETURE DE LA VISIÈRE D'UN CASQUE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

- **TACCIOLI, Emiliano**
20099 SESTO SAN GIOVANNI MI (IT)
- **RATTI, Carlo Filippo**
15050 VILLALVERNIA AL (IT)

(30) Priority: **16.03.2022 IT 202200005099**

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners
Via Meravigli, 16
20123 Milano (IT)

(43) Date of publication of application:
20.09.2023 Bulletin 2023/38

(73) Proprietor: **PT. Tarakusuma Indah**
Bekasi - Jawa Barat 17853 (ID)

(56) References cited:
US-A- 4 860 389 US-A- 5 553 329
US-A1- 2012 240 314

(72) Inventors:
• **TEDJAKUSUMA, Henry**
JAKARTA BARAT (ID)

EP 4 245 180 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention relates to a device for opening/closing the visor of a helmet. More particularly, the invention relates to a device for opening/closing the visor of a helmet of the full-face type, i.e., provided with a chin piece integral with the helmet shell, or of the so-called "open face" type.

[0002] As is known, the visor of the helmet is an extremely important element of the helmet itself, as it prevents air from entering the shell of the helmet and thus irritating the eyes of the driver.

[0003] The visor must be able to be lifted and lowered extremely quickly, using only one hand, and often, indeed, substantially necessarily, while wearing motorcycle gloves.

[0004] The opening and closing of the visor must also be such as to ensure a perfect seal between the visor and the shell of the helmet, in order to prevent unwanted air drafts, which produce both annoying noises and discomfort for the eyes of the user.

[0005] Currently, the opening and closing of the visor are provided by acting on a protruding portion of the visor, with the presence of metal springs that allow to keep the visor in the closed position, and with complex assemblies with various metal and plastic materials, and numerous elements involved in the opening/closing mechanism.

[0006] Solutions of the known type are therefore not economical from a manufacturing point of view, nor do they allow long durability of the mechanism over time, indeed because the springs can yield and therefore change their performance over time, making the opening and closing not substantially homogeneous throughout the lifetime of said helmet.

[0007] US 5 553 329 discloses a helmet for motorcyclists and the like, provided with a safety device for locking the visor.

[0008] The aim of the present invention is to provide a device for opening/closing the visor of a helmet that allows to open and close the visor in the absence of metal springs.

[0009] Within this aim, an object of the present invention is to provide a device for opening/closing the visor of a helmet that has a reduced number of component parts.

[0010] Another object of the present invention is to provide a device for opening/closing the visor of a helmet that can be assembled easily.

[0011] Not least object of the present invention is to provide a device for opening/closing the visor of a helmet that is highly reliable, relatively easy to provide, and at competitive costs.

[0012] This aim and these and other objects that will become better apparent hereinafter are achieved by a device for opening/closing the visor of a helmet, as defined in claim 1.

[0013] Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of the

device according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

5 Figure 1 is a partial perspective view of a helmet with the opening/closing device according to the present invention;

10 Figure 2 is an exploded perspective view of the opening/closing device according to the present invention;

15 Figure 3 is an exploded longitudinal sectional view of the opening/closing device according to the present invention;

20 Figure 4 is a longitudinal sectional view of the opening/closing device according to the present invention, mounted on a helmet;

Figure 5 is a further longitudinal sectional view of the opening/closing device according to the present invention, mounted on a helmet.

25 **[0014]** With reference to the figures, the device for opening/closing the visor of a helmet according to the present invention is generally designated by the reference numeral 1 and comprises a base element 2 adapted to be rendered integral with a shell 3 of a helmet and provided so as to form a female receptacle for a male element 5 adapted to be rendered integral with the visor 4 of the helmet.

30 **[0015]** Essentially, the male element 5 comprises a tooth which is made of plastic material and therefore inherently flexible and is substantially U-shaped, with a portion of the rounded region of the U-shape that is flattened so as to adhere to the female base element 2.

35 **[0016]** The male element 5 is therefore shaped complementarily to the base element 2.

40 **[0017]** The receptacle of the base element 2 within which the male element 5 engages is conveniently provided with retention means 8 adapted to form an undercut that allows the locking of the male element 5 when it engages in the receptacle of the base element 2.

45 **[0018]** Furthermore, the male element 5 is provided with a tab 6 which is adapted to protrude from the female base element 2 so that it can be easily gripped by the user with the hands, even when wearing gloves.

50 **[0019]** Furthermore, the male element 5 is provided with a pair of retention teeth 9 arranged laterally to the tab 6. The retention teeth 9 are adapted to engage under the retention means (undercuts) 8 of the receptacle of the base element 2 when the male element 5 enters the base element 2.

55 **[0020]** Therefore, the male element 5 is configured to be integral with the visor 4 of the helmet, by means of a pin 7, while the female base element 2 is adapted to be rendered integral with the shell 3 of the helmet.

[0021] The U-shape of the male element 5, which is essentially configured as a tooth that protrudes downward from the visor 4, and is adapted to engage in the receptacle formed by the female element 2, allows the male element 5 to be elastic, so as to allow its insertion by forcing within the female base element 2, with the retention teeth 9 moving beyond the retention means 8 and locking below them, and its disengagement, acting against the tab 6, so that the walls of the male element move mutually closer, as a result of elastic deformation of the male element, so that it can be allowed to exit from the receptacle of the female base element 2, disengaging the retention teeth 9 from the retention means 8 of the receptacle of the base element 2.

[0022] Therefore, it is noted that the metal springs present in devices of the known type are replaced in the present invention by a tooth made of plastic material constituted by the male element 5, which can flex by virtue of its shape once the user acts on the protruding tab 6, which is integral with the male element 5.

[0023] In this manner, the engagement and disengagement of the visor 4 with the shell 3 occur in an extremely simplified manner, without complex assemblies of numerous parts, without the presence of metal springs, and above all with a durability over time that does not depend on the elastic capacity of the springs but is simply entrusted to the flexibility of the male element 5, which is preferably made of plastic material and does not change its characteristics substantially over time.

[0024] In the case of a full-face helmet, the device according to the present invention is arranged centrally in axial alignment with the centerline of the helmet.

[0025] In the case of a so-called "open air" helmet, instead, the device according to the present invention is arranged laterally.

[0026] In practice it has been found that the device according to the present invention fully achieves the intended aim and objects, since it allows to open/close the visor of the helmet without the use of metal springs and most of all with a device constituted by an extremely reduced number of component parts.

[0027] The device thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the accompanying claims.

[0028] All the details may furthermore be replaced with other technically equivalent elements.

[0029] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to the requirements and the state of the art.

[0030] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A device (1) for opening/closing the visor (4) of a helmet, comprising a base element (2), which is configured to be associated stably with the shell (3) of a helmet and is adapted to form a receptacle, and a male element (5), which is adapted to be associated stably with the visor (4) of the helmet and is adapted to form an elastically flexible tooth which is adapted to be engaged in said receptacle of said base element (2), **characterized by** said male element (5) being provided with a tab (6) which protrudes from said base element (2) when said male element (5) is engaged in said base element (2), for the lifting/lowering of said visor (4), the receptacle of said base element (2) being provided with retention means (8) adapted to form an undercut for the retention of said male element (5) when said male element is engaged in said receptacle of the base element (2).
2. The device according to claim 1, **characterized in that** said male element (5) is shaped complementarily to said base element (2).
3. The device according to claim 1 or 2, **characterized in that** said male element (5) configured as elastically flexible tooth protrudes from said visor (4) and is adapted to engage in the receptacle formed by said base element (2).
4. The device according to claim 1, **characterized in that** said male element (5) comprises retention teeth (9) which are arranged laterally to said tab (6) and are adapted to engage below said retention means (8) of the receptacle of said base element (2).
5. The device according to claim 1, **characterized in that** said base element (2) is substantially U-shaped, with a portion of the U-shape that is rectilinear, and said male element (5) also is substantially U-shaped with a rectilinear portion.
6. The device according to claim 5, **characterized in that** said U-shaped male element (5) is elastically flexible by acting on the protruding tab (6) so as to move mutually closer mutually opposite walls of said male element (5).
7. The device according to claim 1, **characterized in that** said male element (5) is rendered integral with said visor (4) by means of a pin (7).
8. The device according to claim 1, **characterized in that** said male element (5) is made of plastic material.
9. A helmet comprising a shell (3) and a visor (4) which

can be paired with said shell (3), **characterized in that** it comprises a device (1) for opening/closing said visor (4) according to one or more of the preceding claims.

Patentansprüche

1. Eine Vorrichtung (1) zum Öffnen/Schließen des Visiers (4) eines Helms, die ein Basiselement (2) umfasst, welches ausgebildet ist, um fest mit der Schale (3) eines Helms verbunden zu werden, und um eine Aufnahme zu bilden, und ein vorstehendes Element (5), das ausgebildet ist, um fest mit dem Visier (4) des Helms verbunden zu werden, und um einen elastisch biegsamen Zahn zu bilden, der ausgebildet ist, um in die Aufnahme des Basiselements (2) einzugreifen; **dadurch gekennzeichnet, dass** das vorstehende Element (5) mit einer Nase (6) versehen ist, die von dem Basiselement (2) vorsteht, wenn das vorstehende Element (5) in das Basiselement (2) eingreift, zum Zwecke des Anhebens/Absenkens des Visiers, wobei die Aufnahme des Basiselements (2) mit Haltemitteln (8) ausgestattet ist, die ausgebildet sind, um eine Unterschneidung zum Halten des vorstehenden Elements (5) zu bilden, wenn das vorstehende Element in die Aufnahme des Basiselements (2) eingreift.
2. Die Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das vorstehende Element (5) komplementär zu dem Basiselement (2) geformt ist.
3. Die Vorrichtung gemäß Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** das als elastisch biegsamer Zahn ausgebildete vorstehende Element (5) von dem Visier (4) vorsteht und ausgebildet ist, um in die von dem Basiselement (2) geformte Aufnahme einzugreifen.
4. Die Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das vorstehende Element (5) Haltezähne (9) umfasst, die seitlich von der Nase (6) angeordnet und ausgebildet sind, um unterhalb der Haltemittel (8) der Aufnahme des Basiselements (2) einzugreifen.
5. Die Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das Basiselement (2) im Wesentlichen U-förmig ist, mit einem Abschnitt der U-Form, der geradlinig ist, und das vorstehende Element (5) ebenfalls U-förmig mit einem geradlinigen Abschnitt ist.
6. Die Vorrichtung gemäß Anspruch 5, **dadurch gekennzeichnet, dass** das U-förmige vorstehende Element (5) durch Einwirken auf die vorstehende Nase (6) elastisch biegsam ist, um einander gegen-

überliegende Wände des vorstehenden Elements (5) näher zueinander zu bewegen.

7. Die Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das vorstehende Element (5) mit Hilfe eines Stifts (7) integral mit dem Visier (4) gemacht wird.
8. Die Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das vorstehende Element (5) aus Kunststoffmaterial hergestellt ist.
9. Ein Helm, der ein Gehäuse (3) und ein Visier (4) umfasst, das paarweise mit dem Gehäuse (3) angeordnet werden kann, **dadurch gekennzeichnet, dass** er eine Vorrichtung (1) zum Öffnen/Schließen des Visiers (4) gemäß einem oder mehreren der obigen Ansprüche umfasst.

Revendications

1. Dispositif (1) d'ouverture/fermeture de la visière (4) d'un casque, comprenant un élément de base (2), qui est configuré pour être associé de manière stable à la coque (3) d'un casque et est adapté pour former un réceptacle, et un élément mâle (5), qui est adapté pour être associé de manière stable à la visière (4) du casque et est adapté pour former une dent élastiquement flexible qui est adaptée pour être engagée dans ledit réceptacle dudit élément de base (2), **caractérisé en ce que** ledit élément mâle (5) est muni d'une patte (6) qui fait saillie à partir dudit élément de base (2) lorsque ledit élément mâle (5) est engagé dans ledit élément de base (2), pour le levage/abaissement de ladite visière (4), le réceptacle dudit élément de base (2) étant pourvu de moyens de retenue (8) adaptés pour former une contre-dépouille pour la retenue dudit élément mâle (5) lorsque ledit élément mâle est engagé dans ledit réceptacle de l'élément de base (2).
2. Le dispositif selon la revendication 1, **caractérisé en ce que** ledit élément mâle (5) est de forme complémentaire à celle dudit élément de base (2).
3. Le dispositif selon la revendication 1 ou 2, **caractérisé en ce que** ledit élément mâle (5) configuré comme une dent élastiquement flexible dépasse de ladite visière (4) et est adapté pour s'engager dans le réceptacle formé par ledit élément de base (2).
4. Le dispositif selon la revendication 1, **caractérisé en ce que** ledit élément mâle (5) comprend des dents de retenue (9) qui sont disposées latéralement par rapport à ladite patte (6) et sont adaptées pour s'engager sous lesdits moyens de retenue (8) du

réceptacle dudit élément de base (2).

5. Le dispositif selon la revendication 1, **caractérisé en ce que** ledit élément de base (2) est sensiblement en forme de U, avec une partie de la forme en U qui est rectiligne, et ledit élément mâle (5) est également sensiblement en forme de U avec une partie rectiligne. 5
6. Le dispositif selon la revendication 5, **caractérisé en ce que** ledit élément mâle (5) en forme de U est élastiquement flexible en agissant sur la patte en saillie (6) de manière à rapprocher mutuellement les parois mutuellement opposées dudit élément mâle (5). 10 15
7. Le dispositif selon la revendication 1, **caractérisé en ce que** ledit élément mâle (5) est rendu intégralement avec ladite visière (4) au moyen d'une goupille (7). 20
8. Le dispositif selon la revendication 1, **caractérisé en ce que** ledit élément mâle (5) est réalisé en matière plastique. 25
9. Un casque comprenant une coque (3) et une visière (4) qui peut être couplée à ladite coque (3), **caractérisé en ce qu'il** comprend un dispositif (1) d'ouverture/fermeture de ladite visière (4) selon une ou plusieurs des revendications précédentes. 30

35

40

45

50

55

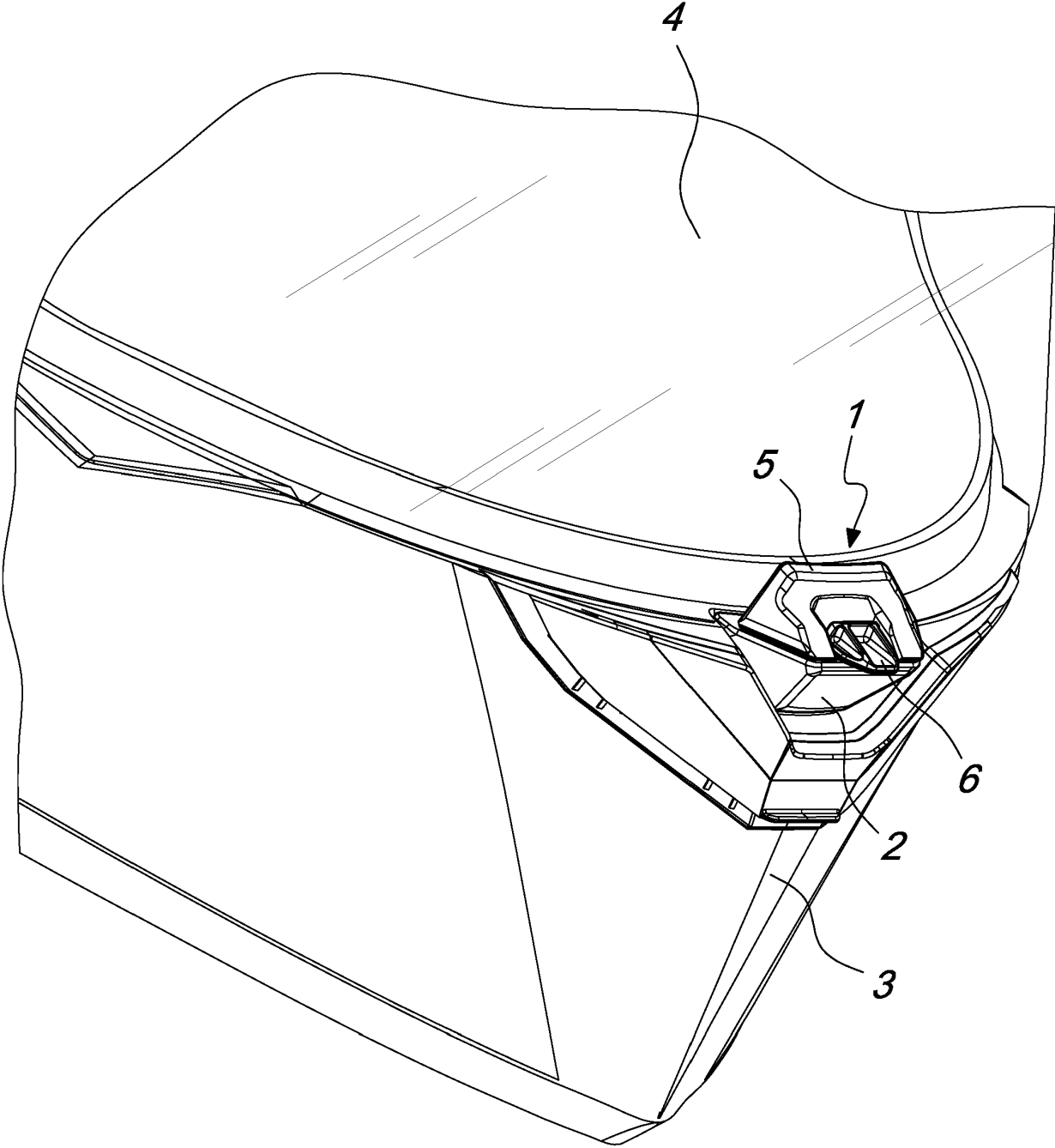


Fig. 1

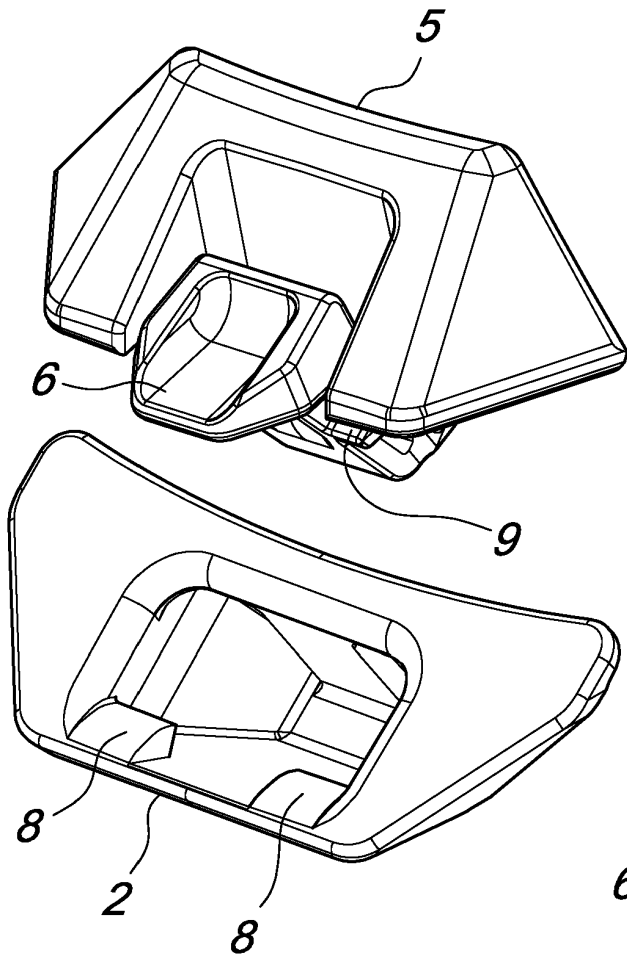


Fig. 2

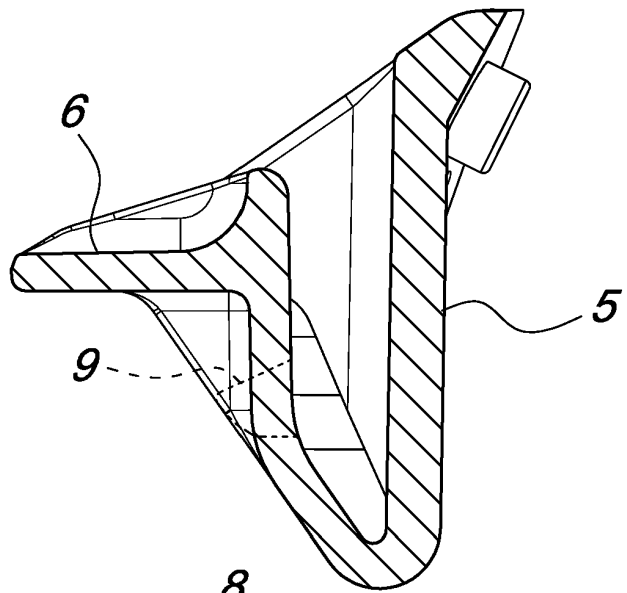
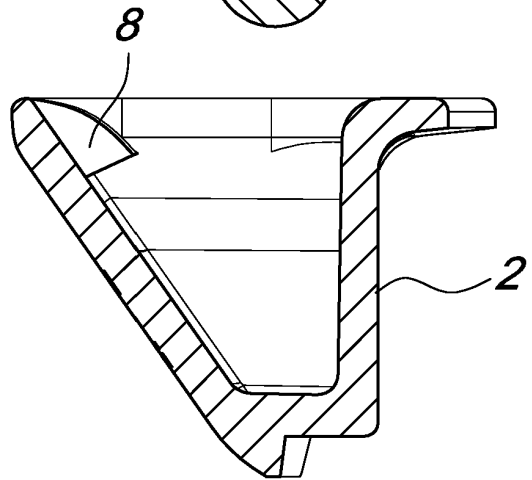
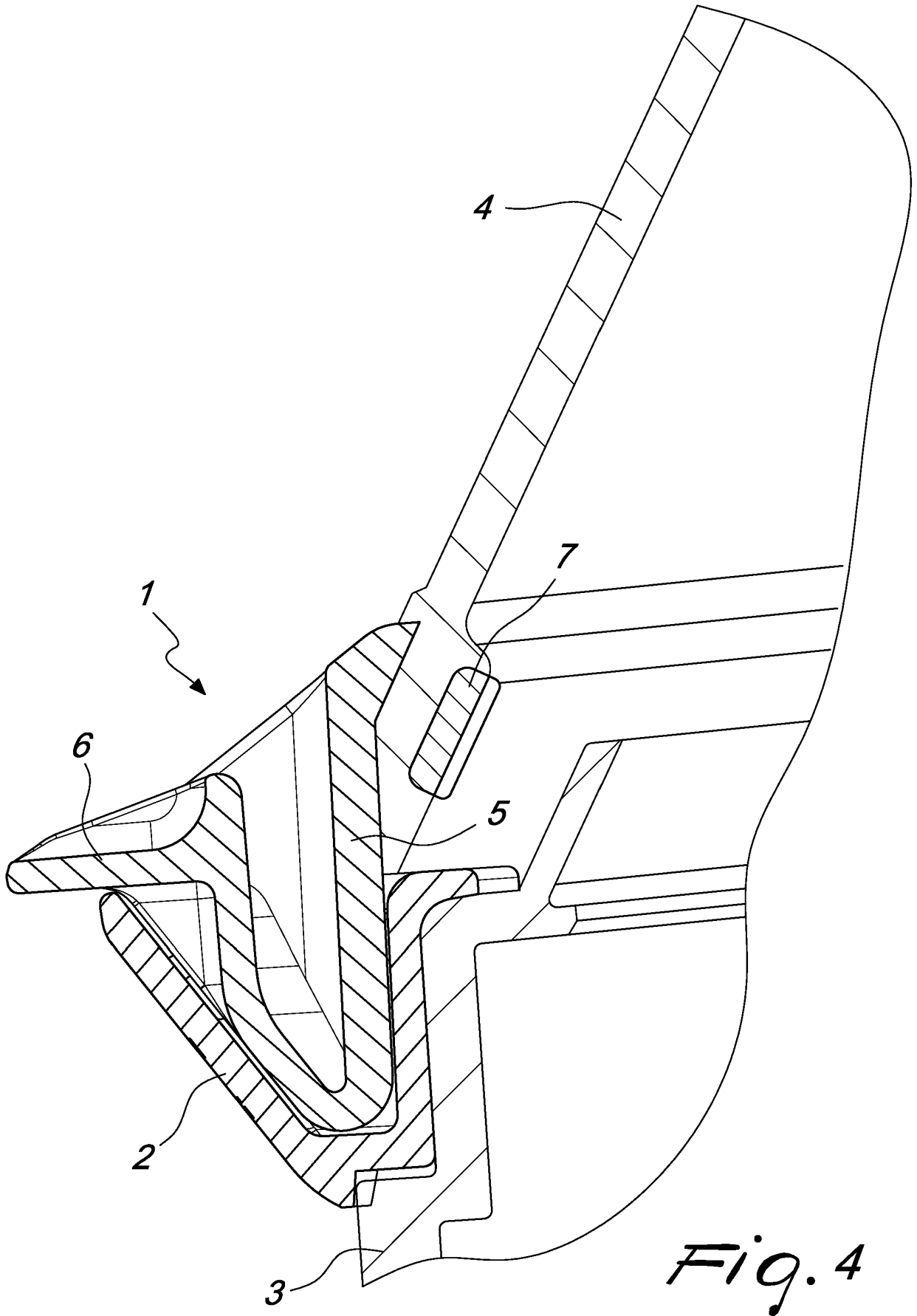


Fig. 3





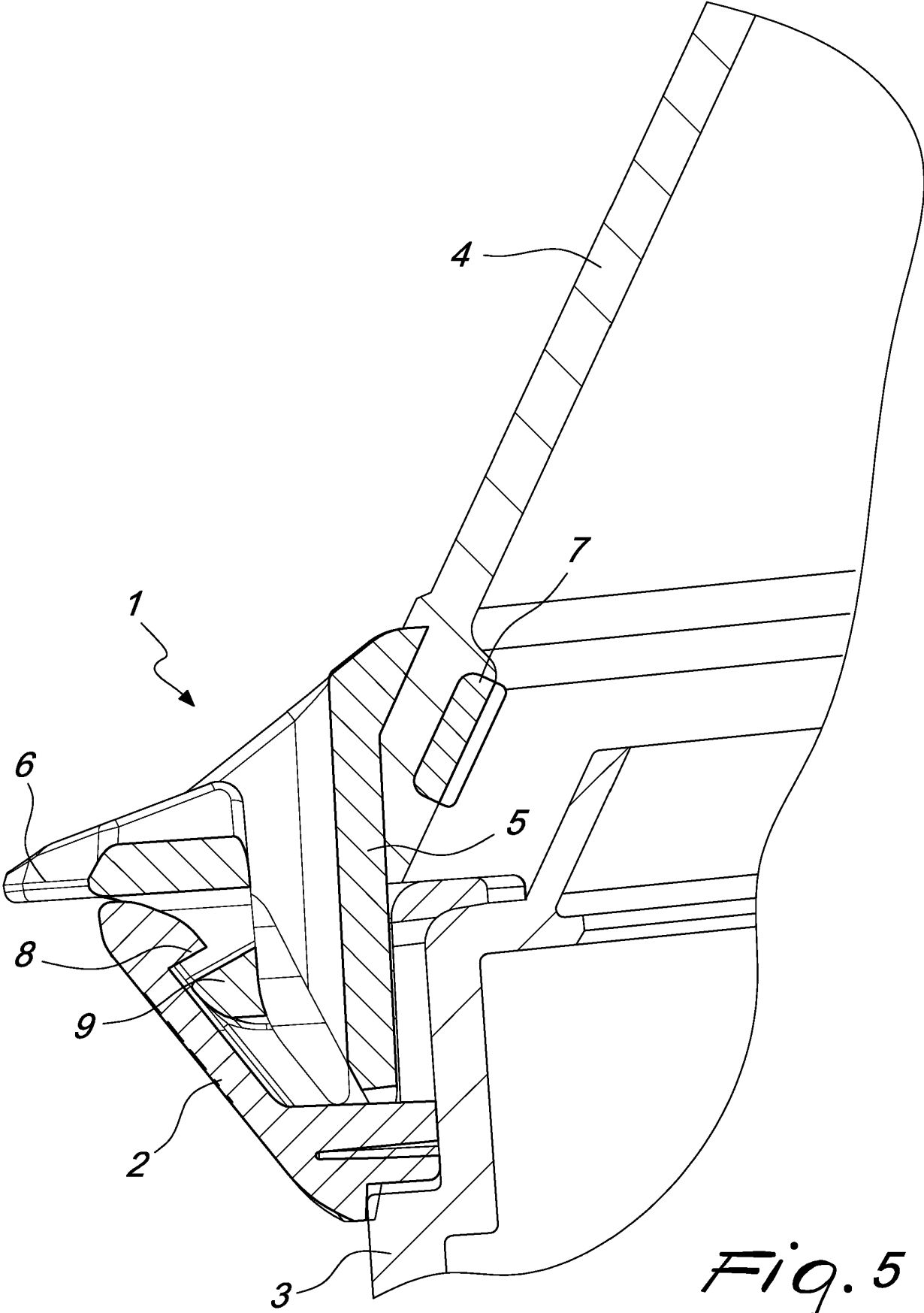


Fig. 5

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

- US 5553329 A [0007]